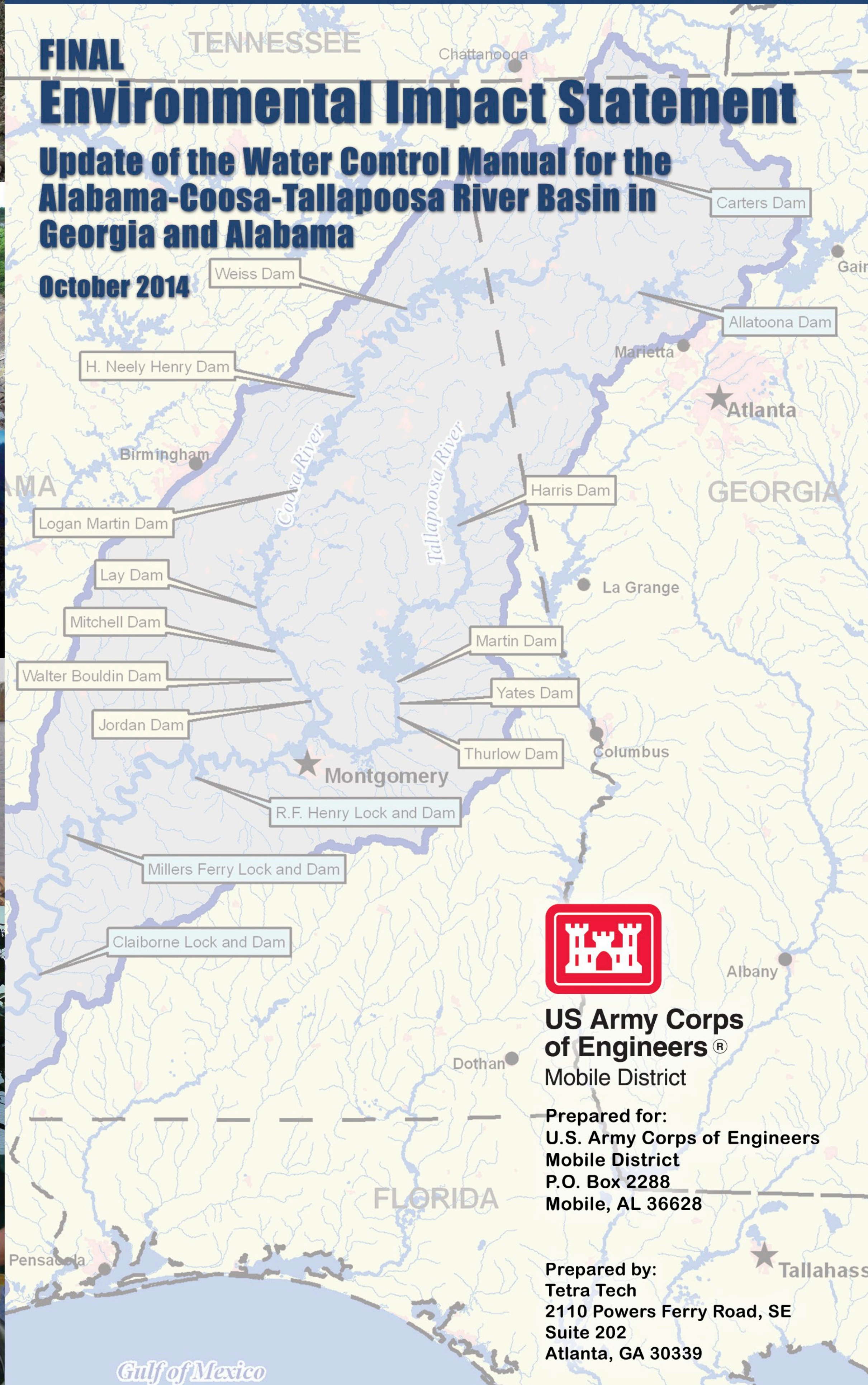





FINAL
Environmental Impact Statement

Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa River Basin in Georgia and Alabama

October 2014



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Mobile District

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Appendix B
Pertinent Correspondence

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Appendix B

Part I:
Public and Agency Comments and USACE Response

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Appendix B

Part 1 – Public and Agency Comments on the Draft Environmental Impact Statement and the USACE Responses to the Comments

Water Control Manual Update for Alabama-Coosa-Tallapoosa River Basin, Georgia and Alabama

The draft EIS for the update of the ACT Basin Water Control Manual was filed with EPA on February 22, 2013 and formally released for public review on March 1, 2013 when the Notice of Availability of the EIS was published in the Federal Register. The comment period was initially scheduled to end on May 1, 2013. However, the USACE received multiple requests for extension of the comment period. In response to these requests, the comment period was extended until May 31, 2013, which provided a total of 90 days for agency and public comment. During the comment period, public workshops on the draft EIS and WCM were held in four cities within the ACT basin during the week of March 25, 2013: Kennesaw, GA on March 25; Rome, GA on March 26; Gadsden, AL on March 27; and Montgomery, AL on March 28. Technical experts were available to answer questions from agencies and members of the public, and administrative staff members were present to receive public comments. Attendees at these meetings totaled 129, either representing various agencies and organizations or as interested individuals.

Seventy (70) comments on the draft EIS were submitted from federal, state, and local agencies, private organizations, and individuals. The comments were recorded and numbered in the order by which they were received during the comment period. Table B-1 presents a summary of the comments received, grouped and organized sequentially as follows: federal agencies (3), state agencies (both Alabama and Georgia) (6), local government officials and agencies (7), private organizations (representing business and industry, environmental interests, and lake associations) (21), and individuals (33). Table B-1 identifies the author, the author's organization or agency, the means by which the comment was submitted (letter, court reporter transcript, etc.), and the page number in Part 1 of Appendix B where the comment letter followed by the USACE responses can be found.

Upon receipt of the public comment submittals (letter, email, court reporter transcript, etc.), the project team reviewed and parsed each document into a series of sub-comments determined by the particular interest or concern of the author (e.g., water quality, recreation, hydropower, NEPA procedure, cumulative impacts). Each sub-comment was assigned a unique number corresponding to the order it appears in the original document. The team prepared responses to each of the sub-comments, specifically noting if any EIS revisions were made in conjunction with the response. Consideration of public and agency comments on the draft EIS led to incorporating a number of updates and revisions into the final EIS.

Public comments and USACE responses are presented on the following pages of Appendix B, Part 1, as described below: (1) each original comment document is posted in its entirety as submitted by the commenter (in the order shown in Table 1); (2) following the original comment document, the text of each comment subset is presented sequentially and immediately followed by the corresponding USACE response.

Table B-1.
Interested parties submitting comments on the draft EIS for the ACT WCM update

ID No.	Author	Organization	Comment Type	Page No.
Federal agencies				
0043	Joyce Stanley	U.S. Department of Interior, Office of Environmental Policy and Compliance	Letter	B-9
0055	Herb Nadler	Southeastern Power Administration	Letter	B-21
0069	Heinz Mueller	Environmental Protection Agency	Letter	B-28
State agencies				
0025	Tom Littlepage	Alabama Office of Water Resources	Public Mtg. - Computer	B-58
0045	John Biagi	Georgia Wildlife Resources Division	Letter	B-60
0047	N. Gunter Guy, Jr.	Alabama Dept. of Conservation and Natural Resources	Letter	B-65
0061	Judson Turner	Georgia Environmental Protection Division	Letter	B-74
0062	Brian Atkins	Alabama Office of Water Resources	Letter	B-105
0068	Lance R. LeFleur	Alabama Dept. of Environmental Management	Letter	B-143
Local/regional government agencies and water utilities				
0044	Kirk Day	Cherokee County (AL) Commission	Letter	B-169
0049	Marcie Foster	Cherokee County (AL) Commission	Letter	B-173
0053	Charles Hyland, Jr.	Mobile Area Water and Sewer System	Letter	B-175
0056	Katherine Zitsch	Metropolitan North Georgia Water Planning District	Letter	B-182
0060	Katherine H. Zitsch/ Glenn M. Page	Cobb County-Marietta Water Authority/Atlanta Regional Commission	Letter	B-184
0065	Thomas Morgan	Water Works and Sanitary Sewer Board, City of Montgomery (AL)	Letter	B-207
0067	Frank Eskridge	Water Works and Sewer Board of Gadsden (AL)	Letter	B-218
Businesses, power companies, and trade organizations				
0042	Tanya Blalock	Georgia Power Company	Letter	B-221
0048	Jerry Sailors	Coosa-Alabama River Improvement Association, Inc.	Letter	B-225
0051	Blake Hardwich	Manufacture Alabama!	Letter	B-234
0052	Roy McAuley	Alabama Pulp and Paper Council	Letter	B-240
0064	Matthew Bowden	Alabama Power Company	Letter	B-245
0066	William Canary	Business Council of Alabama	Letter	B-410
0070	Richard Feathers	Southeastern Federal Power Customers, Inc.	Letter	B-415
Environmental organizations				
0059	Gilbert B. Rogers/ Lauren C. Joy	Southern Environmental Law Center	Letter	B-445
Lake association representatives				
0006	Thomas Foster	Lake Allatoona Association	Online	B-491
0019	Mike Riley	Logan Martin Lake Protection Association	Court Reporter	B-495
0021	William Copeland	Neely Henry Lake Association	Court Reporter	B-498

ID No.	Author	Organization	Comment Type	Page No.
0022	Hap Bryant	Neely Henry Lake Association	Court Reporter	B-502
0024	Kelly Stephens	Neely Henry Lake Association	Public Mtg. - Computer	B-505
0028	Not Identified	Lake Allatoona Association	Public Mtg. - Written	B-507
0039	Board of Directors	Lake Allatoona Association	Letter	B-533
0041	Kelly Stephens	Neely Henry Lake Association	Letter	B-573
0054	Mike Riley	Logan Martin Lake Protection Association	Letter	B-578
0057	Carolyn Landrem	Weiss Lake Improvement Association, Inc.	Letter	B-581
0058	Mike Riley	Logan Martin Lake Protection Association	Letter	B-585
0063	Steve Forehand	Lake Martin Resource Association, Inc.	Letter	B-590
Private citizens				
0001	Glenn Brown	Private Citizen	Online	B-596
0002	Randall Foster	Private Citizen	Online	B-598
0003	Warney Conley	Private Citizen	Online	B-600
0004	Bill Brumbelow	Private Citizen	Online	B-602
0005	Chris Baerman	Private Citizen	Online	B-604
0007	Terri Nelson	Private Citizen	Online	B-606
0008	Steve Nelson	Private Citizen	Online	B-608
0009	H.D. Nelson	Private Citizen	Online	B-610
0010	Joy Cordle	Private Citizen	Online	B-612
0011	Dean Nelson, Jr.	Private Citizen	Online	B-614
0012	Robert Brown	Private Citizen	Online	B-616
0013	Doug Brown	Private Citizen	Online	B-618
0014	Jeff Mitchell	Private Citizen	Online	B-620
0015	Richard Cantrell	Private Citizen	Online	B-622
0016	Ann Butler	Private Citizen	Online	B-624
0017	Glenn Brown	Private Citizen	Online	B-626
0018	Bob Taylor	Private Citizen	Online	B-628
0020	Jerry Johns	Private Citizen	Court Reporter	B-630
0023	Ken Swafford	Private Citizen	Court Reporter	B-633
0026	Mike Bearden	Private Citizen	Public Mtg. - Written	B-637
0027	Glenn Brown	Private Citizen	Public Mtg. - Written	B-641
0029	Robert Taylor	Private Citizen	Public Mtg. - Written	B-649
0030	Glen Long	Private Citizen	Public Mtg. - Written	B-653
0031	Melba Rogers	Private Citizen	Online	B-656
0032	Guy Andrews	Private Citizen	Online	B-658
0033	Vince Persano	Private Citizen	Online	B-660
0034	Tia Robertson	Private Citizen	Court Reporter	B-662
0035	Jerry Culpepper	Private Citizen	Court Reporter	B-665

ID No.	Author	Organization	Comment Type	Page No.
0036	Rhonda Kay	Private Citizen	Court Reporter	B-668
0037	John Horney	Private Citizen	Court Reporter	B-671
0038	Robby Robert	Private Citizen	Court Reporter	B-674
0040	Keith McLaughlin	Private Citizen	Letter	B-667
0050	Jim Hall	Private Citizen	Letter	B-721

NOTE: Upon review of public comments received by multiple methods, comment ID no. 0046 was determined to be a duplicate of comment ID no. 0066. Thus, comment ID no. 0046 is not included herein

Comment Number: 2013-0043

Name: Joyce Stanley

Affiliation: US Department of the Interior Office of Environmental Policy and Compliance

Date: 5/29/2013 10:40:32 AM

Address:
75 Spring Street, S.W.
Suite 1144
Georgia
Atlanta, GA 30303

Attachments: Water Control Manual for Alabama Coosa Tallapoosa

Comments:

Please see following letter for comments and recommendations on the Draft Environmental Impact Statement (DEIS) for the Update of the Water Control Manual (WCM) for the Alabama-Coosa-Tallapoosa (ACT) River Basin in Georgia and Alabama.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Richard B. Russell Federal Building
75 Spring Street, S.W., Suite 1144
Atlanta, Georgia 30303

ER 13/0125
9043.1

May 29, 2013

Colonel Steven J. Roemhildt
U.S. Army Corps of Engineers, Mobile District
P.O. Box 2288
Mobile, AL 36628-0001

Re: Comments and Recommendations on the Draft Environmental Impact Statement (DEIS) for the Update of the Water Control Manual (WCM) for the Alabama-Coosa-Tallapoosa (ACT) River Basin in Georgia and Alabama

Dear Colonel Roemhildt:

The United States Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS) for the Update of the Water Control Manual (WCM) for the Alabama-Coosa-Tallapoosa (ACT) River Basin in Georgia and Alabama. The DEIS has been prepared to fulfill the requirements of the National Environmental Policy Act of 1969 (NEPA), as amended (Title 42 of the U.S.C, Sections 4321-4347) for the WCM update.

General Comments

We sent a Draft Fish and Wildlife Coordination Act (FWCA) Report to the Corps in December 2012. The document has been included as an appendix to the DEIS. In general, our comments on the DEIS are contained in the Draft FWCA Report. Key issues identified by the Department include conservation and recovery of natural flow variability, improved water quality parameters, connectivity to the floodplain, support for fish passage, enhancements for listed species and species of conservation need, monitoring programs to determine the effects of upstream dams, and implementation of an adaptive management approach. Maintenance activities that cause deviation from the WCM-specified flows may provide instream flow research opportunities that are needed for fish and wildlife management. We request that these activities be coordinated with the Department so that ephemeral data collection can be planned and executed.

In response to drought conditions in 2007, collaboration between the Department, Alabama Power Company (APC), and the Corps resulted in the Alabama Drought Response Operations

Proposal (ADROP). The Corps requested assistance from the Department to meet responsibilities under the FWCA for the update to the ACT WCM. The United States Fish and Wildlife Service Ecological field offices for Alabama and Georgia have coordinated to provide the Corps with the following comments (FWCA 48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq*.; Endangered Species Act (Act), as amended (16 U.S.C. 1531-1543)).

Because of the limited scope of the proposed updates, neither the Corps' Proposed Action nor the No Action Alternative will address all of the Department's conservation concerns in the major rivers within the ACT Basin. These concerns include minimal mimicking of components of the natural flow regime, no reduction of effects of hydropower peaking flows, lack of improvement to water quality, lack of support for reintroductions and enhancements for listed species, and no recognition that fish passage at ACT dams is within the scope of the current effort.

The Department fully supports the ADROP and was an active participant in its development. We also support the suspension of navigation when in drought. The Department supports the ongoing efforts of the Corps in fish passage through locks and dams, but encourages additional studies at upstream facilities.

Specific Comments

<u>Endangered Species Act Section 7 Consultation</u>

It is our understanding that the Corps will initiate Section 7 Consultation after the DEIS public comment period is completed. Based on available information, the following species and critical habitat may be affected by the proposed action (e.g., water temperature, dissolved oxygen changes).

Alabama red-belly turtle (*Pseudemys alabamensis*) - Endangered
Alabama sturgeon (*Scaphirhynchus suttkusi*) - Endangered
Amber darter (*Percina antesella*) - Endangered
Blue shiner (*Cyprinella caerulea*) - Threatened
Coosa moccasinshell (*Medionidus parvulus*) - Endangered
Cylindrical lioplax (*Lioplax cyclostomaformis*) - Endangered
Etowah darter (*Etheostoma etowahae*) - Endangered
Finelined pocketbook (*Hamiota altilis*) - Threatened
Georgia pigtoe (*Pleurobema hanleyianum*) - Endangered
Georgia rockcress (*Arabis georgiana*) - Candidate
Goldline darter (*Percina aurolineata*) - Threatened
Gulf sturgeon (*Acipenser oxyrinchus desotoi*) - Threatened
Heavy pigtoe (*Pleurobema taitianum*) - Endangered
Inflated heelsplitter (*Potamilus inflatus*) - Threatened
Interrupted (=Georgia) rocksnail (*Leptoxis foremani*) - Endangered
Lacy elimia (*Elimia crenatella*) - Threatened
Mohr's Barbara's button (*Marshallia mohrii*) - Threatened
Painted rocksnail (*Leptoxis taeniata*) - Threatened

Price's potato-bean (*Apios priceana*) - Threatened
Red cockaded woodpecker (*Picoides borealis*) - Endangered
Rough hornsnail (*Pleurocera foremani*) - Endangered
Southern clubshell (*Pleurobema decisum*) - Endangered
Triangular kidneyshell (*Ptychobranchus greenii*) - Endangered
Tulotoma snail (*Tulotoma magnifica*) - Threatened
Upland combshell (*Epioblasma metastriata*) - Endangered[1]
Wood stork (*Mycteria americana*) - Endangered

Critical habitat that occurs in the project area includes:

Alabama moccasinshell (*Medionidus acutissimus*) - Threatened
Alabama sturgeon (*Scaphirhynchus suttkusi*) - Endangered
Coosa moccasinshell (*Medionidus parvulus*) - Endangered
Finelined pocketbook (*Hamiota altilis*) - Threatened
Georgia pigtoe (*Pleurobema hanleyianum*) - Endangered
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Orange-nacre mucket (*Hamiota perovalis*) - Threatened
Ovate clubshell (*Pleurobema perovatum*) - Endangered
Rough hornsnail (*Pleurocera foremani*) - Endangered
Southern acornshell (*Epioblasma othcaloogensis*) - Endangered[2]
Southern clubshell (*Pleurobema decisum*) - Endangered
Southern pigtoe (*Pleurobema georgianum*) - Endangered
Triangular kidneyshell (*Ptychobranchus greenii*) - Endangered
Upland combshell (*Epioblasma metastriata*) - Endangered[2]
Coosa moccasinshell (*Medionidus parvulus*) - Endangered

Future Reservoir-Construction

The DEIS provides a list of six additional water supply reservoirs (Table 2.1-22), two of which are in the Coosa Basin. The Department will be involved with any future reservoir construction via the Clean Water Act permitting process.

Southeastern Power Administration Consultation

Energy produced at Corps projects in the ACT Basin is marketed by the Southeastern Power Administration (SEPA). The Corps schedules and makes electric power available based on their agreement with SEPA. Because the scheduling of hydropower generation for SEPA contracts constitutes a federal action that has the potential to affect listed species protected under the Act, consultation regarding the scheduling of hydropower generation as per the SEPA contract should

[1] The upland combshell (*Epioblasma metastriata*) is likely extinct from the ACT Basin (pers. comm. Johnson and Garner 2012).
[2] The southern acornshell (*E. othcaloogensis*) and upland combshell (*E. metastriata*) are likely extinct from the ACT Basin (pers. Comm. Johnson and Garner 2012).

be discussed. We are presently unaware of a consultation related to the SEPA contract. It should be noted that the scheduling of hydropower per the SEPA contract is a federal action that is separate, but related to the federal action of the WCM Update.

Consideration of Non-hydropower Peaking Opportunities

The Corps references hydropower generation as an authorized project purpose (Table ES-2). The Corps considered but rejected scoping comments that "suggest significant revisions to hydropower operations." However, the DEIS demonstrates that average annual hydropower generation is reduced in Plan D, Plan F, and Plan G (the Proposed Action Alternative) relative to the No Action Alternative (Figure 6.6-8). The Department provided comments to the Corps indicating that periods of non-hydropower peaking windows should be considered. We maintain that non-hydropower peaking windows may be long enough to be beneficial to fishes, but short enough to not cause significant adverse impacts to total hydropower generation.

Based on the information provided in the DEIS, the Department suspects that the cost of implementing non-hydropower peaking windows would be small in comparison to the cost incurred from adopting Plan D, Plan F, or Plan G. The Corps has not provided evidence that these recommendations would cause a significant impact to hydropower generation. In review of model output for the No Action and Proposed Action Alternative, average reservoir levels for Allatoona Lake fall below the Guide Curve during the summer and fall months (Figure 6. 1-3). Late spring or early summer non-hydropower peaking windows would likely enable Allatoona reservoir levels to meet the Guide Curve for a longer period of time. Such a modification would not only be beneficial to reservoir levels, but could also be interpreted as providing a "minor benefit" instead of a "minor adverse" environmental consequence to stream flow conditions in the Etowah River downstream of Allatoona Dam as listed in Table ES-5. A non-hydropeaking window need not necessarily occur in every year, month, or for entire months, and it does not mean that hydropower cannot be produced.

In conclusion, we recommend the Corps' preferred alternative be revised to include a more natural flow regime, improve water quality parameters, provide enhancements for listed species and species of conservation need, and include monitoring programs and an adaptive management approach. We are particularly interested in working with the Corps to identify flexibilities related to flow management and hydropower production.

Thank you for the opportunity to comment on this project. If you have questions, I can be reached on (404) 331-4524 or via email at joyce_stanley@ios.doi.gov.

Sincerely,

J Stanley

Joyce Stanley, MPA
Regional Environmental Protection Specialist

cc: Jerry Ziewitz – FWS

Gary Lecain - USGS
Anita Barnett – NPS
Tommy Broussard – BOEM
Harry J. Payne – OSMRE
OEPC – WASH

Comment ID 0043

Comment ID 0043.001

Author Name: Stanley, Joyce

Organization: US Department of the Interior, Office of Environmental Policy and Compliance

Comment

The United States Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS) for the Update of the Water Control Manual (WCM) for the Alabama-Coosa-Tallapoosa (ACT) River Basin in Georgia and Alabama. The DEIS has been prepared to fulfill the requirements of the National Environmental Policy Act of 1969 (NEPA), as amended (Title 42 of the U.S.C, Sections 4321-4347) for the WCM update.

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The Department fully supports the ADROP and was an active participant in its development. We also support the suspension of navigation when in drought. The Department supports the ongoing efforts of the Corps in fish passage through locks and dams, but encourages additional studies at upstream facilities.

Response

USACE considered the comments provided in the referenced December 2012 FWCAR and provided a response to those comments in a letter dated February 8, 2013 (Appendix B). As discussed in that response, the proposed action is limited to updating the water management guidelines for managing the storage and release of water from USACE reservoirs and reservoirs owned by the Alabama Power Company over which USACE has flood risk management responsibility. Most of the conservation measures recommended in the FWCAR are outside the scope of the current project. Other recommendations are potentially within scope but cannot be practicably implemented without severely impacting authorized project purposes. The proposed action represents an approach that balances all project purposes and would provide improvements for the aquatic environment. USACE understands and notes the comment that neither the proposed action nor the no action alternative will address all of the Department's conservation concerns. USACE appreciates and notes the support for the ADROP that is part of the proposed action.

Comment ID 0043.002

Author Name: Stanley, Joyce

Organization: US Department of the Interior, Office of Environmental Policy and Compliance

Comment

Specific Comments

Endangered Species Act Section 7 Consultation

It is our understanding that the Corps will initiate Section 7 Consultation after the DEIS public comment period is completed. Based on available information, the following species and critical habitat may be affected by the proposed action (e.g., water temperature, dissolved oxygen changes).

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Southern acornshell (Epioblasma othcaloogensis) - Endangered <Footnote 2>
Southern clubshell (Pleurobema decisum) - Endangered
Southern pigtoe (Pleurobema georgianum) - Endangered
Triangular kidneyshell (Ptychobranchus greenii) - Endangered
Upland combshell (Epioblasma metastriata) - Endangered <Footnote 2>
Coosa moccasinshell (Medionidus parvulus) - Endangered

Footnote 1: The upland combshell (Epioblasma metastriata) is likely extinct from the ACT Basin (pers. comm. Johnson and Garner 2012).

Footnote 2: The southern acornshell (E. othcaloogensis) and upland combshell (E. metastriata) are likely extinct from the ACT Basin (pers. Comm. Johnson and Garner 2012).

Response

USACE concurs with the comment and initiated Section 7 Consultation per the comment. Appropriate updates to the EIS have been made in accordance with the species information provided in the comment. Section 7 consultation has been summarized in Section 6.5.4 of the final EIS, and documentation of the consultation is included in Appendix B.

Comment ID 0043.003

Author Name: Stanley, Joyce

Organization: US Department of the Interior, Office of Environmental Policy and Compliance

Comment

Future Reservoir Construction

The DEIS provides a list of six additional water supply reservoirs (Table 2.1-22), two of which are in the Coosa Basin. The Department will be involved with any future reservoir construction via the Clean Water Act permitting process.

Response

Comment noted.

Comment ID 0043.004

Author Name: Stanley, Joyce

Organization: US Department of the Interior, Office of Environmental Policy and Compliance

Comment

Southeastern Power Administration Consultation

Energy produced at Corps projects in the ACT Basin is marketed by the Southeastern Power Administration (SEPA). The Corps schedules and makes electric power available based on their agreement with SEPA. Because the scheduling of hydropower generation for SEPA contracts constitutes a federal action that has the potential to affect listed species protected under the Act, consultation regarding the scheduling of hydropower generation as per the SEPA contract should be discussed. We are presently unaware of a consultation related to the SEPA contract. It should be noted that the scheduling of hydropower per the SEPA contract is a federal action that is separate, but related to the federal action of the WCM Update.

Response

Appropriate Section 7 consultation with the USFWS on the Proposed Action Alternative has been conducted and documentation is included in EIS Appendix B. SEPA contracts are independent of the ACT WCM update process and are not considered relevant for Section 7 consultation with USFWS.

Comment ID 0043.005

Author Name: Stanley, Joyce

Organization: US Department of the Interior, Office of Environmental Policy and Compliance

Comment

Consideration of Non-hydropower Peaking Opportunities

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Response

Hydropower is an authorized purpose of the Allatoona project, and the facility is designed as a peaking plant. Peaking hydropower provides the greatest economic return. Although the Proposed Action Alternative would result in an insignificant decrease (approximately 0.6%) in hydropower production, the authorized project purpose would continue to be met year round. Any non-peaking hydropower production window would necessarily eliminate that project purpose during that time period. Such impacts would constitute a significant impact on that project purpose and such alternatives were eliminated from the scope of the study.

Comment ID 0043.006

Author Name: Stanley, Joyce

Organization: US Department of the Interior, Office of Environmental Policy and Compliance

Comment

In conclusion, we recommend the Corps' preferred alternative be revised to include a more natural flow regime, improve water quality parameters, provide enhancements for listed species and species of conservation need, and include monitoring programs and an adaptive management approach. We are particularly interested in working with the Corps to identify flexibilities related to flow management and hydropower production.

Thank you for the opportunity to comment on this project. If you have questions, I can be reached on (404) 331-4524 or via email at joyce_stanley@ios.doi.gov.

Response

The conservation recommendations are similar to those identified in the U.S. Fish and Wildlife Service Coordination Act Report of December 2012. USACE provided a response to those comments in a letter dated February 8, 2013. As discussed in that response, the proposed action is limited to updating USACE water management guidelines for managing the storage and release of water from USACE reservoirs and the four APC reservoirs in the ACT Basin over which USACE has flood risk management responsibility. Most of the conservation measures recommended in the FWCAR are outside the scope of the current project. Other recommendations are potentially within scope but cannot be practicably implemented because they do not meet all authorized project purposes. The proposed action represents an approach that balances all project purposes and would provide improvements for the aquatic environment. USACE understands and notes the comment that greater flexibility is needed, and USACE will continue to coordinate with all stakeholders during extraordinary conditions to balance needs across the basin.

From:	Judy L. Worley
To:	ACT-WCM
Cc:	Herb R. Nadler; Leon Jourolmon
Subject:	Southeastern Power DEIS Comments
Date:	Wednesday, May 29, 2013 2:22:14 PM
Attachments:	Mobile DEIS 2013.pdf

Attached are Southeastern Power Administration's comments on the Mobile District's Draft Environmental Impact Statement regarding the update to the Master Water Control Manual for the Alabama-Coosa-Tallapoosa River Basin.

The comments are also being mailed out today. If you have any questions, please contact Herbert Nadler at 706-213-3853 or at: herb.nadler@sepa.doe.gov.

Judith L. Worley
Southeastern Power Administration
1166 Athens Tech Road
Elberton, GA 30635-6711
Phone: 706-213-3836
FAX: 706-213-3884
judyw@sepa.doe.gov

Department of Energy
Southeastern Power Administration
Elberton, Georgia 30635-6711

May 29, 2013

VIA E-Mail

Colonel Steven J. Roemhildt
District Commander
Mobile District, USACE
Attn: PD-EI (ACT-DEIS)
P. O. Box 2288
Mobile, AL 36628-0001

Dear Colonel Roemhildt:

Southeastern Power Administration (Southeastern) is pleased to have an opportunity to provide comments on the Mobile District's Draft Environmental Impact Statement (DEIS) regarding the update to the Master Water Control Manual for the Alabama-Coosa-Tallapoosa (ACT) River Basin. As the Federal agency with responsibility for marketing power from the District's hydroelectric projects, we are very interested in any actions that will be taken which will affect the projects in terms of capacity reductions, energy reductions, seasonal redistributions of power, operational constraints, or restrictions to the daily timing of peaking generation. As such, Southeastern has significant concerns with the proposed change to basin operation and the adequacy of the DEIS analysis utilized to ultimately determine impacts to the hydropower purpose.

Of major concern to Southeastern is the proposed alteration to the conservation pool at the Allatoona project. The four proposed zones of operation clearly represent a reduction in hours use for hydropower when compared to the current plan, particularly the largest zone (ZONE 4), which provides for no hydropower generation despite the fact that the majority of the original congressionally-authorized conservation pool remains. Southeastern strongly contends that this proposed change is a significant impact to the hydropower purpose; and, as plainly described on page ES-1, line 38 of the DEIS, requires a feasibility study and Congressional Authorization. Original project documentation indicates that well in excess of 220,000 acre-feet of project storage capacity would be available for power production and the proposed new zones of operation would have a significant impact to that availability. This clearly constitutes a considerable affect on a project purpose, and as such, is outside the scope of a Water Control Manual update.

Another concern to Southeastern is the selection of an inappropriate baseline for comparison to the proposed action alternative (Plan G). The selection of current condition as the baseline arbitrarily dismisses all cumulative impacts that have occurred to the detriment of the hydropower purpose for the last several decades. Rather than simply establishing a new benchmark forward, the DEIS analysis should have identified these previous impacts so that they could have been included in the impact summary. During the multi-state compact negotiations, a 1970s timeframe analysis was going to be conducted in order to identify harm and impacts to parties which had already occurred and been incorporated into what was considered "normal" operations. The same approach should be followed in this instance. Southeastern also disagrees with the concept the DEIS utilizes in determining "system impacts" to hydropower in the river basin. This approach masks project-specific impacts and obscures the individual parties that are potentially harmed by the proposed revision. Southeastern firmly believes that the DEIS should contain a site-specific analysis for each individual hydropower project which identifies benefits or impacts. The analysis that has been conducted is inadequate, as it only looks forward and socializes the impacts on a river system basis, when in reality, very specific parties will be harmed if the plan is implemented.

Southeastern also questions the HEC-ResSim modeling which is being utilized in the analysis. Baseline modeling output that supposedly depicts the current operation is so significantly different than corresponding project actual information, we question if it really is a simulation of current operations. The comparison that has been made between the proposed alternative Plan G and the Baseline do not appear to produce a realistic estimation of impacts to hydropower. In almost all instances, the differences between the model results of the Baseline and Plan G are a small fraction of a percent; however, when compared to project actual operations, the differences for both are significant.

Among our other areas of concerns are the reductions and seasonal redistribution of hydropower generation, particularly at Allatoona with the re-defining of the project guide curve/flood control pool during the fall and early winter months. This proposed altered operation would shift generation from the critical demand months of June through September into the fall and winter months, which does not reflect the most valuable use of hydropower, and again represents a loss in benefits to our purpose.

We are also concerned with the proposed introduction of zones of operation at the Carters project. Ultimately the increased level of releases could result in lower overall project elevations, which may impact project capacity. The importance of the capacity component cannot be overlooked or eliminated from an analysis. A significant portion of Southeastern revenue is based on the generating capacity of the projects. Any change in operation which may result in a drawdown of a project could impact our ability to satisfy capacity obligations and impact revenue.

In addition, the model completely misrepresents the operations at the Carters project. At Carters, we pump and generate only the quantity of energy that is required to support the capacity at the project. Any generation in excess of this quantity is an unnecessary additional cost for pumping energy to the Government. Artificially setting Carters generation to such large quantities introduces additional generation into the system energy totals which tends to obscure impacts that would occur during actual operations. In every instance for the 70-year modeled period, both the Baseline and Plan G model generate well in excess of 600,000 MWH annually, when in reality there have only been three times in the project's 37-year history that this has occurred. The generation and pump cycles required to meet this quantity of energy production is significant; and with the physical limitations of the re-regulation pond, it is unrealistic for a model to accomplish this continually.

Southeastern appreciates the tremendous effort the Mobile District has put into the development of the draft Master Water Control Manual thus far and understands the many challenges ahead. We look forward to working with the District in refining this proposed document in a manner which enables Congressionally Authorized purposes to continue to meet obligations and allows the needs of the basin to be satisfied.

Sincerely,

Herbert Nadler

Herbert Nadler
Assistant Administrator
of Power Resources

Comment ID 0055

Comment ID 0055.001

Author Name: Nadler, Herbert

Organization: Southeastern Power Administration

Comment

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Southeastern appreciates the tremendous effort the Mobile District has put into the development of the draft Master Water Control Manual thus far and understands the many challenges ahead. We look forward to working with the District in refining this proposed document in a manner which enables Congressionally Authorized purposes to continue to meet obligations and allows the needs of the basin to be satisfied.

Response

USACE disagrees with the comment regarding impacts on hydropower. The analysis of the Proposed Action Alternative (Plan G) indicates that hydropower would not be significantly impacted.

In the Council on Environmental Quality's memorandum of March 23, 1981, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, the response to Question No. 3 addressing the No-Action Alternative states: "the 'no action' alternative may be thought of in terms of continuing with the present course of action until that action is changed." Consequently, for purposes of the ACT WCM update process, 'no action' reflects current reservoir operations as they have evolved over time in response to laws, regulations, policy, and new technical information. Basing the 'no action' alternative on a pre-NEPA 1962 WCM for the purpose of assessing the effects of alternative WCM update plans would neither accurately reflect current baseline operations nor be consistent with 'no action' as defined in the CEQ memorandum. In the EIS, the USACE endeavored not only to describe the Affected Environment in terms of current conditions in the ACT basin but also to incorporate a historical perspective on natural and human resources in the basin dating back to the early 1950's when Allatoona Dam and Lake was completed and placed in operation.

USACE disagrees with the comment regarding the adequacy of the ResSim modeling. The ResSim model properly reflects current operations within the basin. Section 2 of the EIS adequately discusses cumulative changes that have occurred incrementally since the 1962 WCM. As stated previously, the correct baseline is represented by current operations. In order to model current operations in HEC-ResSim, a set of operational assumptions were necessarily incorporated in the model. Unique circumstances encountered at times during actual historical operations may have deviated from these operational assumptions. Additionally, the model simulations were using a 73-year hydrologic period of record assuming all USACE and APC reservoir projects in place over the entire period plus current water withdrawal and returns (represented by year 2006 as described in the EIS). The model simulations were not intended to replicate historically observed data but do provide for a reasonable comparison of alternative water control plans.

USACE disagrees with the comment regarding proposed operations at the Carters project. The USACE analyses of the preferred alternative that introduces zones of operation at Carters results in only slightly lower pool elevations throughout the year but does not decrease the hydropower capacity.

The day-to-day operation at Carters (main dam and reregulation dam) is very dynamic. The model captures a typical daily operation and is not intended to capture high variability. However, the model does capture the flood control operation and minimum flow requirements for all authorized project purposes.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

May 31, 2013

Inland Environment Team
Planning and Environmental Division
Environment and Resources Branch
U.S. Army Corps of Engineers, Mobile District
P.O. Box 2288, Mobile, AL 36628–0001;

Attention: Mr. Chuck Sumner - Biologist

**Subject: EPA Comments on the Draft Environmental Impact Statement (DEIS) for the Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa (ACT) River Basin; Alabama and Georgia.
CEQ #: 20130045; ERP #: COE-39188-00**

Dear Mr. Sumner:

Pursuant to Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency (EPA) reviewed the Draft Environmental Impact Statement (DEIS) Update of the Water Control Manual (WCM) for the proposed project. EPA participated in a public scoping and public meeting held on October 22, 2008, and March 25, 2013, respectively, as well as two interagency webinars on September 11, 2008, and April 2, 2013. This letter is intended to provide EPA's comments on the proposed project.

The purpose of the project is to update the WCM for the Alabama-Coosa-Tallapoosa (ACT) River Basin. The operations at each federal reservoir managed by the U.S. Army Corps of Engineers (USACE) are described in a WCM, which includes WCMs for the operation of the ACT Basin and for the individual USACE projects within that system. The WCM describes how federal projects within the basin should operate in order to meet their authorized purposes. The WCM should provide for operations that meet state water quality standards, particularly where the authorized purpose of the project is water quality.

The updates to the WCM are intended to reflect conditions that have changed since the previous WCM was completed in 1951, and before many of the reservoir projects in the system were completed. These conditions may include changes due to current basin hydrology, legal mandates, environmental considerations or alterations due to structural features. Some individual reservoir manuals have been updated, but the master WCM has not been comprehensively updated. The WCM includes a new drought contingency plan to address water management issues during periods of drought.

According to the DEIS, the ACT Basin provides water resources for multiple purposes and encompasses a 22,800 square mile area in Alabama and Georgia. There are 17 major dams located in the Basin. The USACE owns and operates six of these dams (Allatoona Dam on Allatoona Lake on the Etowah River in Georgia; Carters Dam and Carters Reregulation Dam on Carters Lake on the Coosawattee River in Georgia; Robert F. Henry Lock and Dam and on R.E Woodruff Lake, Millers Ferry Lock and Dam on William Dannelly Lake, and Claiborne Lock and Dam on the Alabama River in Alabama). The USACE also has flood risk management responsibilities at four Alabama Power Company reservoirs (Weiss, H. Neely Henry, and Logan Martin Lakes on the Coosa River; and Harris Lake on the Tallapoosa River).

The authorized project purposes at the USACE dams include flood risk management, hydropower, navigation, water supply, water quality, fish and wildlife conservation, and recreation. Other non-Federal dams located on the Coosa and Tallapoosa Rivers include 11 projects owned and operated by the Alabama Power Company. Operations between the Alabama Power Company (APC) projects and the federal projects are coordinated as necessary to meet flood control, water quality and quantity, and water supply demands. For example, in order for the USACE to develop an effective drought contingency plan for the basin, APC projects had to be incorporated into the plan since these project store 78 percent of the water resources.

Impoundments can fragment aquatic ecosystems, with impacts on many aspects of environmental integrity, particularly when the cumulative effects of multiple impoundments across a system are taken into account. Although the projects subject to the WCM are already in place, the allocations and uses allowed and established through the WCM revision can have significant influence on overall ACT system health by preventing or minimizing further fragmentation.

Based on the review of the DEIS, EPA's comments relate primarily to the potential water resource, biological resource and socioeconomic impacts associated with the proposed action. In summary, EPA recommends that consideration be given to maximizing the use of existing infrastructure in the ACT Basin in an effort to minimize aquatic resource impacts including impacts to wetlands and streams within the basin; requiring the implementation of water efficiency or conservation measures as the primary alternative before commitments are made for supply or storage uses; and ensuring the WCM operations meet water quality standards, including downstream uses and adequate flows to maintain the physical integrity of the habitat. Climate change also has the potential to impact water supply, water quality, flood risk, wastewater, aquatic ecosystems, and energy production. The Final Environmental Impact Statement should consider the impact of dam operations in the Basin on greenhouse gases and climate change, as well as the impacts of climate change on WCM operations. An adaptive management approach would most effectively address climate related issues.

EPA appreciates the consideration of environmental and socioeconomic impacts on children, and low-income and minority populations. According to the DEIS, significant environmental justice (EJ) concerns were not identified during the scoping process. In an effort to adequately ensure that the proposed project does not affect these communities, it is important to meaningfully engage them throughout the decision-making process and to ascertain whether resources of importance may be affected. Efforts to identify populations with EJ concerns that may engage in subsistence activities within the basin should be discussed and EJ comments along with the USACE's responsiveness should be documented in the Final Environmental Impact Statement (FEIS). In addition, EPA recommends that enhanced warning systems be reviewed and implemented in an effort to improve public safety and recreation for all users. This is especially important in areas that have higher levels of children living within the basin and using the resources.

EPA has rated the preferred alternative as "EC-2," environmental concerns with additional information requested for the final document. EPA's review has identified environmental impacts that should be avoided or minimized in order to adequately protect the environment. The FEIS should demonstrate responsiveness to these comments.

We appreciate the opportunity to provide comments on the proposed WCM DEIS for the ACT River Basin. We also appreciate the ongoing efforts to coordinate with us during the public comment period. If you have any questions regarding our comments, please contact Ntale Kajumba (404/562-9620) of my staff or the Water Protection Division technical coordinators on technical issues (See Detailed Attachment).

Sincerely,

Heinz J. Mueller, Chief
NEPA Program Office
Office of Environmental Accountability

Attachments: EPA Detailed Comments
EPA Rating System

EPA's Detailed Comments on the Water Control Manual DEIS for the ACT River Basin

Alternatives

The DEIS addresses a no action and three action alternative (Plan A, Plan F and Plan G). The no-action alternative involves no change in how the dams are currently managed. The USACE's preferred alternative (Plan G) is identified in the DEIS. The proposal includes the following:

- **Implements Basin Drought Operations Plan:** includes triggers and dam releases/flow targets to conserve storage and provide reduced levels of service during drought
- **Navigation Plan:** includes triggers to reduce (9.0' or 7.5' channel) or suspend navigation level of service based on system storage
- **Minimum Flows:** implements seasonal minimum flows at Carters when reservoir storage level supports
- **Hydropower:** variable hydropower generation at Allatoona based on action zone and time of year
- **Revised Guide Curves:** H. Neely Henry (APC) and Allatoona
- **Revised Action Zones:** Allatoona and Carters
- **Water Supply:** no change in existing contracted amounts
- **Alabama Power Company Projects (APC):** continued operation under current FERC licenses

<u>Recommendations:</u> EPA appreciates that a preferred alternative was identified in the DEIS (Plan G). EPA rated the preferred alternative as "EC-2," environmental concerns with additional information requested for the final document. EPA's review has identified environmental impacts that should be further avoided /minimized in order to adequately protect the environment. The FEIS should demonstrate responsiveness to the comments below.

Water Resources

Wetlands and Streams

As described in the DEIS, the purpose and need for the federal action is to "determine how the federal projects in the ACT Basin should be operated for their authorized purposes, in light of current conditions and applicable law, and to implement those operations through updated water control plans and manuals."

The alternatives considered for management of water supply can significantly influence the alternatives that entities can in turn consider when assessing how to meet water supply needs. With effective management, many allocations and uses can be met with existing infrastructure, whereas new infrastructure or projects such as reservoirs could have greater impacts to environmental resources. When such projects require CWA Section 404 permits, they must meet the requirements of the regulations at 40 CFR Part 230, also known as the Section 404(b)(1) Guidelines. One of the key requirements of the Section 404(b)(1) Guidelines is that no such work shall be permitted if there is "a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR § 230.10(a)), if it would "cause or contribute to significant degradation of the waters of the United States" (40 CFR § 230.10(c)), and "unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem" (40 CFR § 230.10(d)). In accordance with the Section 404(b)(1) Guidelines, the WCM should facilitate holistic management of basin resources such that the total impact is minimized, and entities seeking water allocations and uses have access to alternatives that are the least environmentally damaging both in a local context and on a basin scale whenever possible.

Impoundments can fragment aquatic ecosystems, with impacts on many aspects of environmental integrity, particularly when the cumulative effects of multiple impoundments across a system are taken into account. Although the projects subject to the WCM are already in place, the allocations and uses allowed and established through the WCM revision can have significant influence on overall ACT system health by preventing further fragmentation. If managed to make the best use of these existing resources, further impacts of additional supply infrastructure development could be avoided or at least minimized.

Unimpeded physical continuity of the major ACT rivers with their floodplains, including riparian wetlands, is also controlled in large part—or in the case of the Coosa and Alabama Rivers, nearly completely—by the management approach set forth in Water Control Manuals. Access to floodplains is critical to river sediment and chemical dynamics, hydrating riparian floodplains, and maintaining vegetation and habitat important in the lifecycles of many species, both aquatic and terrestrial, with characteristics adapted to such ecosystems. Managing flows for magnitude, seasonality, and variability that mimic natural conditions such that rivers have regular access to their floodplains is protective of riverine ecosystems and can reduce impacts to wetlands.

Recommendations: EPA recommends that consideration be given to maximizing the use of existing infrastructure in the ACT Basin—in balance with environmental uses such as protection of habitat, aquatic life, and water quality—such that impacts to aquatic resources are on the whole minimized for the basin. If allowing additional uses avoids impacts of new impoundments and additional infrastructure, overall impacts to the basin could be minimized with holistic management. The Mobile District should fully address and document the effects of the proposed actions on wetlands and streams.

Contact – Rosemary Hall - 404/562-9846

Water Supply Efficiency/Conservation

Projects that impact hydrology, such as new or expanded water supply, development, and recreational or amenity impoundments, often require Clean Water Act (CWA) Section 404 permits, making them subject to review for compliance with the Section 404(b)(1) Guidelines. When reviewing such projects, EPA and the USACE must consider whether the applicant has demonstrated adherence to the mitigation sequence, with avoidance and minimization of impacts to aquatic resources as the first two steps, and then ensure that the applicant has evaluated an appropriate range of alternatives and selected the Least Environmentally Damaging Practicable Alternative. For water supply project proposals, full implementation of conservation and efficiency measures, including water reuse options, is a primary alternative that could have a fraction of the impacts to aquatic resources associated with developing new supply infrastructure. When evaluating requests for allocations and uses related to the projects in the ACT Water Control Manual now and in the future, the USACE should consider whether efficiency and conservation measures are in place to ensure that the overall use of USACE lakes minimizes impacts to aquatic resources.

Minimizing supply withdrawals with conservation measures can also reduce conflicts among uses, easing pressure on the ACT system as a whole, and easing management of releases and flows for environmental protection. EPA Region 4's 2010 Guidelines on Water Efficiency Measures for Water Supply Projects in the Southeast ("WEGs") describes conservation and efficiency measures that can be expected of users seeking allocations or withdrawals from the system, and should be used to evaluate how well efficiency is being implemented before committing to new allocations or uses. We especially encourage that any entity seeking allocations demonstrate meaningful efforts to repair leaking infrastructure; use an integrated resource management approach across residential, industrial, agricultural, and commercial settings; implement full-cost pricing, conservation pricing, and metering of all water users; use low-impact development and green infrastructure; facilitate retrofitting of buildings; optimize water reuse; and facilitate landscaping to minimize demand and waste, and implement efficient irrigation practices. Protecting basin flows through conservation and efficient use can reduce impacts to streams and riparian wetlands, aquatic life, habitat, and water quality, and can ease management of system flows, particularly under low-rainfall conditions.

Recommendations: EPA recommends that demonstrated water efficiency/conservation implementation be required before commitments are made for supply/storage. Water quantity planning should consider:
- Decreasing trend in inflows (land use, withdrawals, climate change)
- Reuse opportunities (direct, indirect potable)
- How drought contingency plans will be formally incorporated into NPDES permits
- Cumulative impacts, including reservoirs and other supply projects proposed or under consideration in the basin, as well as interbasin transfers

Contact – Rosemary Hall - 404/562-9846

Water Quality

State water quality standards programs include designated uses, criteria to protect those uses, and an antidegradation policy (CWA Section 303(c); 40 CFR § 131). Section 401 of the CWA additionally protects these water quality standards, requiring state certification that federal activities which may result in any discharge will comply with state water quality standards.

Further, Section 404(b)(1) Guidelines state that no such work shall be permitted if it would cause or contribute to "violations of any applicable State water quality standard" (40 CFR § 230.10(b)(1)), or if it would "cause or contribute to significant degradation of the waters of the United States" (40 CFR § 230.10(c)).

The revised WCM should be consistent with state water quality standards, particularly where the authorized purpose of a dam is water quality. The WCM should provide for the attainment and maintenance of all downstream uses (40 CFR § 131.10 (b)), including the uses in Mobile Bay. Downstream uses including drinking water, recreation, fishing, swimming, shellfish harvesting and aquatic life protection. This should include ensuring compliance with physical parameters (such as pH, temperature, conductivity and dissolved oxygen), biological criteria, chemical parameters, nutrient loadings (including lake nitrogen, phosphorus and chlorophyll standards) and providing the flows necessary for protection of aquatic life. In particular, there are several waters impaired for nutrients in the basin, including Lakes Allatoona, Carters and Weiss. Changes in operations can have substantial impacts on nutrient dynamics (Pinay, Clément, & Naiman, 2002). For example, chlorophyll-a response in Lake Weiss is very sensitive to retention time increases from withdrawals (Maceina & Bayne, 2003). The impacts of the proposed alternative should be evaluated to ensure that flow changes do not contravene nutrient control and total maximum daily load (TMDL) restoration efforts by Alabama Department of Environmental Management and Georgia Environmental Protection Division.

The WCM should provide reasonable assurance that water quality standards will not be violated; consider the impact on reasonable potential to exceed water quality standards as analyzed for National Pollutant Discharge Elimination Systems permits; confirm that TMDL restoration efforts will not be adversely affected; and ensure that reservoir operations will not cause or contribute to water quality impairments or listings.

Since the date of the last WCM revision, the science related to instream flows has evolved significantly. The revision of the WCM provides an opportunity to incorporate the latest science and successful practices for regulating flows to improve water quality, meet designated uses and, where possible, restore the hydrologic condition and ecological integrity of the river system. For instance, ecologists now understand that flows across the range of the natural hydrograph are important for maintaining the structure and function of aquatic ecosystems rather than regulating a river to meet a static low flow target.

Aquatic plant and animal species have evolved life cycle patterns directly tied to the primary components of hydrologic variability: frequency, magnitude, duration, timing and rate of change of natural flows. Every aspect of the lives of aquatic plants and animals is cued by and inextricably linked to the natural variability of our rivers and streams, which is often absent in highly regulated systems. The EPA encourages incorporation of variable flows in the revised WCM, including the seasonal, intra-annual and inter-annual variable flow patterns needed to maintain or restore processes that sustain natural riverine characteristics. Naturally variable flows are also a major determinant of physical habitat in streams and rivers and directly affect biological composition. Modifying flow regimes provides an opportunity to positively alter habitat and influence species diversity, distribution and abundance. Therefore, the EPA recommends that, where possible, the WCM be designed to mimic the natural conditions as closely as possible in the downstream waters.

Over the past decade, numerous licenses were negotiated and re-issued by the Federal Energy Regulatory Commission (FERC) and river operations have been improved on several USACE operated systems. Many renewed FERC licenses and updated dam operations by the USACE have included advancements in water management and dam operations to better protect and maintain aquatic life. For example, the FERC license issued to South Carolina Electric and Gas (SCE&G) for the operation of the Saluda River includes numerous updated provisions for protection of mussels, sturgeon, trout and rare plant and animal species. The USACE's participation in the Sustainable Rivers project has also resulted in revised dam operations that have improved aquatic life, recreation as well as improved the economic impact for local communities.

EPA would like to reiterate the suggestions provided in the "Draft Fish and Wildlife Coordination Act Report on Water Control Manual Updates for the Alabama – Coosa – Tallapoosa River Basin in Alabama and Georgia" (dated December 2012). EPA suggests the use of multiple endpoints to demonstrate the protection of aquatic life designated uses. Relevant endpoints include floodplain connectivity (inundation, maintenance of off-channel habitats, wetted perimeter, out-of-bank habitats) and habitat suitability analysis. Because of the intensity of the later (e.g. physical habitat simulation), the EPA recommends consulting the relevant wildlife resource agencies to determine which habitat locations are critical to aquatic life in the basin and may warrant prioritized, intensive study.

In addition, EPA recommends that drought contingency plans be formally coordinated with dischargers (especially NPDES permit holders) and water intake permitees (including public drinking water suppliers, cooling water intakes, industrial users, etc.) to ensure that drought operations are adequately considered in permit limits and discharger operations.

Recommendations: EPA recommends analyzing the effects of the WCM operations on water quality standards, with a particular emphasis on physiochemical endpoints such as dissolved oxygen, biological endpoints such as sensitive aquatic species and physical endpoints that protect the designated aquatic life use, including adequate flows to maintain the physical integrity of habitat. EPA also encourages the Mobile District to examine projects, such as the Green River in Kentucky, as examples of USACE improvements in river management. We would welcome the opportunity to follow up and provide additional information on these projects in upcoming weeks.

Contacts: Lisa Gordon 404/562-9317 and Stephen Maurano 404/562-9044.

Aquatic Life and Endangered Species

EPA notes that the U.S. Fish & Wildlife Service (FWS) has been actively engaged in the WCM and DEIS and has submitted two recent comment letters to the USACE regarding the protection of threatened and endangered species within the Basin.

Recommendations: EPA principally supports and defers to FWS on this project. We encourage continued coordination with the FWS regarding the assessment and protection of federally-protected threatened or endangered species. The FEIS should include a summary of the coordination to date between the USACE and FWS, as well as any updated information regarding the assessment and protection of species within the project area.

Contacts: Lisa Gordon 404/562-9317 and Gary Davis 404/562-9239

Flood Impacts

The Corps of Engineers recently issued the *Appropriate Application of Paleoflood Information for the Hydrology and Hydraulics Decisions of the U.S. Army Corps of Engineers*. EPA also notes that one of the rivers along the ACT has resulted in serious flooding impacts to surrounding communities (e.g., flooding has been an historical issue in Rome, Georgia and much of Montgomery, Alabama is located within the floodplain). The Alternatives that feature increased flows should address any additional flooding or changes to the Federal Emergency Management Agency (FEMA)/ National Flood Insurance Program (NFIP) floodplain maps. These communities are members of the NFIP and have officially adopted the Flood Insurance Rate Maps (FIRM) maps. These maps (legally "adopted" by the community) represent where FEMA has delineated both the special flood hazard areas (SFHAs) and the risk premium zones applicable to the community.

Recommendations: EPA understands that Paleoflood information is not relevant for all Hydrology and Hydraulics decisions, but the FEIS should indicate whether the concepts/ recommendations in the USACE document, *Appropriate Application of Paleoflood Information for Hydrology and Hydraulics Decisions of the U.S. Army Corps of Engineers*, were used in the WCM or EIS and how they were used. In addition, the alternatives that feature increased flows should address any additional flooding or changes to the FEMA/NFIP floodplain maps and the FEIS should disclose which Alternatives have impacts to these, and what these changes involve.

Contact: Paul Gagliano 404/562-9373.

Public Safety and Recreation

FERC license renewals have recently resulted in negotiated agreements that include provisions to enhance the recreation and public safety on regulated rivers. For instance, the SCE&G license on the Saluda River included a Warning Safety Enhancement Plan and provisions for Recreational Flow Releases. These revisions were prompted, in part, by hazardous conditions that existed during flow releases that resulted in the loss of life in recreation areas.

Recommendations: EPA suggests that the WCM incorporate new and innovative procedures to enhance warning systems to improve public safety and recreation throughout the system.

Contacts: Lisa Gordon 404/562-9317.

Coordination with FERC Relicensing

FERC relicensing actions are currently underway for the Coosa River projects and APC has requested to modify winter pool levels at the Weiss and Logan Martin Lakes. Plan G (the Preferred Alternative) does not include these proposed modified winter pool levels.

Recommendations: EPA recommends that the USACE include additional information regarding how proposed modifications to the winter pool levels at the Weiss and Logan Martin may affect downstream flows in the Basin and impact the overall operations of the preferred alternatives.

Climate Change:

Adapting to future climate change impacts requires hydroclimate monitoring, prediction and application of such information to support water management decisions. There is an expanding body of literature on the greenhouse gas contributions (CO_2, CH_4, N_2O) of reservoirs (Varis, Kummu, Härkönen, & Huttunen, 2012). Emissions pathways include flux across the air-water interface, from supersaturation in the sediment, releases immediately below the turbines and further downstream (Diem, Koch, Schwarzenbach, Wehrli, & Schubert, 2012).

The potential impacts of climate change on the ACT water budget are manifold: changing precipitation patterns, increased evapotranspiration, and decreased soil moisture. These impacts could be exacerbated by other hydrological modifications such as increased withdrawals and reduced baseflow from impervious surface.

Recommendations: EPA notes that climate change has the potential to impact water supply, water quality, flood risk, wastewater, aquatic ecosystems, and energy production. The FEIS should consider the impact of dam operations in the Basin on greenhouse gases and climate change, as well as the impacts of climate change on WCM operations. EPA recommends an adaptive management approach in response to these impacts.

Contact: Stephen Maurano 404/562-904

Environmental Justice

Pursuant to the executive order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," the EIS examined the effect of the proposed action on minority and/or low-income populations. U.S. Census Bureau information for 2000 was used to identify low-income and minority populations within the Basin. The data indicated that most of the minority populations in the Basin were located in rural small to medium-sized towns in Alabama. The poverty rate in the Alabama portion of the ACT Basin is almost twice as high as the rate found in the Georgia portion of the basin. The DEIS concluded that communities with EJ concerns that use the reservoirs for fishing and recreation could experience some inconveniences due to seasonal fluctuations in the water surface under the No Action Alternative. During extreme drought years, reservoir users including low-income and minority populations could be affected, but less so under the preferred alternative. The preferred alternative would incorporate a new action zone at Carters Lake, revisions to the action zones at

Allatoona Lake, and specific drought management measures for the APC lakes and USACE lakes downstream of Montgomery that may result in more effective management of water surface levels and conservation storage in USACE and APC dams during drought conditions. Public access and use of the lakes should be improved for a longer periods of time. According to the DEIS, no significant environmental justice concerns relative to reservoir water management operations in the ACT Basin were identified during the scoping process for this EIS.

Recommendations: EPA appreciates the demographics analysis that identified low-income and minority populations within the basin and we recommend that the FEIS incorporate a discussion of any changes to the analysis based on more recent 2010 Census information. Based on some of the demographics information, EPA recommends a targeted approach for outreach to communities with EJ concerns, particularly in those areas with higher populations like rural Alabama. Specific efforts that were made to meaningfully engage low-income and minority stakeholder groups or individuals in the public involvement and decision-making process should also be discussed in the FEIS. EPA agrees that access and use of the reservoirs by minority and low-income populations could place more emphasis on shoreline or near-shore access activities like picnicking, wading/swimming, and recreational and subsistence fishing, primarily from the bank or public docks/piers, rather than boating-related activities that might be somewhat less dependent on high lake levels. Low water levels in the lakes would still adversely affect the access and usability of the lake resources. Any efforts to identify EJ populations that may engage in subsistence activities within the basin boundaries (i.e., subsistence fishing) should be discussed in the FEIS. The FEIS should also include a summary of EJ comments or concerns identified during the public involvement process along with agency responses to those concerns and efforts to avoid, minimize or mitigate potential impacts.

Contact: Ntale Kajumba – 404-562-9620

Children's Health

Pursuant to the executive order 12898 EO 13045: "Protection of Children from Environmental Health Risks and Safety Risks," the DEIS examined the environmental health and safety risks associated with this action on children's health. The DEIS indicated that the USACE uses specific measures at operating projects to minimize such risks including implementing water safety and other education programs, providing clear signage, marking designated use areas, removing hazards where appropriate, restricting public access to certain areas designed for authorized personnel, and other activities designed to promote safe use. According to the document, many of these activities are directly focused on children who visit the reservoirs and these health and safety activities are expected to continue and/or be adjusted as needed. The DEIS states that existing water management activities at the reservoirs do not impose any undue risks to children that are not effectively addressed by the above activities and no additional risks would be imposed by the proposed updates to water management practices.

Recommendation: EPA notes that the DEIS has described several measures in an effort to avoid and minimize impacts to users of the reservoir including children. In addition, we again suggest that the reservoirs incorporate new and innovative procedures to enhance warning systems (See public safety measures).

Contacts: Ntale Kajumba- 404-562-9620

References:

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Comment ID 0069

Comment ID 0069.001

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Pursuant to Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency (EPA) reviewed the Draft Environmental Impact Statement (DEIS) Update of the Water Control Manual (WCM) for the proposed project. EPA participated in a public scoping and public meeting held on October 22, 2008, and March 25, 2013, respectively, as well as two interagency webinars on September 11, 2008, and April 2, 2013. This letter is intended to provide EPA's comments on the proposed project.

The purpose of the project is to update the WCM for the Alabama-Coosa-Tallapoosa (ACT) River Basin. The operations at each federal reservoir managed by the U.S. Army Corps of Engineers (USACE) are described in a WCM, which includes WCMs for the operation of the ACT Basin and for the individual USACE projects within that system. The WCM describes how federal projects within the basin should operate in order to meet their authorized purposes. The WCM should provide for operations that meet state water quality standards, particularly where the authorized purpose of the project is water quality.

The updates to the WCM are intended to reflect conditions that have changed since the previous WCM was completed in 1951, and before many of the reservoir projects in the system were completed. These conditions may include changes due to current basin hydrology, legal mandates, environmental considerations or alterations due to structural features. Some individual reservoir manuals have been updated, but the master WCM has not been comprehensively updated. The WCM includes a new drought contingency plan to address water management issues during periods of drought.

According to the DEIS, the ACT Basin provides water resources for multiple purposes and encompasses a 22,800 square mile area in Alabama and Georgia. There are 17 major dams located in the Basin. The USACE owns and operates six of the dams (Allatoona Dam on Allatoona Lake on the Etowah River in Georgia; Carters Dam and Carters Reregulation Dam on Carters Lake on the Coosawattee River in Georgia; Robert F. Henry Lock and Dam and on R.E. Woodruff Lake, Millers Ferry Lock and Dam on William Dannelly Lake, and Claiborne Lock and Dam on the Alabama River in Alabama). The USACE also has flood risk management responsibilities at four Alabama Power Company reservoirs (Weiss, H. Neely Henry, and Logan Martin Lakes on the Coosa River; and Harris Lake on the Tallapoosa River).

The authorized project purposes at the USACE dams include flood risk management, hydropower, navigation, water supply, water quality, fish and wildlife conservation, and recreation. Other non-Federal dams located on the Coosa and Tallapoosa Rivers include 11 projects owned and operated by the Alabama Power Company. Operations between the Alabama Power Company (APC) projects and the federal projects are coordinated as necessary to meet flood control, water quality and quantity, and water supply demands. For example, in order for the USACE to develop and effective drought contingency plan for the basin, APC projects had to be incorporated into the plan since these project store 78 percent of the water resources.

Impoundments can fragment aquatic ecosystems, with impacts on many aspects of environmental integrity, particularly when the cumulative effects of multiple impoundments across a system are taken into account. Although the projects subject to the WCM are already in place, the allocations and uses allowed and established through the WCM revision can have significant influence on overall ACT system health by preventing or minimizing further fragmentation.

Response

USACE concurs with your general observations about the ACT Basin, the overall scope of the WCM update process, the environmental effects of impoundments, and the value of storage in existing reservoir projects. In accordance with ER 1110-2-8154, USACE has an objective to ensure that water quality, as affected by a USACE project and its operation, is suitable to support project purposes, designated water uses and pertinent standards, and public health and safety. Water quality aspects have been considered in updating the WCMs.

Comment ID 0069.002

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Based on the review of the DEIS, EPA's comments relate primarily to the potential water resource, biological resource and socioeconomic impacts associated with the proposed action. In summary, EPA recommends that consideration be given to maximizing the use of existing infrastructure in the ACT Basin in an effort to minimize aquatic resource impacts including impacts to wetlands and streams within the basin; requiring the implementation of water efficiency or conservation measures as the primary alternative before commitments are made for supply or storage uses; and ensuring the WCM operations meet water quality standards, including downstream uses and adequate flows to maintain the physical integrity of the habitat. Climate change also has the potential to impact water supply, water quality, flood risk, wastewater, aquatic ecosystems, and energy production. The Final Environmental Impact Statement should consider the impact of dam operations in the Basin on greenhouse gases and climate change, as well as the impacts of climate change on WCM operations. An adaptive management approach would most effectively address climate related issues.

Response

USACE notes the recommendations to maximize the use of existing infrastructure and to require implementation of water conservation/efficiency measures in addressing future water supply needs. These and other factors will definitely be addressed as part of any future water supply reallocation study that may be undertaken for pertinent projects in the ACT Basin. However, the proposed action as defined for the ACT WCM update does not include consideration of new water supply storage reallocation at Allatoona or Carters Lakes.

As stated in the response to comment 0069.001 above, USACE has an objective to ensure that water quality aspects are fully considered when updating the WCMs.

The EIS does address and consider the effects of ACT project operations on greenhouse gases and climate change as well as the impact of climate change on the operation of the ACT reservoir projects. Refer to Section 6.3 of the draft EIS. Project operation activities make a negligible overall contribution to greenhouse gas emissions, and operation of the project to generate hydroelectric power makes an important positive contribution to efforts to reduce greenhouse gas emissions in lieu of the use of fossil fuels. Climate change may have significant, but highly uncertain and variable, impacts on ACT Basin hydrology and the associated operation of the reservoir projects. The EIS has been updated to provide a more detailed assessment of these potential effects as described in the following paragraph.

Following the coordination of the draft EIS and receipt of agency and public comments, USACE re-ran the HEC-ResSim (water quantity) and HEC-5Q (water quality) models to evaluate the sensitivity of the Proposed Action Alternative to (1) reduce basin inflow that may be expected due to climate change and (2) long range water supply demand projections in the ACT Basin. The results of these sensitivity analyses are presented in Section 6 (Environmental Consequences) of the final EIS. The information provided by these analyses were also used to revise and update the cumulative effects section of the EIS (Section 6.9) in regard to reasonably foreseeable actions to meet future water supply needs (whether by storage reallocation from existing reservoirs or constructing new reservoirs) and the potential effects of climate change of hydrologic conditions in the ACT Basin.

Comment ID 0069.003

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

EPA appreciates the consideration of environmental and socioeconomic impacts on children, and low-income and minority populations. According to the DEIS, significant environmental justice (EJ) concerns were not identified during the scoping process. In an effort to adequately ensure that the proposed project does not affect these communities, it is important to meaningfully engage them throughout the decision-making process and to ascertain whether resources of importance may be affected. Efforts to identify populations with EJ concerns that may engage in subsistence activities within the basin should be discussed and EJ comments along with the USACE's responsiveness should be documented in the Final Environmental Impact Statement (FEIS). In addition, EPA recommends that enhanced warning systems be reviewed and implemented in an effort to improve public safety and recreation for all users. This is especially important in areas that have higher levels of children living within the basin and using the resources.

Response

All stakeholders were encouraged to participate in the ACT WCM update process. This was accomplished though public open houses, newsletters, as well as soliciting stakeholder input throughout the process.

Public Safety is at the forefront of operations at all USACE projects. Projects are responsible for maintaining downstream safety plans. Updated information regarding public warning systems are part of each projects WCM and will be included as part of the updated WCM.

Section 2.1.1.1.2.1.4 of the EIS was updated to include a brief discussion on USACE public safety and risk communication activities at the reservoir projects, including downstream warning systems. Section 6.6.8 on Environmental Justice considerations addresses these ongoing efforts as well as consideration of innovative approaches to improve safety and risk communication as future conditions may dictate.

Comment ID 0069.004

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

EPA has rated the preferred alternatives as "EC-2," environmental concerns with additional information requested for the final document. EPA's review has identified environmental impacts that should be avoided or minimized in order to adequately protect the environment. The FEIS should demonstrate responsiveness to these comments.

We appreciate the opportunity to provide comments on the proposed WCM DEIS for the ACT River Basin. We also appreciate the ongoing efforts to coordinate with us during the public comment period. If you have any questions regarding our comments, please contact Ntlae Kajumba (404/562-9620) of my staff or the Water Protection Division technical coordinators on technical issues (See Detailed Attachment).

Response

Comment noted. General comments summarized in these statements are addressed in more detail in response to the specific EPA comments. Thank you for your participation in the ACT WCM update.

Comment ID 0069.005

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

EPA's Detailed Comments on the Water Control Manual DEIS for the ACT River Basin

Alternatives

The DEIS addresses a no action and three action alternative (Plan A, Plan F and Plan G). The no-action alternative involves no change in how the dams are currently managed. The USACE's preferred alternative (Plan G) is identified in the DEIS. The proposal includes the following:

• Implements Basin Drought Operations Plan: includes triggers and dam releases/flow targets to conserve storage and provide reduced levels of service during drought

• Navigation Plan: includes triggers to reduce (9.0' or 7.5' channel) or suspend navigation level of service based on system storage

• Minimum Flows: implements seasonal minimum flows at Carters when reservoir storage level supports

• Hydropower: variable hydropower generation at Allatoona based on action zone and time of year

• Revised Guide Curves: H. Neely Henry (APC) and Allatoona

• Revised Action Zones: Allatoona and Carters

• Water Supply: no change in existing contracted amounts

• Alabama Power Company Projects (APC): continued operation under current FERC licenses

Recommendations: EPA appreciates that a preferred alternative was identified in the DEIS (Plan G). EPA rated the preferred alternative as "EC-2" environmental concerns with additional information requested for the final document. EPA's review has identified environmental impacts that should be further avoided/minimized in order to adequately protect the environment. The FEIS should demonstrate responsiveness to the comments below.

Response

Comment noted. The detailed EPA comments are addressed under the pertinent comment ID numbers for those comments.

Comment ID 0069.006

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Water Resources

Wetlands and Streams

As described in the DEIS, the purpose and need for the federal action is to "determine how the federal projects in the ACT Basin should be operated for their authorized purposes, in light of current conditions and applicable law, and to implement those operations through updated water control plans and manuals."

The alternatives considered for management of water supply can significantly influence the alternatives that entities can in turn consider when assessing how to meet water supply needs. With effective management, many allocations and uses can be met with existing infrastructure, whereas new infrastructure or projects such as reservoirs could have greater impacts to environmental resources. When such projects require CWA Section 404 permits, they must meet the requirements of the regulations at 40 CFR Part 230, also known as the Section 404(b)(1) Guidelines. One of the key requirements of the Section 404(b)(1) Guidelines is that no such work shall be permitted if there is "a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR § 230.10(a)), if it would "cause or contribute to significant degradation of the waters of the United States" (40 CFR § 230.10(c)), and "unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem" (40 CFR § 230.10(d)). In accordance with the Section 404(b)(1) Guidelines, the WCM should facilitate holistic management of basin resources such that the total impact is minimized, and entities seeking water allocations and uses have access to alternatives that are the least environmentally damaging both in a local context and on a basin scale whenever possible.

Impoundments can fragment aquatic ecosystems, with impacts on many aspects of environmental integrity, particularly when the cumulative effects of multiple impoundments across a system are taken into account. Although the projects subject to the WCM are already in place, the allocations and uses allowed and established through the WCM revision can have significant influence on overall ACT system health by preventing further fragmentation. If managed to make the best use of these existing resources, further impacts of additional supply infrastructure development could be avoided or at least minimized.

Unimpeded physical continuity of the major ACT rivers with their floodplains, including riparian wetlands, is also controlled in large part - or in the case of the Coosa and Alabama Rivers, nearly completely - by the management approach set forth in Water Control Manuals. Access to floodplains is critical to river sediment and chemical dynamics, hydrating riparian floodplains, and maintaining vegetation and habitat important in the lifecycles of many species, both aquatic and terrestrial, with characteristics adapted to such ecosystems. Managing flows for magnitude, seasonality, and variability that mimic natural conditions such that rivers have regular access to their floodplains is protective of riverine ecosystems and can reduce impacts to wetlands.

Recommendations: EPA recommends that consideration be given to maximizing the use of existing infrastructure in the ACT Basin - in balance with environmental uses such as protection of habitat, aquatic life, and water quality - such that impacts to aquatic resources are on the whole minimized for the basin. If allowing additional uses avoids impacts of new impoundments and additional infrastructure, overall impacts to the basin could be minimized with holistic management. The Mobile District should fully address and document the effects of the proposed actions on wetlands and streams.

Contact - Rosemary Hall - 404/562-9846

Response

The EIS discusses current conditions with respect to wetlands and streams in Section 2.5.1.1 and expected effects on those resources in Section 6.5.1.1. The proposed ACT Basin WCM update does not include a proposal for an increased storage reallocation for Cobb County – Marietta Water Authority or a new storage reallocation for any other entity. When requested, reallocation of reservoir storage for water supply in a USACE reservoir must be considered on balance with other authorized project purposes. New reservoir proposals in the basin that are presently under consideration for Section 404 permits were developed independently by local interests and not in lieu of storage reallocation at USACE reservoirs. USACE recognizes the potential impacts that new reservoirs may have relative to habitat fragmentation, riparian wetlands, and stream habitats. The effects are fully considered in any Section 404 permit process for a new reservoir, as well as alternatives to the proposal.

Comment ID 0069.007

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Water Supply Efficiency/Conservation

Projects that impact hydrology, such as new or expanded water supply, development, and recreational or amenity impoundments, often require Clean Water Act (CWA) Section 404 permits, making them subject to review for compliance with the Section 404(b)(1) Guidelines. When reviewing such projects, EPA and the USACE must consider whether the applicant has demonstrated adherence to the mitigation sequence, with avoidance and minimization of impacts to aquatic resources as the first two steps, and then ensure that the applicant has evaluated an appropriate range of alternatives and selected the Least Environmentally Damaging Practicable Alternative. For water supply project proposals, full implementation of conservation and efficiency measures, including water reuse options, is a primary alternative that could have a fraction of the impacts to aquatic resources associated with developing new supply infrastructure. When evaluating requests for allocations and uses related to the projects in the ACT Water Control Manual now and in the future, the USACE should consider whether efficiency and conservation measures are in place to ensure that the overall use of USACE lakes minimizes impacts to aquatic resources.

Minimizing supply withdrawals with conservation measures can also reduce conflicts among uses, easing pressure on the ACT system as a whole, and easing management of releases and flows for environmental protection. EPA Region 4's 2010 Guidelines on Water Efficiency Measures for Water Supply Projects in the Southeast ("WEGs") describes conservation and efficiency measures that can be expected of users seeking allocations or withdrawals from the system, and should be used to evaluate how well efficiency is being implemented before committing to new allocations or uses. We especially encourage that any entity seeking allocations demonstrate meaningful efforts to repair leaking infrastructure; use an integrated resource management approach across residential, industrial, agricultural, and commercial settings; implement full-cost pricing, conservation pricing, and metering of all water users; use low-impact development and green infrastructure; facilitate retrofitting of buildings; optimize water reuse; and facilitate landscaping to minimize demand and waste, and implement efficient irrigation practices. Protecting basin flows through conservation and efficient use can reduce impacts to streams and riparian wetlands, aquatic life, habitat, and water quality, and can ease management of system flows, particularly under low-rainfall conditions.

Recommendations: EPA recommends that demonstrated water efficiency/conservation implementation be required before commitments are made for supply/storage. Water quantity planning should consider:
- Decreasing trend in inflows (land use, withdrawals, climate change)
- Reuse opportunities (direct, indirect potable)
- How drought contingency plans will be formally incorporated into NPDES permits
- Cumulative impacts, including reservoirs and other supply projects proposed or under consideration in the basin, as well as interbasin transfers

Contact - Rosemary Hall - 404/562-9846

Response

Please note that the comment is not directly relevant to the proposed action. The proposed action to update the ACT WCMs does not include any proposal for new reservoir storage reallocation.

USACE concurs with your general comments about new reservoirs and the Section 404 permit process. Hickory Log Creek reservoir was permitted several years ago, was recently completed, and has been considered in the analysis. There are three proposed new water supply reservoirs in the ACT basin in Georgia at the present time (as discussed in Section 2.1.1.1.4.17), and the Section 404 permit process for those proposals is underway in the USACE Savannah District for Richland Creek, Russell Creek, and Indian Creek reservoirs). All the evaluation factors identified in the EPA comments are incorporated into each of those permit reviews.

Other potential water supply reservoirs are being considered for future development (as discussed in Section 2.1.1.2.5.1.6), but no new proposals have been sufficiently developed to initiate the Section 404 permit process. USACE agrees that implementing improved water conservation and efficiency measures are an important consideration for developing new water supply sources, and significant efforts are underway in the ACT basin, particularly within the MNGWPD, to implement such measures.

The following responses are offered regarding EPA recommendations that water quantity planning consider the following:

• Decreasing trend in inflows – Sensitivity analyses conducted after coordination of the draft EIS further considered the potential effects of climate change and future water demand increases. The final EIS provides information on these sensitivity analyses.

• Reuse opportunities – Water reuse initiatives are the responsibility of the states and local water providers. A number of initiatives are being considered, particularly within the MNGWPD area. Water reuse activities are likely to be limited and localized and are not expected to have an appreciable impact on water demands for the foreseeable future.

• How drought contingency plans will formally be incorporated into NPDES permits – The WCM update may result in minor adjustments to 7Q10 flows upon which NPDES permits are based. See discussion at Executive Summary (page ES-88) and in Section 6.10. Adjustment of NPDES permits in response to any of these minor changes will be the responsibility of the respective states that mange the NPDES program.

• Cumulative impacts, including reservoirs, other water supply projects, and interbasin transfers – The EIS addresses cumulative effects in Section 6.9. Reasonably foreseeable future reservoirs and other water supply projects are directly considered. Interbasin transfers are indirectly accounted for in the tabulation of withdrawals from and returns to the ACT basin.

Comment ID 0069.008

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Water Quality

State water quality standards programs include designated uses, criteria to protect those uses, and an antidegradation policy (CWA Section 303(c); 40 CFR § 131). Section 401 of the CWA additionally protects these water quality standards, requiring state certification that federal activities which may result in any discharge will comply with state water quality standards.

Further, Section 404(b)(1) Guidelines state that no such work shall be permitted if it would cause or contribute to "violations of any applicable State water quality standard" (40 CFR § 230.10(b)(1), or if it would "cause or contribute to significant degradation of the waters of the United States" (40 CFR § 230.10(c)).

The revised WCM should be consistent with state water quality standards, particularly where the authorized purpose of a dam is water quality. The WCM should provide for the attainment and maintenance of all downstream uses (40 CFR § 131.10(b)), including the uses in Mobile Bay. Downstream uses including drinking water, recreation, fishing, swimming, shellfish harvesting and aquatic life protection. This should include ensuring compliance with physical parameters (such as pH, temperature, conductivity and dissolved oxygen), biological criteria, chemical parameters, nutrient loadings (including lake nitrogen, phosphorus and chlorophyll standards) and providing the flows necessary for protection of aquatic life. In particular, there are several waters impaired for nutrients in the basin, including Lakes Allatoona, Carters and Weiss. Changes in operations can have substantial impacts on nutrient dynamics (Pinay, Clément, & Naiman, 2002). For example, chlorophyll-a response in Lake Weiss is very sensitive to retention time increases from withdrawals (Maceina & Bayne, 2003). The impacts of the proposed alternative should be evaluated to ensure that flow changes do not contravene nutrient control and total maximum daily load (TMDL) restoration efforts by Alabama Department of Environmental Management and Georgia Environmental Protection Division.

The WCM should provide reasonable assurance that water quality standards will not be violated; consider the impact on reasonable potential to exceed water quality standards as analyzed for National Pollutant Discharge Elimination Systems permits; confirm that TMDL restoration efforts will not be adversely affected; and ensure that reservoir operations will not cause or contribute to water quality impairments or listings.

Since the date of the last WCM revision, the science related to instream flows has evolved significantly. The revision of the WCM provides an opportunity to incorporate the latest science and successful practices for regulating flows to improve water quality, meet designated uses and, where possible, restore the hydrologic condition and ecological integrity of the river system. For instance, ecologists now understand that flows across the range of the natural hydrograph are important for maintaining the structure and function of aquatic ecosystems rather than regulating a river to meet a static flow target.

Response

Water quality standards were discussed throughout Section 6.1.2. For example, Section 6.1.2.2.2 describes deviations of dissolved oxygen from the No Action but goes on to state that concentrations would not be expected to be less than water quality standards.

In response to comments regarding chlorophyll a in Weiss Lake, a review of retention times in Weiss Lake found increased retention times in May and June of drought years 2007 and 1986. These increased retention times are consistent with Dr. Bayne's documentation and modeled results indicate increased chlorophyll a in May and June 2007. Further review of loads into Weiss Lake and water surface elevations reveal that the changes in water quality are related to a change in Weiss Lake operations from the APC's Drought Curve under the No Action Alternative. Plan G and other USACE alternatives operate Weiss Lake water levels to more closely mimic the project's guide curve.

Under Plan G retention times increase by 60 days in June 2007 because water levels are held higher. The greatest differences in retention times are seen in drought years 1986 and 2007. Minimal differences in monthly average retention times are seen in a wet weather year, 2003.

The HEC-5Q water quality model evaluated Weiss Lake chlorophyll a and nutrients (TN and TP) under the No Action Alternative as well as under Plans D, F and G. Based on the ACT draft EIS, ADEM had concerns about how the proposed plans may impact Weiss Lake water quality, especially chlorophyll a. Alabama has a water quality standard for chlorophyll a in Weiss Lake of 20 ug/l during the summer growing season - April through October. The HEC-5Q Weiss Lake model results were reevaluated using the growing season averages for years 2000 through 2008. The model outputted chlorophyll a daily values at 4 locations in Weiss Lake - 1) State Line, 2) Weiss_OUT1, 3) WeissOUT2 and 4) Dam Pool. The various Plan predictions were compared to the No Action

Alternative. For all four stations the 2000 - 2008 average growing season chlorophyll a stayed the same or decreased. For the most critical year - 2007 was the year with highest predicted chlorophyll a - the growing season chlorophyll a decreased by over 10 percent.

Also the Plan D, F and G TN and TP growing season average loadings in to Weiss Lake (predicted at State Line) remain at the same levels as the No Action Alternative levels. Refer to Section 6.1.2 of the FEIS (Water Quality) for more detailed information on water quality considerations.

Comment ID 0069.009

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Aquatic plant and animal species have evolved life cycle patterns directly tied to the primary components of hydrologic variability: frequency, magnitude, duration, timing and rate of change of natural flows. Every aspect of the lives of aquatic plants and animals is cued by and inextricably linked to the natural variability of our rivers and streams, which is often absent in highly regulated systems. The EPA encourages incorporation of variable flows in the revised WCM, including the seasonal, intra-annual and inter-annual variable flow patterns needed to maintain or restore processes that sustain natural riverine characteristics. Naturally variable flows are also a major determinant of physical habitat in streams and rivers and directly affect biological composition. Modifying flow regimes provides an opportunity to positively alter habitat and influence species diversity, distribution and abundance. Therefore, the EPA recommends that, where possible, the WCM be designed to mimic the natural conditions as closely as possible in the downstream waters.

Response

USACE agrees with the environmental importance of natural flow regimes. However, the USACE reservoirs were authorized by Congress and constructed expressly to alter the natural flow. The comment recommends that fish and wildlife and other interests associated with the aquatic environment in general be maximized. The USACE position is to balance all authorized project purposes including fish and wildlife, recreation, navigation, hydropower, etc. Given this need for balance, the USACE attempts to provide flows for the benefit of fish and wildlife to the extent practicable given limitations of statutory authority, infrastructure and funding limitations. In regards to specific project limitations it must be pointed out that Carters Lake has a unique feature in the re-regulation pool which allows varying monthly releases for 7Q10 minimum flows in order to mimic a more natural condition downstream. That feature is not present at the other facilities. Allatoona Lake is designed as a hydropower peaking facility and would require extended periods not producing any hydropower to provide anything approaching a natural flow regime. Additionally, Allatoona has a major flood management function which necessarily requires controlling peak flows downstream. On the Alabama River, the three USACE projects (R.F. Henry, Millers Ferry and Claiborne) are all run-of-river and for the most part pass whatever water they receive from upstream. This fact makes these three projects entirely dependent on upstream hydrology and releases by the Alabama Power Company (APC) projects.

Comment ID 0069.010

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Over the past decade, numerous licenses were negotiated and re-issued by the Federal Energy Regulatory Commission (FERC) and river operations have been improved on several USACE operated systems. Many renewed FERC licenses and updated dam operations by the USACE have included advancements in water management and dam operations to better protect and maintain aquatic life. For example, the FERC license issued to South Carolina Electric and Gas (SCE&G) for the operation of the Saluda River includes numerous updated provisions for protection of mussels, sturgeon, trout and rare plant and animal species. The USACE's participation in the Sustainable Rivers project has also resulted in revised dam operations that have improved aquatic life, recreation as well as improved the economic impact for local communities.

EPA would like to reiterate the suggestions provided in the "Draft Fish and Wildlife Coordination Act Report on Water Control Manual Updates for the Alabama - Coosa - Tallapoosa River Basin in Alabama and Georgia" (dated December 2012). EPA suggests the use of multiple endpoints to demonstrate the protection of aquatic life designated uses. Relevant endpoints include floodplain connectivity (inundation, maintenance of off-channel habitats, wetted perimeter, out-of-bank habitats) and habitat suitability analysis. Because of the intensity of the later (e.g. physical habitat simulation), the EPA recommends consulting the relevant wildlife resource agencies to determine which habitat locations are critical to aquatic life in the basin and may warrant prioritized, intensive study.

Response

USACE considered the comments provided in the referenced December 2012 FWCAR and provided a response to those comments in a letter dated February 8, 2013. Both documents may be found in the EIS Appendix B, Pertinent Correspondence. As discussed in that response, the proposed action is limited to updating water management guidelines for managing the storage and release of water from the USACE reservoirs and the four reservoirs owned by the Alabama Power Company over which USACE has flood risk management responsibility. Most of the conservation measures recommended in the FWCAR are outside the scope of the current project. Other recommendations are potentially within scope but cannot be practicably implemented without severely impacting authorized project purposes. The Proposed Action Alternative represents an approach that balances all project purposes and would provide improvements for the aquatic environment. During the evaluation there was ongoing coordination with the USFWS, including the Planning Aid Letter, a site meeting at Allatoona Lake, and the referenced FWCAR. Analyses were performed as requested by USFWS and data provided to them. Based on those analyses and modeling of hydrology and water quality, USACE concluded that the Proposed Action Alternative would not have significant adverse impacts compared to the no action alternative. Furthermore, in completing Section 7 consultation for the proposed action the USFWS, by letter dated March 20, 2014, concurred with the USACE determination that implementation of the Proposed Action (Plan G) may affect, but is not likely to adversely affect, federally protected species in the ACT Basin. The documentation of Section 7 Consultation may be found in Appendix B.

Comment ID 0069.011

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

In addition, EPA recommends that drought contingency plans be formally coordinated with dischargers (especially NPDES permit holders) and water intake permitees (including public drinking water suppliers, cooling water intakes, industrial users, etc.) to ensure that drought operations are adequately considered in permit limits and discharger operations.

Response

The responsibility for permitting withdrawals and discharges is a state responsibility and outside the purview of the USACE. River flows during drought operations that fall below 7Q10 may result in adjustments to state permitted parameters. Dischargers, including NPDES permit holders, water supply authorities and other interested parties were included in the NEPA process receiving notices of scoping and the DEIS. The DEIS specifically included the full draft of the drought contingency plan. Some of those stakeholders have commented on the plan, and those comments are included in this document. Consistent with the proposed drought plan, USACE will continue to coordinate with basin stakeholders before, during, and after droughts.

Comment ID 0069.012

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Recommendations: EPA recommends analyzing the effects of the WCM operations on water quality standards, with a particular emphasis on physiochemical endpoints such as dissolved oxygen, biological endpoints such as sensitive aquatic species and physical endpoints that protect the designated aquatic life use, including adequate flows to maintain the physical integrity of habitat. EPA also encourages the Mobile District to examine projects, such as the Green River in Kentucky, as examples of USACE improvements in river management. We would welcome the opportunity to follow up and provide additional information on these projects in upcoming weeks.

Contacts: Lisa Gordon 404/562/9317 and Stephen Maurano 404/562-9044.

Response

Extensive modeling was performed to evaluate the impacts of the proposed action on these endpoints. This included HEC-RESIM comparing flows and HEC-5Q which compared water quality parameters. The effects of the WCM operations on physiochemical endpoints relating water quality to biological endpoints were discussed in the DEIS in Section 6.5.4.2. Water quality standards were discussed throughout Section 6.1.2. For example, Section 6.1.2.2.2 describes deviations of dissolved oxygen from the No Action but goes on to state that these changes would not be expected to result in water quality violations (page 6-85, line 14).

Comment ID 0069.013

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Aquatic Life and Endangered Species

EPA notes that the U.S. Fish & Wildlife Service (FWS) has been actively engaged in the WCM and DEIS and has submitted two recent comment letters to the USACE regarding the protection of threatened and endangered species within the Basin.

Recommendations: EPA principally supports and defers to FWS on this project. We encourage continued coordination with the FWS regarding the assessment and protection of federally-protected threatened or endangered species. The FEIS should include a summary of the coordination to date between the USACE and FWS, as well as any updated information regarding the assessment and protection of species within the project area.

Contacts: Lisa Gordon 404/562/9317 and Gary Davis 404/562-9239

Response

USACE concurs. Section 7 consultation with the FWS has been completed. The consultation process is summarized in Section 6.5.4 of the final EIS, and the consultation documentation is included in Appendix B, Part 3.

Comment ID 0069.014

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Flood Impacts

The Corps of Engineers recently issued the Appropriate Application of Paleoflood Information for the Hydrology and Hydraulics Decisions of the U.S. Army Corps of Engineers. EPA also notes that one of the rivers along the ACT has resulted in serious flooding impacts to surrounding communities (e.g., flooding has been an historical issue in Rome, Georgia and much of Montgomery, Alabama is located within the floodplain). The Alternatives that feature increased flows should address any additional flooding or changes to the Federal Emergency Management Agency (FEMA/National Flood Insurance Program (NFIP) floodplain maps. These communities are members of the NFIP and have officially adopted the Flood Insurance Rate Maps (FIRM) maps. These maps (legally "adopted" by the community) represent where FEMA has delineated both the special flood hazard areas (SFHAs) and the risk premium zones applicable to the community.

Recommendations: EPA understands that Paleoflood information is not relevant for all Hydrology and Hydraulics decisions, but the FEIS should indicate whether the concepts/ recommendations in the USACE document, Appropriate Application of Paleoflood Information for the Hydrology and Hydraulics Decisions of the U.S. Army Corps of Engineers, were used in the WCM or EIS and how they were used. In addition, the alternatives that feature increased flows should address any additional flooding or changes to the FEMA/NFIP floodplain maps and the FEIS should disclose which Alternatives have impacts to these, and what these changes involve.

Contact: Paul Gagliano 404/562-9373.

Response

The Proposed Action Alternative did not increase flood impacts at Rome, Georgia; therefore, there will also be no increase in flood impacts further downstream at Montgomery, Alabama. Several initial measures investigated did increase flooding downstream and they were subsequently eliminated from further consideration.

The Paleoflood information is not appropriate for assessment of reservoir with volume considerations according to the USACE document, Appropriate *Application of Paleoflood Information for Hydrology and Hydraulics Decisions of the U.S. Army Corps of Engineers.* Therefore, specific reference to the document was not included in the WCM or FEIS.

Comment ID 0069.015

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Public Safety and Recreation

FERC license renewals have recently resulted in negotiated agreements that include provisions to enhance the recreation and public safety on regulated rivers. For instance, the SCE&G license on the Saluda River included a warning Safety Enhancement Plan and provisions for Recreational Flow Releases. These revisions were prompted, in part, by hazardous conditions that existed during flow releases that resulted in the loss of life in recreation areas.

Recommendations: EPA suggests that the WCM incorporate new and innovative procedures to enhance warning systems to improve public safety and recreation throughout the system.

Contacts: Lisa Gordon 404/562-9317.

Response

Public Safety is at the forefront of operations at all USACE projects. Projects are responsible for maintaining downstream safety plans. Updated information regarding public warning systems are part of each projects WCM and will be included as part of the updated WCM.

Section 2.1.1.1.2.1.4 of the EIS was updated to include a brief discussion on USACE public safety and risk communication activities at the reservoir projects, including downstream warning systems. Section 6.6.6 addressing socio-economic impacts relative to public recreation use of the USACE reservoir projects addresses these ongoing efforts as well as consideration of innovative approaches to improve safety and risk communication as future conditions may dictate.

Comment ID 0069.016

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Coordinating with FERC Relicensing

FERC relicensing actions are currently underway for the Coosa River projects and APC has requested to modify winter pool levels at the Weiss and Logan Martin Lakes. Plan G (the Preferred Alternative) does not include these proposed modified winter pool levels.

Recommendations: EPA recommends that the USACE include additional information regarding how proposed modifications to the winter pool levels at the Weiss and Logan Martin may affect downstream flows in the Basin and impact the overall operations of the preferred alternatives.

Response

The new FERC license, issued on June 20, 2013, following public review of the draft EIS for the ACT WCM update, did not include the proposed modifications to winter pool levels at Weiss and Logan Martin lakes. The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss and Logan Martin Projects are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment ID 0069.017

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Climate Change

Adapting to future climate change impacts requires hydroclimate monitoring, prediction and application of such information to support water management decisions. There is an expanding body of literature on the greenhouse gas contributions (CO_2, CH_4, N_2O) of reservoirs (Varis, Kummu, Härkönen, & Huttunen, 2012). Emissions pathways include flux across the air-water-interface, from supersaturation in the sediment, releases immediately below the turbines and further downstream (Diem, Koch, Schwarzenbach, Wehrli, & Schubert, 2012).

The potential impacts of climate change on the ACT water budget are manifold: changing precipitation patterns, increased evapotranspiration, and decreased soil moisture. These impacts could be exacerbated by other hydrological modifications such as increased withdrawals and reduced baseflow from impervious surface.

Recommendations: EPA notes that climate change has the potential to impact water supply, water quality, flood risk, wastewater, aquatic ecosystems, and energy production. The FEIS should consider the impact of dam operations in the Basin on greenhouse gases and climate change, as well as the impacts of climate change on WCM operations. EPA recommends an adaptive management approach in response to these impacts.

Contact: Stephen Maurano 404/562-904

Response

Climate change is discussed in the EIS Sections 2.3 (Affected Environment) and 6.3 (Environmental Consequences). Based on comments received on the draft EIS, further analysis was conducted to evaluate the sensitivity of the Proposed Action (Plan G) to increased future water M&I demands and potential reduced basin inflows and increased air temperatures associated with climate change. The sensitivity analysis results are presented in Section 6.9. Also, USACE regulations require that necessary actions are taken to keep approved water control manuals up-to-date and revised when needed to conform with changing requirements, improvements in technology, new legislation, etc.

Comment ID 0069.018

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Environmental Justice

Pursuant to the executive order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," the EIS examined the effect of the proposed action on minority and/or low-income populations. U.S. Census Bureau information for 2000 was used to identify low-income and populations within the Basin. The data indicated that most of the minority populations in the Basin were located in rural small to medium-sized towns in Alabama. The poverty rate in the Alabama portion of the ACT Basin is almost twice as high as the rate found in the Georgia portion of the basin. The DEIS concluded that communities with EJ concerns that use the reservoirs for fishing and recreation could experience some inconveniences due to seasonal fluctuations in the water surface under the No Action Alternative. During extreme drought years, reservoir users including low-income and minority populations could be affected, but less so under the preferred alternative. The preferred alternative would incorporate a new action zone at Carters Lake, revisions to the action zones at Allatoona Lake, and specific drought management measures for the APC lakes and USACE lakes downstream of Montgomery that may result in more effective management of water surface levels and conservation storage in USACE and APC dams during drought conditions. Public access and use of the lakes should be improved for a longer periods of time. According to the DEIS, no significant environmental justice concerns relative to reservoir water management operations in the ACT Basin were identified during the scoping process for this EIS.

Recommendations: EPA appreciates the demographics analysis that identified low-income and minority populations within the basin and we recommend that the FEIS incorporate a discussion of any changes to the analysis based on more recent 2010 Census information. Based on some of the demographics information, EPA recommends a targeted approach for outreach to communities with EJ concerns, particularly in those areas with higher populations like rural Alabama. Specific efforts that were made to meaningfully engage low-income and minority stakeholder groups or individuals in the public involvement and decision-making process should also be discussed in the FEIS. EPA agrees that access and use of the reservoirs by minority and low-income populations could place more emphasis on shoreline or near-shore access activities like picknicking, wading/swimming, and recreational and subsistence fishing, primarily from the bank or public docks/piers, rather than boating-related activities that might be somewhat less dependent on high lake levels. Low water levels in the lakes would still adversely affect the access and usability of the lake resources. Any efforts to identify EJ populations that may engage in subsistence activities within the basin boundaries (i.e., subsistence fishing) should be discussed in the FEIS. The FEIS should also include a summary of EJ comments or concerns identified during the public involvement process along with agency responses to those concerns and efforts to avoid, minimize, or mitigate potential impacts.

Contact: Ntale Kajumba - 404-562-9620

Response

USACE encouraged all stakeholders to participate in the ACT WCM update process. This was accomplished though public open houses, library postings, newsletters, as well as soliciting stakeholder input throughout the process. Public scoping meetings and meetings on the DEIS were held at four locations, two each in Alabama and Georgia as described on page ES-5 and Section 1.4.5. The meetings were held at central locations where the maximum number of people would have opportunity to attend regardless of minority or economic status.

No additional public comments related to environmental justice considerations were received during coordination of the draft EIS.

Comment ID 0069.019

Author Name: Mueller, Heinz

Organization: ENVIRONMENTAL PROTECTION AGENCY

Comment

Children's Health

Pursuant to the executive order 12898 EO 13045: "Protection of Children from Environmental Health Risks and Safety Risks," the DEIS examined the environmental health and safety risks associated with this action on children's health. The DEIS indicated that the USACE uses specific measures at operating projects to minimize such risks including implementing water safety and other education programs, providing clear signage, marking designated use areas, removing hazards where appropriate, restricting public access to certain areas designed for authorized personnel, and other activities designed to promote safe use. According to the document, many of these activities are directly focused on children who visit the reservoirs and these health and safety activities are expected to continue and/or be adjusted as needed. The DEIS states that existing water management activities at the reservoirs do not impose any undue risks to children that are not effectively addressed by the above activities and no additional risks would be imposed by the proposed updates to water management practices.

Recommendation: EPA notes that the DEIS has described several measures in an effort to avoid and minimize impacts to users of the reservoir including children. In addition, we again suggest that the reservoirs incorporate new and innovative procedures to enhance warning systems (See public safety measures).

Contacts: Ntale Kajumba - 404-562-9620

Response

Public Safety is at the forefront of operations at all USACE projects. Projects are responsible for maintaining downstream safety plans. Updated information regarding public warning systems are part of each projects WCM and will be included as part of the updated WCM.

Section 2.1.1.1.2.1.4 of the EIS was updated to include a brief discussion on USACE public safety and risk communication activities at the reservoir projects, including downstream warning systems. Section 6.6.9 on Protection of Children addresses these ongoing efforts as well as consideration of innovative approaches to improve safety and risk communication as future conditions may dictate.

Comment Number: 2013-0025

Name: Tom Littlepage

Affiliation: Alabama Office of Water Resources

Date:

Address:
[redacted]
Montgomery, AL 36104

Attachments: None.

Comments:

Rrequest that all the posters and display maps used in the public forums be uploaded to the web site.

Comment ID 0025

Comment ID 0025.001

Author Name: Littlepage, Tom

Organization: ALABAMA OFFICE OF WATER RESOURES

Comment

Request that all the posters and display maps used in the public forums be uploaded to the web site.

Response

The posters and display maps used in the March 2013 public forums that were held during the public review period for the draft EIS are posted in the Documents Library for the project at the following link: http://www.sam.usace.army.mil/Missions/PlanningEnvironmental/ACTMasterWaterControlManualUpdate/ACTDocumentLibrary.aspx.

Comment Number: 2013-0045

Name: John Biagi

Affiliation: Georgia DNR Wildlife Resources Division Fisheries Management Section

Date: 5/29/2013 1:37:11 PM

Address:
2070 U.S. Highway 278 S.E.
Social Circle, GA 30025-4711

Attachments: COE ACT DraftEIS signed comments by FM 5-29-13.pdf

Comments:

Please see the attached comments from the Fisheries Section of the Georgia Wildlife Resources Division. (Please see following letter.)

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

WILDLIFE RESOURCES DIVISION

MARK WILLIAMS
COMMISSIONER

DAN FORSTER
DIRECTOR

May 29, 2013

Commander
U.S. Army Corps of Engineers
Mobile District,
Attn: PD-EI (ACT-DEIS)
P.O. Box 2288
Mobile, AL 36628

SUBJECT: Alabama-Coosa-Tallapoosa River Basin Water Control Manual Update

Thank you for the opportunity to provide comments regarding the Draft Environmental Impact Statement (DEIS) for updates to the Alabama-Coosa-Tallapoosa River Basin (ACT) Water Control Master Manual. The Georgia Wildlife Resources Division (WRD), Fisheries Management Section, offers the following comments for your consideration:

Lake Allatoona

The U.S. Army Corps of Engineers (USACE) currently works to manage spring reservoir water levels for fish spawning for four to six weeks within an eight-week window annually between March 15 and May 15. Under the Preferred Action Alternative (Plan G), fish spawn operations would continue at Lake Allatoona and we look forward to continued coordination with the USACE during fish spawn operations.

Proposed operational changes under Plan G would revise the existing guide curve at Lake Allatoona by implementing a phased-fall drawdown period between early September and December (DEIS, Figure ES-6). This is anticipated to result in "notably" higher lake levels through the fall and early winter period relative to current operations (No-action alternative). We agree that these higher lake levels will benefit boaters and anglers by improving boat ramp access during the period.

Etowah River Tailwater

The Etowah River Tailwater (ERT) from Allatoona Dam downstream to the City of Rome provides considerable recreational fishing opportunities for black bass, catfish, and striped bass. The upper Coosa River Basin striped bass population (to include the Etowah River) is a popular sport fishery and is unique in that it is one of only a handful of land-locked, naturally reproducing populations in the Southeast. This robust population is also important as it serves as the primary brood fish source for the WRD's statewide striped bass production program.

FISHERIES MANAGEMENT SECTION
2070 U.S. HIGHWAY 278 S.E. | SOCIAL CIRCLE, GEORGIA 30025-4711
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Commander, U.S. Army Corps of Engineers
[Page 2 of 2]

Adult striped bass have an obligate need for cool water and seek out cool water refuge during the hot summer months. Currently, the ERT provides such a refuge due to the cool water released from Allatoona Dam and large numbers of striped bass migrate to and reside within the ERT throughout the summer and early fall months each year. This thermal refuge is important to the overall health of the upper Coosa River Basin striped bass population; therefore, maintenance of the thermal regime of the ERT during the summer months is of great interest to WRD and the angling public.

Overall, the proposed operational updates under the Preferred Action Alternative (Plan G) to the Allatoona Water Control Plan (Appendix A) should maintain the historic satisfactory cool water refuge for striped bass in the ERT. However, in Section 7-05 b 1) *Instructions for Spillway Gates and Sluices Operation*, the USACE states an operational preference for surface water releases from Lake Allatoona through the spillway gates when the reservoir elevation is higher than 835 ft. above MSL and additional water release is required above that provided by the two power units and the house unit. Surface temperatures in Lake Allatoona range from 27-30°C between June and early October annually. A surface water release from Allatoona Dam through the spillway gates during this time frame could adversely affect striped bass residing in the ERT. As such, we suggest the USACE consider using the sluice gates ((7-05 b 2) *Instructions for Spillway Gates and Sluices Operation)* as an option for water release when additional water releases are needed between June and early October. Since the sluice gates would be releasing hypolimnetic water from Lake Allatoona, the water temperatures would be cooler than the surface water released from the spillway gates.

We appreciate the opportunity to provide comments during this important process. If we can be of further assistance, please contact Senior Fisheries Biologist Jim Hakala at 706-624-1161 or via e-mail jim.hakala@dnr.state.ga.us.

Sincerely,

John Biagi
Chief of Fisheries

cc: Jeff Durniak

Comment ID 0045

Comment ID 0045.001

Author Name: Biagi, John

Organization: Georgia Wildlife Resources Division

Comment

Thank you for the opportunity to provide comments regarding the Draft Environmental Impact Statement (DEIS) for updates to the Alabama-Coosa-Tallapoosa River Basin (ACT) Water Control Master Manual. The Georgia Wildlife Resources Division (WRD), Fisheries Management Section, offers the following comments for your consideration:

Lake Allatoona

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Proposed operational changes under Plan G would revise the existing guide curve at Lake Allatoona by implementing a phased-fall drawdown period between early September and December (DEIS, Figure ES-6). This is anticipated to result in "notably" higher lake levels through the fall and early winter period relative to current operations (No-action alternative). We agree that these higher lake levels will benefit boaters and anglers by improving boat ramp access during the period.

Response

Comment noted. USACE appreciates your participation.

Comment ID 0045.002

Author Name: Biagi, John

Organization: Georgia Wildlife Resources Division

Comment

Etowah River Tailwater

The Etowah River Tailwater (ERT) from Allatoona Dam downstream to the City of Rome provides considerable recreational fishing opportunities for black bass, catfish, and striped bass. The upper Coosa River Basin striped bass population (to include the Etowah River) is a popular sport fishery and is unique in that it is one of only a handful of land-locked, naturally reproducing populations in the Southeast. This robust population is also important as it serves as the primary brood fish source for the WRD's statewide striped bass production program.

Adult striped bass have an obligate need for cool water and seek out cool water refuge during the hot summer months. Currently, the ERT provides such a refuge due to the cool water released from Allatoona Dam and large numbers of striped bass migrate to and reside within the ERT throughout the summer and early fall months each year. This thermal refuge is important to the overall health of the upper Coosa River Basin striped bass population; therefore, maintenance of the thermal regime of the ERT during the summer months is of great interest to WRD and the angling public.

Overall, the proposed operational updates under the Preferred Action Alternative (Plan G) to the Allatoona Water Control Plan (Appendix A) should maintain the historic satisfactory cool water refuge for striped bass in the ERT. However, in Section 7-05 b 1) Instructions for Spillway Gates and Sluices Operation, the USACE states an operational preference for surface water releases from Lake Allatoona through the spillway gates when the reservoir elevation is higher than 835 ft. above MSL and additional water release is required above that provided by the two power units and the house unit. Surface temperatures in Lake Allatoona range from 27-30°C between June and early October annually. A surface water release from Allatoona Dam through the spillway gates during this time frame could adversely affect striped bass residing in the ERT. As such, we suggest the USACE consider using the sluice gates ((7-05 b 2) Instructions for Spillway Gates and Sluices Operation) as an option for water release when additional water releases are needed between June and early October. Since the sluice gates would be releasing hypolimnetic water from Lake Allatoona, the water temperatures would be cooler than the surface water released from the spillway gates.

We appreciate the opportunity to provide comments during this important process. If we can be of further assistance, please contact Senior Fisheries Biologist Jim Hakala at 706-624-1161 or via e-mail iim.hakalandnrstate.qa.us.

Response

Spillway gate operations, as described in Section 7-05 of the Allatoona WCM, are to support flood risk management operations and have the next highest priority after turbine releases. Sluice gate operations during flood operations have a lower priority. Also, sluice gate releases during the summertime when the lake is thermally stratified, contain higher levels of reduced metals / dissolved solids which could be detrimental to overall water quality conditions downstream. When sluice gate releases would not be expected to result in decreased water quality conditions downstream, they may occasionally be performed for brief periods in coordination with GA DNR to provide cooler water for downstream fisheries.

From:	Cook, Stan
To:	ACT-WCM
Subject:	ACT Control Manual Comments
Date:	Thursday, May 30, 2013 3:59:29 PM
Attachments:	image001.gif CommentsWaterControlManualALCoosaTallapoosa20130530.pdf

Dear Sir:

Attached are comments respectfully submitted by Alabama Department of Conservation and Natural Resources concerning the proposed Control Manual for the ACT. We will also mail in a set of comments. Thank you for the opportunity to express our position.

Sincerely
Stan Cook
Chief of Fisheries
Jim Folsom Building
64 North Union St
Suite 551
Montgomery, AL 36043

STATE OF ALABAMA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
WILDLIFE AND FRESHWATER FISHERIES DIVISION
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ROBERT BENTLEY
GOVERNOR

N. GUNTER GUY, JR.
COMMISSIONER

CURTIS JONES
DEPUTY COMMISSIONER

The mission of the Wildlife and Freshwater Fisheries Division is to manage, protect, conserve, and enhance the wildlife and aquatic resources of Alabama for the sustainable benefit of the people of Alabama.

CHARLES F. "CHUCK" SYKES
DIRECTOR

FRED R. HARDERS
ASST. DIRECTOR

May 23, 2013

Colonel Steven J. Roemhildt
Mobile District, U.S. Army Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628-0001

RE: Comments on the Water Control Manual for Alabama-Coosa-Tallapoosa Basin

Dear Colonel Roemhildt:

The Fisheries Section of Alabama's Department of Conservation and Natural Resources (ADCNR) submitted comments to the Alabama-Coosa-Tallapoosa (ACT) River Basin Water Control Manual Update Process on October 17, 2008 regarding project releases, recreation, fish passage, water quality and Alabama's Comprehensive Wildlife Conservation Strategy. Upon reviewing the Draft Environmental Impact Statement (DEIS) to adopt an updated Master Water Control Manual for the ACT, we believe the U.S. Army Corps of Engineers (USACE) has failed to adequately address comments and recommendations for the protection and enhancement of aquatic wildlife resources for the people of Alabama. Therefore, we would like to reaffirm our previous comments in our letter dated October 17, 2008 and provide these additional comments:

- In our opinion the DEIS does not adequately address our concerns over the use of 7Q10 as a target flow for project releases. ADCNR holds in trust the wildlife resources for the people of Alabama. Natural flow regimes in a stream or river channel adequately supports the full suite of ecological functions (biodiversity, channel maintenance, floodplain operation) through factors such as timing (seasonal), frequency (how often), magnitude (size of water events), rate of change (how quickly is water delivered), and duration (how long do the events last) to ensure complete ecosystem functionality. Deviations from the natural flow regime of rivers and streams affect their physical, chemical, and biological functions. Whether there is a significant impact to ecological integrity depends on the magnitude of deviation. A 7Q10 flow is not an instream flow standard that will protect aquatic wildlife nor will it meet hydrologic needs of a functioning flowing system. This low flow may protect against exceeding pollution thresholds, but fails to adequately protect aquatic wildlife. Target flows for project releases should ensure that sufficient quality and quantity of water is provided that resembles the natural flow regime. A 7Q10 flow regime will hinder ADCNR's ability to manage, protect, conserve, and enhance the trust resources of Alabama. Water scientists

Letter to Colonel Steven Roemhildt
Page 2
May 23, 2013

and aquatic biologists generally agree that natural stream flow with all of its variations through seasonal flood events, low flows in summer, and high flows in late winter and spring (inter and intra-annual natural flow variability) is a significant controlling variable in nature helping to recharge groundwater aquifers, create and maintain aquatic habitat, support fish and wildlife populations, and maintain acceptable water-quality conditions (Instream Flow Council, 2004).

ADCNR implemented an Instream Flow Policy in 2012 which explains our position on f low standards. The following are excerpts from that policy.

> *Instream flows are incorrectly thought of as minimum flows by many. Minimum flows are just that, minimal, and do not fully protect stream functions. The whole concept of a minimum flow has led to many rivers and streams becoming depleted and damaged with respect to their hydrological and ecosystem function. Minimum flows actually become maximum flows in highly used and altered systems since managed flows are rarely allowed to exceed this "minimum" limit. "Conservation Flow" is defined as the minimum continuous water flow requirement as determined by DCNR that is necessary to maintain the biological, physical, and chemical integrity of a waterway using generally accepted scientific methodologies. Conservation flow for regulated waterways shall be as follows: 1) for waterways regulated for hydropower production the requirement shall be determined through the Federal Energy Regulatory Commission licensing process; 2) for waterways regulated for other purposes (such as drinking water impoundments) the recommended seasonal requirement is 30% of Mean Annual Flow (MAF) for July through November, 60% MAF for January through April, and 40% MAF for May, June, and December or will be based on an accepted instream flow methodology such as the Instream Flow Incremental Methodology (IFIM). Conservation flow for unregulated waterways shall be 30% MAF or will be based on an accepted instream flow methodology such as the Instream Flow Incremental Methodology (IFIM).*
>
> *"Subsistence Flow" is the minimum water flow requirement as determined by DCNR that must remain in a waterway in order to avoid serious or long term adverse effects on the biological integrity of the waterway. Subsistence flow shall be determined as follows: 1) for waterways regulated for hydropower production the requirement shall be determined through the Federal Energy Regulatory Commission licensing process; 2) for waterways regulated for other purposes (such as drinking water impoundments) and for unregulated waterways the requirement is 10% of Mean Annual Flow (MAF) or will be based on an accepted instream flow methodology such as the Instream Flow Incremental Methodology (IFIM).*
>
> *It is the policy of the DCNR to advocate for the protection of the Instream Flow requirements in all water allocation decisions.*

The USACE's operations does not require approval of the Federal Energy Regulatory Commission. However, the responsibility of the USACE's water control operations must include a flow regime that maintains ecological integrity in order to protect the physical, chemical, and biological functions from waters flowing into the State of Alabama and through the Mobile Delta.

- The DEIS does not address current and proposed project operational impacts to backwater areas which serve as valuable nursery habitat for aquatic wildlife as well as prime fishing areas. Access to these backwater areas for recreational boaters are being impeded or lost due to sediment deposition changes related to project operations. The USACE's neglect of small boat channel maintenance has also caused questions to be raised concerning riparian ownership issues.

- The proposed action alternative (Plan G) allows for higher average lake levels at Allatoona Lake by implementing a fall stepped down guide curve. The implementation of the new guide appears to be mainly for the purposes of increasing recreational access at the lake to the detriment of recreational access at Weiss Lake and possibly other public water in the ACT. Therefore, ADCNR is concerned that there will be recreational impacts in Alabama due to the increased storage at Allatoona Lake during fall and winter months. It appears that Alabama recreational opportunities were not given equal consideration. We request the USACE evaluate impacts to recreation at Weiss Lake and other downstream bodies of water, particularly during drought scenarios where recreational access may be severely limited.

- Alabama sturgeon, *Scaphirhynchus suttkusi,* has been impacted by the loss and fragmentation of habitat as a result of project operations (dam construction, flow alteration/regulation, and channel maintenance). The only capture of Alabama sturgeon in the past decade in the Claiborne Lock and Dam tailrace underscores the fact that project operations are contributing to the extinction of this species. Riverine flow regimes that mimic flows prior to USACE's construction of lock and dams on the Alabama River can certainly be used to set flow standards that are protective of Alabama sturgeon's life history needs. Connectivity to riverine habitats above Claiborne Lock and Dam would also assist in meeting Alabama sturgeon life history needs. See the following comments.

- A fish passage plan for all USACE locks and dams in the ACT should be developed. We recognize the USACE's effort to continue seasonal operations of locks for fish passage at Claiborne Lock and Dam and at Millers Ferry Lock and Dam. However, fish passage lockages should be conducted at R.F. Henry Lock and Dam. While this method of fish passage has had success, it does not appear to be successful for all riverine species that need to move. Additional types of fish passage strategies should be evaluated for their application as part of a fish passage plan for the Alabama River.

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Page 4
May 23, 2013

- The DEIS incorrectly states that smallmouth bass occur in USACE reservoirs located in Alabama. Black bass species that are known to occur in these reservoirs are largemouth bass, *Micropterus salmoides,* and Alabama bass, *Micropterus henshalli.*

- Page 2-219. Table 2.511. The Alabama pearlshell, *Margaritifera marrianae,* is a state-protected species and should be documented as such in this table.

<u>References</u>

Annear, T., I. Chisholm, H. Beecher, A. Locke, P. Aarrestad, C. Coomer, C. Estes, J. Hunt, R. Jacobson, G. Jobsis, J. Kauffman, J. Marshall, K. Mayes, G. Smith, R. Wentworth, and C. Stalnaker. 2004. Instream Flows for Riverine Resource Stewardship - Revised Edition. Instream Flow Council, Cheyenne, WY.

Sincerely,

N. Gunter Guy, Jr.
Commissioner

Comment ID 0047

Comment ID 0047.001

Author Name: Guy, Jr., N. Gunter

Organization: ALABAMA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

Comment

The Fisheries Section of Alabama's Department of Conservation and Natural Resources (ADCNR) submitted comments to the Alabama-Coosa-Tallapoosa (ACT) River Basin Water Control Manual Update Process on October 17,2008 regarding project releases, recreation, fish passage, water quality and Alabama's Comprehensive Wildlife Conservation Strategy. Upon reviewing the Draft Environmental Impact Statement (DElS) to adopt an updated Master Water Control Manual for the ACT, we believe the U.S. Army Corps of Engineers (USACE) has failed to adequately address comments and recommendations for the protection and enhancement of aquatic wildlife resources for the people of Alabama. Therefore, we would like to reaffIrm our previous comments in our letter dated October 17, 2008 and provide these additional comments:

• In our opinion the DEIS does not adequately address our concerns over the use of 7Q10 as a target flow for project releases. ADCNR holds in trust the wildlife resources for the people of Alabama. Natural flow regimes in a stream or river channel adequately supports the full suite of ecological functions (biodiversity, channel maintenance, floodplain operation) through factors such as timing (seasonal), frequency (how often), magnitude (size of water events), rate of change (how quickly is water delivered), and duration (how long do the events last) to ensure complete ecosystem functionality. Deviations from the natural flow regime of rivers and streams affect their physical, chemical, and biological functions. Whether there is a significant impact to ecological integrity depends on the magnitude of deviation. A 7Ql0 flow is not an instream flow standard that will protect aquatic wildlife nor will it meet hydrologic needs of a functioning flowing system. This low flow may protect against exceeding pollution thresholds, but fails to adequately protect aquatic wildlife. Target flows for project releases should ensure that sufficient quality and quantity of water is provided that resembles the natural flow regime. A 7QI0 flow regime will hinder ADCNR's ability to manage, protect, conserve, and enhance the trust resources of Alabama. Water scientists and aquatic biologists generally agree that natural stream flow with all of its variations through seasonal flood events, low flows in summer, and high flows in late winter and spring (inter and intra-annual natural flow variability) is a significant controlling variable in nature helping to recharge groundwater aquifers, create and maintain aquatic habitat, support fish and wildlife populations, and maintain acceptable water-quality conditions (In stream Flow Council, 2004).

ADCNR implemented an Instream Flow Policy in 2012 which explains our position on flow standards. The following are excerpts from that policy.

"Instream flows are incorrectly thought of as minimum flows by many. Minimum flows are just that, minimal, and do not fully protect stream functions. The whole concept of a minimum flow has led to many rivers and streams becoming depleted and damaged with respect to their hydrological and ecosystem function. Minimum flows actually become maximum flows in highly used and altered systems since managed flows are rarely allowed to exceed this "minimum" limit."   Conservation Flow" is defined as the minimum continuous water flow requirement as determined by DCNR that is necessary to maintain the biological, physical, and chemical integrity of a waterway using generally accepted scientific methodologies. Conservation flow for regulated waterways shall be as follows: 1) for waterways regulated for hydropower production the requirement shall be determined through the Federal

Energy Regulatory Commission licensing process; 2) for waterways regulated for other purposes (such as drinking water impoundments) the recommended seasonal requirement is 30% of Mean Annual Flow (MAF) for July through November, 60% MAF for January through April, and 40% MAF for May, June, and December or will be based on an accepted instream flow methodology such as the Instream Flow Incremental Methodology (IFIM)." Conservation flow for unregulated waterways shall be 30% MAF or will be based on an accepted instream .flow methodology such as the Instream Flow Incremental Methodology (IFIM).

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It is the policy of the DCNR to advocate for the protection ofthe Instream Flow requirements in all water allocation decisions."

The USACE's operations does not require approval of the Federal Energy Regulatory Commission. However, the responsibility of the USACE's water control operations must include a flow regime that maintains ecological integrity in order to protect the physical, chemical, and biological functions from waters flowing into the State of Alabama and through the Mobile Delta.

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Response

The USACE, as a federal agency, does not have an obligation to follow state instream flow policies. Peaking hydropower projects are not intended to mimic natural flow regimes. The USACE meets its authorized project purposes for hydropower generation, flood risk management, recreation, fish and wildlife conservation, etc., through controlled releases from reservoirs constructed to achieve those purposes. The USACE does not use the 7Q10 value as a flow target. At Allatoona Lake, the proposed minimum flow would be 240 cfs. The flow at Carters Lake would be based on variable monthly minimum discharges and most often would exceed the 7Q10 value. USACE projects on the Alabama River are "run-of-river" and depend almost entirely on upstream releases from APC projects. The USFWS Fish and Wildlife Coordination Act Report and the USACE response of February 8, 2013 provide additional discussion of natural flows and how the USACE manages water releases to balance all project purposes.

The surface area of USACE reservoirs, including backwater areas would not be affected by the proposed operation. Operations for lake levels to support fish spawning would continue. The issue of sediment deposition as a result of project operations has been addressed in other locations. For example see the response to comment on page B-709. The comment regarding small boat access channel maintenance is outside the scope of the ACT WCM update process.

Comment ID 0047.002

Author Name: Guy, Jr., N. Gunter

Organization: ALABAMA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

Comment

• The proposed action alternative (Plan G) allows for higher average lake levels at Allatoona Lake by implementing a fall stepped down guide curve. The implementation of the new guide appears to be mainly for the purposes of increasing recreational access at the lake to the detriment of recreational access at Weiss Lake and possibly other public water in the ACT. Therefore, ADCNR is concerned that there will be recreational impacts in Alabama due to the increased storage at Allatoona Lake during fall and winter months. It appears that Alabama recreational opportunities were not given equal consideration. We request the USACE evaluate the impacts to recreation at Weiss Lake and other downstream bodies of water, particularly during drought scenarios where recreational access may be severely limited.

Response

Impacts to recreation throughout the ACT Basin were considered as a part of the WCM update process. The Proposed Action Alternative (Plan G) also indicates improvements over the No Action Alternative in lake levels at the APC projects mainly due to the implementation of the drought management plan. Reference Figures 6.1-8, 6.1-9 and 6.1-10 in the draft EIS.

Comment ID 0047.003

Author Name: Guy, Jr., N. Gunter

Organization: ALABAMA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

Comment

• Alabama sturgeon, Scaphirhynchus suttkusi, has been impacted by the loss and fragmentation of habitat as a result of project operations (dam construction, flow alteration/regulation, and channel maintenance). The only capture of Alabama sturgeon in the past decade in the Claiborne Lock and Dam tailrace underscores the fact that project operations are contributing to the extinction of this species. Riverine flow regimes that mimic flows prior to USACE's construction of lock and dams on the Alabama River can certainly be used to set flow standards that are protective of Alabama sturgeon's life history needs. Connectivity to riverine habitats above Claiborne Lock and Dam would also assist in meeting Alabama sturgeon life history needs. See the following comments.

• A fish passage plan for all USACE locks and dams in the ACT should be developed. We recognize the USACE's effort to continue seasonal operations of locks for fish passage at Claiborne Lock and Dam and at Millers Ferry Lock and Dam. However, fish passage lockages should be conducted at R.F. Henry Lock and Dam. While this method of fish passage has had success, it does not appear to be successful for all riverine species that need to move. Additional types of fish passage strategies should be evaluated for their application as part of a fish passage plan for the Alabama River.

Response

USACE has worked closely with the USFWS, ADCNR, and others since the 1990s on studies and operational considerations related to protection of the Alabama sturgeon. On July 8, 2013, the USFWS published a recovery plan for the Alabama sturgeon. The overall strategy for the recovery program is "to prevent possible extinction of the Alabama sturgeon by increasing numbers of the species through hatchery propagation and augmentation, protecting existing riverine habitat, and enhancing riverine flows at Claiborne and Millers Ferry (Locks and Dams) during the time periods most sensitive for spawning and larval drift." The plan contains numerous tasks to meet the recovery objectives. One of the recovery tasks specified in the plan is "to identify opportunities to enhance fish passage at Claiborne and Millers Ferry Locks and Dams by manipulating flows and modifying lock operations." On June 2, 2009, the USFWS listed Critical Habitat for the sturgeon stating that a Primary Constituent Element included a flow regime that maintains all life stages of the species. However, they did not provide specific flow parameters that would meet the requirement.

Mobile District currently conducts fish passage operations at Claiborne Lock and Dam and Millers Ferry Lock and Dam, and in cooperation with other stakeholders concentrates its efforts at those two facilities. USACE will continue to work with partners and stakeholders throughout the basin to improve fish passage within the limitations of existing infrastructure and authorized project purposes. Fish passage operations were addressed in the Biological Assessment for the proposed WCM update prepared by the District, which determined that the proposed action may affect, but is not likely to adversely affect, the Alabama sturgeon. USFWS concurred with the USACE determination by letter dated March 20, 2014.

Comment ID 0047.004

Author Name: Guy, Jr., N. Gunter

Organization: ALABAMA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

Comment

• The DEIS incorrectly states that small mouth bass occur in USACE reservoirs located in Alabama. Black bass species that are known to occur in these reservoirs are largemouth bass, Micropterus salmoides, and Alabama bass, Micropterus henshalli.

• Page 2-219. Table 2.511. The Alabama pearlshell, Margaritifera marrianae, is a stateprotected species and should be documented as such in this table.

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Response

The requested revisions have been made.

From: Cristal Sailors
To: ACT-WCM
Cc: [redacted].
Subject: Comments of the State of Georgia, Draft EIS Update Water Control Manual
Date: Friday, May 31, 2013 4:49:41 PM
Attachments: 20130531153655.pdf

Please see the attached.

Thanks,

Cristal Sailors
GA EPD, Director's Office
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May 31, 2013

BY ELECTRONIC MAIL AND U.S. MAIL

Colonel Steven J. Roemhildt, Commander
U.S. Army Corps of Engineers, Mobile District
Attn: PD-EI (ACT-DEIS)
P.O. Box 2288
Mobile, AL 36628

Re: Draft Environmental Impact Statement for Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa River Basin Environmental Impact Statement
Comments of the State of Georgia

Dear Colonel Roemhildt:

In response to the Federal Register Notice of March 8, 2013 (78 Fed. Reg. 15,007), the State of Georgia submits the following comments regarding the U.S. Army Corps of Engineers' ("Corps") Draft Environmental Impact Statement ("DEIS") on the potential environmental impacts associated with the Corps' update of the water control manual ("WCM") for the Alabama-Coosa-Tallapoosa ("ACT") River Basin.

I. Introduction

As noted in the State of Georgia's October 20, 2008 comments regarding the Scoping Process for the ACT WCM, Georgia has a significant interest in the Corps' management of water resources within the ACT Basin. The headwaters of both the Coosa River Basin and the Tallapoosa River Basin are within the State. In addition, the Corps' two primary storage reservoirs in the ACT River Basin—Lake Allatoona and Carters Lake—are located in Georgia. Georgia relies upon both reservoirs for municipal and industrial water supply, recreation, support of water quality, and fish and wildlife habitat. More than 915,000 Georgians rely upon water supply withdrawals from Lake Allatoona alone. Several Georgia communities also rely on the Tallapoosa River and its tributaries to meet municipal and industrial water supply needs.

The State of Georgia submits these comments regarding deficiencies in the DEIS and WCM. The DEIS fails to assess current or future water supply demand and usage. The DEIS also fails to consider changes that Alabama Power Company ("APC") has proposed to flood control operations at APC's projects in the ACT Basin. These issues, as well as other concerns, are discussed in greater detail below.

II. Regulatory Requirements for Environmental Impact Statement and Water Control Manual

The National Environmental Policy Act ("NEPA") requires federal agencies to develop an Environmental Impact Statement ("EIS") before undertaking any major federal action "significantly affecting the quality of the human environment." 42 U.S.C. § 4332. Council on Environmental Quality ("CEQ") regulations establish parameters for analysis to be undertaken in an EIS.

The purpose of an EIS is to the "provide full and fair discussion of significant environmental impacts" and "inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1. To comply with NEPA, an agency must "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves conflicts concerning alternative uses of available resources." 40 C.F.R. § 1501.2(c). Proposals that are related to each other should be evaluated as part of a single EIS. 40 C.F.R. § 1502.4. The EIS is to be used to evaluate potential actions before a decision is made, not to justify a decision that an agency has already made. 40 C.F.R. § 1502.5. The Corps must integrate its NEPA evaluation into its decision-making process at the earliest possible time. 40 C.F.R. § 1501.2.

The heart of any EIS is the consideration and analysis of alternatives. 40 C.F.R. § 1502.14. The EIS must rigorously "explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14(a). One such alternative that the agency must consider is the no action alternative. 40 C.F.R. § 1502.14(d). The no action alternative is the alternative that represents the *de facto* status quo with regard to agency action. *See Center for Biological Diversity v. United States Dept. of Interior*, 623 F.3d 633, 642 (9th Cir. 2010) ("A no action alternative in an EIS allows policymakers and the public to compare the environmental consequences of the status quo to the consequences of the proposed action."); *Custer County Action Ass'n v. Garvey,* 356 F.3d 1024, 1040 (10th Cir. 2001) (finding that the no action alternative must represent the "known impacts of maintaining the status quo," even if the agency's current actions might exceed its authority); Council on Environmental Quality, *Memorandum to Agencies Containing Answers to 40 Most Asked Questions on NEPA Regulations*, 46 Fed. Reg. 18,026, 18,027 (March 17, 1981) ("the regulations require the analysis of the no action alternative even if the agency is under a court order or legislative command to act. This analysis provides a benchmark, enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives."). The agency also must consider reasonable alternatives, including those that are outside its jurisdiction. 40 C.F.R. § 1502.14(c).

The Corps must consider the cumulative impact of the no action alternative and other reasonable alternatives. "Cumulative impact" is defined to include the effects not only of the agency's actions but the actions of third parties that will result from the agency's actions or failure to act:

> Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless

> of what agency (Federal or non-Federal) or person undertakes such other actions.

40 C.F.R. § 1508.7.

Environmental consequences are the "scientific and analytic basis for consideration of alternatives." 40 C.F.R. § 1502.16. Consequences to be considered include direct and indirect effects, and possible conflicts with state plans and polices. 40 C.F.R. § 1502.16(c). Effects to be considered include economic, ecological, aesthetic, historic, cultural, social, and health, whether direct, indirect, or cumulative. 40 C.F.R. § 1508.8. When economic and sociological effects are interrelated with environmental effects, then all of these effects on the human environment are to be studied. 40 C.F.R. § 1508.14.

III. The Corps' Analysis of Current Water Supply Needs and Water Supply Alternatives

Nearly a million residents of the State of Georgia rely upon withdrawals from Lake Allatoona to meet a wide range of municipal and industrial water supply needs. The State of Georgia expects these needs to increase in the foreseeable future as the State's population, particularly in the Atlanta metro area, continues to grow.

To address Georgia's future water supply needs, on January 29, 2013, Georgia Governor Nathan Deal submitted to the Assistant Secretary of the Army for Civil Works a formal request that the Corps manage the resources of Lake Allatoona to meet the projected water supply needs for water stored in Lake Allatoona (the "Allatoona Water Supply Request"). Governor Deal requested that the Corps (1) allow gross municipal and industrial water withdrawals from Lake Allatoona to increase to between 123.9 and 147.9 million gallons per day (MGD) annual average to meet 2040 demands; (2) allow the Cobb County-Marietta Water Authority ("CCMWA") to withdraw from its existing intake in Lake Allatoona water that is released from the Hickory Log Creek Reservoir specifically for CCMWA, without requiring CCMWA to acquire additional storage space for such withdrawals; (3) in determining the amount of water that may be withdrawn without exhausting the storage that a water supply user has purchased, credit to that user exclusively all returns of treated wastewater that the Georgia EPD has permitted and allocated to that user for withdrawal; and (4) enter into contracts that document the parties' understanding as to how the Corps will operate in support of Georgia's water supply needs.

On April 29, 2013, the Assistant Secretary issued a response to Governor Deal's request. The Assistant Secretary's letter states that the Allatoona Water Supply Request "will require additional evaluation," and that "the Corps is unable at this time to make a final decision on any of the aforementioned requests." The letter also says that "the Corps is not in a position to take final action on any of those issues prior to the completion of the updated ACT water control manual in fall 2103."

The letter states, therefore, that the "water control manual update only addresses the operational aspects of the federal reservoirs and the Alabama Power Company reservoirs that are incorporated for flood control and navigation into the federal system, taking into account congressional authorizations, current law, and current conditions affecting the system operations." It also says that the Corps is reviewing its policy for crediting of return flows and other storage accounting issues that Georgia has raised, that the WCM update "will not foreclose resolution or dictate the outcome" of Georgia's Allatoona Water Supply Request, and that the Corps intends to further revise the WCM as necessary after making a decision on the Water Supply Request.

The Assistant Secretary's letter appears to have helped clarify the Corps' intent in developing the WCM. That is, it appears to be the position of the Corps that it has not made a determination whether to credit return flows exclusively to CCMWA or other water supply users as directed under an allocation by the State of Georgia, whether to credit exclusively to CCMWA releases of stored water from Hickory Log Creek Reservoir, or how to address other storage accounting issues that the State of Georgia and CCMWA have raised. Therefore, the Corps has not made a final determination on how much water the storage space of CCMWA and Cartersville will produce at any given time, or whether CCMWA and Cartersville need additional storage to accommodate their current levels of water use. The Corps will need to make those findings before it can determine the amount of additional storage that may be needed to accommodate future water supply demands and decide whether to allocate such storage to water supply.

Assuming the WCM is not intended as a decision as to water supply, and therefore is intended only to continue the status quo with regard to Corps action pending a separate determination on water supply, the Corps should clarify that and should revise the DEIS to study that scenario. Contrary to what it suggests, the DEIS does not consider the "current conditions affecting system operations" at Lake Allatoona. The DEIS states that "[y]ear 2006 represented the greatest annual amount" of water use in the basin through the 1939-2008 simulation period and that, therefore, the "2006 net withdrawals are modeled as diversions." DEIS Appendix C, p. 31. The DEIS does not, however, use 2006 withdrawals, or any other figure that roughly approximates current levels of water supply use, at Lake Allatoona. Instead, the Corps assumes that water supply withdrawals from Lake Allatoona will be 34.5 MGD for CCMWA and 16.76 MGD for the City of Cartersville for each and every month of the year. These numbers are not accurate approximations of current water use in at least two ways: they are considerably less than current levels of withdrawal; and, in reality, withdrawals vary by month and season.[1] In 2006, for example, CCMWA's gross withdrawals from Lake Allatoona varied from 33.5 MGD in January to 62.9 MGD in June, and the annual average withdrawal was well above 34.5 MGD. CCMWA's gross withdrawals on an annual basis have been reduced since 2006 but remain well above 34.5 MGD

[1] In addition, although the DEIS notes a number of potential water projects within the ACT Basin, the DEIS fails to address the Hickory Log Creek Reservoir or include the reservoir's operations in modeling flows in the Basin. The Corps' failure to model operations related to the Hickory Log Creek Reservoir is another example of the DEIS's failure to address current conditions.

nearly every month. CCMWA's net withdrawals, by contrast, have been below 34.5 MGD in nearly every month.

The HEC-ResSim model that the Corps uses to evaluate impacts in the DEIS fails to accurately account not only for actual withdrawals from the Allatoona reach, it also fails to account for return flows of treated wastewater discharged directly into Lake Allatoona or indirectly back to the Lake via upstream tributaries. These return flows result in a discharge to the ACT Basin system of more than 20 MGD on an annual average basis. In addition, as is the case for system withdrawals, these return flows are seasonally variable. Because returns are a part of current operations at Lake Allatoona, the Corps should adjust its model to reflect this reality.

The Corps does not offer a rational basis for choosing the amounts it has assumed for current water supply withdrawals from Lake Allatoona. It appears that the amounts the Corps has assigned for water withdrawal correspond to an estimate of the critical yield from CCMWA's and Cartersville's storage space. This is inappropriate for multiple reasons. For one, even if the amounts of water that the storage accounts will produce were an appropriate estimation of current water use, the Corps has not properly calculated those withdrawal amounts. As the Corps is well aware, the amount of water that CCMWA's and Cartersville's storage accounts will produce at any given time is variable, and depends on, among other things, the amount of water entering the reservoir at any given time and storage accounting methodology. If numbers that the Corps has chosen approximate the water withdrawals available from CCMWA's and Cartersville's storage space in the critical period, they significantly underestimate the amount of water that CCMWA's and Cartersville's storage space will produce at other times.[2]

In addition, and more broadly, to the extent that the Corps intends the WCM to maintain the status quo pending a decision on the Allatoona Water Supply Request, the DEIS should utilize the best information for current withdrawals. Why the Corps may have chosen contracted-for storage levels (incorrectly calculated, as noted above) as a proxy for current water use is not clear. Some indication of the Corps' rationale may be contained in the Corps' response to a comment made during the scoping process. Comment BC6 states, "The baseline should be based on the amount of storage currently under contract and should assume that the contract amounts establish limits or caps on the amount of water that can be withdrawn for water supply purposes." DEIS p. 1-42, lines 11-13. Comment BC7 states, "The baseline should not assume that the current practice of allowing water withdrawals in excess of contract amounts by the CCMWA will be continued in the future." DEIS p. 1-42, lines 15-16. The Corps responds to both comments by stating, "The Corps agrees." DEIS p. 1-42. lines 14, 17.

[2] On a related issue, as Georgia and CCMWA have previously suggested in comments to the Corps, the Corps, in its storage accounting should credit return flows exclusively to the storage account of water users to whom Georgia has allocated those return flows.

Not only are Comments BC6 and BC7 incorrect to the extent that they imply that CCMWA or Cartersville has overdrawn its storage account—that determination has not been made, as noted above—they also reflect a misunderstanding of the Corps' obligations under NEPA. An EIS must include an analysis of the no action alternative. The no action alternative represents the effect of the agency continuing to act, or not act, as it has been doing. Therefore, to analyze the no action alternative, the Corps must consider the effect of continuing to allow the current level of water supply withdrawals as they have occurred at Lake Allatoona, even if the Corps were to determine that current withdrawals exceed contracted-for amounts, and even if the Corps were required by law to restrict withdrawing parties to their contracted-for amounts (which it is not). *See supra* p. 3. By not assuming current levels of withdrawal, the DEIS does not include the correct no action alternative and therefore is fatally flawed.

If it desires to consider a reduction in water supply withdrawals to 34.5 MGD for CCMWA and 16.76 MGD for Cartersville as an action alternative, which Georgia submits is not a reasonable alternative, and therefore not worthy of consideration, the Corps at least would have to analyze the effects of this reduction. The cumulative effects of a reduction in water withdrawals from Lake Allatoona to those levels would include short-to-long-term water shortages, and the need for the State or other third parties to develop alternative supplies (dams and reservoirs in the ACT Basin, interbasin transfers from outside the basin, etc.). The DEIS does not address the environmental, human health, or economic effects of water shortages and new water resource projects in its cumulative effects analysis.

The Corps also fails to consider increased water supply withdrawals from Lake Allatoona as an action alternative. The Corps suggests that it has chosen this approach because Georgia's Allatoona Water Supply Request is under consideration and apparently will be addressed in a separate decision, ostensibly with another EIS.[3] Georgia will not prejudge that process, but Georgia points out that its future water supply need is reasonably foreseeable; therefore, the current EIS should at least consider it as an alternative, even if the Corps is not yet prepared to make such an increase the proposed action. In addition, because the Corps is authorized by the Water Supply Act of 1958 to allocate additional storage to water supply, water supply is a fully authorized purpose of Lake Allatoona. Without considering future levels of supply, the EIS has not rigorously explored and objectively evaluated all reasonable alternatives, contrary to 40 C.F.R. § 1502.14(a). Nor will the Corps have incorporated the NEPA evaluation into its decision-making process at the earliest

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[3] The Corps also states, with regard to reallocation for water supply, that the Corps desires to remain neutral, and "no conceivable proposal exists that both states would support." DEIS p. 1-7, lines 24-25. While Georgia agrees that the Corps should remain neutral in the dispute between the States, taking no action ultimately with regard to reallocation would not be "neutral." The neutral and appropriate course is instead for the Corps to consider any request or need for reallocation on the merits, in accordance with applicable regulations.

possible time, contrary to 40 C.F.R. § 1501.2, or combined related actions in a single EIS, contrary to 40 C.F.R. § 1502.4.

IV. The DEIS Does Not Assess Alabama Power Company's Proposed Operations

The DEIS does not analyze the effects of rule curve changes that APC has proposed in the ongoing Federal Energy Regulatory Commission ("FERC") relicensing process for the Coosa River Project. In addition, the DEIS does not analyze changes that APC has proposed in the FERC relicensing process for the Lake Martin Project.

For Lake Weiss, APC proposes to raise the winter guide curve by 3 feet from elevation 558 feet to 561 feet from December 1 through March 1. There would be a constant rise in the lake elevation until reaching the normal elevation of 564 feet on May 1. The summer guide curve would be extended from August 31 to September 30. *See* DEIS p. 2-36, lines 3-11. For Logan Martin Lake, APC has proposed to raise the winter pool by 2 feet, from the existing winter elevation of 460 feet to 462 feet. From January 1 to April 14, the pool would be at 462 feet. Beginning on April 15, lake levels would gradually increase to the normal summer pool elevation of 465 feet. On October 1, the water elevation would begin to fall to the winter pool elevation of 462 feet by January 1. *See* DEIS p. 2-39, lines 29-33.

Despite acknowledging that both proposals "could have some adverse effects on the flood risk management function" on the respective projects and stating that the "Corps has not concurred with the APC proposal to FERC," the Corps elected not to consider these adverse effects as part of the DEIS. DEIS p. 2-36, lines 7-11; p. 2-39, lines 33-38. Instead, the DEIS states that before "implementing the proposed increase in the winter pool elevation, additional analysis (and NEPA documentation) would be required to allow revisions to the ACT manual beyond those considered in this EIS." *Id.*

The Corps' failure to consider APC's proposed rule curve changes violates the Corps' obligation to consider cumulative impacts under NEPA. In a response to a comment that the "Corps should conduct an analysis of cumulative effects of FERC relicensing process of eight APC dams in the ACT Basin," the Corps responds that the "environmental effects of the operations of the APC projects under the proposed FERC license are documented in Final Environmental Assessment (EA) for Hydropower License Coosa River Hydroelectric Project-FERC Project No. 2146-111 Alabama and Georgia, December 2009." ("FERC Coosa EA"). DEIS p. 1-38, lines 8-13.

The FERC Coosa EA does not, however, relieve the Corps of its obligations under NEPA regarding the ACT WCM. The proposed rule curve changes are "reasonably foreseeable future actions" that the Corps must consider as part of the NEPA process. The DEIS itself acknowledges that "additional analysis (and NEPA documentation) would be required" for the proposed rule curve changes. This statement is inconsistent with the Corps' position that the FERC Coosa EA has already addressed any potential environmental concerns regarding APC's operations. In addition, the analysis in the FERC Coosa EA is insufficient to meet the requirements of the EIS that the Corps is to develop for the ACT WCM. Finally, neither the FERC Coosa EA nor the DEIS address APC's proposed changes for the Lake Martin Project. Therefore, the Final EIS for the ACT WCM must adequately consider the cumulative effects of the proposed changes to the APC projects in the ACT Basin.

V. General and Technical Comments

There are a number of other issues related to the DEIS, the Master ACT WCM and the individual project WCMs that the Corps must address prior to issuing the final documents:

A. General Comments

1. Clarity of Peaking Power Generation Requirements

Although the State of Georgia understands and appreciates the need for flexibility in the Corps' hydropower operations, the Corps' decisions as to how it plans to operate at Lake Allatoona in the proposed Zone 3 and during the winter drawdown period should be clarified so as to prevent confusion in the future. For Zone 3, the Corps' WCM for Allatoona provides that peaking power generation will be limited to between 0 and 2 hours per day when the Lake is in Zone 3. The Corps' HEC-ResSim model, however, provides that peaking power will be scheduled at 2 hours in the top 20% storage of Zone 3, 1 hour for the next 70% of Zone 3, and 0 hours when the Lake is in the lowest 10% of Zone 3. While Georgia does not wish to limit the Corps' flexibility in operations, when modeling the impact of the proposed operations on Lake Allatoona, the Corps may need to provide a range of possible outcomes.

2. Apparent Errors in Low Basin Inflow Guide

The values presented for the Low Basin Inflow Guide used in the Drought Contingency Plan in various locations, including Table 4.2-4 in the DEIS, Table 8 in the ACT Master WCM, and Table 7-7 in the Allatoona WCM do not appear to be accurate. Because the amount of storage at the turn of the year is the same, the positive and negative filling volume in the fall should aggregate to zero. That is not the case for the current numbers in the Corps documents.

Georgia EPD has independently calculated the storage change and believe the numbers to be as follows:

Month	**Coosa Filling Volume**	**Tallapoosa Filling Volume**	**Total Filling Volume**	**7Q10 Flow**	**Required Basin Inflow**
January	514	0	514	4640	5154
February	587	1800	2387	4640	7027

March	655	2955	3610	4640	8250
April	1734	2311	4045	4640	8685
May	316	46	361	4640	5001
June	0	0	0	4640	4640
July	0	0	0	4640	4640
August	0	0	0	4640	4640
September	-691	-918	-1608	4640	3032
October	-1396	-2103	-3499	4640	1141
November	-912	-2748	-3660	4640	980
December	-746	-1212	-1958	4640	2682

B. Draft Environmental Impact Statement (DEIS)

1. Page ES-28, Figure ES-6 and Lines 8-9 – Figure ES-6 states that hydropower generation is to be reduced in the months of September through November. Lines 8-9 state that "hydropower generation would be reduced during annual drawdown in the fall (September through October)." The Corps should correct this discrepancy.

2. Page 2-15, Line 17 – The word "that" after "being met less" should be changed to "than."

3. Page 2-21, Table 2.1-5, Figure 2.1-12 – Table 2.1-5 indicates that the conservation storage for Lake Martin is 49.3% of the total conservation storage in the ACT Basin. Figure 2.1-12 indicates that the conservation storage for Lake Martin is 48.7%. The Corps should correct this discrepancy.

4. Page 3-8, Line 26 – The DEIS incorrectly states that CCMWA's current contract for storage in Lake Allatoona expires in 2013. As the Corps is aware, CCMWA's storage contract provides that it expires (though CCMWA's entitlement to storage does not) 50 years after each particular storage space is placed into operation. Although CCMWA and the Corps entered into a storage contract for storage at Lake Allaoona in 1963, CCMWA did not begin using any of that storage until 1966. Therefore, CCMWA's storage contract does not expire until at least 2016. The Corps should make this correction in the Final EIS.

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5. Pages 3-10 to 3-11 – The DEIS provides a discussion of the litigation history for the ACT and ACF River Basins. This discussion ends with negotiations between the states and the decision to update the ACT WCM in 2007. The Corps should update Section 3.1.10 of the EIS to indicate that all of Alabama's claims have been dismissed.

6. Page 4-3, Line 19 – "WMC" should be changed to "WCM."

7. Page 4-7, Figure 4.2-1 – Figure 4.2-1 is not consistent with Table 4.2-1 on page 4-8.

8. Page 5-5, Figure 5.1-3 – The drought curve in Figure 5.1-3 is different from the drought curve used in the HEC-ResSim model.

C. ACT Master Water Control Manual

1. Page 1-3, Table 1-1 – The conservation storage values listed in Table 1-1 for many of the reservoir projects in the ACT Basin are inconsistent with the conservation storage values used in the HEC-ResSim model. The following table provides a comparison:

Project	Conservation storage listed in manual (acre-feet)	Conservation storage in HEC-ResSim model (acre-feet)
Carters	141,402	141,402
Allatoona	284,580	284,589
Weiss	237,448	261,025
H. Neely Henry	43,205	118,300
Logan Martin	108,262	141,876
Lay	77,478	92,348
Mitchell	28,048	48,821
Jordan	15,969	16,965
Harris	191,129	207,318

Martin	1,183,356	1,202,291
Yates	5,976	6,918

2. Page 7-11, Figure 7-3 – The project curves in Figure 7-3 are not consistent with the values in Table 7-1 on page 7-12.

3. Page 7-14, Table 7-3 – The values in Table 7-3 are not consistent with the numbers shown in Figure 7-5. The values for December appear to be incorrect.

4. Page E-C-28, Table 9 – To allow for independent verification by Basin stakeholders, the Corps should specify the methodology or technical tool used to calculate the 7Q10 flows at the Georgia/Alabama line.

5. Pages E-C-30 and E-C-31 – The contents of Figures 14 and 15 appear to be incorrect.

D. Allatoona Water Control Manual

1. Page 7-3, Table 7-2; Page 7-11, Line 36 – Table 7-2 provides a list of "typical" peaking generation hours. Other portions of the Manual, including page 7-11, line 36, refer to these same hours as "minimum" generation hours. The Manual should consistently indicate that the generation hours are "typical" but do not represent minimum required hours.

2. Pages 7-11 to 7-12, Line 27 – The Hydroelectric Power section (7-10) makes no reference to a reduction in peaking power generation during the transition to winter draw down (September through November) even though the DEIS and the HEC-ResSim model both anticipate reduced hydropower generation during that period. The Corps should modify both the Master and Allatoona WCMs to account for reduced hydropower generation during the winter draw down period.

3. Page 7-15, Lines 35-45 – The Allatoona WCM does not clearly define "Basin Inflow" for drought operations. As written, the term could be confused with the "Navigation Basin Inflow." Basin Inflow should be defined as all of the water entering Alabama Power's reservoirs downstream of Lake Weiss and the local incremental flow entering Lake Weiss that originates from the drainage area of Weiss downstream of both Lake Allatoona and the Carters Re-Regulation Dam.

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4. Plate 2-5 – The elevation-storage values for Lake Allatoona shown in Plate 2-5 differ from those used in the HEC-ResSim model. The following table compares the elevation-storage values:

Pool Elevation (ft)	Total Storage in Manual (acre-feet)	Total Storage in Model (acre-feet)
780	37,861	37,851
800	82,891	82,884
802	89,655	89,647
806	104,887	104,879
808	113,451	113,447
810	122,711	122,709
812	132,715	132,705
814	143,511	143,514
816	155,135	155,137
818	167,619	167,612
820	180,993	181,000
822	195,279	195,280
824	210,493	210,492
826	226,651	226,656
828	243,769	243,772
830	261,863	261,860
832	280,994	280,940
834	301,040	301,031
836	322,145	322,154

838	344,281	344,288
840	367,471	367,473
842	391,741	391,749
844	417,136	417,136
846	443,718	443,713
848	471,558	471,559
850	500,731	500,734
852	531,323	531,317
854	563,431	563,427
856	597,165	597,164
858	632,553	632,646
860	670,047	670,052
870	804,000	804,006

E. H.N. Henry Water Control Manual

1. Page 7-9, Line 1, Table 7-4 – The values in Table 7-4 for the month of December appear to be incorrect because the values are the same as for the month of January.

2. Page 8-1, Lines 24-29 – The Corps uses the temporary winter rule curve elevation of 507 feet for the water resources analysis but uses an elevation of 505 feet for the flood risk analysis. The Corps should use the same elevation for both analyses.

3. Page 2-3, Line 27 – The WCM references Plate 2-13, which is not incorporated in the document.

4. Plate 7-1 – The WCM contains two plates that are both titled Plate 7-1. One plate uses the temporary rule curve of 507 to 508 feet. The other plate uses the existing curve of 505 to 508 feet. It is confusing to have two sets of rule curves under the same plate title. In addition, it is not clear which plate the Corps uses for its evaluation.

5. Pages E-F-20 and E-F-30 – The values in Figures 14 and 15 appear to be different from the values used in the HEC-ResSim model.

F. Millers Ferry Water Control Manual

1. Page 2-3, Table 2-1 – Table 2-1 lists the total storage at elevation 71 feet as 214,950 acre-feet. The HEC-ResSim model uses the value of 214,650 acre-feet.

G. Carters Water Control Manual

1. Plate 7-2 – The storage numbers shown in Plate 7-2 differ from the values used in the HEC-ResSim model as follows:

Pool Elevation (ft)	Total Storage in Manual (acre-feet)	Total Storage in Model (acre-feet)
850	40,500	40,000
900	71,000	70,000
1000	195,000	200,000

H. Harris Water Control Manual

1. Plate 2-2 – Plate 2-2 is for the Neely Henry project, not the Harris project.

2. Plate 2-20 – The storage numbers shown in Plate 2-20 differ from the values used in the HEC-ResSim model as follows:

Pool Elevation (ft)	Total Storage in Manual (acre-feet)	Total Storage in Model (acre-feet)
767	211,812	212,036
768	218,025	218,403
769	224,373	224,770
770	230,858	231,276

771	237,485	237,901
772	244,254	244,685
773	251,171	251,607
774	258,234	258,688
775	265,449	265,928
776	272,818	273,306
777	280,344	280,844
778	288,031	288,540
779	295,881	296,394
780	303,898	304,436
781	321,086	312,637
782	320,445	321,012
783	328,982	329,564
784	337,701	338,298
785	346,603	347,216
786	355,695	356,324
787	364,979	365,625
788	374,459	375,122
789	384,141	384,821
790	394,028	394,724
791	404,126	404,840
792	414,438	415,170

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793	424,969	425,721
794	435,725	436,495
795	446,711	447,501
796	457,932	458,742

3. Page E-D-28 – The storage values shown in Table 14 and 15 appear to be incorrect.

VI. Conclusion

Please give the foregoing comments careful consideration in making necessary revisions to the WCM and the EIS for the ACT WCM. Please contact me if you have any questions or if I can be a resource for additional information that would assist you in this process.

Respectfully Submitted,

Judson H. Turner

Judson H. Turner
Director
Georgia Environmental Protection Division

Comment ID 0061

Comment ID 0061.001

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

In response to the Federal Register Notice of March 8, 2013 (78 Fed. Reg. 15,007), the State of Georgia submits the following comments regarding the U.S. Army Corps of Engineers' ("Corps") Draft Environmental Impact Statement ("DEIS") on the potential environmental impacts associated with'the Corps' update of the water control manual ("WCM") for the Alabama-Coosa-Tallapoosa ("ACT") River Basin.

I. Introduction

As noted in the State of Georgia's October 20, 2008 comments regarding the Scoping Process for the ACT WCM, Georgia has a significant interest in the Corps' management of water resources within the ACT Basin. The headwaters of both the Coosa River Basin and the Tallapoosa River Basin are within the State. In addition, the Corps' two primary storage reservoirs in the ACT River Basin-Lake Allatoona and Carters Lake-are located in Georgia. Georgia relies upon both reservoirs for municipal and industrial water supply, recreation, support of water quality, and fish and wildlife habitat. More than 915,000 Georgians rely upon water supply withdrawals from Lake Allatoona alone. Several Georgia communities also rely on the Tallapoosa River and its tributaries to meet municipal and industrial water supply needs.

The State of Georgia submits these comments regarding deficiencies in the DEIS and WCM. The DEIS fails to assess current or future water supply demand and usage. The DEIS also fails to consider changes that Alabama Power Company (" APC") has proposed to flood control operations at APC's projects in the ACT Basin. These issues, as well as other concerns, are discussed in greater detail below.

Response

Please see responses to comments 0061.002 through 0061.0012, below.

Comment ID 0061.002

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

II. Regulatory Requirements for Environmental Impact Statement and Water Control Manual

The National Environmental Policy Act ("NEPA") requires federal agencies to develop an Environmental Impact Statement ("EIS") before undertaking any major federal action "significantly affecting the quality of the human environment." 42 U.S.C. § 4332. Council on Environmental Quality ("CEQ") regulations establish parameters for analysis to be undertaken in an EIS.

The purpose of an EIS is to the "provide full and fair discussion of significant environmental impacts" and "inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality ofthe human environment." 40 C.F .R. § 1502.1. To comply with NEPA, an agency must "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves conflicts concerning alternative uses of available resources." 40 C.F.R. § 1501.2(c). Proposals that are related to each other should be evaluated as part of a single EIS. 40 C.F.R. § 1502.4. The EIS is to be used to evaluate potential actions before a decision is made, not to justify a decision that an agency has already made. 40 C.F.R. § 1502.5. The Corps must integrate its NEPA evaluation into its decisionmaking process at the earliest possible time. 40 C.F.R. § 1501.2.

The heart of any EIS is the consideration and analysis of alternatives. 40 C.F.R. § 1502.14. The EIS must rigorously "explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14(a). One such alternative that the agency must consider is the no action alternative. 40 C.F.R. § 1502.14(d). The no action alternative is the alternative that represents the de facto status quo with regard to agency action. See Center for Biological Diversity v. United States Dept. of Interior, 623 F.3d 633, 642 (9th Cir. 201 0) ("A no action alternative in an EIS allows policymakers and the public to compare the environmental consequences ofthe status quo to the consequences of the proposed action."); Custer County Action Ass'n v. Garvey, 356 F.3d 1024, 1040 (lOth Cir. 2001) (finding that the no action alternative must represent the "known impacts of maintaining the status quo," even if the agency's current actions might exceed its authority); Council on Environmental Quality, Memorandum to Agencies Containing Answers to 40 Most Asked Questions on NEPA Regulations, 46 Fed. Reg. 18,026, 18,027 (March 17, 1981) ("the regulations require the analysis of the no action alternative even if the agency is under a court order or legislative command to act. This analysis provides a benchmark, enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives."). The agency also must consider reasonable alternatives, including those that are outside its jurisdiction. 40 C.F.R. § 1502.14(c).

Response

USACE concurs with the commenter's points about the NEPA process. The EIS for the ACT Basin WCM update is fully compliant with NEPA and pertinent implementing regulations.

Comment ID 0061.003

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

The Corps must consider the cumulative impact of the no action alternative and other reasonable alternatives. "Cumulative impact" is defined to include the effects not only of the agency's actions but the actions of third parties that will result from the agency's actions or failure to act:

Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

40 C.F.R. § 1508.7.

Environmental consequences are the "scientific and analytic basis for consideration of alternatives." 40 C.F.R. § 1502.16. Consequences to be considered include direct and indirect effects, and possible conflicts with state plans and polices. 40 C.F.R. § 1502.16(c). Effects to be considered include economic, ecological, aesthetic, historic, cultural, social, and health, whether direct, indirect, or cumulative. 40 C.F.R. § 1508.8. When economic and sociological effects are interrelated with environmental effects, then all of these effects on the human environment are to be studied. 40 C.F.R. § 1508.14.

Response

USACE concurs that cumulative impacts must be addressed in accordance with NEPA and the CEQ and USACE implementing regulations. Cumulative impacts are addressed in Section 6.10 of the EIS. The cumulative impacts analysis has been revised and updated in the final EIS to incorporate additional information obtained during the public review of the draft EIS.

Comment ID 0061.004

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Comment

III. The Corps' Analysis of Current Water Supply Needs and Water Supply Alternatives

Nearly a million residents of the State of Georgia rely upon withdrawals from Lake Allatoona to meet a wide range of municipal and industrial water supply needs. The State of Georgia expects these needs to increase in the foreseeable future as the State's population, particularly in the Atlanta metro area, continues to grow.

To address Georgia's future water supply needs, on January 29, 2013, Georgia Governor Nathan Deal submitted to the Assistant Secretary of the Army for Civil Works a formal request that the Corps manage the resources of Lake Allatoona to meet the projected water supply needs for water stored in Lake Allatoona (the "Allatoona Water Supply Request"). Governor Deal requested that the Corps (1) allow gross municipal and industrial water withdrawals from Lake Allatoona to increase to between 123.9 and 147.9

("CCMWA") to withdraw from its existing intake in Lake Allatoona water that is released from the Hickory Log Creek Reservoir specifically for CCMW A, without requiring CCMW A to acquire additional storage space for such withdrawals; (3) in determining the amount of water that may be withdrawn without exhausting the storage that a water supply user has purchased, credit to that user exclusively all returns of treated wastewater that the Georgia EPD has permitted and allocated to that user for withdrawal; and (4) enter into contracts that document the parties' understanding as to how the Corps will operate in support of Georgia's water supply needs.

On April 29, 2013, the Assistant Secretary issued a response to Governor Deal's request. The Assistant Secretary's letter states that the Allatoona Water Supply Request "will require additional evaluation," and that "the Corps is unable at this time to make a final decision on any of the aforementioned requests." The letter also says that "the Corps is not in a position to take final action on any of those issues prior to the completion of the updated ACT water control manual in fall 2103."

The letter states, therefore, that the "water control manual update only addresses the operational aspects of the federal reservoirs and the Alabama Power Company reservoirs that are incorporated for flood control and navigation into the federal system, taking into account congressional authorizations, current law, and current conditions affecting the system operations." It also says that the Corps is reviewing its policy for crediting of return flows and other storage accounting issues that Georgia has raised, that the WCM update "will not foreclose resolution or dictate the outcome" of Georgia's Allatoona Water Supply Request, and that the Corps intends to further revise the WCM as necessary after making a decision on the Water Supply Request.

The Assistant Secretary's letter appears to have helped clarify the Corps' intent in developing the WCM. That is, it appears to be the position of the Corps that it has not made a determination whether to credit return flows exclusively to CCMWA or other water supply users as directed under an allocation by the State of Georgia, whether to credit exclusively to CCMWA releases of stored water from Hickory Log Creek Reservoir, or how to address other storage accounting issues that the State of Georgia and CCMWA have raised. Therefore, the Corps has not made a final determination on how much water the storage space of CCMWA and Cartersville will produce at any given time, or whether CCMWA and Cartersville need additional storage to accommodate their current levels of water use. The Corps will need to make those findings before it can determine the amount of additional storage that may be needed to accommodate future water supply demands and decide whether to allocate such storage to water supply.

Assuming the WCM is not intended as a decision as to water supply, and therefore is intended only to continue the status quo with regard to Corps action pending a separate determination on water supply, the Corps should clarify that and should revise the DEIS to study that scenario. Contrary to what it suggests, the DEIS does not consider the "current conditions affecting system operations" at Lake Allatoona. The DEIS states that "[y]ear 2006 represented the greatest annual amount" of water use in the basin through the 1939-2008 simulation period and that, therefore, the "2006 net withdrawals are modeled as diversions." DEIS Appendix C, p. 31. The DEIS does not, however, use 2006 withdrawals, or any other figure that roughly approximates current levels of water supply use, at Lake Allatoona. Instead, the Corps assumes that water supply withdrawals from Lake Allatoona will be 34.5 MGD for CCMWA and 16.76 MGD for the City of Cartersville for each and every month of the year. These numbers are not accurate approximations of current water use in at least two ways: they are considerably less than current levels of withdrawal; and, in reality, withdrawals vary by month and season. <Footnote 1> In 2006, for example, CCMWA's gross withdrawals from Lake Allatoona varied from 33.5 MGD in January to 62.9 MGD in June, and the annual average withdrawal was well above 34.5 MGD. CCMWA's gross withdrawals on an annual basis have been reduced since 2006 but remain well above 34.5 MGD nearly every month.

CCMWA's net withdrawals, by contrast, have been below 34.5 MGD in nearly every month.

The HEC-ResSim model that the Corps uses to evaluate impacts in the DEIS fails to accurately account not only for actual withdrawals from the Allatoona reach, it also fails to account for return flows of treated wastewater discharged directly into Lake Allatoona or indirectly back to the Lake via upstream tributaries. These return flows result in a discharge to the ACT Basin system of more than 20 MGD on an annual average basis. In addition, as is the case for system withdrawals, these return flows are seasonally variable. Because returns are a part of current operations at Lake Allatoona, the Corps should adjust its model to reflect this reality.

The Corps does not offer a rational basis for choosing the amounts it has assumed for current water supply withdrawals from Lake Allatoona. It appears that the amounts the Corps has assigned for water withdrawal correspond to an estimate of the critical yield from CCMWA's and Cartersville's storage space. This is inappropriate for multiple reasons. For one, even if the amounts of water that the storage accounts will produce were an appropriate estimation of current water use, the Corps has not properly calculated those withdrawal amounts. As the Corps is well aware, the amount of water that CCMWA's and Cartersville's storage accounts will produce at any given time is variable, and depends on, among other things, the amount of water entering the reservoir at any given time and storage accounting methodology. If numbers that the Corps has chosen approximate the water withdrawals available from CCMWA's and Cartersville's storage space in the critical period, they significantly underestimate the amount of water that CCMWA's and Cartersville's storage space will produce at other times. <Footnote 2>

In addition, and more broadly, to the extent that the Corps intends the WCM to maintain the status quo pending a decision on the Allatoona Water Supply Request, the DEIS should utilize the best information for current withdrawals. Why the Corps may have chosen contracted-for storage levels (incorrectly calculated, as noted above) as a proxy for current water use is not clear. Some indication of the Corps' rationale may be contained in the Corps' response to a comment made during the scoping process. Comment BC6 states, "The baseline should be based on the amount of storage currently under contract and should assume that the contract amounts establish limits or caps on the amount of water that can be withdrawn for water supply purposes." DEIS p. 1-42, lines 11-13. Comment BC7 states, "The baseline should not assume that the current practice of allowing water withdrawals in excess of contract amounts by the CCMWA will be continued in the future." DEIS p. 1-42, lines 15-16. The Corps responds to both comments by stating, "The Corps agrees." DEIS p. 1-42. lines 14, 17.

Not only are Comments BC6 and BC7 incorrect to the extent that they imply that CCMWA or Cartersville has overdrawn its storage account-that determination has not been made, as noted above-they also reflect a misunderstanding of the Corps' obligations under NEPA. An EIS must include an analysis of the no action alternative. The no action alternative represents the effect of the agency continuing to act, or not act, as it has been doing. Therefore, to analyze the no action alternative, the Corps must consider the effect of continuing to allow the current level of water supply withdrawals as they have occurred at Lake Allatoona, even if the Corps were to determine that current withdrawals exceed contracted-for amounts, and even if the Corps were required by law to restrict withdrawing parties to their contracted-for amounts (which it is not). See supra p. 3. By not assuming current levels of withdrawal, the DEIS does not include the correct no action alternative and therefore is fatally flawed.

If it desires to consider a reduction in water supply withdrawals to 34.5 MGD for CCMWA and 16.76 MGD for Cartersville as an action alternative, which Georgia submits is not a reasonable alternative, and therefore not worthy of consideration, the Corps at least would have to analyze the effects of this reduction. The cumulative effects of a reduction in water withdrawals from Lake Allatoona to those levels would include short-to-long-term water shortages, and the need for the State or other third parties to develop alternative supplies (dams and reservoirs in the ACT Basin, interbasin transfers from outside the basin, etc.). The DEIS does not address the environmental, human health, or economic effects of water shortages and new water resource projects in its cumulative effects analysis.

The Corps also fails to consider increased water supply withdrawals from Lake Allatoona as an action alternative. The Corps suggests that it has chosen this approach because Georgia's Allatoona Water Supply Request is under consideration and apparently will be addressed in a separate decision, ostensibly with another EIS. <Footnote 3> Georgia will not prejudge that process, but Georgia points out that its future water supply need is reasonably foreseeable; therefore, the current EIS should at least consider it as an alternative, even if the Corps is not yet prepared to make such an increase the proposed action. In addition, because the Corps is authorized by the Water Supply Act of 1958 to allocate additional storage to water supply, water supply is a fully authorized purpose of Lake Allatoona. Without considering future levels of supply, the EIS has not rigorously explored and objectively evaluated all reasonable alternatives, contrary to 40 C.F.R. § 1502.14(a). Nor will the Corps have incorporated the NEPA evaluation into its decision-making process at the earliest possible time, contrary to 40 C.F.R. § 1501.2, or combined related actions in a single EIS, contrary to 40 C.F.R. § 1502.4.

Footnote 1: In addition, although the DEIS notes a number of potential water projects within the ACT Basin, the DEIS fails to address the Hickory Log Creek Reservoir or include the reservoir's operations in modeling flows in the Basin. The Corps' failure to model operations related to the Hickory Log Creek Reservoir is another example of the DEIS's failure to address current conditions.

Footnote 2: On a related issue, as Georgia and CCMWA have previously suggested in comments to the Corps, the Corps, in its storage accounting should credit return flows exclusively to the storage account of water users to whom Georgia has allocated those return flows.

Footnote 3: The Corps also states, with regard to reallocation for water supply, that the Corps desires to remain neutral, and "no conceivable proposal exists that both states would support." DEIS p. 1-7, lines 24-25. While Georgia agrees that the Corps should remain neutral in the dispute between the States, taking no action ultimately with regard to reallocation would not be "neutral." The neutral and appropriate course is instead for the Corps to consider any request or need for reallocation on the merits, in accordance with applicable regulations.

Response

As acknowledged in the comment, the No Action Alternative is intended to represent current project operations and existing conditions in the ACT basin, not including any requested increase in water supply storage for CCMWA or Cartersville at Allatoona Lake. For the draft EIS, USACE selected 34.5 mgd to represent the contract amount that 13,140 ac-ft would yield during the critical period. This methodology was used for storage contracts at Allatoona and Carters Lakes.

Following coordination of the draft EIS, the No Action Alternative was updated to reflect actual withdrawals from Allatoona Lake rather than the amounts in the existing storage agreements. As described in the modeling report (EIS Appendix C), year 2006 withdrawal values were selected to represent actual withdrawals for the model simulation over the period of record. 2006 was the year of highest net withdrawals in the ACT basin. In addition, assumed Hickory Log Creek reservoir operations for water supply (consistent with the project as described in the Section 404 permit) were incorporated into the HEC ResSim and HEC-5Q models. The simulation for the period of record was re-run with the updated models, and the effects associated with the model results are summarized in Section 6 of the final EIS.

The final EIS also incorporates an analysis of the sensitivity of the proposed action alternative to long range water demand projections across the entire basin (including pertinent areas of the Metro Water District). A summary of the sensitivity analysis is included in the EIS in Section 6 under the "Sensitivity Analysis" discussion, and the Cumulative Effects section (6.10) also addresses future demands and potential regional and local projects to meet those demands.

Comment ID 0061.005

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

IV. The DEIS Does Not Assess Alabama Power Company's Proposed Operations

The DEIS does not analyze the effects of rule curve changes that APC has proposed in the ongoing Federal Energy Regulatory Commission ("FERC") relicensing process for the Coosa River Project. In addition, the DEIS does not analyze changes that APC has proposed in the FERC relicensing process for the Lake Martin Project.

For Lake Weiss, APC proposes to raise the winter guide curve by 3 feet from elevation 558 feet to 561 feet from December 1 through March 1. There would be a constant rise in the lake elevation until reaching the normal elevation of 564 feet on May 1. The summer guide curve would be extended from August 31 to September 30. See DEIS p. 2-36, lines 3-11. For Logan Martin Lake, APC has proposed to raise the winter pool by 2 feet, from the existing winter elevation of 460 feet to 462 feet. From January 1 to April14, the pool would be at 462 feet. Beginning on April15, lake levels would gradually increase to the normal summer pool elevation of 465 feet. On October 1, the water elevation would begin to fall to the winter pool elevation of 462 feet by January 1. See DEIS p. 2-39, lines 29-33.

Despite acknowledging that both proposals "could have some adverse effects on the flood risk management function" on the respective projects and stating that the "Corps has not concurred with the APC proposal to FERC," the Corps elected not to consider these adverse effects as part of the DEIS. DEIS p. 2-36, lines 7-11; p. 2-39, lines 33-38. Instead, the DEIS states that before "implementing the proposed increase in the winter pool elevation, additional analysis (and NEPA documentation) would be required to allow revisions to the ACT manual beyond those considered in this EIS." Id.

The Corps' failure to consider APC's proposed rule curve changes violates the Corps' obligation to consider cumulative impacts under NEPA. In a response to a comment that the "Corps should conduct an analysis of cumulative effects of FERC relicensing process of eight APC dams in the ACT Basin," the Corps responds that the "environmental effects of the operations of the APC projects under the proposed FERC license are documented in Final Environmental Assessment (EA) for Hydropower License Coosa River Hydroelectric Project-PERC Project No. 2146-111 Alabama and Georgia, December 2009." ("FERC Coosa EA"). DEIS p. 1-38, lines 8-13.

The FERC Coosa EA does not, however, relieve the Corps of its obligations under NEPA regarding the ACT WCM. The proposed rule curve changes are "reasonably foreseeable future actions" that the Corps must consider as part of the NEPA process. The DEIS itself acknowledges that "additional analysis (and NEPA documentation) would be required" for the proposed rule curve changes. This statement is inconsistent with the Corps' position that the FERC Coosa EA has already addressed any potential environmental concerns regarding APC's operations. In addition, the analysis in the FERC Coosa EA is insufficient to meet the requirements of the EIS that the Corps is to develop for the ACT WCM. Finally, neither the FERC Coosa EA nor the DEIS address APC's proposed changes for the Lake Martin Project. Therefore, the Final EIS for the ACT WCM must adequately consider the cumulative effects of the proposed changes to the APC projects in the ACT Basin.

Response

USACE does not agree that the proposed APC rule curve changes are reasonably foreseeable. In fact, the FERC license issued on June 20, 2013 for the Coosa River Project did not include the requested changes. Should rule curve changes be approved in the future appropriate NEPA documentation would be conducted prior to the approval.

Comment ID 0061.006

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

V. General and Technical Comments

There are a number of other issues related to the DEIS, the Master ACT WCM and the individual project WCMs that the Corps must address prior to issuing the final documents:

A. General Comments

1. Clarity of Peaking Power Generation Requirements

Although the State of Georgia understands and appreciates the need for flexibility in the Corps' hydropower operations, the Corps' decisions as to how it plans to operate at Lake Allatoona in the proposed Zone 3 and during the winter drawdown period should be clarified so as to prevent confusion in the future. For Zone 3, the Corps' WCM for Allatoona provides that peaking power generation will be limited to between 0 and 2 hours per day when the Lake is in Zone 3. The Corps' HEC-ResSim model, however, provides that peaking power will be scheduled at 2 hours in the top 20% storage of Zone 3, 1 hour for the next 70% of Zone 3, and 0 hours when the Lake is in the lowest 10% of Zone 3. While Georgia does not wish to limit the Corps' flexibility in operations, when modeling the impact of the proposed operations on Lake Allatoona, the Corps may need to provide a range of possible outcomes.

Response

USACE has described a range of hydropower generation within each of the action zones. Within each action zone, USACE has the discretion to reduce hydropower to zero hours. USACE acknowledges the request by Georgia to model the range of hydropower generation. USACE modeling attempts to capture the typical operation in the alternatives and allows for relative comparisons. USACE full discretion at the federal reservoirs is not included in the modeling and would require multiple variations of each alternative. USACE selected instead to capture the typical generation in each action zone for this manual update process.

Comment ID 0061.007

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

2. Apparent Errors in Low Basin Inflow Guide

The values presented for the Low Basin Inflow Guide used in the Drought Contingency Plan in various locations, including Table 4.2-4 in the DEIS, Table 8 in the ACT Master WCM, and Table 7-7 in the Allatoona WCM do not appear to be accurate. Because the amount of storage at the tum of the year is the same, the positive and negative filling volume in the fall should aggregate to zero. That is not the case for the current numbers in the Corps documents.

Georgia EPD has independently calculated the storage change and believe the numbers to be as follows:

<Table with data on storage change included in the letter. See attached PDF.>

Response

Table values have been corrected.

Comment ID 0061.008

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

B. Draft Environmental Impact Statement

1. Page ES-28, Figure ES-6 and Lines 8-9 - Figure ES-6 states that hydropower generation is to be reduced in the months of September through November. Lines 8- 9 state that "hydropower generation would be reduced during annual drawdown in the fall (September through October)." The Corps should correct this discrepancy.

Response

Discrepancy noted has been corrected.

Comment ID 0061.009

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

2. Page 2-15, Line 17- The word "that" after "being met less" should be changed to "than."

3. Page 2-21, Table 2.1-5, Figure 2.1-12.- Table 2.1-5 indicates that the conservation storage for Lake Martin is 49.3% of the total conservation storage in the ACT Basin. Figure 2.1-12 indicates that the conservation storage for Lake Martin is 48.7%. The Corps should correct this discrepancy.

Response

Lake Martin pertinent data was revised to be consistent throughout the documents.

Comment ID 0061.010

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

4. Page 3-8, Line 26- The DEIS incorrectly states that CCMWA 's current contract for storage in Lake Allatoona expires in 2013. As the Corps is aware, CCMWA's storage contract provides that it expires (though CCMWA's entitlement to storage does not) 50 years after each particular storage space is placed into operation. Although CCMWA and the Corps entered into a storage contract for storage at Lake Allaoona in 1963, CCMWA did not begin using any of that storage until 1966. Therefore, CCMWA's storage contract does not expire until at least 2016. The Corps should make this correction in the Final EIS.

Response

Concur. The discussion of the CCMWA storage agreement was revised and specific reference to the expiration year was removed from the text.

Comment ID 0061.011

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

5. Pages 3-10 to 3-11- The DEIS provides a discussion of the litigation history for the ACT and ACF River Basins. This discussion ends with negotiations between the states and the decision to update the ACT WCM in 2007. The Corps should update Section 3.1.10 of the EIS to indicate that all of Alabama's claims have been dismissed.

6. Page 4-3, Line 19-"WMC" should be changed to "WCM."

7. Page 4-7, Figure 4.2-1 -Figure 4.2-1 is not consistent with Table 4.2-1 on page 4- 8.

8. Page 5-5, Figure 5.1-3- The drought curve in Figure 5.1-3 is different from the drought curve used in the HEC-ResSim model.

Response

5. The litigation history in Section 3.1.10 of the EIS has been updated as requested.

6. The text has been corrected.

7. The inconsistencies between Figure 4.2-1 and Table 4.2-1 have been resolved and corrected.

8. Figure 5.1-3 was incorrect and has been revised accordingly.

Comment ID 0061.012

Author Name: Turner, Judson

Organization: Georgia Environmental Protection Division

Comment

C. ACT Master Water Control Manual

1. Page 1-3, Table 1-1-The conservation storage values listed in Table 1-1 for many of the reservoir projects in the ACT Basin are inconsistent with the conservation storage values used in the HEC-ResSim model. The following table provides a comparison:

<Table with data on conservation storage value was included in the letter. See attached PDF.>

2. Page 7-11, Figure 7-3- The project curves in Figure 7-3 are not consistent with the values in Table 7-1 on page 7-12.

3. Page 7-14, Table 7-3- The values in Table 7-3 are not consistent with the numbers shown in Figure 7-5. The values for December appear to be incorrect.

4. Page E-C-28, Table 9-To allow for independent verification by Basin stakeholders, the Corps should specify the methodology or technical tool used to calculate the 7Q10 flows at the Georgia/ Alabama line.

5. Pages E-C-30 and E-C-31- The contents of Figures 14 and 15 appear to be incorrect.

D. Allatoona Water Control Manual

1. Page 7-3. Table 7-2; Page 7-11, Line 36- Table 7-2 provides a list of "typical" peaking generation hours. Other portions of the Manual, including page 7-11, line 36, refer to these same hours as "minimum" generation hours. The Manual should consistently indicate that the generation hours are "typical" but do not represent minimum required hours.

2. Pages 7-11 to 7-12, Line 27- The Hydroelectric Power section (7-10) makes no reference to a reduction in peaking power generation during the transition to winter draw down (September through November) even though the DEIS and the HECResSim model both anticipate reduced hydropower generation during that period. The Corps should modify both the Master and Allatoona WCMs to account for reduced hydropower generation during the winter draw down period.

3. Page 7-15, Lines 35-45 - The Allatoona WCM does not clearly define "Basin Inflow" for drought operations. As written, the term could be confused with the "Navigation Basin Inflow." Basin Inflow should be defined as all of the water entering Alabama Power's reservoirs downstream of Lake Weiss and the local incremental flow entering Lake Weiss that originates from the drainage area of Weiss downstream of both Lake Allatoona and the Carters Re-Regulation Dam.

4. Plate 2-5- The elevation-storage values for Lake Allatoona shown in Plate 2-5 differ from those used in the HEC-ResSim model. The following table compares the elevation-storage values:

<Table with data for Lake Allatoona comparing elevation storage values was included in the letter. See attached PDF.>

E. H.N. Henry Water Control Manual

1. Page 7-9, Line 1, Table 7-4- The values in Table 7-4 for the month of December appear to be incorrect because the values are the same as for the month of January.

2. Page 8-1, Lines 24-29- The Corps uses the temporary winter rule curve elevation of 507 feet for the water resources analysis but uses an elevation of 505 feet for the flood risk analysis. The Corps should use the same elevation for both analyses.

3. Page 2-3, Line 27- The WCM references Plate 2-13, which is not incorporated in the document.

4. Plate 7-1- The WCM contains two plates that are both titled Plate 7-1. One plate uses the temporary rule curve of 507 to 508 feet. The other plate uses the existing curve of 505 to 508 feet. It is confusing to have two sets of rule curves under the same plate title. In addition, it is not clear which plate the Corps uses for its evaluation.

5. Pages E-F-20 and E-F-30- The values in Figures 14 and 15 appear to be different from the values used in the HEC-ResSim model.

F. Millers Ferry Water Control Manual

1. Page 2-3, Table 2-1- Table 2-llists the total storage at elevation 71 feet as 214,950 acre-feet. The HEC-ResSim model uses the value of 214,650 acre-feet.

G. Carters Water Control Manual

1. Plate 7-2- The storage numbers shown in Plate 7-2 differ from the values used in the HEC-ResSim model as follows:

<Table with data on Carters storage numbers was included in the letter. See attached PDF.>

H. Harris Water Control Manual

1. Plate 2-2- Plate 2-2 is for the Neely Henry project, not the Harris project.

2. Plate 2-20- The storage numbers shown in Plate 2-20 differ from the values used in the HEC-ResSim model as follows:

<Table with data on Harris storage values was included in the letter. See attached PDF.>

3. Page E-D-28- The storage values shown in Table 14 and 15 appear to be incorrect.

VI. Conclusion

Please give the foregoing comments careful consideration in making necessary revisions to the WCM and the EIS for the ACT WCM. Please contact me if you have any questions or if I can be a resource for additional information that would assist you in this process.

Response

Comments have been incorporated into the documents with revisions made and inconsistencies corrected as appropriate.

From:	Atkins, Brian
To:	ACT-WCM
Subject:	Alabama Office of Water Resources" Comments regarding USACE Draft ACT EIS and Water Control Manual
Date:	Friday, May 31, 2013 4:16:22 PM
Attachments:	20130531 - OWR Comments re USACE Draft ACT EIS and WCM.pdf

Dear Colonel Roemhildt,

On behalf of the Alabama Office of Water Resources and the State of Alabama, I submit the attached comments on the Draft Environmental Impact Statement (EIS) issued in connection with the update of the Alabama-Coosa-Tallapoosa (ACT) River Basin Water Control Manual. A signed copy of this letter as well accompanying exhibits will be transmitted to you by overnight delivery.

If you need more information about our comments or wish to discuss them, please let me know.

Sincerely,

J. Brian Atkins, P.E.
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ALABAMA DEPARTMENT OF ECONOMIC AND COMMUNITY AFFAIRS

JIM BYARD, JR.
DIRECTOR

May 31, 2013

Via Electronic Mail and Overnight Delivery

Colonel Steven J. Roemhildt
U.S. Army Corps of Engineers, Mobile District
P.O. Box 2288
Mobile, AL 36628

Re: Draft Environmental Impact Statement
Update of the Alabama-Coosa-Tallapoosa River Basin Water Control Manual

Dear Colonel Roemhildt:

On behalf of the Alabama Office of Water Resources and the State of Alabama, I submit the following comments on the Draft Environmental Impact Statement (EIS) issued in connection with the update of the Alabama-Coosa-Tallapoosa (ACT) River Basin Water Control Manual. The draft EIS and the draft master manual contain serious procedural, technical, and substantive flaws.

I. Baseline for NEPA Analysis

An essential part of the process required by the National Environmental Policy Act (NEPA) is determination of a "No Action Alternative" against which the environmental impacts of the proposed federal action can be evaluated. In the draft EIS, the Corps claims that the "No Action Alternative represents no change from the current management direction or level of management intensity" and "represents the continuation of the current water control operations at each of the federal projects in the ACT Basin." Draft EIS at 4-35.

The No Action Alternative is fatally flawed because it relies upon the draft 1993 manual for Lake Allatoona, which was never subjected to the review mandated by NEPA. At section 5.1.2 of the draft EIS, the Corps highlights the significance of action zones at Lake Allatoona to the No Action Alternative. Those action zones at Lake Allatoona were defined by the 1993 draft manual.

It is beyond dispute that the 1993 draft manual was illegally promulgated. NEPA requires federal agencies to analyze the environmental impacts of a proposed action <u>before</u> proceeding

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with that action. *See* 42 U.S.C.. § 4332(2)(C). Even though the Corps has relied on the 1993 draft manual for two decades in the operation of Lake Allatoona, the draft manual was never subjected to NEPA review, let alone before the Corps adopted it as its operational guide for Lake Allatoona.

Because the 1993 draft manual was illegally promulgated, it cannot form any part of the No Action Alternative, even if the agency has based its operations on the illegal plan. *See, e.g., Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1038 (9th Cir. 2008). To allow the Corps to utilize the 1993 draft manual and its novel action zones as part of the No Action Alternative would mean that the major shift in operations represented by that draft plan would never be subjected to the required NEPA analysis. The Corps seeks to minimize its improper use of an illegal manual in the No Action Alternative by suggesting that only "incremental changes" have occurred since the last EIS in the 1970s, but the Corps cannot dodge its NEPA obligations by characterizing the major change in the operational regime at Lake Allatoona reflected in the 1993 draft manual as merely incremental. Allowing the 1993 draft manual to form the basis of the Lake Allatoona portion of the No Action Alternative would create a perverse incentive for federal agencies to disregard their NEPA obligations. Instead of using the 1993 draft manual as the basis for the Lake Allatoona operations, the Corps must instead use the operations that existed at the time of the last EIS conducted in connection with Lake Allatoona operations in the 1970s.

Even if the use of the 1993 draft manual as part of the No Action Alternative were not a problem, the No Action Alternative is still flawed because, contrary to the Corps' assertions, it does not reflect the current water control operations in the Basin. The No Action Alternative fails to reflect the current water control operations in several respects:

A. The No Action Alternative does not reflect current water-supply operations at Lake Allatoona. The Corps has contracts with the Cobb County Marietta Water Authority (CCMWA) and the City of Cartersville allocating specific amounts of storage space at Lake Allatoona for water supply use. For purposes of modeling the No Action Alternative, the Corps assumed that the allocated storage amounts would yield a total of 79.3 cfs, and the Corps used that figure to reflect water-supply operations at Lake Allatoona. The use of that figure is flawed for two reasons.

   First, the Corps should have utilized data based upon actual historical water-supply usage, not on an estimate of what allocated storage would yield. The Corps claims in section 1.5 of the draft EIS that it is using 2009 conditions as the baseline, but it offers no explanation as to why 2009 operations were not used for water-supply withdrawals at Lake Allatoona. The failure to utilize the actual figures for water-supply usage at Lake Allatoona in the No Action Alternative stands in stark contrast to the usage of the actual numbers for water-supply usage at Carters Lake and all other withdrawal points in the No Action Alternative.[1] In fact, the only time that the

[1] Although the Corps claims that it bases the No Action Alternative on 2009 operations, the Corps used 2006 data for water-supply usage at all withdrawal points except Lake Allatoona.

Corps has deviated from use of actual, historical data concerning water supply in modeling the No Action Alternative is in making the calculations for Lake Allatoona. When an Alabama representative asked Corps officials from the Mobile District at one of the public meetings concerning the draft EIS why the actual historical numbers were not being utilized, the Corps officials responded that the decision to ignore the actual water-supply data had been made by their superiors. This suggests that a political, rather than a scientific, decision was made to mask the actual water-supply usage and the Corps' actual operations at Lake Allatoona.

Second, even if it were appropriate to use an estimate as opposed to historical data, the 79.3 cfs figure is grossly inaccurate. It was derived from an outdated critical-yield calculation for Lake Allatoona. When the current critical-yield calculation is applied to the contractual storage allocations, then the correct estimate for the yield falls to 50.0 cfs. (See Exhibit 1.[2]) That means that the Corps has overstated the yield of the contractual storage allocations at Lake Allatoona in the No Action Alternative by 59%.

B. In modeling the hydropower generation at Lake Allatoona in the No Action Alternative, the Corps assumes a strict and regular schedule for generation of hydropower. But that is not how the Corps operated historically. Information maintained by the Corps on the amount of dam discharges at Lake Allatoona plainly shows that the Corps' generation was highly variable. See Exhibit 2.[3] Indeed, in the midst of the 2007 drought, the Governor of Alabama sent a letter highlighting the Corps' failure to adhere to the hydropower generation schedule that the Corps claimed to be following. (A copy of the letter is attached as Exhibit 3.) Simply put, the No Action Alternative does not reflect the current hydropower operations at Lake Allatoona.

C. The No Action Alternative also fails to reflect the fact that the Corps has systematically overfilled Lake Allatoona in the months corresponding to the rising arm of the rule curve. The graphs attached as Exhibit 4 show that this has repeatedly occurred in the last ten years, yet the Corps' modeling of the No Action Alternative does not take account of it.

D. The No Action Alternative does not reflect the Corps' actual operations at Carters Lake, particularly during drought periods. During the critical 2007 drought, the Corps utilized more storage at Carters Lake than what the modeling of the No Action Alternative reflects. (See Exhibit 5.)

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[2] All of the exhibits to this letter are contained on a disk that is being submitted with the copy of this letter being transmitted to you by overnight delivery. We include on the disk Exhibit 19, which is an affidavit related to preparation of the technical exhibits referenced in this letter.

[3] The information provided by the Corps reflects dam discharges. The exhibit shows how to relate dam discharges to hours of hydropower generation.

E. The modeling of the No Action Alternative also presents a distorted picture of the river flows at Rome. As shown in Exhibit 6, the baseline condition in the model reflects substantially lower flows during the 2007 drought than actually occurred.

F. The No Action Alternative does not reflect how Alabama Power Company has actually operated its projects such as Lake Weiss, Lake H. Neely Henry, and Lake Martin. During drought years, Alabama Power received variances that allowed it to fill above the rule curve at some of its projects and received permission to cutback the flow that it was required to deliver below its projects. The modeling of the No Action Alternative, however, does not take account of that operational history. (See Exhibit 7.)

Because the No Action Alternative is supposed to reflect current operations, the model results for it should conform closely to historical data for the affected projects. Based upon the multiple flaws in constructing the No Action Alternative, it is hardly surprising that the model outputs for the No Action Alternative deviate materially and substantially from historical results. With such serious problems with the No Action Alternative, the Corps' assessment of environmental impacts is fatally deficient. Unless and until the Corps utilizes an appropriate baseline, no valid assessment of environmental effects can occur.

II. Cumulative Effects for NEPA Analysis

In the draft EIS, the Corps acknowledges that it must assess cumulative effects, which is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions." See Draft EIS at § 6.9. The Corps' consideration of reasonably foreseeable future actions in the draft EIS is deficient and, thus, its assessment of cumulative effects is insufficient.

"To consider cumulative effects some quantified or detailed information is required. Without such information, neither the courts nor the public in reviewing the [agency's] decisions, can be assured that the [agency] provided the hard look that it is required to provide." *Neighbors of Cuddy Mtn. v. U.S. Forest Serv.*, 127 F.3d 1372, 1379-80 (9th Cir. 1998). "General statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." *Id.* at 1380. "The impacts analysis must also contain some quantified or detailed information." *Sierra Club v. Bosworth*, 510 F.3d 1016, 1030 (9th Cir. 2007). "A simple declaration that a project's cumulative impacts are insignificant, without a convincing explanation, fails [the hard look] test." *Mountaineers v. U.S. Forest Serv.*, 445 F. Supp. 2d 1235, 1247 (W.D. Wash, 2006).

There are glaring omissions in the Corps' consideration of reasonably foreseeable future actions. Entities in Georgia have been discussing the need for substantial increases in water-supply withdrawals in the Georgia portion of the ACT Basin for many years. On January 24, 2013, the State of Georgia submitted a request for multiple actions to be taken to increase its water-supply usage in the ACT Basin. (A copy of that request is attached as Exhibit 8.) At Lake Allatoona, Georgia requests that water-supply withdrawals be increased from the current authorization pursuant to the contracts with CCMWA and Cartersville of an annual average of 32.3 mgd[4] to 123.9 mgd, an increase of 284%. In addition, Georgia asks that the storage accounting for the authorized contract amounts be changed from a gross basis to a net basis. If allowed, such a change would drive the proposed water-supply withdrawals even higher.

In that same letter, Georgia requests that an additional 27 mgd be allowed to be withdrawn by CCMWA in connection with releases from Hickory Log Creek Reservoir. Taken together with its other requests related to Lake Allatoona, that would amount to an aggregate increase of 367% over current water-supply authorizations.

Georgia also notes in the letter that its additional 2040 water-supply demands will have to be met either out of the proposed Richland Creek Reservoir or out of Lake Allatoona. According to the letter, those additional demands will amount to an additional 24 mgd if met out of Lake Allatoona. Thus, when considered in the aggregate, that involves an increase of 441% over current water-supply authorizations.

Even though Georgia contends that this massive increase in demand is needed to meet its population growth in the basin, the Corps does not consider the Georgia request, either as to the specific requested increases or as to the claimed massive needs of a growing population generally, in its cumulative effects analysis. In addition, the cumulative effects analysis takes no account of the water-supply impacts of either the onset of operations at the already-constructed Hickory Log Creek Reservoir (44 mgd yield)[5] or the proposed Richland Creek Reservoir (35 mgd yield). Nor does the cumulative effects analysis take any account of the fact, conceded by Georgia in the materials submitted with its letter, that the annual average withdrawals at Lake Allatoona already are 49.5 mgd and have been as high as 64.3 mgd (which is a clear violation of the contracts into which the Corps has entered).

In order to undertake an appropriate evaluation of cumulative effects for purposes of the EIS, the Corps must take these reasonably foreseeable future uses and model their effects when considered in conjunction with the proposed action. Alabama anticipates that such modeling would show serious adverse environmental effects downstream from Lake Allatoona because the

[4] The 32.3 mgd figure is derived from applying the current critical-yield calculation for Lake Allatoona to the contractual storage allocations to CCMWA and Cartersville. (See Exhibit 1.)

[5] In fact, the Corps in the draft EIS (at page 1-40) expressly disavows giving any consideration to Hickory Log Creek Reservoir other than its 2009 operations.

The draft EIS also describes Hickory Log Creek Reservoir as follows at page 2-62: "As planned and designed by the CCMWA and city of Canton, water will be pumped from the Etowah River to fill the reservoir during high-flow periods and released during low-flow periods to supplement Etowah River flows and Allatoona Lake inflows to enable water supply withdrawals from existing water intake facilities (CCMWA 2010)." To the extent that the description suggests that the reservoir was designed with the intent for increased water supply withdrawals from existing intake facilities in Lake Allatoona, that is incorrect. The only withdrawal point contemplated by the license issued in connection with the reservoir was the City of Canton's intake facility on the Etowah River.

massive increase in water-supply withdrawals that Georgia projects over the next 27 years will radically diminish downstream flows, especially in times of drought.

The actual cumulative-effects analysis contained in the draft EIS is superficial and conclusory. Occupying less than four pages in the draft EIS, the section on cumulative effects contains no detailed consideration of expected increases in water-supply usage. Instead, the Corps resorts to general assertions such as "demands for public water supply . . . are expected to continue to increase in the future." Even worse, the Corps does not make any effort whatsoever to evaluate how the increases in water-supply usage, when considered in conjunction with the proposed alternative, will impact the environment. For example, the Corps appears to have done no modeling of how increased water-supply withdrawals along with the proposed action would affect the downstream environment. These deficiencies in the cumulative effects analysis must be corrected before the EIS becomes final.

III. Additional Model and Data Errors

In addition to the fatal problems with the No Action Alternative and the failure to properly consider cumulative effects, there are additional problems with the Corps' modeling, the data it employed in connection with the modeling, and the interpretation of the results of the modeling that must be corrected before the EIS is issued.

A. In modeling the Proposed Action Alternative, the Corps assumed more hydropower generation at Lake Allatoona than is required by the draft manual for that project. In particular, the draft manual gives the Corps the option to generate zero hydropower in all action zones at Lake Allatoona, and provides a range of generation levels for Zone 1, 2 and 3. The modeling of the Proposed Action Alternative, however, assumed that the Corps would generate the maximum amount of hydropower in Zones 1 and 2 during nine months of the year and would generate 50% of the maximum for those zones in the other three months. Those assumptions are not realistic. Historical operations by the Corps at Lake Allatoona under the 1993 draft manual have frequently seen the Corps generate less than 100% of the authorized hydropower amount during the nine-month period of the year and less than 50% of the authorized hydropower amount during the other three months. (See Exhibit 2.) In fact, the Corps has frequently generated less than the minimum amount defined by the draft 1993 manual for Zone 1. In the draft manual for Lake Allatoona (at page 7-2), the Corps stated that it intends to use the action zones "to manage the lake at the highest level possible within the conservation storage pool while balancing the needs of all authorized purposes with water conservation as a national priority used as a guideline." In light of that statement, it does not seem realistic to assume in the modeling that the Corps will generate the maximum amount of hydropower allowed in Zone 1 and 2. The Corps offers no explanation as to why the assumptions employed in its modeling are reasonable.

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In order to perform a valid EIS, the Corps should, at a minimum, also model a low-flow scenario in which the Corps generates at the bottom of each range for each action zone. We have modeled how the flows at Rome would have differed in 2007 between Plan G and an operational regime in which no hydropower is generated (which the manual permits), and we have calculated what effect the difference in flows would have had on the conservation storage pool at Lake Allatoona. (See Exhibit 9.) In the likely event that serious environmental impacts would result from that low-flow scenario, the Corps should perform additional modeling to determine where in the range the adverse environmental impacts are diminished.

We note that this sort of bracketed approach to modeling environmental impacts was employed by the Corps in preparing its 1998 EIS in connection with potential allocation formulas in the ACT Basin.

B. Just as with the Corps' modeling of the No Action Alternative, the Corps' modeling of the Proposed Action Alternative assumes a water-supply number for Lake Allatoona that reflects neither the contractually authorized water-supply allocations nor historical water-supply amounts. Until this erroneous input is corrected, any results of the modeling are invalid.

C. The Corps is also knowingly using erroneous inputs with its DSS data. We became aware of the data error when we ran the ResSim model to match the observed USGS flow data below Allatoona. The model inflow data set did not allow us to replicate the historically observed elevation and outflow readings. What the Corps' data shows as project outflow (the Allatoona Discharge from the ACTHEC_8.dss file with the "F pathname" of "COE_ADJ") does not match what the USGS data shows (taken from the USGS website for station number USGS 02394000 ETOWAH RIVER AT ALLATOONA DAM). For the period of 1980-2008, the Corps data shows the Allatoona outflow as 1,593 cfs compated to 1,726 cfs from the USGS.

Over one year ago, we alerted the Corps' Mobile District to these problems with the models. In the past few months, representatives of the Mobile District acknowledged the problems that we identified. They explained that the COE_ADJ outflow was used to create the input "incremental" inflow data contained in the DSS file (ACTCUM_8.dss). They further admitted that the inflow data needs to be recalculated.

This flaw in the data affects every model run and the critical-yield calculations that have been performed, thereby making it impossible to draw any valid conclusions until the flaw in the data is fixed.

D. The Corps has also modeled operations for Carters Lake that do not match the proposed guide curve contained in the draft EIS. (See Exhibit 10.) In fact, the guide curves for Carters Lake in the Executive Summary of the draft EIS, the draft Carters Manual, and the ResSim Modeling Report are all different from each other, and the modeled guide curve for Carters Lake is different from each of them. Needless to say, the draft EIS cannot be valid if the models underlying it do not conform to the proposed action.

E. In addition to the flaws with the model inputs, the Corps has also committed a serious error in its method of interpreting the model outputs. The Corps has evaluated the model outputs by looking to effects on an annual average basis and by looking to an average of a specific calendar day over many years. Use of long-term averages virtually guarantees that any adverse environmental impact will be masked. Instead of using these types of long-term averages to evaluate environmental impacts, the Corps should be looking at effects during more limited periods, especially during critical dry periods during droughts.

Given the nature of varying hydrological conditions throughout a year and over several years, long-term averages are inappropriate to evaluate the environmental impacts of the proposed action. For example, if one compares the actual observed average flow at Rome for the 2007 water year (October 2006-September 2007) with the flow for the same period under Plan G, the flow under Plan G is less than 1% different from the historical flow, which would lead one to conclude that there is little environmental impact compared to history. However, if one limits the comparison to the June-September 2007 period, the Plan G flows are 300 cfs, or 21% lower, than the historical flows. (See Exhibit 11.) In the summer months of the most extreme drought recorded in the Basin, a reduction in flow of 300 cfs at Rome almost certainly would have a material detrimental environmental impact at Lake Weiss and downstream from Lake Weiss. Yet that significant impact is lost through the use of full-year averaging.

In Exhibit 11, we also provide an additional example as a further indicator as to why full-year averaging is not appropriate. It shows for the 2007 water year how substantial the deviations from the annual average were throughout the year. Just a few high spikes (that only occur for 1 or 2 days in a year) can mask several months of low flows if one only looks at an annual average. An appropriate analysis must focus on the critical periods of a drought year when flows are lowest. A fair assessment of the environmental impacts of the proposed action during a severe drought, such as the one that occurred in 2007, simply cannot be made through use of annual averages.

In light of all of the problems with the modeling and the data on which it is based, the results of the modeling are neither valid nor reliable, and any assessment of environmental impacts cannot be legitimately made until the problems are fixed.

IV. Water Quality Impacts

In the Draft EIS, the Corps ignores its own regulations as to how it must address the adverse downstream water quality impacts caused by its operations.

The Corps admits in the draft EIS that the Proposed Action Alternative will cause detrimental environmental impacts downstream from Lake Allatoona. *See, e.g.*, Draft EIS at 6-112 ("State agencies would continue to apply adaptive management techniques to more precisely define the ACT system's assimilative capacity. Water management activites may affect water quality under low flow conditions such that the state regulatory agency may consider reevaluation of NPDES permits to confirm the system's assimilative capacity."). The draft EIS, however, indicates that the Corps deems the downstream environmental consequences of its Proposed Action Alternative to be outside its concern. Instead, the Corps appears to conclude that the burden for addressing those consequences must be shouldered by others.

The draft EIS takes a much-too-narrow view of the Corps' obligations relative to the downstream consequences of its actions. The Corps' own regulations clearly mandate that "Corps management responsibilities extend throughout the area influenced by and influencing the water [the Corps] manage[s]." *See Water Quality and Environmental Management for Corps Civil Works Projects*, ER 1110-2-8154, at page 2 (May 31, 1995) ER 1110-2-8154, at page 2. Those same regulations (at page 3) require the Corps to implement water quality management plans that are "scoped to include all areas influencing and influenced by the project."

The Corps has committed in ER 1110-2-8154 to a "policy to develop and implement a holistic, environmentally sound water quality management strategy for each project." In furtherance of that commitment, Corps regulations dictate that the Corps implement a water quality management program that, among other things:

> Ensure[s] that water quality, as affected by the project and its operation, is suitable for project purposes, existing water uses, and public health and safety and is in compliance with applicable Federal and state water quality standards.
>
> ....
>
> Ensure[s] that the project and its operation offer the lowest stress possible on the aquatic environment.

ER 1110-2-8154 at pages 3-4.

The draft EIS plainly demonstrates that the Corps is violating its own regulations. Rather than assessing measures that the Corps can take to alleviate the downstream environmental consequences of its Proposed Action Alternative, the draft EIS simply identifies adverse consequences and then suggests that downstream parties will have to deal with them. *See* draft EIS at 6-112 — 6-118. Not only does that approach fail to recognize the fact that "Corps management responsibilities extend throughout the area influenced by" the Corps' operations of Lake Allatoona, but it further violates the Corps' obligation to maintain "the existing instream water uses and the water quality necessary to protect them." *See* ER 1110-2-8154, at page 2.

The Draft EIS details a number of adverse environmental consequences that would arise downstream of Lake Allatoona under the Proposed Action Alternative, and in each instance, the Corps' solution for addressing these consequences is for downstream parties to take steps to deal with them. For example, the Corps concedes that its proposed operational changes would result in increased temperatures in the Alabama River at the confluence of the Coosa and Tallapoosa Rivers and that median water temperatures during low-flow periods are predicted to increase by as much as 1.8° F. Draft EIS at 6-112. The Corps acknowledges that such an increase "would be expected to affect allowable discharges along the reach and aquatic species." *Id.* The Corps offers no suggestion that it would take any action to address the issue, but instead states that permits for existing discharges "could be restricted during conditions similar to what occurred in 2007." *Id.*

Likewise, the Corps acknowledges the Proposed Action Alternative would adversely impact downstream levels of dissolved oxygen, *id.* at 6-112, phosphorous, *id.* at 6-115, nitrogen, *id.* at 6-116, and chlorophyll a, *id.* at 6-117. Again, the Corps' solution for addressing the consequences of its actions involves no action on the part of the Corps, but instead would impose the burden of dealing with the consequences on others. *See, e.g.*, Draft EIS at 6-117 ("In periods of dry weather, with low inflows, the Proposed Action Alternative would be expected to increase algal growth in Weiss Lake, and resulting potential updates to discharge permits may have an adverse impact on upstream dischargers."); *id.* at 6-115 (acknowledging that the Proposed Action Alternative would have adverse effects on total phosphorous concentrations in the upper Coosa River and stating that "point source permits might need to be revisited to ensure that water quality standards would be met").

The draft EIS's "solution" of restricting dischargers' permit limits or otherwise shifting the burden of dealing with the acknowledged environmental consequences of the Corps' Proposed Action Alternative to other parties is in direct conflict with the Corps' obligation "to protect all existing and future uses including assimilative capacity, aquatic life, water supply, recreation, industrial use, hydropower, etc." *See* ER 1110-2-8154, at 2.

Corps regulations clearly recognize that the Corps must "at least, manage its projects in accordance with all applicable Federal and state environmental laws, criteria, and standards." *Id.* And, the Corps has committed to a policy of giving the environment "equal standing not simply consideration in all aspects of project management and the operational decision-making process. *Id.* at 3. By proposing an action that includes admitted environmental consequences that will adversely impact downstream uses, the Corps is clearly not meeting these obligations.

Moreover, as the comments and accompanying materials submitted by the Alabama Department of Environmental Management ("ADEM") demonstrate, the Corps' Proposed Action Alternative will result in water quality violations and other adverse environmental impacts downstream from Lake Allatoona. As such, the Corps' Proposed Action Alternative fails to satisfy the Corps' obligation to comply with Federal, state, interstate, and local environmental laws, criteria, and standards.

V. Proposed Action Alternative Reflects a Substantial and Inappropriate Reordering of Lake Allatoona's Project Purposes

The Corps' Proposed Action Alternative represents a substantial reordering of project purposes at Lake Allatoona that will cause enormous harm to downstream interests, especially during drought periods. The substantial and ill-considered shifts in Lake Allatoona's project purposes include the following:

A. The Proposed Action Alternative includes what is described as a modified drawdown at Lake Allatoona in the fall months, and this represents an inappropriate elevation of recreation as the dominant project purpose during the critical dry months of the year. Specifically, the Corps proposes that the drawdown of the conservation storage pool at Lake Allatoona be suspended from October 1 until mid-November each year. This results in a novel plateau in the rule curve at elevation 835 for that 45-day period.

Neither the draft EIS nor the proposed manual for Lake Allatoona offers any explanation why this action is being proposed. At one of the public meetings in connection with the draft EIS, an Alabama representative asked representatives of the Corps' Mobile District as to why the modified drawdown, which will significantly curtail downstream flows during the driest months of the year, was being proposed. The Corps officials responded that the action was designed to benefit recreation at Lake Allatoona.

This decision runs counter to the basic rationale for reservoir management expressed by the Corps in the draft EIS. The Corps stated in § 2.1.1 of the draft EIS, "An important function of the many reservoirs in the ACT Basin is to store water when there is an abundance of rain and to release water when there is less rain, ensuring that all water needs are met throughout the year." With the modified drawdown under the Proposed Action Alternative, the Corps is abandoning this fundamental principle. Instead of releasing water in the driest months of the year when the water needs are great (see Exhibit 12), the Corps intends to hold water at Lake Allatoona until the critical period is over. The water will be released later in the year when it is of much diminished use to the system.

The decision to take this action to elevate the importance of recreation at Lake Allatoona is inconsistent with the Corps manual upon which the Corps purports to base the draft EIS. In Engineering Manual EM 1110-2-3600, *Management of Water Control Systems* (November 30, 1987) at page 2-29, the Corps states, "The Federal interest in the provision of recreation opportunities at Corps of Engineers projects is limited; that is, other project purposes, such as flood control or navigation, are needed to establish Corps interest. Many projects, including those for which recreation facilities may have been included under general provisions of the Flood Control Act of 1944, as amended, do not have separable storage costs for recreation. While under these circumstances recreation is an authorized purpose, it is secondary to project functions for which the storage was formulated." The draft EIS confirms at page 2-66 that recreation at Lake Allatoona is authorized only under general legislation. The economic justification for the project was based on hydropower and flood control. Yet rather than making recreation secondary as the Corps' manual requires, the Proposed Action Alternative makes recreation the dominant purpose.

The Corps' decision to embrace the modified-drawdown concept is also inconsistent with the Corps' statement at page 2-70 of the draft EIS that the Corps "considers recreational needs at the Allatoona Lake project in making water management decisions" "[d]uring the peak recreation season, generally Memorial Day through Labor Day." With the modified drawdown, the Corps is making recreation the driving factor for operation of the project after the peak recreation season has ended.

The Corps clearly recognizes the effects of this drastic change in its operating regime during the fall months of the year. The Corps stated that its objective was to "sustain higher water levels [at Lake Allatoona] after Labor Day," (Draft EIS at page 4-23), and it will succeed in that goal if the Proposed Action Alternative is implemented. The Corps forecasts that Lake Allatoona will be 1-5 feet higher during the period of October-December as a result of this change. The Corps acknowledges at page 6-14 of the draft EIS that the modified-drawdown plan will be "likely to maintain notably higher monthly lake elevations from October through December, particularly under drought conditions."

The downstream environmental and economic effects of this plan to operate Lake Allatoona in the dry months to enhance recreation will be severe. The Corps predicts that the flows at Rome will be 200-500 cfs lower in the fall. (See Draft EIS at 6-57.) Especially during droughts, that will have substantial adverse consequences for water quality at Lake Weiss and throughout the ACT Basin. During the drought of 2007, historic low flows were observed at the Alabama-Georgia state line during the fall months of the year, yet the Proposed Action Alternative would drive those flows hundreds of cfs lower. Moreover, system hydropower alone will decrease significantly in the fall months with a loss of nearly 6% in October. (See Draft EIS at 6-178.)

The Corps has no justification whatsoever for holding water in Lake Allatoona to promote recreational interests after the peak recreation season has ended when the adverse effects to hydropower, water quality, and the other authorized project purposes are so substantial. Accordingly, Alabama demands that the Corps abandon the modified-drawdown concept in the Proposed Action Alternative.

B. The Proposed Action Alternative also represents a significant diminution in the importance of hydropower as an operating purpose at Lake Allatoona. Under the new action zones, the Corps will have the ability to generate zero hydropower in all action zones at all times. Coupled with the Corps' stated goal of keeping Lake Allatoona as full as possible, this is a significant shift in the operational regime at the project.

Under the prior regime according to which the Corps has operated Lake Allatoona, the Corps was required to generate hydropower when Lake Allatoona is in the upper portion of the conservation storage pool. This was consistent with congressional intent because the economic justification for Lake Allatoona's construction was primarily hydropower generation. Under the new Allatoona manual, the Corps will even have the ability to generate zero hydropower when the conservation storage pool is in Zone 1 in the summer and fall months. That alone is an unjustified and substantial change in the relative importance of the project's operating purposes.

Even though the Proposed Action Alternative nominally has four action zones, Zone 1 does not exist between January 1 and June 15, and Zone 2 does not exist between January 1 and April 15. Zone 3 is defined in the proposed Allatoona manual as indicating "drier than normal conditions or impending drought conditions." It is nonsensical to suggest that conditions are drier than normal or indicative of impending drought when the conservation storage pool is full on or before April 15. Furthermore, the Corps offers no explanation as to why Zone 1 does not come into existence until June 15, two full months after the full pool level is reached on the guide curve.

In addition, the diminution in the importance of hydropower as an operating purpose is shown by the fact that there is no hydropower generation whatsoever in Zone 4. The Corps has defined Zone 4 to include a majority of the conservation storage pool for most of the year. (See Exhibit 13.) In fact, on June 1, Zone 4 includes 84% of the conservation storage pool. It is a major shift for the Corps to make so much of the project's conservation storage pool unavailable for hydropower generation.[6]

Although the Corps seeks to diminish the significance of these changes by assuming that it will generate the maximum amount of hydropower during most of the year and by assessing hydropower effects on a systemic basis, the Corps cannot hide from the fact that the Proposed Action Alternative represents a substantial change in the relative importance of hydropower in operating Lake Allatoona.

C. In addition to elevating the importance of recreation and diminishing the importance of hydropower as operating purposes at Lake Allatoona, the Proposed Action Alternative also places much greater importance on water supply than the last properly promulgated manual. The Corps admits in the draft EIS at page 2-66 that "[d]uring extreme drought conditions, water supply and water quality requirements have been the major operating concerns." Similarly, in the draft Allatoona manual at

[6] Similarly, at Carters Lake, the Corps has created two actions zones. Zone 2 is described as reflecting "hydrologic conditions . . .likely to indicate severe drought conditions." Carters Lake's conservation storage pool contains 52 feet of storage, but Zone 2 begins at a level within as little as 1.5 feet of the top of the conservation storage pool. In Zone 2, the Carters Manual mandates that only minimum flows be released. The notion that a severe drought is indicated when the project's elevation is so close to the top of the conservation storage pool is absurd.

page 8-5, the Corps states, "During droughts there is serious concern about protecting water supplies."

The inclusion of water supply as one of the two major operating concerns during droughts represents a major shift in emphasis from the last approved manual. This shift has been heightened by the Corps' allowance of water-supply usage of Lake Allatoona by entities far in excess of their contractually authorized amounts.

In deciding to hold water in Lake Allatoona to protect water supply, especially in illegal amounts, the Corps has lost sight of the original expectation that the conservation storage pool would be used to make releases during dry times.

D. Even though the Corps concedes in the draft Allatoona manual (at page 2-1) that Lake Allatoona was "originally authorized for hydropower, flood risk management and navigation," the Corps has completely abandoned navigation as an operating purpose for the project. At page 7-12 of the draft Allatoona manual, the Corps admits, "There are no specific reservoir regulation requirements to support navigation at Allatoona Dam."

In the draft Allatoona manual at p. 3-3, the Corps claims that "Corps reservoirs are operated as a system to accomplish the authorized purposes of the projects." At page ES-27 of the draft EIS, the Corps acknowledges that inflow above the Alabama Power Company projects in the Coosa River is critical for navigation. Yet, the Corps has ignored any systemic focus on navigation and ignored the impact that releases from Allatoona and Carters have on downstream navigation when it failed to include any operations at Lake Allatoona whatsoever for navigation under the Proposed Action Alternative. At page 2-69 of the draft EIS, the Corps justifies its abandonment of navigation as one of Lake Allatoona's operating purposes by noting that Lake Allatoona and Carters Lake, "while originally authorized to support downstream navigation, are not regulated for navigation because they are distant from the navigation channel, and any releases for that purpose would be captured and reregulated by APC reservoirs downstream." But that explanation cannot be reconciled with the Corps' insistence that the ACT Basin is operated as a system. Of course flows will be captured and reregulated in a multi-project system. Indeed, Congress envisioned that navigation would be possible in the basin through construction of a series of projects, not just one.

The Corps has no authority to override Congress's determination that navigation is one of Lake Allatoona's authorized purposes.

To the extent that the Corps adopts its Proposed Action Alternative, the Corps cannot undertake the substantial shifts in the relative sizes of the project purposes at Lake Allatoona that the Proposed Action Alternative entails or the abandonment of one of the operating purposes without congressional approval. For decades, the Corps has acknowledged that its discretion to alter the operational balance among purposes at an existing project is strictly circumscribed: "It is the view of this office [of the Army General Counsel] that the discretionary authority given the

Chief of Engineers to make post-authorization changes in projects . . . is not considered to include matters which materially alter the nature of the project, such as the addition or deletion of project purposes where not otherwise authorized by law, or substantial changes in the relative sizes of project purposes." (See Exhibit 14.) The Corps' recognition of its inability to undertake a reallocation that substantially changes the relative sizes of project purposes was confirmed in *EDF v. Alexander*, 467 F. Supp. 885 (N.D. Miss. 1979), *aff'd on other grounds*, 614 F.2d 474 (5th Cir. 1980).

The Corps recognized this requirement of congressional approval at page 1-2 of the draft EIS: "Any proposed changes to the ACT Basin water control operations that would significantly affect other project purposes . . . would require feasibility-level studies and congressional authorization." Notwithstanding that recognition that the requirement exists, the Corps has given no indication that it intends to adhere to it. A failure to obtain congressional approval, however, would render illegal the implementation of the Proposed Action Alternative.

VI. Proposed Action Alternative Will Make Drought Operations More Frequent and Drought Effects More Severe in Alabama

The Corps' Proposed Action Alternative will make drought operations in Alabama more frequent and drought effects more severe. The draft EIS includes a new drought plan for the ACT Basin in Alabama. Under the Corps' No Action Alternative, the state-line flow trigger for the drought plan would have been triggered 14.1% of the time. Under the Proposed Action Alternative, however, the state-line flow trigger would be triggered 16.4% of the time. That represents a 16% increase in the number of days that Alabama would be under drought conditions as defined by the plan. As mentioned above, the Corps' modeling of the Proposed Action Alternative assumes that the Corps will generate the maximum amount of hydropower at Lake Allatoona for nine months of the year and 50% of the maximum during the other three months. Those assumptions, however, come nowhere close to how the Corps actually operated during the 2007 drought. If one assumes that the Corps generates no hydropower at Allatoona (which is clearly allowed under the draft Allatoona manual), then the state-line flow trigger would be triggered in Alabama 20.9% of the time, which would be a 48% increase in the number of days that the drought plan would be operative compared to when the drought plan would have been triggered under the No Action Alternative. (See Exhibit 15.)

There also is no question that the effects of droughts will be more severe under the Proposed Action Alternative compared to comparable conditions historically. As discussed above, the Corps concedes that flows at Rome will be 200-500 cfs lower in the fall months of the year under the Proposed Action Alternative and that lake levels at Lake Allatoona will be "notably higher" in the fall months under drought conditions. During the drought of 2007, Alabama experienced major water quality and other environmental problems in the ACT Basin during the fall months. Indeed, many Alabama industries were on the verge of having to shut down operations and lay off employees because they were close to being unable to meet permit limits with their discharges. A reduction in flow in the Coosa River at the Alabama state line by 200-500 cfs will almost certainly cause far graver environmental and economic consequences than have been experienced during prior similar droughts.

In light of the substantial increase in drought operations caused by the Proposed Action Alternative even under the Corps' rosy assumptions and the inevitable increase in drought severity, there is no justification whatsoever for the changes.

VII. Inadequate Information Relating to Water Storage Accounting for Lake Allatoona

At page 8-5 of the draft manual for Lake Allatoona, the Corps describes a water accounting system that will be used to account for usage of Lake Allatoona's storage by parties with a contractual right to use part of the conservation storage pool. The description of the accounting system is vague, and key terms are not defined. After receiving the draft manual, we requested during a meeting with the Corps on April 2, 2013, that documents reflecting the storage accounting system be provided to us so that we could better understand it and provide any comments on it. A Corps representative responded that the Corps could not provide that information to Alabama without permission from the Corps' counsel. The information should be provided immediately so that Alabama can perform an evaluation of it and comment on it as necessary.

Alabama representatives also asked the Corps about the accounting storage system at the public meeting in Gadsden on March 27, 2013. Representatives of the Corps' Mobile District told our representatives that the Mobile District does not actually perform the storage accounting for Lake Allatoona in the manner described in the manual. Instead of following the manual's description, the Mobile District uses an inflow number that is already the net result of evaporation and other losses. Needless to say, the description of the storage accounting system in the manual should conform to the manner in which the storage accounting is actually performed.

The Corps should revise the draft Allatoona Manual so that ambiguity concerning the storage accounting system is eliminated. For example, the formula in the manual refers to subtraction of "Loss Share," but that critical term is not defined. How it is defined will have a significant impact on the results of the calculation.

Although the Corps gives a general discussion of the storage accounting system in the draft manual, it does not include it in its modeling or supporting analysis. Including the storage accounting system in the model would not be difficult, and would represent a necessary correction of the Corps' use of a water-supply withdrawal amount for Lake Allatoona in the modeling that neither represents the actual historical withdrawals or the contractually authorized amounts.

The Corps also states at page 8-5 of the draft Allatoona Manual that "[t]he use of contracted water supply storage space will be carefully monitored to ensure contracted storage volumes are not exhausted." As discussed in detail below, CCMWA has repeatedly exhausted its contracted storage, yet the Corps has failed to take any action in response. The draft manual should spell out specifically what progression of steps that the Corps will take to enforce the limits of the water-supply storage contracts into which it enters.

VIII. Failure to Address Decades-Old Water-Supply Issues

Finally, Alabama expresses its dismay at the Corps' failure as part of the manual-update process to address CCMWA's violation of the terms of its contract for storage for water supply at Lake Allatoona.

In 1963, the Corps contracted with CCMWA for 13,140 acre-feet of storage at Lake Allatoona. Even though the Corps estimated at the time it entered into that contract that 13,140 acre-feet would yield 34.5 mgd, a more recent critical yield analysis performed by the Corps established that the allocated storage would only yield approximately 22 mgd. The Corps also determined in or around 1990 that CCMWA would receive no credit for its return flows in calculating its usage of the allocated storage. (See Exhibit 16.)

In 2007, the Corps wrote to CCMWA stating that its calculations indicated that CCMWA was exceeding its allocated storage amount. (See Exhibit 17.) Indeed, the Corps' calculations showed that CCMWA's excess usage had been as high as 197% of the allocated storage amount. In response to that letter, CCMWA admitted in a letter to the Corps dated November 19, 2007, that its gross withdrawals under the contract had exceeded 34.5 mgd "for decades." (See Exhibit 18.)

Alabama contended in the lawsuit it filed against the Corps in the United States District Court for the Northern District of Alabama that the Corps failure to enforce the contractual limit over the course of decades was a *de facto* reallocation of additional storage to CCMWA. The Corps successfully moved to dismiss that case on the ground that the Corps had not yet taken a final agency action. As one of its arguments in support of the dismissal in 2012, the Corps suggested to the district court that the Corps could address the CCMWA exceedance level as part of the ACT Manual update.

That suggestion to the district court appears to have been, at best, misleading. The draft EIS makes clear that the Corps never intended to address the issue of CCMWA's contract violation as part of the manual-update process. Neither the draft manual for Lake Allatoona nor any other document associated with the draft EIS contains any indication that the Corps has taken any steps to enforce the contract limits or contemplates taking any such steps. Indeed, as described above, the Corps resorts to fiction in the draft EIS in describing current water-supply operations at Lake Allatoona. Simply put, the Corps pretends that the contract exceedance does not exist.

The Corps' failure to enforce its contract with CCMWA cannot be reconciled with its Engineering Manual EM 1110-2-3600, which it claims in the draft EIS to be following. At page 2-19 of that manual, it states, "Regulation of reservoirs for M&I water supply is performed in accordance with contractual arrangements." At Lake Allatoona, the Corps has operated, and continues to operate, the dam to accommodate CCMWA's use of water that far exceeds the contractual arrangement.

Alabama cannot understand why the Corps will not subject CCMWA to the same procedures and requirements as any other party desiring an allocation of storage for water-supply. CCMWA has brazenly commandeered storage to which it is not entitled, and the Corps has tacitly given permission for this usurpation through its inaction. Particularly in light of the new operating regime proposed for Lake Allatoona, CCMWA's contract violation will only make worse the adverse downstream environmental effects caused by the illegal water-supply usage.

The failure of the Corps to acknowledge the decades-long exceedance, let alone to analyze it as part of the draft EIS, renders the environmental assessment that has been performed entirely legitimate.

IX. Conclusion

Should you need more information on our comments or wish to discuss them, please let me know.

Sincerely,

J. Brian Atkins

J. Brian Atkins, P.E.
Division Director
Alabama Office of Water Resources

cc: Governor Robert Bentley
Senator Richard Shelby
Senator Jeff Sessions

Enclosures

Comment ID 0062

Comment ID 0062.001

Author Name: Atkins, Brian

Organization: ALABAMA OFFICE OF WATER RESOURCES

Comment

On behalf of the Alabama Office of Water Resources and the State of Alabama, I submit the following comments on the Draft Environmental Impact Statement (EIS) issued in connection with the update of the Alabama-Coosa-Tallapoosa (ACT) River Basin Water Control Manual. The draft EIS and the draft master manual contain serious procedural, technical, and substantive flaws.

I. Baseline for NEPA Analysis

An essential part of the process required by the National Environmental Policy Act (NEPA) is determination of a "No Action Alternative" against which the environmental impacts of the proposed federal action can be evaluated. In the draft EIS, the Corps claims that the "No Action Alternative represents no change from the current management direction or level of management intensity" and "represents the continuation of the current water control operations at each of the federal projects in the ACT Basin." Draft EIS at 4-35.

The No Action Alternative is fatally flawed because it relies upon the draft 1993 manual for Lake Allatoona, which was never subjected to the review mandated by NEPA. At section 5.1.2 of the draft EIS, the Corps highlights the significance of action zones at Lake Allatoona to the No Action Alternative. Those action zones at Lake Allatoona were defined by the 1993 draft manual.

It is beyond dispute that the 1993 draft manual was illegally promulgated. NEPA requires federal agencies to analyze the environmental impacts of a proposed action *before* proceeding with that action. See 42 U.S.C .. § 4332(2)(C). Even though the Corps has relied on the 1993 draft manual for two decades in the operation of Lake Allatoona, the draft manual was never subjected to NEPA review, let alone before the Corps adopted it as its operational guide for Lake Allatoona. (*Emphasis added*)

Because the 1993 draft manual was illegally promulgated, it cannot form any part of the No Action Alternative, even if the agency has based its operations on the illegal plan. See, e.g., Friends of Yosemite Valley v. Kempthorne, 520 F.3d 1024, 1038 (9th Cir. 2008). To allow the Corps to utilize the 1993 draft manual and its novel action zones as part of the No Action Alternative would mean that the major shift in operations represented by that draft plan would never be subjected to the required NEPA analysis. The Corps seeks to minimize its improper use of an illegal manual in the No Action Alternative by suggesting that only "incremental changes" have occurred since the last EIS in the 1970s, but the Corps cannot dodge its NEPA obligations by characterizing the major change in the operational regime at Lake Allatoona reflected in the 1993 draft manual as merely incremental. Allowing the 1993 draft manual to form the basis of the Lake Allatoona portion of the No Action Alternative would create a perverse incentive for federal agencies to disregard their NEPA obligations. Instead of using the 1993 draft manual as the basis for the Lake Allatoona operations, the Corps must instead use the operations that existed at the time of the last EIS conducted in connection with Lake Allatoona operations in the 1970s.

Even if the use of the 1993 draft manual as part of the No Action Alternative were not a problem, the No Action Alternative is still flawed because, contrary to the Corps' assertions, it does not reflect the current water control operations in the Basin. The No Action Alternative fails to reflect the current water control operations in several respects:

A. The No Action Alternative does not reflect current water-supply operations at Lake Allatoona. The Corps has contracts with the Cobb County Marietta Water Authority (CCMWA) and the City of Cartersville allocating specific amounts of storage space at Lake Allatoona for water supply use. For purposes of modeling the No Action Alternative, the Corps assumed that the allocated storage amounts would yield a total of 79.3 cfs, and the Corps used that figure to reflect water-supply operations at Lake Allatoona. The use of that figure is flawed for two reasons.

First, the Corps should have utilized data based upon actual historical water-supply usage, not on an estimate of what allocated storage would yield. The Corps claims in section 1.5 of the draft EIS that it is using 2009 conditions as the baseline, but it offers no explanation as to why 2009 operations were not used for water-supply withdrawals at Lake Allatoona. The failure to utilize the actual figures for water supply usage at Lake Allatoona in the No Action Alternative stands in stark contrast to the usage of the actual numbers for water-supply usage at Carters Lake and all other withdrawal points in the No Action Alternative. <Footnote 1> In fact, the only time that the Corps has deviated from use of actual, historical data concerning water supply in modeling the No Action Alternative is in making the calculations for Lake Allatoona. When an Alabama representative asked Corps officials from the Mobile District at one of the public meetings concerning the draft EIS why the actual historical numbers were not being utilized, the Corps officials responded that the decision to ignore the actual water-supply data had been made by their superiors. This suggests that a political, rather than a scientific, decision was made to mask the actual water-supply usage and the Corps' actual operations at Lake Allatoona.

Second, even if it were appropriate to use an estimate as opposed to historical data, the 79.3 cfs figure is grossly inaccurate. It was derived from an outdated critical yield calculation for Lake Allatoona. When the current critical-yield calculation is applied to the contractual storage allocations, then the correct estimate for the yield falls to 50.0 cfs. (See Exhibit 1. <Footnote 2>) That means that the Corps has overstated the yield of the contractual storage allocations at Lake Allatoona in the No Action Alternative by 59%.

B. In modeling the hydropower generation at Lake Allatoona in the No Action Alternative, the Corps assumes a strict and regular schedule for generation of hydropower. But that is not how the Corps operated historically. Information maintained by the Corps on the amount of dam discharges at Lake Allatoona plainly shows that the Corps' generation was highly variable. See Exhibit 2. <Footnote 3> Indeed, in the midst of the 2007 drought, the Governor of Alabama sent a letter highlighting the Corps' failure to adhere to the hydropower generation schedule that the Corps claimed to be following. (A copy of the letter is attached as Exhibit 3.) Simply put, the No Action Alternative does not reflect the current hydropower operations at Lake Allatoona.

C. The No Action Alternative also fails to reflect the fact that the Corps has systematically overfilled Lake Allatoona in the months corresponding to the rising arm of the rule curve. The graphs attached as Exhibit 4 show that this has repeatedly occurred in the last ten years, yet the Corps' modeling of the No Action Alternative does not take account of it.

D. The No Action Alternative does not reflect the Corps' actual operations at Carters Lake, particularly during drought periods. During the critical 2007 drought, the Corps utilized more storage at Carters Lake than what the modeling of the No Action Alternative reflects. (See Exhibit 5.)

E. The modeling of the No Action Alternative also presents a distorted picture of the river flows at Rome. As shown in Exhibit 6, the baseline condition in the model reflects substantially lower flows during the 2007 drought than actually occurred.

F. The No Action Alternative does not reflect how Alabama Power Company has actually operated its projects such as Lake Weiss, Lake H. Neely Henry, and Lake Martin. During drought years, Alabama Power received variances that allowed it to fill above the rule curve at some of its projects and received permission to cutback the flow that it was required to deliver below its projects. The modeling of the No Action Alternative, however, does not take account of that operational history. (See Exhibit 7.)

Because the No Action Alternative is supposed to reflect current operations, the model results for it should conform closely to historical data for the affected projects. Based upon the multiple flaws in constructing the No Action Alternative, it is hardly surprising that the model outputs for the No Action Alternative deviate materially and substantially from historical results. With such serious problems with the No Action Alternative, the Corps' assessment of environmental impacts is fatally deficient. Unless and until the Corps utilizes an appropriate baseline, no valid assessment of environmental effects can occur.

Footnote 1: Although the Corps claims that it bases the No Action Alternative on 2009 operations, the Corps used 2006 data for water-supply usage at all withdrawal points except Lake Allatoona.

Footnote 2: All of the exhibits to this letter are contained on a disk that is being submitted with the copy of this letter being transmitted to you by overnight delivery. We include on the disk Exhibit 19, which is an affidavit related to preparation of the technical exhibits referenced in this letter.

Footnote 3: The information provided by the Corps reflects dam discharges. The exhibit shows how to relate dam discharges to hours of hydropower generation.

Response

USACE disagrees with the comment. The No Action alternative accurately represents current water management operations at projects throughout the basin. The No Action Alternative meets the letter and intent of NEPA requirements.
In the Council on Environmental Quality's memorandum of March 23, 1981, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, the response to Question No. 3 addressing the No-Action Alternative states: "the 'no action' alternative may be thought of in terms of continuing with the present course of action until that action is changed." Consequently, for purposes of the ACT WCM update process, 'no action' reflects current reservoir operations as they have evolved over time in response to laws, regulations, policy, and new technical information. Basing the description of 'no action' on a pre-NEPA 1962 WCM as a basis for comparison to alternative WCM update plans
would not accurately reflect current baseline operations or be consistent with 'no action' as defined in the CEQ memorandum. In the EIS, USACE endeavored not only to describe the Affected Environment in terms of current conditions in the ACT basin but also to incorporate a historical perspective on natural and human resources in the basin dating back to the early 1950's when Allatoona Dam and Lake was completed and placed in operation.

Based on comments received on the draft EIS, the No Action Alternative (baseline condition) was modified to include actual water supply withdrawals by CCMWA in lieu of the current water supply contract amount for CCMWA. As described in the modeling report (EIS Appendix C), year 2006 withdrawal values were selected to represent actual withdrawals for the model simulation over the period of record. 2006 was the year of highest net withdrawals in the ACT basin. Models were rerun and the impact analysis in Section 6 was updated as appropriate.

Comment ID 0062.002

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Comment

II. Cumulative Effects for NEPA Analysis

In the draft EIS, the Corps acknowledges that it must assess cumulative effects, which is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions." See Draft EIS at § 6.9. The Corps' consideration of reasonably foreseeable future actions in the draft EIS is deficient and, thus, its assessment of cumulative effects is insufficient.

"To consider cumulative effects some quantified or detailed information is required. Without such information, neither the courts nor the public in reviewing the [agency's] decisions, can be assured that the [agency] provided the hard look that it is required to provide." Neighbors of Cuddy Mtn. v. US. Forest Serv., 127 F.3d 1372, 1379-80 (9th Cir. 1998). "General statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." Id. at 1380. "The impacts analysis must also contain some quantified or detailed information." Sierra Club v. Bosworth, 510 F.3d 1016, 1030 (9th Cir. 2007). "A simple declaration that a project's cumulative impacts are insignificant, without a convincing explanation, fails [the hard look] test." Mountaineers v. US. Forest Serv., 445 F. Supp. 2d 1235, 1247 (W.D. Wash, 2006).

There are glaring omissions in the Corps' consideration of reasonably foreseeable future actions. Entities in Georgia have been discussing the need for substantial increases in water-supply withdrawals in the Georgia portion of the ACT Basin for many years. On January 24, 2013, the State of Georgia submitted a request for multiple actions to be taken to increase its water-supply usage in the ACT Basin. (A copy of that request is attached as Exhibit 8.) At Lake Allatoona, Georgia requests that water-supply withdrawals be increased from the current authorization pursuant to the contracts with CCMWA and Cartersville of an annual average of 32.3 mgd <Footnote 4> to 123.9 mgd, an increase of 284%. In addition, Georgia asks that the storage accounting for the authorized contract amounts be changed from a gross basis to a net basis. If allowed, such a change would drive the proposed water-supply withdrawals even higher.

In that same letter, Georgia requests that an additional 27 mgd be allowed to be withdrawn by CCMW A in connection with releases from Hickory Log Creek Reservoir. Taken together with its other requests related to Lake Allatoona, that would amount to an aggregate increase of 367% over current water-supply authorizations.

Georgia also notes in the letter that its additional 2040 water-supply demands will have to be met either out of the proposed Richland Creek Reservoir or out of Lake Allatoona. According to the letter, those additional demands will amount to an additional 24 mgd if met out of Lake Allatoona. Thus, when considered in the aggregate, that involves an increase of 441% over current water-supply authorizations.

Even though Georgia contends that this massive increase in demand is needed to meet its population growth in the basin, the Corps does not consider the Georgia request, either as to the specific requested increases or as to the claimed massive needs of a growing population generally, in its cumulative effects analysis. In addition, the cumulative effects analysis takes no account of the water-supply impacts of either the onset of operations at the already-constructed Hickory Log Creek Reservoir (44 mgd yield) <Footnote 5> or the proposed Richland Creek Reservoir (35 mgd yield). Nor does the cumulative effects analysis take any account of the fact, conceded by Georgia in the materials submitted with its letter, that the annual average withdrawals at Lake Allatoona already are 49.5 mgd and have been as high as 64.3 mgd (which is a clear violation of the contracts into which the Corps has entered).

In order to undertake an appropriate evaluation of cumulative effects for purposes of the EIS, the Corps must take these reasonably foreseeable future uses and model their effects when considered in conjunction with the proposed action. Alabama anticipates that such modeling would show serious adverse environmental effects downstream from Lake Allatoona because the massive increase in water-supply withdrawals that Georgia projects over the next 27 years will radically diminish downstream flows, especially in times of drought.

The actual cumulative-effects analysis contained in the draft EIS is superficial and conclusory. Occupying less than four pages in the draft EIS, the section on cumulative effects contains no detailed consideration of expected increases in water-supply usage. Instead, the Corps resorts to general assertions such as "demands for public water supply ... are expected to continue to increase in the future." Even worse, the Corps does not make any effort whatsoever to evaluate how the increases in water-supply usage, when considered in conjunction with the proposed alternative, will impact the environment. For example, the Corps appears to have done no modeling of how increased water-supply withdrawals along with the proposed action would affect the downstream environment. These deficiencies in the cumulative effects analysis must be corrected before the EIS becomes final.

Footnote 4: The 32.3 mgd figure is derived from applying the current critical-yield calculation for Lake Allatoona to the contractual storage allocations to CCMW A and Cartersville. (See Exhibit 1.)

Footnote 5: In fact, the Corps in the draft EIS (at page 1-40) expressly disavows giving any consideration to Hickory Log Creek Reservoir other than its 2009 operations.

The draft EIS also describes Hickory Log Creek Reservoir as follows at page 2-62: "As planned and designed by the CCMWA and city of Canton, water will be pumped from the Etowah River to fill the reservoir during high-flow periods and released during low-flow periods to supplement Etowah River flows and Allatoona Lake inflows to enable water supply withdrawals from existing water intake facilities (CCMWA 20 I 0)." To the extent that the description suggests that the reservoir was designed with the intent for increased water supply withdrawals from existing intake facilities in Lake Allatoona, that is incorrect. The only withdrawal point contemplated by the license issued in connection with the reservoir was the City of Canton's intake facility on the Etowah River.

Response

USACE concurs that cumulative impacts must be addressed in accordance with NEPA and the CEQ and USACE implementing regulations. Cumulative impacts are addressed in Section 6.9 of the EIS. The cumulative impacts analysis has been revised and updated in the final EIS to incorporate additional information obtained during the public review of the draft EIS. The proposed action does not include a water supply reallocation study and is therefore limited to water management operations. A sensitivity analysis has been added to the evaluation that will include the potential for variation from historic inflows. In addition, the models were refined to incorporate operation of Hickory Log Creek reservoir, as permitted (i.e., all water supply withdrawals would occur upstream of Allatoona Lake).

Section 2.1.1.1.4.17 has been revised to include a description of the operation of Hickory Log Creek reservoir as permitted by USACE. The proposed operation of the project as described in the CCMWA reference cited in the draft EIS would require reallocation of storage in Allatoona Lake and is not within the scope of this WCM update process.

Comment ID 0062.003

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Comment

III. Additional Model and Data Errors

In addition to the fatal problems with the No Action Alternative and the failure to properly consider cumulative effects, there are additional problems with the Corps' modeling, the data it employed in connection with the modeling, and the interpretation of the results of the modeling that must be corrected before the EIS is issued.

A. In modeling the Proposed Action Alternative, the Corps assumed more hydropower generation at Lake Allatoona than is required by the draft manual for that project. In particular, the draft manual gives the Corps the option to generate zero hydropower in all action zones at Lake Allatoona, and provides a range of generation levels for Zone 1, 2 and 3. The modeling of the Proposed Action Alternative, however, assumed that the Corps would generate the maximum amount of hydropower in Zones 1 and 2 during nine months of the year and would generate 50% of the maximum for those zones in the other three months. Those assumptions are not realistic. Historical operations by the Corps at Lake Allatoona under the 1993 draft manual have frequently seen the Corps generate less than 100% of the authorized hydropower amount during the nine-month period of the year and less than 50% of the authorized hydropower amount during the other three months. (See Exhibit 2.) In fact, the Corps has frequently generated less than the minimum amount defined by the draft 1993 manual for Zone 1. In the draft manual for Lake Allatoona (at page 7-2), the Corps stated that it intends to use the action zones "to manage the lake at the highest level possible within the conservation storage pool while balancing the needs of all authorized purposes with water conservation as a national priority used as a guideline." In light of that statement, it does not seem realistic to assume in the modeling that the Corps will generate the maximum amount of hydropower allowed in Zone 1 and 2. The Corps offers no explanation as to why the assumptions employed in its modeling are reasonable.

In order to perform a valid EIS, the Corps should, at a minimum, also model a low-flow scenario in which the Corps generates at the bottom of each range for each action zone. We have modeled how the flows at Rome would have differed in 2007 between Plan G and an operational regime in which no hydropower is generated (which the manual permits), and we have calculated what effect the difference in flows would have had on the conservation storage pool at Lake Allatoona. (See Exhibit 9.) In the likely event that serious environmental impacts would result from that low-flow scenario, the Corps should perform additional modeling to determine where in the range the adverse environmental impacts are diminished.

We note that this sort of bracketed approach to modeling environmental impacts was employed by the Corps in preparing its 1998 EIS in connection with potential allocation formulas in the ACT Basin.

B. Just as with the Corps' modeling of the No Action Alternative, the Corps' modeling of the Proposed Action Alternative assumes a water-supply number for Lake Allatoona that reflects neither the contractually authorized water-supply allocations nor historical water-supply amounts. Until this erroneous input is corrected, any results of the modeling are invalid.

C. The Corps is also knowingly using erroneous inputs with its DSS data. We became aware of the data error when we ran the ResSim model to match the observed USGS flow data below Allatoona. The model inflow data set did not allow us to replicate the historically observed elevation and outflow readings. What the Corps' data shows as project outflow (the Allatoona Discharge from the ACTHEC_8.dss file with the "F pathname" of "COE_ADJ") does not match what the USGS data shows (taken from the USGS website for station number USGS 02394000 ETOWAH RIVER AT ALLATOONA DAM). For the period of 1980-2008, the Corps data shows the Allatoona outflow as 1,593 cfs compated to 1,726 cfs from the USGS.

Over one year ago, we alerted the Corps' Mobile District to these problems with the models. In the past few months, representatives of the Mobile District acknowledged the problems that we identified. They explained that the COE_ADJ outflow was used to create the input "incremental" inflow data contained in the DSS file (ACTCUM_8.dss). They further admitted that the inflow data needs to be recalculated.

This flaw in the data affects every model run and the critical-yield calculations that have been performed, thereby making it impossible to draw any valid conclusions until the flaw in the data is fixed.

D. The Corps has also modeled operations for Carters Lake that do not match the proposed guide curve contained in the draft EIS. (See Exhibit 1 0.) In fact, the guide curves for Carters Lake in the Executive Summary of the draft EIS, the draft Carters Manual, and the ResSim Modeling Report are all different from each other, and the modeled guide curve for Carters Lake is different from each of them. Needless to say, the draft EIS cannot be valid if the models underlying it do not conform to the proposed action.

E. In addition to the flaws with the model inputs, the Corps has also committed a serious error in its method of interpreting the model outputs. The Corps has evaluated the model outputs by looking to effects on an annual average basis and by looking to an average of a specific calendar day over many years. Use of long-term averages virtually guarantees that any adverse environmental impact will be masked. Instead of using these types of long-term averages to evaluate environmental impacts, the Corps should be looking at effects during more limited periods, especially during critical dry periods during droughts.

Given the nature of varying hydrological conditions throughout a year and over several years, long-term averages are inappropriate to evaluate the environmental impacts of the proposed action. For example, if one compares the actual observed average flow at Rome for the 2007 water year (October 2006-September 2007) with the flow for the same period under Plan G, the flow under Plan G is less than 1% different from the historical flow, which would lead one to conclude that there is little environmental impact compared to history. However, if one limits the comparison to the June-September 2007 period, the Plan G flows are 300 cfs, or 21% lower, than the historical flows. (See Exhibit 11.) In the summer months of the most extreme drought recorded in the Basin, a reduction in flow of 300 cfs at Rome almost certainly would have a material detrimental environmental impact at Lake Weiss and downstream from Lake Weiss. Yet that significant impact is lost through the use of full-year averaging.

In Exhibit 11 , we also provide an additional example as a further indicator as to why full-year averaging is not appropriate. It shows for the 2007 water year how substantial the deviations from the annual average were throughout the year. Just a few high spikes (that only occur for 1 or 2 days in a year) can mask several months of low flows if one only looks at an annual average. An appropriate analysis must focus on the critical periods of a drought year when flows are lowest. A fair assessment of the environmental impacts of the proposed action during a severe drought, such as the one that occurred in 2007, simply cannot be made through use of annual averages.

In light of all of the problems with the modeling and the data on which it is based, the results of the modeling are neither valid nor reliable, and any assessment of environmental impacts cannot be legitimately made until the problems are fixed.

Response

A. The hours identified in the actions zones of the Proposed Action represent the most likely hydropower demand during normal conditions. Modeling is not intended to capture the exact operation of every day. While USACE agrees that the actual operation may not be the maximum amount identified in each action zone, the assumptions are consistent with each alternative and allows for meaningful comparisons. Using the maximum value in each zone is consistent with previous modeling approach used during previous ACT/ACF studies. There are numerous factors that water managers consider when determining the available hydropower generation hours. These factors don't lend themselves to a model algorithm; as a
result, they were omitted. The fixed number of hydropower hours per zone is sufficient to capture typical reductions.

B. Water Supply numbers for the No Action alternative have been modified to reflect actual usage that occurred in calendar year 2006. This is consistent with remainder of the basin. For all other alternatives, the water supply numbers are limited to the contractually authorized water supply allocations. Using the same water supply numbers for each reservoir alternative operation allows for proper comparative impact analysis.

C. The input DSS data is the unimpaired flow data set. USACE works with the states to periodically update the data set to include recent hydrologic period, refinement to water use data and reservoir/streamflow improved data. It's an improper statement to say USACE knowingly used erroneous data. As problems are identified in the data set by the states, USACE will work to make corrections. The ACT unimpaired flow data set has been updated to include hydrology through calendar year 2011. Problems in the unimpaired flow identified by the states' technical teams have been addressed.

D. Carters guide curves represented in the model are the proposed changes. Figures in other documents will be modified for consistency.

E. USACE disagrees with this comment. At the draft EIS stage, the HEC-ResSim model was run using a 70-year period of hydrologic record (1939-2008). This period include several severe drought periods, including more recent droughts in the early 1980's, mid- to late 1980's, early 2000's, and 2006-2008 (the drought of record). The model has been updated to extend the period of record through 2011. Long term daily averages were used, in part, at the draft EIS stage to help evaluate expected changes under the various water management alternatives along with other approaches to considering the HEC-ResSim outputs. In response to public comments on the draft EIS, the final EIS presented and discussed both median and 90 percent exceed values for lake levels and streamflow to demonstrate that consideration was given to extreme conditions. The EIS also includes numerous duration curves for lake elevations and flows at various points along the rivers in the ACT basin. These and other views of the data provide a perspective, over time, about how the alternative plans respond during periods of extremely low flow conditions.

Comment ID 0062.004

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Comment

IV. Water Quality Impacts

In the Draft EIS, the Corps ignores its own regulations as to how it must address the adverse downstream water quality impacts caused by its operations.

The Corps admits in the draft EIS that the Proposed Action Alternative will cause detrimental environmental impacts downstream from Lake Allatoona. See, e.g., Draft EIS at 6-112 ("State agencies would continue to apply adaptive management techniques to more precisely define the ACT system's assimilative capacity. Water management activites may affect water quality under low flow conditions such that the state regulatory agency may consider reevaluation of NPDES permits to confirm the system's assimilative capacity."). The draft EIS, however, indicates that the Corps deems the downstream environmental consequences of its Proposed Action Alternative to be outside its concern. Instead, the Corps appears to conclude that the burden for addressing those consequences must be shouldered by others.

The draft EIS takes a much-too-narrow view of the Corps' obligations relative to the downstream consequences of its actions. The Corps' own regulations clearly mandate that "Corps management responsibilities extend throughout the area influenced by and influencing the water [the Corps] manage[s]." See Water Quality and Environmental Management for Corps Civil Works Projects, ER 1110-2-8154, at page 2 (May 31, 1995) ER 1110-2-8154, at page 2. Those same regulations (at page 3) require the Corps to implement water quality management plans that are "scoped to include all areas influencing and influenced by the project."

The Corps has committed in ER 1110-2-8154 to a "policy to develop and implement a holistic, environmentally sound water quality management strategy for each project." In furtherance of that commitment, Corps regulations dictate that the Corps implement a water quality management program that, among other things:

Ensure[s] that water quality, as affected by the project and its operation, is suitable for project purposes, existing water uses, and public health and safety and is in compliance with applicable Federal and state water quality standards.

Ensure[s] that the project and its operation offer the lowest stress possible on the aquatic environment.

ER 1110-2-8154 at pages 3-4.

The draft EIS plainly demonstrates that the Corps is violating its own regulations. Rather than assessing measures that the Corps can take to alleviate the downstream environmental consequences of its Proposed Action Alternative, the draft EIS simply identifies adverse consequences and then suggests that downstream parties will have to deal with them. See draft EIS at 6-112 - 6-118. Not only does that approach fail to recognize the fact that "Corps management responsibilities extend throughout the area influenced by" the Corps' operations of Lake Allatoona, but it further violates the Corps' obligation to maintain "the existing instream water uses and the water quality necessary to protect them." See ER 1110-2-8154, at page 2.

The Draft EIS details a number of adverse environmental consequences that would arise downstream of Lake Allatoona under the Proposed Action Alternative, and in each instance, the Corps' solution for addressing these consequences is for downstream parties to take steps to deal with them. For example, the Corps concedes that its proposed operational changes would result in increased temperatures in the Alabama River at the confluence of the Coosa and Tallapoosa Rivers and that median water temperatures during low-flow periods are predicted to increase by as much as 1.8° F. Draft EIS at 6-112. The Corps acknowledges that such an increase "would be expected to affect allowable discharges along the reach and aquatic species." Id. The Corps offers no suggestion that it would take any action to address the issue, but instead states that permits for existing discharges "could be restricted during conditions similar to what occurred in 2007." Id.

Likewise, the Corps acknowledges the Proposed Action Alternative would adversely impact downstream levels of dissolved oxygen, id. at 6-112, phosphorous, id. at 6-115, nitrogen, id. at 6-116, and chlorophyll a, id. at 6-117. Again, the Corps' solution for addressing the consequences of its actions involves no action on the part of the Corps, but instead would impose the burden of dealing with the consequences on others. See, e.g., Draft EIS at 6-117 ("In periods of dry weather, with low inflows, the Proposed Action Alternative would be expected to increase algal growth in Weiss Lake, and resulting potential updates to discharge permits may have an adverse impact on upstream dischargers."); id. at 6-115 (acknowledging that the Proposed Action Alternative would have adverse effects on total phosphorous concentrations in the upper Coosa River and stating that "point source permits might need to be revisited to ensure that water quality standards would be met").

The draft EIS's "solution" of restricting dischargers' permit limits or otherwise shifting the burden of dealing with the acknowledged environmental consequences of the Corps' Proposed Action Alternative to other parties is in direct conflict with the Corps' obligation "to protect all existing and future uses including assimilative capacity, aquatic life, water supply, recreation, industrial use, hydropower, etc." See ER Ill 0-2-8154, at 2.

Corps regulations clearly recognize that the Corps must "at least, manage its projects in accordance with all applicable Federal and state environmental laws, criteria, and standards." Id. And, the Corps has committed to a policy of giving the environment "equal standing not simply consideration in all aspects of project management and the operational decision-making process. Id. at 3. By proposing an action that includes admitted environmental consequences that will adversely impact downstream uses, the Corps is clearly not meeting these obligations.

Moreover, as the comments and accompanying materials submitted by the Alabama Department of Environmental Management ("ADEM") demonstrate, the Corps' Proposed Action Alternative will result in water quality violations and other adverse environmental impacts downstream from Lake Allatoona. As such, the Corps' Proposed Action Alternative fails to satisfy the Corps' obligation to comply with Federal, state, interstate, and local environmental laws, criteria, and standards.

Response

USACE disagrees with the position stated in the comment. The EIS appropriately documents the impacts to the human environment for the alternatives. The WCMs will comply with all applicable laws and regulations.

Comment ID 0062.005

Author Name: Atkins, Brian

Organization: ALABAMA OFFICE OF WATER RESOURCES

Comment

V. Proposed Action Alternative Reflects a Substantial and Inappropriate Reordering of Lake Allatoona's Project Purposes

The Corps' Proposed Action Alternative represents a substantial reordering of project purposes at Lake Allatoona that will cause enormous harm to downstream interests, especially during drought periods. The substantial and ill-considered shifts in Lake Allatoona's project purposes include the following:

A. The Proposed Action Alternative includes what is described as a modified drawdown at Lake Allatoona in the fall months, and this represents an inappropriate elevation of recreation as the dominant project purpose during the critical dry months of the year. Specifically, the Corps proposes that the drawdown of the conservation storage pool at Lake Allatoona be suspended from October 1 until mid-November each year. This results in a novel plateau in the rule curve at elevation 835 for that 45-day period.

Neither the draft EIS nor the proposed manual for Lake Allatoona offers any explanation why this action is being proposed. At one of the public meetings in connection with the draft EIS, an Alabama representative asked representatives of the Corps' Mobile District as to why the modified drawdown, which will significantly curtail downstream flows during the driest months of the year, was being proposed. The Corps officials responded that the action was designed to benefit recreation at Lake Allatoona.

This decision runs counter to the basic rationale for reservoir management expressed by the Corps in the draft EIS. The Corps stated in §2.1.1 of the draft EIS, "An important function of the many reservoirs in the ACT Basin is to store water when there is an abundance of rain and to release water when there is less rain, ensuring that all water needs are met throughout the year." With the modified drawdown under the Proposed Action Alternative, the Corps is abandoning this fundamental principle. Instead of releasing water in the driest months of the year when the water needs are great (see Exhibit 12), the Corps intends to hold water at Lake Allatoona until the critical period is over. The water will be released later in the year when it is of much diminished use to the system.

The decision to take this action to elevate the importance of recreation at Lake Allatoona is inconsistent with the Corps manual upon which the Corps purports to base the draft EIS. In Engineering Manual EM Ill 0-2-3600, Management of Water Control Systems (November 30, 1987) at page 2-29, the Corps states, "The Federal interest in the provision of recreation opportunities at Corps of Engineers projects is limited; that is, other project purposes, such as flood control or navigation, are needed to establish Corps interest. Many projects, including those for which recreation facilities may have been included under general provisions of the Flood Control Act of 1944, as amended, do not have separable storage costs for recreation. While under these circumstances recreation is an authorized purpose, it is secondary to project functions for which the storage was formulated." The draft EIS confirms at page 2-

66 that recreation at Lake Allatoona is authorized only under general legislation. The economic justification for the project was based on hydropower and flood control. Yet rather than making recreation secondary as the Corps' manual requires, the Proposed Action Alternative makes recreation the dominant purpose.

The Corps' decision to embrace the modified-drawdown concept is also inconsistent with the Corps' statement at page 2-70 of the draft EIS that the Corps "considers recreational needs at the Allatoona Lake project in making water management decisions" "[d]uring the peak recreation season, generally Memorial Day through Labor Day." With the modified drawdown, the Corps is making recreation the driving factor for operation of the project after the peak recreation season has ended.

The Corps clearly recognizes the effects of this drastic change in its operating regime during the fall months of the year. The Corps stated that its objective was to "sustain higher water levels [at Lake Allatoona] after Labor Day," (Draft EIS at page 4-23), and it will succeed in that goal if the Proposed Action Alternative is implemented. The Corps forecasts that Lake Allatoona will be 1-5 feet higher during the period of October-December as a result of this change. The Corps acknowledges at page 6-14 of the draft EIS that the modified-drawdown plan will be "likely to maintain notably higher monthly lake elevations from October through December, particularly under drought conditions."

The downstream environmental and economic effects of this plan to operate Lake Allatoona in the dry months to enhance recreation will be severe. The Corps predicts that the flows at Rome will be 200-500 cfs lower in the fall. (See Draft EIS at 6-57.) Especially during droughts, that will have substantial adverse consequences for water quality at Lake Weiss and throughout the ACT Basin. During the drought of 2007, historic low flows were observed at the Alabama-Georgia state line during the fall months of the year, yet the Proposed Action Alternative would drive those flows hundreds of cfs lower. Moreover, system hydropower alone will decrease significantly in the fall months with a loss of nearly 6% in October. (See Draft EIS at 6-178.)

The Corps has no justification whatsoever for holding water in Lake Allatoona to promote recreational interests after the peak recreation season has ended when the adverse effects to hydropower, water quality, and the other authorized project purposes are so substantial. Accordingly, Alabama demands that the Corps abandon the modified-drawdown concept in the Proposed Action Alternative.

B. The Proposed Action Alternative also represents a significant diminution in the importance of hydropower as an operating purpose at Lake Allatoona. Under the new action zones, the Corps will have the ability to generate zero hydropower in all action zones at all times. Coupled with the Corps' stated goal of keeping Lake Allatoona as full as possible, this is a significant shift in the operational regime at the project.

Under the prior regime according to which the Corps has operated Lake Allatoona, the Corps was required to generate hydropower when Lake Allatoona is in the upper portion of the conservation storage pool. This was consistent with congressional intent because the economic justification for Lake Allatoona's construction was primarily hydropower generation. Under the new Allatoona manual, the Corps will even have the ability to generate zero hydropower when the conservation storage pool is in Zone 1 in the summer and fall months. That alone is an unjustified and substantial change in the relative importance of the project's operating purposes.

Even though the Proposed Action Alternative nominally has four action zones, Zone 1 does not exist between January 1 and June 15, and Zone 2 does not exist between January 1 and April 15. Zone 3 is defined in the proposed Allatoona manual as indicating "drier than normal conditions or· impending drought conditions." It is nonsensical to suggest that conditions are drier than normal or indicative of impending drought when the conservation storage pool is full on or before April 15. Furthermore, the Corps offers no explanation as to why Zone 1 does not come into existence until June 15, two full months after the full pool level is reached on the guide curve.

In addition, the diminution in the importance of hydropower as an operating purpose is shown by the fact that there is no hydropower generation whatsoever in Zone 4. The Corps has defined Zone 4 to include a majority of the conservation storage pool for most of the year. (See Exhibit 13.) In fact, on June 1, Zone 4 includes 84% ofthe conservation storage pool. It is a major shift for the Corps to make so much of the project's conservation storage pool unavailable for hydropower generation. <Footnote 6>

Although the Corps seeks to diminish the significance of these changes by assuming that it will generate the maximum amount of hydropower during most of the year and by assessing hydropower effects on a systemic basis, the Corps cannot hide from the fact that the Proposed Action Alternative represents a substantial change in the relative importance of hydropower in operating Lake Allatoona.

C. In addition to elevating the importance of recreation and diminishing the importance of hydropower as operating purposes at Lake Allatoona, the Proposed Action Alternative also places much greater importance on water supply than the last properly promulgated manual. The Corps admits in the draft EIS at page 2-66 that "[d]uring extreme drought conditions, water supply and water quality requirements have been the major operating concerns." Similarly, in the draft Allatoona manual at page 8-5, the Corps states, "During droughts there is serious concern about protecting water supplies."

The inclusion of water supply as one of the two major operating concerns during droughts represents a major shift in emphasis from the last approved manual. This shift has been heightened by the Corps' allowance of water-supply usage of Lake Allatoona by entities far in excess of their contractually authorized amounts.

In deciding to hold water in Lake Allatoona to protect water supply, especially in illegal amounts, the Corps has lost sight of the original expectation that the conservation storage pool would be used to make releases during dry times.

D. Even though the Corps concedes in the draft Allatoona manual (at page 2-1) that Lake Allatoona was "originally authorized for hydropower, flood risk management and navigation," the Corps has completely abandoned navigation as an operating purpose for the project. At page 7-12 of the draft Allatoona manual, the Corps admits, "There are no specific reservoir regulation requirements to support navigation at Allatoona Dam."

In the draft Allatoona manual at p. 3-3, the Corps claims that "Corps reservoirs are operated as a system to accomplish the authorized purposes of the projects." At page ES-27 of the draft EIS, the Corps acknowledges that inflow above the Alabama Power Company projects in the Coosa River is critical for navigation. Yet, the Corps has ignored any systemic focus on navigation and ignored the impact that releases from Allatoona and Carters have on downstream navigation when it failed to include any operations at Lake Allatoona whatsoever for navigation under the Proposed Action Alternative. At page 2-69 of the draft EIS, the Corps justifies its abandonment of navigation as one of Lake Allatoona's operating purposes by noting that Lake Allatoona and Carters Lake, "while originally authorized to support downstream navigation, are not regulated for navigation because they are distant from the navigation channel, and any releases for that purpose would be captured and reregulated by APC reservoirs downstream." But that explanation cannot be reconciled with the Corps' insistence that the ACT Basin is operated as a system. Of course flows will be captured and reregulated in a multi-project system. Indeed, Congress envisioned that navigation would be possible in the basin through construction of a series of projects, not just one.

The Corps has no authority to override Congress's determination that navigation is one of Lake Allatoona's authorized purposes.

To the extent that the Corps adopts its Proposed Action Alternative, the Corps cannot undertake the substantial shifts in the relative sizes of the project purposes at Lake Allatoona that the Proposed Action Alternative entails or the abandonment of one of the operating purposes without congressional approval. For decades, the Corps has acknowledged that its discretion to alter the operational balance among purposes at an existing project is strictly circumscribed: "It is the view of this office [of the Army General Counsel] that the discretionary authority given the Chief of Engineers to make post-authorization changes in projects .. . is not considered to include matters which materially alter the nature of the project, such as the addition or deletion of project purposes where not otherwise authorized by law, or substantial changes in the relative sizes of project purposes." (See Exhibit 14.) The Corps' recognition of its inability to undertake a reallocation that substantially changes the relative sizes of project purposes was confirmed in EDF v. Alexander, 467 F. Supp. 885 (N.D. Miss. 1979), aff'd on other grounds, 614 F.2d 474 (5th Cir. 1980).

The Corps recognized this requirement of congressional approval at page 1-2 of the draft EIS: "Any proposed changes to the ACT Basin water control operations that would significantly affect other project purposes . .. would require feasibility-level studies and congressional authorization." Notwithstanding that recognition that the requirement exists, the Corps has given no indication that it intends to adhere to it. A failure to obtain congressional approval, however, would render illegal the implementation of the Proposed Action Alternative.

Footnote 6: Similarly, at Carters Lake, the Corps has created two actions zones. Zone 2 is described as reflecting "hydrologic conditions ...likely to indicate severe drought conditions." Carters Lake's conservation storage pool contains 52 feet of storage, but Zone 2 begins at a level within as little as 1.5 feet of the top of the conservation storage pool. In Zone 2, the Carters Manual mandates that only minimum flows be released. The notion that a severe drought is indicated when the project's elevation is so close to the top of the conservation storage pool is absurd.

Response

USACE disagrees with the statement that there would be a "substantial reordering of project purposes". In fact, USACE does not prioritize project purposes and the proposed action continues to balance all authorized project purposes. Navigation is a project purpose that is supported by releases from Lake Allatoona and the seasonal variation in reservoir storage does redistribute downstream flows providing benefits to navigation throughout the ACT. However, there are no specific reservoir regulation requirements to support navigation at Allatoona Dam or immediately downstream.

USACE disagrees that there would be a significant decrease in hydropower production. Those impacts are stated in the DEIS in section 6.6.3 and the Proposed Action would have less than a 1% decrease in system hydropower compared to the No Action Alternative.

Comment ID 0062.006

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Comment

VI. Proposed Action Alternative Will Make Drought Operations More Frequent and Drought Effects More Severe in Alabama

The Corps' Proposed Action Alternative will make drought operations in Alabama more frequent and drought effects more severe. The draft EIS includes a new drought plan for the ACT Basin in Alabama. Under the Corps' No Action Alternative, the state-line flow trigger for the drought plan would have been triggered 14.1% of the time. Under the Proposed Action Alternative, however, the state-line flow trigger would be triggered 16.4% of the time. That represents a 16% increase in the number of days that Alabama would be under drought conditions as defined by the plan. As mentioned above, the Corps' modeling of the Proposed Action Alternative assumes that the Corps will generate the maximum amount of hydropower at Lake Allatoona for nine months of the year and 50% of the maximum during the other three months. Those assumptions, however, come nowhere close to how the Corps actually operated during the 2007 drought. If one assumes that the Corps generates no hydropower at Allatoona (which is clearly allowed under the draft Allatoona manual), then the state-line flow trigger would be triggered in Alabama 20.9% of the time, which would be a 48% increase in the number of days that the drought plan would be operative compared to when the drought plan would have been triggered under the No Action Alternative. (See Exhibit 15.)

There also is no question that the effects of droughts will be more severe under the Proposed Action Alternative compared to comparable conditions historically. As discussed above, the Corps concedes that flows at Rome will be 200-500 cfs lower in the fall months of the year under the Proposed Action Alternative and that lake levels at Lake Allatoona will be "notably higher" in the fall months under drought conditions. During the drought of 2007, Alabama experienced major water quality and other environmental problems in the ACT Basin during the fall months. Indeed, many Alabama industries were on the verge of having to shut down operations and lay off employees because they were close to being unable to meet permit limits with their discharges. A reduction in flow in the Coosa River at the Alabama state line by 200-500 cfs will almost certainly cause far graver environmental and economic consequences than have been experienced during prior similar droughts.

In light of the substantial increase in drought operations caused by the Proposed Action Alternative even under the Corps' rosy assumptions and the inevitable increase in drought severity, there is no justification whatsoever for the changes.

Response

USACE disagrees with the commenter's description of the proposed plan. USACE analyses of the proposed alternative indicate the Drought Contingency Plan will not increase drought severity. In periods of severe drought within the ACT Basin, it will be within the discretion of the Division Commander to approve the enactment of ACT Basin Water Management conference calls. The purposes of the calls are to share ongoing water management decisions with basin stakeholders and to receive stakeholder input regarding needs and potential impacts to users within the basin. During the 2007-2008 drought period, the Division Commander enacted drought calls. Each drought period is unique and reservoir operation varies accordingly. The federal headwater storage projects provide significant flow augmentation during drought periods and benefits multiple users throughout the basin. This operation will continue under the Proposed Alternative.

Comment ID 0062.007

Author Name: Atkins, Brian

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Comment

VII. Inadequate Information Relating to Water Storage Accounting for Lake Allatoona

At page 8-5 of the draft manual for Lake Allatoona, the Corps describes a water accounting system that will be used to account for usage of Lake Allatoona's storage by parties with a contractual right to use part of the conservation storage pool. The description of the accounting system is vague, and key terms are not defined. After receiving the draft manual, we requested during a meeting with the Corps on April 2, 2013, that documents reflecting the storage accounting system be provided to us so that we could better understand it and provide any comments on it. A Corps representative responded that the Corps could not provide that information to Alabama without permission from the Corps' counsel. The information should be provided immediately so that Alabama can perform an evaluation of it and comment on it as necessary.

Alabama representatives also asked the Corps about the accounting storage system at the public meeting in Gadsden on March 27, 2013. Representatives of the Corps' Mobile District told our representatives that the Mobile District does not actually perform the storage accounting for Lake Allatoona in the manner described in the manual. Instead of following the manual' s description, the Mobile District uses an inflow number that is already the net result of evaporation and other losses. Needless to say, the description of the storage accounting system in the manual should conform to the manner in which the storage accounting is actually performed.

The Corps should revise the draft Allatoona Manual so that ambiguity concerning the storage accounting system is eliminated. For example, the formula in the manual refers to subtraction of "Loss Share," but that critical term is not defined. How it is defined will have a significant impact on the results of the calculation.

Although the Corps gives a general discussion of the storage accounting system in the draft manual, it does not include it in its modeling or supporting analysis. Including the storage accounting system in the model would not be difficult, and would represent a necessary correction of the Corps' use of a water-supply withdrawal amount for Lake Allatoona in the modeling that neither represents the actual historical withdrawals or the contractually authorized amounts.

The Corps also states at page 8-5 of the draft Allatoona Manual that " [t]he use of contracted water supply storage space will be carefully monitored to ensure contracted storage volumes are not exhausted." As discussed in detail below, CCMWA has repeatedly exhausted its contracted storage, yet the Corps has failed to take any action in response. The draft manual should spell out specifically what progression of steps that the Corps will take to enforce the limits of the water-supply storage contracts into which it enters.

Response

The Water Control Manuals acknowledges the existence and use of the storage accounting spreadsheet for water supply accounting purposes. The storage accounting spreadsheet incorporates current USACE guidance and no revisions are anticipated at this time. USACE recognizes the need for additional water policy guidance associated with water supply storage accounting and these issues are being addressed under National policy review. Enforcement mechanisms for water supply accounting are outside the scope of the Water Control Manual updates.

Comment ID 0062.008

Author Name: Atkins, Brian

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Comment

VIII. Failure to Address Decades-Old Water-Supply Issues

Finally, Alabama expresses its dismay at the Corps' failure as part of the manual-update process to address CCMWA 's violation of the terms of its contract for storage for water supply at Lake Allatoona.

In 1963, the Corps contracted with CCMWA for 13,140 acre-feet of storage at Lake Allatoona. Even though the Corps estimated at the time it entered into that contract that 13,140 acre-feet would yield 34.5 mgd, a more recent critical yield analysis performed by the Corps established that the allocated storage would only yield approximately 22 mgd. The Corps also determined in or around 1990 that CCMWA would receive no credit for its return flows in calculating its usage ofthe allocated storage. (See Exhibit 16.)

In 2007, the Corps wrote to CCMWA stating that its calculations indicated that CCMWA was exceeding its allocated storage amount. (See Exhibit 17.) Indeed, the Corps' calculations showed that CCMWA's excess usage had been as high as 197% of the allocated storage amount. In response to that letter, CCMWA admitted in a letter to the Corps dated November 19, 2007, that its gross withdrawals under the contract had exceeded 34.5 mgd "for decades." (See Exhibit 18.)

Alabama contended in the lawsuit it filed against the Corps in the United States District Court for the Northern District of Alabama that the Corps failure to enforce the contractual limit over the course of decades was a de facto reallocation of additional storage to CCMWA. The Corps successfully moved to dismiss that case on the ground that the Corps had not yet taken a final agency action. As one of its arguments in support of the dismissal in 2012, the Corps suggested to the district court that the Corps could address the CCMWA exceedance level as part of the ACT Manual update.

That suggestion to the district court appears to have been, at best, misleading. The draft EIS makes clear that the Corps never intended to address the issue of CCMWA's contract violation as part of the manual-update process. Neither the draft manual for Lake Allatoona nor any other document associated with the draft EIS contains any indication that the Corps has taken any steps to enforce the contract limits or contemplates taking any such steps. Indeed, as described above, the Corps resorts to fiction in the draft EIS in describing current water-supply operations at Lake Allatoona. Simply put, the Corps pretends that the contract exceedance does not exist.

The Corps' failure to enforce its contract with CCMWA cannot be reconciled with its Engineering Manual EM 1110-2-3600, which it claims in the draft EIS to be following. At page 2-19 of that manual, it states, "Regulation of reservoirs for M&I water supply is performed in accordance with contractual arrangements." At Lake Allatoona, the Corps has operated, and continues to operate, the dam to accommodate CCMWA's use of water that far exceeds the contractual arrangement.

Alabama cannot understand why the Corps will not subject CCMWA to the same procedures and requirements as any other party desiring an allocation of storage for water-supply. CCMWA has brazenly commandeered storage to which it is not entitled, and the Corps has tacitly given permission for this usurpation through its inaction. Particularly in light of the new operating regime proposed for Lake Allatoona, CCMWA's contract violation will only make worse the adverse downstream environmental effects caused by the illegal water-supply usage.

The failure of the Corps to acknowledge the decades-long exceedance, let alone to analyze it as part of the draft EIS, renders the environmental assessment that has been performed entirely legitimate.

IX. Conclusion

Should you need more information on our comments or wish to discuss them, please let me know.

<Additional attachments to this letter are available upon request.>

Response

USACE disagrees with the assertions contained in this comment. USACE expects that parties to federal contracts will comply with the terms of those contracts. The proposed operations described in the draft ACT water control manual and EIS assume that withdrawals will be consistent with what is contemplated under existing water supply storage contracts. The question about enforcement is a legal question and those decisions are made by the Department of Justice. USACE would consult with DOJ based on specific facts in the event of noncompliance in the future.

A reallocation of storage at Lake Allatoona for water supply is outside the scope of the Water Control Manual update process. Any request for a reallocation of storage for water supply would need to be addressed after the completion of the Water Control Manual update process.

Following coordination of the draft EIS, the No Action Alternative was updated to reflect actual CCMWA withdrawals from Allatoona Lake rather than the amounts in the existing CCWMA storage agreement. As described in the modeling report (EIS Appendix C), year 2006 withdrawal values were selected to represent actual withdrawals for the model simulation over the period of record. 2006 was the year of highest net withdrawals in the ACT basin. In addition, assumed Hickory Log Creek reservoir operations for water supply (consistent with the project as described in the Section 404 permit) were incorporated into the HEC ResSim and HEC-5Q models. The simulation for the 70-year period of record (updated to 73 years to include 2009 - 2011) was re-run with the updated models, and the effects associated with the model results are summarized in Section 6 of the final EIS.

The final EIS also incorporates an analysis of the sensitivity of the proposed action alternative to long range water demand projections across the entire basin (including pertinent areas of the Metro Water District). A summary of the sensitivity analysis is included in the EIS in Section 6 under the "Sensitivity Analysis" discussion, and the Cumulative Effects section (6.9) also addresses future demands and potential regional and local projects to meet those demands.

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ROBERT J. BENTLEY
GOVERNOR

May 29, 2013

Colonel Steven J. Roemhildt, Commanding Officer
U.S. Army Corps of Engineers, Mobile District
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Mobile, AL 36628-001

Dear Colonel Roemhildt:

The Alabama Department of Environmental Management (ADEM) is pleased to provide the following comments and supporting data regarding the Draft Environmental Impact Statement (DEIS) prepared by the Mobile District of the United States Army Corps of Engineers (USACOE) pursuant to the National Environmental Policy Act (NEPA) for proposed modifications to the Water Control Manual for the Alabama-Coosa-Tallapoosa (ACT) River basin. As the environmental regulatory agency for the State of Alabama, ADEM ensures that activities which have the potential to impact Alabama's surface waters do not cause or contribute to violations of the State's water quality standards found in ADEM Administrative Code Chapter 335-6-10 (Attachment 1). In that regard, the following comments will primarily address impacts to water quality resulting from the proposed alternative and statements in the DEIS related to those impacts. ADEM believes that the USACOE has obligations under the NEPA, the Federal Water Pollution Control Act (Clean Water Act), and the USACOE's own regulations which are not adequately addressed in the DEIS.

1. The USACOE's proposed alternative must comply with the Clean Water Act and USACOE regulations.

   Section 101. (b) of the Clean Water Act states, in part: "It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of his authority under this Act."

   In addition, Section 313. (a) states, in part: "Each department, agency, or instrumentality of the executive, legislative, and judicial branches of the Federal Government (1) having jurisdiction over any property or facility, or (2) engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants, and each officer, agent, or employee

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thereof in the performance of his official duties, shall be subject to, and comply with, all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution in the same manner, and to the same extent as any nongovernmental entity including the payment of reasonable service charges. The preceding sentence shall apply (A) to any requirement whether substantive or procedural (including any recordkeeping or reporting requirement, any requirement respecting permits and any other requirement, whatsoever), (B) to the exercise of any Federal, State, or local administrative authority, and (C) to any process and sanction, whether enforced in Federal, State, or local courts or in any other manner. This subsection shall apply notwithstanding any immunity of such agencies, officers, agents, or employees under any law or rule of law."

Federal regulations at 40 CFR §130.12 (c) state: "Each department, agency or instrumentality of the executive, legislative and judicial branches of the Federal Government having jurisdiction over any property or facility or engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants shall comply with all Federal, State, interstate and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution in the same manner and extent as any non-governmental entity in accordance with section 313 of the CWA."

Furthermore, Title 22, Section 22-22-1 et seq., Code of Alabama 1975, includes as its purpose "...to conserve the waters of the State and to protect, maintain and improve the quality thereof for public water supplies, for the propagation of wildlife, fish and aquatic life and for domestic, agricultural, industrial, recreational and other legitimate beneficial uses; to provide for the prevention, abatement and control of new or existing water pollution; and to cooperate with other agencies of the State, agencies of other states and the federal government in carrying out these objectives." (ADEM Administrative Code Chapter 335-6-10).

Under ADEM Administrative Code Chapter 335-6-10, ADEM has promulgated water quality standards, including narrative and numeric criteria, to "protect, maintain and improve the quality" of the waters of the State of Alabama. *Id.*

Corps regulations mandate that "Federal facilities shall comply with all Federal, state, interstate, and local requirements in the same manner and extent as other entities." ER 1110-2-8154 at 2 (Water Quality and Environmental Management for Corps Civil Works Projects). Through these regulations, the USACOE has committed "to develop and implement a holistic, environmentally sound water quality management strategy for each project." *Id.* The regulations recognize that "the management of [Corps] projects affects environments distant from [their] property boundaries and is influenced by actions of others also distant from [their] properties." *Id.* Thus, the regulations dictate that "Corps management responsibilities extend throughout the area influenced by and influencing the water" that the Corps manages. "The thrust of [the Corps'] policy is to protect all existing and future uses including assimilative capacity, aquatic life, water supply, recreation, industrial use, hydropower, etc." *Id.*

Section 8 of the regulation describes the management of USACOE projects and states, in part:

> Divisions should adopt and implement the following general water quality management objectives for all Corps water resources projects:
>
> a. Ensure that water quality, as affected by the project and its operation, is suitable for project purposes, existing water uses, and public health and safety and is in compliance with applicable Federal and state water quality standards."
>
> . . .
>
> k. Ensure that the project and its operation offer the lowest stress possible to the aquatic environment.

ER 1110-2-8154 at 3-4.

The USACOE's proposed action fails to comply with the foregoing obligations of the Corps. The DEIS details numerous adverse downstream environmental impacts that will result from lower flows under the preferred alternative. Rather than complying with its obligation to "protect all existing and future uses including assimilative capacity," the Corps suggests that the State will dictate that existing permit holders must restrict their discharges in order to alleviate the impacts of the Corps' proposed action. ADEM submits that the Corps is obligated to comply with its own regulations and other applicable law to protect existing uses and to avoid causing or contributing to adverse downstream environmental conditions.

2. The USACOE's proposed alternative (Plan G) will result in reduced river flow into Weiss Lake during critical water quality periods. The reduced flows will cause or contribute to violations of Alabama's water quality standards. (ADEM Administrative Code Chapter 335-6-10).

   Reduced flows downstream of the Carters and Allatoona Projects will have adverse environmental impacts and are not insignificant as characterized by the Corps. The USACOE states: "Operational changes at upstream Corps projects included as part of the Proposed Action Alternative, particularly the water management measure to reduce hydropower generation at Allatoona Lake during the fall drawdown period, would somewhat shift releases in time over the period from September through December. However, on the basis of model runs over the 70-year period of record, those adjustments result in slightly lower flow in the Coosa River at Rome, Georgia, during the September to November period." (DEIS p. 6-58). The USACOE concludes that this lowering of flow in the Coosa River would be insignificant. However, that conclusion is based on a faulty analysis of impacts to downstream water quality resulting from the proposed water management changes at Allatoona Lake. Most significantly, the analyses performed by the USACOE do not include the use of a calibrated water quality model but rely instead on predictions by the HEC-5Q water quality model (with flow input from the HEC-ResSim reservoir operations model) of the 5th percentile, 95th percentile, and median conditions under historical and alternative operations.

The monthly 7-day low flows that would occur under drought conditions with the reservoir system operated under Plan G compared with the historical baseline monthly 7-day low flows would be significantly less during certain critical months. Specifically, the monthly 10th percentile exceedance value for 7-day average flow in June is 16% less under Plan G operations than under the historical model flows (No Action Alternative). In July the monthly 10th percentile exceedance value for 7-day average flow is 12% less under Plan G operations for the period 1980 through 2008. When monthly 7-day 10-year recurrence low flows (7Q10) are calculated for the same period (1980 – 2008) using the Pearson Type III methodology, the monthly 7Q10 is 8% less in August and 15% less in September under Plan G operations compared to historical modeled flow. Regardless of which method is used as the basis for comparison, these declines in 7-day average flow are significant given the water quality considerations in downstream reservoirs during drought conditions.

The Corps recognizes that the reduced flows under its preferred alternative will result in adverse downstream environmental impacts, including but not limited to downstream industrial, municipal, and recreational water uses in the State of Alabama. (DEIS pp. 6-112 — 6-118). The proposed preferred alternative is inconsistent with Corps regulations which require it to "[e]nsure that water quality, as affected by the project and its operation, is suitable for project purposes, existing water uses, and public health and safety and is in compliance with applicable Federal and state water quality standards." ER 1110-2-8154 at 3. The USACOE's response to the lower flows during drought conditions under the proposed alternative is that "[w]ater management activities may affect water quality under low flow conditions such that the state regulatory agencies may consider reevaluation of NPDES permits to confirm the system's assimilative capacity." (DEIS p. 6-112, and DEIS Executive Summary p. ES-48). However, the USACOE does not consider the viability of or potential costs of compliance with more restrictive permit limitations by NPDES permit holders. Further, the Corps' discussion of the effects of reduced flows on fish and wildlife is inadequate to allow comment upon flow regimens for purposes of protecting endangered species, including but not limited to federally listed endangered aquatic species in the Coosa River.

Under the discussion of the proposed action's impact on oxygen demand, the Corps states: "During low-flow conditions, some NPDES permits limit point source discharges, and permit conditions may be temporarily changed during extreme low-flow conditions." (DEIS p. 6-

112, and DEIS Executive Summary p. ES-49). Again, however, the USACOE does not evaluate what those temporary changes to NPDES permit limits might include or what the cost of complying with those conditions might be. Nor does it consider changes to Georgia NPDES permit holders that must and should be made during these conditions to avoid disparate impacts on Alabama NPDES permit holders located downstream.

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This reevaluation of 7Q10 flows is clearly within the responsibility of the USACOE as a part of their evaluation of the alternatives under NEPA. (40 CFR Part 1502.23). The cost of this evaluation should not be placed on the State of Alabama and the cost of any subsequent changes in NPDES permits must be considered as a part of the alternatives analysis.

Weiss Lake, the first reservoir on the Coosa River downstream of the USACOE-operated Allatoona Lake on the Etowah River and Carters Lake on the Coosawattee River, is currently listed as impaired by ADEM due to excessive nutrient loading. (Attachment 2 – Final Total Maximum Daily Load (TMDL) for Nutrient Impairment - Weiss Lake). In 2001, the State of Alabama adopted numeric nutrient criteria in the form of a growing season average chlorophyll *a* concentration for two locations within Weiss Lake. Historic measurements of chlorophyll *a* in Weiss Lake show that the adopted criteria have been exceeded during a number of years and particularly during drought years. (Attachment 3 – ADEM Water Quality Data for Weiss Lake). The following figures depict growing season (April –

October) mean chlorophyll *a* concentrations in the dam forebay of Weiss Lake (station WEIC-1), near the mid-reservoir upstream of Alabama Highway 9 (station WEIC-2), and near the Alabama-Georgia state line at the upstream end of Weiss Lake (station WEIC-12).

Figure 1.

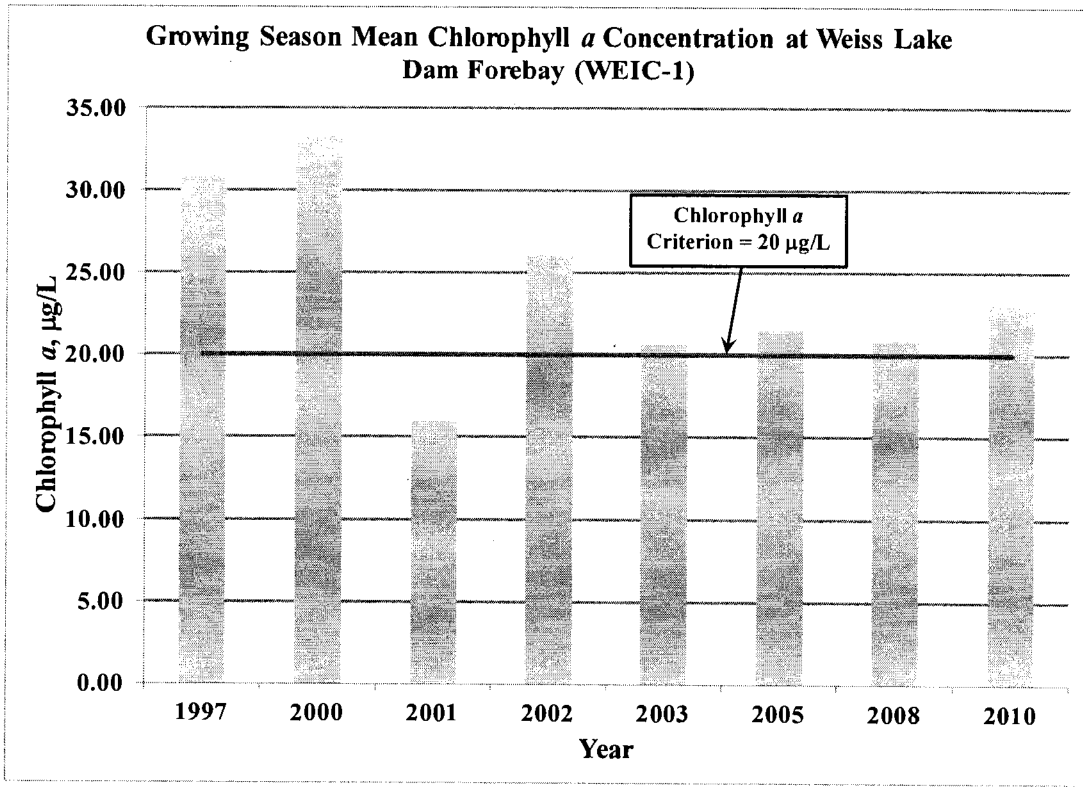


Figure 2.

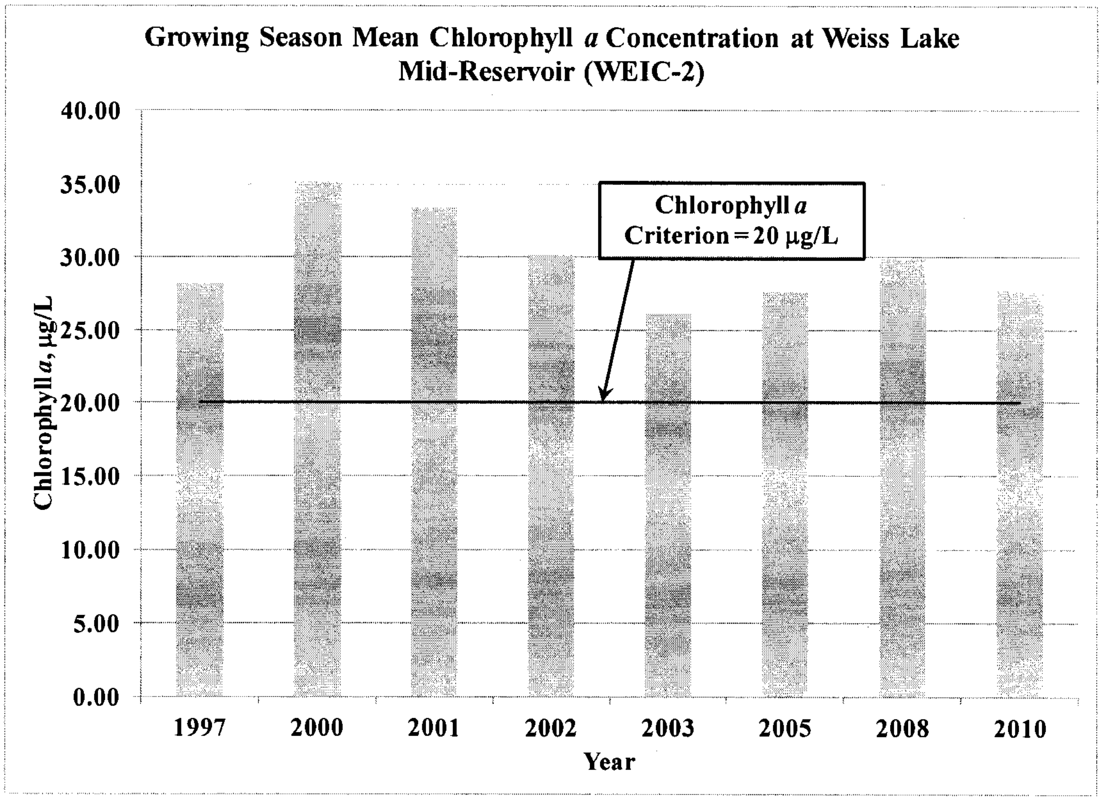
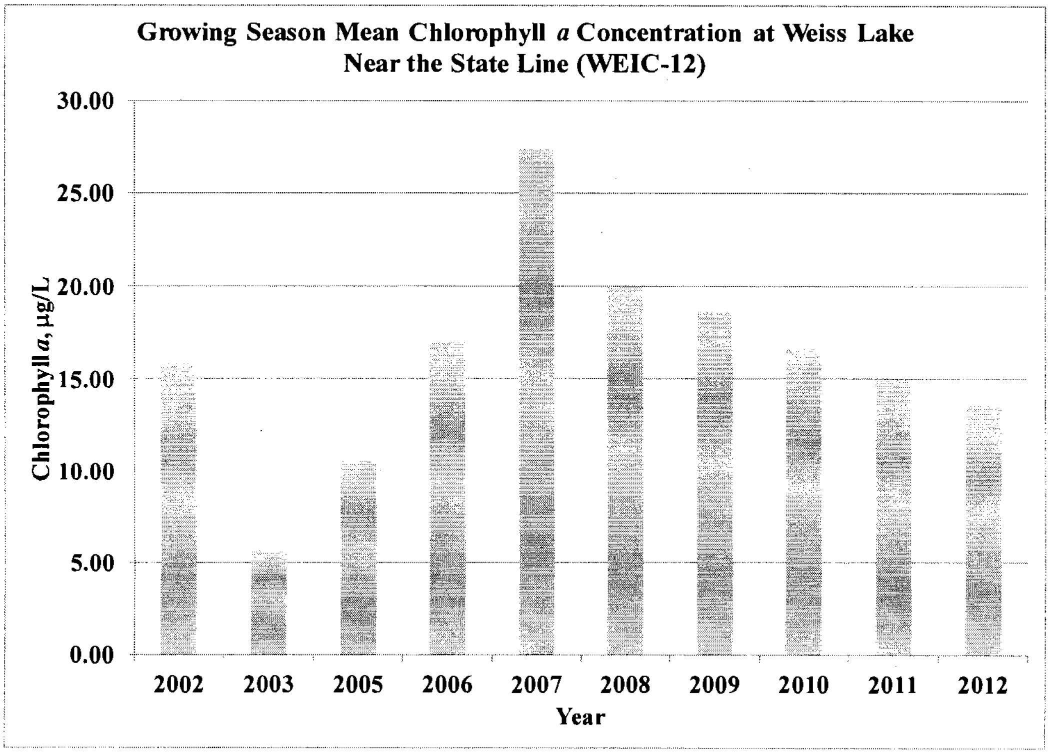


Figure 3.



Figures 2 and 3 above highlight Weiss Lake's susceptibility to increased algal productivity during periods of drought (i.e., 2000, 2007) as a result of the reservoir's increased residence time. (See also Attachment 4 – Maceina, M. J. and Bayne, D. R. 2003. "The Potential Impact of Water Reallocation on Retention and Chlorophyll *a* in Weiss Lake, Alabama", *Lake and Reservoir Management* 19(3); pp. 200-207). The reduced flows under the Corps' preferred alternative are going to exacerbate chlorophyll *a* concentrations at Weiss Lake. The DEIS concedes this. (DEIS p. 6-117 ("In periods of dry weather, with low inflows, the Proposed Action Alternative would be expected to increase algal growth in Weiss Lake, and resulting potential updates to discharge permits may have an adverse impact on upstream dischargers.")).

Other water quality parameters are also significantly affected by reduced flow into Weiss Lake and the resulting increase in residence time. These include dissolved oxygen (DO), temperature, and pH. While Alabama's water quality criteria for chlorophyll *a* are expressed as a growing season average concentration, criteria for DO, temperature, and pH are applied instantaneously and not as a daily, weekly, or growing season average. For DO, the criterion is further applied at a depth of five feet below the water surface when the total depth is ten feet or greater. At locations where the water depth is less than ten feet, the criterion is applied at mid-depth. Since DO and pH are both influenced by algal productivity, these parameters often reflect hypereutrophic conditions in the photic zone of the reservoir through an increased diurnal change. Elevated temperatures resulting from decreased flow and increased residence time can further impact DO by decreasing the saturation concentration and increasing biochemical reaction rates. The following figures illustrate the impact of low inflow on pH, DO, and temperature at several locations in Weiss Lake between the dam forebay and the state line. The figures illustrate the fact that Weiss Lake is already experiencing problems with these water quality criteria, especially in times of drought. Just as with chlorophyll *a*, lower flows into Weiss Lake as proposed under the Corps' preferred alternative will only serve to exacerbate these problems.

Figure 4.

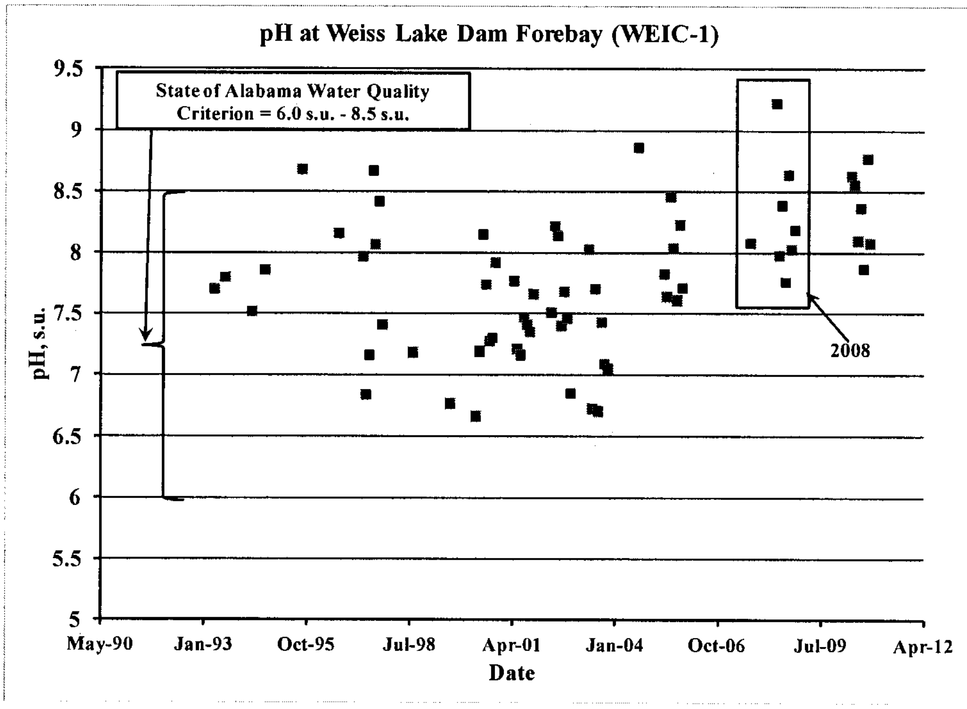


Figure 5.

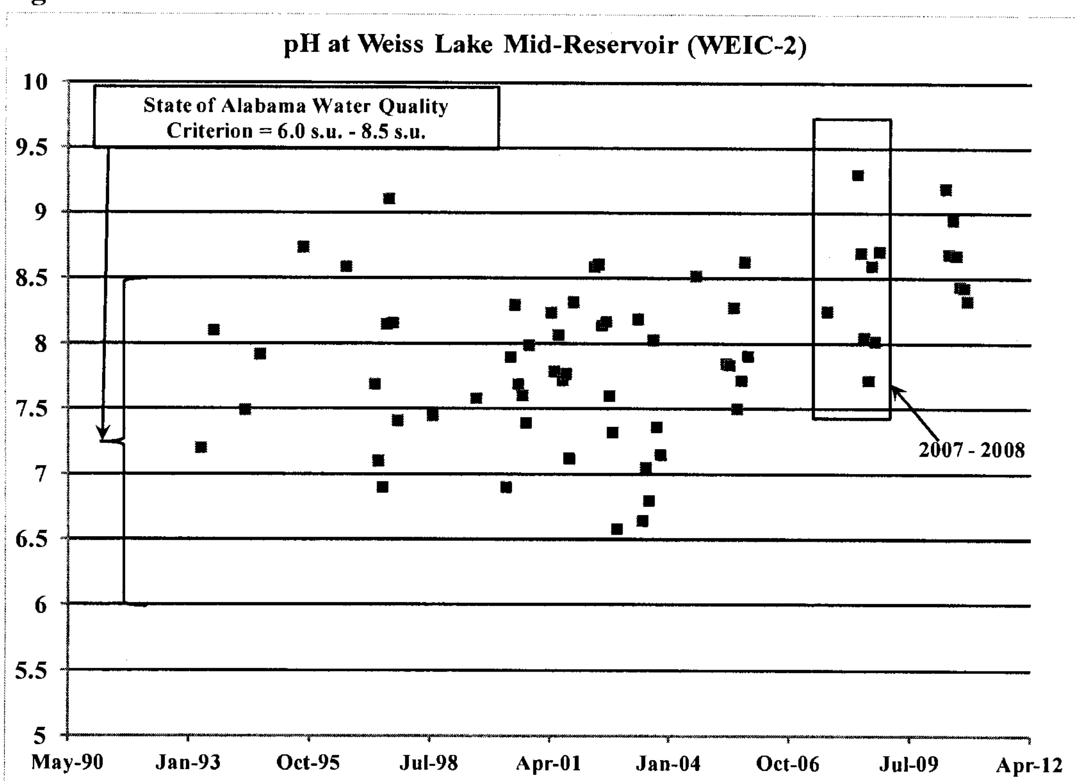


Figure 6.

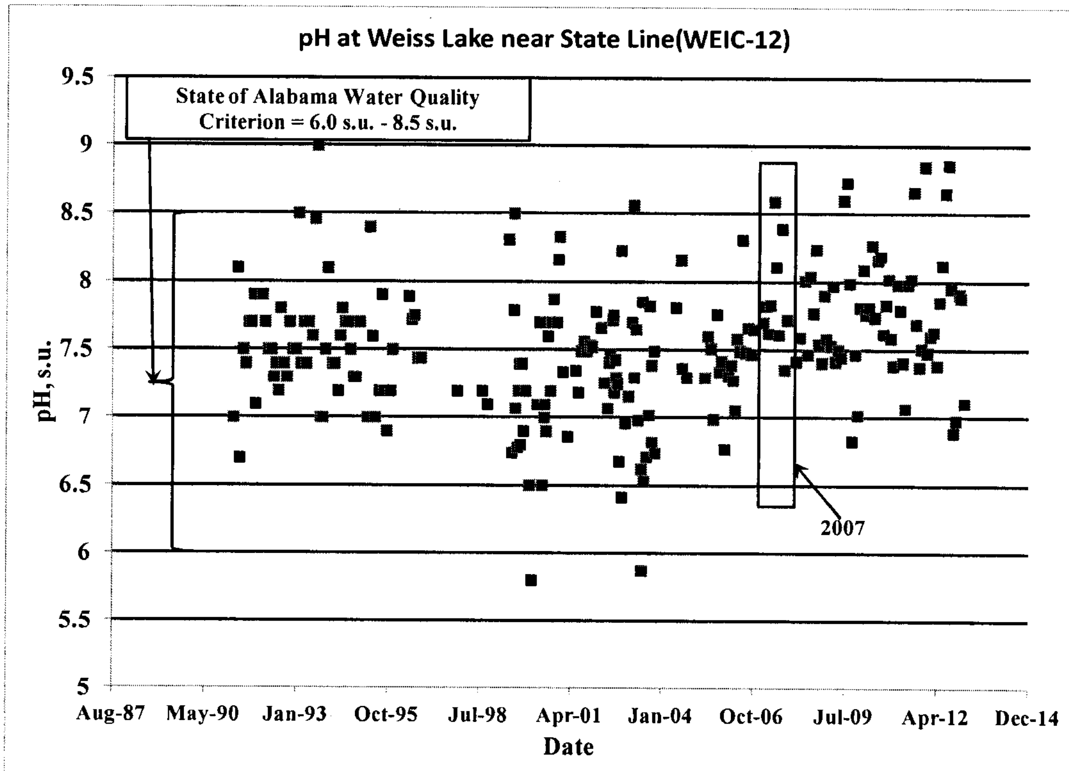


Figure 7.

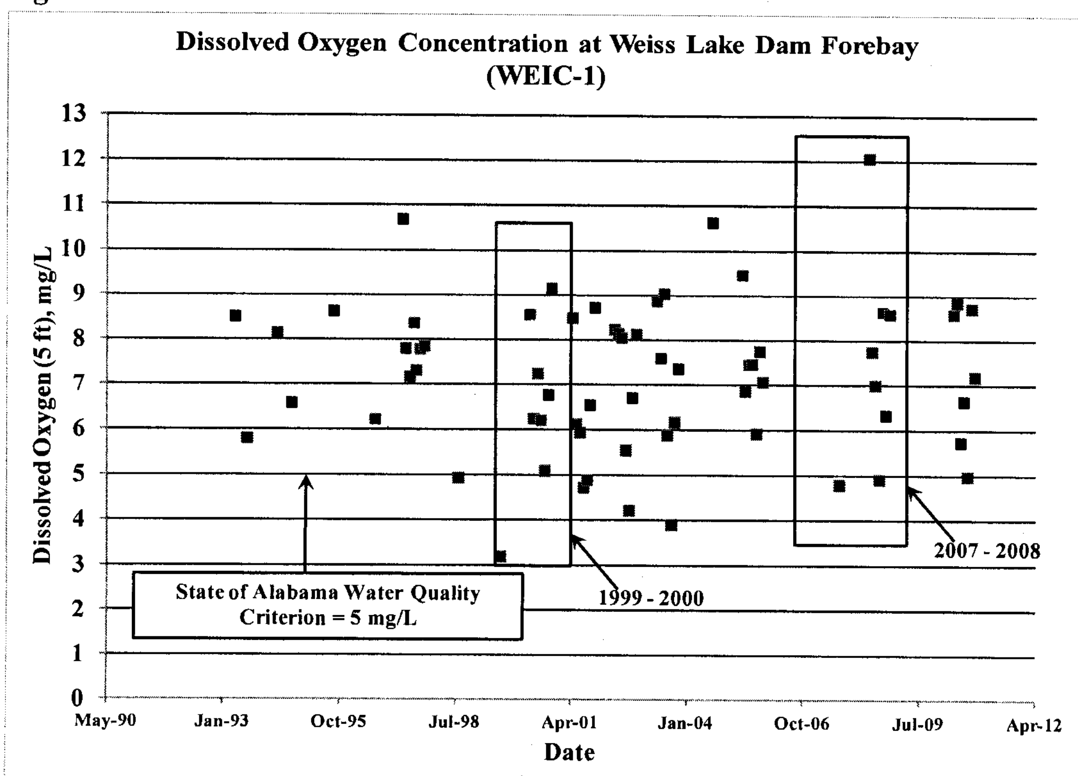


Figure 8.

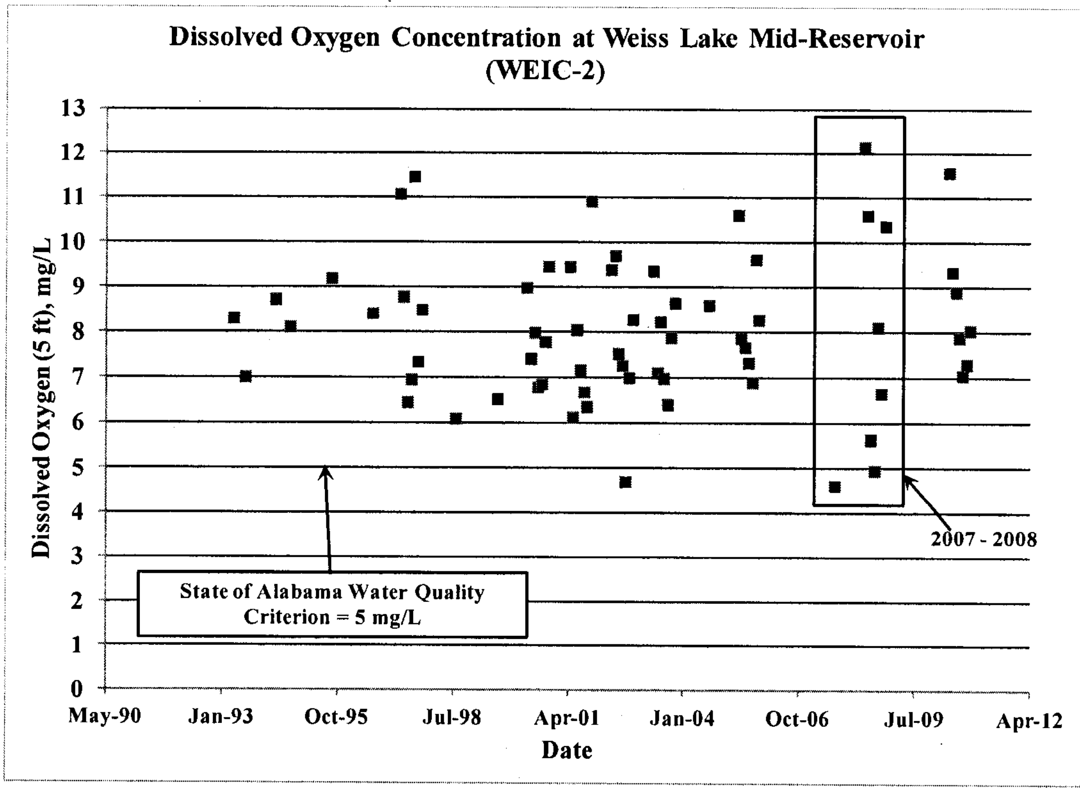


Figure 9.

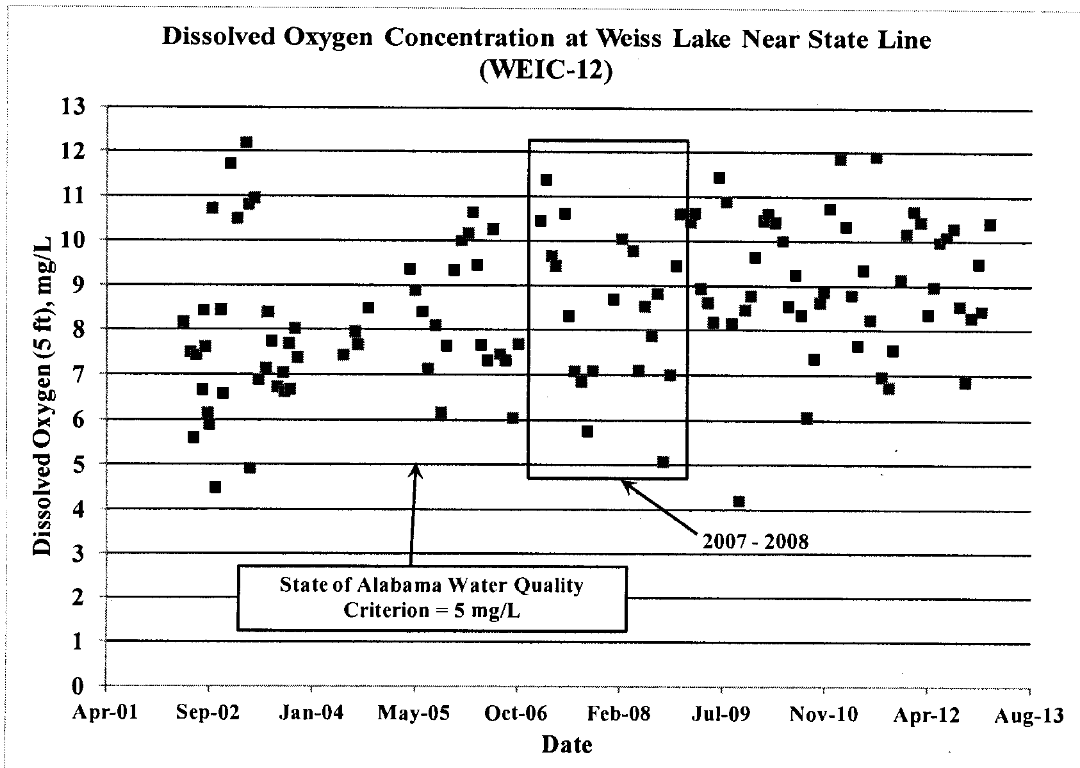


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Figure 10.

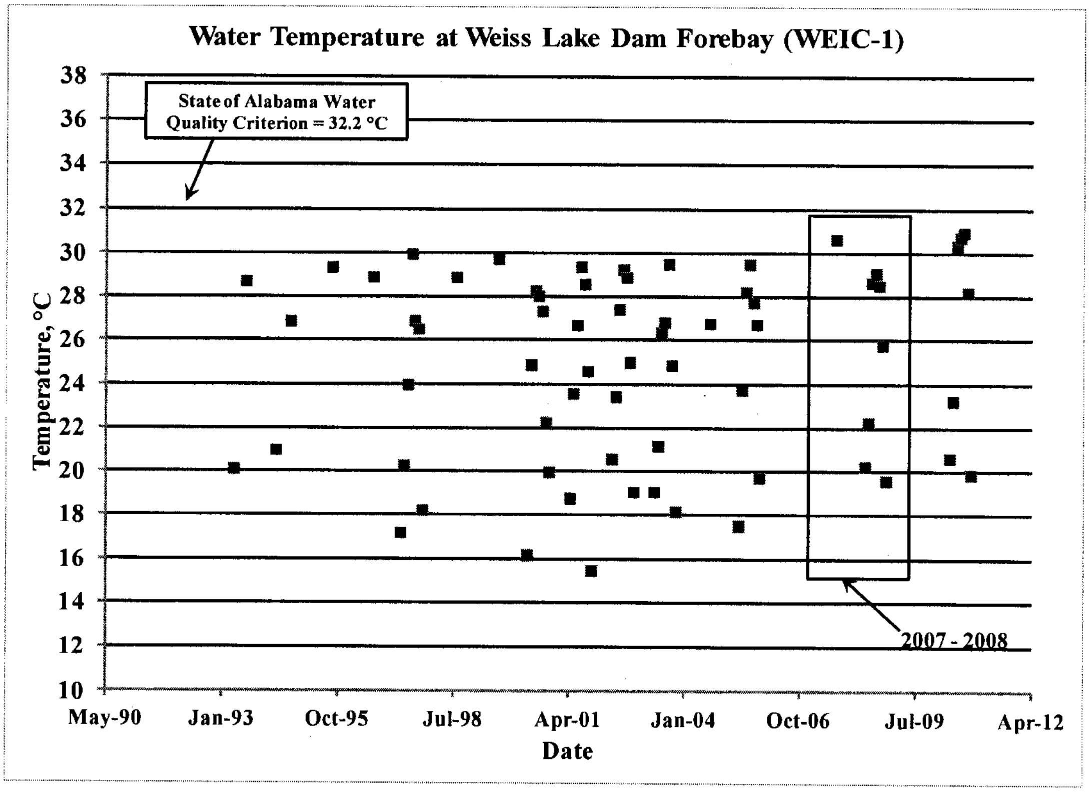

Figure 11.

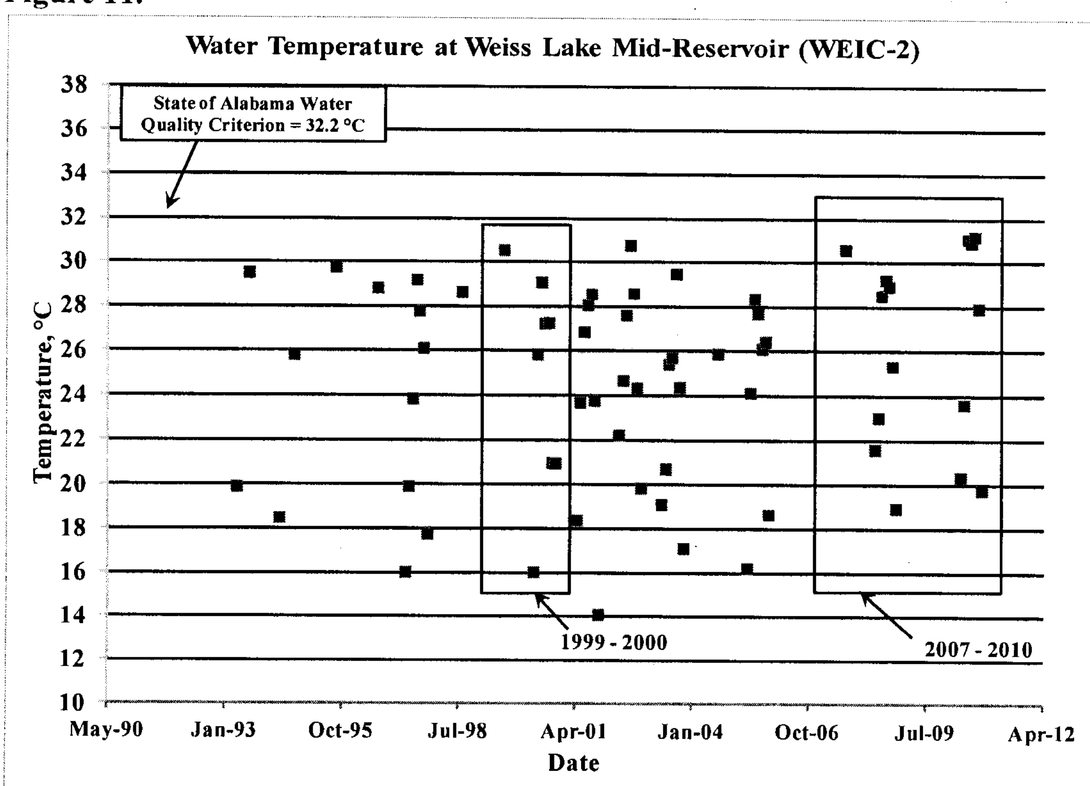

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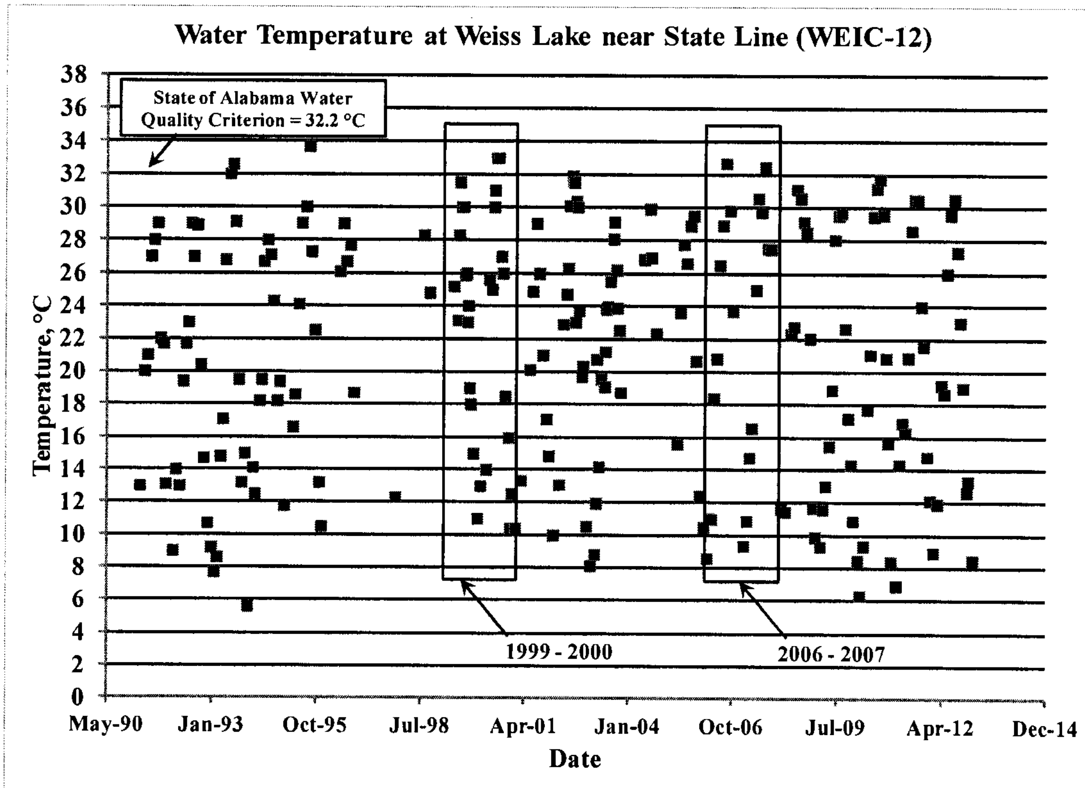
Figure 12.

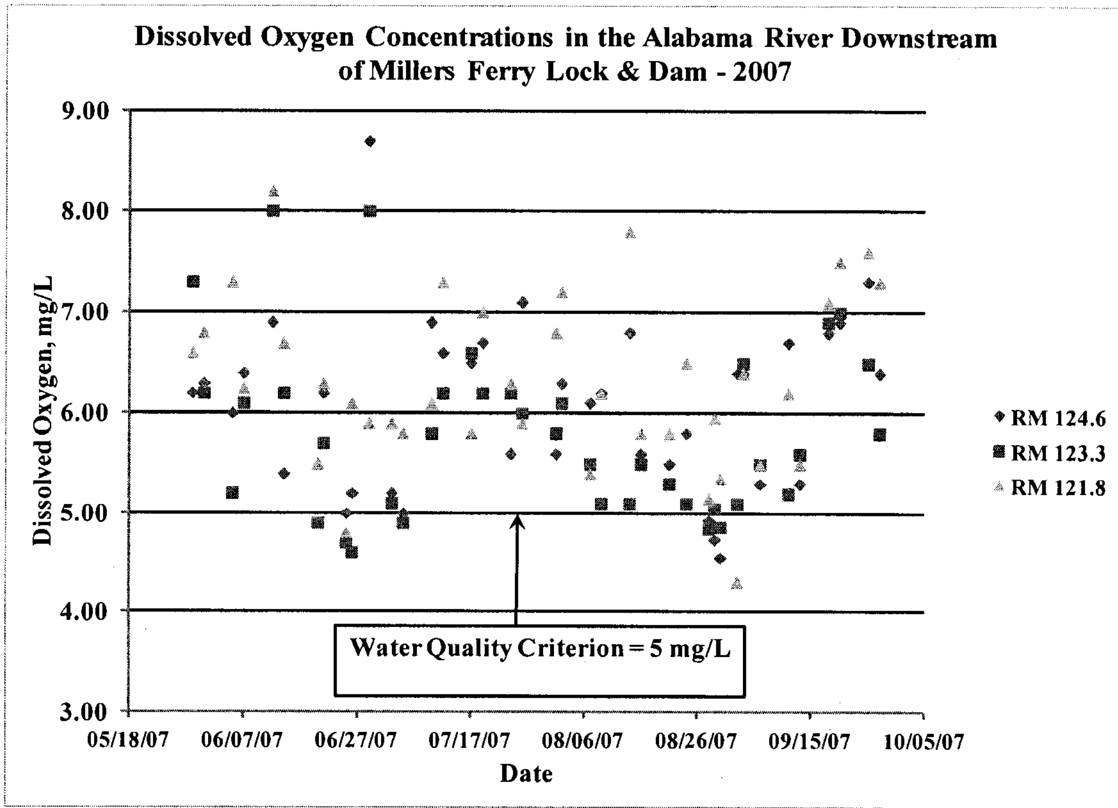


(Water quality data for other reservoirs in the Coosa, Tallapoosa, and Alabama River basins is included as Attachment 5.) The historical water quality data demonstrates that reductions in flows as proposed under the preferred alternative are likely to adversely impact downstream water quality and result in violations of water quality standards. The DEIS concedes this point. (DEIS pp. 6-112 — 6-118). The Corps is thereby violating its obligation to "[e]nsure that the project and its operation offer the lowest stress possible to the aquatic environment" and to "[e]nsure that water quality, as affected by the project and its operation, is suitable for project purposes, existing water uses, and public health and safety and is in compliance with applicable Federal and state water quality standards." ER 1110-2-8154 at 3-4.

3. The importance of a routine water quality monitoring and reporting program was highlighted during the 2007 drought when water quality concerns on the Alabama River below the Millers Ferry Lock and Dam resulted in changes to the USACOE's operation of the hydropower facility.

These changes became necessary after low dissolved oxygen conditions in the Alabama River upstream of the International Paper mill threatened to require the mill to curtail operations pursuant to requirements in the facility's NPDES permit. (See Part IV of Attachment 6 – Final NPDES Permit AL0002674 – International Paper Company – Pine Hill Containerboard Mill). (Dissolved oxygen data collected by International Paper during 2007 are shown in Figure 13). If the USACOE had been routinely monitoring water quality conditions (DO and temperature) in the Millers Ferry Dam tailrace during the summer of 2007, a more complete understanding of the factors affecting DO resources in the downstream river segment would have been possible, and management actions could have been initiated sooner.

Figure 13.



The USACOE has proposed no water quality monitoring plan (as required by ER 1110-2-8154) to ensure that Plan G does not cause or contribute to violations of Alabama's water quality standards or otherwise result in adverse downstream environmental impacts.

Although the DEIS recognizes that changing conditions may necessitate updates to the Water Control Manual for the ACT, there is no mention of specific monitoring plans to detect these changes. USACOE regulations at ER 1110-2-8154 (Water Quality and Environmental Management for Corps Civil Works Projects) describe specific management objectives for all USACOE projects, including the development and implementation of a water quality data collection program for each project.

Section 8 of the regulation provides:

> Division-wide water quality management programs are required. Specific water quality management objectives must be developed by the districts for each project, and procedures must be outlined and implemented to meet those objectives. These objectives will be included in the project water control plans. These plans must be reviewed and updated as needed but not less than every 10 years. The plans must achieve environmentally sustainable overall use of the resource. The water quality management plans should be scoped to include all areas influencing and influenced by the project. Divisions must ensure that water quality management is an integral part of the water control management program. Division water control/quality elements are responsible for approval of deviations from water control manuals and should provide guidance in developing water quality data collection activities. Divisions should adopt and implement the following general water quality management objectives for all Corps water resource projects:
>
> a. Ensure that water quality, as affected by the project and its operation, is suitable for project purposes, existing water uses, and public health and safety and is in compliance with applicable Federal and state water quality standards."
>
> . . .
>
> k. Ensure that the project and its operation offer the lowest stress possible to the aquatic environment.

ER 1110-2-8154 at 3-4.

This regulation provides additional detail on the necessary elements of a water quality data collection program and states: "A continuing water quality data collection program is necessary for each Corps project. This data collection is essential in order to understand and manage the environmental resources of the Corps' water projects effectively." *Id.* at 4. Objectives of the water quality data collection program are detailed in Section 10. *Id.* at 4-5. The Corps' preferred alternative fails to include an adequate water quality management program as Corps regulations require. *Id.* at 3.(The full text of ER 1110-2-8154 is included as Attachment 7).

In summary, the Corps' proposed action in the DEIS directly conflicts with the Corps' regulations. As noted above, the Corps' "management responsibilities extend throughout the area influenced by and influencing the water [it] manage[s]." ER 1110-2-8154 at 2. In fulfilling those responsibilities, the Corps has committed to a policy of "protect[ing] all existing and future uses including assimilative capacity, aquatic life, water supply, recreation, industrial use, hydropower, etc." *Id.* Rather than "[e]nsur[ing] that water quality, as affected by the project and its operation, is suitable for project purposes, existing water uses, and public health and safety and is in compliance with applicable Federal and state water quality standards," *id.* at 3, the DEIS concedes that the preferred alternative will have adverse downstream environmental consequences but leaves it to others to deal with those consequences. Such an approach is contrary to the Corps' obligation to comply with its regulations and to "manage its projects in accordance with all applicable Federal and state environmental laws, criteria, and standards." *Id.* at 2.

ADEM appreciates the opportunity to provide comments on the DEIS developed for the ACT Water Control Manual revisions. ADEM stands ready to cooperate in any way possible to ensure that the updated manual provides protection of Alabama's water quality standards while maintaining the necessary flexibility to operate the very complex system of reservoirs in the ACT River basin. ADEM looks forward to assisting where needed in additional efforts to implement an effective water quality monitoring program to ensure that USACOE operation of the ACT system complies with Alabama's water quality regulations.

If there are questions regarding these comments or a need for additional clarification, please contact Mr. Lynn Sisk of the Department's Water Division at (334)271-7826.

Sincerely,

Lance R. LeFleur
Director

LRL/LS/ghe

Enclosures

Affidavit

cc: Glenda Dean, Chief, ADEM Water Division
Lynn Sisk, Chief, ADEM Water Quality Branch
Jim Giattina, Director, EPA Region IV Water Management Division
Linda MacGregor, Chief, Watershed Protection Branch, GA Environmental Protection Division
Bill Pearson, Field Supervisor, Daphne Field Office, US Fish and Wildlife Service

Comment ID 0068

Comment ID 0068.001

Author Name: LeFleur, Lance R.

Organization: Alabama Department of Environmental Management

Comment

The Alabama Department of Environmental Management (ADEM) is pleased to provide the following comments and supporting data regarding the Draft Environmental Impact Statement (DEIS) prepared by the Mobile District of the United States Army Corps of Engineers (USACOE) pursuant to the National Environmental Policy Act (NEPA) for proposed modifications to the Water Control Manual for the Alabama-Coosa-Tallapoosa (ACT) River basin. As the environmental regulatory agency for the State of Alabama, ADEM ensures that activities which have the potential to impact Alabama's surface waters do not cause or contribute to violations of the State's water quality standards found in ADEM Administrative Code Chapter 335-6-10 (Attachment 1). In that regard, the following comments will primarily address impacts to water quality resulting from the proposed alternative and statements in the DEIS related to those impacts. ADEM believes that the USACOE has obligations under the NEPA, the Federal Water Pollution Control Act (Clean Water Act), and the USACOE's own regulations which are not adequately addressed in the DEIS.

1. The USACOE's proposed alternative must comply with the Clean Water Act and USACOE regulations.

Section 101. (b) of the Clean Water Act states, in part: "It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of his authority under this Act."

In addition, Section 313. (a) states, in part: "Each department, agency, or instrumentality of the executive, legislative, and judicial branches of the Federal Government (1) having jurisdiction over any property or facility, or (2) engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants, and each officer, agent, or employee thereof in the performance of his official duties, shall be subject to, and comply with, all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution in the same manner, and to the same extent as any nongovernmental entity including the payment of reasonable service charges. The preceding sentence shall apply (A) to any requirement whether substantive or procedural (including any recordkeeping or reporting requirement, any requirement respecting permits and any other requirement, whatsoever), (B) to the exercise of any Federal, State, or local administrative authority, and (C) to any process and sanction, whether enforced in Federal, State, or local courts or in any other manner. This subsection shall apply notwithstanding any immunity of such agencies, officers, agents, or employees under any law or rule of law."

Federal regulations at 40 CFR §130.12 (c) state: "Each department, agency or instrumentality of the executive, legislative and judicial branches of the Federal Government having jurisdiction over any property or facility or engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants shall comply with all Federal, State, interstate and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution in the same manner and extent as any nongovernmental entity in accordance with section 313 of the CWA."

Furthermore, Title 22, Section 22-22-1 et Na., Code of Alabama 1975, includes as its purpose "...to conserve the waters of the State and to protect, maintain and improve the quality thereof for public water supplies, for the propagation of wildlife, fish and aquatic life and for domestic, agricultural, industrial, recreational and other legitimate beneficial uses; to provide for the prevention, abatement and control of new or existing water pollution; and to cooperate with other agencies of the State, agencies of other states and the federal government in carrying out these objectives." (ADEM Administrative Code Chapter 335-6- 10).

Under ADEM Administrative Code Chapter 335-6-10, ADEM has promulgated water quality standards, including narrative and numeric criteria, to "protect, maintain and improve the quality" of the waters of the State of Alabama, Id.

Corps regulations mandate that "Federal facilities shall comply with all Federal, state, interstate, and local requirements in the same manner and extent as other entities." ER 1110- 2-8154 at 2 (Water Quality and Environmental Management for Corps Civil Works Projects). Through these regulations, the USACOE has committed "to develop and implement a holistic, environmentally sound water quality management strategy for each project." Id. The regulations recognize that "the management of [Corps] projects affects environments distant from [their] property boundaries and is influenced by actions of others also distant from [their] properties." Id. Thus, the regulations dictate that "Corps management responsibilities extend throughout the area influenced by and influencing the water" that the Corps manages. "The thrust of [the Corps'] policy is to protect all existing and future uses including assimilative capacity, aquatic life, water supply, recreation, industrial use, hydropower, etc." Id.

Section 8 of the regulation describes the management of USACOE projects and states, in part:

Divisions should adopt and implement the following general water quality management objectives for all Corps water resources projects:

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Response

1. USACE has followed all applicable laws in updating the WCMs and preparing the EIS.

2. A review of retention times in Weiss Lake found increased retention times in May and June of drought years 2007 and 1986 for the alternative plans compared to No Action. These increased retention times are consistent with Dr. Bayne's documentation and modeled results indicate increased chlorophyll a in May and June 2007. Further review of loads into Weiss Lake and water surface elevations reveal that the changes in water quality are related to a change in Weiss Lake operations from the APC's Drought Curve under the No Action Alternative. Plan G and other USACE alternatives operate Weiss Lake water levels to more closely mimic the project's guide curve.

Under Plan G retention times increase by 60 days in June 2007 because water levels are held higher than No Action. The greatest differences in retention times are seen in drought years 1986 and 2007. Minimal differences in monthly average retention times are seen in a wet weather year, 2003.

The HEC-5Q water quality model evaluated Weiss Lake chlorophyll a and nutrients (TN and TP) under the No Action Alternative as well as under Plans D, F and G. Based on the ACT draft EIS, ADEM had concerns about how the proposed plans may impact Weiss Lake water quality, especially chlorophyll a. Alabama has a water quality standard for chlorophyll a in Weiss Lake of 20 ug/l during the summer growing season - April through October. The HEC-5Q Weiss Lake model results were reevaluated using the growing season averages for years 2000 through 2008. The model outputted chlorophyll a daily values at 4 locations in Weiss Lake - 1) State Line, 2) Weiss_OUT1, 3) WeissOUT2 and 4) Dam Pool. The various Plan predictions were compared to the No Action Alternative. For all four stations the 2000 - 2008 average growing season chlorophyll a stayed the same or decreased. For the most critical year - 2007 was the year with highest predicted chlorophyll a - the growing season chlorophyll a decreased by over 10 percent.

Also the Plan D, F and G TN and TP growing season average loadings in to Weiss Lake (predicted at State Line) remain at the same levels as the No Action Alternative levels.

The HEC-5Q model coefficients were adjusted using the observed data to provide reasonable long-term, system-wide, approximations of water quality concentrations. The ability to predict individual values was not emphasized. The HEC-5Q model is not a calibrated regulatory model. Therefore, the word "calibration" was not used in the report. The HEC-5Q model coefficients and parameters are within reported ranges listed in the published literature. These coefficients were selected to cover the entire range of conditions for the ACT. None of the model coefficients were skewed just to fit the data. Therefore, the focus of this analysis was to achieve reasonable responses over the system for the entire analysis period, using a consistent set of model coefficients, which were derived using observed data. USACE chose to use the term "model adjustment" instead of "model calibration." Similarly, instead of using the term "model validation", USACE chose the more accurate term "demonstration of model performance." Plots and descriptions of this process are detailed in the water quality modeling report (Appendix D of the DEIS).

There are several possible reasons for periodic discrepancies between modeled and observed values. First, the observed data represent the average over the euphotic zone, while the modeled data represent the surface layer. Differences in concentrations may also be due to differences in vertical location of the computed and observed values or the time of day measurements are taken. Finally, there can be differences in residence times between the modeled and observed data. The synthetic meteorology approach selected for this study allowed modeling the entire 70+ period of record of the ACT with a single HEC-5Q model using a consistent set of forcing data, without requiring modifications to model coefficients. Differences in forcing at a particular point in time can cause short-term differences between modeled and observed concentrations. However, the purpose of this study was to characterize seasonal basin-wide responses, suitable for comparing differences between alternatives. The HEC-5Q model of the ACT performs well for characterizing basin responses and trends in dissolved oxygen, temperature, and chlorophyll-a, as supported through comparison of trends between modeled and observed data.

With respect to stated concerns about endangered species effects, USACE completed Section 7 consultation with the USFWS for the proposed action (Plan G) pursuant to the Endangered Species Act. For the proposed action, USACE determined either "no effect" or "may affect, but not likely to adversely affect" federally listed species or their critical habitat. The USFWS concurred with the USACE determination by letter dated March 20, 2014. Copies of consultation documentation and correspondence may be found in Appendix B, Part 3.

Comment ID 0068.002

Author Name: LeFleur, Lance R.

Organization: Alabama Department of Environmental Management

Comment

Weiss Lake, the first reservoir on the Coosa River downstream of the USACOE-operated Allatoona Lake on the Etowah River and Carters Lake on the Coosawattee River, is currently listed as impaired by ADEM due to excessive nutrient loading. (Attachment 2 - Final Total Maximum Daily Load (TMDL) for Nutrient Impairment - Weiss Lake). In 2001, the State of Alabama adopted numeric nutrient criteria in the form of a growing season average chlorophyll a concentration for two locations within Weiss Lake. Historic measurements of chlorophyll a in Weiss Lake show that the adopted criteria have been exceeded during a number of years and particularly during drought years. (Attachment 3 - ADEM Water Quality Data for Weiss Lake). The following figures depict growing season (April - October) mean chlorophyll a concentrations in the dam forebay of Weiss Lake (station WEIC-1), near the mid-reservoir upstream of Alabama Highway 9 (station WEIC-2), and near the Alabama-Georgia state line at the upstream end of Weiss Lake (station WEIC-12).

<Figure 1, "Growing Season Mean Chlorophyll a Concentration at Weiss Lake Dam Forebay (WEIC-1)," Figure 2, "Growing Season Mean Chlorophyll a Concentration at Weiss Lake Mid-Reservoir (WEIC-2)," and Figure 3, "Growing Season Mean Chlorophyll a Concentration at Weiss Lake Near the State Line (WEIC-12)," included in the comment letter. Please see original comment letter.>

<Please see original comment letter for Attachments 2 and 3.>

Figures 2 and 3 above highlight Weiss Lake's susceptibility to increased algal productivity during periods of drought (i.e., 2000, 2007) as a result of the reservoir's increased residence time. (See also Attachment 4 - Maceina, M. J. and Bayne, D. R. 2003. "The Potential Impact of Water Reallocation on Retention and Chlorophyll a in Weiss Lake, Alabama", Lake and Reservoir Management 19(3); pp. 200-207). The reduced flows under the Corps' preferred alternative are going to exacerbate chlorophyll a concentrations at Weiss Lake. The DEIS concedes this. (DEIS p. 6-117 ("In periods of dry weather, with low inflows, the Proposed Action Alternative would be expected to increase algal growth in Weiss Lake, and resulting potential updates to discharge permits may have an adverse impact on upstream dischargers.")).

<Please see original comment letter for Attachment 4.>

Other water quality parameters are also significantly affected by reduced flow into Weiss Lake and the resulting increase in residence time. These include dissolved oxygen (DO), temperature, and pH. While Alabama's water quality criteria for chlorophyll a are expressed as a growing season average concentration, criteria for DO, temperature, and pH are applied instantaneously and not as a daily, weekly, or growing season average. For DO, the criterion is further applied at a depth of five feet below the water surface when the total depth is ten feet or greater. At locations where the water depth is less than ten feet, the criterion is applied at mid-depth. Since DO and pH are both influenced by algal productivity, these parameters often reflect hypereutrophic conditions in the photic zone of the reservoir through an increased diurnal change. Elevated temperatures resulting from decreased flow and increased residence time can further impact DO by decreasing the saturation concentration and increasing biochemical reaction rates. The following figures illustrate the impact of low inflow on pH, DO, and temperature at several locations in Weiss Lake between the dam forebay and the state line. The figures illustrate the fact that Weiss Lake is already experiencing problems with these water quality criteria, especially in times of drought. Just as with chlorophyll a, lower flows into Weiss Lake as proposed under the Corps' preferred alternative will only serve to exacerbate these problems.

<Figure 4, "pH at Weiss Lake Dam Forebay (WEIC-1)," Figure 5, "pH at Weiss Lake Mid-Reservoir (WEIC-2)," Figure 6, "pH at Weiss Lake Near State Line (WEIC-12)," Figure 7, "Dissolved Oxygen Concentration at Weiss Lake Dam Forebay (WEIC-1)," Figure 8, "Dissolved Oxygen Concentration at Weiss Lake Mid-Reservoir (WEIC-2)," Figure 9, "Dissolved Oxygen Concentration at Weiss Lake Near State Line (WEIC-12)," Figure 10, "Water Temperature at Weiss Lake Dam Forebay (WEIC-1)," Figure 11, "Water Temperature at Weiss Lake Mid-Reservoir (WEIC-2)," Figure 12, "Water Temperature at Weiss Lake near State Line (WEIC-12)" included in the comment letter. Please see original letter.>

(Water quality data for other reservoirs in the Coosa, Tallapoosa, and Alabama River basins is included as Attachment 5.) The historical water quality data demonstrates that reductions in flows as proposed under the preferred alternative are likely to adversely impact downstream water quality and result in violations of water quality standards. The DEIS concedes this point. (DEIS pp. 6-112 - 6-118). The Corps is thereby violating its obligation to "[e]nsure that the project and its operation offer the lowest stress possible to the aquatic environment" and to "[e]nsure that water quality, as affected by the project and its operation, is suitable for project purposes, existing water uses, and public health and safety and is in compliance with applicable Federal and state water quality standards." ER 1110-2- 8154 at 3-4.

<Please see original comment letter for Attachment 5.>

Response

A review of retention times in Weiss Lake found increased retention times in May and June of drought years 2007 and 1986. These increased retention times are consistent with Dr. Bayne's documentation and modeled results indicate increased chlorophyll a in May and June 2007. Further review of loads into Weiss Lake and water surface elevations reveal that the changes in water quality are related to a change in Weiss Lake operations from the APC's Drought Curve under the No Action Alternative. Plan G and other USACE alternatives operate Weiss Lake water levels to more closely mimic the project's guide curve.

Under Plan G retention times increase by 60 days in June 2007 because water levels are held higher. The greatest differences in retention times are seen in drought years 1986 and 2007. Minimal differences in monthly average retention times are seen in a wet weather year, 2003.

The HEC-5Q water quality model evaluated Weiss Lake chlorophyll a and nutrients (TN and TP) under the No Action Alternative as well as under Plans D, F and G. Based on the ACT draft EIS, ADEM had concerns about how the proposed plans may impact Weiss Lake water quality, especially chlorophyll a. Alabama has a water quality standard for chlorophyll a in Weiss Lake of 20 ug/l during the summer growing season - April through October. The HEC-5Q Weiss Lake model results were reevaluated using the growing season averages for years 2000 through 2008. The model outputted chlorophyll a daily values at 4 locations in Weiss Lake - 1) State Line, 2) Weiss_OUT1, 3) WeissOUT2 and 4) Dam Pool. The various Plan predictions were compared to the No Action Alternative. For all four stations the 2000 - 2008 average growing season chlorophyll a stayed the same or decreased. For the most critical year (2007 - the year with highest predicted chlorophyll a), the growing season chlorophyll a decreased by over 10 percent under the Proposed Action Alternative (Plan G) compared to the No Action Alternative.

Also the Plan D, F and G TN and TP growing season average loadings in to Weiss Lake (predicted at State Line) remain at the same levels as the No Action Alternative levels.

Comment ID 0068.003

Author Name: LeFleur, Lance R.

Organization: Alabama Department of Environmental Management

Comment

3. The importance of a routine water quality monitoring and reporting program was highlighted during the 2007 drought when water quality concerns on the Alabama River below the Millers Ferry Lock and Dam resulted in changes to the USACOE's operation of the hydropower facility.

These changes became necessary after low dissolved oxygen conditions in the Alabama River upstream of the International Paper mill threatened to require the mill to curtail operations pursuant to requirements in the facility's NPDES permit. (See Part IV of Attachment 6 - Final NPDES Permit AL0002674 - International Paper Company - Pine Hill Containerboard Mill). (Dissolved oxygen data collected by International Paper during 2007 are shown in Figure 13). If the USACOE had been routinely monitoring water quality conditions (DO and temperature) in the Millers Ferry Dam tailrace during the summer of 2007, a more complete understanding of the factors affecting DO resources in the downstream river segment would have been possible, and management actions could have been initiated sooner.

<Figure 13, "Dissolved Oxygen Concentrations in the Alabama River Downstream of Millers Ferry Lock & Dam - 2007," included in the comment letter. Please see original letter.>

<Please see original comment letter for Attachment 6.>

Response

Improvement of downstream conditions is an objective for all authorized USACE projects. Improvement of downstream flow condition consistent with project purposes, has been the subject of extensive consideration and dialogue with interested parties for a number of years. At the point in the NEPA Process, after a long history of coordination on potential measures to improve conditions downstream of USACE dams in the ACT Basin, the determination that daily water quality monitoring is not necessary at the base of Millers Ferry Dam. USACE conducts routine water quality testing at the two reservoir storage facilities, but not at a run of the river project like Millers Ferry Dam that is located below several FERC licensed facilities. During extreme events, such as the drought of 2007, one would expect to experience water quality issues under any management alternative. Such extreme events however, do not necessitate daily water quality monitoring. USACE water quality monitoring efforts are described for each project in their respective water control manuals; specifically in Sections 4-08; 5-02; 7-07; and 8-04.

Comment ID 0068.004

Author Name: LeFleur, Lance R.

Organization: Alabama Department of Environmental Management

Comment

The USACOE has proposed no water quality monitoring plan (as required by ER 1110-2- 8154) to ensure that Plan G does not cause or contribute to violations of Alabama's water quality standards or otherwise result in adverse downstream environmental impacts.

Although the DEIS recognizes that changing conditions may necessitate updates to the Water Control Manual for the ACT, there is no mention of specific monitoring plans to detect these changes. USACOE regulations at ER 1110-2-8154 (Water Quality and Environmental Management for Corps Civil Works Projects) describe specific management objectives for all USACOE projects, including the development and implementation of a water quality data collection program for each project.

Section 8 of the regulation provides:

Division-wide water quality management programs are required. Specific water quality management objectives must be developed by the districts for each project, and procedures must be outlined and implemented to meet those objectives. These objectives will be included in the project water control plans. These plans must be reviewed and updated as needed but not less than every 10 years. The plans must achieve environmentally sustainable overall use of the resource. The water quality management plans should be scoped to include all areas influencing and influenced by the project. Divisions must ensure that water quality management is an integral part of the water control management program. Division water control/quality elements are responsible for approval of deviations from water control manuals and should provide guidance in developing water quality data collection activities. Divisions should adopt and implement the following general water quality management objectives for all Corps water resource projects:

a. Ensure that water quality, as affected by the project and its operation, is suitable for project purposes, existing water uses, and public health and safety and is in compliance with applicable Federal and state water quality standards."

...

k. Ensure that the project and its operation offer the lowest stress possible to the aquatic environment.

ER 1110-2-8154 at 3-4.

This regulation provides additional detail on the necessary elements of a water quality data collection program and states: "A continuing water quality data collection program is necessary for each Corps project. This data collection is essential in order to understand and manage the environmental resources of the Corps' water projects effectively." Id. at 4. Objectives of the water quality data collection program are detailed in Section 10. Id. at 4-5. The Corps' preferred alternative fails to include an adequate water quality management program as Corps regulations require. Id. at 3.(The full text of ER 1110-2-8154 is included as Attachment 7).

<Please see original comment letter for Attachment 7.>

In summary, the Corps' proposed action in the DEIS directly conflicts with the Corps' regulations. As noted above, the Corps' "management responsibilities extend throughout the area influenced by and influencing the water [it] manage[s]." ER 1110-2-8154 at 2. In fulfilling those responsibilities, the Corps has committed to a policy of "protect[ing] all existing and future uses including assimilative capacity, aquatic life, water supply, recreation, industrial use, hydropower, etc." Id. Rather than "[e]nsur[ing] that water quality, as affected by the project and its operation, is suitable for project purposes, existing water uses, and public health and safety and is in compliance with applicable Federal and state water quality standards," id. at 3, the DEIS concedes that the preferred alternative will have adverse downstream environmental consequences but leaves it to others to deal with those consequences. Such an approach is contrary to the Corps' obligation to comply with its regulations and to "manage its projects in accordance with all applicable Federal and state environmental laws, criteria, and standards." Id. at 2.

ADEM appreciates the opportunity to provide comments on the DEIS developed for the ACT Water Control Manual revisions. ADEM stands ready to cooperate in any way possible to ensure that the updated manual provides protection of Alabama's water quality standards while maintaining the necessary flexibility to operate the very complex system of reservoirs in the ACT River basin. ADEM looks forward to assisting where needed in additional efforts to implement an effective water quality monitoring program to ensure that USACOE operation of the ACT system complies with Alabama's water quality regulations.

If there are questions regarding these comments or a need for additional clarification, please contact Mr. Lynn Sisk of the Department's Water Division at (334)271-7826.

<The author included additional attachments to their comment letter. The attachments included data, charts, and graphs to support the authors comments. The attachments to this letter are available upon request.>

Response

USACE disagrees with the commenter's premise, conclusions, or interpretation of the CWA or USACE regulations. USACE is not required to meet state water quality flow standards on systems authorized for navigation. However, improvement of downstream conditions is an objective for all authorized USACE projects. Improvement of downstream flow conditions consistent with project purposes, has been the subject of extensive consideration and dialogue with interested parties for a number of years. USACE does conduct routine water quality testing. USACE water quality monitoring efforts are described for each project in their respective water control manuals; specifically in Sections 4-08; 5-02; 7-07; and 8-04.

Comment Number: 2013-0044

Name: Kirk Day

Affiliation: Cherokee County Commission

Date: 5/30/2013 4:05:10 PM

Address:
260 Cedar Bluff Road
Suite 103
Cherokee
Centre, AL 35960

Attachments: ACT-WCM Comments from Cherokee Co Commission.doc

Comments:

Attached are comments from the Chairman of the Cherokee County Commission. They are in Word 2010 format. Please notify the sender at kirkday@cherokeecounty-al.gov if there is a problem in opening the document. (Please see following letter.)

CHEROKEE COUNTY COMMISSION
260 Cedar Bluff Road, Suite 103 · Centre, AL 35960
Phone: 256-927-3668

May 30, 2013

Colonel Steven J. Roemhildt
Mobile District, U.S. Army Corps of Engineers
P.O. Box2288
Mobile, Alabama 36628-0001

Re: Water Control Manual for Alabama-Coosa-Tallapoosa Basin

Dear Colonel Roemhildt:

On behalf of the Cherokee County Commission, I would like to provide you with some input concerning the Water Control Manual for the Alabama-Coosa-Tallapoosa Basin. I appreciate you giving us the opportunity to tell you of our concerns. Weiss Lake is the engine which drives much of the economy in our county. Many businesses on and around Weiss Lake are dependent on the recreational and agricultural activities which the lake provides to our residents and visitors alike. Reduced flows and degraded water quality would have an impact on our economy and our ability to promote our county as a tourist destination.

Weiss Lake is a very nutrient rich lake and could almost be considered hyper eutrophic. Reduced outflows from Corps of Engineers projects upstream will cause the water quality to further degrade. The flow of water into the lake and the retention time of the water while in the lake have a proven effect on the water quality of Weiss Lake. Dr. David Bayne has documented this relationship in his study, *The Potential Impact of Water Reallocation on Retention and Chlorophyll in Weiss Lake, 2003.*

Lastly, the Water Control Manual for the ACT Basin did not consider the winter pool level increase requested by Alabama Power Company's (APC) relicense application. APC submitted the application in July of 2005 to FERC. In 2007, the Secretary of the Army directed that an update of the Master WCM for the ACT Basin be conducted. This update did not address the requested winter pool increase. Realizing the beneficial impact such an increase would have on real estate prices and recreational opportunities, the Cherokee County Commission respectfully ask that the Corps of Engineers reexamine APC's request.

Please feel free to contact me regarding any of these comments submitted on behalf of the commission. My personal e-mail is: kirkday@cherokeecounty-al.gov. On a personal note, as a 1993 graduate of USMA, I would like to say to a fellow graduate, "Go Army! Beat Navy!"

Sincerely,

J. Kirk Day
Probate Judge and County Commission Chairman
Cherokee County, Alabama

Comment ID 0044

Comment ID 0044.001

Author Name: Day, Kirk

Organization: CHEROKEE COUNTY COMMISSION

Comment

On behalf of the Cherokee County Commission, I would like to provide you with some input concerning the Water Control Manual for the Alabama-Coosa-Tallapoosa Basin. I appreciate you giving us the opportunity to tell you of our concerns. Weiss Lake is the engine which drives much of the economy in our county. Many businesses on and around Weiss Lake are dependent on the recreational and agricultural activities which the lake provides to our residents and visitors alike. Reduced flows and degraded water quality would have an impact on our economy and our ability to promote our county as a tourist destination.

Response

Comment noted. USACE appreciates your participation in the ACT WCM update.

Comment ID 0044.002

Author Name: Day, Kirk

Organization: CHEROKEE COUNTY COMMISSION

Comment

Weiss Lake is a very nutrient rich lake and could almost be considered hyper eutrophic. Reduced outflows from Corps of Engineers projects upstream will cause the water quality to further degrade. The flow of water into the lake and the retention time of the water while in the lake have a proven effect on the water quality of Weiss Lake. Dr. David Bayne has documented this relationship in his study, The Potential Impact of Water Reallocation on Retention and Chlorophyll in Weiss Lake, 2003.

Response

A review of retention times in Weiss Lake found increased retention times in May and June of drought years 2007 and 1986. These increased retention times are consistent with Dr. Bayne's documentation and modeled results indicate increased chlorophyll a in May and June 2007. Further review of loads into Weiss Lake and water surface elevations reveal that the changes in water quality are related to a change in Weiss Lake operations from the APC's Drought Curve under the No Action Alternative. Under Plan G and other USACE alternatives, Weiss Lake water levels would be expected to more closely mimic the project's guide curve than under the No Action Alternative.

Under Plan G, retention times increase by 60 days in June 2007 because water levels are held higher. The greatest differences in retention times are seen in drought years 1986 and 2007. Minimal differences in monthly average retention times are observed in a wet weather year, 2003.

The HEC-5Q water quality model evaluated Weiss Lake chlorophyll a and nutrients (TN and TP) under the No Action Alternative as well as under Plans D, F and G. Based on the ACT draft EIS, ADEM had concerns about how the proposed plans may impact Weiss Lake water quality, especially chlorophyll a. Alabama has a water quality standard for chlorophyll a in Weiss Lake of 20 ug/l during the summer growing season – April through October. The HEC-5Q Weiss Lake model results were reevaluate using the growing season averages for years 2000 through 2008. The model outputted chlorophyll a daily values at 4 locations in Lake Weiss – 1) State Line, 2) Weiss_OUT1, 3) WeissOUT2 and 4) Dam Pool. The various Plan predictions were compared to No Action Alternative. For all four stations the 2000 – 2008 average growing season chlorophyll a stayed the same or decreased. For the most critical year – 2007 was the year with highest predicted chlorophyll a – the growing season chlorophyll a decreased by over 10 percent.

Also the Plan D, F and G TN and TP growing season average loadings in to Lake Weiss (predicted at State Line) remain at the same levels as the No Action Alternative levels. Overall Plans D, F and G do not significantly impact the predicted growing season average values and decrease them during the critical low flow and highest chlorophyll a year of 2007.

Comment ID 0044.003

Author Name: Day, Kirk

Organization: CHEROKEE COUNTY COMMISSION

Comment

Lastly, the Water Control Manual for the ACT Basin did not consider the winter pool level increase requested by Alabama Power Company's (APC) relicense application. APC submitted the application in July of 2005 to FERC. In 2007, the Secretary of the Army directed that an update of the Master WCM for the ACT Basin be conducted. This update did not address the requested winter pool increase. Realizing the beneficial impact such an increase would have on real estate prices and recreational opportunities, the Cherokee County Commission respectfully ask that the Corps of Engineers reexamine APC's request.

Please feel free to contact me regarding any of these comments submitted on behalf of the commission. My personal e-mail is: kirkday@cherokeecounty-al.gov. On a personal note, as a 1993 graduate of USMA, I would like to say to a fellow graduate, "Go Army! Beat Navy!"

Response

APC proposed guide curve revisions for Weiss and Logan Martin Lakes on the Coosa River are not considered to be reasonably foreseeable. The June 2013 FERC license for the APC Coosa River projects, issued following public review of the draft ACT WCM EIS, did not include revised winter guide curves for Weiss and Logan Martin Lakes. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

From:	marciefosterforcherokeecounty@gmail.com on behalf of Marcie Foster
To:	ACT-WCM
Subject:	DEIS Weiss Lake Comments
Date:	Monday, April 01, 2013 3:23:38 PM

Good afternoon,

My name is Marcie Foster and I am the Cherokee County Commissioner for District 3. A portion of my District includes or is attached to Weiss Lake. Weiss Lake is one of the economic engines for this county, providing a significant amount of revenue to the businesses and county in recreation type activities. At this time Alabama Power drops the lake level for 4 to 6 months of the year. This has a devastating effect on the local economy as the lake is too low to accommodate most activities, including fishing and fishing tournaments.
It is my understanding that over a decade ago a plan was developed for Alabama Power to use an alternative operating curve on Neely Henry Lake. This alternative operating curve allows for better recreational access by decreasing the winter draw down amount. The use of the alternative operating curve has been extended indefinitely and according to the 2013 DEIS there have been no significant problems resulting from use of the alternative operating curve.
I would strenuously urge you to consider developing the same alternatives for Weiss Lake. If such a plan could be implemented with no detriment to the lake or environment it would make a great impact on the local economy of Cherokee County. The Chamber of Commerce as informed me that Cherokee County is unable to attract many events in the November to March months because the lake levels are not at a recreational level. This leaves our lodging, restaurants, marinas, parks, and stores with significantly fewer patrons during these months.

Thank you for your consideration.

--
Marcie L. Foster
Cherokee County Commissioner
District #3
Office:
5635 Weiss Lake Blvd
Leesburg, AL 35983
(256)525-4000
[redacted]

Commission Office:
260 Cedar Bluff Rd
Centre, Al 35960
Phone: 256-927-3668
Fax: 256-927-3669

Comment ID 0049

Comment ID 0049.001

Author Name: Foster, Marcie

Organization: Cherokee County Commissioner, District #3

Comment

My name is Marcie Foster and I am the Cherokee County Commissioner for District 3. A portion of my District includes or is attached to Weiss Lake. Weiss Lake is one of the economic engines for this county, providing a significant amount of revenue to the businesses and county in recreation type activities. At this time Alabama Power drops the lake level for 4 to 6 months of the year. This has a devastating effect on the local economy as the lake is too low to accommodate most activities, including fishing and fishing tournaments.

It is my understanding that over a decade ago a plan was developed for Alabama Power to use an alternative operating curve on Neely Henry Lake. This alternative operating curve allows for better recreational access by decreasing the winter draw down amount. The use of the alternative operating curve has been extended indefinitely and according to the 2013 DEIS there have been no significant problems resulting from use of the alternative operating curve.

I would strenuously urge you to consider developing the same alternatives for Weiss Lake. If such a plan could be implemented with no detriment to the lake or environment it would make a great impact on the local economy of Cherokee County. The Chamber of Commerce as informed me that Cherokee County is unable to attract many events in the November to March months because the lake levels are not at a recreational level. This leaves our lodging, restaurants, marinas, parks, and stores with significantly fewer patrons during these months.

Thank you for your consideration.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

From:	Rambo, Carol
To:	ACT-WCM
Cc:	Hyland, Charles E.
Subject:	Public Comment re Draft EIS on ACT River Basin Water Control Manual submitted on behalf of Mobile Area Water & Sewer System
Date:	Friday, May 31, 2013 8:58:47 AM
Attachments:	Public Comment for Corps of Engineers 30may13.pdf

MAWSS
MOBILE AREA WATER & SEWER SYSTEM

May 30, 2013

Commander
U. S. Army Corps of Engineers
Mobile District
Attn: PD-EI (ACT-DEIS)
Post Office Box 2288
Mobile, AL 36628

RE: Draft Environmental Impact Statement
Update of the Alabama-Coosa-Tallapoosa River Basin Water Control Manual

To Whom It May Concern:

On behalf of the Mobile Area Water & Sewer System, I submit the attached comments on the Draft Environmental Impact Statement (EIS) issued in connection with the update of the Alabama-Coosa-Tallapoosa (ACT) River Basin Water Control Manual. The draft EIS and the draft master manual contain serious procedural, technical, and substantive flaws.

Sincerely,

Charles E. Hyland, Jr.

Charles E. Hyland, Jr., Director

CEH/cr

Enclosure

P.O. Box 2368, Mobile, AL 36652 • 207 North Catherine Street • Mobile, AL 36604 • Phone 251.694.3100 • Fax 251.694.3448
www.mawss.com

My name is Charles E. Hyland, Jr. I am currently the Director of the Board of Water & Sewer Commissioners of the City of Mobile, having served in that position since March 2013. I served as Water & Sewer Administrator from 1990-2013, working in a variety of areas of the Mobile Area Water & Sewer System.

The attached documentation is related to the impact the diversion of waters that feed the ACT River Basin could potentially have on the Board of Water & Sewer Commissioners and our customers. This harm includes failure to be able to provide fresh water unencumbered with salt or brine from tidal and other influences of Mobile Bay for use in industrial processes and the diminishment of a standby source of drinking water for our residential and commercial customers.

This packet contains a short narrative, pictures of the canal used to transport water from Bucks to industrial customers, and information related to saltwater intrusion and the industrial water supply.

The Mobile Board provides water and waste water service to residential, commercial, and industrial customers in the Mobile Area, including Mobile County, Alabama and Baldwin County, Alabama. The Mobile Board's service area is downstream of the Alabama, Coosa and Tallapoosa River Basin ("ACT River Basin"). To reliably and lawfully operate its facilities, the Mobile Board is heavily dependent on reliable water from the ACT River Basin, particularly the Alabama River, which terminates into the Mobile River. In 1967, the Mobile Board constructed a water intake 30 miles upstream on the Mobile River (the terminus of the Alabama River) at Bucks, Alabama. The facility includes a protective structure and electrical and diesel powered pumps that elevate the water sufficiently to flow to a canal and pumping network, which was also constructed in 1967, that transports untreated raw water sixteen miles south to industrial customers. Intake and transport capacity exceeds ninety million gallons per day and is currently operating near 20 million gallons per day. Since 2002, this water intake also serves as standby source of water supply for municipal drinking water should a disaster or other emergency limit or prohibit the use of the Mobile Board's primary surface water impoundment located in another watershed.

The location of the water intake site at Bucks, Alabama was chosen for the express purpose of obtaining fresh water, unencumbered with salt or brine from tidal and other influences of Mobile Bay, for use in industrial processes. The Alabama River is the source of 90% of the Board's industrial water supply. Reduced flow of water in the Alabama River has recently allowed salty, brackish water from Mobile Bay to extend north of the Bucks intake. This intrusion is caused by the tidal action of salty Mobile Bay when the flow of fresh water in the Mobile River is too low to keep the denser Bay water from extending upriver. The encroachment of salt water upstream is directly related to the reducing volume of Mobile River flow. The result is that water now pumped from the River at the Bucks intake contains salt levels in excess of limits acceptable for some industrial uses. The extent of unacceptable, elevated salt concentration in the Mobile River at the Bucks intake site increases with reducing flow from the Alabama River and is adversely affecting the Mobile Board's operations and those of its industrial customers. In consequence of this, the ACT River Basin is of vital importance to the Mobile Board, and any action that diminishes water flows therein will cause increasing harm to the Mobile Board and its customers.

Comment ID 0053

Comment ID 0053.001

Author Name: Hyland, Jr., Charles E.

Organization: MOBILE AREA WATER AND SEWER SYSTEM

Comment

My name is Charles E. Hyland, Jr. I am currently the Director of the Board of Water & Sewer Commissioners of the City of Mobile, having served in that position since March 2013. I served as Water & Sewer Administrator from 1990-2013, working in a variety of areas of the Mobile Area Water & Sewer System.

The attached documentation is related to the impact the diversion of waters that feed the ACT River Basin could potentially have on the Board of Water & Sewer Commissioners and our customers. This harm includes failure to be able to provide fresh water unencumbered with salt or brine from tidal and other influences of Mobile Bay for use in industrial processes and the diminishment of a standby source of drinking water for our residential and commercial customers.

This packet contains a short narrative, pictures of the canal used to transport water from Bucks to industrial customers, and information related to saltwater intrusion and the industrial water supply.

The Mobile Board provides water and waste water service to residential, commercial, and industrial customers in the Mobile Area, including Mobile County, Alabama and Baldwin County, Alabama. The Mobile Board's service area is downstream of the Alabama, Coosa and Tallapoosa River Basin ("ACT River Basin"). To reliably and lawfully operate its facilities, the Mobile Board is heavily dependent on reliable water from the ACT River Basin, particularly the Alabama River, which terminates into the Mobile River. In 1967, the Mobile Board constructed a water intake 30 miles upstream on the Mobile River (the terminus of the Alabama River) at Bucks, Alabama. The facility includes a protective structure and electrical and diesel powered pumps that elevate the water sufficiently to flow to a canal and pumping network, which was also constructed in 1967, that transports untreated raw water sixteen miles south to industrial customers. Intake and transport capacity exceeds ninety million gallons per day and is currently operating near 20 million gallons per day. Since 2002, this water intake also serves as standby source of water supply for municipal drinking water should a disaster or other emergency limit or prohibit the use of the Mobile Board's primary surface water impoundment located in another watershed.

The location of the water intake site at Bucks, Alabama was chosen for the express purpose of obtaining fresh water, unencumbered with salt or brine from tidal and other influences of Mobile Bay, for use in industrial processes. The Alabama River is the source of 90% of the Board's industrial water supply. Reduced flow of water in the Alabama River has recently allowed salty, brackish water from Mobile Bay to extend north of the Bucks intake. This intrusion is caused by the tidal action of salty Mobile Bay when the flow of fresh water in the Mobile River is too low to keep the denser Bay water from extending upriver. The encroachment of salt water upstream is directly related to the reducing volume of Mobile River flow. The result is that water now pumped from the River at the Bucks intake contains salt levels in excess of limits acceptable for some industrial uses. The extent of unacceptable, elevated salt concentration in the Mobile River at the Bucks intake site increases with reducing flow from the Alabama River and is adversely affecting the Mobile Board's operations and those of its industrial customers. In consequence of this, the ACT River Basin is of vital importance to the Mobile Board, and any action that diminishes water flows therein will cause increasing harm to the Mobile Board and its customers.

<Additional attachments to this letter are available upon request.>

Response

The Proposed Action Alternative for update of the ACT WCM would have an overall negligible effect on hydrodynamic or salinity conditions in the Mobile River, Mobile-Tensaw Delta, and Mobile Bay as compared to the No Action Alternative (existing conditions/current operations). As pointed out in Section 2 of the draft EIS, the ACT basin contributes roughly only 50 percent of the total flow in the Mobile River below the juncture of the Alabama and Tombigbee Rivers. USACE projects in the Black Warrior-Tombigbee River basin operate as run-of-river projects with no conservation storage and little ability to manage or modify the flow regime. Modeling of the ACT basin for the No Action Alternative and the Proposed Action Alternative reveal that differences in the flow regime at the most downstream points in the basin (e.g., Claiborne Lock and Dam) are generally negligible. For these reasons, the Mobile-Tensaw Delta and the Mobile Bay further downstream are not likely to be affected any differently by the Proposed Action Alternative than current water management operations in the ACT basin. Pertinent paragraphs in Section 6.10 of the EIS have been revised and updated to in response to this comment.

May 31, 2013

<u>BY ELECTRONIC MAIL AND U.S. MAIL</u>
Colonel Steven J. Roemhildt, Commander
U.S. Army Corps of Engineers, Mobile District
Attn: PD-EI (ACT-DEIS)
P.O. Box 2288
Mobile, AL 36628

Subject: Metropolitan North Georgia Water Planning District Comments
Draft Master Water Control Manual Update and Environmental Impact Statement
for the Alabama - Coosa - Tallapoosa River Basin

Dear Colonel Roemhildt:

Please accept these comments on the Draft Water Control Manual (the "Manual") and Draft Environmental Impact Statement on behalf of the Metropolitan North Georgia Water Planning District (the "Metro Water District"). The Metro Water District is concerned that the draft documents do not address the current or future water supply needs of the region. Because these needs already exist and are projected to increase over the life of the Water Control Manual, some action must be taken to address them. I have attached a copy of our latest Water Supply and Water Conservation Management Plan to help document these requirements.

It also should be noted that the Metro Water District has helped implement an aggressive water conservation program across the region, including areas served by Allatoona Lake. The region has achieved water conservation savings greater than 20% and is committed to the wise use of our resources. The Metro Water District's water conservation program is also outlined within the Water Supply and Conservation Plan.

Please do not hesitate to call if I can provide you with additional information or assist you in any other way.

Sincerely,

Katherine Zitsch, PE, BCEE
Manager

Attachment: 2009 Metro Water District Water Supply and Water Conservation Management Plan

40 Courtland St., NE ♦ Atlanta, Georgia 30303-2538
Telephone: (404) 463-3256 ♦ Facsimile (404) 463-3254

Comment ID 0056

Comment ID 0056.001

Author Name: Zitsch, Katherine

Organization: Metropolitan North Georgia Water Planning District

Comment

Please accept these comments on the Draft Water Control Manual (the "Manual") and Draft Environmental Impact Statement on behalf of the Metropolitan North Georgia Water Planning District (the "Metro Water District"). The Metro Water District is concerned that the draft documents do not address the current or future water supply needs of the region. Because these needs already exist and are projected to increase over the life of the Water Control Manual, some action must be taken to address them. I have attached a copy of our latest Water Supply and Water Conservation Management Plan to help document these requirements.

It also should be noted that the Metro Water District has helped implement an aggressive water conservation program across the region, including areas served by Allatoona Lake. The region has achieved water conservation savings greater than 20% and is committed to the wise use of our resources. The Metro Water District's water conservation program is also outlined within the Water Supply and Conservation Plan.

Please do not hesitate to call if I can provide you with additional information or assist you in any other way.

Response

Addressing future water supply needs of the region is outside the scope of the ACT WCM update process. The final EIS includes an analysis of the sensitivity of the proposed action alternative for the ACT WCM update to long range water demand projections across the entire basin (including pertinent areas of the Metro Water District). A summary of the sensitivity analysis is included in the EIS in Section 6 under the "Sensitivity Analysis" discussion, and the Cumulative Effects section (6.10) also addresses future demands and potential projects to meet those demands.

As part of the Affected Environment section of the EIS, Section 2.1.1.2.5.1.8 provides an overview of the Metro Water District as well as the District's Water Supply and Conservation Plan. Metro Water District conservation initiatives are specifically noted in the EIS.

<NOTE: The commentor (Ms. Zitsch) attached a copy of the following 210-page document to her letter: Water Supply and Water Conservation Management Plan, May 2009, Metropolitan North Georgia Water Planning District. This document is available on the Internet at http://documents.northgeorgiawater.org/Water_Supply_Water_Conservation_Plan_May2009.pdf.>

1170 Atlanta Industrial Drive
Marietta, Georgia 30066

40 Courtland Street, NE
Atlanta, Georgia 30303

May 31, 2013

BY ELECTRONIC MAIL AND U.S. MAIL
Colonel Steven J. Roemhildt, Commander
U.S. Army Corps of Engineers, Mobile District
Attn: PD-EI (ACT-DEIS)
P.O. Box 2288
Mobile, AL 36628

Re: Draft Master Water Control Manual Update and Environmental Impact Statement for the Alabama-Coosa-Tallapoosa River Basin: **Comments of the Cobb County-Marietta Water Authority and the Atlanta Regional Commission.**

Dear Colonel Roemhildt:

Please accept these comments on the Draft Water Control Manual (the "Manual") and Draft Environmental Impact Statement (the "EIS") on behalf of the Cobb County-Marietta Water Authority ("CCMWA") and the Atlanta Regional Commission.

The Water Control Manual Should Address *Future* Water Supply Needs

First, the Draft Manual and EIS should not be limited to "current conditions" in the basin. At a minimum, the new Manual must address conditions as they will exist during the foreseeable future while the Manual is in use, including projected water supply demands documented in the State of Georgia's recent water supply request.[1]

We are aware that this limitation on the scope of the Manual is an attempt by the Corps to honor promises made to the State of Alabama and its Senate delegation, but we urge you to reconsider nonetheless. The Army should adopt a policy of strict neutrality in this interstate dispute. When one State wants action and another State wants delay, "neutrality" requires acting on the merits of any request that is properly before the agency while leaving the States to pursue their legal and equitable claims in other venues. Any other response puts the Army in the position of having to adjudicate competing legal claims, which is exactly what is happening in the ACT. By bowing to Alabama's demand that it take no action to address water supply needs in Georgia, the Army has, in effect, granted Alabama a victory on claims that would never pass muster in court.

[1] Letter from Nathan Deal, Gov. of Georgia, to Hon. Jo-Ellen Darcy, Asst. Secretary of the Army for Civil Works re Lake Allatoona-Request for Final Agency Action (Jan. 24, 2013) with Affidavit of Judson H. Turner and all attachments.

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Furthermore, if the Army is worried that a comprehensive update to the Manual would interfere with ongoing negotiations between the States, this fear is misplaced. After waiting almost a quarter of a century for the States to negotiate an amicable solution, it is long past time for the Army to conclude that the States are at an impasse and that it has no choice but to exercise its discretion to determine how the system should be operated.

The Description of "Current Conditions" in the Manual is Not Accurate

Second, we are also concerned that description of "current conditions" in the Manual and EIS is not accurate. There is no mention in either document of the existing levels of water supply withdrawals and returns, of the existing demands supplied by CCMWA and the City of Cartersville, or of the existence of the Hickory Log Creek Reservoir. At a minimum, the Manual and EIS must acknowledge these "facts on the ground" and state how they will be addressed when the new Manual is adopted.

1. The CCMWA Contract

The Draft Manual appears to suggest that the "existing condition" as it relates to water supply is a storage contract with a fixed yield of 34.5 mgd. This is how the storage contract with CCMWA is described in the text of the EIS,[2] and it is also how the withdrawal is modeled in RES-SIM, but it is not correct. To the contrary, as the Corps recently acknowledged, "[t]he contract does not establish fixed limits on withdrawals from the reservoir. Rather, the Contract provides CCMWA the right to utilize 13,140 acre-feet of storage space in the reservoir." *See* Letter from Col. Steven Roemhildt, USACE, to Glenn Page, CCMWA (Sept. 11, 2012) at 1 (emphasis added).[3]

In essence, CCMWA has purchased a bucket from the Army, and CCMWA is entitled to store such water in the bucket as may be allocated to it by the State of Georgia. The quantity of water that CCMWA can withdraw from the bucket depends upon (1) the permit issued to it by the State of Georgia; and (2) the availability of water in the bucket. The quantity of water in the bucket at any given point in time depends upon the timing and quantity of inflows in relation to the timing and quantity of withdrawals. It is the function of the storage accounting spreadsheet described in the Appendix to record these variables and to track the balance.[4]

When all of this is taken into account, as it must be, it is unclear whether CCMWA requires additional storage in Allatoona to support its existing water supply operations. The draft documents provide no indication one way or the other.

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[2] The Draft EIS states that the no action alternative, or "baseline," is "based on the amount of storage currently under contract," and that it "assume[s] that contract amounts establish limits or caps on the amount of water that can be withdrawn for water supply purposes." Draft EIS at 1-42.

[3] The contract was executed in 1963 and will soon be extended to provide permanent rights to storage in accordance with Pub. L. 88-140. *See* Letter from Col. Steven Roemhildt, USACE, to G. Page, CCMWA (Nov. 20, 2012).

[4] Draft Manual, Appendix A at 8-5.

2. Actual Withdrawals and Returns by CCMWA

Although 34.5 mgd is a not a meaningful threshold, it should be noted that CCMWA's average annual gross water withdrawal from Allatoona Lake has exceeded that number every year since 2000. The greatest single annual average withdrawal was 50.3 mgd and occurred in 2000. The lowest average withdrawal since 2000 was 34.52 mgd; this occurred in 2012, when plant production capacity was curtailed because of a major construction project.

Approximately one-third of the water withdrawn is returned to the reservoir from two wastewater treatment plants operated by Cobb County, one of the principal wholesale customers of CCMWA. As a result, the average annual net withdrawal by CCMWA has rarely exceeded 34.5 mgd.

3. Existing Demands Supplied by CCMWA

The water withdrawn by CCMWA is currently used to serve existing homes and businesses. Because these customers already exist, some action will have to be taken to meet their needs if withdrawals from Allatoona Lake are curtailed. If the Army is unable or unwilling to do anything, the State of Georgia and CCMWA will have no choice but to respond by building additional storage projects within the ACT basin to fill the gap.

Through an aggressive water conservation program, per capita usage within CCMWA's service area was reduced by more than 20% from 2001 to 2010. Especially with the economy rebounding, further reductions in the gross withdrawal by CCMWA would likely cause severe service limitations and disruptions to CCMWA and its customers.

4. Hickory Log Creek Reservoir

Another current condition of the ACT Basin is the existence of the Hickory Log Creek Reservoir ("HLCR"), a completed reservoir project the Manual and the EIS ignore in the evaluation of alternatives.

HLCR is an off-stream pumped-storage project located on a tributary of the Etowah River upstream of Allatoona. CCMWA partnered with the City of Canton to construct this project, which was completed in 2008 and is expected to yield 44 mgd. Georgia EPD has allocated 3/4 of the total yield (33 mgd) to CCMWA and 1/4 (11 mgd) to Canton.

The project was not designed to have a water treatment plant drawing directly from it. Instead, the concept is to store water in HLCR and to utilize the Etowah River to deliver this water to existing treatment facilities owned by the City of Canton and by CCMWA. Water is piped from storage in HLCR to the Etowah River, where it flows to the existing withdrawal and treatment facilities operated by the City of Canton (in the Etowah River) and CCMWA (in Allatoona Lake). The State of Georgia has approved this concept and has issued a permit stating that water released from storage in HLCR can be used only to provide water supply to Canton and CCMWA customers.

Although the project is fully constructed, the Army has been unable or unwilling to amend its storage accounting spreadsheet to provide a credit to CCMWA for water delivered to Allatoona from HLCR. CCMWA submitted a formal proposal detailing the required changes to the storage accounting spreadsheet on August 26, 2010.[5] The Mobile District informed CCMWA in a letter dated September 11, 2012 that the Assistant Secretary of the Army "intends to address these storage accounting concepts as part of a broader, national review of water supply policies."[6] No further action has been taken, however, and there is no indication that the promised review has even commenced.

If the Army refuses to credit CCMWA for water delivered to Allatoona from Hickory Log Creek Reservoir, CCMWA will have no alternative but to construct new facilities to withdraw the water from the Etowah River and pipe it to the existing treatment facilities at Allatoona Lake. The end result will be the same—as CCMWA will remove 33 mgd from the system either way. The only difference between these two scenarios is that CCMWA may be forced to spend substantial sums (approximately $100 million) to construct a new pumping station and pipeline to replace the natural conduit provided by the Etowah River.

<u>The Proposed Storage Accounting Spreadsheet</u>
<u>Deprives CCMWA of Water Allocated to it by the State of Georgia.</u>

The Draft Manual states the following formula will be used to track the balance in each user's account:

Account Balance =
Ending Storage - Beginning Storage + Inflow Share - Loss Share - User's Usage.

Draft Manual at 7-8 & Appendix A at 8-5.

If implemented, this formula would deprive CCMWA of a state law property right because it denies CCMWA credit for water that has been allocated to it by the State of Georgia—specifically return flows and water delivered to Allatoona from HLCR. It is the State of Georgia, and not the Corps, that has sole jurisdiction to allocate water rights—and the State of Georgia has determined that these flows should be credited to CCMWA. A decision by the Army to reject the State's allocation of this water to CCMWA would be the same as a bank deciding to credit one user's deposit to another user's account.

As explained by the General Counsel of the Army Corps of Engineers in a June 2012 memorandum to the United States Court of Appeals for the Eleventh Circuit, the Army's general practice has been to treat all inflow the same and to apportion it among users based on the size of each user's account.[7] Notwithstanding its protestations to the contrary, the effect of this practice is to equate storage rights with water rights: it assumes that a contract for 75% of the storage in a reservoir also conveys a right to impound 75% of the inflow. As stated above, the State of Georgia has rejected this approach and instead has determined that return flows and deliveries from HLCR should be allocated 100% to CCMWA.

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[5] *See* Letter from Glenn Page, CCMWA, to Col. Steven Roemhildt, USACE, re Hickory Log Creek Reservoir — Special Condition #15 (Aug. 26, 2010).

[6] *See* Letter from Col. Steven Roemhildt, USACE, to Glenn Page (Sept. 11, 2012).

[7] *See* Memorandum for the Chief of Engineers dated June 25, 2012 re Authority to Provide Municipal and Industrial Water Supply from Buford Dam /Lake Lanier Project, Georgia at 37.

To the extent relevant, note that Georgia's allocation of return flows and HLCR deliveries to CCMWA will not have any effect on the yield of Allatoona Lake or its ability to serve other authorized purposes. In the case of return flows, the discharge actually *increases* the yield beyond what the reservoir would naturally produce. The sole effect of the State's allocation is to assign this benefit to the entity responsible for producing it, whereas the effect of the Army's allocation would be to commandeer this additional water to benefit other users. The same is true with respect to HLCR. Because the State has already authorized CCMWA to withdraw 33 mgd, the only question is whether CCMWA can deliver the water to Allatoona Lake or whether it must construct new facilities to withdraw it from the Etowah River. The effect on Allatoona Lake will be the same either way.

The Storage Accounting Spreadsheet Also Includes Technical Errors

In addition to the legal errors described above, the Storage Accounting Spreadsheet also includes serious technical errors that must be fixed. These are outlined below and described more fully in previous correspondence.[8]

1. The Inflow Share Credited to CCMWA Should be 4.61% During the Summer and 13.39% During the Winter.

The concept utilized in the spreadsheet is that inflow should be divided *pro rata* based on the size of each storage account: if CCMWA holds 4.61% of the conservation storage, CCMWA gets 4.61% of the inflow. By this logic, the "Inflow Share" credited to CCMWA and the other water supply users should vary seasonally. Because CCMWA owns 4.61% of the summer pool and 13.39% of the winter pool, the Inflow Share credited to CCMWA should vary from 4.61% in the summer to 13.39% in the winter.[9] The spreadsheet currently allocates 4.61% to CCMWA at all times.

2. The Storage Accounting Spreadsheet Discriminates Against Water Supply Users by Giving Special Privileges to the Hydropower Account.

Another flaw in the storage accounting spreadsheet is that it does not handle "spill" correctly. Spill occurs when any account is full. Because the balance in each account depends in part on the amount that has been withdrawn, it is possible for one account to be full while others are empty.

There are four storage accounts altogether: the hydropower account and three water supply accounts. When any of the three water supply accounts fills up, the spreadsheet "spills" any addition inflow into the other accounts *pro rata*. The spreadsheet is not consistent, however,

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[8] *See* Letter from Glenn Page, CCMWA, to Col. Byron Jorns re Cobb County-Marietta Water Contract No. 01-076-CIVENG-64-116 (Nov. 19, 2007) with Exhibits A and B; Letter from Glenn Page, CCMWA to Col. Byron Jorns re Cobb County-Marietta Water Contract No. 01-076-CIVENG-64-116 (Dec. 5, 2007) with Exhibits C through G; and Letter from Glenn Page, CCMWA, to Col. Steven Roemhildt, USACE re letter of Sept. 11, 2012 (Oct. 22, 2012).

[9] CCMWA's storage account is fixed year-round at 13,140 acre-feet but conservation storage varies from 367,471 acre-feet in summer to 98,100 acre-feet in winter. Draft Manual at 3-3.

because the spreadsheet never allows the hydropower account to spill into the water supply accounts. Instead of redistributing water to the water supply account when the hydropower account is full, the spreadsheet allows hydropower to keep the surplus. In other words, the spreadsheet discriminates against water supply by capping the water supply accounts but not the hydropower account.

If all accounts were treated the same, as they must be, then the maximum that could be held in the hydropower account in winter (when the total conservation storage is 98,100 acre-feet) is 77,771 acre-feet of storage.[10] Whenever the volume of water in storage exceeds this amount, the excess can only be stored in the water supply accounts. It follows that all accounts must be full whenever Allatoona Lake is at or above its rule curve.

Another way to understand this problem is to observe that, because the sum of all the storage accounts equals total conservation storage, it is physically and mathematically impossible for conservation storage to be full while <u>*any*</u> storage account is less than full—and yet the spreadsheet allows this to happen.

<u>The "No Action Alternative" Does Not Comply with NEPA</u>

The errors and omissions described above constitute violations of the National Environmental Policy Act ("NEPA"), including the requirement to provide an accurate description of the "no action" alternative. *See* 40 C.F.R. §1502.14. Every EIS "*must* 'include the alternative of no action.' " *N.C. Wildlife Fed'n v. N.C. Dept. of Transp.*, 677 F.3d 596, 602 (4th Cir. 2012). "Without [accurate baseline] data, an agency cannot carefully consider information about significant environment impacts." *See N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1085 (9th Cir. 2011). This "mak[es] it impossible to accurately isolate and assess environmental impacts" of the proposed action. *N.C. Wildlife Fed'n*, 677 F.3d at 602.

It is especially important to identify the no action alternative here, because in this case the no action alternative may be the most damaging of all. "Where a choice of 'no action' by the agency would result in predictable actions by others, this consequence of the 'no action' alternative should be included in the analysis." Council on Envt'l Quality, *Memorandum to Agencies Containing Answers to 40 Most Asked Questions on NEPA Regulations*, 46 Fed. Reg. 18,026, 18,027 (Mar. 17, 1981). In this case, the consequence of a decision by the Corps to take no action to address current and future water supply demands would be to force CCMWA and/or the State of Georgia to address the resulting water supply shortages.

The actual impact will depend in part on whether the Corps intends to curtail existing withdrawals by CCMWA—a point on which neither the Draft Manual nor the Draft EIS is clear. If the Corps does intend to curtail existing withdrawals, this action would have significant and reasonably foreseeable effects. In the short-term, this would likely lead to drastic water shortages in the area served by CCMWA. In addition to the potential public health and safety impacts such a shortage would cause, this would likely lead to a moratorium on all new growth within the area served by CCMWA, and many existing homes and businesses will either be forced to relocate or to do without water. Further, emergency measures would need to be taken by CCMWA, its

[10] The rest belongs to water supply, as follows: 13,140 acre-feet to CCMWA, 6,371 acre-feet to Cartersville, and 818 to Chatsworth. Draft Manual at 7-8.

customers, and the State of Georgia to create new supplies to replace what is lost in Allatoona, including the construction of new water supply reservoirs. The environmental effects of such a course of action would be far more significant than the effect of allowing current usage to continue. None of these effects are considered in the EIS.

If the Corps' position is that no action will be taken to limit existing usage until final action is taken, the Corps must explain what it meant when it stated in the Draft EIS that "contract amounts establish limits or caps on the amount of water that can be withdrawn for water supply purposes." Draft EIS at 1-42.

If the Corps has not decided whether current withdrawals must be curtailed to comply with the contract, this too must be stated clearly. "Agencies violate NEPA when they fail to disclose that their analysis contains incomplete information." *N.C. Wildlife Fed'n v. N.C. Dept. of Transp*., 677 F. 3d 596, 603 (4th Cir. 2012). *See also N.M. ex rel. Richardson v. Bureau of Land Mgmt*., 565 F.3d 683, 708 (10th Cir.2009); *Native Ecosystems Council v. U.S. Forest Serv*., 418 F.3d 953, 964 (9th Cir. 2005); *Sierra Club v. U.S. Army Corps of Eng'rs*, 701 F.2d 1011, 1030 (2d Cir. 1983); *State Farm*, 463 U.S. 29, 43 (1983) (holding that an agency acts arbitrarily and capriciously when it fails to "examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made") (internal quotation marks omitted). Such required "up-front disclosures [include] relevant shortcomings in the data or models." *Lands Council v. Powell*, 395 F.3d 1019, 1032 (9th Cir. 2005); *see* 40 C.F.R. § 1502.22 (an agency "shall make clear" if there is "incomplete or unavailable information" in an environmental impact statement). Without this information, it is impossible to evaluate the social and environmental impacts of any alternative in comparison to the "no action" alternative.

The Alternatives Analysis Fails to Consider All Reasonable Alternatives to Address Current Water Supply Needs

Consistent with its decision to ignore current conditions relating to water supply, the Draft Manual and EIS also fail to consider reasonable alternatives to address current water supply needs. The alternatives analysis must "rigorously explore and objectively evaluate all reasonable alternatives," including "alternatives not within the jurisdiction of the lead agency," 50 C.F.R § 1502.14(a), (c).

Reasonable alternatives improperly excluded from analysis include but are not limited to the following: (1) taking action on the storage accounting issues described above to determine exactly how much water CCMWA can withdraw; (2) revising the storage accounting spreadsheet to honor the State's allocation of return flows and deliveries from HLCR to CCMWA; (3) to the extent CCMWA requires additional storage to meet current or future needs, taking action on outstanding reallocation requests by CCMWA and the State of Georgia to provide additional storage; (4) to the extent CCMWA requires additional storage to meet current or future needs, executing interim contracts to cover the need until a final decision is reached. All of these alternatives have been proposed by CCMWA and discussed extensively with the Corps prior to publishing the Draft EIS.

To the extent these alternatives were excluded "because no conceivable proposal exists that both states would support,"[11] this is not a valid justification for ignoring reasonable alternatives. It is wholly improper for the Army to give Alabama the power to veto Georgia's request.

Furthermore, Congressional authorization would not be required to pursue any of the alternatives noted above. The Corps is fully authorized by the Water Supply Act to allocate additional storage to water supply without further congressional authorization. The only limit on this authority is that the reallocation must not "significantly affect other project purposes" or require "major structural or operational changes."[12] A reallocation on the small scale needed to meet current and future water supply needs would not exceed these limits.[13]

But even if the Corps were worried that that Congressional authorization might be required for some or all alternatives, this would not justify excluding those alternatives from consideration. CEQ regulations expressly require that all reasonable alternatives be considered, including those not within the jurisdiction of the lead agency. The D.C. Circuit has explained that this duty extends to reasonable alternatives that exceed an agency's existing authority because an EIS "is not only for the exposition of the thinking of the agency, but also for the guidance of these ultimate decision-makers, and must provide them with the environmental effects of both the proposal and the alternatives, for their consideration along with the various other elements of the public interest." *Natural Res. Def. Council, Inc. v. Morton*, 458 F.2d 827, 835 (D.C. Cir. 1972). *See also* 46 Fed. Reg. at 18,027 ("An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable. A potential conflict with local or federal law does not necessarily render an alternative unreasonable . . . . Alternatives that are outside the scope of what Congress has approved or funded must still be evaluated in the EIS if they are reasonable, because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies.").

The Cumulative Impact Study Fails to Consider All Reasonably Foreseeable Impacts during the Period While the Manual Will Govern Operations

The EIS also fails to address all reasonably foreseeable cumulative impacts of the proposed action. CEQ regulations state that an EIS must consider cumulative impacts on the environment. 40 C.F.R. § 1508.25(a)(1)-(3). *See also Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976). "A reasonable cumulative impacts analysis must to include" … "other actions—past, present, and reasonably foreseeable proposed—that have or are expected to have impacts in the same area"; "the impacts or expected impacts from these actions," and "the overall impact that can be expected if the individual impacts are allowed to accumulate.' " *Ga. River Network v. U.S. Army Corps of Eng'rs*, 334 F. Supp. 2d 1329, (N.D. Ga. 2003) (quoting *Grand Canyon*

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[11] Draft EIS at 1-7, lines 24-25.

[12] 43 U.S.C. §§ 390b(b), (d).

[13] The Corps has previously explained the technical and project-specific inquiry that is required to determine whether additional congressional authorization is required. *See* Memorandum for the Chief of Engineers dated June 25, 2012 re Authority to Provide Municipal and Industrial Water Supply from Buford Dam /Lake Lanier Project, Georgia at 46.

Trust v. F.A.A., 290 F.3d 339, 342 (D.C. Cir. 2002); *see also D'Olive Bay Restoration & Pres. Comm., Inc. v. U.S. Army Corps of Eng'rs*, 513 F. Supp. 2d 1261, 1292-93 (S. D. Ala. 2007).

The cumulative impacts analysis in the EIS is inadequate because it ignores all future developments in the ACT Basin—federal, state, and private. At a minimum, the cumulative impacts analysis must address current conditions as well as reasonably foreseeable future impacts during the life of the Manual, which will remain in effect until it is amended. Given that it has taken almost half a century to update the existing water control plan, and given that no schedule has been adopted to update the WCM to address future conditions, it must be assumed that the WCM will remain in effect for an extended period of time—ten to twenty years at a minimum. All reasonably foreseeable future actions within that timeframe must be considered, including but not limited to the following.

1. Georgia's Water Supply Request

Anticipated growth in water demand on the scale documented in the pending reallocation requests by CCMWA and Georgia must be included. This projected growth is a reality that must be addressed one way or the other in the EIS: either studying the impact of granting the pending reallocation requests and thus meeting the demand or by studying the impact of denying the request and thus forcing homes and businesses to relocate.

2. Hickory Log Creek Reservoir Project

HLCR must also be included. To the extent it is unclear whether the withdrawal will be taken from the Etowah River or from Allatoona Lake, this should be stated, but the authorized withdrawal of 44 mgd (33 mgd by CCMWA; 11 mgd by Canton) should be included in the model because it will be removed from the system either way.

3. Proposed change to Alabama Rule Curve

The new license conditions proposed by Alabama Power Company for its projects on the Coosa and Tallapoosa River must also be included. Among other significant changes, Alabama Power has proposed a significant reduction in seasonal flood storage at these projects. These changes are neither "remote" nor "speculative"; they are included in a license application that has already been approved by FERC staff and declared to be ready for action by the Committee.

<u>Incorporation by Reference of Previous Comments</u>

Finally, we request that the following documents be reconsidered and included in the Administrative Record for this proceeding:

- Letter from Glenn Page, CCMWA, to Col. Byron Jorns re Cobb County-Marietta Water Contract No. 01-076-CIVENG-64-116 (Nov. 19, 2007) with Exhibits A and B;
- Letter from Carol Couch, Georgia EPD, to Col. Byron Jorns re Cobb County-Marietta Water Contract No. 01-076-CIVENG-64-116;

- Letter from Glenn Page, CCMWA to Col. Byron Jorns re Cobb County-Marietta Water Contract No. 01-076-CIVENG-64-116 (Dec. 5, 2007) with Exhibits C through G.
- Letter from Glenn Page, CCMWA to Col. Byron Jorns re Hickory Log Creek Reservoir (Dec. 20, 2007);
- Letter from Glenn Page, CCMWA, to Col. Steven Roemhildt re Hickory Log Creek Reservoir — Special Condition #15 (Aug. 26, 2010) with Exhibits A through D;
- Letter from Steven Stockton, Dir. of Civil Works, to Glenn Page, CCMWA (Mar. 6, 2012);
- Letter from Col. Roemhildt, USACE, to Glenn Page, CCMWA (May 15, 2012);
- Letter from Glenn Page, CCMWA, to Col. Roemhildt, USACE (June 22, 2012);
- Memorandum for the Chief of Engineers re Authority to Provide Municipal and Industrial Water Supply from the Buford Dam / Lake Lanier Project, Georgia (June 25, 2012);
- Letter from Col. Roemhildt, USACE, to Glenn Page (Sept. 11, 2012);
- Letter from Col. Roemhildt, USACE, to Glenn Page (Sept. 21, 2012);
- Letter from Glenn Page, CCMWA, to Col. Steven Roemhildt, USACE, re letter of Sept. 11, 2012;
- Letter from Glenn Page, CCMWA, to Col. Steven Roemhildt re Conversion of CCMW A Storage Contract (DA-01-076-CIVENG-64-116) to Reflect Permanent Right to Storage and Renewal of Easement (EASEMENT NO. DA-01-076-CIVENG-64-167) (Oct. 22, 2012) with Exhibits A through C;
- Letter from Col. Byron Jorns, USACE, to Glenn Page (Nov. 2, 2007);
- Letter from Steven Roemhildt, USACE, to Glenn Page, CCMWA (Nov. 20, 2012);
- Letter from Steven Roemhildt, USACE, to Glenn Page, CCMWA (Nov. 20, 2012);
- Letter from Nathan Deal, Gov. of Georgia, to Hon. Jo-Ellen Darcy, Asst. Secretary of the Army for Civil Works re Lake Allatoona-Request for Final Agency Action (Jan. 24, 2013) with Affidavit of Judson H. Turner and all attachments.
- Letter from Jo-Ellen Darcy, Asst. Secretary of the Army, to Hon. Nathan Deal, Gov. of Georgia (Apr. 29, 2013).

We have not attached copies of these documents because you should have them already, but please do not hesitate to ask if you cannot locate them.

May 31, 2013
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CONCLUSION

In summary, the storage accounting formula must be fixed to address the legal and technical errors addressed above and the Manual and EIS must be revised to include alternatives to address current and future water supply needs. The Manual and EIS should also be revised to include a cumulative impacts analysis covering reasonably foreseeable impacts within the ACT Basin during the life of the manual.

Please do not hesitate to call if you require any additional information or if we can assist you in anyway.

Respectfully yours,

Glenn M. Page, P.E.
General Manager
Cobb County-Marietta Water Authority

Katherine H. Zitsch, PE, BCEE
Manager, Natural Resources Division
Atlanta Regional Commission

Comment ID 0060

Comment ID 0060.001

Author Name: Page, Glenn M., Zitsch, Katherine H./

Organization: Atlanta Regional Commission and Cobb County-Marietta Water Authority

Comment

Please accept these comments on the Draft Water Control Manual (the "Manual") and Draft Environmental Impact Statement (the "EIS") on behalf of the Cobb County-Marietta Water Authority ("CCMWA") and the Atlanta Regional Commission.

The Water Control Manual Should Address Future Water Supply Needs

First, the Draft Manual and EIS should not be limited to "current conditions" in the basin. At a minimum, the new Manual must address conditions as they will exist during the foreseeable future while the Manual is in use, including projected water supply demands documented in the State of Georgia's recent water supply request. <Footnote 1>

We are aware that this limitation on the scope of the Manual is an attempt by the Corps to honor promises made to the State of Alabama and its Senate delegation, but we urge you to reconsider nonetheless. The Army should adopt a policy of strict neutrality in this interstate dispute. When one State wants action and another State wants delay, "neutrality" requires acting on the merits of any request that is properly before the agency while leaving the States to pursue their legal and equitable claims in other venues. Any other response puts the Army in the position of having to adjudicate competing legal claims, which is exactly what is happening in the ACT. By bowing to Alabama's demand that it take no action to address water supply needs in Georgia, the Army has, in effect, granted Alabama a victory on claims that would never pass muster in court.

Furthermore, if the Army is worried that a comprehensive update to the Manual would interfere with ongoing negotiations between the States, this fear is misplaced. After waiting almost a quarter of a century for the States to negotiate an amicable solution, it is long past time for the Army to conclude that the States are at an impasse and that it has no choice but to exercise its discretion to determine how the system should be operated.

The Description of "Current Conditions" in the Manual is Not Accurate

Second, we are also concerned that description of "current conditions" in the Manual and EIS is not accurate. There is no mention in either document of the existing levels of water supply withdrawals and returns, of the existing demands supplied by CCMWA and the City of Cartersville, or of the existence of the Hickory Log Creek Reservoir. At a minimum, the Manual and EIS must acknowledge these "facts on the ground" and state how they will be addressed when the new Manual is adopted.

1. The CCMWA Contract

The Draft Manual appears to suggest that the "existing condition" as it relates to water supply is a storage contract with a fixed yield of 34.5 mgd. This is how the storage contract with CCMWA is described in the text of the EIS, <Footnote 2> and it is also how the withdrawal is modeled in RES-SIM, but it is not correct. To the contrary, as the Corps recently acknowledged, "*[t]he contract does not establish fixed limits on withdrawals from the reservoir.* Rather, the Contract provides CCMWA the right to utilize 13,140 acre-feet of storage space in the reservoir." See Letter from Col. Steven Roemhildt, USACE, to Glenn Page, CCMWA (Sept. 11, 2012) at 1 (*emphasis added*). <Footnote 3>

In essence, CCMWA has purchased a bucket from the Army, and CCMWA is entitled to store such water in the bucket as may be allocated to it by the State of Georgia. The quantity of water that CCMWA can withdraw from the bucket depends upon (1) the permit issued to it by the State of Georgia; and (2) the availability of water in the bucket. The quantity of water in the bucket at any given point in time depends upon the timing and quantity of inflows in relation to the timing and quantity of withdrawals. It is the function of the storage accounting spreadsheet described in the Appendix to record these variables and to track the balance. <Footnote 4>

When all of this is taken into account, as it must be, it is unclear whether CCMWA requires additional storage in Allatoona to support its existing water supply operations. The draft documents provide no indication one way or the other.

2. Actual Withdrawals and Returns by CCMWA

Although 34.5 mgd is a not a meaningful threshold, it should be noted that CCMWA's average annual gross water withdrawal from Allatoona Lake has exceeded that number every year since 2000. The greatest single annual average withdrawal was 50.3 mgd and occurred in 2000. The lowest average withdrawal since 2000 was 34.52 mgd; this occurred in 2012, when plant production capacity was curtailed because of a major construction project.

Approximately one-third of the water withdrawn is returned to the reservoir from two wastewater treatment plants operated by Cobb County, one of the principal wholesale customers of CCMWA. As a result, the average annual net withdrawal by CCMWA has rarely exceeded 34.5 mgd.

3. Existing Demands Supplied by CCMWA

The water withdrawn by CCMWA is currently used to serve existing homes and businesses. Because these customers already exist, some action will have to be taken to meet their needs if withdrawals from Allatoona Lake are curtailed. If the Army is unable or unwilling to do anything, the State of Georgia and CCMWA will have no choice but to respond by building additional storage projects within the ACT basin to fill the gap.

Through an aggressive water conservation program, per capita usage within CCMWA's service area was reduced by more than 20% from 2001 to 2010. Especially with the economy rebounding, further reductions in the gross withdrawal by CCMWA would likely cause severe service limitations and disruptions to CCMWA and its customers.

4. Hickory Log Creek Reservoir

Another current condition of the ACT Basin is the existence of the Hickory Log Creek Reservoir ("HLCR"), a completed reservoir project the Manual and the EIS ignore in the evaluation of alternatives.

HLCR is an off-stream pumped-storage project located on a tributary of the Etowah River upstream of Allatoona. CCMWA partnered with the City of Canton to construct this project, which was completed in 2008 and is expected to yield 44 mgd. Georgia EPD has allocated 3/4 of the total yield (33 mgd) to CCMWA and 1/4 (11 mgd) to Canton.

The project was not designed to have a water treatment plant drawing directly from it. Instead, the concept is to store water in HLCR and to utilize the Etowah River to deliver this water to existing treatment facilities owned by the City of Canton and by CCMWA. Water is piped from storage in HLCR to the Etowah River, where it flows to the existing withdrawal and treatment facilities operated by the City of Canton (in the Etowah River) and CCMWA (in Allatoona Lake). The State of Georgia has approved this concept and has issued a permit stating that water released from storage in HLCR can be used *only* to provide water supply to Canton and CCMWA customers. <*Emphasis added*>

Although the project is fully constructed, the Army has been unable or unwilling to amend its storage accounting spreadsheet to provide a credit to CCMWA for water delivered to Allatoona from HLCR. CCMWA submitted a formal proposal detailing the required changes to the storage accounting spreadsheet on August 26, 2010. <Footnote 5> The Mobile District informed CCMWA in a letter dated September 11, 2012 that the Assistant Secretary of the Army "intends to address these storage accounting concepts as part of a broader, national review of water supply policies." <Footnote 6> No further action has been taken, however, and there is no indication that the promised review has even commenced.

If the Army refuses to credit CCMWA for water delivered to Allatoona from Hickory Log Creek Reservoir, CCMWA will have no alternative but to construct new facilities to withdraw the water from the Etowah River and pipe it to the existing treatment facilities at Allatoona Lake. The end result will be the same-as CCMWA will remove 33 mgd from the system either way. The only difference between these two scenarios is that CCMWA may be forced to spend substantial sums (approximately $100 million) to construct a new pumping station and pipeline to replace the natural conduit provided by the Etowah River.

The Proposed Storage Accounting Spreadsheet Deprives CCMWA of Water Allocated to it by the State of Georgia.

The Draft Manual states the following formula will be used to track the balance in each user's account:

Account Balance =
Ending Storage - Beginning Storage + Inflow Share - Loss Share - User's Usage.

Draft Manual at 7-8 & Appendix A at 8-5.

If implemented, this formula would deprive CCMWA of a state law property right because it denies CCMWA credit for water that has been allocated to it by the State of Georgia-specifically return flows and water delivered to Allatoona from HLCR. It is the State of Georgia, and not the Corps, that has sole jurisdiction to allocate water rights-and the State of Georgia has determined that these flows should be credited to CCMWA. A decision by the Army to reject the State's allocation of this water to CCMWA would be the same as a bank deciding to credit one user's deposit to another user's account.

As explained by the General Counsel of the Army Corps of Engineers in a June 2012 memorandum to the United States Court of Appeals for the Eleventh Circuit, the Army's general practice has been to treat all inflow the same and to apportion it among users based on the size of each user's account. <Footnote 7> Notwithstanding its protestations to the contrary, the effect of this practice is to equate storage rights with water rights: it assumes that a contract for 75% of the storage in a reservoir also conveys a right to impound 75% of the inflow. As stated above, the State of Georgia has rejected this approach and instead has determined that return flows and deliveries from HLCR should be allocated 100% to CCMWA.

To the extent relevant, note that Georgia's allocation of return flows and HLCR deliveries to CCMWA will not have any effect on the yield of Allatoona Lake or its ability to serve other authorized purposes. In the case of return flows, the discharge actually increases the yield beyond what the reservoir would naturally produce. The sole effect of the State's allocation is to assign this benefit to the entity responsible for producing it, whereas the effect of the Army's allocation would be to commandeer this additional water to benefit other users. The same is true with respect to HLCR. Because the State has already authorized CCMWA to withdraw 33 mgd, the only question is whether CCMWA can deliver the water to Allatoona Lake or whether it must construct new facilities to withdraw it from the Etowah River. The effect on Allatoona Lake will be the same either way.

Footnote 1: Letter from Nathan Deal, Gov. of Georgia, to Hon. Jo-Ellen Darcy, Asst. Secretary of the Army for Civil Works re Lake Allatoona-Request for Final Agency Action (Jan. 24, 2013) with Affidavit of Judson H. Turner and all attachments.

Footnote 2: The Draft EIS states that the no action alternative, or "baseline," is "based on the amount of storage currently under contract," and that it "assume[s] that contract amounts establish limits or caps on the amount of water that can be withdrawn for water supply purposes." Draft EIS at 1- 42.

Footnote 3: The contract was executed in 1963 and will soon be extended to provide permanent rights to storage in accordance with Pub. L. 88-140. See Letter from Col. Steven Roemhildt, USACE, to G. Page, CCMWA (Nov. 20, 2012).

Footnote 4: Draft Manual, Appendix A at 8-5.

Footnote 5: See Letter from Glenn Page, CCMWA, to Col. Steven Roemhildt, USACE, re Hickory Log Creek Reservoir - Special Condition #15 (Aug. 26, 2010).

Footnote 6: See Letter from Col. Steven Roemhildt, USACE, to Glenn Page (Sept. 11, 2012).

Footnote 7: See Memorandum for the Chief of Engineers dated June 25, 2012 re Authority to Provide Municipal and Industrial Water Supply from Buford Dam /Lake Lanier Project, Georgia at 37.

Response

USACE disagrees with the basic concerns about the adequacy of the documents. The WCM and EIS will comply with NEPA and all federal laws. An appropriate number of alternatives were considered and carried forward for final evaluation. Specific concerns summarized in this comment are addressed in more detail in response to Comment ID 0060.002 through 0060.005 below.

Comment ID 0060.002

Author Name: Page, Glenn M., Zitsch, Katherine H./

Organization: Atlanta Regional Commission and Cobb County-Marietta Water Authority

Comment

The Storage Accounting Spreadsheet Also Includes Technical Errors

In addition to the legal errors described above, the Storage Accounting Spreadsheet also includes serious technical errors that must be fixed. These are outlined below and described more fully in previous correspondence. <Footnote 8>

1. The Inflow Share Credited to CCMWA Should be 4.61% During the Summer and 13.39% During the Winter.

The concept utilized in the spreadsheet is that inflow should be divided pro rata based on the size of each storage account: if CCMWA holds 4.61% of the conservation storage, CCMWA gets 4.61% of the inflow. By this logic, the "Inflow Share" credited to CCMWA and the other water supply users should vary seasonally. Because CCMWA owns 4.61% of the summer pool and 13.39% of the winter pool, the Inflow Share credited to CCMWA should vary from 4.61% in the summer to 13.39% in the winter. <Footnote 9> The spreadsheet currently allocates 4.61% to CCMWA at all times.

2. The Storage Accounting Spreadsheet Discriminates Against Water Supply Users by Giving Special Privileges to the Hydropower Account.

Another flaw in the storage accounting spreadsheet is that it does not handle "spill" correctly. Spill occurs when any account is full. Because the balance in each account depends in part on the amount that has been withdrawn, it is possible for one account to be full while others are empty.

There are four storage accounts altogether: the hydropower account and three water supply accounts. When any of the three water supply accounts fills up, the spreadsheet "spills" any addition inflow into the other accounts pro rata. The spreadsheet is not consistent, however, because the spreadsheet never allows the hydropower account to spill into the water supply accounts. Instead of redistributing water to the water supply account when the hydropower account is full, the spreadsheet allows hydropower to keep the surplus. In other words, the spreadsheet discriminates against water supply by capping the water supply accounts but not the hydropower account.

If all accounts were treated the same, as they must be, then the maximum that could be held in the hydropower account in winter (when the total conservation storage is 98,100 acrefeet) is 77,771 acre-feet of storage. <Footnote 10> Whenever the volume of water in storage exceeds this amount, the excess can only be stored in the water supply accounts. It follows that all accounts must be full whenever Allatoona Lake is at or above its rule curve.

Another way to understand this problem is to observe that, because the sum of all the storage accounts equals total conservation storage, it is physically and mathematically impossible for conservation storage to be full while *any* storage account is less than full-and yet the spreadsheet allows this to happen. <*Emphasis added*>

Footnote 8: See Letter from Glenn Page, CCMWA, to Col. Byron Jorns re Cobb County-Marietta Water Contract No. 01-076-CIVENG-64-116 (Nov. 19, 2007) with Exhibits A and B; Letter from Glenn Page, CCMWA to Col. Byron Jorns re Cobb County-Marietta Water Contract No. 01-076- CIVENG-64-116 (Dec. 5, 2007) with Exhibits C through G; and Letter from Glenn Page, CCMWA, to Col. Steven Roemhildt, USACE re letter of Sept. 11, 2012 (Oct. 22, 2012).

Footnote 9: CCMWA's storage account is fixed year-round at 13,140 acre-feet but conservation storage varies from 367,471 acre-feet in summer to 98,100 acre-feet in winter. Draft Manual at 3-3.

Footnote 10: The rest belongs to water supply, as follows: 13,140 acre-feet to CCMWA, 6,371 acre-feet to Cartersville, and 818 to Chatsworth. Draft Manual at 7-8.

Response

The Water Control Manuals acknowledges the existence and use of the storage accounting spreadsheet for water supply accounting purposes. The storage accounting spreadsheet incorporates current USACE guidance and no revisions are anticipated at this time. USACE recognizes the need for additional water policy guidance associated with water supply storage accounting and these issues are being addressed under National policy review.

Comment ID 0060.003

Author Name: Page, Glenn M., Zitsch, Katherine H./

Organization: Atlanta Regional Commission and Cobb County-Marietta Water Authority

Comment

The "No Action Alternative" Does Not Comply with NEPA

The errors and omissions described above constitute violations of the National Environmental Policy Act ("NEPA"), including the requirement to provide an accurate description of the "no action" alternative. See 40 C.F.R. §1502.14. Every EIS "must ‘include the alternative of no action.' " N.C. Wildlife Fed'n v. N.C. Dept. of Transp., 677 F.3d 596, 602 (4th Cir. 2012). "Without [accurate baseline] data, an agency cannot carefully consider information about significant environment impacts." See N. Plains Res. Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1085 (9th Cir. 2011). This "mak[es] it impossible to accurately isolate and assess environmental impacts" of the proposed action. N.C. Wildlife Fed'n, 677 F.3d at 602.

It is especially important to identify the no action alternative here, because in this case the no action alternative may be the most damaging of all. "Where a choice of 'no action' by the agency would result in predictable actions by others, this consequence of the 'no action' alternative should be included in the analysis." Council on Envt'l Quality, Memorandum to Agencies Containing Answers to 40 Most Asked Questions on NEPA Regulations, 46 Fed. Reg. 18,026, 18,027 (Mar. 17, 1981). In this case, the consequence of a decision by the Corps to take no action to address current and future water supply demands would be to force CCMWA and/or the State of Georgia to address the resulting water supply shortages.

The actual impact will depend in part on whether the Corps intends to curtail existing withdrawals by CCMWA-a point on which neither the Draft Manual nor the Draft EIS is clear. If the Corps does intend to curtail existing withdrawals, this action would have significant and reasonably foreseeable effects. In the short-term, this would likely lead to drastic water shortages in the area served by CCMWA. In addition to the potential public health and safety impacts such a shortage would cause, this would likely lead to a moratorium on all new growth within the area served by CCMWA, and many existing homes and businesses will either be forced to relocate or to do without water. Further, emergency measures would need to be taken by CCMWA, its customers, and the State of Georgia to create new supplies to replace what is lost in Allatoona, including the construction of new water supply reservoirs. The environmental effects of such a course of action would be far more significant than the effect of allowing current usage to continue. None of these effects are considered in the EIS.

If the Corps' position is that no action will be taken to limit existing usage until final action is taken, the Corps must explain what it meant when it stated in the Draft EIS that "contract amounts establish limits or caps on the amount of water that can be withdrawn for water supply purposes." Draft EIS at 1-42.

If the Corps has not decided whether current withdrawals must be curtailed to comply with the contract, this too must be stated clearly. "Agencies violate NEPA when they fail to disclose that their analysis contains incomplete information." N.C. Wildlife Fed'n v. N.C. Dept. of Transp., 677 F. 3d 596, 603 (4th Cir. 2012). See also N.M. ex rel. Richardson v. Bureau of Land Mgmt., 565 F.3d 683, 708 (10th Cir.2009); Native Ecosystems Council v. U.S. Forest Serv., 418 F.3d 953, 964 (9th Cir. 2005); Sierra Club v. U.S. Army Corps of Eng'rs, 701 F.2d 1011, 1030 (2d Cir. 1983); State Farm, 463 U.S. 29, 43 (1983) (holding that an agency acts arbitrarily and capriciously when it fails to "examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made") (internal quotation marks omitted). Such required "up-front disclosures [include] relevant shortcomings in the data or models." Lands Council v. Powell, 395 F.3d 1019, 1032 (9th Cir. 2005); see 40 C.F.R. § 1502.22 (an agency "shall make clear" if there is "incomplete or unavailable information" in an environmental impact statement). Without this information, it is impossible to evaluate the social and environmental impacts of any alternative in comparison to the "no action" alternative.

The Alternatives Analysis Fails to Consider All Reasonable Alternatives to Address Current Water Supply Needs

Consistent with its decision to ignore current conditions relating to water supply, the Draft Manual and EIS also fail to consider reasonable alternatives to address current water supply needs. The alternatives analysis must "rigorously explore and objectively evaluate all reasonable alternatives," including "alternatives not within the jurisdiction of the lead agency," 50 C.F.R § 1502.14(a), (c).

Reasonable alternatives improperly excluded from analysis include but are not limited to the following: (1) taking action on the storage accounting issues described above to determine exactly how much water CCMWA can withdraw; (2) revising the storage accounting spreadsheet to honor the State's allocation of return flows and deliveries from HLCR to CCMWA; (3) to the extent CCMWA requires additional storage to meet current or future needs, taking action on outstanding reallocation requests by CCMWA and the State of Georgia to provide additional storage; (4) to the extent CCMWA requires additional storage to meet current or future needs, executing interim contracts to cover the need until a final decision is reached. All of these alternatives have been proposed by CCMWA and discussed extensively with the Corps prior to publishing the Draft EIS.

To the extent these alternatives were excluded "because no conceivable proposal exists that both states would support," <Footnote 11> this is not a valid justification for ignoring reasonable alternatives. It is wholly improper for the Army to give Alabama the power to veto Georgia's request.

Furthermore, Congressional authorization would not be required to pursue any of the alternatives noted above. The Corps is fully authorized by the Water Supply Act to allocate additional storage to water supply without further congressional authorization. The only limit on this authority is that the reallocation must not "significantly affect other project purposes" or require "major structural or operational changes." <Footnote 12> A reallocation on the small scale needed to meet current and future water supply needs would not exceed these limits. <Footnote 13>

But even if the Corps were worried that that Congressional authorization might be required for some or all alternatives, this would not justify excluding those alternatives from consideration. CEQ regulations expressly require that all reasonable alternatives be considered, including those not within the jurisdiction of the lead agency. The D.C. Circuit has explained that this duty extends to reasonable alternatives that exceed an agency's existing authority because an EIS "is not only for the exposition of the thinking of the agency, but also for the guidance of these ultimate decision-makers, and must provide them with the environmental effects of both the proposal and the alternatives, for their consideration along with the various other elements of the public interest." Natural Res. Def. Council, Inc. v. Morton, 458 F.2d 827, 835 (D.C. Cir. 1972). See also 46 Fed. Reg. at 18,027 ("An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable. A potential conflict with local or federal law does not necessarily render an alternative unreasonable . . . . Alternatives that are outside the scope of what Congress has approved or funded must still be evaluated in the EIS if they are reasonable, because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies.").

Footnote 11: Draft EIS at 1-7, lines 24-25.

Footnote 12: 43 U.S.C. §§ 390b(b), (d).

Footnote 13: The Corps has previously explained the technical and project-specific inquiry that is required to determine whether additional congressional authorization is required. See Memorandum for the Chief of Engineers dated June 25, 2012 re Authority to Provide Municipal and Industrial Water Supply from Buford Dam /Lake Lanier Project, Georgia at 46.

Response

USACE has made changes in its baseline condition to assure compliance with NEPA. The No Action Alternative was revised to reflect the inclusion of 2006 water withdrawals. 2006 withdrawal values were selected to represent actual withdrawals for the model simulation over the period of record. 2006 was the year of highest net withdrawals in the ACT basin. During the scoping phase of the DEIS preparation, other alternatives were considered and rejected for various reasons, including those outside the scope of the water control manual update or those that did not include congressional authorization.

Comment ID 0060.004

Author Name: Page, Glenn M., Zitsch, Katherine H./

Organization: Atlanta Regional Commission and Cobb County-Marietta Water Authority

Comment

The Cumulative Impact Study Fails to Consider All Reasonably Foreseeable Impacts during the Period While the Manual Will Govern Operations

The EIS also fails to address all reasonably foreseeable cumulative impacts of the proposed action. CEQ regulations state that an EIS must consider cumulative impacts on the environment. 40 C.F.R. § 1508.25(a)(1)-(3). See also Kleppe v. Sierra Club, 427 U.S. 390, 410 (1976). "A reasonable cumulative impacts analysis must to include" … "other actions-past, present, and reasonably foreseeable proposed-that have or are expected to have impacts in the same area"; "the impacts or expected impacts from these actions," and "the overall impact that can be expected if the individual impacts are allowed to accumulate.' " Ga. River Network v. U.S. Army Corps of Eng'rs, 334 F. Supp. 2d 1329, (N.D. Ga. 2003) (quoting Grand Canyon Trust v. F.A.A., 290 F.3d 339, 342 (D.C. Cir. 2002); see also D'Olive Bay Restoration & Pres. Comm., Inc. v. U.S. Army Corps of Eng'rs, 513 F. Supp. 2d 1261, 1292-93 (S. D. Ala. 2007).

The cumulative impacts analysis in the EIS is inadequate because it ignores all future developments in the ACT Basin-federal, state, and private. At a minimum, the cumulative impacts analysis must address current conditions as well as reasonably foreseeable future impacts during the life of the Manual, which will remain in effect until it is amended. Given that it has taken almost half a century to update the existing water control plan, and given that no schedule has been adopted to update the WCM to address future conditions, it must be assumed that the WCM will remain in effect for an extended period of time-ten to twenty years at a minimum. All reasonably foreseeable future actions within that timeframe must be considered, including but not limited to the following.

1. Georgia's Water Supply Request

Anticipated growth in water demand on the scale documented in the pending reallocation requests by CCMWA and Georgia must be included. This projected growth is a reality that must be addressed one way or the other in the EIS: either studying the impact of granting the pending reallocation requests and thus meeting the demand or by studying the impact of denying the request and thus forcing homes and businesses to relocate.

2. Hickory Log Creek Reservoir Project

HLCR must also be included. To the extent it is unclear whether the withdrawal will be taken from the Etowah River or from Allatoona Lake, this should be stated, but the authorized withdrawal of 44 mgd (33 mgd by CCMWA; 11 mgd by Canton) should be included in the model because it will be removed from the system either way.

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Finally, we request that the following documents be reconsidered and included in the Administrative Record for this proceeding:

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• Letter from Col. Roemhildt, USACE, to Glenn Page (Sept. 21, 2012);
• Letter from Glenn Page, CCMWA, to Col. Steven Roemhildt, USACE, re letter of Sept. 11, 2012;
• Letter from Glenn Page, CCMWA, to Col. Steven Roemhildt re Conversion of CCMW A Storage Contract (DA-01-076-CIVENG-64-116) to Reflect Permanent Right to Storage and Renewal of Easement (EASEMENT NO. DA-01-076- CIVENG-64-167) (Oct. 22, 2012) with Exhibits A through C;
• Letter from Col. Byron Jorns, USACE, to Glenn Page (Nov. 2, 2007);
• Letter from Steven Roemhildt, USACE, to Glenn Page, CCMWA (Nov. 20, 2012);
• Letter from Steven Roemhildt, USACE, to Glenn Page, CCMWA (Nov. 20, 2012);
• Letter from Nathan Deal, Gov. of Georgia, to Hon. Jo-Ellen Darcy, Asst. Secretary of the Army for Civil Works re Lake

Allatoona-Request for Final Agency Action (Jan. 24, 2013) with Affidavit of Judson H. Turner and all attachments.
• Letter from Jo-Ellen Darcy, Asst. Secretary of the Army, to Hon. Nathan Deal, Gov. of Georgia (Apr. 29, 2013).

We have not attached copies of these documents because you should have them already, but please do not hesitate to ask if you cannot locate them.

Response

Based on comments received on the draft EIS, the No Action Alternative (baseline condition) was modified to include actual water supply withdrawals by CCMWA in lieu of the current water supply contract amount for CCMWA. As described in the modeling report (EIS Appendix C), year 2006 withdrawal values were selected to represent actual withdrawals for the model simulation over the period of record. 2006 was the year of highest net withdrawals in the ACT basin.

As explained in Section 1.4.4 of the draft EIS, the scope of the ACT WCM update does not consider pending or new reservoir storage reallocation proposals to meet future water demands, which would be addressed under a distinct and separate discretionary authority under the Water Supply Act of 1958. The pending CCMWA and other such future reallocation requests will be addressed in a separate process. Based on comments received during the draft, USACE conducted a sensitivity analysis to evaluate the performance of the Proposed Action Alternative using long range water supply demand projections for the ACT basin. Operation of the Hickory Log Reservoir, as currently permitted, has been included in revised HEC ResSim model runs.

APC proposed guide curve revisions for Weiss and Logan Martin Lakes on the Coosa River and Lake Martin on the Tallapoosa River are not considered to be reasonably foreseeable for purposes of the cumulative impacts analysis for the ACT WCM update. The June 2013 FERC license for the APC Coosa River projects, issued following public review of the draft ACT WCM EIS, did not include revised winter guide curves for Weiss and Logan Martin Lakes. APC has proposed guide curve revisions for Lake Martin, currently under an ongoing FERC relicensing process, but those revisions were not included in the proposed action in the June 2013 draft FERC EIS. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Section 6.10 of the EIS (Cumulative Effects) addresses the effects of reasonably foreseeable actions affecting water resources in the ACT basin. The sensitivity analysis is summarized in the EIS in Section 6 under the "Sensitivity Analysis" discussion and the information from that analysis was included in an updated Section 6.10.

Comment ID 0060.005

Author Name: Page, Glenn M., Zitsch, Katherine H./

Organization: Atlanta Regional Commission and Cobb County-Marietta Water Authority

Comment

CONCLUSION

In summary, the storage accounting formula must be fixed to address the legal and technical errors addressed above and the Manual and EIS must be revised to include alternatives to address current and future water supply needs. The Manual and EIS should also be revised to include a cumulative impacts analysis covering reasonably foreseeable impacts within the ACT Basin during the life of the manual.

Please do not hesitate to call if you require any additional information or if we can assist you in anyway.

Response

The Water Control Manuals acknowledge the existence and use of the storage accounting spreadsheet for water supply accounting purposes. However, the storage accounting spreadsheet does not influence daily water management decision making. USACE recognizes the need for additional water policy guidance associated with water supply storage accounting and these issues are being addressed under National policy review.

As indicated in response to the above comment, the EIS has been updated to include actual water supply withdrawals by CCMWA in lieu of the current water supply contract amount for CCMWA. As described in the modeling report (EIS Appendix C), year 2006 withdrawal values were selected to represent actual withdrawals for the model simulation over the period of record. 2006 was the year of highest net withdrawals in the ACT basin.

USACE also conducted a sensitivity analysis to evaluate the performance of the Proposed Action Alternative using long range water supply demand projections for the ACT basin. The sensitivity analysis is summarized in the EIS in Section 6 under the "Sensitivity Analysis" discussion and the information from that analysis was included in an updated Section 6.10 (Cumulative Effects). Section 6.10 of the EIS addresses the effects of reasonably foreseeable actions affecting water resources in the ACT basin.

WATER WORKS & SANITARY SEWER BOARD
of the City of Montgomery

22 Bibb Street, P.O. Box 1631, Montgomery, Alabama 36102-1631 **(334) 206-1600** **(334) 240-1616 FAX**

May 31, 2013

US ACE Mobile District
P.O. Box 2288
Mobile, AL 36628

RE: Draft Environmental Impact Statement and the Draft Water Control Manual for the ACT

To Whom It May Concern:

On behalf of The Water Works and Sanitary Sewer Board of the City of Montgomery, I submit the following comments on the Draft Environmental Impact Statement (EIS) and Draft Water Control Manual for the ACT. The draft EIS and Water Control Manual have numerous procedural, technical and substantive flaws that, if implemented, could seriously affect the water and wastewater operations of the Board.

At the outset, the Board adopts the comments and exhibits of the Alabama Office of Water Resources and the State of Alabama and incorporates these comments as part of the Board's comments. However, the Board first notes that, for reasons in addition to those stated in the comments of the Alabama Office of Water Resources and the State of Alabama concerning cumulative effects, the cumulative effects analysis in the draft EIS does not meet the requirements of 40 C.F.R. § 1508.7 to consider the "incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Apart from the points raised by the Alabama Office of Water Resources and the State of Alabama, the cumulative effects analysis in the draft EIS is too limited and focuses largely on the effects of constructing dams and reservoirs above 20 acres in size, which ignores the directive in section 1508.7 that "[c]umulative impacts can result from individually minor but collectively significant actions taking place over a period of time." Also, although the analysis in the draft EIS does conclude that the Proposed Action Alternative (as well as Plan D and Plan F) would have cumulative effects on water quality, this is the sum of the analysis. This analysis is too perfunctory and conclusory to be of sufficient benefit as would satisfy the requirements of 40 C.F.R. § 1508.7 and the National Environmental Policy Act, 42 U.S.C. § 4332(2)(C).

Furthermore, the draft EIS understates the adverse effects on downstream water quality and quantity because of the flawed modeling used (including, but not limited to, use of incorrect DSS data), as discussed by the Alabama Office of Water Resources and the State of Alabama in their comments. The Board's operations consist of water treatment facilities and wastewater treatment facilities located on the Tallapoosa and Alabama rivers. The Tallapoosa River Water Treatment Plant requires flows to be greater than 2,400 CFS to maintain a river level of 3 feet at the plant's pump dock. Water levels that go below the required minimum would cause water quality degradation and loss of use of the water plant. The permit requirements for the wastewater treatment plants are as follows:

Towassa permit # AL0022241, TSS 30.0 mg/L, BOD 25.0 mg/L
Econchate permit # AL0022225, TSS 30.0 mg/L, BOD 25.0 mg/L
Catoma permit # AL0027863, TSS 30.0 mg/L, BOD 25.0 mg/L

If the river inflow drops below the current 7Q10 flow requirements at each of the plants, then the Board will be in violation of its permits requirements. Also if the stream inflows by each of the plants are reduced, this will affect the water quality and water quantity (See Board's Exhibit 1). In addition, a reduction of instream flows below 20% will also adversely affect the many endangered species that inhabit these rivers.

However, the draft EIS does not address the Corps' responsibility under ER 1110-2-8154 to ensure suitable water quality, but improperly shifts this responsibility to other parties, as explained in the comments of the Alabama Office of Water Resources and the State of Alabama. The effects on the Board and its operations of the Corps' proposed actions would be amplified by the unique location of the City of Montgomery on the Alabama River near the confluence of the Coosa and Tallapoosa Rivers.*

Sincerely,

Thomas R. Morgan

Thomas R. Morgan
General Manager

cc: Board of Directors

*The Coosa and Tallapoosa Rivers join just north of Montgomery to form the Alabama River (See Board's Exhibit 2, which is a map of the rivers also showing the location of the water and wastewater plants).

FILED
2005 Nov-15 PM 01:58
U.S. DISTRICT COURT
N.D. OF ALABAMA

FILED
2004 Dec-06 AM 11:03
U.S. DISTRICT COURT
N.D. OF ALABAMA

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ALABAMA
EASTERN DIVISION

STATE OF ALABAMA,	)	
	)	
Plaintiff,	)	
	)	
v.	)	CV NO.: CV-90-BE-01331-E
	)	
THE UNITED STATES ARMY, CORPS OF ENGINEERS, et al.,	)	
	)	
	)	
Defendants.	)	

AFFIDAVIT

OF

THOMAS R. MORGAN

STATE OF ALABAMA	)
	)
COUNTY OF MONTGOMERY	)

Before me the undersigned Notary Public, in and for said State and County, appeared Thomas R. Morgan, who, after being first duly sworn, deposed and said the following:

1. My name is Thomas R. Morgan. I am over 21 years of age. I have first-hand knowledge of the matters and information testified to in this Affidavit and am otherwise competent to give testimony. I understand these statements made in this Affidavit are to be under oath and are truthful in all respects. I give this Affidavit voluntarily for use in support of the Renewed

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EXHIBIT "1"

Motion To Intervene in the above-styled litigation filed on behalf of The Water Works and Sanitary Sewer Board of the City of Montgomery, Alabama, (the "Montgomery Board" or "Board"), and for all other purposes authorized by law.

2. I currently serve as the General Manager of the Montgomery Board, and have served in that capacity since 1991. I served as the Board President of the Association of Metropolitan Sewerage Agencies for the 2003-2004 term. I also served on the EPA Urban Wet Weather Flows Federal Advisory Committee and the SSO Federal Advisory Committee. I am a member of the Water Environment Federation/Water Environment Research Foundation; American Water Works Association; Association of Metropolitan Sewerage Agencies; Association of Metropolitan Water Agencies and the American Public Works Association. I also serve as the Chair of the Tallapoosa River Basin Steering Committee, Chair of the Catoma Creek Watershed Committee, and as a Board Member of the Alabama Clean Water Partnership.

3. The Montgomery Board is a public corporation authorized by and existing under Section 11-50-310 *et seq*. of the Code of Alabama 1975, as amended. The Board's principal place of business is Montgomery, Alabama. The Board provides water consumption, wastewater treatment systems, and other services to the city of Montgomery and numerous neighboring rural communities. The Board's water system consists of the C.T. Perry Water Filtration Plant, the Day Street Pumping Station, the Court Street Pumping Station, 42 wells, seven elevated storage reservoirs, and approximately 1600 miles of water distribution mains. The Board's sewer system is composed of four wastewater facilities, 55 pump stations, approximately 1,000 miles of sewer maintenance, and approximately 250 square miles of service area.

4. The Montgomery Board's service area is located within the confluence of the

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Alabama, Coosa, and Tallapoosa Rivers. Those Rivers combine to form the ACT River Basin, which is made subject of the above-styled lawsuit. As discussed below, the Board relies heavily on waters drawn from the ACT River Basin, and any action that diminishes water flows therein will cause serious harm to the Board and its customers, including, without limitation, the degradation of water quality and impairment of the Board's ability to adequately treat wastewater.

5. By authority of state and local laws, the Montgomery Board has a vested right and duty to acquire, treat, and distribute safe, clean water to its customers. Additionally, the Board has a vested right and duty to treat and recycle the wastewater of its customers. To accomplish its duties, the Board is heavily dependent on reliable water flows in the ACT River Basin. For example, the Board obtains over 60% of its water supply from the Tallapoosa River, which, as noted, is part of the ACT River Basin. Furthermore, three of the Montgomery Board's wastewater facilities are located on and heavily dependent upon the Alabama River, which, as noted, is part of the ACT River Basin. Consequently, the ACT River Basin is critically important to the Montgomery Board, and any action that diminishes water flows therein will cause serious harm to the Board and its customers.

6. As alleged in this lawsuit, the Army Corps of Engineers and other Defendants are attempting to illegally divert headwaters located in Georgia that feed the ACT River Basin to the detriment of downstream users including the Montgomery Board. As a result of this illegal diversion, water flows in the ACT River Basin will be diminished, thereby causing serious harm to the Board and its customers. This harm includes, without limitation, the degradation of water quality and impairment of the Board's ability to adequately treat wastewater. Indeed, the illegal diversion of water from the ACT River Basin which reduces the water flows below the Montgomery

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Board's permit requirements would result in changes to the permit requirements for each of the Board's water and wastewater treatment facilities such that the Montgomery Board would have to expend millions of dollars in modifications to those facilities. Therefore, the resolution of the issues raised in this lawsuit have a direct, substantial, and immediate impact on the Board and its customers. Furthermore, the Board's long range planning and analysis are completely jeopardized by the illegal diversion made subject of this case. In short, the Board's future and the future of its customers hinge on the outcome of this lawsuit.

7. The Board's interests in this lawsuit are similar, but not identical those of the State of Alabama. While Alabama's interests are general and concern the management of all of the water resources of the ACF and ACT River Basins, the Montgomery Board's interests are specific and limited to the ACT River Basin – namely the Tallapoosa River. The Board is only interested in the ACF River Basin to the extent that any actions taken with respect to the ACF River Basin could adversely impact the ACT River Basin. Consequently, neither the State of Alabama nor any existing party can adequately represent the Board's interests in this litigation.

8. Because the social and economic well-being of the Board and the area it serves is dependent on the continued availability of adequate, reliable, and safe supplies of water from the ACT River Basin, the Board respectfully requests to join this lawsuit and be heard on these critically important issues.

FURTHER, Affiant saith not.

Thomas R. Morgan

THOMAS R. MORGAN

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STATE OF ALABAMA)
)
COUNTY OF MONTGOMERY)

SWORN TO and SUBSCRIBED before me this 2nd day of December 2004.

Charlene L. Wachs
Notary Public [Seal]
My Commission expires:
12/9/2006

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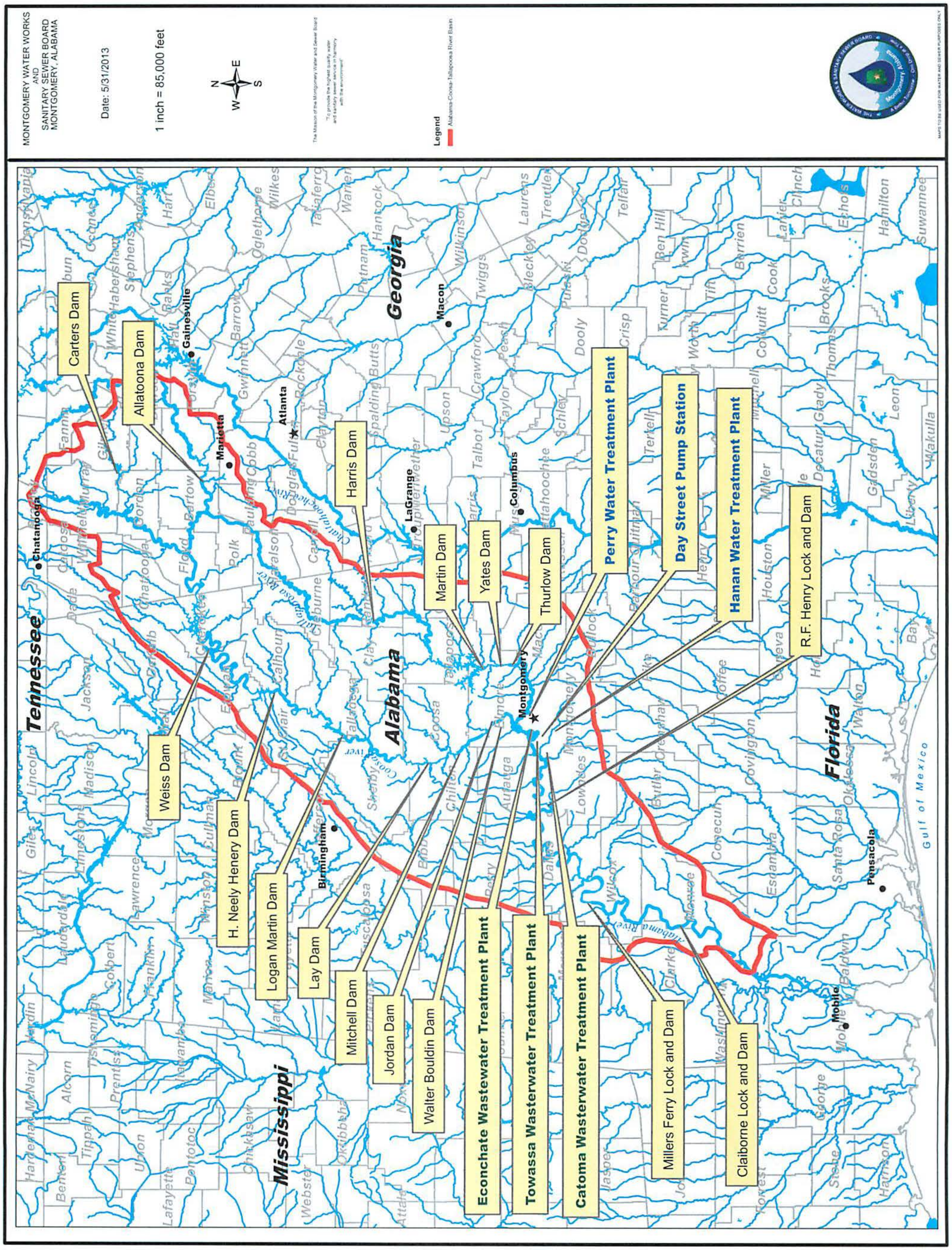
MONTGOMERY WATER WORKS AND SANITARY SEWER BOARD MONTGOMERY, ALABAMA
Date: 5/31/2013
1 inch = 85,000 feet
Legend
Alabama-Coosa-Tallapoosa River Basin
Carters Dam
Allatoona Dam
Harris Dam
Martin Dam
Yates Dam
Thurlow Dam
Perry Water Treatment Plant
Day Street Pump Station
Hanan Water Treatment Plant
R.F. Henry Lock and Dam
Weiss Dam
H. Neely Henery Dam
Logan Martin Dam
Lay Dam
Mitchell Dam
Jordan Dam
Walter Bouldin Dam
Econchate Wastewater Treatment Plant
Towassa Wasterwater Treatment Plant
Catoma Wasterwater Treatment Plant
Millers Ferry Lock and Dam
Claiborne Lock and Dam
Tennessee
Georgia
Alabama
Mississippi
Florida
Atlanta
Montgomery
Birmingham
Columbus
Macon
Mobile
Pensacola
Gulf of Mexico

EXHIBIT 2

Comment ID 0065

Comment ID 0065.001

Author Name: Morgan, Thomas

Organization: Water Works and Sanitary Sewer Board of the City of Montgomery

Comment

On behalf of The Water Works and Sanitary Sewer Board of the City of Montgomery, I submit the following comments on the Draft Environmental Impact Statement (EIS) and Draft Water Control Manual for the ACT. The draft EIS and Water Control Manual have numerous procedural, technical and substantive flaws that, if implemented, could seriously affect the water and wastewater operations of the Board.

At the outset, the Board adopts the comments and exhibits of the Alabama Office of Water Resources and the State of Alabama and incorporates these comments as part of the Board's comments. However, the Board first notes that, for reasons in addition to those stated in the comments of the Alabama Office of Water Resources and the State of Alabama concerning cumulative effects, the cumulative effects analysis in the draft EIS does not meet the requirements of 40 C.F.R. § 1508.7 to consider the "incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Apart from the points raised by the Alabama Office of Water Resources and the State of Alabama, the cumulative effects analysis in the draft EIS is too limited and focuses largely on the effects of constructing dams and reservoirs above 20 acres in size, which ignores the directive in section 1508.7 that"[c]umulative impacts can result from individually minor but collectively significant actions taking place over a period of time." Also, although the analysis in the draft EIS does conclude that the Proposed Action Alternative (as well as Plan D and Plan F) would have cumulative effects on water quality, this is the sum of the analysis. This analysis is too perfunctory and conclusory to be of sufficient benefit as would satisfy the requirements of 40 C.F.R. § 1508.7 and the National Environmental Policy Act, 42 U.S.C. § 4332(2)(C).

Response

The cumulative effects of the proposed action along with other present and reasonably foreseeable water resource projects in the ACT Basin by others are discussed in Section 6.9 of the EIS. The commenter expressed concern that the cumulative effects discussion in Section 6.9 of the EIS limited the assessment of existing impoundments in the basin to reservoirs of 20 acres or more in size. Compiling available information on the ACT mainstem reservoirs and other reservoirs in the basin of approximately 20 acres or larger was a reasonable approach for this assessment and would account for all but a relatively small portion of the total surface area and storage volume of all reservoirs and impoundments in the basin (including hundreds of small farm ponds and locally constructed impoundments).

Based upon comments received on the draft EIS, the final EIS incorporates the results of an analysis of the sensitivity of the Proposed Action Alternative for the ACT Basin WCM update to a potential climate change scenario and to long range water demand projections across the entire basin. Information from the sensitivity analysis was used to revise and update the Cumulative Effects section (6.9) for potential increases in water supply demands, which may be met through new reservoir construction, reservoir storage reallocation, or by other means.

Water quality effects associated with the Proposed Action Alternative are generally expected to be minor overall but may be slightly more acute during infrequent and generally short-term periods of extreme drought conditions. USACE will work with the states to minimize these impacts through its daily project operations and within its authorities, and the states may have to make accommodations or set restrictions in their discharge permits for those infrequent extreme circumstances.

Comment ID 0065.002

Author Name: Morgan, Thomas

Organization: Water Works and Sanitary Sewer Board of the City of Montgomery

Comment

Furthermore, the draft EIS understates the adverse effects on downstream water quality and quantity because of the flawed modeling used (including, but not limited to, use of incorrect DSS data), as discussed by the Alabama Office of Water Resources and the State of Alabama in their comments. The Board's operations consist of water treatment facilities and wastewater treatment facilities located on the Tallapoosa and Alabama rivers. The Tallapoosa River Water Treatment Plant requires flows to be greater than 2,400 CFS to maintain a river level of 3 feet at the plant's pump dock. Water levels that go below the required minimum would cause water quality degradation and loss of use of the water plant. The permit requirements for the wastewater treatment plants are as follows:

Towassa permit # AL002224 1, TSS 30.0 mg/L, BOD 25.0 mg/L
Econchate permit # AL0022225, TSS 30.0 mg/L, BOD 25.0 mg/L
Catoma permit # AL0027863, TSS 30.0 mg/L, BOD 25.0 mg/L

If the river inflow drops below the current 7Q10 flow requirements at each of the plants, then the Board will be in violation of its permits requirements. Also if the stream inflows by each of the plants are reduced, this will affect the water quality and water quantity (See Board's Exhibit 1). In addition, a reduction of instream flows below 20% will also adversely affect the many endangered species that inhabit these rivers.

However, the draft EIS does not address the Corps' responsibility under ER 1110-2-8154 to ensure suitable water quality, but improperly shifts this responsibility to other parties, as explained in the comments of the Alabama Office of Water Resources and the State of Alabama. The effects on the Board and its operations of the Corps' proposed actions would be amplified by the unique location of the City of Montgomery on the Alabama River near the confluence of the Coosa and Tallapoosa Rivers.*

*The Coosa and Tallapoosa Rivers join just north of Montgomery to form the Alabama River (See Board's Exhibit 2, which is a map of the rivers also showing the location of the water and wastewater plants).

<Author included a copy of comments made by the State of Alabama.>

Response

USACE disagrees with the statement that water quantity and/or quality modeling are flawed. Reduced flows less than 7Q10 levels would be most likely to occur when drought conditions exist, with one or more drought indicators triggered as defined by the drought plan described for the proposed action. That drought plan was developed in coordination with the Alabama Power Company

(APC) and adopted by them in their FERC Coosa River Project relicensing application. APC owns and operates seven reservoir projects on the Coosa River between the City of Montgomery and the two upstream USACE projects in Georgia. APC also owns and operates four projects upstream of Montgomery on the Tallapoosa River.

Because of the large volume of storage available in those APC projects and the proximity of their downstream projects to Montgomery, their operational decisions are the primary factors determining flows on the Alabama River at Montgomery. The impacts of the APC drought plan were evaluated during the FERC relicensing process and found to be minor. Therefore, USACE is not responsible to "ensure suitable water quality" at Montgomery as asserted in the comment. With respect to stated concerns about endangered species effects, USACE completed Section 7 consultation with the USFWS for the proposed action (Plan G) pursuant to the Endangered Species Act. For the proposed action, USACE determined either "no effect" or "may affect, but not likely to adversely affect" federally listed species or their critical habitat. The USFWS concurred with the USACE determination by letter dated March 20, 2014. Copies of consultation documentation and correspondence may be found in Appendix B, Part 3.

The Water Works and Sewer Board
of the
City of Gadsden, Alabama

515 Albert Rains Boulevard • P.O. Box 800 • Gadsden, AL 35902-0800
(256) 543-2884 • FAX: (256) 543-7704

Colonel Steven J. Roemhildt
Mobile District, U.S. Army Corps of Engineers
P. O. Box 2288
Mobile, Alabama 36628-0001

May 30, 2013

Re: Draft Environmental Impact Statement
Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa Basin

Dear Colonel Roemhildt:

The Water Works and Sewer Board of the City of Gadsden, Alabama, appreciates this opportunity to provide comment on the above-referenced Draft Environmental Impact Statement (D.E.I.S.) related to the Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa Basin.

We would like to submit the following comments for your consideration:

1. We do not believe adequate time has been allowed for Stakeholders to appropriately review the D.E.I.S. for the following reasons:
   a. Since the conclusion of the Scoping process (approximately four years ago) a new generation of Stakeholders has come into being who were not part of the work that went into developing the updated Manual. I myself am part of this group. For those of us who were not part of the process prior to 2008 the Open Houses that were conducted at four locations along the Basin were excellent, but did little more than introduce the multitude of subjects that the updated Manual addresses.
   b. We believe that the enormous volume of information associated with the D.E.I.S. for the updated Manual would require months to appropriately review. The time that has been allotted for review and comment essentially allows for a review of the Executive Summary. Please understand, we are grateful for the additional 30 days of comment period that the Corps granted in addition to the original 60 day comment period contemplated (extending the comment period from April 30, 2013 to May 31, 2013).
2. We support the continued use of the revised guide curve for operation of the H. Neely Henry Lake (Coosa River) that the Corps is supporting in the revised Manual. We support final approval of this revised guide curve in the Alabama Power Company (APC) Federal Energy Regulatory Commission (FERC) re-licensing of its Coosa River hydro-power projects.

Once again we appreciate the opportunity to provide comment. If we can be of any further assistance, please let us know.

Sincerely,
WATER WORKS AND SEWER BOARD of GADSDEN, ALABAMA

Frank Eskridge

Frank Eskridge
General Manager

Comment ID 0067

Comment ID 0067.001

Author Name: Eskridge, Frank

Organization: Water Works and Sewer Board of Gadsen, Alabama

Comment

The Water Works and Sewer Board of the City of Gadsden, Alabama, appreciates this opportunity to provide comment on the above-referenced Draft Environmental Impact Statement (D.E.I.S.) related to the Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa Basin.

We would like to submit the following comments for your consideration:

1. We do not believe adequate time has been allowed for Stakeholders to appropriately review the D.E.I.S. for the following reasons:

a. Since the conclusion of the Scoping process (approximately four years ago) a new generation of Stakeholders has come into being who were not part of the work that went into developing the updated Manual. I myself am part of this group. For those of us who were not part of the process prior to 2008 the Open Houses that were conducted at four locations along the Basin were excellent, but did little more than introduce the multitude of subjects that the updated Manual addresses.

b. We believe that the enormous volume of information associated with the D.E.I.S. for the updated Manual would require months to appropriately review. The time that has been allotted for review and comment essentially allows for a review of the Executive Summary. Please understand, we are grateful for the additional 30 days of comment period that the Corps granted in addition to the original 60 day comment period contemplated (extending the comment period from April30, 2013 to May 31, 2013).

Response

USACE initially provided a 60-day period for public comment on the draft EIS (March 1- May 1, 2013). Based upon requests for a time extension for review, USACE extended the comment period an additional 30 days (to May 31, 2013). Allowing 90 days for public review and comment on the draft EIS was adequate, twice the minimum 45-day comment period mandated for draft EISs per CEQ and USACE NEPA regulations.

Comment ID 0067.002

Author Name: Eskridge, Frank

Organization: Water Works and Sewer Board of Gadsen, Alabama

Comment

2. We support the continued use of the revised guide curve for operation of the H. Neely Henry Lake (Coosa River) that the Corps is

supporting in the revised Manual. We support final approval of this revised guide curve in the Alabama Power Company (APC) Federal Energy Regulatory Commission (FERC) re-licensing of its Coosa River hydro-power projects.

Once again we appreciate the opportunity to provide comment. If we can be of any further assistance, please let us know.

Response

Comment noted. Thank you for your input.

Comment Number: 2013-0042

Name: George Martin

Affiliation: Georgia Power

Date: 5/28/2013 10:46:49 AM

Address:
241 Ralph McGill Blvd NE
BIN 10221
Fulton
Atlanta, GA 30308

Attachments: GPC ACTWCMDIES 52813Comments.pdf

Comments:

Please see following letter.

Environmental Affairs
Bin 10221
241 Ralph McGill Boulevard NE
Atlanta, Georgia 30308-3374

Tel 404.506.2102

GEORGIA POWER
A SOUTHERN COMPANY

May 28, 2013
VIA ELECTRONIC MAIL
act-wcm@usace.army.mil

OR

Commander, U.S. Army Corps of Engineers, Mobile District
Attn: PD-EI (ACT-DEIS)
P.O. Box 2288
Mobile, AL 36628

ALABAMA-COOSA-TALLAPOOSA BASIN, WATER CONTROL MANUAL UPDATE AND DRAFT ENVIRONMENTAL IMPACT STATEMENT
Comments Submitted by Georgia Power Company

Dear Sir or Madam:

Georgia Power is providing these comments regarding the Alabama-Coosa-Tallapoosa (ACT) River Basin Water Control Manual Update and Draft Environmental Impact Statement (DEIS). We appreciate the opportunity to comment and provide assistance in developing the scope of issues to be considered in the Corps of Engineer's (Corps) development of the updated Water Control Manual.

Georgia Power operates two generation facilities in the ACT River Basin, Plant Bowen and Plant Hammond. Plant Bowen is a coal fired generation plant with a nameplate rated output of 3,160 megawatts and Plant Hammond is coal fired generation plant with a nameplate rated output of 800 megawatts. Both Plant Bowen and Plant Hammond are critical components of the Georgia Power and Southern Company generation fleet which provides electricity to citizens throughout the Southeast. Accordingly, the Water Control Plan update and EIS should appropriately consider the water requirements to maintain long term operations at Plant Bowen and Plant Hammond as part of the update baseline conditions, in accordance with Council on Environmental Quality regulations at 40 C.F.R. Part 1500.

Based on the flow duration curve, for September, presented in the DEIS under the alternative proposed action (Plan G) there would be approximately three (3) days more every September when the flows would be less than 2,100 cfs at the Coosa River Rome gage (Mayo's Bar). A flow duration curve was not presented for August, but it could be expected that a similar impact of at least 3 days could be seen in August as well, based on the average annual discharges presented for the alternatives. This could mean that at least 3-6 additional days in the annual August-September timeframe GPC's Plant Hammond, downstream of Mayo's Bar, could experience higher river temperatures potentially affecting the plant's ability to provide electric service to the State of Georgia.

If Plan G is proposed for implementation as the preferred alternative, the Corps should first assure, through appropriate state agency and stakeholder coordination, that state water quality standards are not impaired and or degraded.

Thank you for this opportunity to comment. If we can provide additional information, please do not hesitate to contact me at (404) 506-7026 or tdblaloc@southernco.com.

Sincerely,

Tanya Blalock
Environmental Affairs General Manager

Comment ID 0042

Comment ID 0042.001

Author Name: Martin, George

Organization: GEORGIA POWER

Comment

Georgia Power is providing these comments regarding the Alabama-Coosa-Tallapoosa (ACT) River Basin Water Control Manual Update and Draft Environmental Impact Statement (DEIS). We appreciate the opportunity to comment and provide assistance in developing the scope of issues to be considered in the Corps of Engineer's (Corps) development of the updated Water Control Manual.

Georgia Power operates two generation facilities in the ACT River Basin, Plant Bowen and Plant Hammond. Plant Bowen is a coal fired generation plant with a nameplate rated output of 3,160 megawatts and Plant Hammond is coal fired generation plant with a nameplate rated output of 800 megawatts. Both Plant Bowen and Plant Hammond are critical components of the Georgia Power and Southern Company generation fleet which provides electricity to citizens throughout the Southeast. Accordingly, the Water Control Plan update and EIS should appropriately consider the water requirements to maintain long term operations at Plant Bowen and Plant Hammond as part of the update baseline conditions, in accordance with Council on Environmental Quality regulations at 40 C.F.R. Part 1500.

Based on the flow duration curve, for September, presented in the DEIS under the alternative proposed action (Plan G) there would be approximately three (3) days more every September when the flows would be less than 2,100 cfs at the Coosa River Rome gage (Mayo's Bar). A flow duration curve was not presented for August, but it could be expected that a similar impact of at least 3 days could be seen in August as well, based on the average annual discharges presented for the alternatives. This could mean that at least 3-6 additional days in the annual August-September timeframe GPC's Plant Hammond, downstream of Mayo's Bar, could experience higher river temperatures potentially affecting the plant's ability to provide electric service to the State of Georgia.

If Plan G is proposed for implementation as the preferred alternative, the Corps should first assure, through appropriate state agency and stakeholder coordination, that state water quality standards are not impaired and or degraded.

Thank you for this opportunity to comment. If we can provide additional information, please do not hesitate to contact me at (404) 506-7026 or tdblaloc@southernco.com.

Response

As in past years of low flow conditions, water users can coordinate directly with USACE to notify the agency of their needs. When conditions allow, on balance with meeting other project purposes, USACE will work with water users to address extraordinary conditions (special releases, etc.). USACE will notify users when releases are made or other actions are taken during these low flow conditions.

From: Jerry Sailors
To: ACT-WCM
Subject: CARIA Comments on Draft EIS and WCM
Date: Friday, May 31, 2013 11:46:03 AM
Attachments: image001.jpg
CARIA Comments 05.31.2013.pdf

Attached are comments of the Coosa-Alabama River Improvement Association on the Draft Environmental Impact Statement and Water Control Manual for the Alabama-Coosa-Tallapoosa River Basin.

Jerry's signature

Jerry L Sailors
President, CARIA
(334)265-5744
[redacted]

COOSA-ALABAMA RIVER IMPROVEMENT ASSOCIATION, INC.

300-A Water Street, Suite 307
Montgomery, Alabama 36104-2558
(334) 265-5744 Fax (334) 265-6248
Email: cariainc@bellsouth.net
Website: www.caria.org

May 31, 2013

VIA EMAIL TO: act-wcm@usace.army.mil

Colonel Steven J. Roemhildt
Commander, Mobile District
U.S. Army Corps of Engineers
ATTN: PD-EI (ACT-DEIS)
Post Office Box 2288
Mobile, Alabama 36628

Re: Comments on the Draft Environmental Impact Statement (DEIS) for the Revised Water Control Manual (WCM) for the Alabama-Coosa-Tallapoosa (ACT) River Basin

Dear Colonel Roemhildt:

The Coosa-Alabama River Improvement Association (CARIA) was formed in 1890 by businessmen in Gadsden, Alabama for the purpose of promoting river transportation on the Coosa and Alabama Rivers. CARIA members include cities, counties, businesses, and individuals from Rome to Mobile that have an interest in maintaining and improving the multiple-use benefits of those rivers. Our mission is to improve and market the Coosa, Alabama, and Tallapoosa Rivers through education, promotion, and public advocacy.

Over the years we have focused primarily on navigation as an authorized use of federal infrastructure within the Basin, but we have a vested interest in all the uses that infrastructure serves. As demonstrated by recent droughts, balancing navigation, hydropower, recreation, flood control, water supply, water quality, and fish and wildlife enhancement is a difficult, but essential task. So CARIA fully supports the efforts of the US Army Corps of Engineers (Corps) to operate federal facilities in the ACT basin in the most efficient and effective way.

Serving State and Nation since 1890

In general, CARIA views the entire ACT Basin as an economic and environmental resource providing incalculable benefits to the southeast region of the country. A major component of those benefits is the Alabama River navigation channel. Maintaining that channel in an operational status has several economic benefits for the region:

1. The availability of barges as an alternate mode of transportation dampens road and rail rates for shippers;

2. Barges provide exceptional benefits of capacity, efficiency, and safety that contribute to the nation's transportation capability;

3. Maintaining navigation channel facilities greatly benefits recreational boat traffic;

4. Putting cargo onto barges reduces highway congestion and maintenance costs;

5. Waterways have room to absorb additional cargo without significant additional investment costs.

Despite its current low level of barge activity, the Alabama River navigation channel is an economic asset and a tool to create jobs and benefits for the state, particularly central Alabama and the Black Belt region. Growth in barge activity is possible and would be a much-needed economic boon to the state, including some of its most economically challenged areas. CARIA continues to receive regular inquiries from parties interested in siting on a navigable waterway, but they typically lose interest when informed of the Corps' inability to provide navigable conditions on a regular or predictable basis. The WCM and DEIS should do more to recognize and support the potential of the river from Montgomery to Mobile Bay and encourage the economic activity that commercial navigation would generate.

Overall, CARIA supports any of the proposed alternatives that provide more definitive criteria of navigation depths and more positive benefits as depicted in the modeled flows below Claiborne Dam. Also appreciated is the inclusion of a drought management plan with defined actions. There are, however, several areas that need to be clarified.

<u>The Corps should clarify its authority to maintain the channel.</u>

Language describing the scope of the DEIS relative to congressional authority pertaining to navigation is misleading:

- Page ES-2, lines 13-14: "This EIS considers only operational changes within existing congressional authorities and does not consider operational changes that would require additional authority."

- Page ES-10, lines 39-40 and page ES-11, lines 1-2: "Navigation is one of the congressionally authorized purposes in the ACT Basin; however, recommendations to … construct additional training works in the Alabama

> River, or maintain tributaries to the Alabama River exceed existing congressional authority for navigation in the system and were not considered."

These statements suggest that the Corps lacks statutory authority to carry out minor improvements that would assist in keeping the channel clear. That is not our understanding. In any event, flow and channel maintenance are inextricably connected concepts when providing for navigation. As the Corps reviews its plans to support commercial navigation, we urge you not to separate these two interrelated factors.

Congress has authorized the Corps to maintain the Alabama River navigation channel, which extends from the mouth of the river 305 river miles to a point approximately 17 miles above Montgomery at the confluence of the Coosa and Tallapoosa Rivers. The channel itself consists of channel cutoffs, dams with locks, and training works. Throughout the DEIS and WCM are references to maintaining that channel through flow management, dredging, and training works.

Training works then are part of the authorized channel infrastructure and should be acknowledged as an ongoing operational requirement in the DEIS and WCM. As with dredging, modifying those training works should require justifying funding only, not additional authorization. To the extent the Corps' statements reflect a view that the Corps lacks standing statutory authority (apart from the question of year-to-year funding), we urge the Corps to clarify its view as to the extent and nature of its authority to build small works, such as training weirs, for the sake of channel availability.

<u>The Corps should clear tributary openings to boost flows.</u>

Currently, the Corps and Alabama Power Company (APC) coordinate water flows supporting navigation in the Alabama River. Given the current state of channel maintenance, the agreed-upon daily average minimum flow of 4640 cfs <u>does not provide full-depth navigation</u> or maintenance at the7Q10 flow of 6,600 cfs below Claiborne. Intervening flows from Alabama River tributaries and drawdown of RF Henry and Millers Ferry reservoirs must be used. The minimal storage capacity of the Henry and Millers Ferry reservoirs limits capability to provide the flows required. It is imperative, therefore, intervening flows from tributaries, such as Catoma Creek and the Cahaba River, be fully utilized to maximize the chances of attaining sufficient navigation flows at Claiborne, which means we must not allow those tributaries to silt in or be blocked.

As the Corps notes, "Releases by APC together with local inflows downstream of the Coosa and Tallapoosa Rivers' confluence are expected to provide the required flow in the Alabama River downstream of the Claiborne Lock and Dam." (DEIS, p. 4-6, ll. 27-29)

The Corps also observed in the June 2009 Mobile District report, *Environmental Assessment for Small Boat Access Channels in the Alabama River, Alabama*, as follows: "Operation and maintenance of the Alabama-Coosa River system (ACR) <u>and its tributaries</u> provides for development of navigation, flood control, power, and recreation" and "is authorized by Public Law 14, 79th Congress, in accordance with the River and Harbor Act on 1899, on 2 March 1945." (Emphasis added.)

The Corps, then, is authorized to maintain those tributaries that contribute to navigation flows by removing sediment blocking the mouth of those tributaries. Maintenance of the tributaries then should be acknowledged as an ongoing operational requirement in the DEIS and WCM. Any suggestion otherwise in an official document such as the WCM or EIS is detrimental to public and private efforts to promote the Alabama River navigation channel as an economic asset.

<u>The Corps has proposed a *de facto* reordering of project purposes at the expense of navigation.</u>

The WCM purports to not prioritize the multiple uses in managing federal reservoirs, but the preferred alternative does exactly that by raising and extending the "plateau" of the rule curves at Allatoona and Carters in the dry months of the late summer and fall, when it is needed most downstream. We find this particularly difficult to understand given that navigation was among the original purposes for which the reservoirs were constructed, and downstream interests have acted in reliance on those flows being there.

Likewise, the Corps' Drought Management Plan (DEIS pp ES 12-13 and p 4-14, WCM p E-C-22) also exposes navigation to abandonment for the sake of other purposes at the most critical times in that the downstream navigation flow target at Montgomery is the first to be reduced under any declared drought condition. However, as demonstrated during the drought years of 2007 and 2008, attempts to maintain the 4640 cfs releases from the Coosa and Tallapoosa projects can endanger the entire ACT system. Cutback in releases at that time, given the minimal impact on the low level of navigation downstream, was fully justifiable and underscored the need for a well-designed drought management plan that minimizes the effect low flow conditions can have on all river-supported purposes. The WCM (p 7-1, lines 26-27) reiterates the Corps' responsibility to "ensure adequate water control regulation to support navigation on the Alabama River." Navigation flows also support other downstream needs, such as water quality and wastewater assimilation. So when describing actions taken to address drought conditions, both the WCM and DEIS should then acknowledge that any decision to reduce "navigation" flows should be made with due consideration of economic as well as environmental impacts on downstream requirements.

Thank you for your consideration of these comments. Please feel free to contact me if I may provide additional information.

Sincerely,

Jerry Sailors

Jerry L. Sailors
President

Comment ID 0048

Comment ID 0048.001

Author Name: Sailors, Jerry

Organization: Coosa-Alabama River Improvement Association, Inc.

Comment

The Coosa-Alabama River Improvement Association (CARIA) was formed in 1890 by businessmen in Gadsden, Alabama for the purpose of promoting river transportation on the Coosa and Alabama Rivers. CARIA members include cities, counties, businesses, and individuals from Rome to Mobile that have an interest in maintaining and improving the multipleuse benefits of those rivers. Our mission is to improve and market the Coosa, Alabama, and Tallapoosa Rivers through education, promotion, and public advocacy.

Over the years we have focused primarily on navigation as an authorized use of federal infrastructure within the Basin, but we have a vested interest in all the uses that infrastructure serves. As demonstrated by recent droughts, balancing navigation, hydropower, recreation, flood control, water supply, water quality, and fish and wildlife enhancement is a difficult, but essential task. So CARIA fully supports the efforts of the US Army Corps of Engineers (Corps) to operate federal facilities in the ACT basin in the most efficient and effective way.

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Likewise, the Corps' Drought Management Plan (DEIS pp ES 12-13 and p 4-14, WCM P E-C-22) also exposes navigation to abandonment for the sake of other purposes at the most critical times in that the downstream navigation flow target at Montgomery is the first to be reduced under any declared drought condition. However, as demonstrated during the drought years of 2007 and 2008, attempts to maintain the 4640 cfs releases from the Coosa and Tallapoosa projects can endanger the entire ACT system. Cutback in releases at that time, given the minimal impact on the low level of navigation downstream, was fully justifiable and underscored the need for a well-designed drought management plan that minimizes the effect low flow conditions can have on all riversupported purposes. The WCM (p 7-1, lines 26-27) reiterates the Corps' responsibility to "ensure adequate water control regulation to support navigation on the Alabama River." Navigation flows also support other downstream needs, such as water quality and wastewater assimilation. So when describing actions taken to address drought conditions, both the WCM and DEIS should then acknowledge that any decision to reduce "navigation" flows should be made with due consideration of economic as well as environmental impacts on downstream requirements.

Thank you for your consideration of these comments. Please feel free to contact me if I may provide additional information.

Response

USACE concurs that the second statement cited from the Executive Summary in your comment regarding navigation authority is inaccurate and somewhat misleading. The intent of the statement was to establish that navigation-related activities such as improving existing or adding new training works or dredging the entrances to tributary streams would be outside the scope of the ACT WCM update process for existing reservoirs in the basin. Provision of flow conditions in support of navigation in the Alabama River is specifically within the scope of this WCM update for USACE reservoirs in the ACT basin. Other navigation-related needs, such as those identified above, would be addressed through existing USACE navigation maintenance authorities or by obtaining new congressional authorization, if necessary.

A similar statement about navigation in the 3rd paragraph of Section 4.1 of the EIS more correctly states the scope of the WCM update with respect to navigation. The statement in the Executive Summary has been modified accordingly.

The proposed action alternative does not represent a de facto reordering of project purposes at the expense of navigation. In fact, as pointed out in Section 6.1.1.5, the proposed action alternative would provide improved flow conditions for navigation under most circumstances compared to the no action alternative. In addition, the WCM update, including the drought management plan, recognizes that there are times during which there is not a sufficient level of basin inflow to fully support all authorized project purposes, including navigation, and provides for a structured approach to manage the reservoirs and balance project purposes to the maximum extent practicable during those dry periods. This structured water management approach should improve the level of predictability regarding the availability of sufficient flows to support navigation or lack thereof for navigation interests.

Economic and environmental consequences relative to all resources and activities affected by ACT reservoir operations have been taken into account in developing and recommending the proposed plan.

From:	Blake Hardwich
To:	ACT-WCM
Subject:	Manufacture Alabama Comments Regarding ACT DEIS
Date:	Thursday, May 30, 2013 11:13:37 AM
Attachments:	image001.jpg image002.jpg image005.jpg SOce VL282213053010090.pdf

Please find attached Manufacture Alabama comments regarding the Draft Master Water Control Manual Update and Draft Environmental Impact Statement (DEIS) for the Alabama-Coosa-Tallapoosa (ACT) River Basin.

If you have any questions or concerns, I can be reached at the number below.

Thank you for your attention to this matter.

Blake Hardwich
Manufacture Alabama
401 Adams Avenue
Suite 710
Montgomery, AL 36104
334.386.3000
334.386.3001(fax)

Follow Manufacture Alabama:

MANUFACTURE
Alabama!
Making the best in Alabama!

May 30, 2013

VIA U.S. MAIL AND E-MAIL TO
ACT-WCM@USACE.ARMY.MIL

Colonel Steven J. Roemhildt
Commander, Mobile District
U.S. Army Corps of Engineers
ATTN: PD-EI (ACT-DEIS)
P.O. Box 2288
Mobile, Alabama 36628

Re: Draft Master Water Control Manual Update and Draft Environmental Impact Statement (DEIS) for the Alabama-Coosa-Tallapoosa (ACT) River Basin

Dear Colonel Roemhildt:

The U.S. Army Corps of Engineers recently published a Draft Water Control Manual and Draft Environmental Impact Statement for the Corps' operations on the Alabama-Coosa-Tallapoosa River System. This letter provides the comments of Manufacture Alabama. Manufacture Alabama is the state's only association dedicated exclusively to the competitive, legislative, regulatory and operational interests of manufacturers in Alabama and their partners. Manufacture Alabama represents all of the pulp & paper mills in the state including Georgia Pacific, International Paper and Resolute Forest Products, who all have plants located on the ACT River System. Manufacture Alabama also represents the chemical industry who also have plants located on the ACT River System.

Alabama residents, including Manufacture Alabama members, depend on releases from the Corps' two storage reservoirs in the ACT River System, namely, Lake Allatoona and Carters Lake. Those two reservoirs are substantial contributors to Coosa River inflow. The volume and time of year of releases from those two lakes are critically important.

We understand that the Corps' proposal reduces so-called navigation flows and releases for hydropower production during the late summer and fall, when those flows are most needed downstream. The Corps disclaims responsibility for navigation flows, saying that Allatoona and Carters "are not regulated specifically for navigation." DEIS at 4-7. However, elsewhere, the Corps acknowledges that the two reservoirs were built to support navigation. DEIS at 2-23, 2-28. It seems obvious that greater releases upstream would provide more flow downstream, and it is the Corps' statutory mission to provide for navigation. It is unreasonable for the Corps to withhold its own stored water and place the entire burden of navigation support on the lakes of

401 Adams Avenue, Suite 710 • Montgomery, Alabama 36104
(334) 386-3000 • (334) 386-3001 fax
www.manufacturealabama.org

Alabama. Without the Corps' support, there will be less water in the Coosa River downstream, and stakeholders in Alabama will suffer.

Similarly, the Corps proposes to reduce hydropower releases from Allatoona and Carters during the dry season, opting instead to keep those lakes fuller for local recreation and Atlanta-area water supply. However, the same flows that turn the hydropower turbines are important for stakeholders on the Coosa River.

The Corps asserts that the water quality impacts of its proposal would be "minimal," but as the Corps acknowledges, "Water management activities may affect water quality under low flow conditions such that the state regulatory agencies may consider reevaluation of NPDES permits to confirm the system's assimilative capacity." DEIS at ES-48 – ES-49. The Corps also acknowledges negative impacts in Alabama for particular constituents and conditions. DEIS at ES-49. We disagree that those water quality impacts are "minimal." Low flow conditions typically occur in the dry months. That is when flow augmentation is most needed downstream, and it is also when the Corps proposes to withhold water for local recreation and supply.

The Corps seems to suggest that the only consequence of a negative water quality impact is a bureaucratic adjustment of permit limits. That is not accurate. If the Coosa River's assimilative capacity is reduced to the point that permit limits are implicated, that places any regulated facility's operations at risk. If operations slow or cease, that means less payroll for the local economy. Further, as the Corps' lack of support for downstream stakeholders becomes apparent, that limits our ability to recruit new businesses and industries to the state.

We understand the current proposal mainly involves issues of flow. However, aside from navigation flows, to restore actual commercial navigability on the Alabama River would provide Alabama an important tool for business recruitment. We urge the Corps to support commercial navigation with both adequate flow and a renewed program of channel maintenance.

In closing, we urge the Corps to reconsider its preferred alternative and operate its storage reservoirs as they were originally intended, which is to supplement flows during the times of year when they are the most scarce. Stakeholders downstream are counting on it.

Thank you for your consideration of these comments. Please feel free to contact me if you should have any questions or comments.

Sincerely,

President
Manufacture Alabama

Comment ID 0051

Comment ID 0051.001

Author Name: Hardwich, Blake

Organization: Manufacture Alabama!

Comment

The U.S. Army Corps of Engineers recently published a Draft Water Control Manual and Draft Environmental Impact Statement for the Corps' operations on the Alabama-Coosa-Tallapoosa River System. This letter provides the comments of Manufacture Alabama. Manufacture Alabama is the state's only association dedicated exclusively to the competitive, legislative, regulatory and operational interests of manufacturers in Alabama and their partners. Manufacture Alabama represents all of the pulp & paper mills in the state including Georgia Pacific, International Paper and Resolute Forest Products, who all have plants located on the ACT River System. Manufacture Alabama also represents the chemical industry who also have plants located on the ACT River System.

Alabama residents, including Manufacture Alabama members, depend on releases from the Corps' two storage reservoirs in the ACT River System, namely, Lake Allatoona and Carters Lake. Those two reservoirs are substantial contributors to Coosa River inflow. The volume and time of year of releases from those two lakes are critically important.

We understand that the Corps' proposal reduces so-called navigation flows and releases for hydropower production during the late summer and fall, when those flows are most needed downstream. The Corps disclaims responsibility for navigation flows, saying that Allatoona and Carters "are not regulated specifically for navigation." DEIS at 4-7. However, elsewhere, the Corps acknowledges that the two reservoirs were built to support navigation. DEIS at 2-23, 2-28. It seems obvious that greater releases upstream would provide more flow downstream, and it is the Corps' statutory mission to provide for navigation. It is unreasonable for the Corps to withhold its own stored water and place the entire burden of navigation support on the lakes of Alabama. Without the Corps' support, there will be less water in the Coosa River downstream, and stakeholders in Alabama will suffer.

Response

Releases are made from both Allatoona and Carters Projects to support all authorized project purposes. Both projects contribute to the navigation flow target downstream through their releases for other project purposes. Analyses indicate no significant impacts to downstream users as a result of the recommended changes to project operation.

Comment ID 0051.002

Author Name: Hardwich, Blake

Organization: Manufacture Alabama!

Comment

Similarly, the Corps proposes to reduce hydropower releases from Allatoona and Carters during the dry season, opting instead to keep those lakes fuller for local recreation and Atlanta-area water supply. However, the same flows that turn the hydropower turbines are important for stakeholders on the Coosa River.

Response

Comment noted.

Comment ID 0051.003

Author Name: Hardwich, Blake

Organization: Manufacture Alabama!

Comment

The Corps asserts that the water quality impacts of its proposal would be "minimal," but as the Corps acknowledges, "Water management activities may affect water quality under low flow conditions such that the state regulatory agencies may consider reevaluation of NPDES permits to confirm the system's assimilative capacity." DEIS at ES-48 - ES-49. The Corps also acknowledges negative impacts in Alabama for particular constituents and conditions. DEIS at ES-49. We disagree that those water quality impacts are "minimal." Low flow conditions typically occur in the dry months. That is when flow augmentation is most needed downstream, and it is also when the Corps proposes to withhold water for local recreation and supply.

Response

As stated in the EIS, in the drought of 2006 – 2008, the USACE generally responded by reducing hydropower generation at Allatoona and Carters Lakes dropping the reservoir pools in summer and fall. Working closely with APC, states, and affected stakeholders releases were made to assist with public health and safety throughout the basin and will continue to do so during similar extreme circumstances. In 2007, the USACE also supported an APC request to reduce the 4,640 cfs flow target at Montgomery by 20 percent to 3,700 cfs. In response to worsening drought conditions in 2007, APC further reduced the target flow even below 3,700 cfs. The drought plan incorporated to this EIS formalizes the experience learned from past drought. In doing so the USACE's objective to develop a drought management plan as required by USACE regulations can be fulfilled and management decisions can be made to decrease the overall impact to all authorized project purposes.

Comment ID 0051.004

Author Name: Hardwich, Blake

Organization: Manufacture Alabama!

Comment

The Corps seems to suggest that the only consequence of a negative water quality impact is a bureaucratic adjustment of permit limits. That is not accurate. If the Coosa River's assimilative capacity is reduced to the point that permit limits are implicated, that places any regulated facility's operations at risk. If operations slow or cease, that means less payroll for the local economy. Further, as the Corps' lack of support for downstream stakeholders becomes apparent, that limits our ability to recruit new businesses and industries to the state.

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In closing, we urge the Corps to reconsider its preferred alternative and operate its storage reservoirs as they were originally intended, which is to supplement flows during the times of year when they are the most scarce. Stakeholders downstream are counting on it.

Thank you for your consideration of these comments. Please feel free to contact me if you should have any questions or comments.

Response

Navigation is a project purpose and commercial navigation is supported on the Alabama River by the proposed plan.

From:	Roy McAuley
To:	ACT-WCM
Subject:	Alabama Pulp & Paper Council Comments on ACT Water Control Manual and EIS
Date:	Friday, May 31, 2013 11:49:46 AM
Attachments:	APPCO ACT Comments.doc

To Whom it Concerns:

Re: Draft Master Water Control Manual Update and Draft Environmental Impact Statement (DEIS) for the Alabama-Coosa-Tallapoosa (ACT) River Basin

Alabama Pulp & Paper Council Comments on the Draft Master Water Control Manual Update and Draft Environmental Impact Statement (DEIS) for the Alabama-Coosa-Tallapoosa (ACT) River Basin are attached.

Roy McAuley
Executive Director
Alabama Pulp & Paper Council
401 Adams Ave., Suite 710,
Montgomery, AL 36104
334 -386-3000 office
[redacted]
roy@manufacturealabama.org

May 31, 2013

VIA E-MAIL TO
ACT-WCM@USACE.ARMY.MIL

Colonel Steven J. Roemhildt
Commander, Mobile District
U.S. Army Corps of Engineers
ATTN: PD-EI (ACT-DEIS)
P.O. Box 2288
Mobile, Alabama 36628

Re: Draft Master Water Control Manual Update and Draft Environmental Impact Statement (DEIS) for the Alabama-Coosa-Tallapoosa (ACT) River Basin

Dear Colonel Roemhildt:

The U.S. Army Corps of Engineers recently published a Draft Water Control Manual and Draft Environmental Impact Statement for the Corps' operations on the Alabama-Coosa-Tallapoosa River System. This letter provides the comments of The Alabama Pulp & Paper Council (APPCO). The council deals with legislative, and regulatory interests of 13 pulp and paper manufacturers in Alabama. Five of these large facilities are located on the ACT system and are dependent on its flow for water supply and waste water assimilation. These five are Resolute Forest Products at Childersburg, three International Paper facilities at Prattville, Selma, and Pine Hill, and Alabama River Cellulose (Georgia Pacific) at Monroeville.

The flow at these facilities is dependent on releases from the Corps' two storage reservoirs in the ACT River System, namely, Lake Allatoona and Carters Lake. Those two reservoirs are substantial contributors to Coosa River inflow. The volume and time of year of releases from those two lakes are critically important. The Corps proposal reduces hydropower releases from Allatoona and Carters during the dry season, opting instead to keep those lakes fuller for local recreation and Atlanta-area water supply.

The Corps proposal is such that flows at Rome will be 250-500 cfs lower in the fall months of the year under the Preferred Alternative and that lake levels at Lake Allatoona will be "notably higher" in the fall months under drought conditions. During the drought of 2007, Alabama experienced major water quality and other environmental problems in the ACT Basin during the fall months. Indeed, some of these mills were on the verge of having to shut down operations and lay off employees because they were close to being unable to meet permit limits with their discharges. The Corps was part of meetings and weekly phone conferences that addressed the issue of adequate downstream flows. A reduction in flow in the Coosa River at the Alabama state line by 250-500 cfs will almost certainly cause far graver environmental and economic consequences than have been experienced during prior similar droughts.

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The Corps asserts that the water quality impacts of its proposal would be "minimal," but as the Corps acknowledges, "Water management activities may affect water quality under low flow conditions such that the state regulatory agencies may consider reevaluation of NPDES permits to confirm the system's assimilative capacity". The Corps also acknowledges negative impacts in Alabama for particular constituents and conditions. The water quality impacts are not likely to be "minimal." Low flow conditions typically occur in the dry months. That is when flow augmentation is most needed downstream, and it is also when the Corps proposes to withhold water for local recreation and supply.

The Corps seems to suggest that the only consequence of a negative water quality impact is a bureaucratic adjustment of permit limits. That is not accurate. If the Coosa River's assimilative capacity is reduced to the point that permit limits are implicated, that places any regulated facility's operations at risk. If operations slow or cease, that means less payroll for the local economy.

In closing, it is inconceivable that the Corps would even consider holding water in Alatoona/Carter for "recreational" purposes given the downstream concerns for water quality and how it relates to our paper mill jobs. We urge the Corps to reconsider its preferred alternative and operate its storage reservoirs as they were originally intended, which is to supplement flows during the times of year when they are the most scarce. Stakeholders downstream are counting on it.

Thank you for your consideration of these comments. Please feel free to contact me if you should have any questions or comments.

Sincerely,

Roy McAuley
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Comment ID 0052

Comment ID 0052.001

Author Name: McAuley, Roy

Organization: Alabama Pulp and Paper Council

Comment

The U.S. Army Corps of Engineers recently published a Draft Water Control Manual and Draft Environmental Impact Statement for the Corps' operations on the Alabama-Coosa-Tallapoosa River System. This letter provides the comments of The Alabama Pulp & Paper Council (APPCO). The council deals with legislative and regulatory interests of 13 pulp and paper manufacturers in Alabama. Five of these large facilities are located on the ACT system and are dependent on its flow for water supply and waste water assimilation. These five are Resolute Forest Products at Childersburg, three International Paper facilities at Prattville, Selma, and Pine Hill, and Alabama River Cellulose (Georgia Pacific) at Monroeville.

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Response

Information noted. No response necessary.

Comment ID 0052.002

Author Name: McAuley, Roy

Organization: Alabama Pulp and Paper Council

Comment

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The Corps seems to suggest that the only consequence of a negative water quality impact is a bureaucratic adjustment of permit limits. That is not accurate. If the Coosa River's assimilative capacity is reduced to the point that permit limits are implicated, that places any regulated facility's operations at risk. If operations slow or cease, that means less pay roll for the local economy.

In closing, it is inconceivable that the Corps would even consider holding water in Alatoona/Carter for "recreational" purposes given the downstream concerns for water quality and how it relates to our paper mill jobs. We urge the Corps to reconsider its preferred alternative and operate its storage reservoirs as they were originally intended, which is to supplement flows during the times of year when they are the most scarce. Stakeholders downstream are counting on it.

Thank you for your consideration of these comments. Please feel free to contact me if you should have any questions or comments.

Response

As in past years of low flow conditions, water users can coordinate directly with USACE to notify the agency of their needs. When conditions allow, on balance with meeting other project purposes, USACE will work with water users to address extraordinary conditions (special releases, etc.). USACE will notify users when releases are made or other actions are taken during these low flow conditions.

From:	Casey, Thomas
To:	ACT-WCM
Cc:	[redacted].
Subject:	APC"s ACT DEIS Comments
Date:	Friday, May 31, 2013 4:45:35 PM
Attachments:	balch_logod08bde FINAL APC ACT DEIS Comments.pdf Attach. A.PDF Misc comments (Attach. B).pdf Attach. C.PDF

Please find attached Alabama Power Company's comments on the Corps' ACT DEIS and proposed ACT manuals.

Thanks.

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ALABAMA POWER
A SOUTHERN COMPANY

May 31, 2013

VIA U.S. Mail & E-Mail
Colonel Steven J. Roemhildt
U.S. Army Corps of Engineers
Mobile District
Attention: PD-EI (ACT-DEIS)
P.O. Box 2288
Mobile, AL 36628
act-wcm@usace.army.mil

Dear Colonel Roemhildt:

Alabama Power Company appreciates the opportunity to provide the U.S. Army Corps of Engineers ("Corps") with comments on the Corps' Draft Environmental Impact Statement ("DEIS") and updated manuals for the Alabama-Coosa-Tallapoosa ("ACT") river basin. We commend the Corps for undertaking the process of updating the ACT Master Manual and individual reservoir regulation manuals for the basin. Maintaining up-to-date manuals is essential for the proper operation and the continued reliability of the ACT system.

Alabama Power supports many aspects of the Corps' proposed manuals and DEIS. In particular, Alabama Power strongly supports the Corps' incorporation of the Alabama Drought Operations Plan ("ADROP") in its Drought Contingency Plan. ADROP reflects the valuable information and experience learned by Alabama Power, the Corps, and the State of Alabama during the severe drought of 2007–2008. ADROP will help ensure the balanced, conservative operation of the ACT Basin system during future drought periods. Alabama Power also supports the Corps' proposed water control manual for Alabama Power's Neely Henry development, which includes the permanent adoption of the interim revised operating curve for that project. The permanent adoption of the interim operating curve and the associated operating rules at Neely Henry will support a wide variety of beneficial uses downstream and around the lake.

Alabama Power does have a number of concerns regarding the Corps' proposed operating plan for Allatoona as well as many of the assumptions relied upon in the DEIS in evaluating the potential impacts of the proposed changes. Specifically, the proposed changes under the Corps' Preferred Alternative (Plan G) for the Allatoona Project—including (1) the phased guide curve, (2) the new action zones, and (3) the reduced hydropower generation schedule—reflect a substantial reordering of project purposes, which will adversely affect water quality, hydropower generation, and navigation downstream. Alabama Power believes that these changes are so substantial that the Corps lacks the authority to implement them without prior Congressional reauthorization of the Allatoona Project.

Alabama Power also submits that the DEIS contains a number of errors that undermine the reliability of the NEPA analysis, including (1) the use of a baseline that does not accurately reflect historic lawful operations, conditions and uses of the projects in the basin, especially at Allatoona, (2) the failure to properly consider relevant potential impacts of the proposed alternatives, and (3) the failure to include in the analysis various proposed guide curve changes for Alabama Power's Weiss and Logan Martin hydroelectric developments, and the Martin project.

In short, while Alabama Power supports much of the Corps' proposal for the ACT Basin, Alabama Power has serious concerns about the Corps' proposed operation of Lake Allatoona. Alabama Power respectfully asks that the Corps re-evaluate the potential impacts of the proposed changes to the congressionally authorized purposes and historic operation of Lake Allatoona on downstream interests. Any proposed changes at Lake Allatoona must be compared to a baseline that accurately reflects the lawful, historical conditions in the basin. These concerns, and others, are expressed in greater detail below.

Alabama Power is also concerned by procedural aspects of the Corps' DEIS public comment period. While the Corps did provide the public with an additional 30 days to respond to the proposal and NEPA analysis, the DEIS, manuals, and the data supporting the Corps' analysis constitute thousands of pages of information, which stakeholders cannot adequately review and evaluate in the time provided. Furthermore, the Corps did not provide the public with all of the technical data needed to evaluate fully the Corps' proposal. On May 2, 2013, Alabama Power submitted a Freedom of Information Act ("FOIA") request for supporting data that have not been provided to the public. The Corps has not yet produced this data. Given the compressed public review period and the incomplete record provided for review, Alabama Power reserves the right to object to aspects of the Corps' proposed manuals and DEIS, or provide supplemental comments, in the future.

I. A Summary of Alabama Power's Interests in the ACT Basin

There are 17 major dams and reservoirs in the ACT Basin. The Corps owns and operates six of these dams in the ACT Basin. Two of the Corps' projects are located in the headwaters of the Coosa River—Allatoona Dam, on the Etowah River, and Carters Dam (and Carters Reregulation Dam) on the Coosawattee River. Releases of water from Lake Allatoona and Carters Lake flow downstream into the Coosa River at Rome, Georgia. From there, these releases flow into Alabama Power's Weiss reservoir located in Cherokee County, Alabama, and Floyd County, Georgia. The remaining Corps dams are located on the Alabama River below Montgomery—R.F. Henry, Miller's Ferry and Claiborne Dams. Alabama Power owns and operates seven hydroelectric projects on the Coosa River—the Weiss, Neely Henry, Logan Martin, Lay, Mitchell, Jordan, and Bouldin projects. Alabama Power also owns and operates four hydroelectric projects on the Tallapoosa River—the Harris, Martin, Yates, and Thurlow projects.

The operation of Alabama Power's ACT River Basin hydroelectric projects is licensed by the Federal Energy Regulatory Commission ("FERC"). Alabama Power depends on the flow of the Coosa River to generate electricity and to comply with the FERC licenses, which provide for the storage and use of water for hydropower production, recreation, fish and wildlife, and downstream navigation support, among other purposes. Releases from Lake Allatoona and Carters Lake also provide certain headwater benefits to Alabama Power's downstream projects. Alabama Power relies upon these headwater benefits to generate electricity at its hydroelectric dams, and, as required by the Federal Power Act, Alabama Power compensates the federal government for the headwater benefits conferred on these downstream hydroelectric projects. These headwater benefits payments have contributed, and will continue to contribute, to the cost of operating and maintaining the Allatoona and Carters reservoirs, and also contribute to the original capital cost of the construction of both reservoirs.

Alabama Power relies, in part, on releases from Lake Allatoona and Carters Lake to support compliance with a FERC requirement to provide a continuous minimum flow for the protection of the tulotoma snail and other species downstream of the Jordan project on the Coosa River, as well as spring attraction flows for fish spawning and weekend and special event recreation releases. Alabama Power also uses, in part, releases from Lake Allatoona and Carters Lake to supply navigation support flows to the Alabama River. When releases from Lake Allatoona and Carters Lake are reduced, Alabama Power must increase releases from storage from its Coosa and Tallapoosa River projects to meet minimum downstream flow targets.

In 1972, in order to coordinate reservoir operations in a manner that would benefit navigation on the Alabama River, Alabama Power made a qualified commitment to provide a minimum navigation flow of 4,640 cfs to the Alabama River from the combined Tallapoosa and Coosa River Basins. A May 2, 1972 letter from Alabama Power to the Corps setting forth this understanding explained that Alabama Power agreed to provide these flows, "assuming of course that our upstream storage dams are above minimum rule curve elevations."

II. The Corps' Preferred Alternative Reorders Allatoona's Project Purposes

As a threshold matter, the Corps relies on an erroneous characterization of the authorized purposes of the Corps' Allatoona project. As described more fully in the following section, it cannot be disputed that Allatoona was originally authorized by Congress for the principal purposes of hydropower generation, flood control and navigation support. Yet, the Corps' DEIS (and its proposed manuals) abandons navigation support from Allatoona entirely and subordinates hydropower generation to recreation storage. The Corps cannot fundamentally re-order the purposes of Allatoona without first obtaining approval by Congress. This not only undermines the Corps' NEPA analysis, but also reflects substantive legal problems with the proposed manuals themselves.

In 1941, Congress authorized construction of Lake Allatoona. Congress specifically authorized the Allatoona Reservoir "for flood control and other purposes in accordance with recommendation of the Chief of Engineers in House Document 674 . . . ." House Document 674 provides that the Board of Engineers for Rivers and Harbors recommended that the Allatoona reservoir be constructed "for the control of floods, regulation of stream flow for navigation, and

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the development of hydroelectric power." Subject to an increase in the estimated first costs for the project, the Chief of Engineers "concur[red] in the recommendations of the Board."

The Board of Engineers for Rivers and Harbors' full report submitted to the Corps is included as part of House Document 674. The Board's report notes that "[t]he flood storage to be reserved in the Allatoona Reservoir would provide practically complete protection to agricultural lands on the Etowah River," and that "[t]he power storage to be provided would increase the minimum stream flow from the present 180 cubic feet per second to an estimated regulated minimum of 980 cubic feet per second." Moreover, "[t]his increased flow would permit the economical generation of power at the site and would increase the firm capacity at existing and potential downstream power developments." At the time, the only existing downstream power developments were owned and operated by Alabama Power.

The Board of Engineers for Rivers and Harbors expressed its opinion that:

> The Allatoona Reservoir constructed in the combined interests of flood control and power development would provide needed flood protection for Rome, Ga., and to agricultural lands in that general vicinity, and would make possible the development of a substantial block of hydroelectric power. Regulation of stream flow to be effected also would be of value to existing and potential downstream power developments. . . . The regulated stream flow also would be of benefit to navigation should the Alabama and Coosa Rivers be further improved at some future time. . . . The Board believes that in order to safeguard the interests of flood control and navigation, Allatoona Dam and power plant should be constructed, operated, and maintained under the direction of the Secretary of War and the supervision of the Chief of Engineers . . . .

The Board of Engineers for Rivers and Harbors thus recommended that the Allatoona Reservoir project be constructed "<u>for the control of floods, regulation of stream flow for navigation, and the development of hydroelectric power</u>." (Emphasis added).

Allatoona was not originally authorized for either recreation or water supply. The only authority the Corps has to operate Allatoona for water supply derives from the Water Supply Act of 1958. But that Act only allows the Corps to reauthorize storage to water supply so long as the reauthorization would not "seriously affect the purposes for which the project was authorized, surveyed, planned, or constructed, or which would involve major structural or operational changes shall be made only upon the approval of Congress as now provided by law [sic]." The Corps also stated in engineer pamphlet EP 1165-2-1 (July 30, 1999), that any reallocation of storage in an existing project where the proposed reallocation would severely affect the project must be authorized by Congress. Paragraph 18-2(a) (at 18-1) of that document cautioned that modification of existing projects to include storage for municipal and industrial purposes "which would severely affect the project, its other purposes, or its operation, requires Congressional authorization." Again in ¶ 18-2(c) (at 18-1-2) of that pamphlet, the Corps declared: "Reallocation of reservoir storage that would have a significant effect on other authorized purposes or that would involve major structural or operational changes requires Congressional approval."

Likewise, the Corps does not have the discretion to reallocate storage in federal reservoirs to recreational use where Congress has not allocated any project costs to storage for recreation. Paragraph 17-3(e) of EP 1165-2-1 (at 17-5) provides:

> Reallocation of Reservoir Storage for Recreation. Many projects, including those for which recreation facilities may have been included under general provisions of the Flood Control Act of 1944, as amended, do not have separable storage costs for recreation. In these circumstances recreation is an authorized project purpose but it is secondary, as far as storage operation is concerned, to project functions for which the storage was formulated. Any reallocation of reservoir storage to provide more stable recreation levels that would have a significant effect on other authorized purposes, or that would involve major structural or operational change, requires Congressional authorization. Costs reallocated to recreation will be established as the highest of the benefits or revenues foregone, replacement costs, or the updated cost of the storage, will be treated as a separable cost, and will be subject to non-Federal cost sharing. (ER 1105-2-100).

Despite these directives and limitations on the Corps' authority to operate Allatoona for recreation, the Corps proposes a preferred alternative (Plan G) for operating Allatoona that abandons navigation and reduces hydropower generation releases to benefit recreation by changing Allatoona's action zones, hydropower-generation schedules, and guide curve. The ultimate effect of this alternative is to reduce flows into the Coosa River in the critical summer and fall periods, when those flows are most needed for hydropower generation, downstream water quality, navigation flows, and support of protected species. These changes cannot be reconciled with the authorized purposes of Allatoona or the restrictions on the Corps' authority to reallocate storage to recreation.

Plan G violates the fundamental purpose of the design and operation of headwater storage reservoirs, as recognized by the DEIS itself: "[T]he need for water in the summer and fall often is greater than the supply of water in the river basin. An important function of the many reservoirs in the ACT Basin is to store water when there is an abundance of rain and to release water when there is less rain, ensuring that all water needs can be met throughout the year . . . . The reservoirs formed by those dams attenuate high river flows during wet periods and augment low flows during dry-weather periods." The operational scheme proposed for Allatoona does the opposite—the Corps proposes to maintain the highest lake levels possible at Lake Allatoona through dry weather periods and then release storage during wet weather periods. This approach is inconsistent with the Corps' responsibility to support the congressionally authorized purposes of the reservoir.

Plan G also includes a revised guide curve at Allatoona for higher lake levels in October to mid-November. The phased guide curve would have a top of conservation pool elevation of 823' from January 1 to 15, transitioning to 840' by May 1 and remaining at 840' through Labor

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Day (early September), then transitioning down to 835' by October 1 and remaining at 835' until mid-November, thereafter transitioning down to elevation 823' by December 31.[1] The described intent of this new guide curve is to benefit recreation, even though this period (October 1 to November 15) is outside the normal recreation season at Allatoona. Thus, the proposed guide curve only makes sense as an additional measure to protect storage for water supply withdrawals. In addition to the phased guide curve, new action zones, and reduced hydropower generation schedule, the preferred alternative grants the Corps even more discretion to reduce hydropower generation releases—the Corps is free to eliminate flows associated with hydropower generation at any time in any of the proposed action zones.

In addition to the revised guide curve at Allatoona the proposed action zones also serve to re-order the project purposes. For example, according to the DEIS, the proposed action zones are expressly used to manage the lakes at the highest level possible for recreation and other purposes to the detriment of hydropower generation releases. To this end, Plan G replaces Allatoona's current 2 action zones (found in the draft 1993 Allatoona manual) with 4 action zones. In zone 1 (the highest elevation zone), the minimum hydropower generation schedule is reduced from 2 hours to 0, and the maximum is reduced from 6 hours to 4. In zone 2, the hydropower generation schedule is only 0 to 3 hours. In zone 3, the Corps provides for only up to 2 hours of hydropower generation, and in zone 4 there is no provision for hydropower generation at all. The bottom line effect is that the percentage of days that flow would be less than 7Q10 would increase by 33% in August, 100% in September, 67% in October, and 25% in November. *See* DEIS, Table 6.1-2 (Coosa River at Rome, Georgia—Percent of days (by month) over the modeled period of record (1939–2008) that flows would likely exceed 7Q10 value), at 6-57. Furthermore, flows would be less than 2000 cfs 65% more often in October under Plan G as compared to the baseline. *See id.*, p. 6-57,-58 ("As noted in Section 6.1.1.3.3.1, flow-duration curves for September, October, and December were reviewed to assess effects of alternative plans on flow in the Coosa River at Rome that might be expected from upstream changes in project operations (Figures 6.1-39, 6.1-40, and 6.1-41).")

Plan G also includes a revised guide curve at Allatoona for higher lake levels in October to mid-November. The phased guide curve would have a top of conservation pool elevation of 823' from January 1 to 15, transitioning to 840' by May 1 and remaining at 840' through Labor Day (early September), then transitioning down to 835' by October 1 and remaining at 835' until mid-November, thereafter transitioning down to elevation 823' by December 31. This new guide curve is supposed to benefit recreation, even though this period (October 1 to November 15) is outside the normal recreation season at Allatoona. Thus, the proposed guide curve only makes sense as an additional measure to protect storage for water supply withdrawals (although unstated as such). In addition to the phased guide curve, new action zones, and reduced hydropower generation schedule, Plan G grants the Corps even more discretion to reduce hydropower generation releases—the Corps is free to eliminate flows associated with hydropower generation at any time in any of the proposed action zones.

[1] All elevations are expressed in mean sea level ("msl") unless otherwise noted.

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In contrast, under existing operations, the bottom of zone 1 (providing 2 to 6 hours of generation) is lower than the proposed bottom of zone 2 (0 to 3 hours of generation), as shown by the following comparison of existing/proposed elevations: elevations 833/835 on August 1, 830/834 on September 1, 827/831 on October 1, 824/828 on November 1, and 821/825 on December 1. The existing action zones under the draft 1993 Allatoona manual reserve approximately 21% of the conservation storage for normal power operations (zone 1, daily peak generation of 2 to 6 hours) in the summer May 1 to September 1 period. This increases to 46% on October 1, to coincide with the mandatory drawdown. The proposed action zones reallocate storage significantly. During the summer May 1 to September 1 period, zone 1 (0 to 4 hours of peak generation) is only 4%, and zone 2 (0 to 3 hours) is only 8%, or a combined 12% of conservation storage, a reduction of 43% from current levels. As of October 1, zone 1 is 7% and zone 2 is 8%, or a combined 15% of conservation storage, a reduction of 67% of the conservation storage available for normal hydropower generation flow releases.

Thus, on its face, Plan G elevates recreation to such an extent that there will be significant impacts to Allatoona's original authorized purposes, requiring congressional reauthorization. Yet, the Corps provides no discussion of this necessity. It is incumbent that the Corps either revise Plan G or receive congressional approval before undertaking the proposed reallocation of storage.

The DEIS states that recreation enhancement is the primary justification for the proposed operations changes at Allatoona but the DEIS does not provide any analysis concerning the amount of increased recreation expected to result from these changes. The DEIS seems to simply assume that enhanced recreation is sufficient to justify the reduction in hydropower releases, navigation flow support, downstream environmental impacts and other negative consequences associated with Plan G. However, there is no evaluation or quantification of increased recreation days or economic impacts associated with the speculated increase in recreation at Allatoona. Studies are commonly conducted to evaluate recreation impacts associated with change in reservoir elevations in order to calculate recreation enhancement values. In addition, the DEIS does not include any analysis of the potential decrease in recreational opportunities at the downstream reservoirs that may result from the Allatoona operational changes in Plan G. Thus, the DEIS suggests that enhancing recreation to achieve unknown benefits at Allatoona is so compelling that it is worth accomplishing without even considering the potential negative impacts to recreation at Alabama Power's downstream reservoirs.[2]

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[2] The Corps' model shows that flows from Allatoona would be reduced by 200 – 500 cfs during the September to November 15 timeframe, even with the maximum hydropower generation releases modeled in each zone. (ES-42 at 20-21.) If Alabama Power's Weiss development assumes the burden to make up this lost flow, there would potentially be a significant adverse effect on reservoir elevations at Weiss of 1 to 2.3 feet. This calculated effect on Weiss pool elevations contradicts the Corps' unsupported conclusion that the proposed action would have a beneficial impact on daily elevations at Weiss (*Id*. at 6-32). In any event, this potential reduction

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Furthermore, the DEIS does not indicate whether the Corps has performed any analysis or evaluation of impacts to Operation and Maintenance ("O&M") allocations among the various project purposes for Lake Allatoona and Carters Lake. As the Corps is changing project operations to deemphasize navigation, reduce the amount of hydropower generation, and increase the amount of recreation, the O&M costs should be rearranged among project purposes to reflect these changes. It can be expected that as navigation and hydropower generation bear a smaller amount of these O&M costs, other project uses such as water supply, recreation and flood control will necessarily bear a larger amount of these costs. Yet there is no analysis of this cost reallocation.

III. The DEIS Does Not Adequately Consider Proposed Changes in Allatoona's Action Zones and Guide Curve

As described above, Plan G represents a substantial reordering of project purposes in favor of recreation. But the DEIS does not reflect the true impacts of the Corps' proposal. There are a number of flawed assumptions in the Corps' baseline model that minimize the impacts evaluated.[3] Furthermore, under NEPA the Corps is required to address the cumulative impact of Plan G and to include analysis of the effect on stakeholders like Alabama Power. It does not appear that the Corps has undertaken a thorough review of cumulative effects analysis.

The modeling of Plan G assumes a certain level of hydropower generation, ignoring the discretion included in Plan G not to generate at all. This model shows a reduction in hydropower generation compared to the baseline model, while the baseline model assumes less hydropower generation than required by the 1993 draft Allatoona manual—a manual never lawfully adopted and subjected to NEPA review. The action zones and hydropower generation schedule in the 1993 draft manual purported to authorize reduced hydropower generation compared to the prior 1962 Allatoona manual and actual operations under that manual. This reflects a continuing trend of decreasing hydropower generation releases while increasing the Corps' discretion to hold as much water in the reservoir as possible until the wet season, when it is not normally needed either for hydropower generation, downstream water quality, or navigation. This trend, perpetuated in Plan G, is damaging to Alabama Power's interests and the operations of its downstream projects.

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in pool elevations at Weiss would certainly have a detrimental effect on recreation, which the Corps has not evaluated.

[3] We understand the Corps' No Action Alternative to represent the baseline for purposes of further NEPA analysis. The baseline, as articulated in the No Action Alternative, represents a benchmark "enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives." 46 Fed. Reg. 18,026 (Mar. 23, 1981) (question 3). This allows a federal agency to "compare the potential impacts of a proposed major federal action to the known impacts of maintaining the status quo." *Ass'n of Pub. Agency Customers, Inc. v. Bonneville Power Admin.*, 126 F.3d 1158, 1188 (9th Cir. 1997). A No Action Alternative is a required element of the alternatives analysis under NEPA, and an accurate baseline is necessary to measure the effects of alternative actions. 40 C.F.R. § 1502.14.

The 1993 draft Allatoona Manual provides that "the Allatoona project will be operated to provide hydroelectric power and to maintain a continuous release of at least 240 cfs during non-generating periods," ensuring "increased flow downstream" during low-flow periods. *Id*. at A4-2. In addition to mandatory continuous releases of 240 cfs, the Corps' 1993 draft Allatoona Manual sets forth guidelines for hydropower operations. The 1993 draft Allatoona Manual establishes a top of conservation pool curve of 840 feet msl during the summer. *Id*. at A4-3. Chart 1-11 shows two operational zones to guide the Corps' hydropower operations during the summer, referred to as Zone 1 and Zone 2. *Id*. at Chart 1-11. "A minimum generation of 2 hours/day is allowed if the pool is in Zone 2. Zone 1 represents more normal circumstances and maximum generation would normally be two to six hours per day." *Id.* at A5-4.

The Corps' modeling of the baseline assumes for Zone 1 only two to four hours of generation, instead of the two to six hours specified by the current draft manual and in Zone 2, the Corps' model assumes zero to one hour of generation, with the assumed one hour of generation only in the top 20% of Zone 2, and only minimum flow below that. The modeling of Plan G, on the other hand, assumes in Zone 1 four hours of generation except in September to November, when hydro-generation is reduced by 50%; and in Zone 2, the model assumes three hours of generation except in September to November, where a reduction of 50% is also assumed; and in Zone 3, 0 to two hours of generation is assumed, again with the 50% reduction in September to November. The model for Plan G does not include the discretion not to generate at all (regardless of zone) even though the manual includes this option. In Plan G, minimum hydropower generation releases are reduced from two hours to 0 in Zone 1, with similar provisions authorizing no hydropower generation releases in Zones 2-4. While the Corps states in the DEIS that "any alternative with a significant adverse impact to hydropower would not be carried forward," DEIS at 4-50, it is unclear as to how hydropower reduction at Allatoona could not be significant if the Corps exercises its discretion to cut the hydropower release to 0 hours in all zones. In fact, the Corps states that recreation levels and water conservation are both priorities, suggesting that the flexibility to cut back on hydropower could be implemented often.

To Alabama Power's knowledge, the 1993 draft Allatoona Manual was never properly finalized or subjected to a full NEPA analysis. The Corps' 1962 Reservoir Regulation Manual for the Allatoona Reservoir, the last reservoir regulation manual properly finalized and adopted, specifies an even greater emphasis on hydropower generation and downstream flow support. The 1962 manual provides that the principal purposes of the Allatoona Reservoirs are flood-control and power. Mobile District, Corps of Engineers, Alabama-Coosa River Basin Reservoir Regulation Manual, Appendix A, at A-6 (Rev. 1962). The increased stream flow created by power production in low-flow seasons "increases the power production at the Alabama Power Company plants on the Coosa River and aids navigation on the Alabama River." *Id*.

The Regulation Plan found in the 1962 Allatoona Manual provides that Allatoona "will be operated as a peaking plant for the production of hydroelectric power and during off-peak periods will maintain a flow of about 200 cfs through the service unit." *Id*. at A-12. The 1962 Allatoona Manual further provides that the reservoir's power production schedule will be conducted in accordance with the terms of a contract negotiated and administered by

Southeastern Power Administration. *Id*. This hydropower generation is required under the 1962 Allatoona Manual until the reservoir reaches its minimum power pool of 800 feet elevation. *See id*. at A-18.

In short, an adequate NEPA analysis should consider the Corps' operations under the last final, approved Allatoona Manual and the hydropower generation schedule described therein. Furthermore, the Corps must establish a baseline consistent with what is actually required in its manuals rather than the informal ad hoc generation schedules used by the Corps more recently. The Corps' analysis fails to establish an accurate baseline and does not evaluate the true impact of the Corps' Plan G, which is a greatly reduced potential for hydropower generation releases at Allatoona.

IV. The DEIS Does not Adequately Consider Economic Impacts to Hydropower

In addition to overstating the amount of hydropower production that could occur under Plan G, the DEIS appears to understate the economic value of lost hydropower energy. The Corps' DEIS relies on the EIA's 2010 Annual Energy Outlook Report (AEO2010), which does not provide energy prices beyond Year 2035, and then assumes constant pricing during Years 2036 through 2060. This 25-year period of increasingly valuable hydropower energy production is simply ignored in the Corps' analysis. Also, because energy prices vary between different regions of the country, the Corps should have used their power marketing partner (SEPA) to obtain forecasted energy prices in this region where this energy is sold. The Corps also does not account for a number of variables that could have a profound effect on future energy prices, which reduces confidence in the study results. Depending on how issues affecting future energy prices develop, the value of hydropower could be 50% greater than shown in Table 6.6-5. The Corps should perform a sensitivity analysis to provide boundary conditions for impacts on future energy values. The Corps' statement that "[b]ecause current Corps policy does not allow the use of real fuel cost escalation, the values were assumed to apply over the entire period of analysis," (page 6-171), ignores a significant impact in determining capacity values and must be taken into account for the analysis to be considered reasonable.

The Corps also states "significant disparities would be expected in Jordan Dam and Lake and Bouldin Dam" as a result of the Alternative Plans. This is surprising. The Corps should explain the reason for the large loss in energy benefits at Bouldin and the increase in energy benefits at Jordan. Furthermore, the Jordan/Bouldin loss is shown as \$2.0 million. This compares to the entire system loss of \$2.6 million. An explanation is required as it appears erroneous that one project (Jordan/Bouldin) would incur such a disproportionate amount of the total losses.

While likely understating the annual lost hydropower energy production for the system and individual projects, Table 6.6-11 states that the No Action to Proposed Action comparison shows that lost energy benefits are approximately \$ 2.6 million per year, and that Alabama Power bears 90% of those losses, or \$2.4 million annually. This is expected to occur on average every year for the next 50 years, or a loss of some \$120 million, even assuming constant replacement energy pricing.

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V. The DEIS Does not Adequately Consider Impacts to Water Quality Downstream

In general, Alabama Power concurs in the Corps' choice of models for planning-level analysis of water quality issues. However, we question specific aspects of the Corps' methodologies. As a result, the DEIS understates certain negative impacts to points downstream.

A. Review of the HEC5Q Water Quality Model and the Corps' Methodologies

Alabama Power contracted with Dynamic Solutions of Knoxville, TN, to assist with the evaluation of the HEC5Q model and conclusions drawn by the Corps. Upon request, the Corps provided the HEC5Q model, ResSim model and input files for both. The Corps also provided access to their modeling contractor to answer technical questions about extracting data from the HEC5Q output. Included as an attachment to Alabama Power's comments is a memorandum from Dynamic Solutions, which includes detailed discussions of flow issues and water quality.

Comparing flow output of the ResSim model Baseline case to actual flow data from 2000 to 2008 (located on publicly available websites of the U.S. Geological Survey ("USGS")) showed reasonable statistical agreement overall. However, one important exception is that at the very lowest flow, the model showed a 12% lower flow than history. Dissolved oxygen ("DO") data used to verify the HEC5Q baseline was taken from the USGS state line gage data and Alabama Power historical measurements within the Weiss powerhouse forebay. The DO output from the HEC5Q model at the state line was plotted against time in a graph similar to Figure 3-45 in Appendix D (see Figure X). The two graphs compare favorably, indicating Alabama Power was able to replicate the Corps' model runs and, subsequently, the results presented in the DEIS. However, Alabama Power has concerns that the DEIS and Appendix D place too much emphasis on median and average values; therefore, in our analysis, we paid special attention to the growing season (May-October) and low flow conditions.

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Figure X

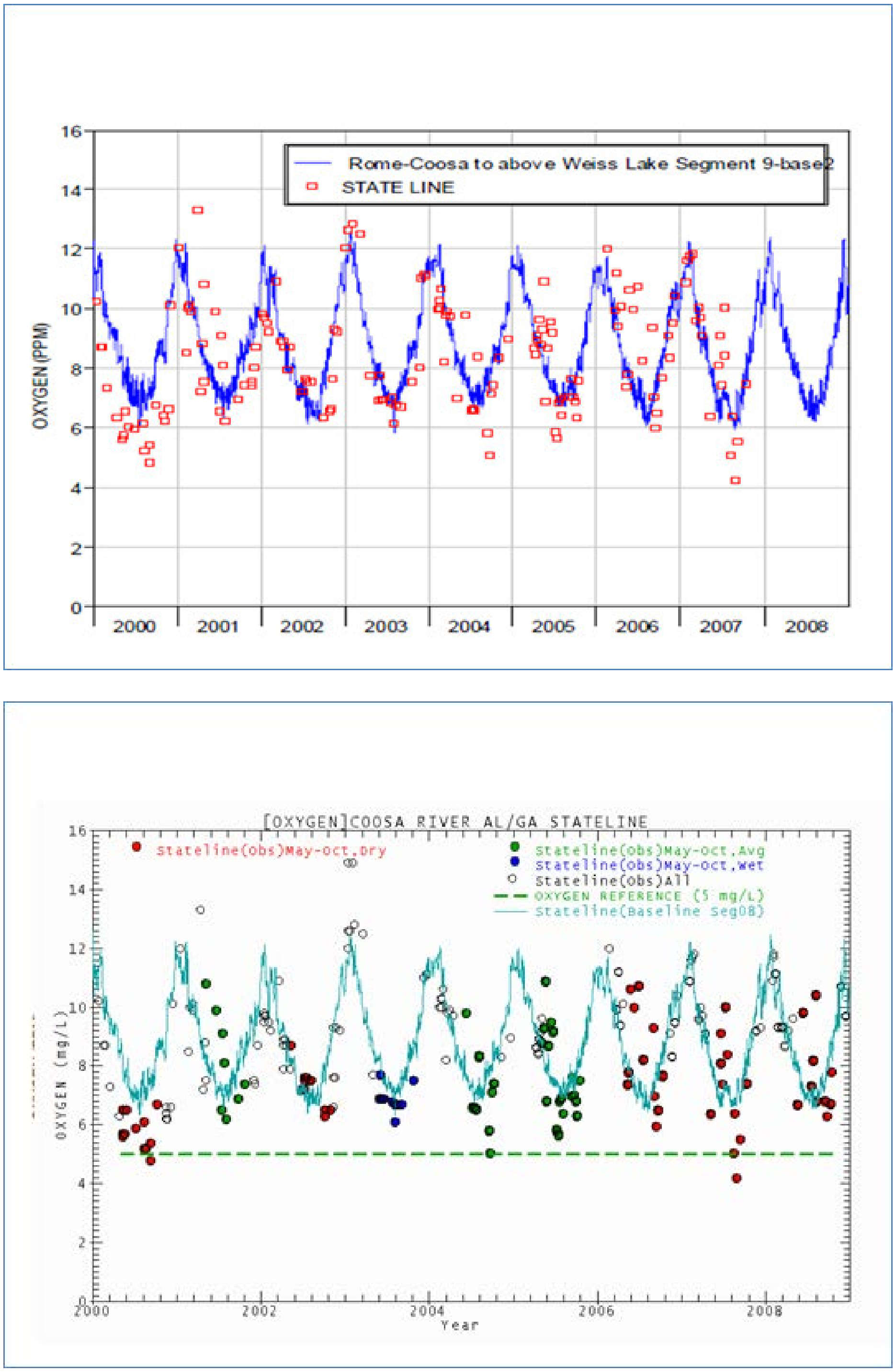

Figure X: Time series of observed and simulated (baseline) oxygen in the Coosa River at AL/GA Stateline. Upper panel is from COE Figure 3-45 of Appendix D, DEIS. Lower panel is model data extracted from HEC-5Q by Dynamic Solutions.

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Alabama Power has several issues with the Corps' methodologies in using the HEC-5Q model to evaluate impacts to water quality in the ACT Basin. First, the Corps should provide a summary list of assumptions considered and input data used in the study along with a discussion of the expected implications. Also, good modeling practice demands a careful and systematic treatment of both model sensitivity and uncertainty, and the Corps should address both.

More fundamentally, the Corps' presentation of data obscures the worse-case water quality scenarios, which is what matters most from the perspective of water quality. The DEIS presents longitudinal profiles of model results only as the relative difference between the baseline and alternative plans. The DEIS also provides anticipated effects of the proposed alternative on the *median* values of water quality constituents. Compliance with water quality criteria, however, is rarely based on a median value; therefore, an analysis based on median values does not provide adequate information to evaluate the worst-case consequences of the proposed alternative. For those with compliance obligations for constituents such as DO or chlorophyll, the worst-case scenario in the model results, in the upper- and lower-end 5th percentile statistics, is the most important. Because the Corps relied on median values, it is virtually certain that actual conditions will be worse than stated in the DEIS and Appendix D.

Also, the DEIS clearly states (page 6-77) that the HEC5Q model has not been developed (or calibrated) to reproduce historical water quality records. The intent of the model instead was to capture the wide range of hydrologic conditions that influence water quality. The water quality model was developed to represent the effect of streamflow, external loads, and reservoir operations under average, wet and dry hydrologic conditions observed during the 2000–2008 period. As a result, the model performance under "worst-case" May-October, dry year hydrologic conditions demonstrates that the water quality model consistently overpredicts the lower quartile of observed oxygen records at the Alabama-Georgia state line and in Weiss Lake near the powerhouse. Therefore, simulated predictions of the potential impact of the Corps' Plan G on DO under "worst-case" hydrologic conditions are unduly optimistic.

B. Downstream Water Quality Degradation

"[T]he Corps has an objective to ensure that water quality, as affected by a Corps project and its operation, is suitable for project purposes, existing water uses, and public safety and is *in compliance with applicable federal and state water quality standards*." DEIS at 1-23 (emphasis added). Clean Water Act ("CWA") section 313 requires federal agencies to comply with federal and state water quality requirements to the same extent as other entities. 33 U.S.C. § 1342. The Corps' own regulations similarly state that "Federal facilities shall comply with all Federal, state, interstate, and local requirements in the same manner and extent as other entities." ER 1110-2-8154, ¶ 6.a (1995). The same regulations also provide that where "a water resource supports a diverse, productive, and ecologically sound habitat," the Corps must maintain and protect those waters "unless there is compelling evidence that to do so will cause significant national economic and social harm." *Id.* Further, "*No degradation is allowed* without substantial proof that the integrity of the stream will not diminish." *Id.* (emphasis added).

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The Corps' proposal makes it more difficult for Alabama Power and municipal and industrial stakeholders to meet water quality requirements and other obligations under low-flow scenarios. Unfortunately, the Corps has not adequately evaluated water quality impacts, including the implications for regulated entities. The DEIS rejects any responsibility for adverse water quality impacts in Alabama and, instead, suggests that the Alabama Department of Environmental Management ("ADEM") may simply tighten permit requirements. It is contrary to the Corps' responsibility as a federal agency to dismiss the water quality consequences of its actions as someone else's problem. Even if that stance were lawful, which it is not, the Corps should acknowledge the reality that stricter discharge limits would, at most, only respond to water quality conditions. They would not repair the damage caused by reduced flows.

C. Effects on Downstream DO and Other Water Quality Parameters

The DEIS states that water quality impacts due to the Corps' proposed alternatives are "negligible" over the modeled period. However, the DEIS elsewhere recognizes that the Corps' proposal will result in adverse water quality conditions (including reduced DO) in Alabama Power's Weiss lake, with the assumptions made by the Corps on hydropower production in individual zones of the ResSim model. Given the Corps' proposal to reserve discretion as to hydropower production at Allatoona, there is potential for even worse effects on water quality. The DEIS must consider water quality impacts downstream if the Corps chooses to reduce hydropower generation within a foreseeable range.

Alabama Power has completed outstanding tasks associated with the process of relicensing the Coosa River Project. We are aware of no further action necessary prior to FERC issuing the license. In other words, the new license is reasonably imminent and clearly foreseeable. The certification issued by ADEM under CWA Section 401 for the new license requires Alabama Power to meet the state water quality standard (4.0 mg/l DO) at all times when water is being released through the turbines. In its analysis of the HEC5Q model, Alabama Power incorporated historical Weiss forebay profile data into the model. That showed that the model failed to predict low DO conditions in the subsurface layers. This has implications on Alabama Power's ability to meet its water quality requirement. Current designs for an aeration system that is necessary for compliance are based on observed, historical data, and any change to those designs or system will result in additional cost.

VI. The DEIS Does not Adequately Consider Impacts to Fish and Wildlife

Endangered Species Act ("ESA") section 7 requires the Corps to make sure any proposed action does not jeopardize the continued existence of a species listed as threatened or endangered ("T&E") or adversely modify designated critical habitat of such a species. *See* 16 U.S.C. § 1536(a). The Corps is required to make this determination in consultation with the U.S. Fish and Wildlife Service ("FWS").

A. Effects at Alabama Power Reservoirs and Further Downstream

Alabama Power's Coosa Project license application proposes a minimum flow in the Weiss Bypass, as described in the Weiss Bypass Adaptive Management Plan ("AMP") and in FERC's Coosa final Environmental Assessment. The DEIS mentions this enhancement but does not analyze the impacts of proposed operations on the AMP, including effects on listed T&E species.

The AMP bases the minimum flow for the Weiss Bypass as a percentage of the flow at the Mayo's Bar Gage, which is basically the flow at the Alabama-Georgia border. The percentage of the state line flow that would be diverted to the Weiss Bypass changes by month. When working with stakeholders to develop these percentages during relicensing, Alabama Power used historic and existing inflows as the basis of discussions. Changes in the guide curve and action zones at Allatoona Reservoir that would change the timing of downstream flows—shifting flows between months or reducing overall flows through water allocations—would ultimately change the flows diverted into the Weiss Bypass. This has important implications for a number of ESA-listed T&E species. Critical habitat has been designated immediately downstream of the Weiss spillway for several endangered species, including the Coosa moccasinshell, Georgia pigtoe, interrupted rocksnail, ovate clubshell, southern acornshell, southern clubshell, southern pigtoe, triangular kidneyshell, and upland combshell, as well as the threatened fine-lined pocketbook.

In addition to impacts to the Weiss Bypass, the Corps' proposal is likely to reduce state line flows, especially during the dry times of year when those flows are needed the most. Reduced state line flows may affect protected species and designated critical habitat in the Coosa and Alabama Rivers further downstream. As one example, during extreme drought, Alabama Power is authorized to lower Lay reservoir to conserve water at upstream storage projects while continuing to meet downstream water demands. If flows at the state line are reduced, exacerbating drought impacts downstream, Alabama Power may have to lower Lay reservoir more often. As evaluated through the ESA Section 7 consultation for Alabama Power's pending Coosa license, federally listed species in Lay, such as the tulotoma snail and rough hornsnail, are affected by the lowering of Lay reservoir. The DEIS does not adequately discuss impacts on federally protected species or the aquatic community in general.

B. Execution of the Corps' Fish and Wildlife Obligations

In the course of relicensing its various reservoir projects, Alabama Power has extensive experience in accounting for ESA-listed T&E species, and ensuring our operations are protective of those species and in compliance with the ESA. However, the Corps' explanation of its consideration of listed species raises concerns of whether the Corps is taking its Section 7 obligations seriously. For example, the Corps asserts that "dedicated studies to address the impacts of the proposed operational changes on protected species . . . are beyond the scope of this effort." DEIS at 6-156. Presumably, "this effort" refers to the effort to determine flows that originate from Corps reservoirs (i.e., the proposed action). To suggest that consideration of listed species is somehow beyond the scope of the Corps' obligations in connection with its proposed reservoir operations in the ACT River Basin is clearly contrary to ESA Section 7. *See* 16 U.S.C. § 1536(a).

The Corps' review of particular species includes significant errors. For example, the Corps refers to the interrupted rocksnail and rough hornsnail as proposed for listing, DEIS at 2-225, when both species were listed in November 2010. The Georgia pigtoe, listed in 2010, is not described in the Corps' narrative explanation, though it does appear in a table. DEIS at 2-220. A statement that "recent surveys failed to collect any live specimens" of the southern clubshell in the Weiss bypass is not accurate. *See* DEIS at 2-223. This suggests that, in the context of developing and publishing this draft proposal, the Corps has not confirmed which listed species are in the affected area, or accounted for the effect of the proposal and action alternatives on those listed species.

The Corps indicates it has consulted with stakeholders, including the resource agencies, on impacts to threatened and endangered species and other natural resources. Draft WCM at 8-1. However, the Corps has not initiated Section 7 consultation. DEIS at 1-10. Correspondence from the resource agencies indicates their concerns with the process. For example, in the Corps' report of February 2013, included in Appendix B, the Corps quotes the following comments provided by the FWS: "the proposed alternative does not fully address many of the Service's consultation concerns in the basin"; "The Service does not fully support the Corps' Proposed Action Alternative"; and "the proposed alternative cannot fully address many of the Service's conservation concerns in the basin." On critical points, the Corps does not provide substantive responses. For example, under "Flow Dynamics," the Corps disclaims responsibility for water quantity and quality downstream from its storage reservoirs. Similarly, some of the Corps' comments in response to FWS's concerns with respect to DO and temperature are essentially argumentative or dismissive.

While not necessarily agreeing with FWS in every respect, Alabama Power generally concurs that the flow reductions and impacts to water quality inherent in the Corps' proposal could adversely affect listed T&E species. The Corps must review the effects of its proposal, adjust proposed operations accordingly, and initiate appropriate consultation with FWS.

VII. The DEIS Does not Adequately Consider Impacts to Navigation

As the Corps acknowledges, "The Congressionally authorized purposes for the Allatoona Project as specified in the original project authorizing documents are flood risk management, hydropower, and *navigation*." Draft Water Control Manual, App. A, at 7-1 (emphasis added). The Corps uses the reservoir for other purposes only through "nationwide authorizing legislation," that is, statutes of general applicability rather than those that specifically authorize this project. *Id.* Likewise, Congress also authorized Carters for "flood risk management, power generation, *navigation* and other purposes as outlined in House Document 414, 77th Congress." Draft WCM, App. H, at 3-1 (emphasis added).

Navigation is not only a primary authorized purpose of the Corps' projects in the ACT River Basin; it is also historically important for commerce in Alabama. In the words of the Corps, "Navigation is an important use of water resources in the ACT Basin. The Alabama

River, from Montgomery downstream to the Mobile area, provides an important navigation route for commercial barge traffic, serving as a valuable regional economic resource." Draft WCM at 7-10. Historically, commercial navigation supported timber, wood products, mining activities, and agriculture, peaking at 4.1 million tons in 1986.

A. Operation of Corps Projects for Navigation

The Corps has failed to articulate a rational basis for refusing to operate Carters and Allatoona in the interest of navigation. According to the Corps, "Historically, navigation has been supported by releases from storage in the ACT Basin." Draft WCM at 7-12. In the past, the Corps has operated Carters and Allatoona to support navigation. However, the Corps now takes the position that *all* flow augmentations from storage for downstream navigation are to come *exclusively* from Alabama Power reservoirs, with absolutely no support from Carters and Allatoona beyond whatever flow is provided for other reasons. The Corps states that Allatoona and Carters, "while originally authorized to support downstream navigation, are not regulated for navigation purposes because they are distant from the navigation channel, and any releases for that purpose would be captured and reregulated by APC reservoirs downstream." Draft WCM, App. H, at 7-19. The Corps also states, with respect to Allatoona, "There are no specific operations for navigation since releases are captured by Alabama Power Projects downstream." Draft WCM, App. A, at 3-2. In other words, the Corps refuses to support navigation specifically, based on distance and Alabama Power's intervening reservoirs. Neither justification is valid.

Without question, the water that flows from Carters and Allatoona generally makes its way to the Alabama River. A passing comparison to the Apalachicola-Chattahoochee-Flint ("ACF") River System demonstrates the invalidity of using distance as a rationale not to supplement flows. There, the Corps has flow obligations for the conservation of T&E species found in the Apalachicola River, even though the Apalachicola River is located approximately 348 miles downstream from the Buford Dam. Allatoona and Carters are located similar distances from the head of navigation on the ACT system—approximately 334 miles and 360 miles, respectively.

In any event, Congress has stipulated that Carters and Allatoona are hydraulically connected to navigation on the Alabama River. That is a necessary conclusion from the original statutory authorizations, which were based on the Corps' own engineering analyses.

It is also unreasonable to suggest that Alabama Power would thwart efforts to support Alabama River navigation with releases from Carters and Allatoona. Such a notion is contradicted by the long history of coordination between Alabama Power and the Corps to meet downstream flow needs. Beyond that, such a position is also inconsistent with the Corps' claim of authority to regulate Alabama Power reservoirs for navigation. Without conceding the nature or scope of the Corps' regulatory authority in that respect, it is logically inconsistent and, therefore, arbitrary and capricious for the Corps to assert that it may regulate Alabama Power reservoirs for navigation, while at the same time withholding flows on the rationale that Alabama Power would capture and hold the water in its reservoirs.

B. Channel Maintenance Issues

The Corps should integrate channel maintenance activities with reservoir operations. The Corps indicates that it ran model simulations to identify periods of navigation availability assuming depths of 7.5 feet and 9 feet, based on a 34-year range of historic inflows, under baseline conditions and three proposed alternatives. DEIS at 6-67. This reflects an understanding that channel availability depends on both flow and the Corps' program of dredging and other maintenance activities. The better maintained the channel, the more the channel is available for commercial navigation relative to a given flow level. In other words, channel maintenance facilitates the same navigation benefit with less flow.

We understand that channel dredging maintenance and reservoir operations are different disciplines. We also agree that there are factors influencing the Corps' ability to maintain the Alabama River channel that are beyond the Corps' ability to control, most notably funding levels provided by Congress. Draft EIS at 1-17 – 1-18. Nevertheless, the relationship between dredging and flow is critically important for commercial navigation and, therefore, unavoidable.

We urge the Corps to maintain an active program of channel maintenance and to account for channel conditions in determining the extent of navigation flows. When the Corps does not adequately maintain the channel, additional flow is required to maintain navigation. If the Corps fails to maintain the channel, and especially if the Corps does not use its own projects to augment flow, it is unreasonable (and, therefore, beyond the Corps' statutory authority with respect to the Coosa River reservoirs) to place the full burden for navigation flows on Alabama Power reservoirs.

C. Navigation MOU

The Draft WCM states that "flows may be reduced if conditions warrant in accordance with the navigation plan memorandum of understanding between the USACE and APC." Draft WCM at 7-11. No such memorandum exists at the present time. Reference to this as a basis for the Corps' operations is inappropriate. Procedurally, we expect that if the Corps anticipates a need for support from Alabama Power reservoirs for navigation support, the Corps will provide that request to Alabama Power, and we will respond to the Corps' request. *Cf.* Draft WCM at 7-15. And if, as the Corps suggests, navigation is unavailable due to lack of dredging or other issues, there is no justifiable reason for Alabama Power to continue making navigation flow releases. The Corps must formally recognize that Alabama Power has no obligation to continue making navigation support releases if the Corps has failed to maintain the navigation channel. In any event, these are the kinds of details we would anticipate working out through a memorandum of understanding, assuming such a memorandum can be mutually agreed to.

VIII. The Corps' DEIS Contains Erroneous Assumptions about Alabama Power's Projects

Of great concern to Alabama Power, the Corps' DEIS makes a number of erroneous assumptions about Alabama Power's projects or otherwise fails to consider proposed changes at Alabama Power's projects relevant to the Corps' revision of the ACT manuals.

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A. Alabama Power's 4,640 cfs Flow Commitment

First, the Corps' baseline does not account for the qualified informal commitment by Alabama Power in the 1972 letter agreement that the 4,640 cfs flow will be provided "assuming of course that our upstream storage dams are above minimum rule curve elevations," which Alabama Power had always understood to be winter pool elevations. Instead, the Corps' baseline assumes Alabama Power is required to provide a flow of 4,640 cfs at Montgomery at all times, without qualification. Alabama Power's agreement to provide flows of 4,640 cfs was a voluntary, qualified commitment between Alabama Power and the Corps, not a regulatory obligation. In fact, in 2007, Alabama Power obtained concurrence from the Corps to reduce the 4,640 cfs flow by 20% as a result of significant drought.

When drought conditions worsened, Alabama Power reduced the flow from its Coosa and Tallapoosa projects even more than had been approved by the Corps. The modeling of Plan G shows much higher elevations at Martin during the 2007–2008 drought than the baseline model, which draws the reservoir down to 452.4 msl because of an assumed strict adherence to a 4,640 cfs flow. By incorrectly assuming a minimum flow of 4,640 cfs with no cutback, the baseline is skewed by showing a much greater improvement over baseline with Plan G than actually would occur. Also, this assumption could skew the 70-year average elevations as well as exceedance curves found in Section 6 of the DEIS for the baseline and Plan G. These data were used to conclude the overall impacts to lake levels based on the changes. The baseline, therefore, cannot assume a constant flow at Montgomery of 4,640 cfs provided by Alabama Power under all conditions.

Furthermore, the 4,640 cfs flow commitment was a calculated flow based upon certain assumptions—including assumptions about the Corps' operations upstream.[4] As explained in a 1987 Supplemental Environmental Impact Statement, it was expected that Allatoona and Carters would release a combined average minimum flow above 1,000 cfs. The Corps itself subsequently recognized in its 1993 manual for Allatoona that "[t]he Allatoona Project releases can often provide a significant portion of this [4,640 cfs minimum navigation] flow." The Corps' baseline assumptions concerning Alabama Power's 4,640 cfs flow commitment must also include this corresponding commitment from the Corps. Any evaluation of alternatives that eliminate the Corps' navigation flow support from Allatoona must account for this change.

The Corps' DEIS also expands the purposes for which this commitment was originally made. The Corps states that this flow commitment "also provides sustained flows for fish and wildlife conservation," as well as minimum water quality standards. But Alabama Power never agreed to voluntarily provide anything other than a *navigation* flow. Alabama Power's 4,640 cfs commitment was never intended for any other purpose, and the Corps has no authority to require

[4] DEIS ES-12 states that 7Q10 flows at Montgomery are 4,640 cfs. Historically, the Corps has stated that 7Q10 at Montgomery is 5,200 cfs. (See April 18, 1972 letter from Col. Harry Griffith to Alabama Power.)

Alabama Power to make releases to support fish or wildlife conservation.[5] Conversely, the Corps states that it has no obligation to make releases from Allatoona to support downstream water quality or fish and wildlife conservation. The DEIS' baseline, therefore, must be revised to accurately reflect the voluntary and qualified nature of Alabama Power's commitment and its limited purpose.

B. Alabama Power's Conservation Storage

The Corps' DEIS also makes faulty assumptions about Alabama Power's Martin project. While there is no Corps manual for Lake Martin, the Corps makes certain assumptions about Lake Martin in establishing the baseline conditions of the ACT system and evaluating various proposed alternatives. For example, the Corps' DEIS states that Lake Martin contains over 48% of the total conservation storage in the ACT Basin. This assumes an elevation of 446' as the bottom of Lake Martin's conservation storage, which is an inaccurate assumption. Elevation 446' represents an operational limitation of the turbines at Lake Martin. However, Alabama Power operates Lake Martin with a normal winter pool drawdown of 481'. The DEIS Glossary defines "conservation pool" to mean "the portion of reservoir storage usually reserved for power production and water supply." DEIS 11-2. At Martin, Alabama Power does not "usually reserve" storage down to 446' for power production or water supply. Though Alabama Power can theoretically generate to as low as elevation 446', the need to utilize storage in Lake Martin to that level is limited to circumstances so extreme that even the drought of 2007 did not justify reaching pool elevations within even 30 feet of this level.[6]

Furthermore, if Alabama Power were to draw Lake Martin down as far as the DEIS' baseline assumes, numerous adverse effects would occur, including 1) lack of adequate storage to support electrical system reliability;[7] 2) difficulty raising Lake Martin back to normal elevations; 3) water supply for various systems, including municipal water authorities, would be

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[5] The DEIS also suggests that Alabama Power's 4,640 cfs flow commitment is expressly included in Alabama Power's FERC licenses. That is not the case. FERC mandates only that Alabama Power support navigation as prescribed be the Corps. Furthermore, the Corps' authority at the Harris project is in 33 CFR 208.11, but the DEIS says the authority is at 33 CFR 208.65, which does not exist.

[6] There are several other statements throughout the DEIS concerning operations or other features of Alabama Power's projects in the basin. For example, the DEIS' descriptions of Alabama Power's projects suggest that only Lay and Mitchell have "storage for water quality." It is not clear what the Corps means by "storage for water quality" and why the Corps deems Alabama Power's other reservoirs to not have any "storage for water quality." It is not Alabama Power's intention in these comments to identify or correct all of those statements.

[7] This capability is important not just at Martin but at all Alabama Power reservoirs in the ACT basin. Alabama Power relies on our hydroelectric generation for fast response to support the electrical system reliability. In order to support this capability, the hydro turbines are always spinning and ready to load. It is critical to have adequate water available in storage to operate and maintain critical generation for the duration of electrical system emergencies.

seriously compromised because of intake locations; 4) detrimental impacts to recreation; and 5) unknown environmental effects. Accordingly, the Corps' DEIS evaluation of the draft ACT Manual is based on a faulty premise concerning "conservation storage" in Lake Martin, which should not be relied upon in determining the reasonableness of the draft ACT Manual. The modeling indicates that under current baseline conditions, Lake Martin would have fallen to about elevation 452.4 in 2007. However, in actuality, Martin did not fall to 452.4' in 2007, in part, because Alabama Power reduced the 4,640 cfs flow, resulting in a low elevation of only 475.5' during those historic drought conditions. Alabama Power made similar flow reductions in response to drought conditions in 1986 and 1988. Interruptions in the 4,640 cfs flow are very much a part of the existing baseline.

C. Pending FERC Relicensing of Alabama Power Projects

Alabama Power's Coosa River Project (which includes all seven of its developments on the Coosa River), and Martin Project on the Tallapoosa River are in the midst of license renewal proceedings with FERC. The relicensing process for the Coosa River Project began in 2000, and culminated in the filing of an application at FERC in 2005. As an interested stakeholder, the Corps participated in the relicensing process, including participation as a cooperating agency, with FERC as the lead agency, in the development of an environmental assessment for the Coosa application. FERC issued a final environmental assessment for that project in December, 2009. Because the 2005 relicense application contained proposals with respect to guide curve changes at the Weiss and Logan Martin developments, FERC's environmental assessment evaluated these guide curve changes. Currently, all required filings have been completed, and Alabama Power is waiting on FERC's final decision on the relicensing of the Coosa River Project.

Similarly, Alabama Power began the Martin relicensing process in 2006, and filed an application with FERC in June 2011. The Corps as an interested stakeholder was notified and requested to participate in the preliminary and ongoing relicensing proceedings. One of the most significant issues studied and evaluated during the pre-license application process was the possibility of changing the Martin guide curve to increase the winter pool elevation. Based on these studies, Alabama Power included a specific proposal for a new guide curve in the final application to FERC. FERC is currently preparing an environmental impact statement, which, among other things, evaluates the proposed guide curve change for Martin Dam.

i. Lake Martin's Guide Curve

The Corps' DEIS assumes for Plan G that "APC projects on the Coosa and Tallapoosa rivers would continue to operate under their current FERC licenses with specific operational requirements." DEIS ES-27. The Corps then states (at DEIS 2-49) that Alabama Power "has expressed intent to evaluate the effects of a change in the winter guide curve" and that "APC will evaluate the possibility" of raising the winter guide curve. It also declares that "the Corps will participate in the FERC relicensing process for Lake Martin with respect to potential effects on the federal projects in the ACT Basin." Though the Corps acknowledges that the current Martin guide curve is likely to change, the DEIS does not include any evaluation of Alabama Power's proposed guide curve change for Martin Dam.

Given that Alabama Power has formally requested FERC approval of a specific guide curve change for Lake Martin, if the Corps thinks there may be any "potential effects on the federal projects in the ACT Basin," the DEIS should evaluate and consider those potential effects as part of its cumulative effects analysis. However, the DEIS does not do this, and its failure to evaluate this proposed operational change at Martin Dam is a substantial oversight and a major flaw in the DEIS. The Corps must consider any potential effects of the Martin guide curve changes on the federal projects as it evaluates the changes it is proposing in the draft ACT Manual.

ii. Weiss and Logan Martin's Guide Curves

Similarly, the Corps' DEIS fails to consider the proposed guide curve and associated operational revisions for Weiss and Logan Martin, even though these changes are under consideration as part of FERC's relicensing process for Alabama Power's Coosa River Project. The Corps participated as a cooperating agency in FERC's environmental assessment for the Coosa relicensing and that document evaluates the specific guide curve changes for Weiss and Logan Martin. Nevertheless, the Corps' DEIS disregards both the extensive and exhaustive work that was completed in consultation with the Corps' Mobile District and the proposed guide curve changes and flood control plan changes that are part of the ongoing Coosa relicensing process.

iii. Neely Henry

The Corps' DEIS also assumes a winter pool elevation of 505' at Alabama Power's H. Neely Henry project, based on the current manual for H. Neely Henry. However, the Corps elsewhere states that conditions as of 2009 are used as baseline. But in 2009, H. Neely Henry was being operated with a winter pool elevation of 507', based on variances approved by the Corps and FERC. For consistency, the Corps should adjust its baseline to account for Henry's operations as of 2009. Furthermore, the statement at DEIS 2-38 that "There is no dedicated flood risk management storage for [Neely Henry Lake]" is perplexing. Neely Henry certainly has a seasonal drawdown for flood control benefits, both under the former guide curve and the guide curve made permanent in the new Neely Henry Reservoir Regulation Manual. Just two pages prior, (DEIS 2-36), it is stated that "H. Neely Henry Lake is used for hydropower generation, <u>flood risk management</u>, navigation flow augmentation . . . ."

D. Logan Martin and Weiss Flood Easement

The DEIS also includes several factually incorrect statements concerning Alabama Power's flood easement at Logan Martin. At DEIS 3-9, the Corps states: "During development of the WCM updates, coordination between the Corps and APC revealed that APC does not have sufficient real estate interests (flood easements) to support flood risk management operations at Logan Martin and Weiss Lakes per existing manuals and FERC licenses." The DEIS says further that "[t]here are no flood easement issues with the APC projects, H. Neely Henry Lake, and R.L. Harris Lake. Therefore, WCM updates for those projects are included in this proposed action." This latter statement indicates very clearly that "flood easement issues" at Logan Martin and Weiss was the Corps' primary reason for not updating the Logan Martin and Weiss manuals at this time.

To be clear, Alabama Power has all of the necessary real estate interests and flood easements at Logan Martin and Weiss to support flood control operations consistent with the existing Corps manuals for these projects and the existing FERC license, as well as all requirements of Section 5 of Public Law 436, which authorized private development and Federal Power Commission licensing of the upper Coosa. Also, the historical record shows that the Corps was aware of and approved the flood easement elevations acquired by Alabama Power in the 1950s and the reasons for acquiring to these elevations, including for example, the May 18, 1956 and October 16, 1956 correspondence from the Corps of Engineers to the Federal Power Commission, and Article 38 of the original Federal Power Commission license for the Coosa Project. Moreover, neither the Federal Power Commission nor its successor agency, FERC, has ever suggested that Alabama Power has not acquired all of the flood easement storage required by the license. Accordingly, the statement in the DEIS that the amount of flood easement at Weiss and Logan Martin was "recently revealed" does not justify delaying the approval of the rule curve changes and flood control procedures at these projects as proposed in the Coosa license application pending at FERC.

Instead of using the ACT Manual update as an opportunity to address the "flood easement issue," the Corps states that "[t]he FERC licenses could be amended in light of APC's request to modify winter pool levels at the Weiss Lake and Logan Martin Lake projects; however, the No Action Alternative does not include these APC-proposed modified pool levels." DEIS at 5-2. Alabama Power's "request to modify winter pool levels" through the relicense application is the process for making this change. Though it remains to be seen how FERC will address this licensing proposal, it is very likely that no post-license amendment process will be necessary to obtain FERC approval.

IX. Alabama Power Has Requested, but Not Received, Additional Data Necessary to Review the Corps' Analysis and Conclusions for Flood Control Impacts

The Corps did not publish or otherwise make available certain data and modeling that are critical to understanding and validating the Corps' analysis and conclusions. Alabama Power requested this information informally, but the Corps has required Alabama Power to submit a more formal request under the Corps' FOIA procedures. We are aware of no lawful basis under FOIA or otherwise for the Corps to withhold the data we seek.

While there is nothing inherently unlawful about following the FOIA procedures, it does have the practical effect of preventing Alabama Power and other stakeholders from reviewing the data and model in time to provide more detailed comments before the close of the DEIS comment period. We believe further analysis in reliance on this data and model is critical to develop a fully informed opinion as to certain aspects of the Corps' proposal. Assuming the Corps ultimately honors our request, we further request that the Corps allow a reasonable period of time for additional review and public comment. Otherwise, the Corps' reliance on the data itself and the products of model runs using the data would be unlawful under NEPA and the Administrative Procedure Act.

X. Technical and Modeling Issues

A. The Corps' Use of HEC-ResSim

Alabama Power's extensive analysis of its proposed guide curve changes at the Weiss, Logan Martin, and Martin Projects used the HEC-RAS model to route flows in river reaches, among other tools. The Corps however used a different model, HEC-ResSim, for flood control issues at Allatoona and to route flows downstream to Rome. While HEC-ResSim is a good choice for modeling reservoir operational alternatives, evaluating the flood impacts at a downstream location on the river is better accomplished with HEC-RAS because HEC-RAS computes water surface profiles and flood elevations along the river. HEC-RAS also dynamically routes the water through the system and produces more accurate hydrographs.

The critical issue with flooding is river stage height and the simple routing methods that are applied in ResSim do not produce the stage height. Stages at Rome are influenced by more than the flow, including the coincidence/timing of the arrival of peaks from the Etowah and Oostanula Rivers. Previous studies by Alabama Power found that stages at Rome cannot be represented by simple stage-flow ratings. Also, flooding along the river reaches between Rome and the upstream Corps reservoirs is influenced by the local runoff, which can be significant enough to mask the impacts of the Corps operations, depending on the center and size of the storm. During Alabama Power's license renewal application process, Alabama Power submitted to the Corps HEC-RAS modeling covering the area from the Carters and Allatoona reservoirs down to Weiss reservoir. Alabama Power suggested in scoping comments for this ACT Manual process that the Corps utilize the modeling tools already available. Further, in the scoping comments Alabama Power not only suggested the Corps use the available tools but use them to evaluate the proposed changes at Weiss and Logan Martin. The DEIS fails to explain why the Alabama Power HEC-RAS model was not used. If the HEC-RAS model had been used, flooding along river reaches and associated elevations could have been analyzed, rather than using HEC-ResSim to evaluate flow at specific gauges. It is not clear to Alabama Power with the information provided by the Corps that any impacts to flooding at Rome could be properly evaluated.

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It is unclear as to how the Corps plans to use the flood study methodology in any future studies including any additional studies requested by the Corps for the Weiss and Logan Martin proposed guide curve changes. To be clear, we believe that Alabama Power has previously submitted all of the models, studies, etc. necessary to support the operational proposals in the pending FERC relicensing applications for the Coosa Projects and the Martin Project. To the extent that Alabama Power would be expected to do additional studies, more information as well as the hourly HEC ResSim model would have to be made available to properly evaluate various operations.

Finally, the DEIS also states that "In updating water control plans and manuals, the Corps will consider improvements that can be made in managing Allatoona Lake for flood risk management." (DEIS 1-41) However, it is not clear whether or how the Corps has considered improvements in the operation of Allatoona in the interest of flood risk management. Rather, on page DEIS 4-49 there is an unsupported statement that "the Allatoona Lake guide curve would likely result in improved flood risk management operations at Allatoona Lake." However, DEIS 6-121 says "changes in magnitude of flood flows and corresponding channel forming influence of those flows in the Etowah and Coosa Rivers downstream of Allatoona Lake would be considered negligible between the No Action Alternative and the [Proposed Action Alternative] phased guide curve." "Negligible" changes and "would likely result in improved flood risk management" seem to be conflicting characterizations, and neither conclusion appears to be supported by any data. And given that the Corps defines "flood risk management" to be limited to seasonal drawdown, it is difficult to see how the proposed Allatoona guide curve would improve on the flood risk management benefits of Allatoona Lake.

B. Flood Risk Management vs. Flood Control

Throughout the DEIS, the phrase "flood risk management" is used as an apparent substitute for the more commonly used phrase "flood control." For example, the DEIS states on page ES-5 "P.L. 83-436 stipulated that the license(s) require provisions for flood risk management storage and for future navigation, with operation for those purposes performed in accordance with reasonable rules and regulations of the Secretary of the Army." However, the text of that statute doesn't mention "flood risk management." Rather, Section 9 of P.L. 83-436 says "The operation and maintenance of the dams shall be subject to reasonable rules and regulations of the Secretary of the Army in the interest of flood control and navigation." Nevertheless, DEIS 5-3 says "WCMs developed for the APC projects are used to guide operations for flood risk management and navigation" and "the Corps is responsible for the review and approval of the flood risk management plans . . . for the APC storage projects Weiss, H. Neely Henry and Logan Martin Lakes on the Coosa River and R.L. Harris Lake on the Tallapoosa River."

If the Corps intends for "flood risk management" to mean the exact same thing as "flood control," it should make that clear statement somewhere in the DEIS, because if the two are not exactly the same thing, then the use of "flood risk management" could be viewed as either expanding or contracting the historical "flood control" purposes of the various reservoirs as embodied in Public Law 436, the FERC licenses and existing reservoir regulation manuals for these projects. Given that the term "flood risk management" is defined in the DEIS Glossary at DEIS 11-3 to mean "Water management operations to draw down reservoirs beginning in the fall through winter and into early spring to provide additional storage capacity to protect life and property in the basin," "flood risk management" appears to include reservoir drawdown only. It would therefore appear that the Corps is limiting its flood control authority for Alabama Power's projects to just the fall and winter drawdown aspects of those projects rather than both drawdown and use of flood easement above the respective full pool elevations for flood control operations. If this is the Corps' understanding of its flood control authority, it would be helpful for the Corps to make this declaration very clearly. If not, the Corps should reconsider its use of the phrase "flood risk management" instead of the well understood and statutorily significant phrase "flood control."

The DEIS also uses the term "flood damage reduction storage," but does not define this term in the DEIS Glossary. The use of this undefined term results in some confusing statements in the DEIS. Moreover, on page 7-6 of the Draft ACT Master Manual, there is the statement, "The operation of four APC dams (Weiss, Logan Martin and H. Neely Henry on the Coosa and R. L. Harris on the Tallapoosa) are subject to rules and regulations in the interest of flood management reduction and navigation . . . ." Perhaps the phrase "flood management reduction" in this statement is a typographical mistake, but it highlights the confusion that can be created by attempts to use something other than "flood control" to describe flood control.

XI. Drought Contingency Plan and ADROP

In the draft Drought Contingency Plan, Table 7 entitled "ACT Basin Drought Regulation Plan Matrix" contains several Jordan flow targets that are not consistent with Alabama Power's ADROP. Table 7 indicates that Jordan will release 1,800 +/- cfs when the basin is in DIL 2 and DIL 3 conditions. Under ADROP, DIL 2 and DIL 3 conditions provide for a range of Jordan releases from 1,600 to 2,000 +/- cfs. Based on conversations with Corps staff in Mobile, Alabama Power understands that the 1,800 cfs midpoint in this range was selected for purposes of modeling the drought plan. Nevertheless, the 1,600 to 2,000 +/- cfs range of release from Jordan when in DIL2 and DIL 3 still remains an important part of Alabama Power's ADROP plan.

As previously noted, the Corps has mischaracterized the 4,640 cfs flow release from the Jordan, Bouldin and Thurlow projects as the 7Q10 at Montgomery. For clarity, all references to 7Q10 in the ACT Drought Contingency Plan, as it relates to flow at Montgomery, should be stated as the "Montgomery flow target."

The draft Drought Contingency Plan in various places characterizes Montgomery flow target as a "navigation" flow. This characterization is not accurate because the Montgomery flow target does not fully support navigation below Claiborne Dam. Indeed, the DEIS makes this point at page 6-67 by saying "The established minimum flow of 4,640 cfs (weekly average at Montgomery downstream of APC's JBT projects) has never actually been sufficient to fully support navigation channel depths downstream." Because there is a separate Navigation Plan

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included in the draft ACT Manual, mischaracterizing the Montgomery flow target as a navigation flow in the Drought Contingency Plan is unnecessary.

Table 8 "Low Basin Inflow Guide" on page E-F-25 in the draft Drought Contingency Plan identifies the current required basin flows necessary to meet both the Montgomery flow target flow release and fill each respective Alabama Power reservoir. These basin flow needs are based on current guide curves for the reservoirs, so future changes to these curves (for example, Martin, Logan Martin and Weiss) will result in changes to the basin flow requirements in Table 8.

The Drought Contingency Plan is included in each individual reservoir water control manual in addition to the Master Manual. Alabama Power recommends removing the Drought Contingency Plan from each individual manual so that it appears only in the Master Manual. If and when the Drought Contingency Plan is modified in the future, it will be much easier to amend if changes do not require reopening each individual reservoir manual.

Finally, as Alabama Power has explained in previous communications with the Corps, some of the reductions in flow from Jordan and Thurlow under ADROP and the Drought Contingency Plan will require FERC approval.

XII. Attachments with Additional Comments and Information

Attached to this letter are documents containing other miscellaneous comments and documents containing revised standard number tables for Alabama Power's projects.

XIII. Conclusion

Again, Alabama Power appreciates the opportunity to provide the Corps with comments on the DEIS and updated manuals for the ACT river basin. We support the Corps' effort to update the ACT Master Manual and individual reservoir regulation manuals for the basin. Alabama Power is also supports many elements of the Corps' proposed manuals and DEIS but there remain serious procedural and substantive problems with the Corps' proposal As we have explained in these comments, the Corps must reassess the proposed changes at Allatoona given the authorized purposes of Allatoona along with many of the assumptions made in the Corps' baseline. The Corps must also conduct additional studies to better predict and analyze impacts downstream that may result from the changes in the operation of Lake Allatoona. And, the DEIS must include as part of the reasonable alternatives analysis the specific operational changes to the Coosa River Project and the Martin Dam Project currently under licensing consideration at FERC. Lastly, as the Corps continues its process to revise the ACT manuals, it must make all relevant data available to the public and initiate a new public comment period.

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Should you have any questions, please do not hesitate to contact me.

Sincerely,

Matthew W. Bowden
Environmental Affairs Vice President

Comments of Alabama Power Company

To the United States Army Corps of Engineers

Draft Environmental Impact Statement
Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa
River Basin in Georgia and Alabama

Attachment A

Comments on the Draft Environmental Impact Statement and Modeling Support for the ACT Water Control Manual Update

Prepared by
Dynamic Solutions, LLC

May 28, 2013

The purpose of Dynamic Solutions, LLC's review of the ACT EIS and modeling support was to evaluate the appropriateness and validity of the approach and models used by the USACE in developing the water control plan. The documents reviewed include:

- ACT Environmental Impact Statement, Volume 1;
- ACT River Basin Master Water Control Manual;
- Appendix A (Allatoona Dam and Lake Water Control Manual);
- Appendix D (H. Neely Henry Dam and Lake Water Control Manual);
- Appendix H (Carters Dam and Lake and Carters Reregulation Dam Water Control Manual);
- Appendix I (R. L. Harris Dam and Lake Water Control Manual);
- EIS Volume 3_Appendix B, Pertinent Correspondence;
- EIS Volume 3_Appendix C, ACT HEC-ResSim Modeling Report; and
- EIS Volume 3_Appendix D, ACT HEC-5Q WQ Modeling Report

We also reviewed the HEC-ResSim Hydro Model and the HEC-5Q Water Quality Model of the ACT Basin provided by the USACE.

GENERAL COMMENTS

1. The choice of models to use for this planning-level analysis was appropriate. The models are set up correctly and generally reflect the processes occurring in the system.
2. A summary list of the assumptions considered for the study along with a discussion of the expected implications should be included in the document.
3. Good modeling practice demands a careful and systematic treatment of both model sensitivity and uncertainty. Both model sensitivity and uncertainty should be addressed as part of this study.
4. Although multiple objectives are given, the document needs to provide an overall explanation of the water resources objectives.
5. Rather than treating each project discretely, explain why a multi-objective optimization for the system was not developed.

EIS COMMENTS

1. Hydrologic-based definition of wet, dry and normal years needs to be provided prior to other analysis and discussion in the EIS report.
2. A six-hour time step was used in the water quality HEC-5Q model. However, power generation can be varied in less than six hours for different operation schedules/zones. Explain how this was resolved in the model simulation and alternative analysis.
3. It is inappropriate to assume that total suspended solids (TSS) discharged from point sources are 100% organic although we believe that this assumption has a minor impact on modeled water quality results. Provide justification for this assumption.
4. The Draft EIS report presents longitudinal profiles of model results only as the relative difference between the baseline and alternative plans. The Draft EIS report also presents model results as a data table of relative differences of median values by river mile for representative average, wet and dry years. The Draft EIS report discusses the potential impact of proposed action alternative on the median values of water quality

1

constituents. Since compliance with water quality criteria, however, is not always based on the median value, the emphasis in the EIS report on changes in median values does not provide adequate information to evaluate the “worst-case” consequences of the proposed alternative. The “worst-case” impact of the proposed alternative on dissolved oxygen, for example, is given by the lower end 5th percentile statistic of the model results rather than the median. Similarly for nutrients and chlorophyll, the “worst-case” impact is given by the upper end 95th percentile statistic of the model results rather than the median value. Although model results shown in Appendix D are presented as absolute values, the results shown are not aggregated over the same time periods as those presented in the Draft EIS report. Since absolute values of the water quality model results are not provided in the Draft EIS report, it is difficult to evaluate changes in actual water quality conditions between the baseline no action scenario and implementation of the proposed alternative plan. The data presented in Table 6.1-7 gives the relative differences between the baseline and the proposed alternative plan only as median values for the representative average, wet and dry years. Data needs to be provided in the table to include the absolute value of the baseline water quality concentration to provide a reference for evaluation. Additional data tables also need to be compiled to provide the absolute value and the average, wet and dry year statistics for the lower percentile (5^{th}) and upper percentile (95^{th}). Additional longitudinal profile plots of water quality results (as absolute values) should also be included in Appendix D of the Draft EIS that match the same time aggregation periods for the representative average, wet and dry years presented in the Draft EIS.

5. To appropriately and accurately evaluate impacts of an operational change on water quality, the baseline (No Action Alternative) model needs to be first calibrated to the observed data. Any conclusions drawn based on the non-calibrated model to predict impacts of proposed operational changes on water quality, otherwise, are misleading.

<u>RESSIM HYDRO MODEL COMMENTS</u>

1. Reading the navigation section, they state that requirements shift between 7.5 and 9-ft depths depending on the conditions in the basin. Because dredging occurs in the summer and fall, the flows required to achieve these depths are less in those seasons. Since dredging is clearly dependent on the Congressional budgeting process, it seems the Corps cannot guarantee meeting dredging requirements each year (see page 41 for a report disclaimer on those ground). An unbiased analysis would not assume that perfect dredging occurs every summer and fall.
2. The curve from the wet year (1992-1994) was used as the constraining flow-depth curve in the HEC-RES SIM model. The justification for using the 1992-1994 period is given as “After careful consideration and discussions with the Corps navigation experts …”. Neither the logic of that assumption nor its impacts are addressed. The choice of a period to ease or restrict flow requirements should be explained and justified by further analyses.
3. The level for the winter pool at H. Neely Henry was specified at 505 feet for “Baseline” while it has operated at 507 feet since 2003, and 507 feet was used for the other alternatives including “Plan G.” Please provide additional clarification about the reasoning for the 505 feet winter pool in the “Baseline” scenario.
4. Streamflows from the “Baseline” model generally match the observed streamflows in the system during critical (growing season in drought years) time periods. Stream gage

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records for the Coosa, Oostanaula, and Etowah rivers were analyzed and compared with output from the HEC-RES SIM model. Relevant flow statistics and frequency distributions for times of critical flow were compared and found to be similar. This indicates that the baseline model reasonably represents historical flow conditions in the system. For more detailed analysis and discussion, see Appendix A.

HEC-5Q WATER QUALITY MODEL COMMENTS

1. The modeling support documentation lacks reported calibration to existing flow and water quality data. The baseline model was setup to mimic “typical” conditions but calibration of the model was not completed so we do not know if the model is capable of producing accurate results and if the model is appropriate to use further for alternative analysis.
2. The model tends to overpredict the lower quartile of observed oxygen records at each of the station locations near the State line during “worst-case” May-October, dry year hydrologic conditions, even when modeled flows are statistically similar to the observed flows for the same hydrologic conditions. The document should provide an explanation as to why the model overpredicts oxygen under low-flow conditions even though the model provides statistically good agreement with historical streamflow records. For more detailed analysis and discussion, see Appendices A and B.

APPENDIX A – FLOW

1. Summary of Key Issues and Findings Related to Flow

Flow data used by the USACE for input to the HEC-RESSIM model was based on assignment of reservoir operating rules for the Baseline Scenario rather than historical flow releases from Carters and Allatoona reservoirs. In the absence of model results based on historical flow data for reservoir releases, the Alabama Power Company is concerned that the Baseline Scenario may not be able to provide a reasonable representation of the impact of "worst-case" hydrologic conditions on flow and water quality conditions upstream of Weiss Reservoir. The objective of the analysis described in this memo is therefore, to perform an evaluation of the comparison between Baseline Scenario model results and observed "worst-case" hydrologic conditions. "Worst-case" conditions in a year are defined by low flow growing season months during drought conditions. Model results and observed flow data were used to compile summary statistics and frequency distributions based on filtering of flow records for the 1 May-31 Oct growing season during the dry years of record from 2000-2008. Model results and observed flow data was extracted for stations downstream of Carters Reservoir on the Coosawattee River, Allatoona Reservoir on the Etowah River and the Oostanaula River and Coosa River near Rome, GA.

In general, there is reasonable statistical agreement between model results and observed flow records during the "worst-case" May-Oct dry years from 2000-2008, with the exception of the gages just downstream of Carters Reservoir and Allatoona Reservoir. Frequency distribution plots and summary statistics are used to quantitatively evaluate how well the model represents observed low-flow conditions. An evaluation of the ability of the model to represent the impact of "worst-case" hydrologic conditions on flow and water quality loading at the upstream end of Weiss Reservoir is best demonstrated with an analysis of flow in the Coosa River at the USGS gage near Rome GA. At this location, the model results for "worst-case" dry conditions for the 5^{th} percentile flow (891 cfs) are in good statistical agreement with the 5^{th} percentile of the observed flow (1020 cfs). At this level the model undershoots the observed flow by 13%. The model results for the median flow during dry conditions show very good statistical agreement with the model median results (1876 cfs) only 1% higher than the observed median flow (1860 cfs). The results for the 95^{th} percentile model flow (4287 cfs) also show good statistical agreement with the 95^{th} percentile for model flow (4287 cfs) only 6% lower than the observed flow (4541 cfs). Table 1 presents the summary statistics and Figure 1A presents the time series and Figure 1B shows the frequency distribution plots for flow on the Coosa River near Rome GA. Figure 1C presents a detailed plot of the frequency distribution for the lower range of flow less than the median flow.

Additional simulated flow data were analyzed at two locations: USGS 02397000 Coosa River near Rome, GA and USGS 02394000 Etowah River above Cartersville, GA. The additional simulated data included the proposed Plan G alternative, a new baseline scenario with no power rules at Allatoona (baseline with no power), and Plan G with no power rules at Allatoona (Plan G with no power).

Table 1- Summary statistics for observed and simulated flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.

FLOW4 USGS 02397000 COOSA RIVER NEAR ROME, GA					
Summary Statistics	**USGS 02397000 Observed Flow (CFS)**	**HWMS Modeled Baseline (CFS)**	**HWMS Modeled Plan G (CFS)**	**HWMS Modeled Baseline No Power (CFS)**	**HWMS Modeled Plan G No Power (CFS)**
May-Oct, 2000-2008, Flow (CFS)	**Dry Years - 2000, 2002, 2006, 2007, 2008**				
F#08=N_Obs	920	925	925	925	925
F#09=Mean	2300	2205	2130	2045	2042
F#10=Mean+2 Standard Error	2405	2304	2227	2160	2155
F#11=Mean-2 Standard Error	2195	2106	2032	1930	1929
F#12=Minimum	720	679	713	599	606
F#13=05%ile	1020	893	883	717	718
F#14=10%ile	1130	1044	1002	824	829
F#15=25%ile	1420	1321	1284	1005	1028
F#16=50%ile	1860	1874	1704	1532	1535
F#17=75%ile	2720	2678	2600	2483	2459
F#18=90%ile	3731	3614	3564	3672	3673
F#19=95%ile	4541	4305	4365	4688	4623
F#20=Maximum	20400	18414	17970	19834	19655

A2

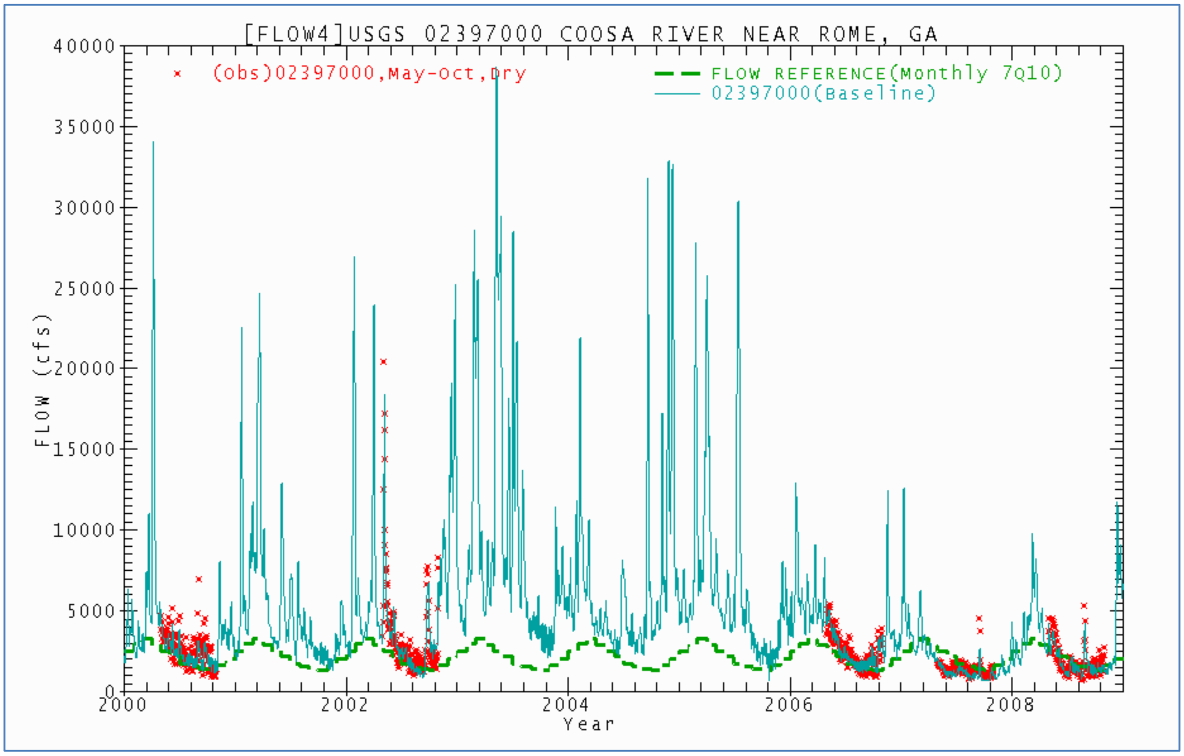
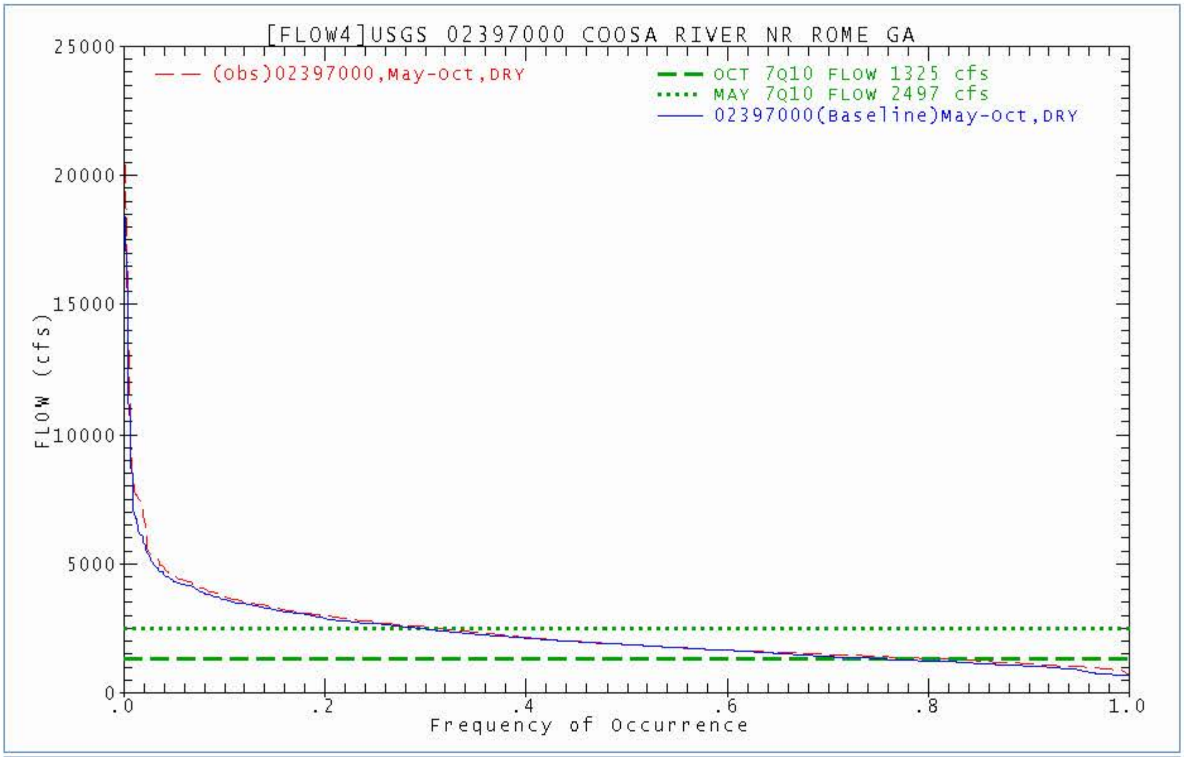
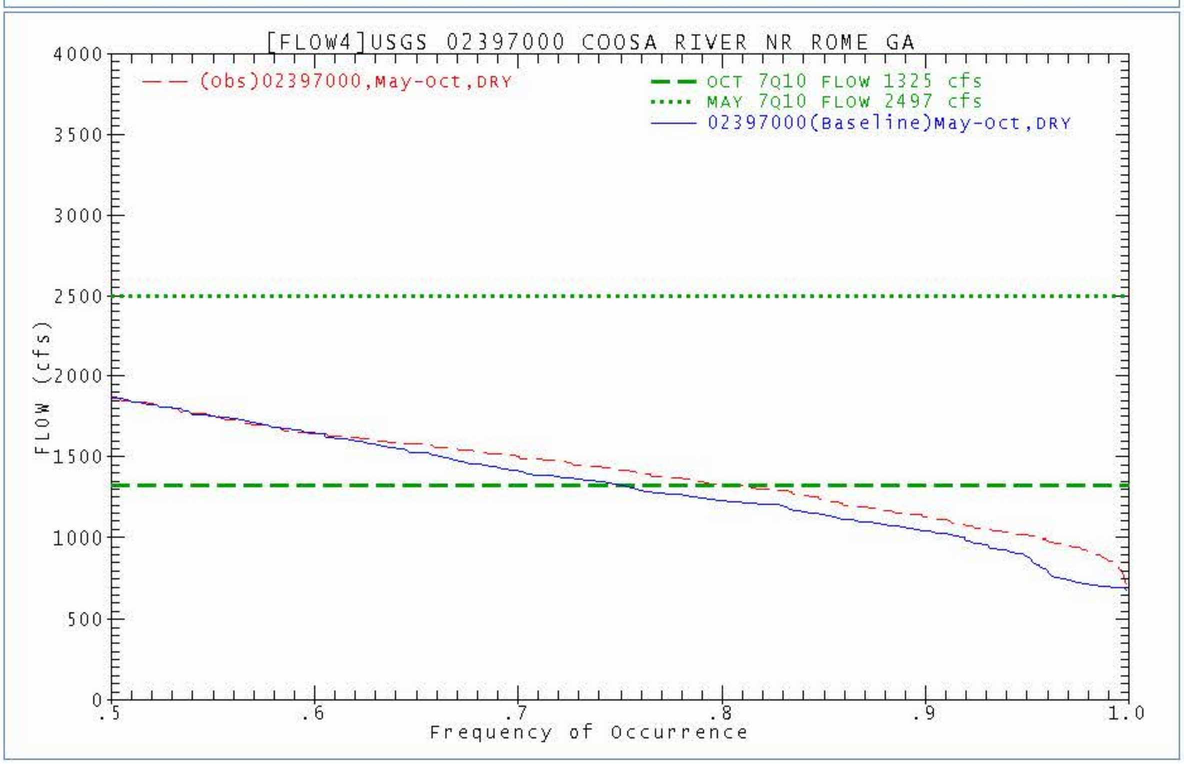


Figure 1A - Time series (A) of observed and simulated baseline flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.

A3





Figures 1B and 1C – Frequency distribution (B) and low flow detail of frequency distribution (C) of observed and simulated baseline flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.

A4

2. Methodology Used for Flow Analysis

As shown in Table 2, an independent check based on USGS flow data obtained for the gage (02397000) on the Coosa River near Rome, GA shows that the choice of 2002, 2003, and 2007 as representative years for average, wet, and dry conditions is appropriate. Based on USGS conventions, hydrologic conditions defined as average, wet and dry for a specified year and season are defined relative to long-term average flow. Normal average conditions are defined by a flow ratio ranging from 0.75 to 1.5; wet conditions are defined by a ratio greater than 1.5; and dry conditions are defined by a ratio less than 0.75. Hydrologic conditions during May-Oct 2002 were very close to “dry” conditions based on a ratio of 0.75 computed for the year. For the analysis of flow and dissolved oxygen data, 2002 was defined as a “dry” year rather than an “average” year. Table 2 presents the average of flow for each year from 2000-2008 for the May-Oct growing season compared to the long-term (1950-2011) average flow of 4,320 cfs for the same time of year. Similar flow ratios are also computed for each year based on annual average flow conditions. Observed flow data records for the USGS station 02397000 for the Coosa River near Rome GA for 2000-2008 are presented in Figure 2 with the records shown for the May-Oct dry years. The long-term May-Oct average from 1950-2011 is shown as a reference flow for identification of average, wet and dry years using the annual flow ratios described above.

Observed flow data is downloaded for the gages listed in Table 3 and shown in Figure 3. Simulated flow data is extracted from the HWMS model for the baseline scenario at model segments matching the locations of the gages listed in Table 2. Observed flow data is not available at the USGS station 02397530 at the AL-GA state line. Minimum flows of 240 cfs are specified for flow downstream of Carters and Allatoona reservoirs. Minimum flows for USGS-02397000 Coosa River near Rome GA are specified as monthly 7Q10 flows for drought flow triggers. Monthly 7Q10 data for the Coosa River is taken from Table 7.1-2 in Draft EIS, page 6-59. Time series plot, frequency distribution plots, summary statistics and data inventories are generated for observed flow data and model flow results for each gage. Results of the analysis of the observed flow data are summarized in Table 4. Table 5 shows summary statistics and frequency distribution plots are compiled for the May-Oct growing season for the dry years to characterize “worst-case” hydrologic conditions for flow and dissolved oxygen.

Table 2 - Flow Ratio for Growing Season (May-Oct) compared to Long Term Growing Season Average Flow for Coosa River USGS station near Rome, GA

USGS 2397000, Coosa River near Rome GA			
	May-Oct	Long Term Average: 4320 CFS	
Year	**Average Flow (CFS)**	**Ratio to Long Term Average**	**Classification**
2000	2590	0.60	Dry
2001	4010	0.93	Average
2002	3240	0.75	Dry to Average
2003	10400	2.4	Wet
2004	4800	1.1	Average
2005	5430	1.3	Average
2006	2430	0.56	Dry
2007	1380	0.32	Dry
2008	1860	0.43	Dry
2009	6490	1.5	Wet
2010	3050	0.71	Dry

A5

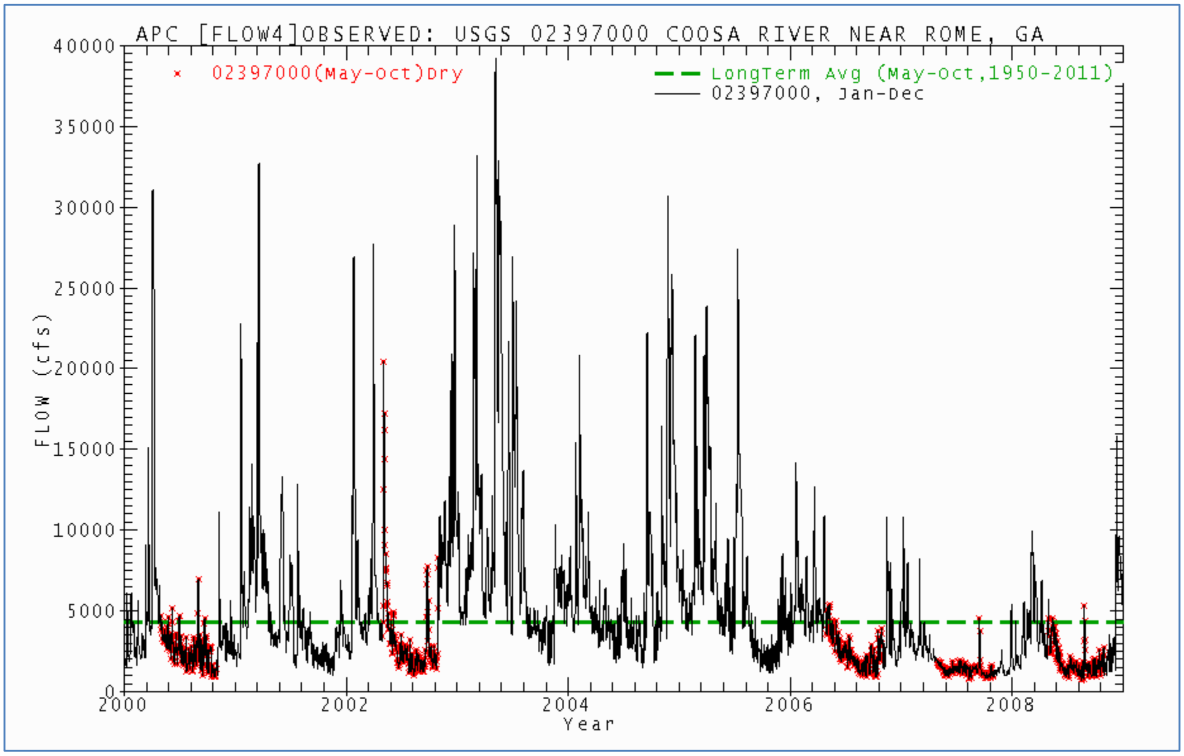


Figure 2 - Observed flow for USGS Gage 02397000 for Coosa River near Rome, GA. Dry periods are indicated with red data points.

Table 3 - Summary of USGS Gage Stations Used for Flow Analysis

USGS Station Number	Longitude	Latitude	Station Name
USGS 02388500	-85.138056	34.29833	FLOW1 USGS 02388500 OOSTANAULA RIVER NEAR ROME, GA
USGS 02394000	-84.741111	34.16306	FLOW2 USGS 02394000 ETOWAH RIVER AT ALLATOONA DAM, ABV CARTERSVILLE,GA
USGS 02395980	-84.838889	34.14278	FLOW3 USGS 02395980 ETOWAH RIVER AT GA 1 LOOP, NEAR ROME, GA2
USGS 02397000	-85.256667	34.20028	FLOW4 USGS 02397000 COOSA RIVER NEAR ROME, GA
USGS 02382500	-84.695556	34.60361	FLOW5 USGS 02382500 COOSAWATTE RIVER at CARTERS GA
USGS 02383500	-84.833056	34.56417	FLOW6 USGS 02383500 COOSAWATTE RIVER at PINE CHAPEL GA

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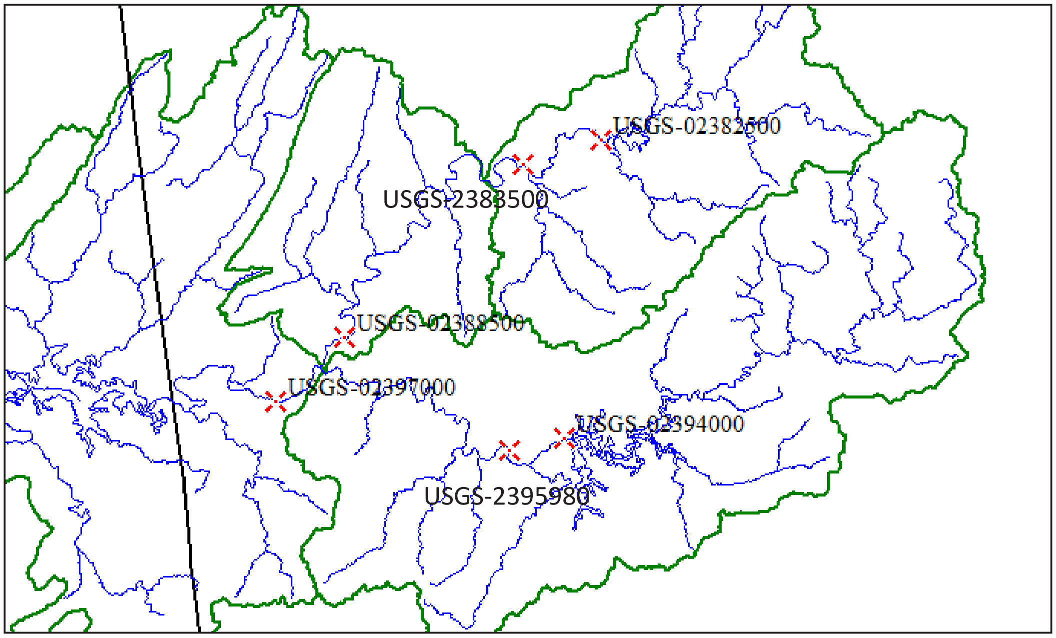


Figure 3 - Location of USGS gages used for comparison of observed flow data to model results

Table 4 - Summary of Dry conditions, 2000-2008, May-Oct Observed Flow

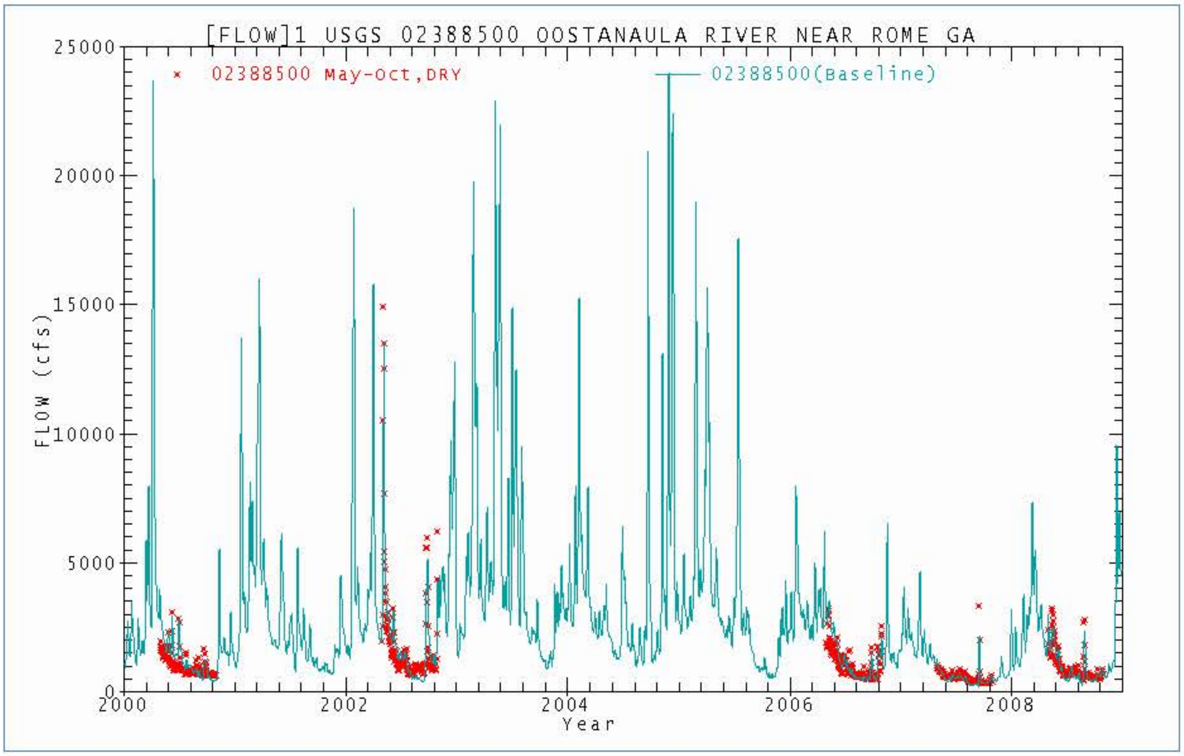
May-Oct 2000-2008, Dry	Observed Flow (cfs)						Station Name
	Reference	**Min**	**5%**	**10%**	**25%**	**50%**	
USGS 02388500	240	319	429	514	617	792	OOSTANAULA R NEAR ROME, GA
USGS 02394000	240	222	285	310	431	750	ETOWAH R AT ALLATOONA DAM, ABV CARTERSVILLE,GA
USGS-02395980	240	430	507	559	728	975	ETOWAH R AT GA 1 LOOP, NEAR ROME, GA2
USGS 02397000	1325-2497	720	1020	1130	1420	1860	COOSA R NEAR ROME, GA
USGS 02382500	240	151	253	280	335	397	COOSAWATTEE RIVER at CARTERS GA
USGS 02383500	240	168	239	306	345	404	COOSAWATTEE RIVER at PINE CHAPEL GA

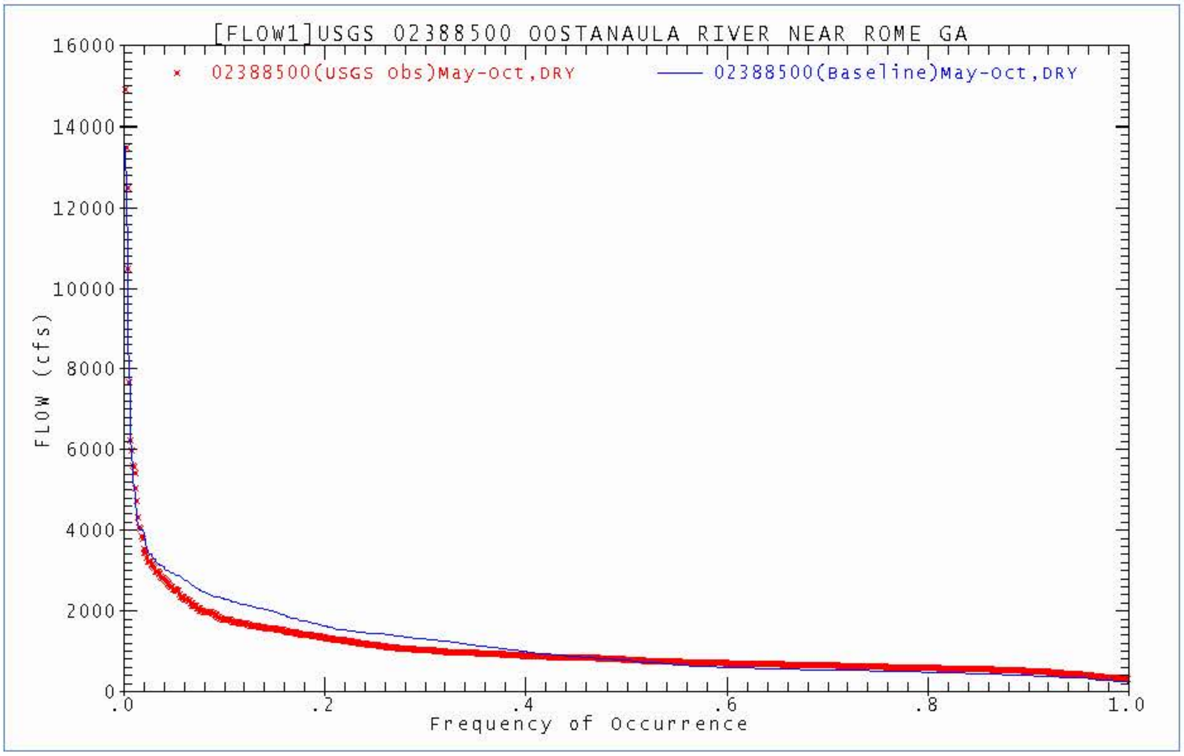
A7

Table 5 - Summary statistics for observed and simulated flow at USGS gage 02388500 on the Oostanaula River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for “Dry” years. Mean +/- 2 Standard Error represents 95% confidence interval.

FLOW1 USGS 02388500 OOSTANAULA RIVER NEAR ROME, GA		
Summary Statistics	**USGS 02388500 Observed Flow (CFS)**	**HWMS Modeled Baseline (CFS)**
May-Oct, 2000-2008, Flow (CFS)	**Dry Years - 2000, 2002, 2006, 2007, 2008**	
F#08=N_Obs	920	920
F#09=Mean	1080	1150
F#10=Mean+2 Standard Error	1150	1230
F#11=Mean-2 Standard Error	1000	1070
F#12=Minimum	319	212
F#13=05%ile	429	341
F#14=10%ile	514	397
F#15=25%ile	617	514
F#16=50%ile	792	773
F#17=75%ile	1150	1440
F#18=90%ile	1790	2290
F#19=95%ile	2530	2900
F#20=Maximum	14900	13500

A8





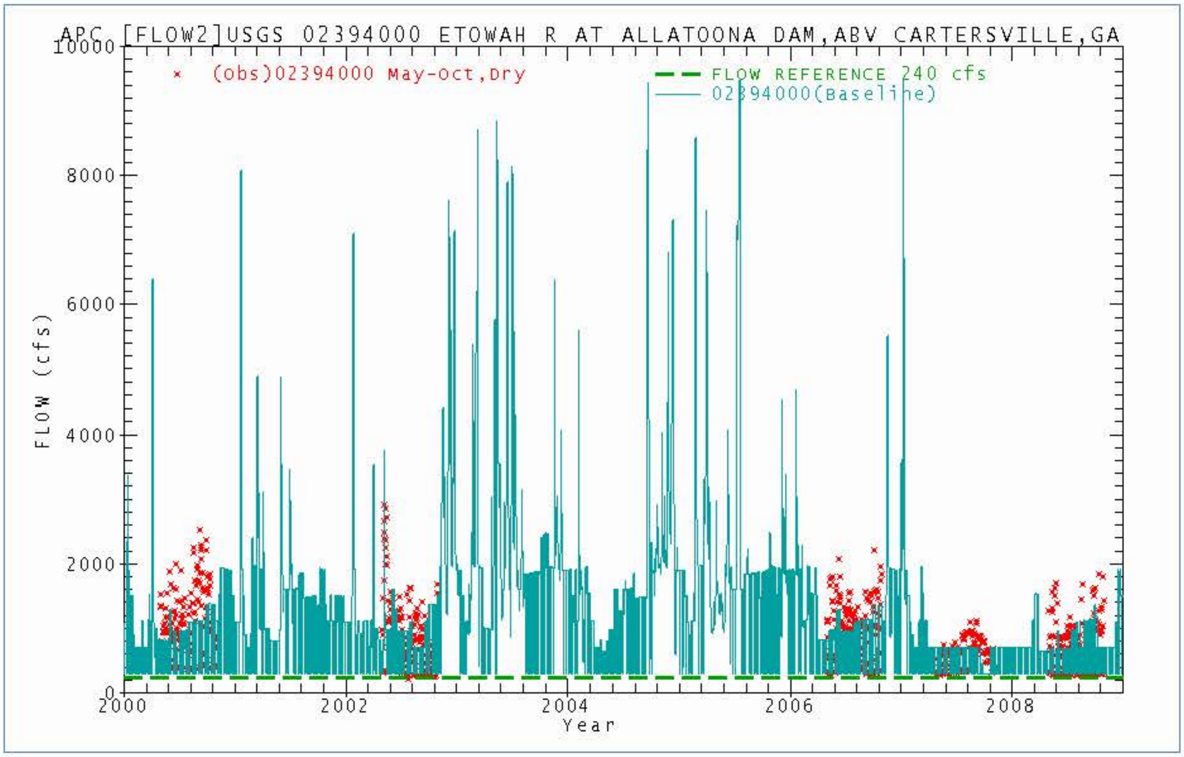
Figures 4A and 4B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02388500 on the Oostanaula River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.

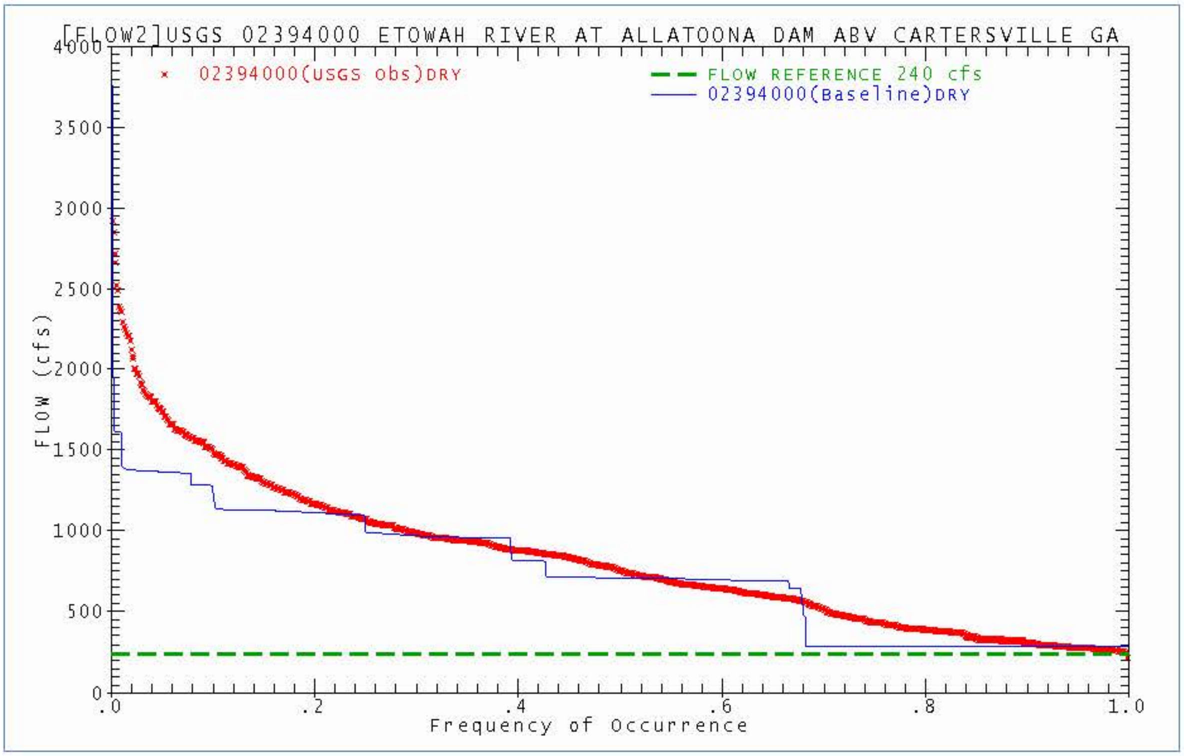
A9

Table 6 - Summary statistics for observed and simulated flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.

FLOW2 USGS 02394000 ETOWAH RIVER AT ALLATOONA DAM, ABV CARTERSVILLE					
Summary Statistics	**USGS 02394000 Observed Flow (CFS)**	**HWMS Modeled Baseline (CFS)**	**HWMS Modeled Plan G (CFS)**	**HWMS Modeled Baseline No Power (CFS)**	**HWMS Modeled Plan G No Power (CFS)**
May-Oct, 2000-2008, Flow (CFS)	**Dry Years - 2000, 2002, 2006, 2007, 2008**				
F#08=N_Obs	920	925	925	925	925
F#09=Mean	831	743	670	583	583
F#10=Mean+2 Standrd Error	862	768	691	623	623
F#11=Mean-2 Standard Error	801	718	648	543	543
F#12=Minimum	222	290	290	290	290
F#13=05%ile	285	290	290	290	290
F#14=10%ile	310	290	290	290	290
F#15=25%ile	431	290	290	290	290
F#16=50%ile	750	707	690	290	290
F#17=75%ile	1070	985	912	608	608
F#18=90%ile	1482	1208	1082	1322	1322
F#19=95%ile	1740	1366	1095	1802	1802
F#20=Maximum	2920	3755	3755	5045	5045

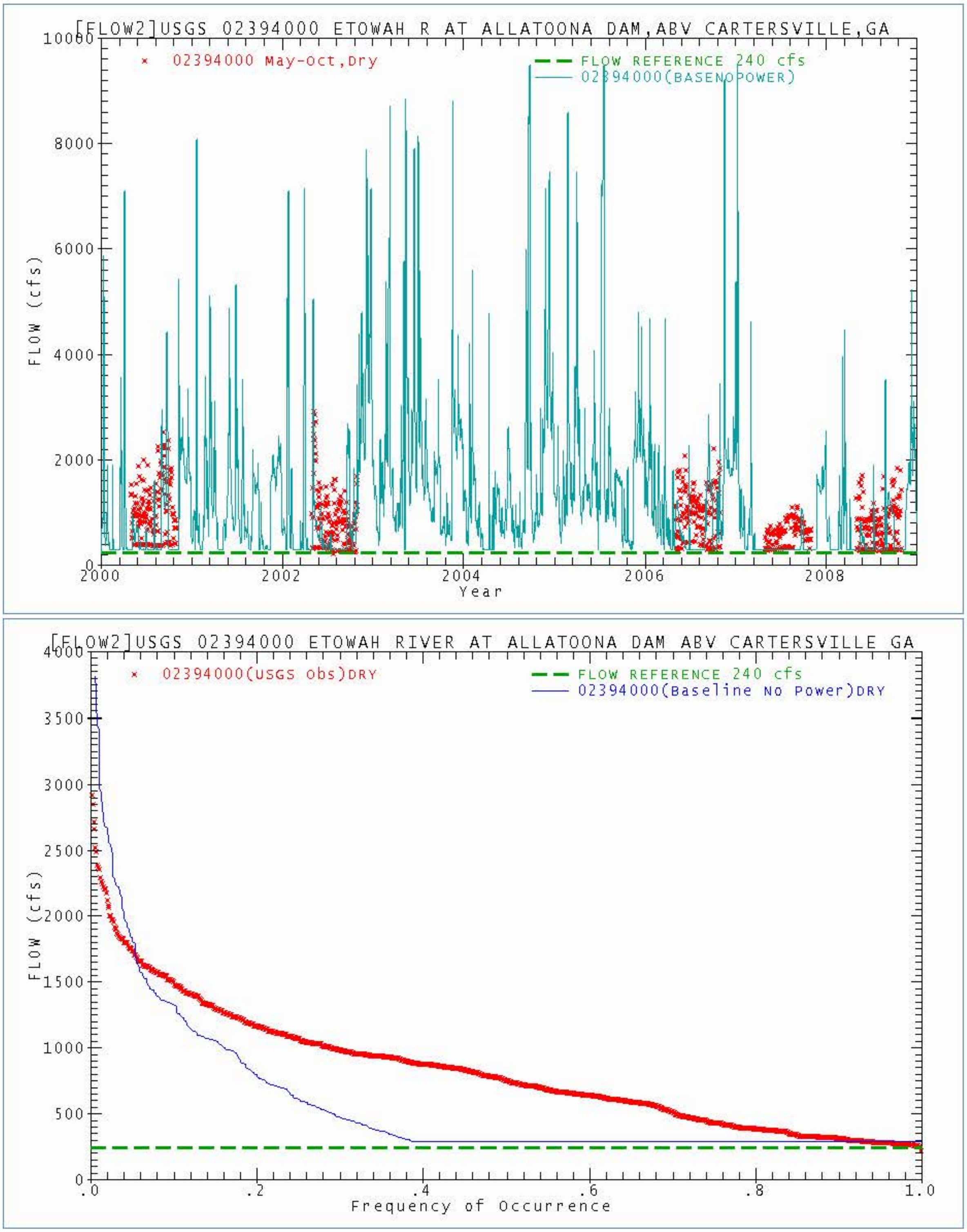
A10





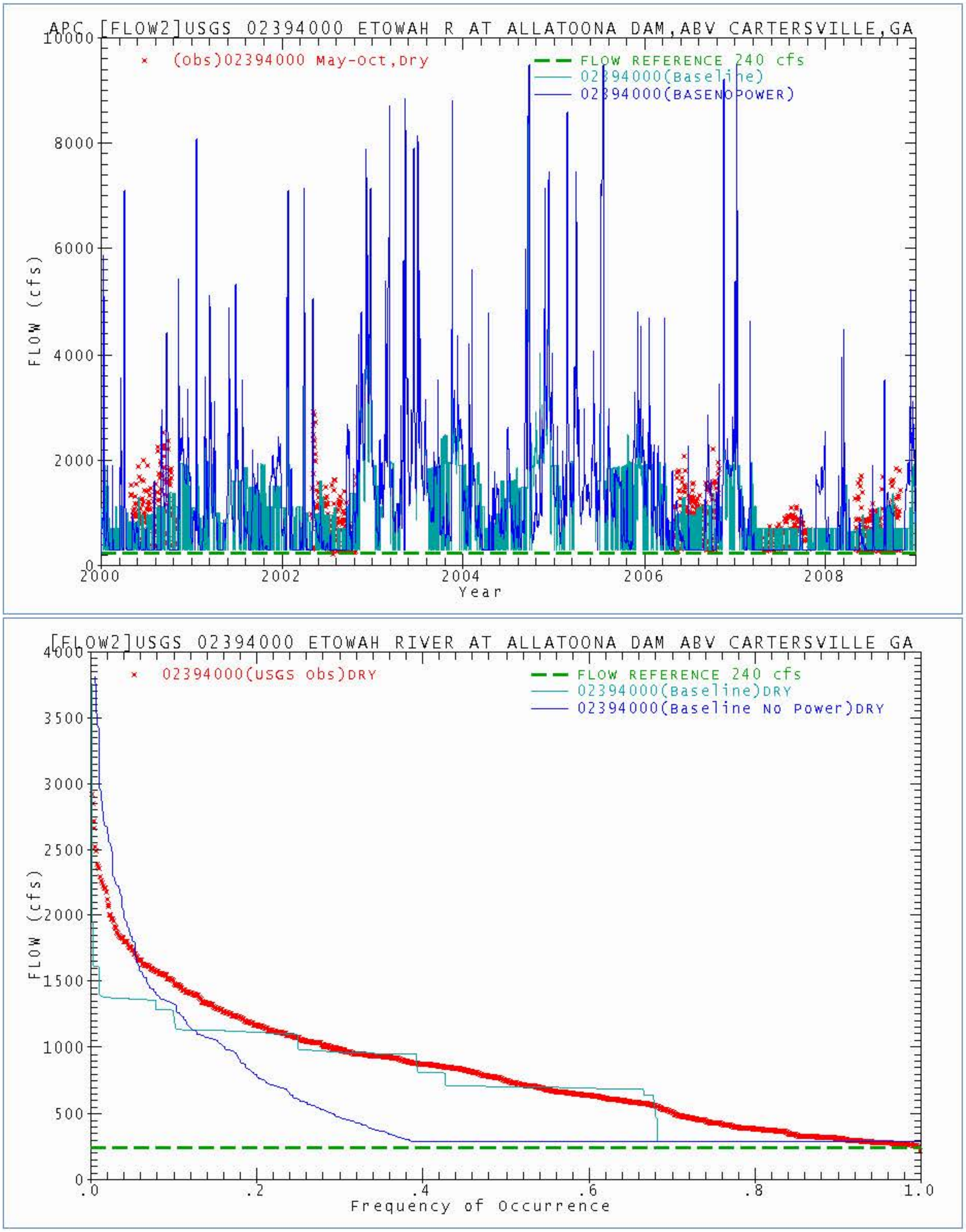
Figures 5A and 5B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for “Dry” years.

A11



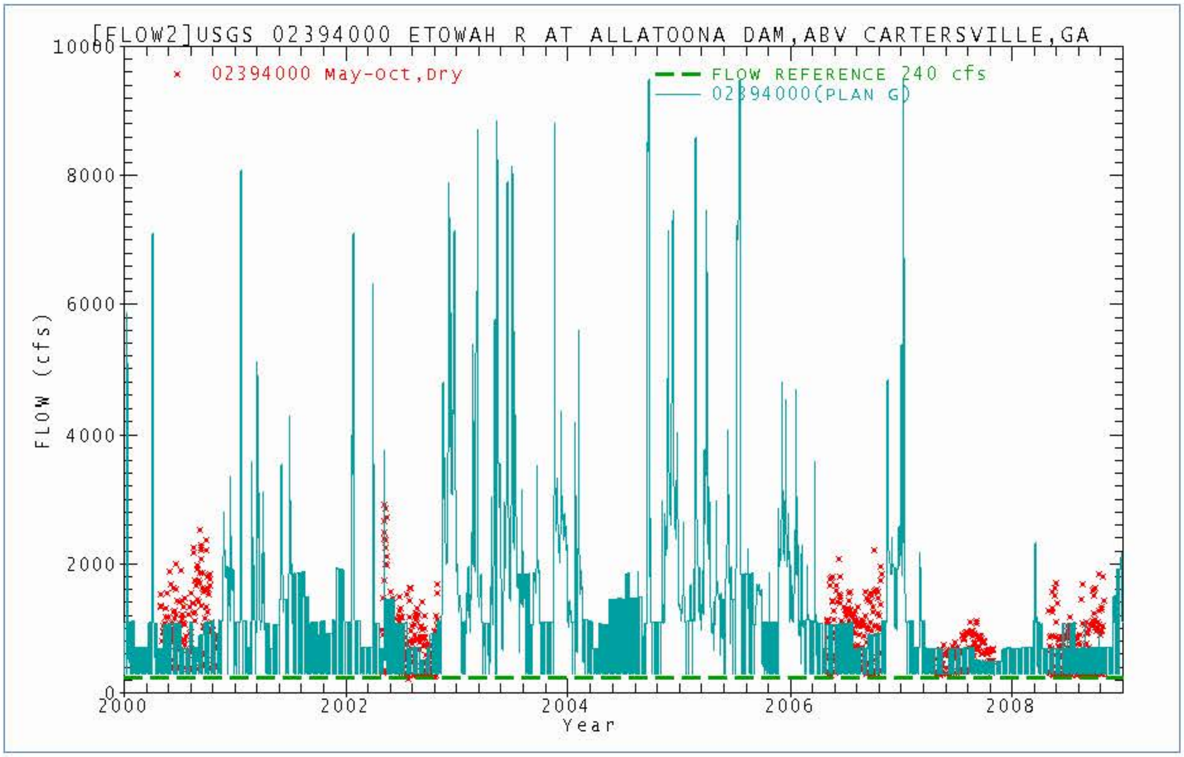
Figures 5C and 5D – Time series (C) and frequency distribution (D) of observed and simulated baseline with no power flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for “Dry” years.

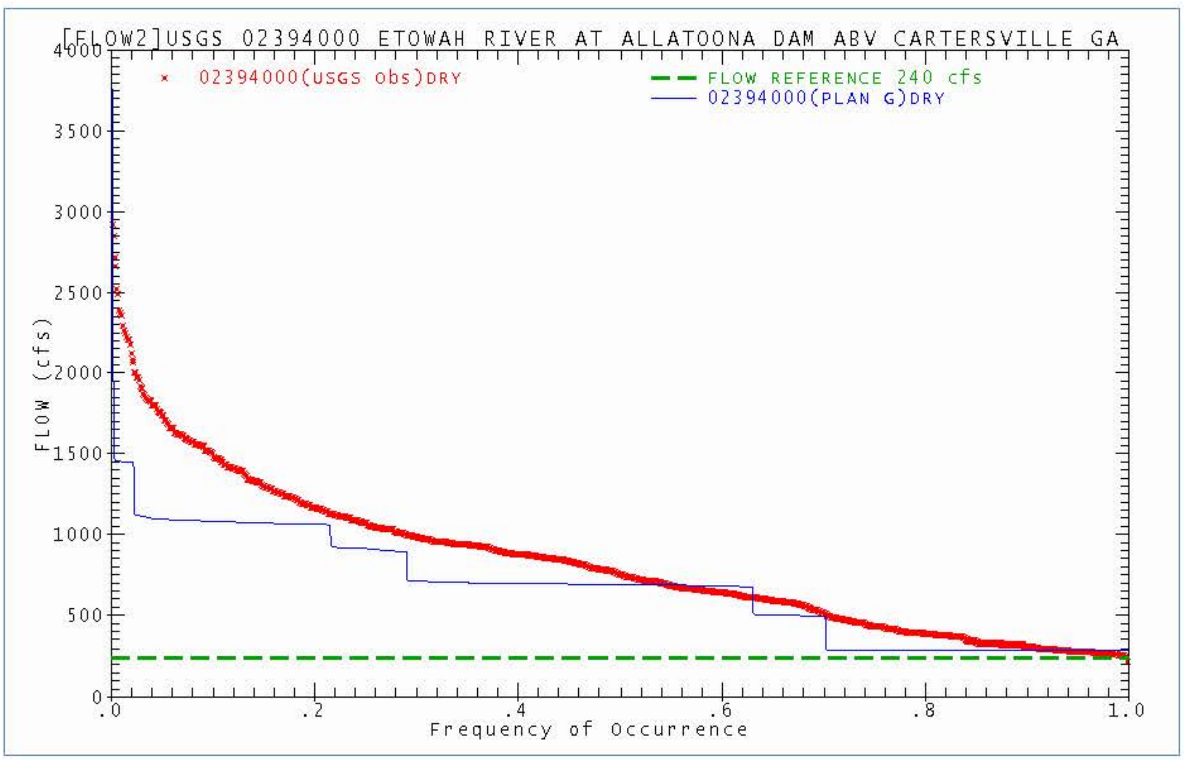
A12



Figures 5E and 5F – Time series (C) and frequency distribution (D) of observed flow and comparison of simulated baseline with baseline with no power flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for “Dry” years.

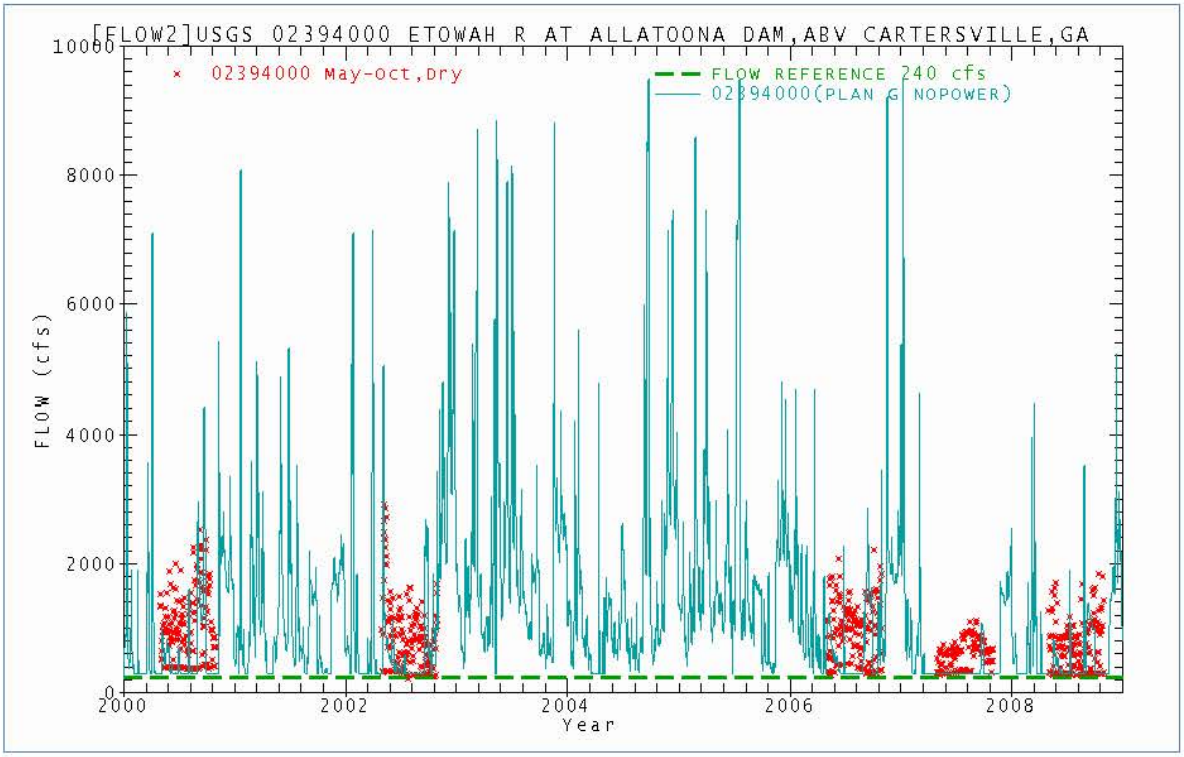
A13

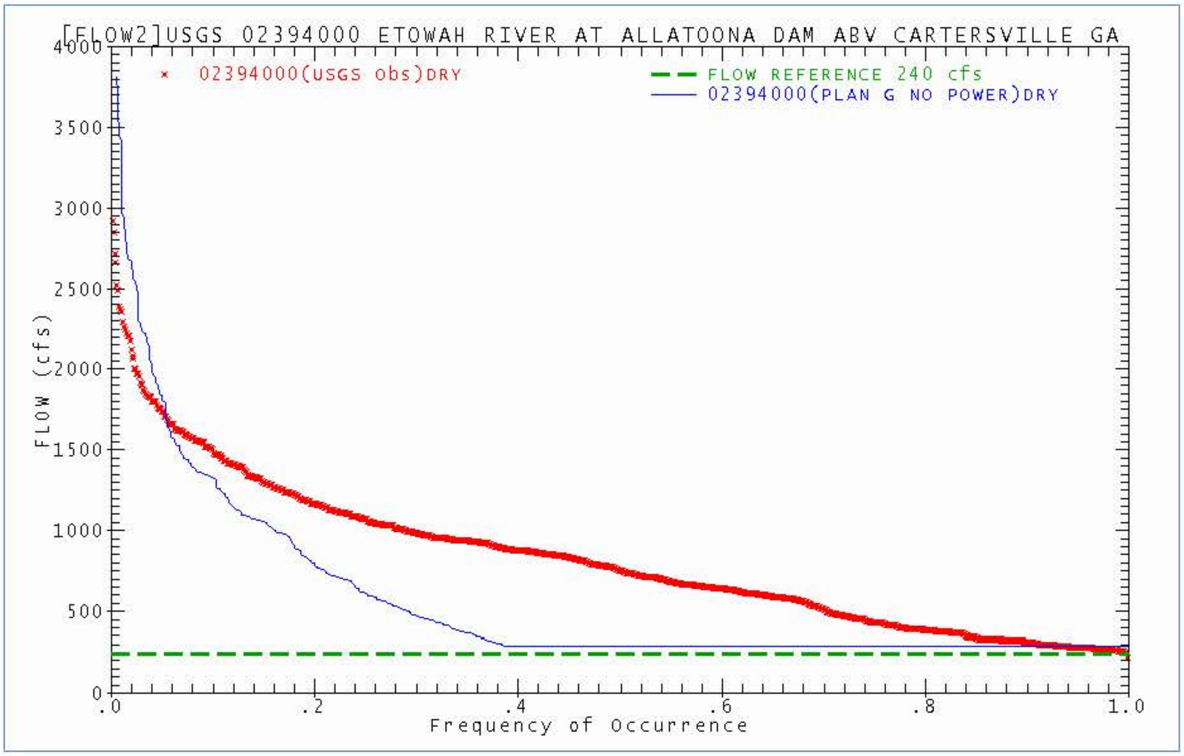




Figures 5G and 5H – Time series (E) and frequency distribution (F) of observed and simulated Plan G flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for “Dry” years.

A14





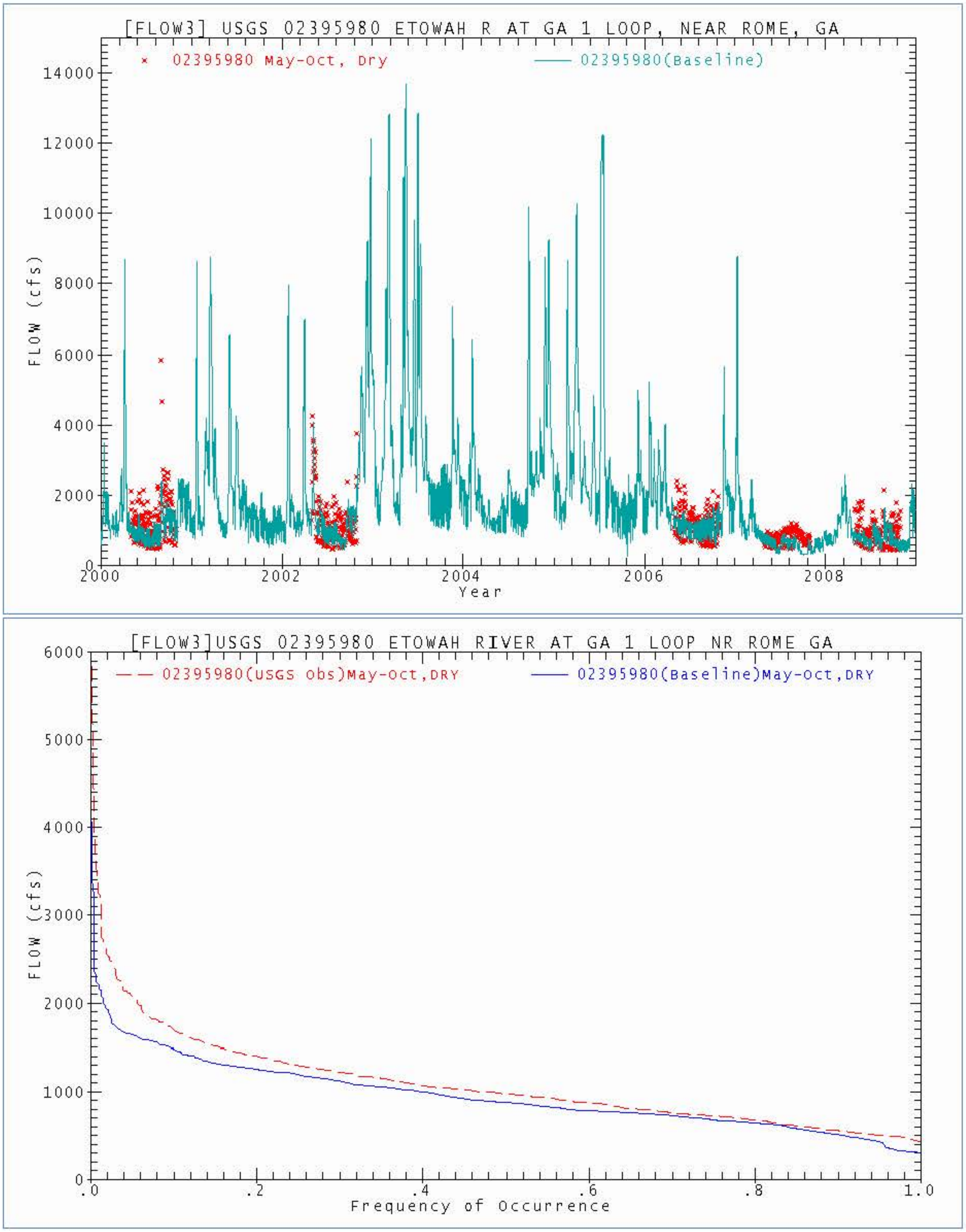
Figures 5I and 5J – Time series (G) and frequency distribution (H) of observed and simulated Plan G with no power flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.

A15

Table 7 - Summary statistics for observed and simulated flow at USGS gage 02395980 on the Etowah River at GA Loop 1. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.

FLOW3 USGS 02395980 ETOWAH RIVER AT GA 1 LOOP, NEAR ROME GA		
Summary Statistics	**USGS 02395980 Observed Flow (CFS)**	**HWMS Modeled Baseline (CFS)**
May-Oct, 2000-2008, Flow (CFS)	**Dry Years - 2000, 2002, 2006, 2007, 2008**	
F#08=N_Obs	920	920
F#09=Mean	1090	956
F#10=Mean+2 Standard Error	1120	982
F#11=Mean-2 Standard Error	1050	929
F#12=Minimum	430	308
F#13=05%ile	507	437
F#14=10%ile	559	516
F#15=25%ile	728	682
F#16=50%ile	975	879
F#17=75%ile	1290	1200
F#18=90%ile	1690	1480
F#19=95%ile	2050	1650
F#20=Maximum	5830	4070

A16



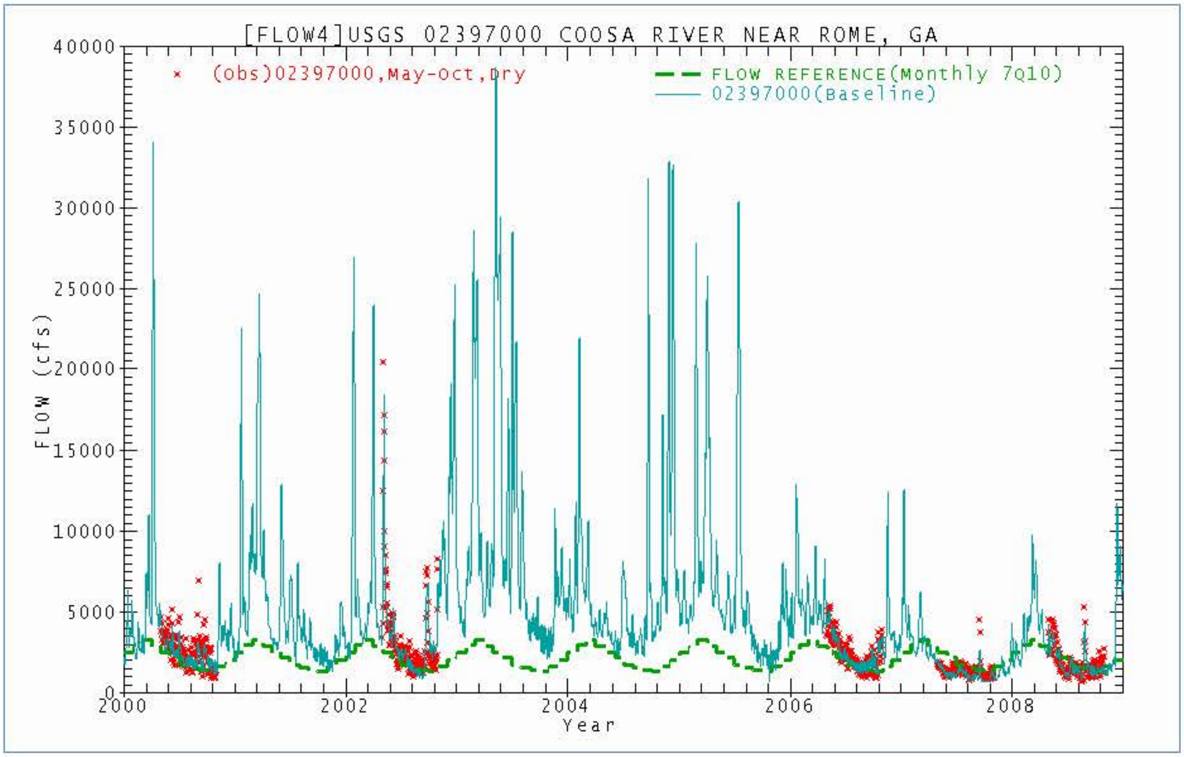
Figures 6A and 6B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02395980 on the Etowah River at GA Loop 1. Data extracted for 2000-2008, May-Oct growing season for “Dry” years.

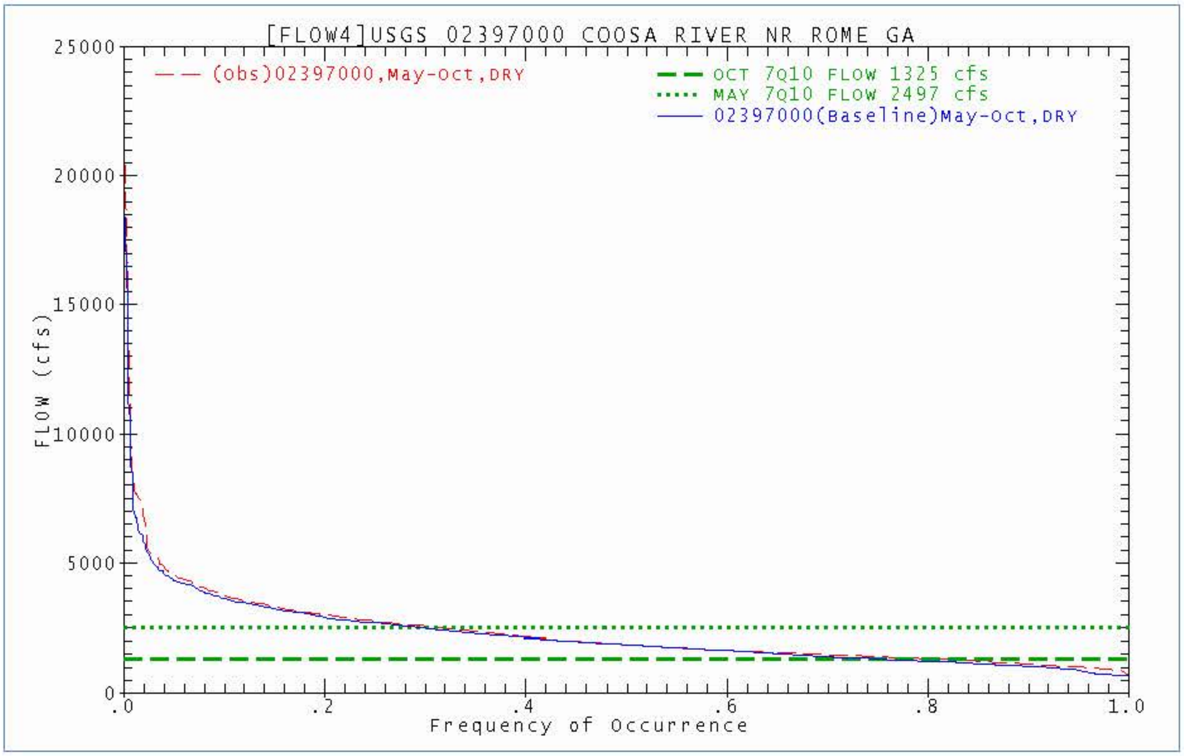
A17

Table 8 - Summary statistics for observed and simulated flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.

FLOW4 USGS 02397000 COOSA RIVER NEAR ROME, GA					
Summary Statistics	**USGS 02397000 Observed Flow (CFS)**	**HWMS Modeled Baseline (CFS)**	**HWMS Modeled Plan G (CFS)**	**HWMS Modeled Baseline No Power (CFS)**	**HWMS Modeled Plan G No Power (CFS)**
May-Oct, 2000-2008, Flow (CFS)	**Dry Years - 2000, 2002, 2006, 2007, 2008**				
F#08=N_Obs	920	925	925	925	925
F#09=Mean	2300	2205	2130	2045	2042
F#10=Mean+2 Standard Error	2405	2304	2227	2160	2155
F#11=Mean-2 Standard Error	2195	2106	2032	1930	1929
F#12=Minimum	720	679	713	599	606
F#13=05%ile	1020	893	883	717	718
F#14=10%ile	1130	1044	1002	824	829
F#15=25%ile	1420	1321	1284	1005	1028
F#16=50%ile	1860	1874	1704	1532	1535
F#17=75%ile	2720	2678	2600	2483	2459
F#18=90%ile	3731	3614	3564	3672	3673
F#19=95%ile	4541	4305	4365	4688	4623
F#20=Maximum	20400	18414	17970	19834	19655

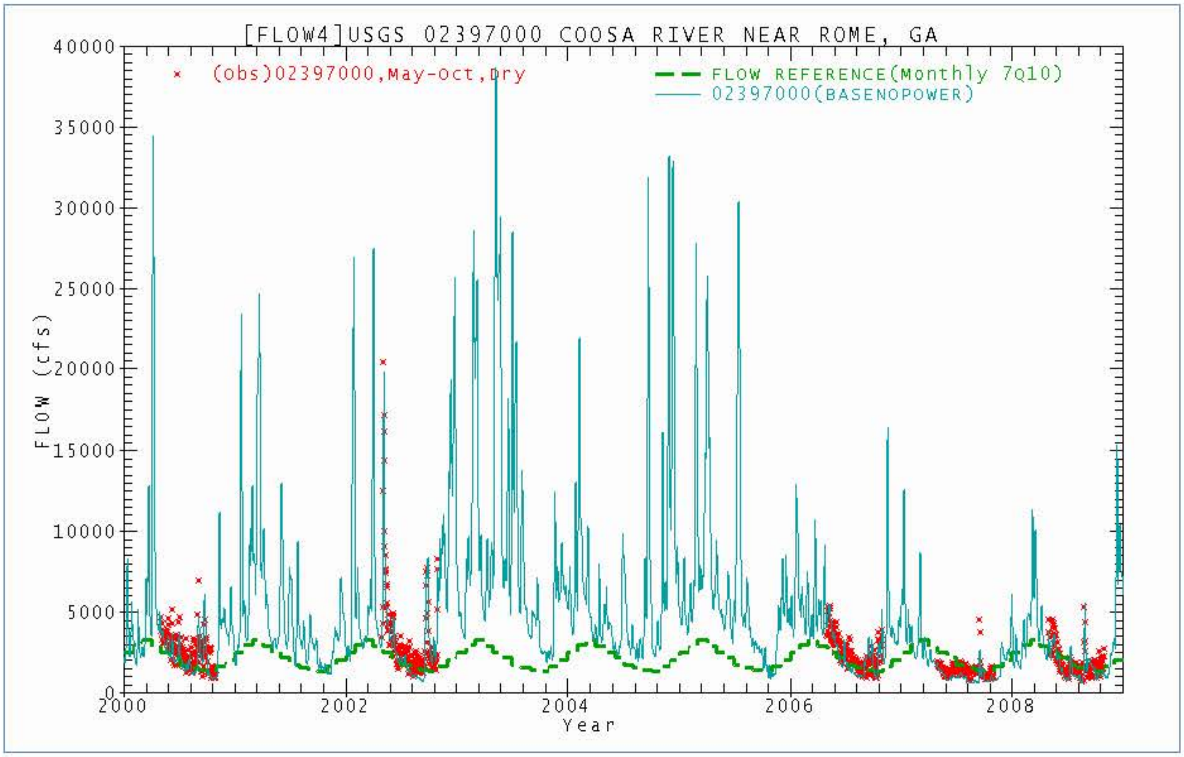
A18

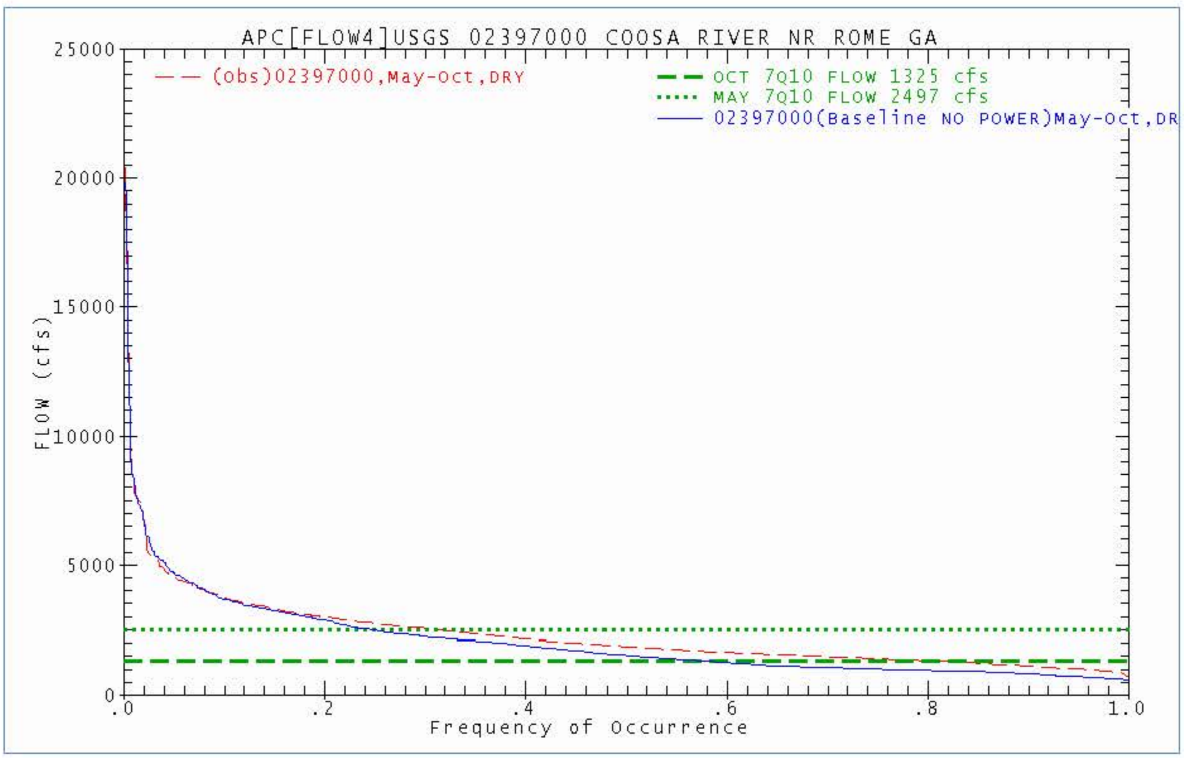




Figures 7A and 7B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.

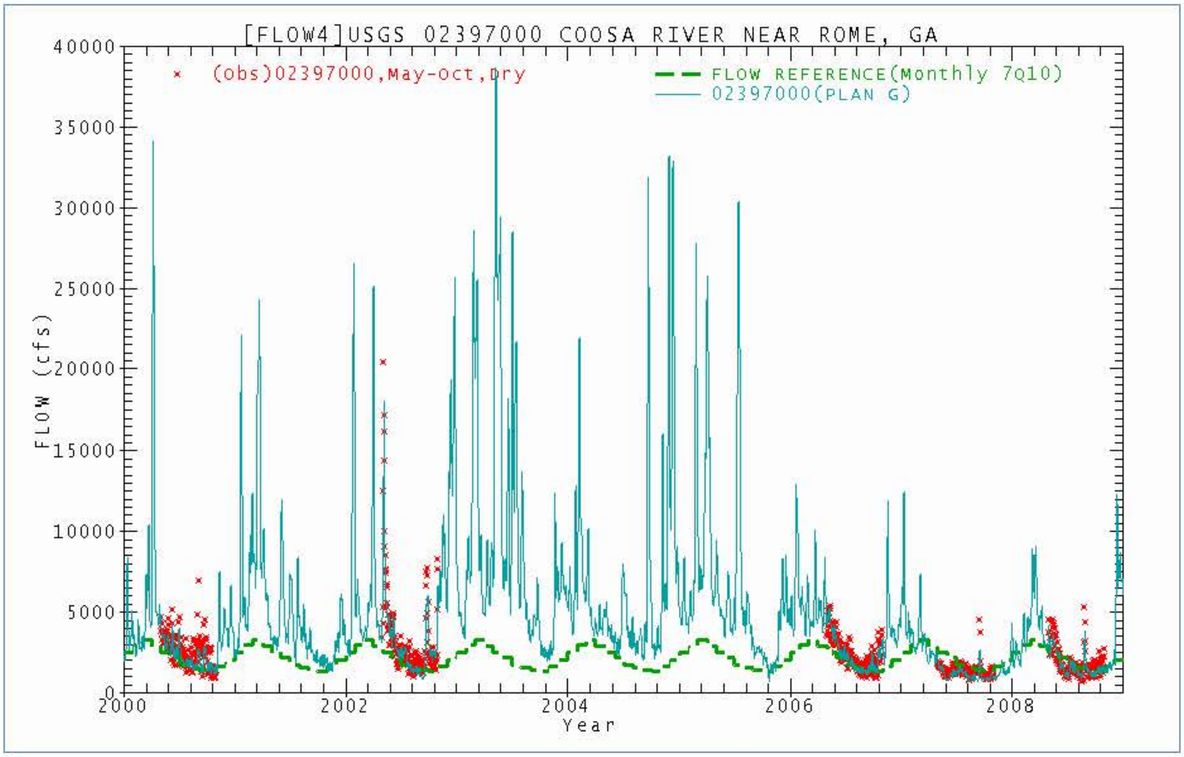
A19

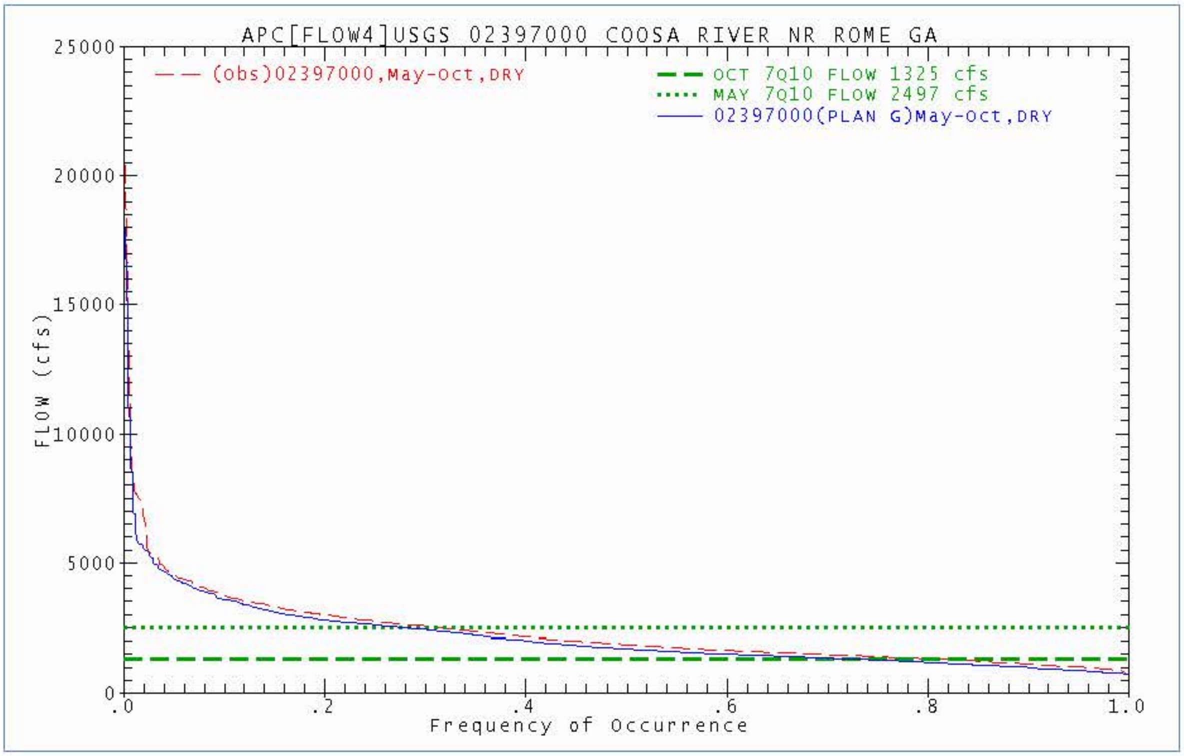




Figures 7C and 7D - Time series (C) and frequency distribution (D) of observed and simulated baseline with no power flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.

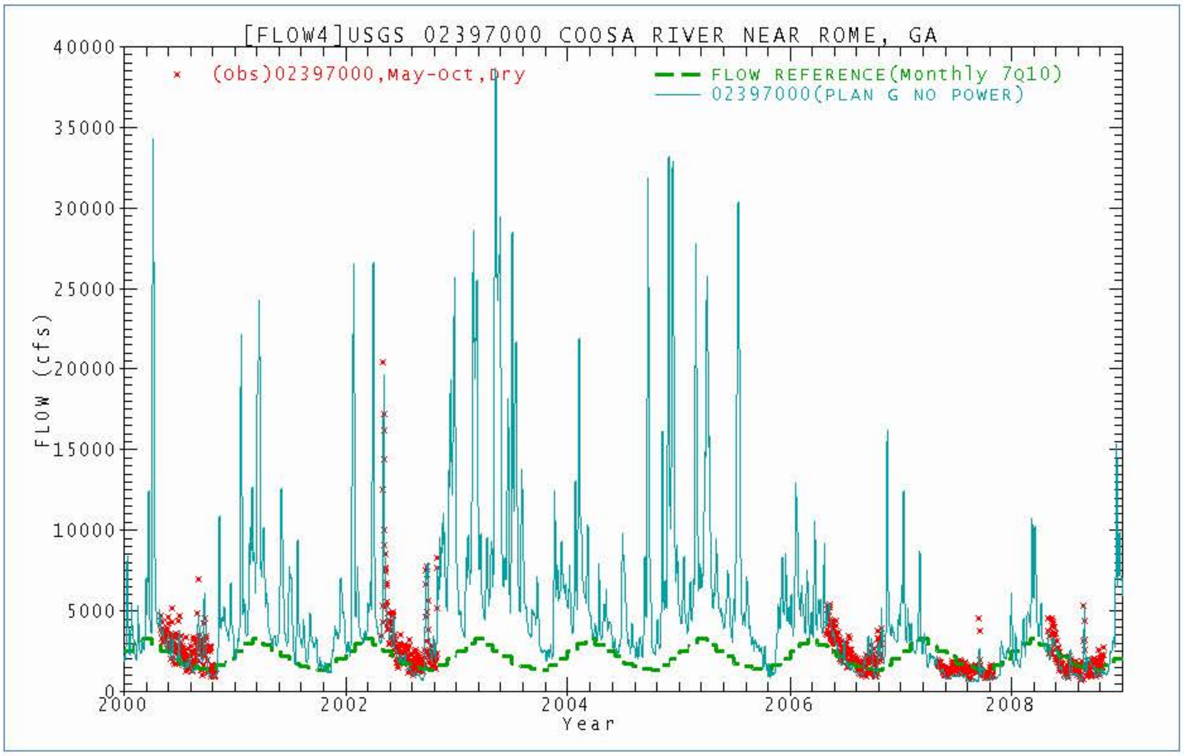
A20

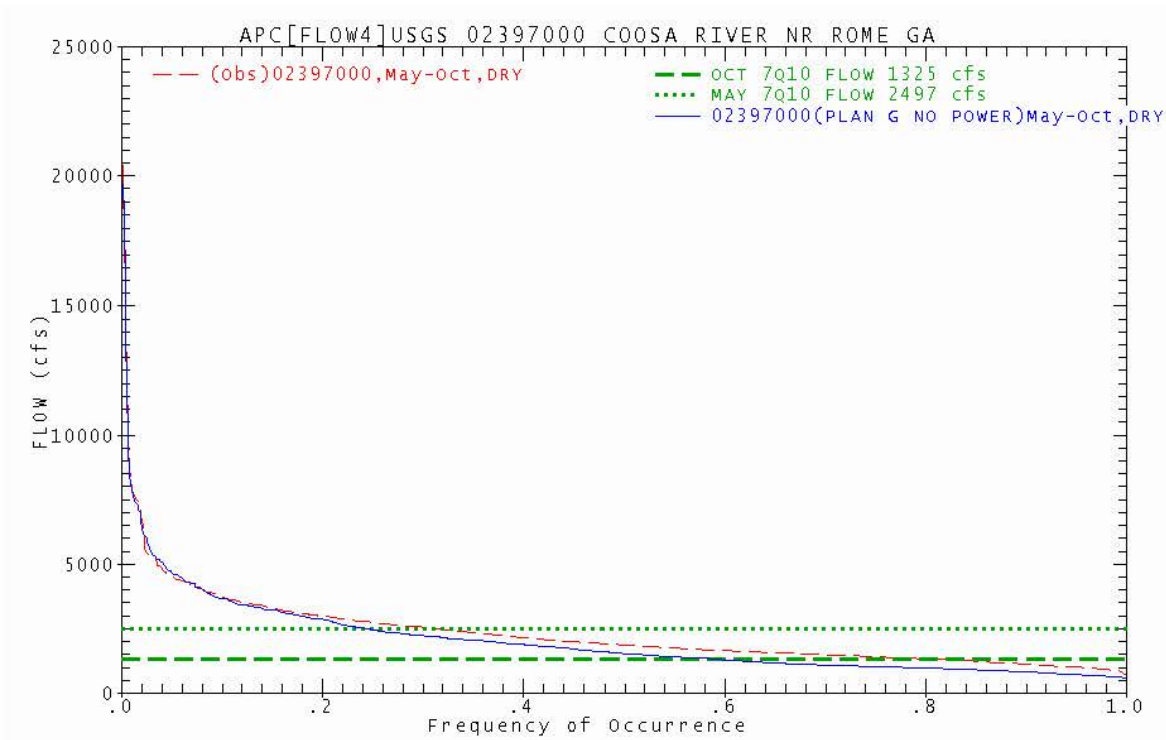




Figures 7E and 7F - Time series (E) and frequency distribution (F) of observed and simulated Plan G flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for “Dry” years.

A21





Figures 7G and 7H - Time series (G) and frequency distribution (H) of observed and simulated Plan G with no power flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.

A22

Table 9 - Summary statistics for observed and simulated flow at USGS gage 02382500 on the Coosawattee River at Carters, GA. Data extracted for 2000-2008, May-Oct growing season for “Dry” years. Mean +/- 2 Standard Error represents 95% confidence interval.

FLOW5 USGS 02382500 COOSAWATTEE RIVER AT CARTERS, GA		
Summary Statistics	**USGS 02382500 Observed Flow (CFS)**	**HWMS Modeled Baseline (CFS)**
May-Oct, 2000-2008, Flow (CFS)	**Dry Years - 2000, 2002, 2006, 2007, 2008**	
F#08=N_Obs	920	920
F#09=Mean	463	397
F#10=Mean+2 Standard Error	478	414
F#11=Mean-2 Standard Error	448	381
F#12=Minimum	151	240
F#13=05%ile	253	240
F#14=10%ile	280	240
F#15=25%ile	335	240
F#16=50%ile	397	265
F#17=75%ile	516	493
F#18=90%ile	718	723
F#19=95%ile	837	822
F#20=Maximum	2460	3180

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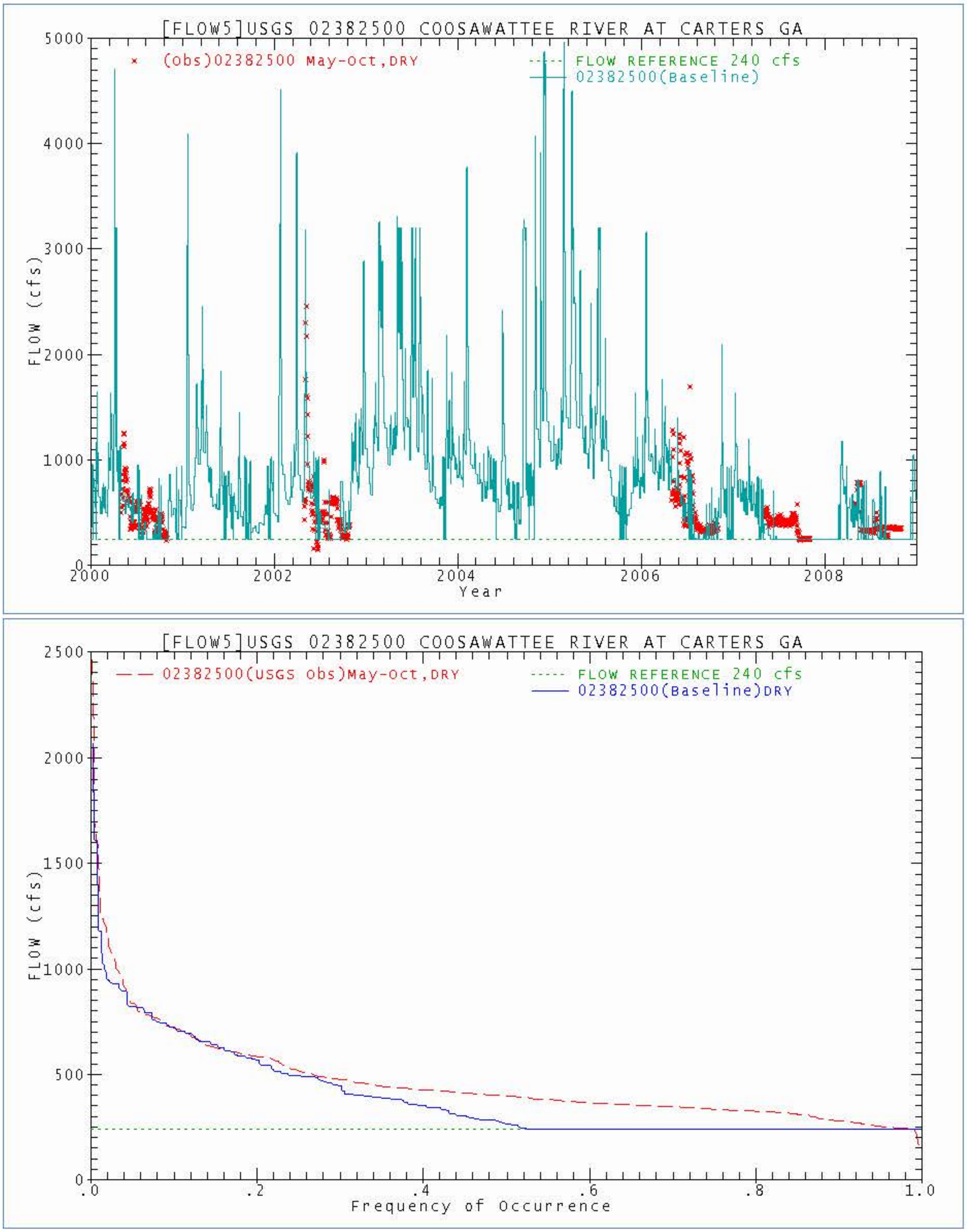

Figures 8A and 8B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02382500 on the Coosawattee River at Carters, GA. Data extracted for 2000-2008, May-Oct growing season for “Dry” years.

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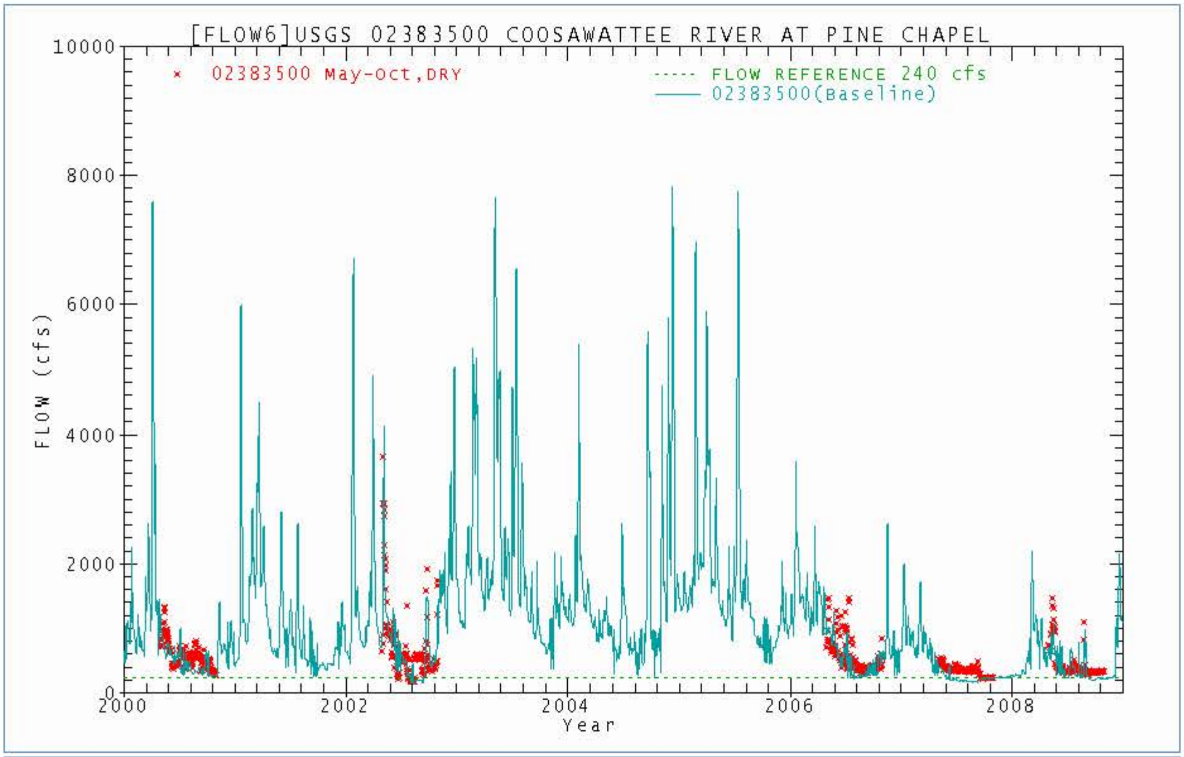
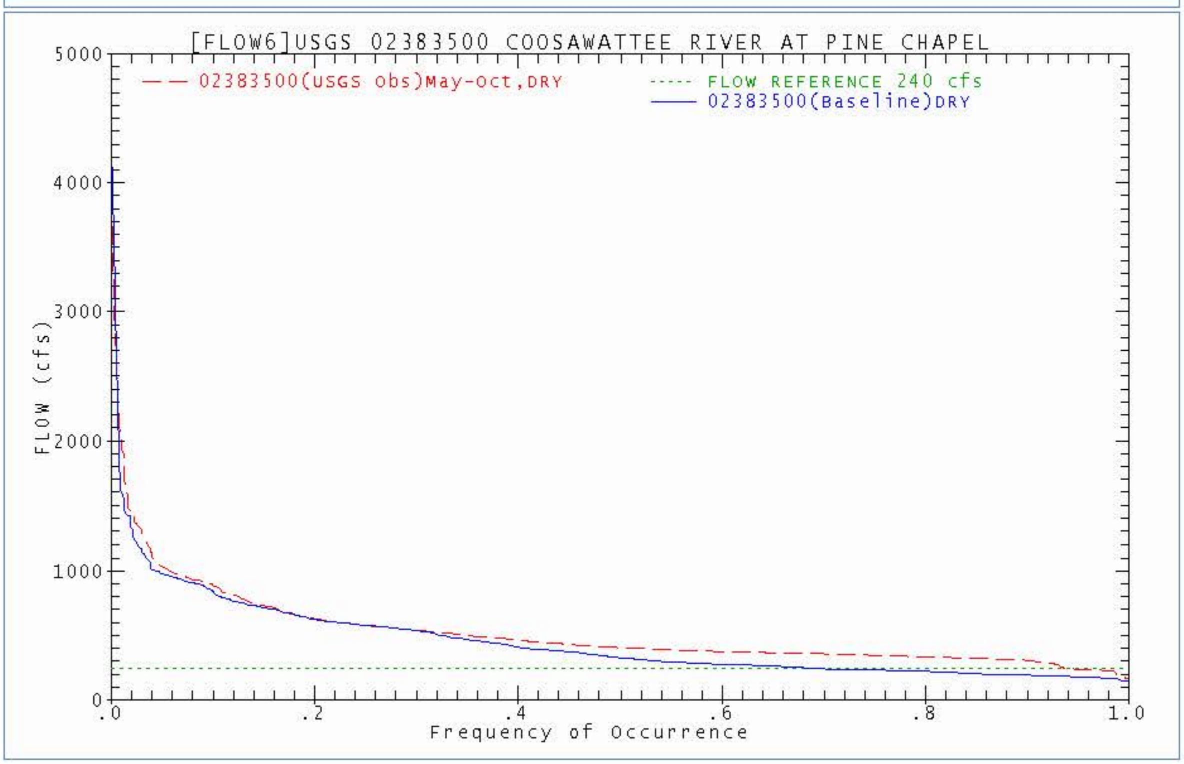
Table 10 - Summary statistics for observed and simulated flow at USGS gage 02383500 on the Coosawattee River at Pine Chapel, GA. Data extracted for 2000-2008, May-Oct growing season for “Dry” years. Mean +/- 2 Standard Error represents 95% confidence interval.

FLOW6 USGS 02383500 COOSAWATTEE RIVER AT PINE CHAPEL		
Summary Statistics	**USGS 02383500 Observed Flow (CFS)**	**HWMS Modeled Baseline (CFS)**
May-Oct, 2000-2008, Flow (CFS)	**Dry Years - 2000, 2002, 2006, 2007, 2008**	
F#08=N_Obs	920	920
F#09=Mean	518	452
F#10=Mean+2 Standard Error	540	475
F#11=Mean-2 Standard Error	497	428
F#12=Minimum	168	142
F#13=05%ile	239	181
F#14=10%ile	306	192
F#15=25%ile	345	232
F#16=50%ile	404	327
F#17=75%ile	579	578
F#18=90%ile	884	838
F#19=95%ile	1030	977
F#20=Maximum	3660	4120

A25





Figures 9A and 9B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02383500 on the Coosawattee River at Pine Chapel, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.

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APPENDIX B – Dissolved Oxygen

1. Summary of Key Issues and Findings Related to Dissolved Oxygen

Section 6 of the Draft EIS presents results of the HEC-5Q water quality model for dissolved oxygen as (a) a longitudinal profile along the Coosa River from River Mile 650 to 350 for the growing season months of May-October for the dry-weather year of 2007 (Figure 6.1-65) and (b) summary table of median oxygen statistics computed for January-December for average (2002), wet (2003) and dry (2007) years by river mile of the model domain (Table 6.1-7). The model results for dissolved oxygen are presented in the Draft EIS as the relative difference between the Baseline No Action scenario and the Alternative Plan scenarios. In the absence of data presented in Figure 6.1-65 and Table 6.1-7 that informs the reader about the predicted dissolved oxygen concentration for the Baseline No Action scenario under the same hydrologic conditions for the same months of the year at different river mile locations, it is difficult to evaluate the significance of the relative change in dissolved oxygen that results from simulations of the proposed action and the alternative plan scenarios.

Appendix D of the Draft EIS presents model results and observed data from USGS, ADEM and GAEPD stations compiled by the U.S. Army Corps of Engineers for dissolved oxygen as longitudinal profiles along the Coosa River (Figures 3-49, 4-14, 4-24, 4-25), vertical profiles in Weiss Reservoir (Figure 3-6), and time series (Figure 3-45) and frequency distributions (Figure 4-9) at the AL/GA Stateline station located on the Coosa River upstream of Weiss Reservoir. Although the longitudinal profiles presented in the Draft EIS Section 6 and Appendix D show the 5th, 50th, and 95th percentile statistics of the model results to depict the temporal variability of model results, there is no consistent set of longitudinal profile plots or summary table of statistics for results by river mile that allows a reviewer to evaluate the model results and observed data under "worst-case" hydrologic conditions during the growing season months of May-October for either the representative dry year of 2007 or other dry years of record from 2000-2008. Model results are presented as: (a) a composite of all years from 2000-2008 for all months from January-December; (b) a composite of all years from 2000-2008 for growing season months of May-October; or (c) the representative dry year of 2007 for all months from January-December.

The model results presented in the Draft EIS do not allow a reviewer to clearly evaluate the impact of the Baseline Scenario, the proposed action and alternative plan scenarios on dissolved oxygen at key locations under "worst-case" dry year conditions during the growing season months of May-October. The Alabama Power Company is concerned that the results presented in the Draft EIS may not provide an adequate representation of the impact of "worst-case" hydrologic conditions on dissolved oxygen conditions in the Coosa River at the AL/GA Stateline and in Weiss Lake near the dam.

The objective of the analysis described in this memo is, therefore, to perform an evaluation of the comparison between Baseline Scenario model results and observed "worst-case" dry year hydrologic conditions for the May-October growing season. Model results and observed data were used to compile summary statistics and frequency distributions for oxygen based on filtering data records for the 1 May-31 October growing season during the dry years of record from 2000-2008. The methodology used to define dry years during 2000-2008 is documented in the flow analysis (Appendix A). Model results and observed dissolved oxygen data were extracted for stations on the Coosa River at the AL/GA Stateline and in Weiss Lake near the dam (Figure 1). Station data at the AL/GA stateline was obtained from the

B1

EPA and USGS Water Quality Portal while Alabama Power Company (APC) provided oxygen records for Weiss Lake at the station near the dam (Table 1).

Table 1 - Summary of Stations Used for Dissolved Oxygen Analysis

Longitude	**Latitude**	**Station Name**	**Description**
-85.4475	34.2018	USGS-02397530	STATE LINE AL-GA Data Source: USGS & EPA Water Quality Portal
-85.4439	34.1983	21GAEPD_WQX-1405010601	
-85.4439	34.1983	21GAEPD-14450001	
-85.4439	34.1983	21GAEPD_WQX-14450001	
-85.7941	34.1341	APC-COFWE588.6	Weiss Lake Near Dam Data Source: APC

B2

Figure 1 - Upper Panel: Location of USGS and GAEPD stations used for comparison of observed data to model results for the Coosa River at the AL/GA Stateline. Lower Panel: Location of station used for comparison of observed oxygen data to model results at Weiss Lake near the dam

B3

2. Summary and Conclusions

The Draft EIS clearly states (page 6-77) that the HEC-5Q water quality model has not been developed (or calibrated) to reproduce historical water quality records. The intent of the model instead was to capture the wide range of hydrologic conditions that influence water quality. The water quality model was developed to represent the effect of streamflow, external loads, and reservoir operations under average, wet, and dry hydrologic conditions observed during the 2000-2008 period.

Our review of model performance under "worst-case" May-October, dry year hydrologic conditions demonstrates that the water quality model consistently overpredicts the lower quartile of observed dissolved oxygen records at each of the station locations evaluated. For compliance with dissolved oxygen water quality criteria, the "worst-case" dry year hydrologic conditions during May-October and the lower quartile (5th, 10th, and 25thpercentile) statistics define the best hydrologic and statistical indicators for dissolved oxygen. In the Draft EIS, the median values of the difference between the baseline and proposed alternative presented in Table 6.1-7, even for the representative dry year of 2007, do not accurately portray the potential "worst-case" impact of the proposed plan on compliance with oxygen criteria. Since the baseline model overpredicts observed oxygen records, simulated predictions of the potential impact of the proposed alternative plan on dissolved oxygen under "worst-case" hydrologic conditions will provide reviewers with an overly optimistic assessment of the potential adverse impact of the proposed or alternative plans for reservoir operations. Details of the analysis of results are presented in the following section. An overview evaluation of each of the stations follows.

<u>Coosa River at the AL/GA Stateline</u>. The model overpredicts observed records by 0.9-1.6 mg/L. The model predicts a range of 6.7-7.0 mg/L while the observations show 5.0-6.1 mg/L for the 5th, 10th and 25th percentile statistics (Table 2). Under "worst-case" May-October dry year conditions, the flow model shows statistically good agreement with observed flow records for the Coosa River near Rome, GA. The water quality model, however, is not able to capture the effect of "worst-case" low-flow hydrologic conditions, even with a good simulation of streamflow at this location, on dissolved oxygen in the Coosa River at this location.

<u>Weiss Lake Near the Dam</u>. Within the surface layer (K=8), the model overpredicts observed records by 0.4-1.3 mg/L. The model predicts a range of 6.3-7.1 mg/L while the observations show a lower range of 5.0-6.7 mg/L for the 5th, 10th and 25th percentile statistics (Table 3). The statistical agreement between the model and observations is not as good as the surface layer in the sub-surface layers (K=7, 6, 5, 4) of the Weiss Lake station. For the sub-surface layers, the model overpredicts observed records by a wide range of 3.2-6.1 mg/L. The model shows a range of 3.7-6.9 mg/L for DO in the sub-surface layers while the observations show much lower DO levels ranging from 0.1-3.6 mg/L for the 5th, 10th and 25th percentile statistics (Table 3).

B4

3. Detailed Analysis of Dissolved Oxygen Data

Coosa River at AL/GA Stateline

Locations of the USGS and GAEPD stations used for the comparison of model results to observed water quality records are shown in Figure 2. HEC-5Q model results were extracted for in this reach of the Coosa River for the model segment identified as Segment 08. Figure 3 shows the time series comparison of baseline model results and observed dissolved oxygen records. Observed DO records are shown for the May-October growing season period for average, wet, and dry years. Model data and observations for the Coosa River at the AL/GA Stateline are presented by the COE in Figure 3-45 in Appendix D of the Draft EIS. As can be seen in Figure 3, the data extracted from the HEC-5Q model for this detailed analysis of oxygen data matches the time series of oxygen presented by the COE in Figure 3-45 in Appendix D for the Stateline location. The comparison shown in the upper and lower panels of Figure 3 demonstrates that the HEC-5Q model results extracted for this analysis by Dynamic Solutions (lower panel) can replicate the water quality model results presented by the COE (upper panel).

As can be seen in the time series plot (Figure 3), the water quality model consistently overpredicts the seasonal summer low oxygen conditions for most of the years of record from 2000-2008. In particular, the model does not reproduce the lowest oxygen levels recorded during the extreme dry conditions of 2007 where some of the observations are less than the 5 mg/L water quality criteria.

Observed records and model results were filtered to extract May-October dry year data to compile summary statistics (Table 2) and frequency distribution plots (Figure 4). Figure 4 shows a comparison of the model baseline results and the observed oxygen data for May-October dry years and January-December all years. As can be seen with the frequency distribution and the summary statistics presented in Table 2, the model overpredicts observed DO for the first and second quartiles. The model shows reasonable statistical agreement for the third quartile, and the model underpredicts the observed DO data for the fourth quartile. The lower panel of Figure 4 shows details of the model results for the low oxygen conditions for the first quartile. The 5^{th} percentile of the observed May-October DO data for the dry years is 5 mg/L while the 5^{th} percentile of the baseline model result for the same hydrologic condition is 6.6 mg/L. The comparison between the composite model results and composite observed DO data for all months and years shows a similar distribution pattern for the lower and upper quartiles where the model overpredicts the lower oxygen distribution and underpredicts the higher end of the distribution.

Analysis of flow results obtained with the HEC-RES SIM model shows that the modeled baseline flow results are in statistically good agreement with the observed flow records for the USGS gage on the Coosa River near Rome, GA (Figure 5). As shown in the frequency distribution (lower panel of Figure 5) and Table 2 for streamflow, the baseline model results (891 cfs) are 12% lower than the observed flow (1,020 cfs) for the "worst-case" flow conditions at the 95^{th} percentile. Since the flow model results are in statistically good agreement with observed flow, even under "worst-case" hydrologic conditions, one would expect that the simulated results for dissolved oxygen would also show comparable statistically good agreement for the same "worst-case" low-flow conditions since streamflow is a major driver for oxygen in the water quality model. The 5^{th} percentile model results for oxygen, however, are 33% higher than the observed data by 1.7 mg/L under the same "worst-case" May-October, dry year conditions.

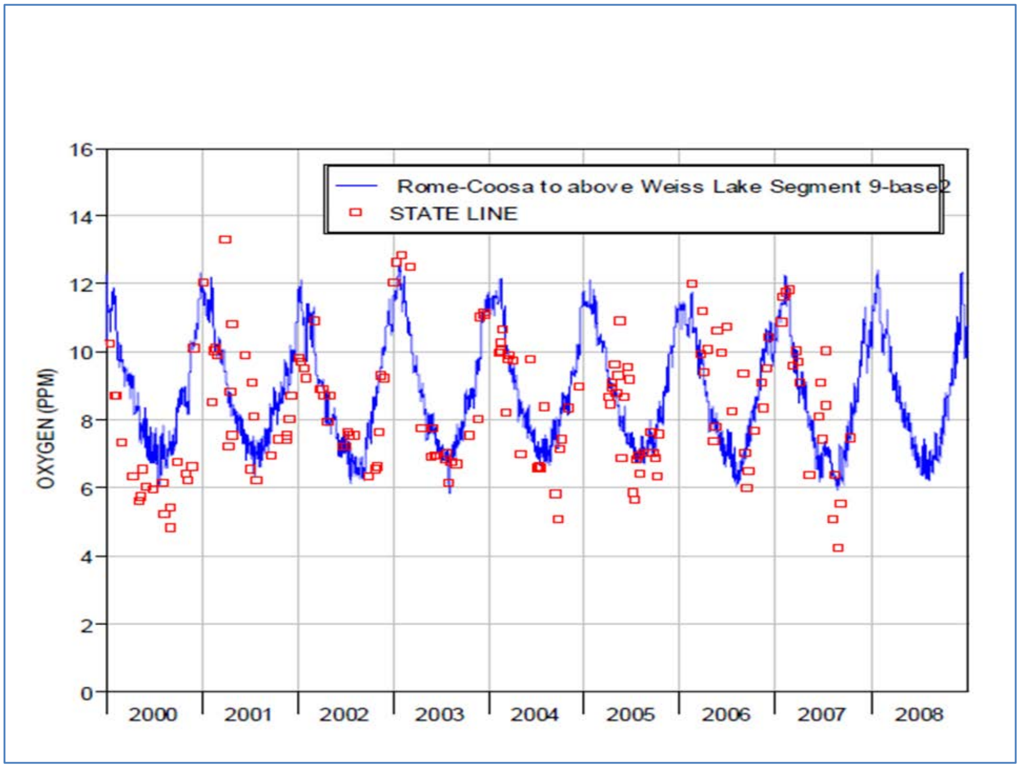
B5

Figure 2 - Location of stations used for the Coosa River at the AL/GA Stateline.

Table 2 - Summary statistics for observed and simulated dissolved oxygen. Data extracted for 2000-2008, May-October for Dry years. Mean +/- 2 Standard Error represents 95% confidence interval.

AL/GA Stateline	**Dissolved Oxygen (mg/L)**				
Summary Statistics May-Oct, 2000-2008	**Observed Data**	**Baseline SEG08**	**Plan G SEG08**	**Baseline No Power SEG08**	**Plan G No Power SEG08**
	Dry Years - 2000, 2002, 2006, 2007, 2008				
F#08=N_Obs	139	3685	3685	3685	3685
F#09=Mean	7.10	7.52	7.49	7.50	7.50
F#10=Mean+2 Standard Error	7.35	7.54	7.51	7.52	7.52
F#11=Mean-2 Standard Error	6.84	7.50	7.47	7.48	7.47
F#12=Minimum	4.19	6.34	6.33	6.17	6.21
F#13=05%ile	5.04	6.69	6.64	6.62	6.62
F#14=10%ile	5.40	6.79	6.76	6.74	6.74
F#15=25%ile	6.10	7.02	6.97	6.99	6.98
F#16=50%ile	6.80	7.34	7.29	7.34	7.34
F#17=75%ile	7.79	8.00	7.97	7.95	7.94
F#18=90%ile	9.31	8.51	8.53	8.55	8.54
F#19=95%ile	10.1	8.78	8.79	8.84	8.84
F#20=Maximum	10.7	9.35	9.33	9.39	9.38

B6



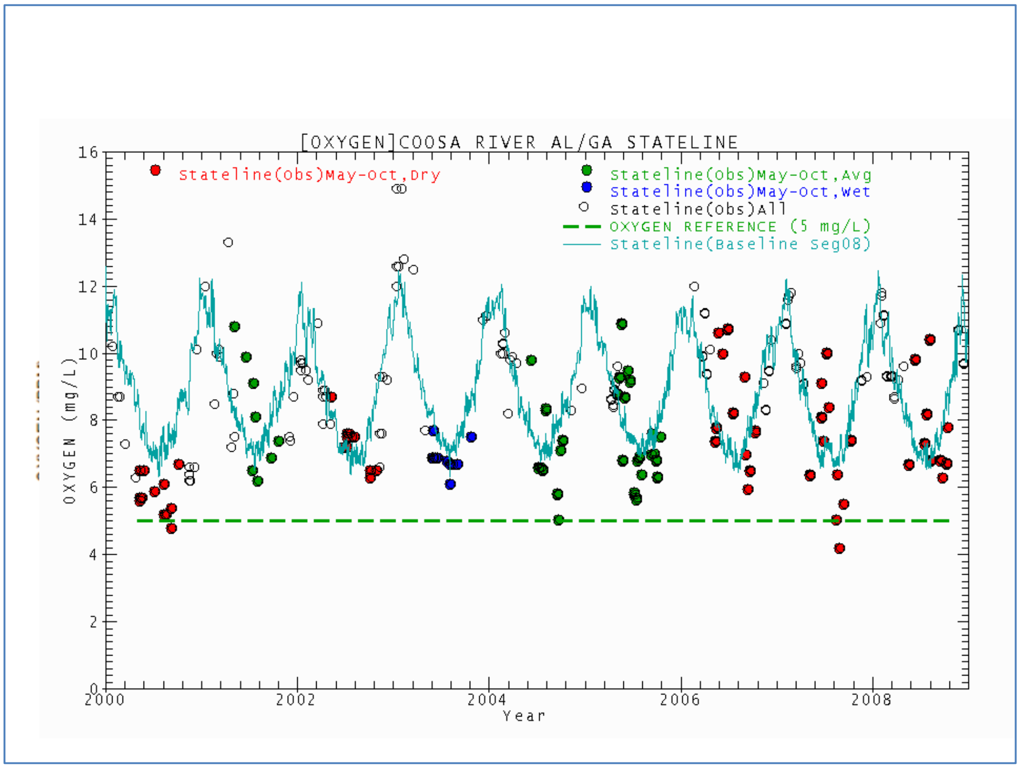


Figure 3- Time series of observed and simulated (baseline) oxygen in the Coosa River at AL/GA Stateline. Upper panel is from COE Figure 3-45 of Appendix D, Draft EIS. Lower panel is model data extracted from HEC-5Q by Dynamic Solutions.

B7

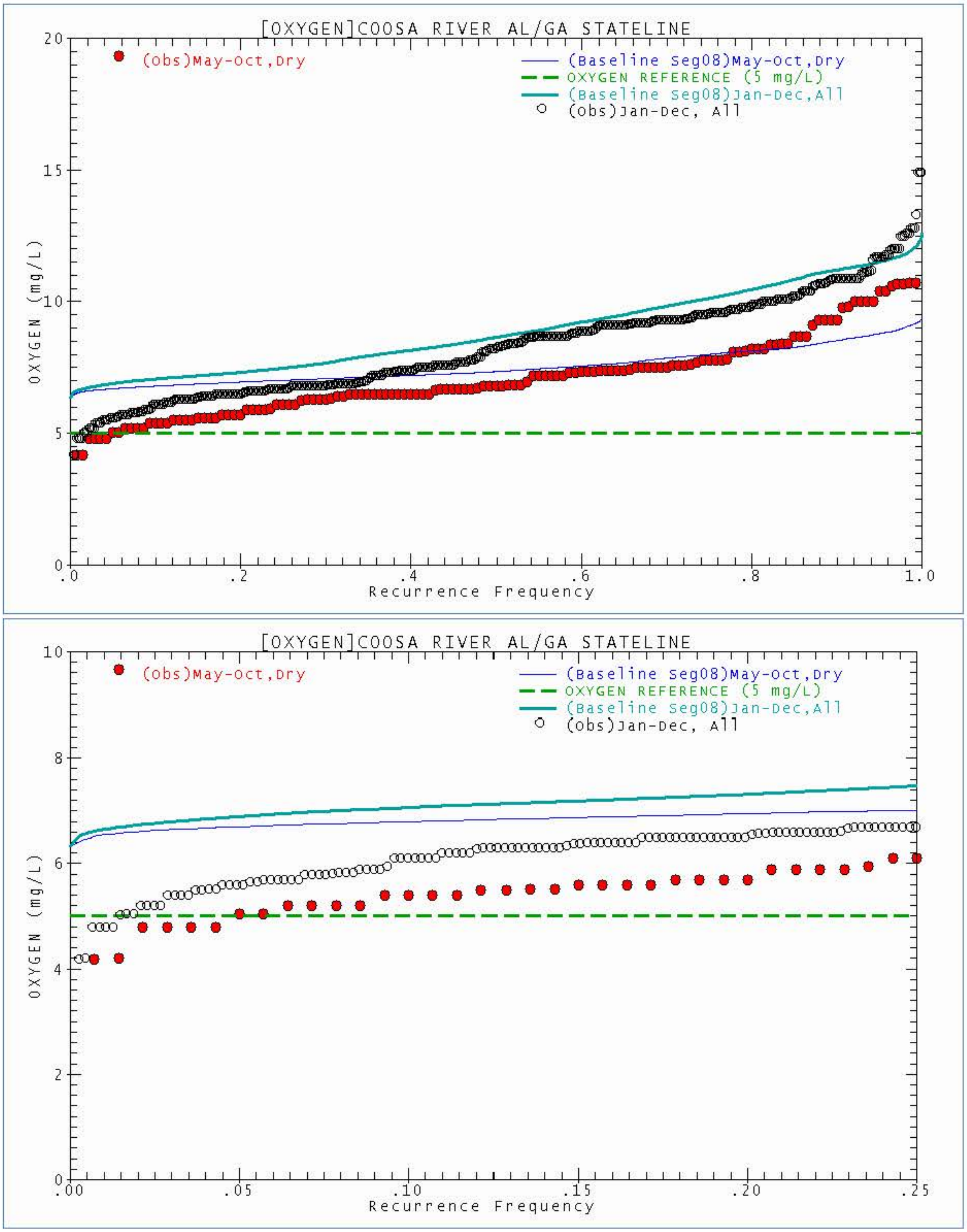
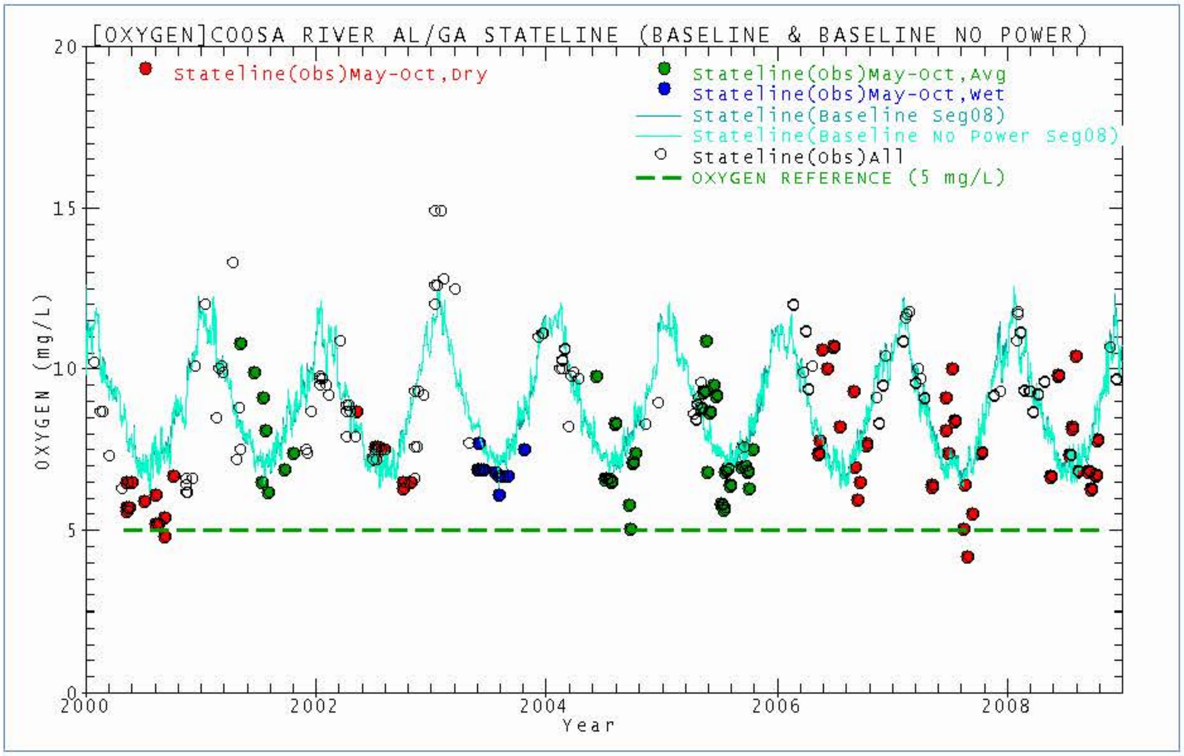
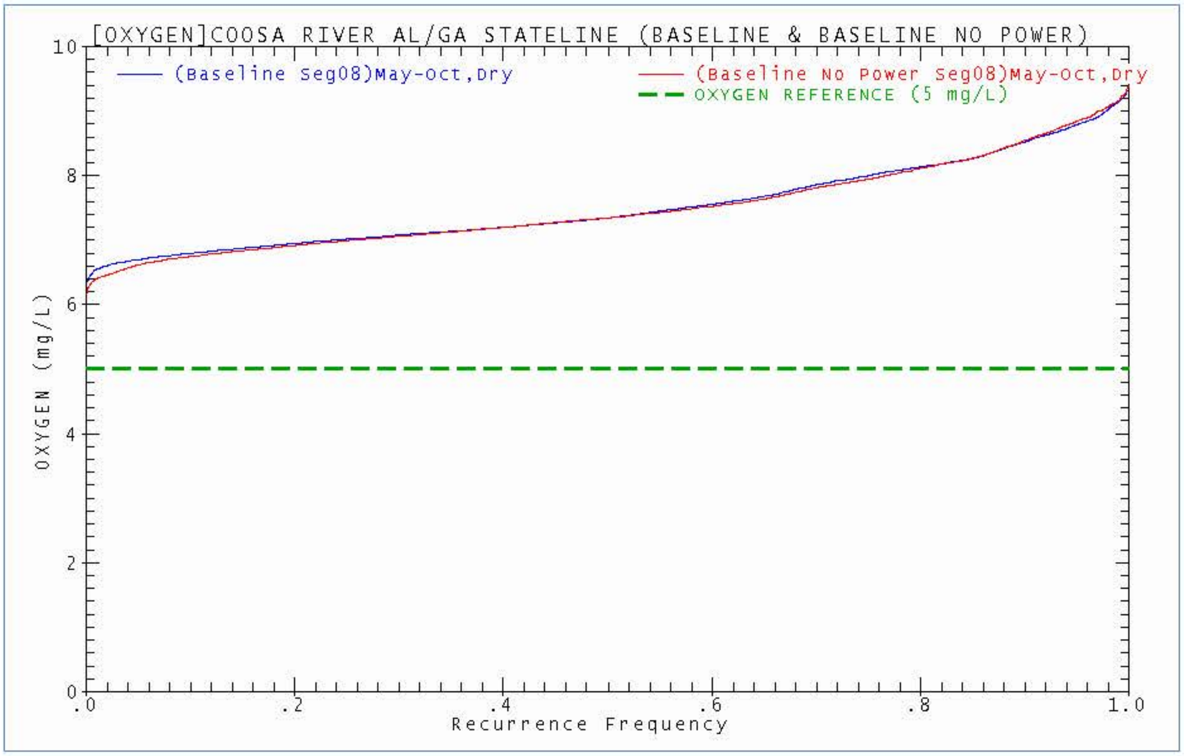


Figure 4A - Frequency distributions of observed and simulated (Baseline) dissolved oxygen in the Coosa River at AL/GA Stateline. Observed data and comparison to model results for 2000-2008 May-October

B8

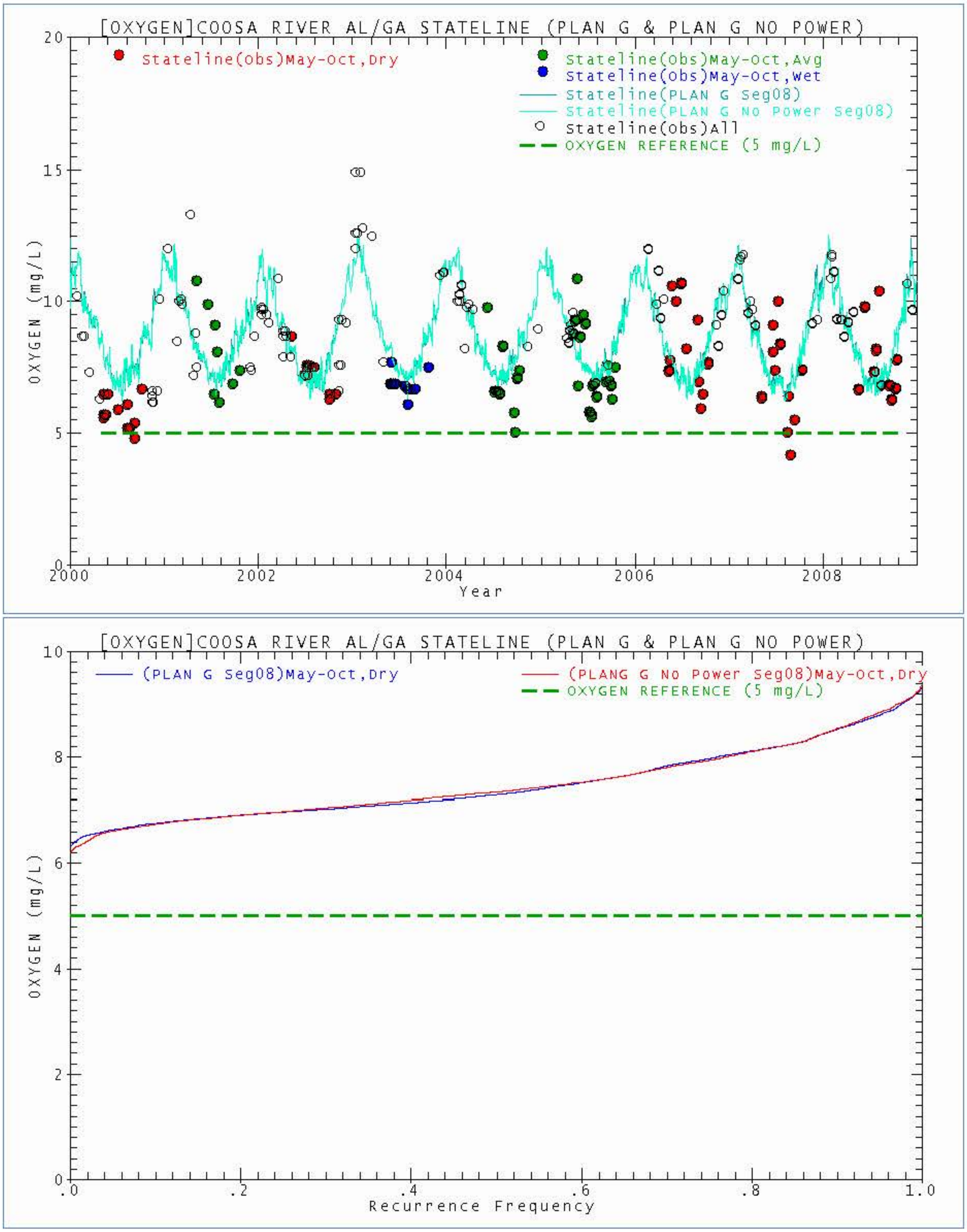
dry years (blue line, red filled circles) and composite 2000-2008 (light blue line, black open circles). Lower panel shows details of frequency distribution for lower quartile.





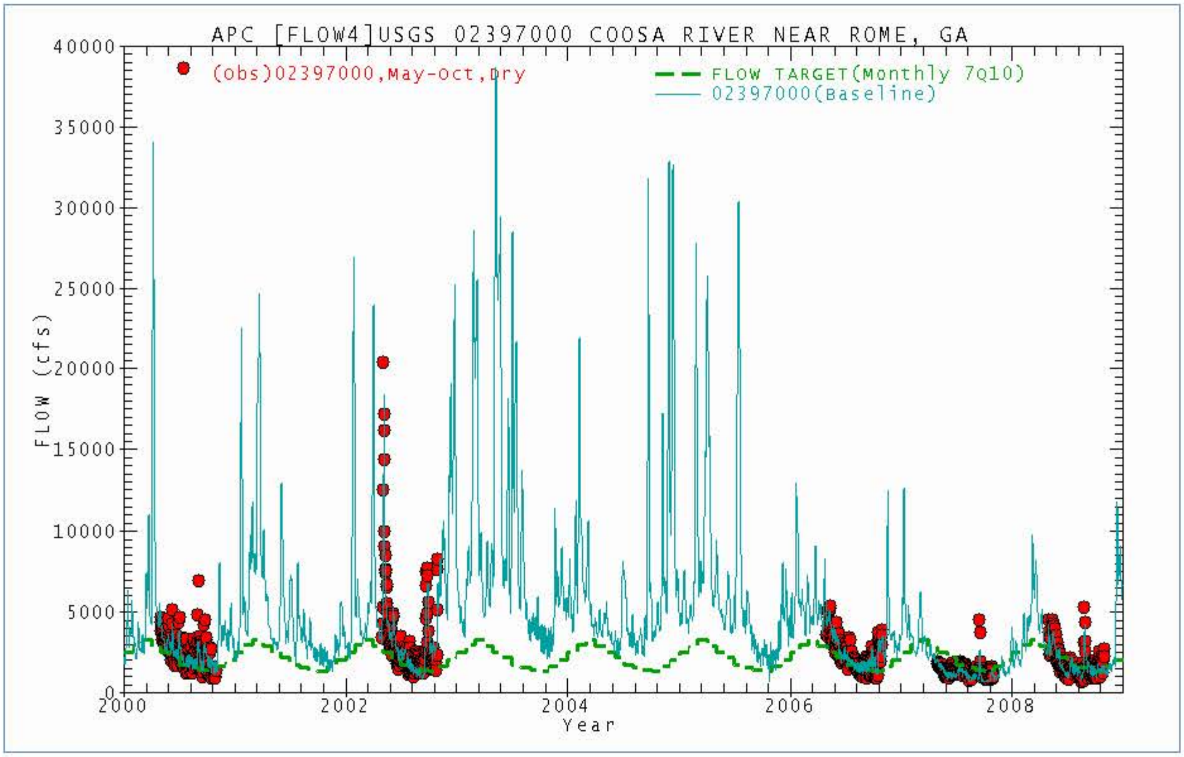
B9

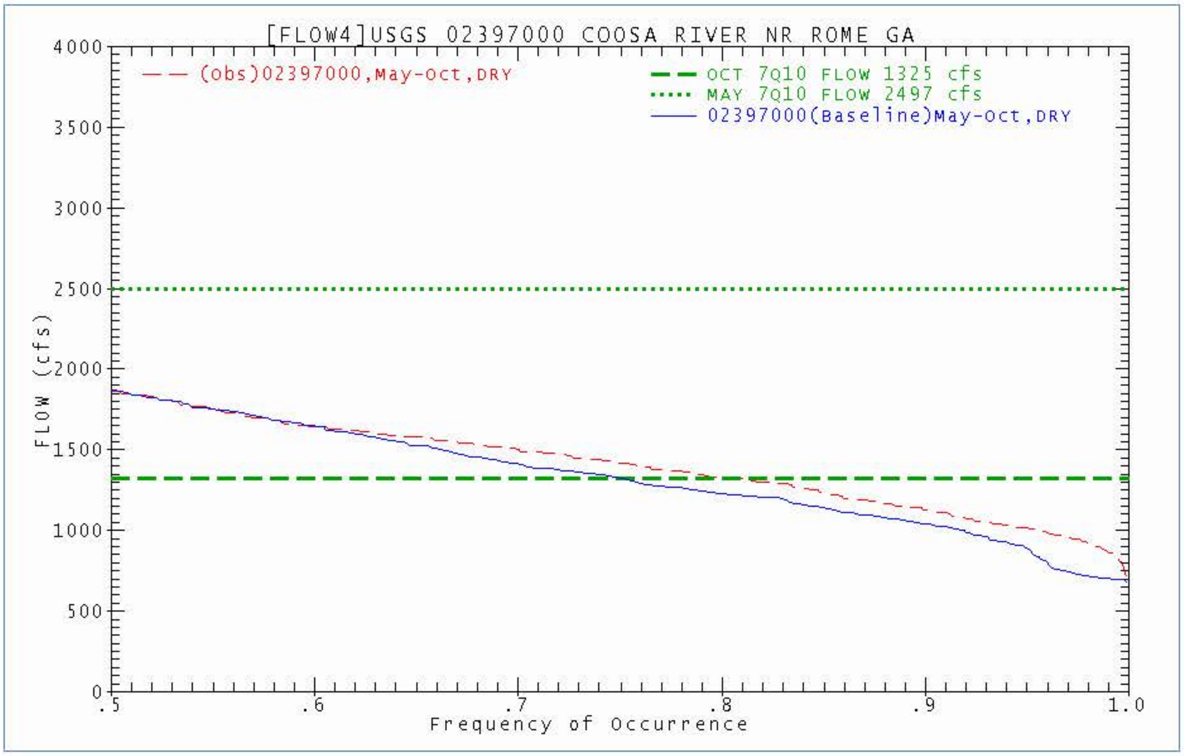
Figure 4B - Time series (upper panel) and frequency distribution (lower panel) comparison of observed and simulated (Baseline and Baseline No Power) dissolved oxygen at the Stateline Coosa River. Observed data shown for 2000-2008, May-Oct for average, wet, and dry years.



B10

Figure 4C - Time series (upper panel) and frequency distribution (lower panel) comparison of observed and simulated (Plan G and Plan G No Power) dissolved oxygen at the Stateline in the Coosa River. Observed data shown for 2000-2008, May-Oct for average, wet and dry years.





B11

Figure 5 - Observed and simulated flow at USGS gage 02397000 on Coosa River near Rome, GA. Observed flow for 2000-2008, May-October for Dry years of record. Upper panel shows time series. Lower panel shows frequency distributions of model and observe data for low-flow conditions.

Weiss Lake near the Dam

The location of the APC station in Weiss Lake used for comparison of model results to observed water quality records is shown in Figure 6. Water quality model results were extracted from the HEC-5Q model for the Weiss Lake model segment (Segment 03) representing the forebay area near the dam. The water column depth of 62 ft for the station is derived from the normal pool elevation for Weiss Lake of 564 ft and a bottom elevation of 502 ft at the station location near the dam. Vertical profiles provided oxygen records at 5 ft intervals from 0 to a maximum depth of 40 ft. The Weiss Lake water quality model assigned 8 equal thickness layers to represent vertical gradients in the reservoir. Observed oxygen data and model results were filtered to extract May-October dry year data to compile summary statistics for the surface layer (K=8) and sub-surface layers (K=7, K=6, K=5, K=4) data (Table 3). Observed data was not available for the bottom layers (K=1 and K=2) and there was only a single observation recorded for Layer 3.

Figure 6 - Location of stations used for comparison of observed oxygen data to model results at Weiss Lake near the dam

B12

Table 3 - Summary statistics for observed and simulated dissolved oxygen at Weiss Lake Station near the Dam. Data extracted for 2000-2008, May-October growing season for Dry years. Mean +/- 2 Standard Error represents 95% confidence interval.

Summary Statistics	Layer 8		Layer 7		Layer 6		Layer 5		Layer 4	
May-Oct, DRY OXYGEN (mg/L) APC Weiss Lake Station 2000, 2002 2006, 2007, 2008	Obs DRY	SEG03 DRY	Obs DRY	SEG03 DRY	Obs DRY	SEG03 DRY	Obs DRY	SEG03 DRY	Obs DRY	SEG03 DRY
F#08=N_Obs	121	3685	58	3685	46	3685	30	3685	7	3685
F#09=Mean	8.46	7.75	5.38	7.68	4.64	7.55	2.28	7.14	4.15	5.75
F#10=Mean+2 Standard Error	8.87	7.78	5.92	7.72	5.31	7.59	3.09	7.17	6.53	5.79
F#11=Mean-2 Standard Error	8.06	7.72	4.84	7.65	3.97	7.51	1.48	7.10	1.78	5.70
F#12=Minimum	3.10	5.07	0.80	4.84	0.70	4.62	0.10	4.30	0.30	2.45
F#13=05%ile	5.00	6.33	2.11	6.10	1.30	5.84	0.10	5.46	0.47	3.71
F#14=10%ile	5.80	6.61	2.47	6.41	1.65	6.19	0.10	5.81	0.64	4.06
F#15=25%ile	6.70	7.08	3.63	6.92	2.85	6.76	0.20	6.34	1.24	4.71
F#16=50%ile	8.69	7.64	5.63	7.55	4.85	7.41	1.45	7.00	3.80	5.56
F#17=75%ile	9.90	8.43	6.74	8.41	6.21	8.32	4.38	7.94	7.10	6.81
F#18=90%ile	11.2	9.01	7.99	9.13	7.90	9.05	5.74	8.62	8.24	7.82
F#19=95%ile	11.8	9.35	9.00	9.54	8.38	9.54	6.16	9.02	8.27	8.09
F#20=Maximum	14.0	11.2	9.60	11.3	8.61	11.5	6.20	10.6	8.30	9.09

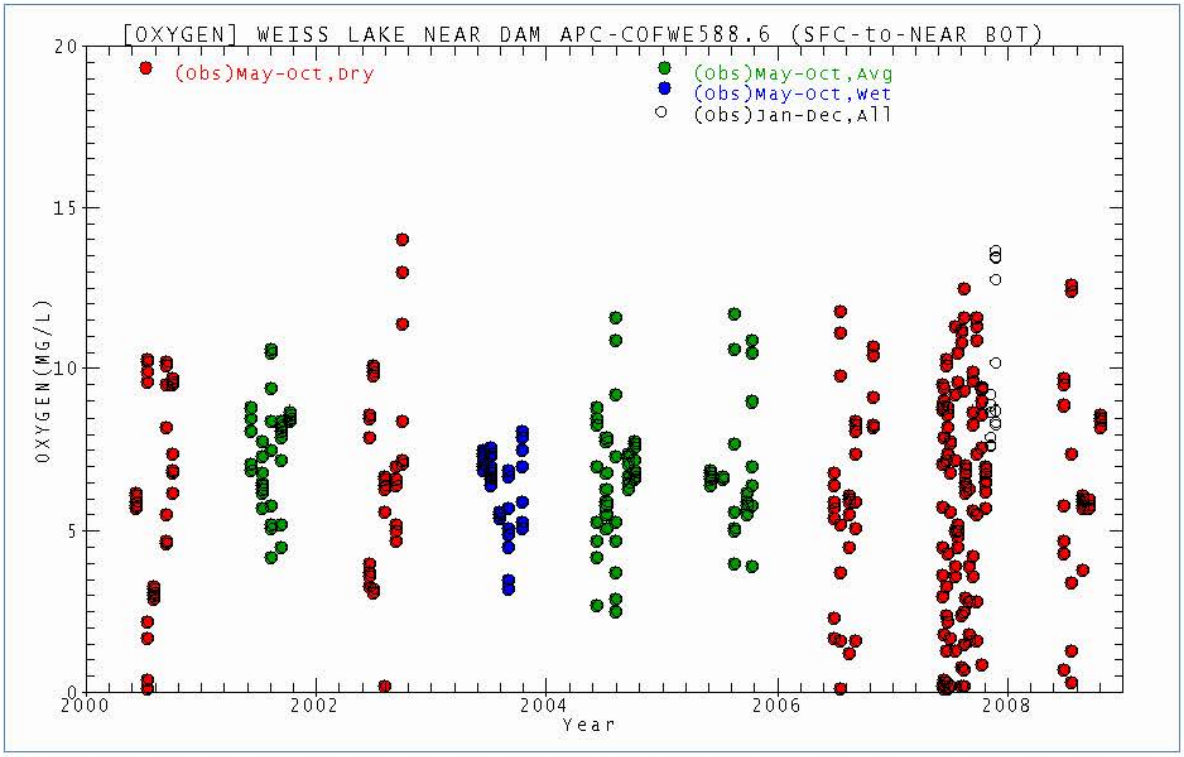
The upper panel of Figure 7 shows the time series of vertical profile DO data from surface to near bottom collected during the average, wet and dry years for 2000-2008. The lower panel shows only the dry year records with the vertical layer index. The surface layer is K=8 and the deepest near bottom observation is K=3. Observations are not available for the lower two layers (K=1 and K=2) for the lake station.

The upper panel of Figure 8 shows the time series comparison of baseline model results and observed dissolved oxygen records for the surface layer (K=8). The lower panel shows the frequency distribution for DO data extracted for May-October for the dry years for the surface layer (K=8). Observed DO records are shown in the time series plot for the May-October growing season period for average, wet and dry years. As can be seen in the time series plot, the water quality model provides a reasonable statistical representation of the seasonally varying low DO conditions for the surface layer. The model, however, underpredicts the observed high oxygen levels that are most apparent in the dry and average years. As noted in Appendix D of the Draft EIS, high algal productivity under the low-flow, longer retention time conditions, most likely contributes to the high observed levels of DO that are not reproduced by the model.

Baseline model results and observed dissolved oxygen records for sub-surface layers (K=7, K=6, K=5, K=4) are presented in Figure 9 through Figure 12. The upper panel in each figure shows the time series comparison of model results to average, wet and dry year observations for the depth layer. The lower panel of each figure shows the frequency distribution for DO data extracted for May-October for the dry years. Observed DO records are shown in the time series plot for the May-October growing season period for average, wet, and dry years. As can be seen in the time series and frequency distribution plots for each sub-surface layer, the water quality model overpredicts the seasonal summer low oxygen conditions for most of the years of record from 2000-2008. The 5th percentile statistics for dry year May-October observations and model results (Table 3) are used as an indicator of “worst-case” conditions for comparison of the observed data with model results for the sub-surface layers. Model performance is evaluated for each sub-surface layer by the difference between the model and observed data and the relative error. The model overpredicts observed DO levels by a range of 3.2-5.4 mg/L for the sub-surface layers with the smallest discrepancy (3.2 mg/L) seen for layer 4 and the largest discrepancy (5.4 mg/L) identified for layer 5. The relative error of the model ranges from 190% for layer 7, 346% for layer 6, 5400% for layer 5 and 640% for layer 4.

Observed records and model results were filtered to extract May-October dry year data to compile summary statistics (Table 3) and frequency distribution plots (Figure 10 through Figure 13) for the sub-surface layers (K=7, K=6, K=5, K=4). The lower panel of each figure shows a comparison of the frequency distribution for the model baseline results and the observed oxygen data for May-October dry years and January-December composite of all years. As can be seen with the frequency distribution and the summary statistics presented in Table 3, the model overpredicts observed DO for the entire distribution of data for “worst-case” dry year, May- October conditions. Observed data, for example, shows that ~50-80% of the May-October dry year samples for Layer 5 and Layer 6 are less than 5 mg/L. By contrast, the model indicates that less than 5% of the model results for Layer 5 and Layer 6 are lower than 5 mg/L for the same hydrologic conditions. For the deepest layer with observations (K=4), records show 60% of the observed values are less than 5 mg/L while the model shows that 35% of the simulated DO values are less than 5 mg/L. The comparison between the composite model results and composite observed DO data for all months and years shows similar distribution patterns where the model tends to overpredict the oxygen distribution for all quartiles.

B14



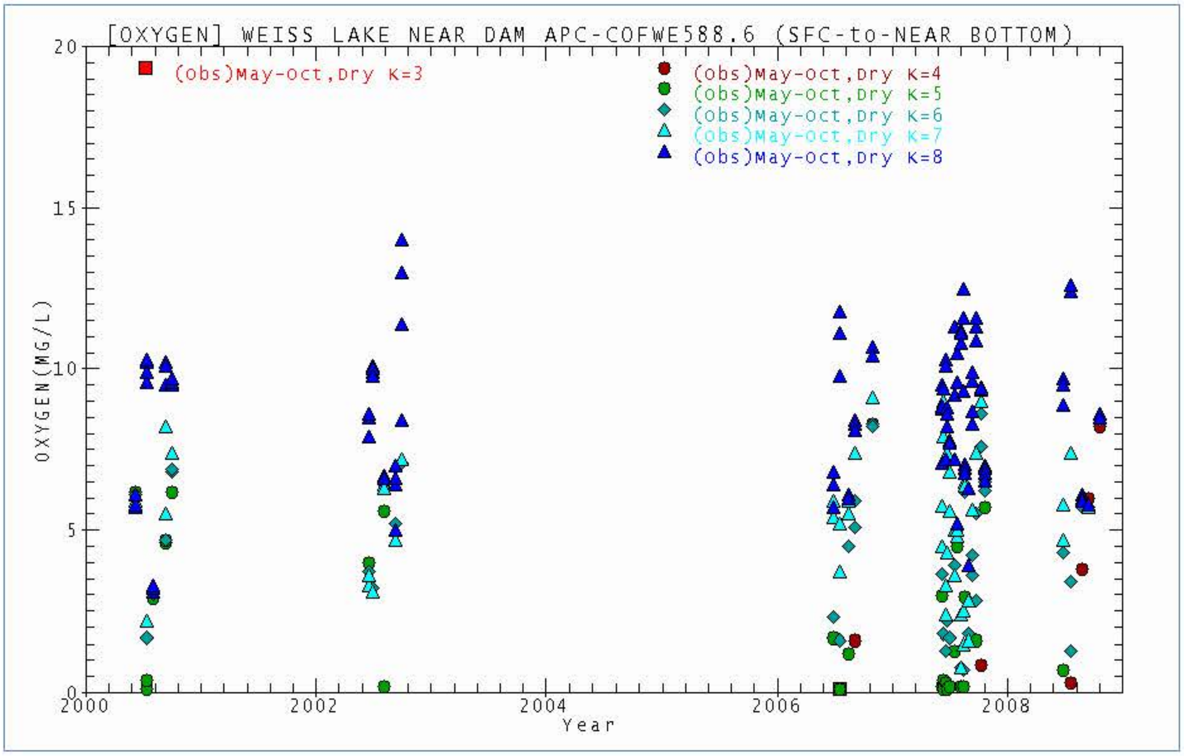
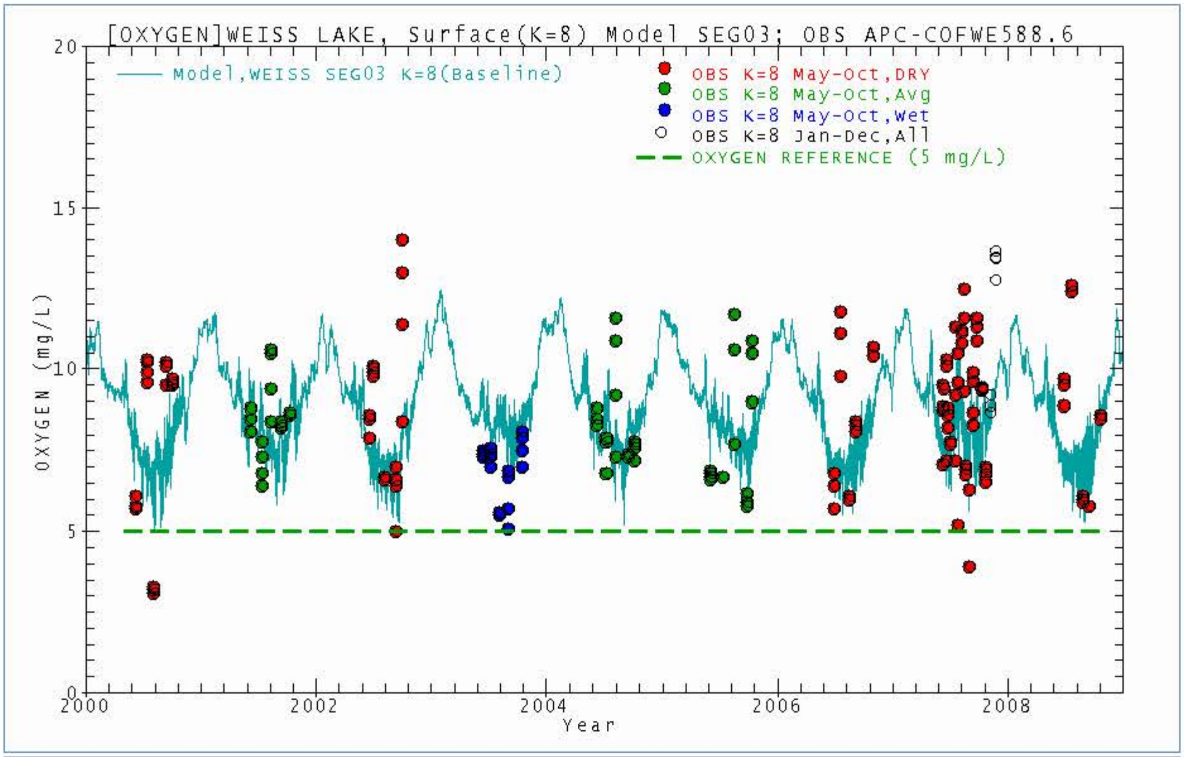


Figure 7 - Time series of observed DO for Weiss Reservoir near the dam. Upper panel shows time series observations for all depth profile samples (surface to near bottom). Average, wet and dry year samples are marked with green, blue and red filled circles. Lower panel shows time series observations for May-Oct dry years for depth samples marked by different symbols from surface (K=8) to near bottom (K=3).

B15



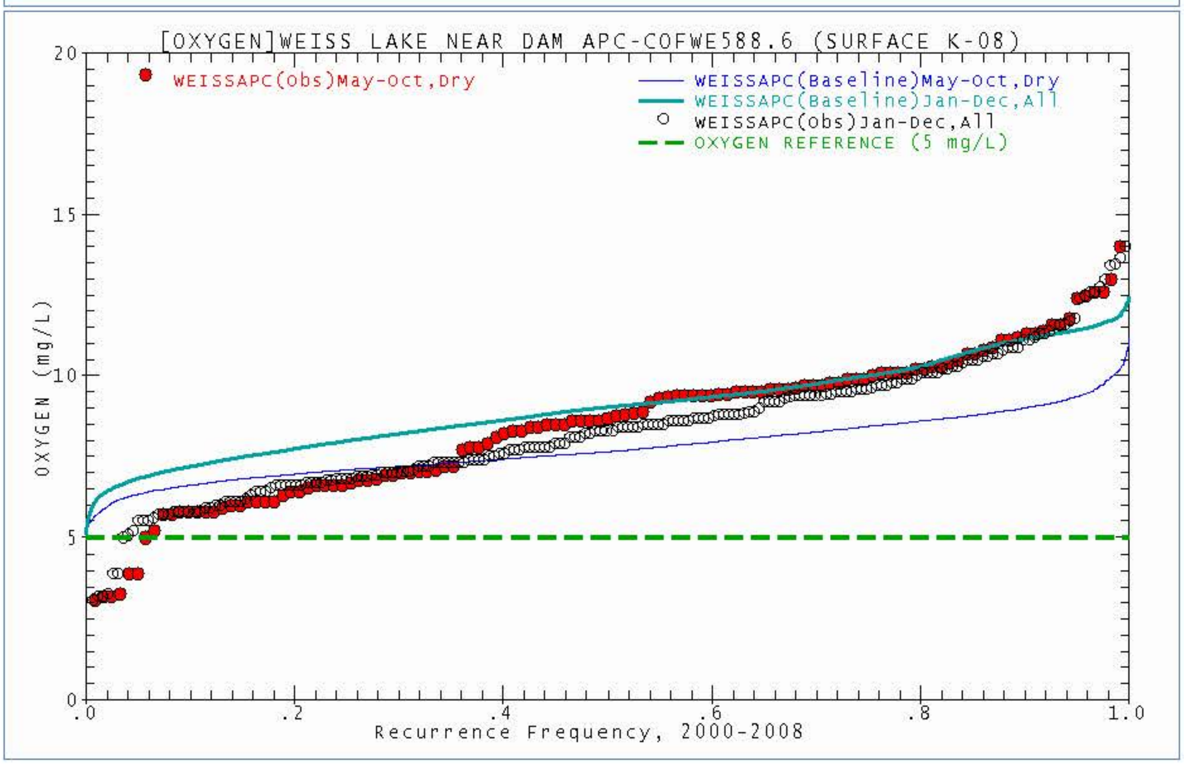


Figure 8 - Observed and simulated (Baseline) dissolved oxygen in Weiss Reservoir near the dam for surface layer (K=8). Observed data shown for 2000-2008, May-Oct growing season for average, wet and dry years. Upper panel shows time series. Lower panel shows frequency distribution of May-Oct, dry years and Jan-Dec, all years.

B16

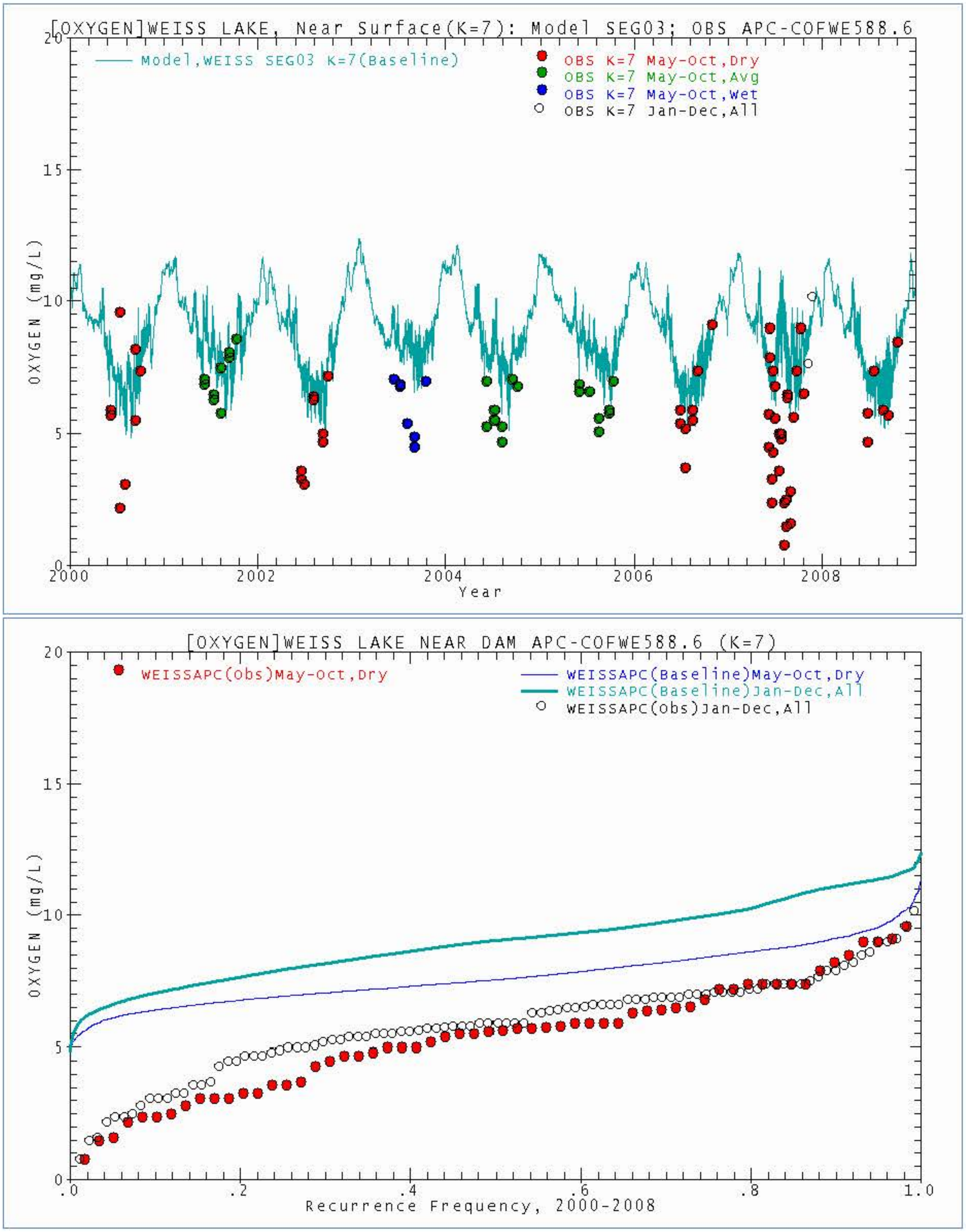


Figure 9 - Observed and simulated (Baseline) dissolved oxygen in Weiss Reservoir near the dam for near surface layer (K=7). Observed data shown for 2000-2008, May-Oct growing season for average, wet and dry years. Upper panel shows time series. Lower panel shows frequency distribution of May-Oct, dry years and Jan-Dec, all years.

B17

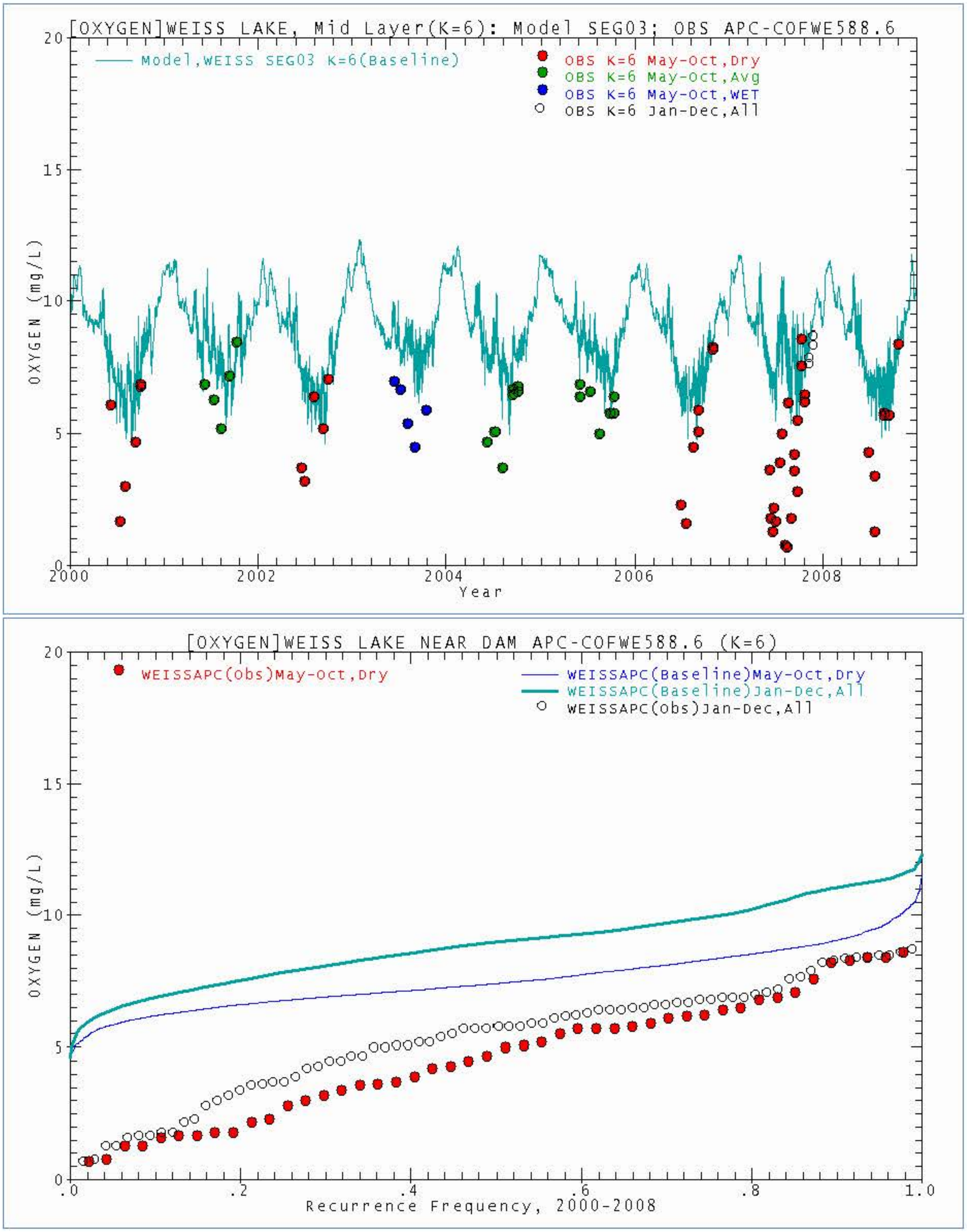


Figure 10 - Observed and simulated (Baseline) dissolved oxygen in Weiss Reservoir near the dam for sub-surface layer (K=6). Observed data shown for 2000-2008, May-Oct growing season for average, wet and dry years. Upper panel shows time series. Lower panel shows frequency distribution of May-Oct, dry years and Jan-Dec, all years.

B18

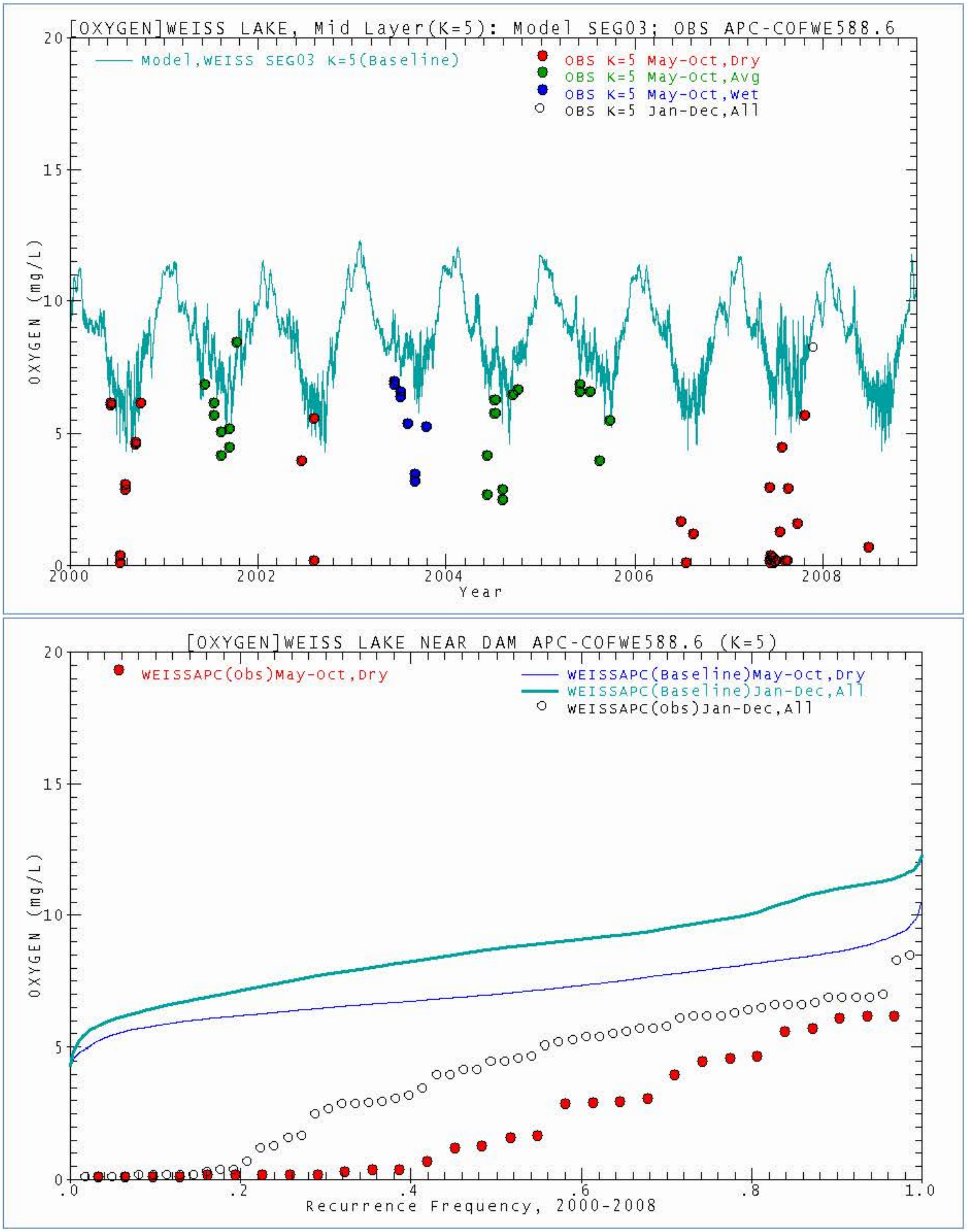


Figure 11 - Observed and simulated (Baseline) dissolved oxygen in Weiss Reservoir near the dam for sub-surface layer (K=5). Upper panel shows time series with observed data 2000-2008, May-Oct for average, wet and dry years. Lower panel shows frequency distribution of May-Oct, dry years and Jan-Dec, all years.

B19

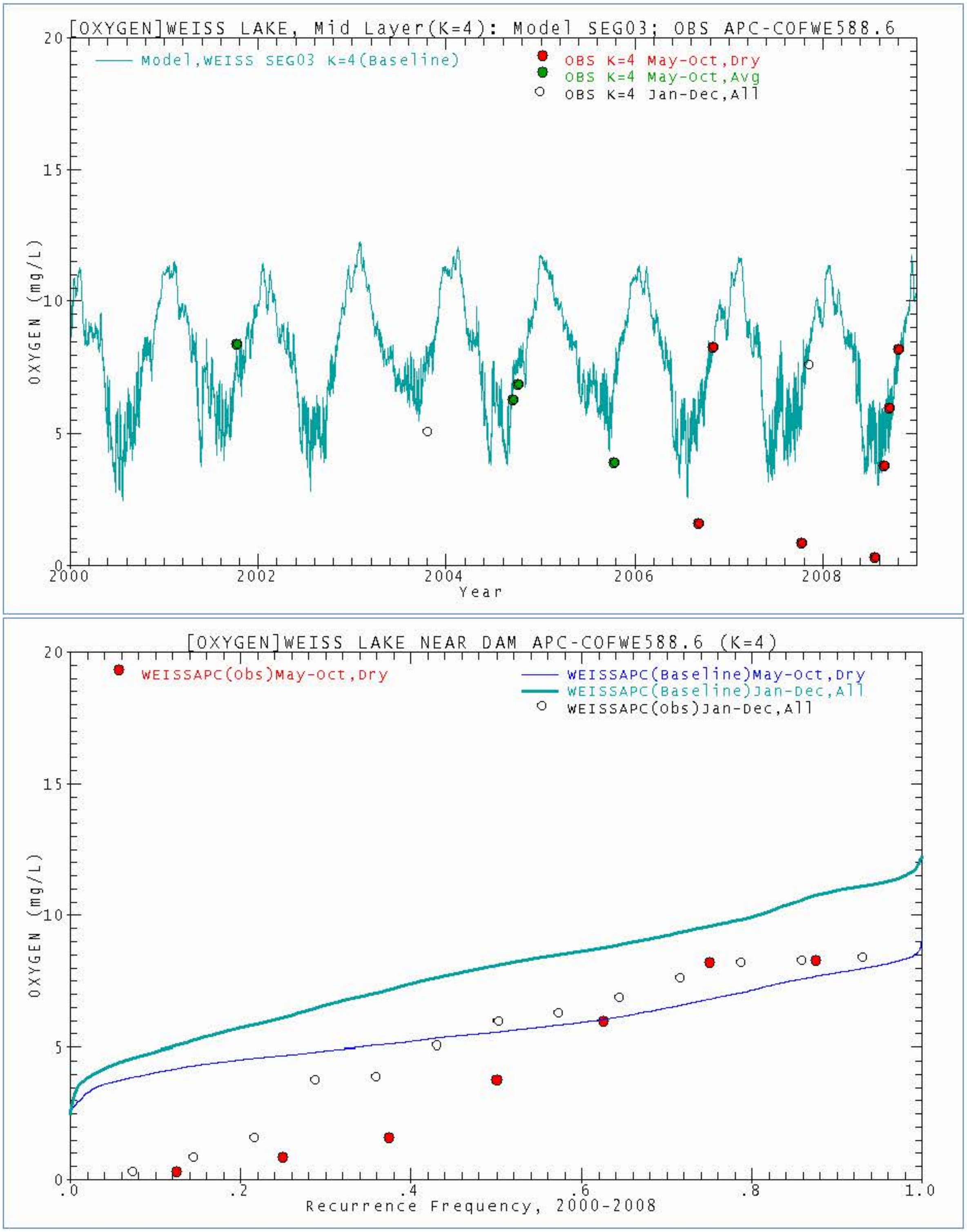


Figure 12 - Observed and simulated (Baseline) dissolved oxygen in Weiss Reservoir near the dam for sub-surface layer (K=4). Upper panel shows time series with observed data 2000-2008, May-Oct for average, wet and dry years. Lower panel shows frequency distribution of May-Oct, dry years and Jan-Dec, all years.

B20

Comments of Alabama Power Company

To the United States Army Corps of Engineers

Draft Environmental Impact Statement
Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa River Basin in Georgia and Alabama

Attachment B

MASTER MANUAL COMMENTS

2-23 line 22 Insert Bouldin in list of APC projects

2-23 line 32 Delete "Harris, Martin, Yates" since this references the Coosa River

2-23 line 16-17 Delete

2-24 line 11 This section repeats an earlier section.

4-1 Section 4-04 line 45&46 The fact that Martin, et al. were constructed prior to P.L. 83-436 is not the reason why there is no “Corps flood risk management authorization” for those projects. P.L. 83-436 had a very specific purpose. It did not convey flood risk management authority on the Corps for every Alabama Power project that would be subsequently constructed.

4-8 line 15-18 Harris was developed in the 70s/80s

4-9 line 13 P.L 89-789 doesn’t say that specifically.

4-9 line 36 Martin does not have 60 feet of drawdown for power due to operational concerns at 45 ft.

4-11 line 42 generating capacity is 128,250 not 135,500

4-12 line 11 should be 17’x30’

4-12 line 41 should be 35 total gates

Section 5 see comments in Henry and Harris appendices

Section 6 see comments in Henry and Harris appendices

7-2 line 21 states the individual manuals for the ACT prescribe regulation guide curves and action zones. This is not true for the APC projects.

7-6 lines 4-6 If the goal is “no higher stages” and “below flood stage,” this would indicate that duration is not part of the equation.

7-18 Section on Deviations (Variances?) is confusing. Who approves, when,etc.? Need better description. Suggest using language from individual manuals on Harris and Henry

8-1 Section VIII does not address any effects on APC projects

8-3 Section 8-05 Water Quality section – lumps all ACT projects together and says operations aren’t performed to meet specific water quality standards however this is not true for APC projects

8-3 line 25 change principally intended to purpose. The 4640 navigation flow provides incidental benefits to …

8-1 Section 8-03 See APC comments on this section in Henry and Harris appendices

ACT Drought Contingency Plan – Apply to all areas where this is contained

E-C-23 in low basin inflow section delete for navigation

E-C-27 The last sentence refers to the ACT Matrix however it only refers to operations at APC and not Corps projects and should be re-titled

Change Required Basin Inflow to Total Basin inflow needed in all locations

Change all calculations computed from 1st and 15th to 1st and 3rd Tuesday

Add all Triggers that are computed are compared to the current months trigger

E-C-28 line 17 change and to or

Some of the comments in the EIS comment letter apply to the Master manual and will not be revisited here

Henry WCM comments:

The Corps should specify and justify any changes from the prior manual.

iii line 29-30 delete "…when navigation support may not be reduced …." Don't characterize contents of document that doesn't exist.

xi PERTINENT DATA

Under Tailwater – All turbine discharge numbers should be considered approximate.

I - INTRODUCTION

1-01 line 35: Change to In conjunction with the ACT Basin Master Water Control Manual, this manual provides a general reference source for H. Neely Henry water control regulation, guidance for water management decision making, and training for new personnel.

1-2 line 23 change System Operations Supervisor to Reservoir Management Supervisor

1-2 line 29 change "the two agencies" to "the Corps and APC."

1-02 line 33 after control insert operations, and change low flow regulations to navigation flow support

CHANGE 1-05 LINE 20 "Power Delivery System" TO "Transmission Department"

CHANGE 1-05 LINE 23 "GEM-Hydro" TO "Hydro Services"

Page 2-3 lines 13 & 14 Change 310,700 to 317,100 and change 534.4 to 532.5 and change spillway design flood to the PMF for H. Neely Henry Reservoir.

Page 3-2 line 25-44 Inconsistent with same section in Harris manual and seems out of place here

Page 3-2 lines 43 and 44 suggest APC coordinated with the Corps on drought operations at Carters and Allatoona which is not the case

Page 3-3 line 16 change system generating requirements to APC system power demand

CHANGE Page 4-1 4.01 LINE 4 CHANGE TO SAY "It flows west to the Alabama State line,"

Page 4-8 line 10 states the largest storms recorded pre-dam however it does not mention the largest USGS recorded event in 1886 of 115,000

Page 4-9 line 10-12 Delete last sentence

Page 4-10 line 21-22 What is the definition of major damage center?

Page 4-10 line 31 says that the Tallapoosa projects are downstream of Henry on the Coosa which is not true. Also table 4-7 shows this as well.

V DATA COLLECTION

This section should be rewritten to describe APC's data collection methods

Section 5-04 describes a process that the Corps uses to handle data. It should be noted this is a Corps process and not an APC process.

Page 5-5 lines 43-44 and page 5-6 line 1-2 Delete Water resources information for the H. Neely Henry is available to the public at the Corps' website, http://www.sam.usace.army.mil/water/. The site contains real-time information, historical data and general information

Page 5-6 line 13 CHANGE TO If the automatic data collection and transfer are not working, operators will, upon request, fax or email daily or hourly project data to the Water Management Section for manual input to the database

5-6 lines 16-23 Delete "notify the Corps Water Management Section. A coordinated effort between APC and the Corps will insure proper notifications to local law enforcement, etc. Change to "begin notifications of local law enforcement, government officials, and emergency management agencies in accordance with APCs Emergency Action Plan for Henry Dam. "

6-1 line 2-4 Delete second sentence of 6-01. It is incorrect

6-1 line 21 change Chief of Engineering Division to Water Management Section and add "(5) Evaluate special water control plan variance requests submitted by APC Reservoir Management and provide approval or disapproval'

Page 6-1 line 29 delete "or forecast of inflow"

Page 6-1 line 29-34 Delete The model has the capability of forecasting inflow and the effects of discharge in accordance to flood control regulations on the reservoir as well as downstream locations. The model is used to assist in accomplishing the intent of the regulation plan and in the day-to-day operation.

Page 6-2 line1- add during normal operations to the end of the sentence.

Page 6-2 is describing a Corps and SERFC process. It is unclear from this section if the Corps or SERFC are running out what if scenarios for forecasting or if release decisions are being made based on these what if scenarios. APC does not receive inflow forecasts for actual rain or what if scenarios into APC reservoirs from the SERFC except periodically upon request during flood conditions. APC does not make flood control release decisions based on anticipated rain but rather with the rules set by the Corps for flood control operations at each plant.

7-1 line 4 delete the 30,383 acre-feet of storage within the 508 to 505 feet NGVD29 range of power-pool drawdown, add change hydro-generation will also augment the flow of the river downstream.

Page 7-1 line 6-8 DELETE "and environmental purposes."

Page 7-1 line 14 change Alabama Control Center to **Reservoir Management** section

Page 7-1 section c describes the evacuation at Henry for flood control as pre-flood. While it may be this in a sense it is tied to actual stages at Gadsden that occur during a flood event not pre-evacuated ahead of any increased inflows.

7-1 lines 29 and 33 Delete pre-flood

7-3 line 3 delete in advance of an impending flood

Page 7-4 line 35 should read Reservoir Management Section (not operator)

Page 7-4 line 40-41 change These flows are also significant as an environmental or water quality minimum flow to “These flows also benefit downstream water quality.”

Page 7-5 line 4 Change “The revisions to the minimum low flow requirements are described” to “The drought contingency plan flows are described…”

Page 7-5, line 20-22 – Replace “A skimming weir has been constructed near the dam to pull this better oxygenated water through the turbine units. However, even with the weir, dissolved oxygen levels in the releases from the dam can result in tailwater dissolved oxygen levels which violate State dissolved oxygen criteria” with “Dissolved oxygen levels in the releases from the dam can result in tailwater dissolved oxygen levels that are at times less than State dissolved oxygen criteria.”

Page 7-5 line 35 change system requirements to APC system power demand

Page 8-1 line 9 change 505 to 507

Page8-1 Section 8-02 is not representative of current flood control operations

Page 8-2 line 20-21 – Delete “Dissolved oxygen levels in the tailwater can drop below State standards during the late summertime period.”

Page 8-2 line 46 – Alabama Power questions why the Corps included the sentence beginning at line 46, on page 8-2 as Neely Henry does not experience *substantial* daily or weekly fluctuations in lake levels associated with hydropower peaking operations.

Page 8-2 line 24 Change Tugaloo to Tallapoosa.

Page 8-3 line 6 add approximately before 6 percent

Page 8-3 line 10 add typically before produced

Page 8-3 line 13 add approximately before turbine capacity

Page 8-3 Not sure where Table 8-1 numbers come from

Page 8-4 line 18 & 19 Incorrect statement, no instream flow requirements exist below HNHenry Dam.

Page 8-4 line 24 Change to “Drought operations in accordance with Table 7-5, Tallapoosa River flows.”

Pg 8-4 Section 8-09 line 11-16 is not accurate and should be deleted or reworded

Page 9-1 line 7 has GA entities listed in the Henry manual that should be removed

Page 9-3 Section 9-03 Delete entire section

Plate 7-1 Delete black start level

Plate 7-1 is the old rule curve. This needs to be changed.

Plate 7-2 is the old flood control procedures. These need to be changed.

Plate 2-10 Step 512 is inaccurate according to our Exhibits

PLATE 2-9 The legend box should read “Indicates Elevation TO Which…” Not WO

PLATE 2-10 The legend box should read “Indicates Elevation TO Which…” Not WO

PLATE 2-10 The legend box misspelled “downstream” and “from”

PLATE 2-12 The recreational facilities listed are both out of date and incomplete. Suggest removing

Table 2.6-12 The data listed is 15 years old and needs to be updated to reflect modern numbers

Harris WCM comments:

The Corps should specify and justify any changes from the prior manual.

iii line 27-28 delete "…when navigation support may not be reduced …." Don't characterize contents of document that doesn't exist.

xiii "RESERVOIR"

Under power plant change (best gate) to (approximate full gate) and change 6500 to 8000

1-1 line 40: Change to: In conjunction with the ACT Basin Master Water Control Manual, this manual provides a general reference source for R. L. Harris water control regulation, guidance for water management decision making, and training for new personnel.

CHANGE 1-05 LINE 20 "Power Delivery System" TO "Transmission Department"

CHANGE 1-05 LINE 23 "GEM-Hydro" TO "Hydro Services"

1-2 line 28 Change System Operations Supervisor to Reservoir Management Supervisor

1-2 line 17 Change to: Other pertinent information regarding the R. L. Harris Project and other APC Tallapoosa River projects are contained within the Federal Energy Regulatory Commission (FERC) license for the Tallapoosa and Martin Projects; should read "licenses for the Harris, Martin, and Yates/Thurlow Projects".

1-2 line 33 change "the two agencies" to "the Corps and APC."

1-2 line 37 after control insert operations, and change low flow regulations to navigation flow support

2-1 line 19 Add potential before water supply, after users add subject to FERC license requirements

2-2 line 27 "summertime" change to "maximum summer full pool"

2-3 line 4 Add approximately before 13,000 cfs

2-3 line 9 delete from the Alabama Control Center in Birmingham, Alabama

2-3 line 15-20 Change to: Development of project lands for recreational purposes is in accordance with the Land Use Plan approved by the FERC. There are presently seven public boat ramps available with plans for additional ramps as recreational activity increases. Located on the west side of the dam is a public tailrace fishing platform and associated parking and restroom facilities. Public hiking and nature trails are also available on project lands.

IV WATERSHED CHARACTERISTICS

4-1 line 15-22 sentence is duplicated

Page 4-4 line 3-4 Delete sentence

Page 4-4 line 5& 6 Change to: siltation is the major source of impairment on the Tallapoosa River; however, the vast majority of the water bodies on the 2010 303d list are not within the Harris Project.

Table 4-2 page 4-6 is to meant to represent mid ACT basin stations and most of these stations are not in the mid ACT. Same for Table 4-3, 4-4, 4-5

Page 4-9 line 3, in section 4-06 Storms and Floods, after gage add and substantial rainfall and runoff within the basin

Page 4-11 line 40 What is the definition of major damage center? Flood control operations at Harris are based on stage height at Wadley

V DATA COLLECTION

This section should be rewritten to accurately describe APC's data collection methods

Section 5-03 describes a process that the Corps uses to handle data. It should be noted this is a Corps process and not an APC process

Page 5-4 lines 39-42 Delete Water resources information for the R. L.Harris Project is available to the public at the Corps' website, http://www.sam.usace.army.mil/water/. The site contains real-time information, historical data and general information

Page 5-5 Change to: If the automatic data collection and transfer are not working, operators will, upon request, fax or email daily or hourly project data to the Water Management Section for manual input to the database.

5-5 line 24 delete the operator on duty should

5-5 lines 25-27 Delete "notify the Corps Water Management Section. A coordinated effort between APC and the Corps will insure proper notifications to local law enforcement, etc. Change to "begin notifications of local law enforcement, government officials, and emergency management agencies in accordance with APCs Emergency Action Plan for Harris Dam. "

VI HYDROLOGIC FORECASTS

6-1 line 2-4 Delete second sentence of 6-01

6-1 line 30-33 delete The model has the capability of forecasting inflow and the effects of discharge in accordance to flood control regulations on the reservoir as well as downstream locations. The model is used to assist in accomplishing the intent of the regulation plan and in the day-to-day operation.

6-1 line 21,change Chief of Engineering Division to Water Management Section and add “(5) Evaluate special water control plan variance requests submitted by APC Reservoir Management and provide approval or disapproval’

6-2 line 2 add during normal operations to the end of the sentence.

Section 6-02 on page 6-2 is describing a Corps and SERFC process. It is unclear from this section if the Corps or SERFC are running out what if scenarios for forecasting or if release decisions are being made based on these what if scenarios. APC does not receive inflow forecasts for actual rain or what if scenarios into APC reservoirs from the SERFC except periodically upon request during flood conditions. APC does not make flood control release decisions based on anticipated rain but rather with the rules set by the Corps for flood control operations at each plant.

VII WATER CONTROL PLAN

7-1 line 3 Delete the 207,000 acre-feet of storage within the 793 to 768 feet NGVD29 range of power-pool drawdown, add hydro-generation will also augment the flow of the river downstream. “

7-1 Change to The power guide curve, which defines the upper limit of the power-pool, varies seasonally. The maximum storage for flood control operations is about 100,000 acre-feet. Hydro-generation releases will be made for operations, and in accordance to the prescribed operating plans for flood control, to keep the reservoir elevation at or below the seasonal elevation specified by the power guide curve. Reservoir regulation during major storms may require special consideration and the operation may deviate from these schedules with the approval of the Corps.

Page 7-1 line 14 DELETE “and environmental purposes.”

Page 7-1 line 19 change Alabama Control Center to **Reservoir Management** section

Page 7-1 Section 7-04 line 31 delete “or is predicted to in the near future

Page 7-1 Section 7-04 line 30 after 13000 add “and 16000”

Page 7-2 line 10 after interchangeably add however currently APC does not operate by 7-05

Page 7-2 line 3 after 144 hours, add ” APC does not use predicted QPF to make release decisions”.

Page 7-2 line 12 should be 6 hrs rather than 3hrs to be consistent with the old manual.

7-2, line 20, change District Commander to Water Management Section

7-2, line 21, add (i.e., a variance)

7-2 line 23 change South Atlantic Division Office to Water Management Section Mobile

Page 7-2 line 40 should read Reservoir Management Section (not operator)

Page 7-2, section 7-08, line 46, change These flows are also significant as an environmental or water quality minimum flow to “These flows also benefit downstream water quality.”

Page 7-3, line 4 change “minimum” to “navigation”

Page 7-3 line 12 Change “The revisions to the minimum low flow requirements are described” to “The drought contingency plan flows are described…”

Page 7-3 line 14 RECREATION, compare this to current Harris manual; also change “full” to “stable” and add “elevation” after “pool”; change “recedes … pool” to “level drops excessively” change “becomes” to “may become”, change “effects caused by” to “impacts resulting from”

Page 7-3 line 42, add, “although weekend peaking power operations also occur.”

Page 7-3, line 44 states that in normal operations the power plant will be operated in accordance with “APC system power requirements”. There are no power requirements from the specific hydro plants. change to “to provide APC system power demand.”

VIII-EFFECT OF WATER CONTROL PLAN

Page 8-1 Section 8-02 Were these floods routed with the original or amended MOU flood control procedures at Harris?

Page 8-1 line 27 What does “Basin Model Regulation” refer too?

Page 8-3 line 11 add approximately before 6 percent

Page 8-3 line 16 add typically before produced

Page 8-3 line 19 add approximate before best gate

Page 8-3 line 34 add AND Coosa after Tallapoosa

Page 8-4 line 10 Change to “Drought operations in accordance with Table 7-5, Tallapoosa River flows.”

Pg 8-4 Section 8-09 line 11-16 is not accurate and should be deleted or reworded

IX-WATER CONTROL MANAGEMENT

Section 9-01 b line 22 and 24 change Coosa River Project to Harris

Page 9-3 Section 9-03 Delete entire section

PLATES

Plate 2-2 is Henry and should be Harris

Plates 2-7 thru 2-18 tables are not updated with current information provided by APC. Terminology and numbers should be updated.

Plates 4-11 and 4-12 should be summary data rather than discharge hydrographs

Plate 7-1 Delete black start level identified that should be removed

Plate 7-3 change from 3 consecutive hours to 6. Also add approximately before 13,000 [BEST GATE] and 16,000 [FULL GATE]

Suggested Changes to the ResSim ACT Model

Henry

Change the Power Plant outlet elevation to 500 ft. The model has the plant elevation as 480 ft, but this is for the spillway crest. The unit limit is 500 ft.

Logan Martin

Change the Power Plant outlet minimum elevation to 452.5 ft to match the Inactive elevation in Operations. The model currently has it at 452.0 ft.

Jordan

Change the Power Plant outlet elevation range to 249-267 ft from 248-268 ft.

Martin

Change the Power Plant outlet maximum elevation to 500 ft, from 490 ft, to match the top of dam elevation.

Harris

Change Dam length at top of dam to 3,242 ft.

Comments of Alabama Power Company

To the United States Army Corps of Engineers

Draft Environmental Impact Statement
Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa
River Basin in Georgia and Alabama

Attachment C

PERTINENT DATA

GENERAL

Other names of project	Lock 3 Dam
Dam site location	
River	Coosa
Miles above mouth of Coosa River	146.8
Miles above mouth of Mobile River	506.2

RESERVOIR

Top of power pool (May through Oct) – feet NGVD29	508
Top of power pool (Dec through Mar) – feet NGVD29	507
Storage volume at 508– acre feet	120,851
Power storage, elevation 505-508 – acre feet	30,383
Inactive storage, below elevation 480 – acre feet	1,547
Full power pool (May through Oct), elev 508 – acres	11,236
Full power pool (Dec through Mar), elev 507 – acres	10,478
Shoreline (elev 508) – miles	339

STREAMFLOW (at damsite)

Average discharge for Period of Record (1967 – 2009) - cfs	9,979
Maximum daily discharge (Nov. 2004) - cfs	89,129
Minimum daily discharge - cfs	0
Spillway design flood peak discharge - cfs	310,700

TAILWATER

Maximum spillway design flood - feet NGVD29	518.8
Full gate turbine discharge (Logan Martin elev. 460)	
1 Unit Operating (8,900 cfs) – feet NGVD29	464.2
2 units operating (17,800 cfs) - feet NGVD29	468.0
3 units operating (26,700 cfs) – feet NGVD29	471.3

DAM

Total length including dikes - feet	4,908
Total length of non-overflow section – feet	253
Maximum height from roadway to foundation – feet	100
Elevation, top of dam - feet NGVD29	539
Elevation, top of parapet - feet NGVD29	541

SPILLWAY

Type	concrete-gravity
Net length – feet	305
Elevation of crest - feet NGVD29	480
Type of gates	Tainter
Number of gates (29'x 40')	6

Elevation of top of gates in closed position - feet NGVD29	509
Maximum discharge capacity (pool elev. 534.4) – cfs	310,700

POWER PLANT

Three units each consisting of a 27,000 kva generator driven by a fixed blade vertical turbine rated 33,500 hp at design head of 35 ft

OPERATING DATA

Gross static head at full power pool (elev. 508 ft NGVD29) – feet	43.0
Minimum head (full-gate discharge – 26,700 cfs) – feet	36.7

EXHIBIT A
SUPPLEMENTARY PERTINENT DATA

GENERAL INFORMATION	
FERC License Number	2146
License Issued	September 4, 1957
License Expiration Date	July 31, 2007[1]
Licensed Capacity, kw	72,900
Project Location	Near Town of Ohatchee; Counties of Cherokee, Etowah, Calhoun and St. Clair; Coosa River 507 river miles above Mobile
Total Area Encompassed by Existing Project Boundary (land and water), acres	12,941
Acres of Water within Existing Project Boundary	11,236
Acres of Mainland within Existing Project Boundary	1,706
Henry Dam Drainage Basin, square miles	6,600
Length of River from Henry Dam to Weiss Dam, miles	78
Length of River from Henry Dam to Logan Martin Dam, miles	48.5
DAM	
Date of Construction	August 1, 1962
In-service Date	June 2, 1966
Construction Type	Gravity concrete and earth-fill
Elevation Top of Abutments, NGVD29	539
Gross Head at Normal Pool Elevation (508 NGVD29), feet	43
Spillway Elevation (to top of gates), NGVD29	509
Total Length of Water Retaining Structures, feet	4,908
Length of non-overflow sections, feet	Right 133; Left 120
Length of embankments feet	Right 3,200; Left 850
Length of Powerhouse (substructure), feet	300
Length of Spillway (total), feet	305

[1] The Coosa River Project (FERC No. 2146), of which Neely Henry is a part, is operating under an annual license until the Federal Energy Regulatory Commission acts on Alabama Power's license application, filed with FERC in 2005.

DAM (continued)	
Length of concrete spillway, feet	305
Length of Spillway (gated), feet	240
Gates: Spillway Gates	6 total
Width by Height, feet	40 x 29
Hazard Classification	High
Spillway Capacity at 534.4 NGVD29, cfs	335,000
RESERVOIR - HENRY LAKE	
Length of Impoundment, mile	78
Pool Elevations: Normal, feet NGVD29	508
Gross Storage:	
Normal Pool @ Elev 508 ft, acre-feet	120,851
Minimum Pool @ Elev 507 ft, acre-feet	109,999
Usable Storage Capacity (between 508 and 480 NGVD29), acre-feet	Approximately 119,000
Surface Area (at NGVD29), acres	11,236
Miles Shoreline (including tributaries) at 508 NGVD29	339
~~Number of Boat Docks~~	~~1,396~~
Water Residence Time, days	5.8
Water Temperature Range, °Fahrenheit:	Maximum 82 Aug; Minimum 40 Jan-Feb
Existing Classification	PWS/F/S
POWERHOUSE	
Length (Superstructure), feet	300
Width (Superstructure), feet	170
Height, feet	105
Construction Type (Superstructure)	Concrete
Draft Tube Invert Elevation, feet NGVD29	408.0
Operating Floor Elevation, feet NGVD29	494.9
Normal Tailwater Elevation, feet NGVD29	between 460.0 & 468.0
High Tailwater Elevation (three units generating), feet NGVD29	471.3
Discharge Capacity, cfs	26,700
Intake Invert Elevation, feet NGVD29	Approximately 450

POWERHOUSE (continued)	
Outdoor Gantry Crane Capacity, tons	140
TURBINES (3)	
Rated Net Head (Gross Static), feet	43
Manufacturer	Newport News
Type	Propeller
Rated Discharge Capacity: Maximum, cfs	8,900 each
Speed, rpm	81.8
Rated Output at 35 ft head, hp	33,500 each
GENERATORS (3)	
Manufacturer	General Electric
Nameplate Rating, kw	24,300 each
Rated Output, kva	27,000
Power Factor	0.9
Voltage, volts	11,500
Number of Phases	3
Frequency	60 cycle
Estimated average annual generation, kwh	210,935,000
TRANSFORMERS	
Transmission Voltage	
Low side, volts	11,500
High side, volts	115,000
Rating, kilovolt amp	90,000
FLOOD FLOWS – HENRY DAM	
Probable Maximum Flood	
Inflow, cfs	356,200
Outflow. Cfs	317,100
Maximum Elevation, feet NGVD29	532.51
Top of Embankment and Spillway, feet NGVD29	539.0

PERTINENT DATA

GENERAL

Other names of project	Crooked Creek
Dam site location	
Miles above mouth of Tallapoosa River	139.1
Miles above mouth of Mobile River	494
Drainage area above dam site, square miles	1,453

STREAM FLOW AT USGS GAGE at WADLEY, AL (cfs)

Average for Period of Record (calendar year 1924 – 2009)	2,562
Maximum daily discharge	103,000
Minimum daily discharge	41

RESERVOIR

Top of power pool (May through Sep) - feet NGVD29	793.0
Top of power pool (Dec through Mar) - feet NGVD29	785.0
Minimum operating pool elevation, feet NGVD29	768.0
Area at pool elevation 793.0, acres	10,660
Total volume at elevation 793.0, acre-feet	425,700
Power storage (elevation 768 to 793 ft NGVD29), acre-feet	207,300
Inactive Storage (below elevation 768 ft NGVD29), acre-feet	218,400
Length, miles	29
Shoreline distance at elevation 793 (summer pool), miles	272

SPILLWAY

Type	concrete-gravity
Net length, feet	310
Elevation of crest, feet above NGVD29	753.0
Type of gates	Tainter
Number of gates (40.5 ft x 40 ft)	6
Maximum discharge capacity (pool elev. 795.0), cfs	267,975

DAM

Total length including dikes, feet	3,242
Total length of non-overflow section, feet	2,632
Maximum height above stream bed, feet	151.5
Elevation, top of dam, feet NGVD29	810

POWER PLANT

Gross static head at full power pool (793 ft NGVD29), feet	131.7
Normal operating head at full turbine discharge, feet	124.0
Number of units	2
Maximum discharge per unit (best gate), cfs	6,500
Total installation, kW	135,000

1 **EXHIBIT A**
2 **SUPPLEMENTARY PERTINENT DATA**

GENERAL

Other names of project	Crooked Creek
Dam site location	
State	Alabama
Basin	Alabama-Tallapoosa
River	Tallapoosa
Miles above mouth of Tallapoosa River	139.1
Miles above mouth of Mobile River	494
Drainage area above dam site, sq. miles	1,453
Drainage area above Martin Dam, sq. miles	2,984
Drainage area above mouth of Tallapoosa, sq. miles	4,680
1 inch of runoff equals, acre-ft (1,453 sq mi)	77,493
Type of project	Dam, Reservoir and Power plant
Objectives of regulation	Hydropower, Navigation, and Flood Risk Management
Project Owner	Alabama Power Company (APC)
Regulating Agencies	APC, Corps of Eng, and FERC

STREAM FLOW AT USGS Gage at WADLEY, AL (cfs)

Average for Period of Record (calendar yr 1924 – 2009)	2,562
Maximum daily discharge	103,000
Minimum daily discharge	41
Maximum annual discharge (calendar yr 1975)	4,904
Minimum annual discharge (calendar yr 2007)	790

REGULATED FLOODS

Maximum flood of project record (May 2003)	
Peak inflow, cfs	106,494
Peak outflow, cfs	98,454
Peak pool elevation, feet above NGVD29	794.9
Peak discharge of Probable Maximum Flood, cfs	310,300

RESERVOIR

Elevation of probable maximum flood, ft above NGVD29	800.3
Full pool elevation May through September, feet above NGVD29	793.0
Full pool elevation December through March, feet above NGVD29	785.0
Maximum operating pool elevation, feet above NGVD29	793.0

Minimum operating pool elevation, feet above NGVD29	768.0
RESERVOIR (Cont'd)	
Area at pool elevation 793.0, acres	10,660
Total volume at elevation 793.0, acre-feet	425,700
Power storage (elevation 768 to 793 ft NGVD29)	207,300
Inactive Storage (below elevation 768 ft NGVD29)	218,400
Length, miles	29
Shoreline distance at elevation 793 (summer pool), miles	272
Shoreline distance at elevation 785 (winter pool), miles	229

SPILLWAY

Type	concrete-gravity
Net length, feet	310
Elevation of crest, feet above NGVD29	753.0
Type of gates	Tainter
Number of gates	6
Length of gates, feet	40.5
Height of gates, feet	40.0
Maximum discharge capacity (pool elev. 795.0), cfs	267,975
Elevation of top of gates in closed position, feet above NGVD29	793.5

DAM

Total length including dikes, feet	3,242
Total length of non-overflow section, feet	2,632
Maximum height above stream bed, feet	151.5
Elevation, top of dam, feet	810

POWER PLANT

Maximum power pool elevation, feet above NGVD29	793.0
Gross static head at full power pool (793 ft NGVD29), feet	131.7
Normal operating head at full turbine discharge, feet	124.0
Length of powerhouse, feet	225
Width of powerhouse, feet	91
Number of units	2
Maximum discharge per unit (best gate) cfs	6,500
Diameter of penstock leading to the turbines, ft	27
Elevation of centerline of intake to turbine	710.0
Elevation of centerline of distributor	659.0
Total installation, kW	135,000

PERTINENT DATA FOR EXISTING RESERVOIR PROJECTS IN THE ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

Allatoona Dam	
Structure type	Gravity concrete
Length	1,250 feet
Maximum height	200 feet
Lake elevation (full summer pool)	840 feet NGVD29
Lake elevation (full winter pool)	823 feet NGVD29
Lake area acres (elev 840)	11,862 acres
Shoreline miles (elev 840)	270 miles
Drainage area	1,122 square miles
Generating capacity (declared)	82.2 MW
Carters Dam	
Structure type	Rock fill and earth fill
Length	2,053feet
Maximum height	445 feet
Lake elevation (full summer pool)	1,074 feet NGVD29
Lake elevation (full winter pool)	1,072 feet NGVD29
Lake area acres (elev 1,074)	3,275 acres
Shoreline miles (elev 1,074)	62.7 miles
Drainage area	374 square miles
Generating capacity (declared)	600 MW
Carters Reregulation Dam	
Structure type	Gated spillway with rock-fill dikes
Length	2,855 feet
Maximum pool elevation	698 feet NGVD29
Top of dike elevation	703 feet NGVD29
Lake area acres	870 acres
Usable Storage	17,210 acre-feet
Drainage area (local to reregulation pool)	148 square miles
Spillway Gates	4 @ 42 feet long by 36.5 feet high
Robert F. Henry Lock and Dam	
Structure type	Gravity concrete and earth fill
Length (earth dikes)	15,290 feet
Length (concrete)	646 feet
Maximum height	105 feet
Lake elevation	126 feet NGVD29
Lake area acres	13,500 acres
Shoreline miles	368 miles
Drainage area	16,233 square miles
Generating capacity (declared)	82 MW
Millers Ferry Lock and Dam	
Structure type	Gravity concrete and earth fill
Length (earth dikes)	15,300 feet
Length (concrete)	994 feet

Maximum height	140 feet
Lake elevation	80.8 feet NGVD29
Lake area acres	18,528 acres
Shoreline miles	516 miles
Drainage area	20,637 square miles
Generating capacity (declared)	90 MW

Claiborne Lock and Dam

Structure type	Gravity concrete and earth fill
Length (earth dikes)	2,550 feet
Length concrete)	916 feet
Maximum height	75 feet
Lake elevation	36 feet NGVD29
Lake area acres	6,290 acres
Shoreline miles	204 miles
Drainage area	21,473 square miles
Generating capacity	N/A

R. L. Harris Dam

Structure type	Gravity concrete
Length	3,242 feet
Maximum height	151.5 feet
Lake elevation	793 feet NGVD29
Lake area acres	10,660 acres
Shoreline miles	272 miles
Drainage area	1,453 square miles
Generating capacity	135 MW

Martin Dam

Structure type	Gravity concrete
Length	2,000 feet
Maximum height	168 feet
Lake elevation	491 feet NGVD29
Lake area acres	41,150 acres
Shoreline miles	880 miles
Drainage area	2,984 square miles
Generating capacity	182.5 MW

Yates Dam

Structure type	Gravity concrete
Length	1,254 feet
Maximum height	88 feet
Lake elevation	345 feet NGVD29
Lake area acres	2,000 acres
Shoreline miles	40 miles
Drainage area	3,250 square miles
Generating capacity	44.25 MW

Thurlow Dam

Structure type	Gravity concrete and earth fill
Length (concrete)	1,959 feet

Maximum height	62 feet
Lake elevation	289 feet NGVD29
Lake area acres	574 acres
Drainage area	3,325 square miles
Generating capacity	81.35 MW

Weiss Dam

Structure type	Gravity concrete and earth fill
Length (earth dikes)	30,506 feet
Length (concrete)	392 feet
Maximum height	126 feet
Lake elevation	564 feet NGVD29
Lake area acres	30,200 acres
Shoreline miles	447 miles
Drainage area	5,273 square miles
Generating capacity	87.75 MW

Neely Henry Dam

Structure type	Gravity concrete and earth fill
Length (earth dikes)	4,100 feet
Length (concrete)	605 feet
Maximum height	104 feet
Lake elevation	508 feet NGVD29
Lake area acres	11,236 acres
Shoreline miles	339 miles
Drainage area	6,600 square miles
Generating capacity	72.9 MW

Logan Martin Dam

Structure type	Gravity concrete and earth fill
Length (earth dikes)	5,464 feet
Length (concrete)	612 feet
Maximum height	97 feet
Lake elevation	465 feet NGVD29
Lake area acres	15,263 acres
Shoreline miles	275 miles
Drainage area	7,700 square miles
Generating capacity	128.25 MW

Lay Dam

Structure type	Gravity concrete and earth fill
Length	2,120 feet
Maximum height	129.6 feet
Lake elevation	396 feet NGVD29
Lake area acres	12,000 acres
Shoreline miles	289 miles
Drainage area	9,087square miles
Generating capacity	177 MW

Mitchell Dam

Structure type	Gravity concrete and earth fill

Length (concrete)	1,277 feet
Maximum height	106 feet
Lake elevation	312 feet NGVD29
Lake area acres	5,850 acres
Shoreline miles	147 miles
Drainage area	9,827 square miles
Generating capacity	170 MW

Jordan Dam

Structure type	Gravity concrete
Length (concrete)	2,066 feet
Maximum height	125 feet
Lake elevation	252 feet NGVD29
Lake area acres	5,880 acres
Shoreline miles	118 miles
Drainage area	10,165 square miles
Generating capacity	100 MW

Bouldin Dam[1]

Structure type	Gravity concrete and earth fill
Length (earth dikes)	9,200 feet
Length (concrete)	228 feet
Maximum height	120 feet
Lake elevation	252 feet NGVD29
Lake area acres	6,800 acres
Shoreline miles	118 miles
Drainage area	10,165 square miles
Generating capacity	225 MW

[1] Bouldin shares a reservoir with Jordan Dam; therefore the lake area, shoreline miles and drainage area are the same.

Comment ID 0064

Comment ID 0064.001

Author Name: Bowden, Matthew

Organization: ALABAMA POWER COMPANY

Comment

Alabama Power Company appreciates the opportunity to provide the U.S. Army Corps of Engineers ("Corps") with comments on the Corps' Draft Environmental Impact Statement ("DEIS") and updated manuals for the Alabama-Coosa-Tallapoosa ("ACT") river basin. We commend the Corps for undertaking the process of updating the ACT Master Manual and individual reservoir regulation manuals for the basin. Maintaining up-to-date manuals is essential for the proper operation and the continued reliability of the ACT system.

Alabama Power supports many aspects of the Corps' proposed manuals and DEIS. In particular, Alabama Power strongly supports the Corps' incorporation of the Alabama Drought Operations Plan ("ADROP") in its Drought Contingency Plan. ADROP reflects the valuable information and experience learned by Alabama Power, the Corps, and the State of Alabama during the severe drought of 2007-2008. ADROP will help ensure the balanced, conservative operation of the ACT Basin system during future drought periods. Alabama Power also supports the Corps' proposed water control manual for Alabama Power's Neely Henry development, which includes the permanent adoption of the interim revised operating curve for that project. The permanent adoption of the interim operating curve and the associated operating rules at Neely Henry will support a wide variety of beneficial uses downstream and around the lake.

Response

Comment noted.

Comment ID 0064.002

Author Name: Bowden, Matthew

Organization: ALABAMA POWER COMPANY

Comment

Alabama Power does have a number of concerns regarding the Corps' proposed operating plan for Allatoona as well as many of the assumptions relied upon in the DEIS in evaluating the potential impacts of the proposed changes. Specifically, the proposed changes under the Corps' Preferred Alternative (Plan G) for the Allatoona Project - including (1) the phased guide curve, (2) the new action zones, and (3) the reduced hydropower generation schedule - reflect a substantial reordering of project purposes, which will adversely affect water quality, hydropower generation, and navigation downstream. Alabama Power believes that these changes are so substantial that the Corps lacks the authority to implement them without prior Congressional reauthorization of the Allatoona Project.

Alabama Power also submits that the DEIS contains a number of errors that undermine the reliability of the NEPA analysis, including (1) the use of a baseline that does not accurately reflect historic lawful operations, conditions and uses of the projects in the basin, especially at Allatoona, (2) the failure to properly consider relevant potential impacts of the proposed alternatives, and (3) the failure to include in the analysis various proposed guide curve changes for Alabama Power's Weiss and Logan Martin hydroelectric developments, and the Martin project.

In short, while Alabama Power supports much of the Corps' proposal for the ACT Basin, Alabama Power has serious concerns about the Corps' proposed operation of Lake Allatoona. Alabama Power respectfully asks that the Corps re-evaluate the potential impacts of the proposed changes to the congressionally authorized purposes and historic operation of Lake Allatoona on downstream interests. Any proposed changes at Lake Allatoona must be compared to a baseline that accurately reflects the lawful, historical conditions in the basin. These concerns, and others, are expressed in greater detail below.

Response

USACE does not agree that the proposed operational modifications in Plan G, and specifically at Allatoona Dam and Lake, constitute a reordering of project purposes. The proposed modifications provide an operational plan that achieves a more effective balance among authorized project purposes than current operation (no action), particularly during severe drought conditions when there is insufficient basin inflow to fully meet all of the authorized purposes. Additional information is provided in response to more detailed APC comments along these lines that follow in this letter.

APC comments suggest that the draft EIS contains a number of fundamental errors. In response to these and other comments on the draft EIS, USACE has adjusted the baseline (or No Action Alternative) to more accurately reflect actual conditions in the ACT basin. The No Action Alternative was modified to include actual water supply withdrawals by CCMWA in lieu of the current water supply agreement amount for CCMWA. As described in the modeling report (EIS Appendix C), year 2006 withdrawal values were selected to represent actual withdrawals for the model simulation over the period of record. 2006 was the year of highest net withdrawals in the ACT basin. The models were also updated to include operation of the Hickory Log Creek reservoir, as permitted by the USACE. These revisions are reflected in the updated model runs and analysis in the final EIS. The final EIS properly and adequately addresses all relevant impacts. More information is provided below in response to specific APC comments on potential impacts which follow in the comment letter. With respect to the inclusion of proposed guide curve changes at the APC Weiss and Logan Martin projects, the approval of those changes by FERC could not be assumed or necessarily considered to be reasonable foreseeable at the time that the draft EIS was prepared. After the draft EIS was circulated for comment, the FERC new license for the APC projects on the Coosa River was issued on June 20, 2013 without approving the proposed guide curve changes in the new license. If the license is modified at some point in the future to include these guide curve changes, the effects will be considered at that time as part of the decision-making process (including appropriate NEPA documentation).

The baseline condition, updated as described above, is accurately defined. More information is provided in response to detailed comments that follow in the APC letter.

Comment ID 0064.003

Author Name: Bowden, Matthew

Organization: ALABAMA POWER COMPANY

Comment

Alabama Power is also concerned by procedural aspects of the Corps' DEIS public comment period. While the Corps did provide the public with an additional 30 days to respond to the proposal and NEPA analysis, the DEIS, manuals, and the data supporting the Corps' analysis constitute thousands of pages of information, which stakeholders cannot adequately review and evaluate in the time provided. Furthermore, the Corps did not provide the public with all of the technical data needed to evaluate fully the Corps' proposal. On May 2, 2013, Alabama Power submitted a Freedom of Information Act ("FOIA") request for supporting data that have not been provided to the public. The Corps has not yet produced this data. Given the compressed public review period and the incomplete record provided for review, Alabama Power reserves the right to object to aspects of the Corps' proposed manuals and DEIS, or provide supplemental comments, in the future.

Response

USACE determined that an additional 30 days to the initial 60-day review would provide adequate time for stakeholders and interested parties to review and comment on the documents.

The technical data that APC requested (hourly time-step modeling runs) was provided on June 5, 2013.

Comment ID 0064.004

Author Name: Bowden, Matthew

Organization: ALABAMA POWER COMPANY

Comment

I. A Summary of Alabama Power's Interests in the ACT Basin

There are 17 major dams and reservoirs in the ACT Basin. The Corps owns and operates six of these dams in the ACT Basin. Two of the Corps' projects are located in the headwaters of the Coosa River-Allatoona Dam, on the Etowah River, and Carters Dam (and Carters Reregulation Dam) on the Coosawattee River. Releases of water from Lake Allatoona and Carters Lake flow downstream into the Coosa River at Rome, Georgia. From there, these releases flow into Alabama Power's Weiss reservoir located in Cherokee County, Alabama, and Floyd County, Georgia. The remaining Corps dams are located on the Alabama River below Montgomery - R.F. Henry, Miller's Ferry and Claiborne Dams. Alabama Power owns and operates seven hydroelectric projects on the Coosa River-the Weiss, Neely Henry, Logan Martin, Lay, Mitchell, Jordan, and Bouldin projects. Alabama Power also owns and operates four hydroelectric projects on the Tallapoosa River-the Harris, Martin, Yates, and Thurlow projects.

The operation of Alabama Power's ACT River Basin hydroelectric projects is licensed by the Federal Energy Regulatory Commission ("FERC"). Alabama Power depends on the flow of the Coosa River to generate electricity and to comply with the FERC licenses, which provide for the storage and use of water for hydropower production, recreation, fish and wildlife, and downstream navigation support, among other purposes. Releases from Lake Allatoona and Carters Lake also provide certain headwater benefits to Alabama Power's downstream projects. Alabama Power relies upon these headwater benefits to generate electricity at its hydroelectric dams, and, as required by the Federal Power Act, Alabama Power compensates the federal government for the headwater benefits conferred on these downstream hydroelectric projects. These headwater benefits payments have contributed, and will continue to contribute, to the cost of operating and maintaining the Allatoona and Carters reservoirs, and also contribute to the original capital cost of the construction of both reservoirs.

Alabama Power relies, in part, on releases from Lake Allatoona and Carters Lake to support compliance with a FERC requirement to provide a continuous minimum flow for the protection of the tulotoma snail and other species downstream of the Jordan project on the Coosa River, as well as spring attraction flows for fish spawning and weekend and special event recreation releases. Alabama Power also uses, in part, releases from Lake Allatoona and Carters Lake to supply navigation support flows to the Alabama River. When releases from Lake Allatoona and Carters Lake are reduced, Alabama Power must increase releases from storage from its Coosa and Tallapoosa River projects to meet minimum downstream flow targets.

In 1972, in order to coordinate reservoir operations in a manner that would benefit navigation on the Alabama River, Alabama Power made a qualified commitment to provide a minimum navigation flow of 4,640 cfs to the Alabama River from the combined Tallapoosa and Coosa River Basins. A May 2, 1972 letter from Alabama Power to the Corps setting forth this understanding explained that Alabama Power agreed to provide these flows, "assuming of course that our upstream storage dams are above minimum rule curve elevations."

II. The Corps' Preferred Alternative Reorders Allatoona's Project Purposes

As a threshold matter, the Corps relies on an erroneous characterization of the authorized purposes of the Corps' Allatoona project. As described more fully in the following section, it cannot be disputed that Allatoona was originally authorized by Congress for the principal purposes of hydropower generation, flood control and navigation support. Yet, the Corps' DEIS (and its proposed manuals) abandons navigation support from Allatoona entirely and subordinates hydropower generation to recreation storage. The Corps cannot fundamentally reorder the purposes of Allatoona without first obtaining approval by Congress. This not only undermines the Corps' NEPA analysis, but also reflects substantive legal problems with the proposed manuals themselves.

In 1941, Congress authorized construction of Lake Allatoona. Congress specifically authorized the Allatoona Reservoir "for flood control and other purposes in accordance with recommendation of the Chief of Engineers in House Document 674 . . . ." House Document 674 provides that the Board of Engineers for Rivers and Harbors recommended that the Allatoona reservoir be constructed "for the control of floods, regulation of stream flow for navigation, and the development of hydroelectric power." Subject to an increase in the estimated first costs for the project, the Chief of Engineers "concur[red] in the recommendations of the Board."

The Board of Engineers for Rivers and Harbors' full report submitted to the Corps is included as part of House Document 674. The Board's report notes that "[t]he flood storage to be reserved in the Allatoona Reservoir would provide practically complete protection to agricultural lands on the Etowah River," and that "[t]he power storage to be provided would increase the minimum stream flow from the present 180 cubic feet per second to an estimated regulated minimum of 980 cubic feet per second." Moreover, "[t]his increased flow would permit the economical generation of power at the site and would increase the firm capacity at existing and potential downstream power developments." At the time, the only existing downstream power developments were owned and operated by Alabama Power.

The Board of Engineers for Rivers and Harbors expressed its opinion that:

The Allatoona Reservoir constructed in the combined interests of flood control and power development would provide needed flood protection for Rome, Ga., and to agricultural lands in that general vicinity, and would make possible the development of a substantial block of hydroelectric power. Regulation of stream flow to be effected also would be of value to existing and potential downstream power developments. . . . The regulated stream flow also would be of benefit to navigation should the Alabama and Coosa Rivers be further improved at some future time. . . . The Board believes that in order to safeguard the interests of flood control and navigation, Allatoona Dam and power plant should be constructed, operated, and maintained under the direction of the Secretary of War and the supervision of the Chief of Engineers . . . .

The Board of Engineers for Rivers and Harbors thus recommended that the Allatoona Reservoir project be constructed *"for the control of floods, regulation of stream flow for navigation, and the development of hydroelectric power."* (*Emphasis added*).

Allatoona was not originally authorized for either recreation or water supply. The only authority the Corps has to operate Allatoona for water supply derives from the Water Supply Act of 1958. But that Act only allows the Corps to reauthorize storage to water supply so long as the reauthorization would not "seriously affect the purposes for which the project was authorized, surveyed, planned, or constructed, or which would involve major structural or operational changes shall be made only upon the approval of Congress as now provided by law [sic]." The Corps also stated in engineer pamphlet EP 1165-2-1 (July 30, 1999), that any reallocation of storage in an existing project where the proposed reallocation would severely affect the project must be authorized by Congress. Paragraph 18-2(a) (at 18-1) of that document cautioned that modification of existing projects to include storage for municipal and industrial purposes "which would severely affect the project, its other purposes, or its operation, requires Congressional authorization." Again in ¶ 18-2(c) (at 18-1-2) of that pamphlet, the Corps declared: "Reallocation of reservoir storage that would have a significant effect on other authorized purposes or that would involve major structural or operational changes requires Congressional approval."

Likewise, the Corps does not have the discretion to reallocate storage in federal reservoirs to recreational use where Congress has not allocated any project costs to storage for recreation. Paragraph 17-3(e) of EP 1165-2-1 (at 17-5) provides:

Reallocation of Reservoir Storage for Recreation. Many projects, including those for which recreation facilities may have been included under general provisions of the Flood Control Act of 1944, as amended, do not have separable storage costs for recreation. In these circumstances recreation is an authorized project purpose but it is secondary, as far as storage operation is concerned, to project functions for which the storage was formulated. Any reallocation of reservoir storage to provide more stable recreation levels that would have a significant effect on other authorized purposes, or that would involve major structural or operational change, requires Congressional authorization. Costs reallocated to recreation will be established as the highest of the benefits or revenues foregone, replacement costs, or the updated cost of the storage, will be treated as a separable cost, and will be subject to non-Federal cost sharing. (ER 1105-2-100).

Despite these directives and limitations on the Corps' authority to operate Allatoona for recreation, the Corps proposes a preferred alternative (Plan G) for operating Allatoona that abandons navigation and reduces hydropower generation releases to benefit recreation by changing Allatoona's action zones, hydropower-generation schedules, and guide curve. The ultimate effect of this alternative is to reduce flows into the Coosa River in the critical summer and fall periods, when those flows are most needed for hydropower generation, downstream water quality, navigation flows, and support of protected species. These changes cannot be reconciled with the authorized purposes of Allatoona or the restrictions on the Corps' authority to reallocate storage to recreation.

Plan G violates the fundamental purpose of the design and operation of headwater storage reservoirs, as recognized by the DEIS itself: "[T]he need for water in the summer and fall often is greater than the supply of water in the river basin. An important function of the many reservoirs in the ACT Basin is to store water when there is an abundance of rain and to release water when there is less rain, ensuring that all water needs can be met throughout the year . . . . The reservoirs formed by those dams attenuate high river flows during wet periods and augment low flows during dry-weather periods." The operational scheme proposed for Allatoona does the opposite - the Corps proposes to maintain the highest lake levels possible at Lake Allatoona through dry weather periods and then release storage during wet weather periods. This approach is inconsistent with the Corps' responsibility to support the congressionally authorized purposes of the reservoir.

Plan G also includes a revised guide curve at Allatoona for higher lake levels in October to mid-November. The phased guide curve would have a top of conservation pool elevation of 823' from January 1 to 15, transitioning to 840' by May 1 and remaining at 840' through Labor Day (early September), then transitioning down to 835' by October 1 and remaining at 835' until mid-November, thereafter transitioning down to elevation 823' by December 31.<Footnote 1> The described intent of this new guide curve is to benefit recreation, even though this period (October 1 to November 15) is outside the normal recreation season at Allatoona. Thus, the proposed guide curve only makes sense as an additional measure to protect storage for water supply withdrawals. In addition to the phased guide curve, new action zones, and reduced hydropower generation schedule, the preferred alternative grants the Corps even more discretion to reduce hydropower generation releases - the Corps is free to eliminate flows associated with hydropower generation at any time in any of the proposed action zones.

In addition to the revised guide curve at Allatoona the proposed action zones also serve to re-order the project purposes. For example, according to the DEIS, the proposed action zones are expressly used to manage the lakes at the highest level possible for recreation and other purposes to the detriment of hydropower generation releases. To this end, Plan G replaces Allatoona's current 2 action zones (found in the draft 1993 Allatoona manual) with 4 action zones. In zone 1 (the highest elevation zone), the minimum hydropower generation schedule is reduced from 2 hours to 0, and the maximum is reduced from 6 hours to 4. In zone 2, the hydropower generation schedule is only 0 to 3 hours. In zone 3, the Corps provides for only up to 2 hours of hydropower generation, and in zone 4 there is no provision for hydropower generation at all. The bottom line effect is that the percentage of days that flow would be less than 7Q10 would increase by 33% in August, 100% in September, 67% in October, and 25% in November. See DEIS, Table 6.1-2 (Coosa River at Rome, Georgia-Percent of days (by month) over the modeled period of record (1939-2008) that flows would likely exceed 7Q10 value), at 6-57. Furthermore, flows would be less than 2000 cfs 65% more often in October under Plan G as compared to the baseline. See id., p. 6-57,-58 ("As noted in Section 6.1.1.3.3.1, flow-duration curves for September, October, and December were reviewed to assess effects of alternative plans on flow in the Coosa River at Rome that might be expected from upstream changes in project operations (Figures 6.1-39, 6.1-40, and 6.1-41).")

Plan G also includes a revised guide curve at Allatoona for higher lake levels in October to mid-November. The phased guide curve would have a top of conservation pool elevation of 823' from January 1 to 15, transitioning to 840' by May 1 and remaining at 840' through Labor Day (early September), then transitioning down to 835' by October 1 and remaining at 835' until mid-November, thereafter transitioning down to elevation 823' by December 31. This new guide curve is supposed to benefit recreation, even though this period (October 1 to November 15) is outside the normal recreation season at Allatoona. Thus, the proposed guide curve only makes sense as an additional measure to protect storage for water supply withdrawals (although unstated as such). In addition to the phased guide curve, new action zones, and reduced hydropower generation schedule, Plan G grants the Corps even more discretion to reduce hydropower generation releases - the Corps is free to eliminate flows associated with hydropower generation at any time in any of the proposed action zones.

In contrast, under existing operations, the bottom of zone 1 (providing 2 to 6 hours of generation) is lower than the proposed bottom of zone 2 (0 to 3 hours of generation), as shown by the following comparison of existing/proposed elevations: elevations 833/835 on August 1, 830/834 on September 1, 827/831 on October 1, 824/828 on November 1, and 821/825 on December 1. The existing action zones under the draft 1993 Allatoona manual reserve approximately 21% of the conservation storage for normal power operations (zone 1, daily peak generation of 2 to 6 hours) in the summer May 1 to September 1 period. This increases to 46% on October 1, to coincide with the mandatory drawdown. The proposed action zones reallocate storage significantly. During the summer May 1 to September 1 period, zone 1 (0 to 4 hours of peak generation) is only 4%, and zone 2 (0 to 3 hours) is only 8%, or a combined 12% of conservation storage, a reduction of 43% from current levels. As of October 1, zone 1 is 7% and zone 2 is 8%, or a combined 15% of conservation storage, a reduction of 67% of the conservation storage available for normal hydropower generation flow releases.

Thus, on its face, Plan G elevates recreation to such an extent that there will be significant impacts to Allatoona's original authorized purposes, requiring congressional reauthorization. Yet, the Corps provides no discussion of this necessity. It is incumbent that the Corps either revise Plan G or receive congressional approval before undertaking the proposed reallocation of storage.

Footnote 1: All elevations are expressed in mean sea level ("msl") unless otherwise noted.

Response

USACE does not prioritize authorized project purposes but operates the projects in a balanced approach to meet all authorized project purposes. Navigation is supported indirectly by the releases from Allatoona Dam used to support other project purposes, mainly hydropower. There is no reallocation of storage proposed as part of updating the WCMs. The project has no specific requirements related to maintaining recreational water levels in the lake.

Analyses indicate that the proposed changes to the guide curve will have negligible impacts on project purposes.

Comment ID 0064.005

Author Name: Bowden, Matthew

Organization: ALABAMA POWER COMPANY

Comment

The DEIS states that recreation enhancement is the primary justification for the proposed operations changes at Allatoona but the DEIS does not provide any analysis concerning the amount of increased recreation expected to result from these changes. The DEIS seems to simply assume that enhanced recreation is sufficient to justify the reduction in hydropower releases, navigation flow support, downstream environmental impacts and other negative consequences associated with Plan G. However, there is no evaluation or quantification of increased recreation days or economic impacts associated with the speculated increase in recreation at Allatoona. Studies are commonly conducted to evaluate recreation impacts associated with change in reservoir elevations in order to calculate recreation enhancement values. In addition, the DEIS does not include any analysis of the potential decrease in recreational opportunities at the downstream reservoirs that may result from the Allatoona operational changes in Plan G. Thus, the DEIS suggests that enhancing recreation to achieve unknown benefits at Allatoona is so compelling that it is worth accomplishing without even considering the potential negative impacts to recreation at Alabama Power's downstream reservoirs. <Footnote 2>

Furthermore, the DEIS does not indicate whether the Corps has performed any analysis or evaluation of impacts to Operation and Maintenance ("O&M") allocations among the various project purposes for Lake Allatoona and Carters Lake. As the Corps is changing project operations to deemphasize navigation, reduce the amount of hydropower generation, and increase the amount of recreation, the O&M costs should be rearranged among project purposes to reflect these changes. It can be expected that as navigation and hydropower generation bear a smaller amount of these O&M costs, other project uses such as water supply, recreation and flood control will necessarily bear a larger amount of these costs. Yet there is no analysis of this cost reallocation.

Footnote 2: The Corps' model shows that flows from Allatoona would be reduced by 200 - 500 cfs during the September to November 15 timeframe, even with the maximum hydropower generation releases modeled in each zone. (ES-42 at 20-21.) If Alabama Power's Weiss development assumes the burden to make up this lost flow, there would potentially be a significant adverse effect on reservoir elevations at Weiss of 1 to 2.3 feet. This calculated effect on Weiss pool elevations contradicts the Corps' unsupported conclusion that the proposed action would have a beneficial impact on daily elevations at Weiss (Id. at 6-32). In any event, this potential reduction in pool elevations at Weiss would certainly have a detrimental effect on recreation, which the Corps has not evaluated.

Response

The Proposed Action Alternative (Plan G) showed overall improvements over the "no action" plan with respect to lake levels at the APC projects mainly due to the implementation of the drought management plan. Reference Figures 6.1-8, 6.1-9 and 6.1-10 in the DEIS. Since there was no change in project purposes, therefore no cost allocation was recalculated.

Comment ID 0064.006

Author Name: Bowden, Matthew

Organization: ALABAMA POWER COMPANY

Comment

III. The DEIS Does Not Adequately Consider Proposed Changes in Allatoona's Action Zones and Guide Curve

As described above, Plan G represents a substantial reordering of project purposes in favor of recreation. But the DEIS does not reflect the true impacts of the Corps' proposal. There are a number of flawed assumptions in the Corps' baseline model that minimize the impacts evaluated. <Footnote 3> Furthermore, under NEPA the Corps is required to address the cumulative impact of Plan G and to include analysis of the effect on stakeholders like Alabama Power. It does not appear that the Corps has undertaken a thorough review of cumulative effects analysis.

The modeling of Plan G assumes a certain level of hydropower generation, ignoring the discretion included in Plan G not to generate at all. This model shows a reduction in hydropower generation compared to the baseline model, while the baseline model assumes less hydropower generation than required by the 1993 draft Allatoona manual - a manual never lawfully adopted and subjected to NEPA review. The action zones and hydropower generation schedule in the 1993 draft manual purported to authorize reduced hydropower generation compared to the prior 1962 Allatoona manual and actual operations under that manual. This reflects a continuing trend of decreasing hydropower generation releases while increasing the Corps' discretion to hold as much water in the reservoir as possible until the wet season, when it is not normally needed either for hydropower generation, downstream water quality, or navigation. This trend, perpetuated in Plan G, is damaging to Alabama Power's interests and the operations of its downstream projects.

The 1993 draft Allatoona Manual provides that "the Allatoona project will be operated to provide hydroelectric power and to maintain a continuous release of at least 240 cfs during nongenerating periods," ensuring "increased flow downstream" during low-flow periods. Id. at A4-2. In addition to mandatory continuous releases of 240 cfs, the Corps' 1993 draft Allatoona Manual sets forth guidelines for hydropower operations. The 1993 draft Allatoona Manual establishes a top of conservation pool curve of 840 feet msl during the summer. Id. at A4-3. Chart 1-11 shows two operational zones to guide the Corps' hydropower operations during the summer, referred to as Zone 1 and Zone 2. Id. at Chart 1-11. "A minimum generation of 2 hours/day is allowed if the pool is in Zone 2. Zone 1 represents more normal circumstances and maximum generation would normally be two to six hours per day." Id. at A5-4.

The Corps' modeling of the baseline assumes for Zone 1 only two to four hours of generation, instead of the two to six hours specified by the current draft manual and in Zone 2, the Corps' model assumes zero to one hour of generation, with the assumed one hour of generation only in the top 20% of Zone 2, and only minimum flow below that. The modeling of Plan G, on the other hand, assumes in Zone 1 four hours of generation except in September to November, when hydro-generation is reduced by 50%; and in Zone 2, the model assumes three hours of generation except in September to November, where a reduction of 50% is also assumed; and in Zone 3, 0 to two hours of generation is assumed, again with the 50% reduction in September to November. The model for Plan G does not include the discretion not to generate at all (regardless of zone) even though the manual includes this option. In Plan G, minimum hydropower generation releases are reduced from two hours to 0 in Zone 1, with similar provisions authorizing no hydropower generation releases in Zones 2-4. While the Corps states in the DEIS that "any alternative with a significant adverse impact to hydropower would not be carried forward," DEIS at 4-50, it is unclear as to how hydropower reduction at Allatoona could not be significant if the Corps exercises its discretion to cut the hydropower release to 0 hours in all zones. In fact, the Corps states that recreation levels and water conservation are both priorities, suggesting that the flexibility to cut back on hydropower could be implemented often.

To Alabama Power's knowledge, the 1993 draft Allatoona Manual was never properly finalized or subjected to a full NEPA analysis. The Corps' 1962 Reservoir Regulation Manual for the Allatoona Reservoir, the last reservoir regulation manual properly finalized and adopted, specifies an even greater emphasis on hydropower generation and downstream flow support. The 1962 manual provides that the principal purposes of the Allatoona Reservoirs are floodcontrol and power. Mobile District, Corps of Engineers, Alabama-Coosa River Basin Reservoir Regulation Manual, Appendix A, at A-6 (Rev. 1962). The increased stream flow created by power production in low-flow seasons "increases the power production at the Alabama Power Company plants on the Coosa River and aids navigation on the Alabama River." Id.

The Regulation Plan found in the 1962 Allatoona Manual provides that Allatoona "will be operated as a peaking plant for the production of hydroelectric power and during off-peak periods will maintain a flow of about 200 cfs through the service unit." Id. at A-12. The 1962 Allatoona Manual further provides that the reservoir's power production schedule will be conducted in accordance with the terms of a contract negotiated and administered by Southeastern Power Administration. Id. This hydropower generation is required under the 1962 Allatoona Manual until the reservoir reaches its minimum power pool of 800 feet elevation. See id. at A-18.

In short, an adequate NEPA analysis should consider the Corps' operations under the last final, approved Allatoona Manual and the hydropower generation schedule described therein. Furthermore, the Corps must establish a baseline consistent with what is actually required in its manuals rather than the informal ad hoc generation schedules used by the Corps more recently. The Corps' analysis fails to establish an accurate baseline and does not evaluate the true impact of the Corps' Plan G, which is a greatly reduced potential for hydropower generation releases at Allatoona.

Footnote 3: We understand the Corps' No Action Alternative to represent the baseline for purposes of further NEPA analysis. The baseline, as articulated in the No Action Alternative, represents a benchmark "enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives." 46 Fed. Reg. 18,026 (Mar. 23, 1981) (question 3). This allows a federal agency to "compare the potential impacts of a proposed major federal action to the known impacts of maintaining the status quo." Ass'n of Pub. Agency Customers, Inc. v. Bonneville Power Admin., 126 F.3d 1158, 1188 (9th Cir. 1997). A No Action Alternative is a required element of the alternatives analysis under NEPA, and an accurate baseline is necessary to measure the effects of alternative actions. 40 C.F.R. § 1502.14.

Response

The USACE baseline model representation of hydropower demand at Allatoona was based on analysis of actual generation within the action zones 1 and 2. The alternatives consider different hydropower demands. The minimum hydropower is represented by a range of peaking hours, depending on the hydrologic condition of the basin. Consistent with USACE conservative reservoir operation, the lower value of the hydropower range is used during low flow drought condition and recovery from droughts. When storage enters lowest zone, peaking hydropower operation is suspended and releases are made to meet the minimum 7Q10 flow release of 240 cfs. The highest number of hours in each zone is used in the model to simulate the hydropower requirement. The range of hydropower peaking hours allows for flexibility in actual reservoir operation and is not captured in the modeling effort for the manual update. Hydropower was not reduced to zero hours during the summer-fall low periods during the actual operations of

2007-2008 and 2011-2012 droughts. Peaking hydropower was reduced to zero hours a few days during winter-spring period to assist with reservoir refill. Hydrologic conditions are wet during this period and typically little to no flow augmentation is required. This reduction is a common hydropower operation of storage reservoirs during the recovery period from droughts. The Allatoona proposed operation will continue to provide significant flow augmentation during drought periods to benefits multiple users throughout the basin.

In the Council on Environmental Quality's memorandum of March 23, 1981, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, the response to Question No. 3 addressing the No-Action Alternative states: "the 'no action' alternative may be thought of in terms of continuing with the present course of action until that action is changed." Consequently, for purposes of the ACT WCM update process, 'no action' reflects current reservoir operations as they have evolved over time in response to laws, regulations, policy, and new technical information. Basing the 'no action' alternative on a pre-NEPA 1962 WCM for the purpose of assessing the effects of alternative WCM update plans would neither accurately reflect current baseline operations nor be consistent with 'no action' as defined in the CEQ memorandum. In the EIS, USACE endeavored not only to describe the Affected Environment in terms of current conditions in the ACT basin but also to incorporate a historical perspective on natural and human resources in the basin dating back to the early 1950's when Allatoona Dam and Lake was completed and placed in operation.

Comment ID 0064.007

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Comment

IV. The DEIS Does not Adequately Consider Economic Impacts to Hydropower

In addition to overstating the amount of hydropower production that could occur under Plan G, the DEIS appears to understate the economic value of lost hydropower energy. The Corps' DEIS relies on the EIA's 2010 Annual Energy Outlook Report (AEO2010), which does not provide energy prices beyond Year 2035, and then assumes constant pricing during Years 2036 through 2060. This 25-year period of increasingly valuable hydropower energy production is simply ignored in the Corps' analysis. Also, because energy prices vary between different regions of the country, the Corps should have used their power marketing partner (SEPA) to obtain forecasted energy prices in this region where this energy is sold. The Corps also does not account for a number of variables that could have a profound effect on future energy prices, which reduces confidence in the study results. Depending on how issues affecting future energy prices develop, the value of hydropower could be 50% greater than shown in Table 6.6-5. The Corps should perform a sensitivity analysis to provide boundary conditions for impacts on future energy values. The Corps' statement that "[b]ecause current Corps policy does not allow the use of real fuel cost escalation, the values were assumed to apply over the entire period of analysis," (page 6-171), ignores a significant impact in determining capacity values and must be taken into account for the analysis to be considered reasonable.

The Corps also states "significant disparities would be expected in Jordan Dam and Lake and Bouldin Dam" as a result of the Alternative Plans. This is surprising. The Corps should explain the reason for the large loss in energy benefits at Bouldin and the increase in energy benefits at Jordan. Furthermore, the Jordan/Bouldin loss is shown as $2.0 million. This compares to the entire system loss of $2.6 million. An explanation is required as it appears erroneous that one project (Jordan/Bouldin) would incur such a disproportionate amount of the total losses.

While likely understating the annual lost hydropower energy production for the system and individual projects, Table 6.6-11 states that the No Action to Proposed Action comparison shows that lost energy benefits are approximately $ 2.6 million per year, and that Alabama Power bears 90% of those losses, or $2.4 million annually. This is expected to occur on average every year for the next 50 years, or a loss of some $120 million, even assuming constant replacement energy pricing.

Response

1st paragraph - As shown in Figure 6.6-3 (Forecasted energy prices for the SEPA region), the forecasted nominal values remain relatively constant over the last five years of the forecast. This was the basis of the assumption for constant energy prices beyond the forecast. EM 1110-2-1701, Hydropower, Section 9-5f, suggests real fuel cost escalation for 30 years. The analysis does utilize regional values. The analysis used the EIA average annual all-hours wholesale generation's prices for in SERC/S, as reported in the annual energy Outlook 2010. The shaping distribution described in Section 6.6.3.1.1 (Energy Price Computation) used regional values for the SEPA region from the Platt's M2M Power data. This source will be referenced in the EIS. At the time of this analysis the Hydropower Analysis Center (HAC) did not include uncertainty analysis on energy prices in their methodology. The hydropower analysis followed USACE processes and procedures for calculating hydropower impacts.

USACE concurs that the last sentence of the 3rd paragraph of Section 6.6.3.2.2.2 regarding real fuel cost escalation is unclear as written. As described in the analysis, power benefits are separated as capacity benefits and energy benefits, where energy benefits include the variable costs of the alternative fuel source (fuel, O&M). Capacity benefits include the fixed costs associated with the alternative fuel source (construction, fixed O&M, etc.). Real fuel escalation is allowed for the energy benefit but not for the capacity benefit, as described in EM 1110-2-1701, Hydropower, Section 9-5f.

2nd paragraph - The current model includes a rule to only divert water to Bouldin during normal operations. The model has been revised to divert water to Bouldin during all normal and drought triggered conditions. The disparity in the energy generated no longer exists. A portion of the energy reduction results from more conservation operation prescribed by the new drought plan.

3rd paragraph – Comment noted.

Comment ID 0064.008

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Comment

V. The DEIS Does not Adequately Consider Impacts to Water Quality Downstream

In general, Alabama Power concurs in the Corps' choice of models for planning-level analysis of water quality issues. However, we question specific aspects of the Corps' methodologies. As a result, the DEIS understates certain negative impacts to points downstream.

A. Review of the HEC5Q Water Quality Model and the Corps' Methodologies

Alabama Power contracted with Dynamic Solutions of Knoxville, TN, to assist with the evaluation of the HEC5Q model and conclusions drawn by the Corps. Upon request, the Corps provided the HEC5Q model, ResSim model and input files for both. The Corps also provided access to their modeling contractor to answer technical questions about extracting data from the HEC5Q output. Included as an attachment to Alabama Power's comments is a memorandum from Dynamic Solutions, which includes detailed discussions of flow issues and water quality.

Comparing flow output of the ResSim model Baseline case to actual flow data from 2000 to 2008 (located on publicly available websites of the U.S. Geological Survey ("USGS")) showed reasonable statistical agreement overall. However, one important exception is that at the very lowest flow, the model showed a 12% lower flow than history. Dissolved oxygen ("DO") data used to verify the HEC5Q baseline was taken from the USGS state line gage data and Alabama Power historical measurements within the Weiss powerhouse forebay. The DO output from the HEC5Q model at the state line was plotted against time in a graph similar to Figure 3- 45 in Appendix D (see Figure X). The two graphs compare favorably, indicating Alabama Power was able to replicate the Corps' model runs and, subsequently, the results presented in the DEIS. However, Alabama Power has concerns that the DEIS and Appendix D place too much emphasis on median and average values; therefore, in our analysis, we paid special attention to the growing season (May-October) and low flow conditions.

<The author included a Figure X in their comment letter. Please see original comment letter for the following figure: Figure X: Time series of observed and simulated (baseline) oxygen in the Coosa River at AL/GA Stateline. Upper panel is from COE Figure 3-45 of Appendix D, DEIS. Lower panel is model data extracted from HEC-5Q by Dynamic Solutions.>

Alabama Power has several issues with the Corps' methodologies in using the HEC-5Q model to evaluate impacts to water quality in the ACT Basin. First, the Corps should provide a summary list of assumptions considered and input data used in the study along with a discussion of the expected implications. Also, good modeling practice demands a careful and systematic treatment of both model sensitivity and uncertainty, and the Corps should address both.

More fundamentally, the Corps' presentation of data obscures the worse-case water quality scenarios, which is what matters most from the perspective of water quality. The DEIS presents longitudinal profiles of model results only as the relative difference between the baseline and alternative plans. The DEIS also provides anticipated effects of the proposed alternative on the median values of water quality constituents. Compliance with water quality criteria, however, is rarely based on a median value; therefore, an analysis based on median values does not provide adequate information to evaluate the worst-case consequences of the proposed alternative. For those with compliance obligations for constituents such as DO or chlorophyll, the worst-case scenario in the model results, in the upper- and lower-end 5th percentile statistics, is the most important. Because the Corps relied on median values, it is virtually certain that actual conditions will be worse than stated in the DEIS and Appendix D.

Also, the DEIS clearly states (page 6-77) that the HEC5Q model has not been developed (or calibrated) to reproduce historical water quality records. The intent of the model instead was to capture the wide range of hydrologic conditions that influence water quality. The water quality model was developed to represent the effect of streamflow, external loads, and reservoir operations under average, wet and dry hydrologic conditions observed during the 2000-2008 period. As a result, the model performance under "worst-case" May-October, dry year hydrologic conditions demonstrates that the water quality model consistently overpredicts the lower quartile of observed oxygen records at the Alabama-Georgia state line and in Weiss Lake near the powerhouse. Therefore, simulated predictions of the potential impact of the Corps' Plan G on DO under "worst-case" hydrologic conditions are unduly optimistic.

B. Downstream Water Quality Degradation

"[T]he Corps has an objective to ensure that water quality, as affected by a Corps project and its operation, is suitable for project purposes, existing water uses, and public safety and *is in compliance with applicable federal and state water quality standards*." DEIS at 1-23 (*emphasis added*). Clean Water Act ("CWA") section 313 requires federal agencies to comply with federal and state water quality requirements to the same extent as other entities. 33 U.S.C. § 1342. The Corps' own regulations similarly state that "Federal facilities shall comply with all Federal, state, interstate, and local requirements in the same manner and extent as other entities." ER 1110-2- 8154, ¶ 6.a (1995). The same regulations also provide that where "a water resource supports a diverse, productive, and ecologically sound habitat," the Corps must maintain and protect those waters "unless there is compelling evidence that to do so will cause significant national economic and social harm." Id. Further, "*No degradation is allowed* without substantial proof that the integrity of the stream will not diminish." Id. (*emphasis added*).

The Corps' proposal makes it more difficult for Alabama Power and municipal and industrial stakeholders to meet water quality requirements and other obligations under low-flow scenarios. Unfortunately, the Corps has not adequately evaluated water quality impacts, including the implications for regulated entities. The DEIS rejects any responsibility for adverse water quality impacts in Alabama and, instead, suggests that the Alabama Department of Environmental Management ("ADEM") may simply tighten permit requirements. It is contrary to the Corps' responsibility as a federal agency to dismiss the water quality consequences of its actions as someone else's problem. Even if that stance were lawful, which it is not, the Corps should acknowledge the reality that stricter discharge limits would, at most, only respond to water quality conditions. They would not repair the damage caused by reduced flows.

C. Effects on Downstream DO and Other Water Quality Parameters

The DEIS states that water quality impacts due to the Corps' proposed alternatives are "negligible" over the modeled period. However, the DEIS elsewhere recognizes that the Corps' proposal will result in adverse water quality conditions (including reduced DO) in Alabama Power's Weiss lake, with the assumptions made by the Corps on hydropower production in individual zones of the ResSim model. Given the Corps' proposal to reserve discretion as to hydropower production at Allatoona, there is potential for even worse effects on water quality. The DEIS must consider water quality impacts downstream if the Corps chooses to reduce hydropower generation within a foreseeable range.

Alabama Power has completed outstanding tasks associated with the process of relicensing the Coosa River Project. We are aware of no further action necessary prior to FERC issuing the license. In other words, the new license is reasonably imminent and clearly foreseeable. The certification issued by ADEM under CWA Section 401 for the new license requires Alabama Power to meet the state water quality standard (4.0 mg/l DO) at all times when water is being released through the turbines. In its analysis of the HEC5Q model, Alabama Power incorporated historical Weiss forebay profile data into the model. That showed that the model failed to predict low DO conditions in the subsurface layers. This has implications on Alabama Power's ability to meet its water quality requirement. Current designs for an aeration system that is necessary for compliance are based on observed, historical data, and any change to those designs or system will result in additional cost.

Response

Part A:
Model Calibration:
The HEC-5Q model coefficients were adjusted using the observed data to provide reasonable long-term, system-wide, approximations of water quality concentrations, including dissolved oxygen. The HEC-5Q model is not a calibrated regulatory model, so the ability to predict individual values was not emphasized. Therefore, the word “calibration” was not used in the report. Constant loading values were used instead of time series of the actual values, and modeled instead of observed flows were used as inputs. The implication of this approach is that the HEC-5Q model was not expected or required to replicate individual historic concentration values. Adjusting the model to replicate individual extreme values and particular times and locations can harm the ability of the model to provide reasonable estimates for the majority of time periods throughout the system.

Analysis of Model Results:
HEC-5Q model results were summarized for each water quality parameter over multiple periods. Two of the most important – and extensive - components of this study were analysis of the extremes and growing season analysis. Cumulative occurrence analysis allowed assessment of the extremes of water temperature and water quality concentrations, as well as the central tendency of these parameters. Three cumulative occurrence levels (5%, 50%, and 95%) were selected as proxies of the minimum, maximum, and central tendency, respectively, of the model results. These were summarized as plots of longitudinal profiles along the rivers in the ACT watershed. These proxies for the minimum and maximum values eliminated reporting of water quality spikes, due to “negative” inflows and other factors (as detailed in Appendix D). Inclusion of a range of flows was a central part of the analysis. Three hydrologic periods (high, low, and “normal” flows) were used for this analysis. Longitudinal occurrence profile plots were created for each parameter for each hydrologic period and each of three growing seasons, as defined by the U.S. Fish and Wildlife Service and the states of Alabama and Georgia.

The analysis of the effects of alternative operating plans is contained in the main body of the EIS. The water quality modeling report (Appendix D) summarized model performance and presented the types of plots used for the analysis. Therefore, it only included one plot of each type or for each combination of analysis parameters. Only a sub-set of the thousands of plots created could be included in the EIS. These plots are available upon request.

Model Input Data:

The following input data were used:

- Meteorology
  - o Meteorological input to the HEC-5Q model consisted of average equilibrium temperature, heat exchange rate, wind speed, and solar radiation at a 6-hour time step. These were computed from daily average meteorological data for nine data zones for the period of record. A diurnal variation was superimposed upon the daily data to derive the 6-hour data for input to the HEC-5Q model. This approach is described in detail in Appendix D of the EIS.

- Boundary Conditions
  - o Non-point Source Loadings:
    - Non-point inputs to the HEC-5Q ACT model, consisting of 102 non-point tributary inflows and BOD, total nitrogen, and total phosphorous loadings, were provided by the EPA BASINS model. Tributary inflow temperature was calculated using the meteorology.
  - o Point Source Loadings:
    - Point source inflows represent non-tributary inflows and include municipal and industrial discharges and cooling water returns. Agricultural returns and groundwater inflows were not considered as point-sources. Monthly average flow and quality characteristics were defined as the average of all the available measurements without regard to the time of month. If insufficient data were available, default values or relationships between parameters were used, as detailed in Appendix D. Input parameters consisted of water temperature, dissolved oxygen, total nitrogen, and total phosphorous.

  - o Initial Conditions
    - The initial conditions of each reservoir were defined using the available data and the tendencies seen in the data. An initial stream quality was not defined, but was instead computed from the reservoir releases after the first time step. Each HEC-5Q model run was started in the winter, when growth rates were slow, which leads to improved accuracy of the model results.

Model Assumptions:

- The HEC-5Q model coefficients and parameters are within acceptable and published literature reported ranges. None of the model coefficients were skewed just to fit the data. The modeling team assumed that published literature ranges were appropriate for this analysis. Comparison with the observed data indicates that the HEC-5Q ACT model does a good job of predicting pollutant, DO, and Chlorophyll-a trends.

Part B:

A thorough analysis of water quality impacts was performed for the ACT watershed. HEC-5Q model results were plotted and analyzed for each water quality parameter, including D.O., over multiple periods, as outlined in the water quality modeling report (Appendix D). A wide range of flows was modeled and analyzed. Model results were summarized for three hydrologic periods, including high flows, low flows, and "normal" flows. For each parameter, a set of longitudinal occurrence profile plots were created for each hydrologic period and each of three growing seasons, as defined by the U.S. Fish and Wildlife Service and the states of Alabama and Georgia. Only a sub-set of the plots could be included in the EIS. These plots are available upon request. More details can be found in the USACE response to Part A, above.

Part C:
Hydropower production is an authorized project purpose therefore any measures that significantly adversely affected hydropower was not carried forward for detailed consideration. A thorough analysis of water quality impacts was performed for the ACT watershed. HEC-5Q model results were plotted and analyzed for each water quality parameter, including D.O., over multiple periods, as outlined in the water quality modeling report (Appendix D). This analysis concluded that the overall effect of the Preferred Action Alternative on water quality is negligible.

Comment ID 0064.009

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Comment

VI. The DEIS Does not Adequately Consider Impacts to Fish and Wildlife

Endangered Species Act ("ESA") section 7 requires the Corps to make sure any proposed action does not jeopardize the continued existence of a species listed as threatened or endangered ("T&E") or adversely modify designated critical habitat of such a species. See 16 U.S.C. § 1536(a). The Corps is required to make this determination in consultation with the U.S. Fish and Wildlife Service ("FWS").

A. Effects at Alabama Power Reservoirs and Further Downstream

Alabama Power's Coosa Project license application proposes a minimum flow in the Weiss Bypass, as described in the Weiss Bypass Adaptive Management Plan ("AMP") and in FERC's Coosa final Environmental Assessment. The DEIS mentions this enhancement but does not analyze the impacts of proposed operations on the AMP, including effects on listed T&E species.

The AMP bases the minimum flow for the Weiss Bypass as a percentage of the flow at the Mayo's Bar Gage, which is basically the flow at the Alabama-Georgia border. The percentage of the state line flow that would be diverted to the Weiss Bypass changes by month. When working with stakeholders to develop these percentages during relicensing, Alabama Power used historic and existing inflows as the basis of discussions. Changes in the guide curve and action zones at Allatoona Reservoir that would change the timing of downstream flows - shifting flows between months or reducing overall flows through water allocations - would ultimately change the flows diverted into the Weiss Bypass. This has important implications for a number of ESA-listed T&E species. Critical habitat has been designated immediately downstream of the Weiss spillway for several endangered species, including the Coosa moccasinshell, Georgia pigtoe, interrupted rocksnail, ovate clubshell, southern acornshell, southern clubshell, southern pigtoe, triangular kidneyshell, and upland combshell, as well as the threatened fine-lined pocketbook.

In addition to impacts to the Weiss Bypass, the Corps' proposal is likely to reduce state line flows, especially during the dry times of year when those flows are needed the most. Reduced state line flows may affect protected species and designated critical habitat in the Coosa and Alabama Rivers further downstream. As one example, during extreme drought, Alabama Power is authorized to lower Lay reservoir to conserve water at upstream storage projects while continuing to meet downstream water demands. If flows at the state line are reduced, exacerbating drought impacts downstream, Alabama Power may have to lower Lay reservoir more often. As evaluated through the ESA Section 7 consultation for Alabama Power's pending Coosa license, federally listed species in Lay, such as the tulotoma snail and rough hornsnail, are affected by the lowering of Lay reservoir. The DEIS does not adequately discuss impacts on federally protected species or the aquatic community in general.

B. Execution of the Corps' Fish and Wildlife Obligations

In the course of relicensing its various reservoir projects, Alabama Power has extensive experience in accounting for ESA-listed T&E species, and ensuring our operations are protective of those species and in compliance with the ESA. However, the Corps' explanation of its consideration of listed species raises concerns of whether the Corps is taking its Section 7 obligations seriously. For example, the Corps asserts that "dedicated studies to address the impacts of the proposed operational changes on protected species . . . are beyond the scope of this effort." DEIS at 6-156. Presumably, "this effort" refers to the effort to determine flows that originate from Corps reservoirs (i.e., the proposed action). To suggest that consideration of listed species is somehow beyond the scope of the Corps' obligations in connection with its proposed reservoir operations in the ACT River Basin is clearly contrary to ESA Section 7. See 16 U.S.C. § 1536(a).

The Corps' review of particular species includes significant errors. For example, the Corps refers to the interrupted rocksnail and rough hornsnail as proposed for listing, DEIS at 2- 225, when both species were listed in November 2010. The Georgia pigtoe, listed in 2010, is not described in the Corps' narrative explanation, though it does appear in a table. DEIS at 2-220. A statement that "recent surveys failed to collect any live specimens" of the southern clubshell in the Weiss bypass is not accurate. See DEIS at 2-223. This suggests that, in the context of developing and publishing this draft proposal, the Corps has not confirmed which listed species are in the affected area, or accounted for the effect of the proposal and action alternatives on those listed species.

The Corps indicates it has consulted with stakeholders, including the resource agencies, on impacts to threatened and endangered species and other natural resources. Draft WCM at 8-1. However, the Corps has not initiated Section 7 consultation. DEIS at 1-10. Correspondence from the resource agencies indicates their concerns with the process. For example, in the Corps' report of February 2013, included in Appendix B, the Corps quotes the following comments provided by the FWS: "the proposed alternative does not fully address many of the Service's consultation concerns in the basin"; "The Service does not fully support the Corps' Proposed Action Alternative"; and "the proposed alternative cannot fully address many of the Service's conservation concerns in the basin." On critical points, the Corps does not provide substantive responses. For example, under "Flow Dynamics," the Corps disclaims responsibility for water quantity and quality downstream from its storage reservoirs. Similarly, some of the Corps' comments in response to FWS's concerns with respect to DO and temperature are essentially argumentative or dismissive.

While not necessarily agreeing with FWS in every respect, Alabama Power generally concurs that the flow reductions and impacts to water quality inherent in the Corps' proposal could adversely affect listed T&E species. The Corps must review the effects of its proposal, adjust proposed operations accordingly, and initiate appropriate consultation with FWS.

Response

USACE initiated informal Section 7 consultation during preparation of the draft EIS. Consultation was completed after the public comment period for the draft EIS. Impacts to threatened and endangered species found in or downstream of Alabama Power Company projects were considered in the Environmental Assessment prepared for the FERC relicensing of the Alabama Power Company Coosa River Project. No flow targets from USACE projects are specified at the Alabama-Georgia State Line or at the

Weiss Bypass. As shown in Figure 6.1-37 there would be insignificant differences in flow between the Proposed Action Alternative and the No Action Alternative. Species listed in Table 2.5-11 were checked and updated where required in response to the comment.

For the proposed WCM update, USACE determined either "no effect" or "may affect, but not likely to adversely affect" federally listed species or their critical habitat. The USFWS concurred with the USACE determination by letter dated March 20, 2014. Copies of consultation documentation and correspondence may be found in Appendix B, Part 3.

Comment ID 0064.010

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Comment

VII. The DEIS Does not Adequately Consider Impacts to Navigation

As the Corps acknowledges, "The Congressionally authorized purposes for the Allatoona Project as specified in the original project authorizing documents are flood risk management, hydropower, and *navigation*." Draft Water Control Manual, App. A, at 7-1 (*emphasis added*). The Corps uses the reservoir for other purposes only through "nationwide authorizing legislation," that is, statutes of general applicability rather than those that specifically authorize this project. Id. Likewise, Congress also authorized Carters for "flood risk management, power generation, *navigation* and other purposes as outlined in House Document 414, 77th Congress." Draft WCM, App. H, at 3-1 (*emphasis added*).

Navigation is not only a primary authorized purpose of the Corps' projects in the ACT River Basin; it is also historically important for commerce in Alabama. In the words of the Corps, "Navigation is an important use of water resources in the ACT Basin. The Alabama River, from Montgomery downstream to the Mobile area, provides an important navigation route for commercial barge traffic, serving as a valuable regional economic resource." Draft WCM at 7-10. Historically, commercial navigation supported timber, wood products, mining activities, and agriculture, peaking at 4.1 million tons in 1986.

A. Operation of Corps Projects for Navigation

The Corps has failed to articulate a rational basis for refusing to operate Carters and Allatoona in the interest of navigation. According to the Corps, "Historically, navigation has been supported by releases from storage in the ACT Basin." Draft WCM at 7-12. In the past, the Corps has operated Carters and Allatoona to support navigation. However, the Corps now takes the position that *all* flow augmentations from storage for downstream navigation are to come *exclusively* from Alabama Power reservoirs, with absolutely no support from Carters and Allatoona beyond whatever flow is provided for other reasons. (*emphasis added*) The Corps states that Allatoona and Carters, "while originally authorized to support downstream navigation, are not regulated for navigation purposes because they are distant from the navigation channel, and any releases for that purpose would be captured and reregulated by APC reservoirs downstream." Draft WCM, App. H, at 7-19. The Corps also states, with respect to Allatoona, "There are no specific operations for navigation since releases are captured by Alabama Power Projects downstream." Draft WCM, App. A, at 3-2. In other words, the Corps refuses to support navigation specifically, based on distance and Alabama Power's intervening reservoirs. Neither justification is valid.

Without question, the water that flows from Carters and Allatoona generally makes its way to the Alabama River. A passing comparison to the Apalachicola-Chattahoochee-Flint ("ACF") River System demonstrates the invalidity of using distance as a rationale not to supplement flows. There, the Corps has flow obligations for the conservation of T&E species found in the Apalachicola River, even though the Apalachicola River is located approximately 348 miles downstream from the Buford Dam. Allatoona and Carters are located similar distances from the head of navigation on the ACT system-approximately 334 miles and 360 miles, respectively.

In any event, Congress has stipulated that Carters and Allatoona are hydraulically connected to navigation on the Alabama River. That is a necessary conclusion from the original statutory authorizations, which were based on the Corps' own engineering analyses.

It is also unreasonable to suggest that Alabama Power would thwart efforts to support Alabama River navigation with releases from Carters and Allatoona. Such a notion is contradicted by the long history of coordination between Alabama Power and the Corps to meet downstream flow needs. Beyond that, such a position is also inconsistent with the Corps' claim of authority to regulate Alabama Power reservoirs for navigation. Without conceding the nature or scope of the Corps' regulatory authority in that respect, it is logically inconsistent and, therefore, arbitrary and capricious for the Corps to assert that it may regulate Alabama Power reservoirs for navigation, while at the same time withholding flows on the rationale that Alabama Power would capture and hold the water in its reservoirs.

B. Channel Maintenance Issues

The Corps should integrate channel maintenance activities with reservoir operations. The Corps indicates that it ran model simulations to identify periods of navigation availability assuming depths of 7.5 feet and 9 feet, based on a 34-year range of historic inflows, under baseline conditions and three proposed alternatives. DEIS at 6-67. This reflects an understanding that channel availability depends on both flow and the Corps' program of dredging and other maintenance activities. The better maintained the channel, the more the channel is available for commercial navigation relative to a given flow level. In other words, channel maintenance facilitates the same navigation benefit with less flow.

We understand that channel dredging maintenance and reservoir operations are different disciplines. We also agree that there are factors influencing the Corps' ability to maintain the Alabama River channel that are beyond the Corps' ability to control, most notably funding levels provided by Congress. Draft EIS at 1-17 - 1-18. Nevertheless, the relationship between dredging and flow is critically important for commercial navigation and, therefore, unavoidable.

We urge the Corps to maintain an active program of channel maintenance and to account for channel conditions in determining the extent of navigation flows. When the Corps does not adequately maintain the channel, additional flow is required to maintain navigation. If the Corps fails to maintain the channel, and especially if the Corps does not use its own projects to augment flow, it is unreasonable (and, therefore, beyond the Corps' statutory authority with respect to the Coosa River reservoirs) to place the full burden for navigation flows on Alabama Power reservoirs.

C. Navigation MOU

The Draft WCM states that "flows may be reduced if conditions warrant in accordance with the navigation plan memorandum of understanding between the USACE and APC." Draft WCM at 7-11. No such memorandum exists at the present time. Reference to this as a basis for the Corps' operations is inappropriate. Procedurally, we expect that if the Corps anticipates a need for support from Alabama Power reservoirs for navigation support, the Corps will provide that request to Alabama Power, and we will respond to the Corps' request. Cf. Draft WCM at 7- 15. And if, as the Corps suggests, navigation is unavailable due to lack of dredging or other issues, there is no justifiable reason for Alabama Power to continue making navigation flow releases. The Corps must formally recognize that Alabama Power has no obligation to continue making navigation support releases if the Corps has failed to maintain the navigation channel. In any event, these are the kinds of details we would anticipate working out through a memorandum of understanding, assuming such a memorandum can be mutually agreed to.

Response

A. There are no specific reservoir regulation requirements to support navigation at Allatoona Dam. The seasonal variation in reservoir storage does redistribute downstream flows providing benefits to navigation. A navigational MOU will be developed between the USACE and APC to address navigation flow requirements after the completion of the water control manual updating process.

B. A navigation plan, included within the MOU will describe the required releases for navigation with and without dredging of the Alabama River and will be prepared after the completion of the water control manual update process. The discussion of navigation flows in the Alabama River in Section 4.2.1 of the EIS has been updated to include a discussion of the relationship of navigation flow requirements and navigation channel maintenance dredging.

C. The navigational MOU will be developed between USACE and the APC after the completion of the ACT Basin Master Manual updating process.

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Comment

VIII. The Corps' DEIS Contains Erroneous Assumptions about Alabama Power's Projects

Of great concern to Alabama Power, the Corps' DEIS makes a number of erroneous assumptions about Alabama Power's projects or otherwise fails to consider proposed changes at Alabama Power's projects relevant to the Corps' revision of the ACT manuals.

A. Alabama Power's 4,640 cfs Flow Commitment

First, the Corps' baseline does not account for the qualified informal commitment by Alabama Power in the 1972 letter agreement that the 4,640 cfs flow will be provided "assuming of course that our upstream storage dams are above minimum rule curve elevations," which Alabama Power had always understood to be winter pool elevations. Instead, the Corps' baseline assumes Alabama Power is required to provide a flow of 4,640 cfs at Montgomery at all times, without qualification. Alabama Power's agreement to provide flows of 4,640 cfs was a voluntary, qualified commitment between Alabama Power and the Corps, not a regulatory obligation. In fact, in 2007, Alabama Power obtained concurrence from the Corps to reduce the 4,640 cfs flow by 20% as a result of significant drought.

When drought conditions worsened, Alabama Power reduced the flow from its Coosa and Tallapoosa projects even more than had been approved by the Corps. The modeling of Plan G shows much higher elevations at Martin during the 2007-2008 drought than the baseline model, which draws the reservoir down to 452.4 msl because of an assumed strict adherence to a 4,640 cfs flow. By incorrectly assuming a minimum flow of 4,640 cfs with no cutback, the baseline is skewed by showing a much greater improvement over baseline with Plan G than actually would occur. Also, this assumption could skew the 70-year average elevations as well as exceedance curves found in Section 6 of the DEIS for the baseline and Plan G. These data were used to conclude the overall impacts to lake levels based on the changes. The baseline, therefore, cannot assume a constant flow at Montgomery of 4,640 cfs provided by Alabama Power under all conditions.

Furthermore, the 4,640 cfs flow commitment was a calculated flow based upon certain assumptions-including assumptions about the Corps' operations upstream.<Footnote 4> As explained in a 1987 Supplemental Environmental Impact Statement, it was expected that Allatoona and Carters would release a combined average minimum flow above 1,000 cfs. The Corps itself subsequently recognized in its 1993 manual for Allatoona that "[t]he Allatoona Project releases can often provide a significant portion of this [4,640 cfs minimum navigation] flow." The Corps' baseline assumptions concerning Alabama Power's 4,640 cfs flow commitment must also include this corresponding commitment from the Corps. Any evaluation of alternatives that eliminate the Corps' navigation flow support from Allatoona must account for this change.

The Corps' DEIS also expands the purposes for which this commitment was originally made. The Corps states that this flow commitment "also provides sustained flows for fish and wildlife conservation," as well as minimum water quality standards. But Alabama Power never agreed to voluntarily provide anything other than a *navigation* flow.<*emphasis added*> Alabama Power's 4,640 cfs commitment was never intended for any other purpose, and the Corps has no authority to require Alabama Power to make releases to support fish or wildlife conservation.<Footnote 5> Conversely, the Corps states that it has no obligation to make releases from Allatoona to support downstream water quality or fish and wildlife conservation. The DEIS' baseline, therefore, must be revised to accurately reflect the voluntary and qualified nature of Alabama Power's commitment and its limited purpose.

B. Alabama Power's Conservation Storage

The Corps' DEIS also makes faulty assumptions about Alabama Power's Martin project. While there is no Corps manual for Lake Martin, the Corps makes certain assumptions about Lake Martin in establishing the baseline conditions of the ACT system and evaluating various proposed alternatives. For example, the Corps' DEIS states that Lake Martin contains over 48% of the total conservation storage in the ACT Basin. This assumes an elevation of 446' as the bottom of Lake Martin's conservation storage, which is an inaccurate assumption. Elevation 446' represents an operational limitation of the turbines at Lake Martin. However, Alabama Power operates Lake Martin with a normal winter pool drawdown of 481'. The DEIS Glossary defines "conservation pool" to mean "the portion of reservoir storage usually reserved for power production and water supply." DEIS 11-2. At Martin, Alabama Power does not "usually reserve" storage down to 446' for power production or water supply. Though Alabama Power can theoretically generate to as low as elevation 446', the need to utilize storage in Lake Martin to that level is limited to circumstances so extreme that even the drought of 2007 did not justify reaching pool elevations within even 30 feet of this level.<Footnote 6>

Furthermore, if Alabama Power were to draw Lake Martin down as far as the DEIS' baseline assumes, numerous adverse effects would occur, including 1) lack of adequate storage to support electrical system reliability;<Footnote 7> 2) difficulty raising Lake Martin back to normal elevations; 3) water supply for various systems, including municipal water authorities, would be seriously compromised because of intake locations; 4) detrimental impacts to recreation; and 5) unknown environmental effects. Accordingly, the Corps' DEIS evaluation of the draft ACT Manual is based on a faulty premise concerning "conservation storage" in Lake Martin, which should not be relied upon in determining the reasonableness of the draft ACT Manual. The modeling indicates that under current baseline conditions, Lake Martin would have fallen to about elevation 452.4 in 2007. However, in actuality, Martin did not fall to 452.4' in 2007, in part, because Alabama Power reduced the 4,640 cfs flow, resulting in a low elevation of only 475.5' during those historic drought conditions. Alabama Power made similar flow reductions in response to drought conditions in 1986 and 1988. Interruptions in the 4,640 cfs flow are very much a part of the existing baseline.

C. Pending FERC Relicensing of Alabama Power Projects

Alabama Power's Coosa River Project (which includes all seven of its developments on the Coosa River), and Martin Project on the Tallapoosa River are in the midst of license renewal proceedings with FERC. The relicensing process for the Coosa River Project began in 2000, and culminated in the filing of an application at FERC in 2005. As an interested stakeholder, the Corps participated in the relicensing process, including participation as a cooperating agency, with FERC as the lead agency, in the development of an environmental assessment for the Coosa application. FERC issued a final environmental assessment for that project in December, 2009. Because the 2005 relicense application contained proposals with respect to guide curve changes at the Weiss and Logan Martin developments, FERC's environmental assessment evaluated these guide curve changes. Currently, all required filings have been completed, and Alabama Power is waiting on FERC's final decision on the relicensing of the Coosa River Project.

Similarly, Alabama Power began the Martin relicensing process in 2006, and filed an application with FERC in June 2011. The Corps as an interested stakeholder was notified and requested to participate in the preliminary and ongoing relicensing proceedings. One of the most significant issues studied and evaluated during the pre-license application process was the possibility of changing the Martin guide curve to increase the winter pool elevation. Based on these studies, Alabama Power included a specific proposal for a new guide curve in the final application to FERC. FERC is currently preparing an environmental impact statement, which, among other things, evaluates the proposed guide curve change for Martin Dam.

i. Lake Martin's Guide Curve

The Corps' DEIS assumes for Plan G that "APC projects on the Coosa and Tallapoosa rivers would continue to operate under their current FERC licenses with specific operational requirements." DEIS ES-27. The Corps then states (at DEIS 2-49) that Alabama Power "has expressed intent to evaluate the effects of a change in the winter guide curve" and that "APC will evaluate the possibility" of raising the winter guide curve. It also declares that "the Corps will participate in the FERC relicensing process for Lake Martin with respect to potential effects on the federal projects in the ACT Basin." Though the Corps acknowledges that the current Martin guide curve is likely to change, the DEIS does not include any evaluation of Alabama Power's proposed guide curve change for Martin Dam.

Given that Alabama Power has formally requested FERC approval of a specific guide curve change for Lake Martin, if the Corps thinks there may be any "potential effects on the federal projects in the ACT Basin," the DEIS should evaluate and consider those potential effects as part of its cumulative effects analysis. However, the DEIS does not do this, and its failure to evaluate this proposed operational change at Martin Dam is a substantial oversight and a major flaw in the DEIS. The Corps must consider any potential effects of the Martin guide curve changes on the federal projects as it evaluates the changes it is proposing in the draft ACT Manual.

ii. Weiss and Logan Martin's Guide Curves

Similarly, the Corps' DEIS fails to consider the proposed guide curve and associated operational revisions for Weiss and Logan Martin, even though these changes are under consideration as part of FERC's relicensing process for Alabama Power's Coosa River Project. The Corps participated as a cooperating agency in FERC's environmental assessment for the Coosa relicensing and that document evaluates the specific guide curve changes for Weiss and Logan Martin. Nevertheless, the Corps' DEIS disregards both the extensive and exhaustive work that was completed in consultation with the Corps' Mobile District and the proposed guide curve changes and flood control plan changes that are part of the ongoing Coosa relicensing process.

iii. Neely Henry

The Corps' DEIS also assumes a winter pool elevation of 505' at Alabama Power's H. Neely Henry project, based on the current manual for H. Neely Henry. However, the Corps elsewhere states that conditions as of 2009 are used as baseline. But in 2009, H. Neely Henry was being operated with a winter pool elevation of 507', based on variances approved by the Corps and FERC. For consistency, the Corps should adjust its baseline to account for Henry's operations as of 2009. Furthermore, the statement at DEIS 2-38 that "There is no dedicated flood risk management storage for [Neely Henry Lake]" is perplexing. Neely Henry certainly has a seasonal drawdown for flood control benefits, both under the former guide curve and the guide curve made permanent in the new Neely Henry Reservoir Regulation Manual. Just two pages prior, (DEIS 2-36), it is stated that "H. Neely Henry Lake is used for hydropower generation, *flood risk management*,<*emphasis added*> navigation flow augmentation . . . ."

D. Logan Martin and Weiss Flood Easement

The DEIS also includes several factually incorrect statements concerning Alabama Power's flood easement at Logan Martin. At DEIS 3-9, the Corps states: "During development of the WCM updates, coordination between the Corps and APC revealed that APC does not have sufficient real estate interests (flood easements) to support flood risk management operations at Logan Martin and Weiss Lakes per existing manuals and FERC licenses." The DEIS says further that "[t]here are no flood easement issues with the APC projects, H. Neely Henry Lake, and R.L. Harris Lake. Therefore, WCM updates for those projects are included in this proposed action." This latter statement indicates very clearly that "flood easement issues" at Logan Martin and Weiss was the Corps' primary reason for not updating the Logan Martin and Weiss manuals at this time.

To be clear, Alabama Power has all of the necessary real estate interests and flood easements at Logan Martin and Weiss to support flood control operations consistent with the existing Corps manuals for these projects and the existing FERC license, as well as all requirements of Section 5 of Public Law 436, which authorized private development and Federal Power Commission licensing of the upper Coosa. Also, the historical record shows that the Corps was aware of and approved the flood easement elevations acquired by Alabama Power in the 1950s and the reasons for acquiring to these elevations, including for example, the May 18, 1956 and October 16, 1956 correspondence from the Corps of Engineers to the Federal Power Commission, and Article 38 of the original Federal Power Commission license for the Coosa Project. Moreover, neither the Federal Power Commission nor its successor agency, FERC, has ever suggested that Alabama Power has not acquired all of the flood easement storage required by the license. Accordingly, the statement in the DEIS that the amount of flood easement at Weiss and Logan Martin was "recently revealed" does not justify delaying the approval of the rule curve changes and flood control procedures at these projects as proposed in the Coosa license application pending at FERC.

Instead of using the ACT Manual update as an opportunity to address the "flood easement issue," the Corps states that "[t]he FERC licenses could be amended in light of APC's request to modify winter pool levels at the Weiss Lake and Logan Martin Lake projects; however, the No Action Alternative does not include these APC-proposed modified pool levels." DEIS at 5-2. Alabama Power's "request to modify winter pool levels" through the relicense application *is* <*emphasis added*> the process for making this change. Though it remains to be seen how FERC will address this licensing proposal, it is very likely that no post-license amendment process will be necessary to obtain FERC approval.

Footnote 4: DEIS ES-12 states that 7Q10 flows at Montgomery are 4,640 cfs. Historically, the Corps has stated that 7Q10 at Montgomery is 5,200 cfs. (See April 18, 1972 letter from Col. Harry Griffith to Alabama Power.)

Footnote 5: The DEIS also suggests that Alabama Power's 4,640 cfs flow commitment is expressly included in Alabama Power's FERC licenses. That is not the case. FERC mandates only that Alabama Power support navigation as prescribed be the Corps. Furthermore, the Corps' authority at the Harris project is in 33 CFR 208.11, but the DEIS says the authority is at 33 CFR 208.65, which does not exist.

Footnote 6: There are several other statements throughout the DEIS concerning operations or other features of Alabama Power's projects in the basin. For example, the DEIS' descriptions of Alabama Power's projects suggest that only Lay and Mitchell have "storage for water quality." It is not clear what the Corps means by "storage for water quality" and why the Corps deems Alabama Power's other reservoirs to not have any "storage for water quality." It is not Alabama Power's intention in these comments to identify or correct all of those statements.

Footnote 7: This capability is important not just at Martin but at all Alabama Power reservoirs in the ACT basin. Alabama Power relies on our hydroelectric generation for fast response to support the electrical system reliability. In order to support this capability, the hydro turbines are always spinning and ready to load. It is critical to have adequate water available in storage to operate and maintain critical generation for the duration of electrical system emergencies.

Response

A. Non-concur. USACE never concurred that the "minimum rule curve elevations" were defined as the "winter pool elevations". The Drought Contingency Plan has been developed to replace the 2 May 1972 letter agreement.

B. USACE has coordinated with APC to resolve any "pertinent data" discrepancies in the documents.

C. Assumptions within the modeling efforts used existing FERC license information. Revisions based upon renewed licenses will be updated when necessary.

D. In Section 3.1.9 of the DEIS, text to be replaced with the following:

The proposed new manuals would replace any current ones and will address the basin-wide management of those water resources. During development of the WCM updates, the USACE determined that APC had obtained flood easements to support flood risk management operations up to 473.5' at Logan Martin and 572' at Weiss pursuant to their original FERC license for those projects. These easement elevations are below the maximum surcharge elevations contained in the current license and Water Control Manuals. APC has proposed new flood operations that would ensure that surcharge operations do not exceed these elevations, which will require a flood study that exceeds the scope of this proposed action. Therefore, updates of the Logan Martin and Weiss WCMs will be deferred pending the completion of the necessary studies to determine if the revised flood risk management protocols are acceptable. There are no proposed changes to flood operations at H. Neely Henry Lake, and R.L. Harris Lake. Therefore, WCM updates for those projects are included in this proposed action.

Comment ID 0064.012

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Comment

IX. Alabama Power Has Requested, but Not Received, Additional Data Necessary to Review the Corps' Analysis and Conclusions for Flood Control Impacts

The Corps did not publish or otherwise make available certain data and modeling that are critical to understanding and validating the Corps' analysis and conclusions. Alabama Power requested this information informally, but the Corps has required Alabama Power to submit a more formal request under the Corps' FOIA procedures. We are aware of no lawful basis under FOIA or otherwise for the Corps to withhold the data we seek.

While there is nothing inherently unlawful about following the FOIA procedures, it does have the practical effect of preventing Alabama Power and other stakeholders from reviewing the data and model in time to provide more detailed comments before the close of the DEIS comment period. We believe further analysis in reliance on this data and model is critical to develop a fully informed opinion as to certain aspects of the Corps' proposal. Assuming the Corps ultimately honors our request, we further request that the Corps allow a reasonable period of time for additional review and public comment. Otherwise, the Corps' reliance on the data itself and the products of model runs using the data would be unlawful under NEPA and the Administrative Procedure Act.

Response

The requested data was provided to Alabama Power Company by FOIA request on June 5, 2013.

Comment ID 0064.013

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Comment

X. Technical and Modeling Issues

A. The Corps' Use of HEC-ResSim

Alabama Power's extensive analysis of its proposed guide curve changes at the Weiss, Logan Martin, and Martin Projects used the HEC-RAS model to route flows in river reaches, among other tools. The Corps however used a different model, HEC-ResSim, for flood control issues at Allatoona and to route flows downstream to Rome. While HEC-ResSim is a good choice for modeling reservoir operational alternatives, evaluating the flood impacts at a downstream location on the river is better accomplished with HEC-RAS because HEC-RAS computes water surface profiles and flood elevations along the river. HEC-RAS also dynamically routes the water through the system and produces more accurate hydrographs.

The critical issue with flooding is river stage height and the simple routing methods that are applied in ResSim do not produce the stage height. Stages at Rome are influenced by more than the flow, including the coincidence/timing of the arrival of peaks from the Etowah and Oostanula Rivers. Previous studies by Alabama Power found that stages at Rome cannot be represented by simple stage-flow ratings. Also, flooding along the river reaches between Rome and the upstream Corps reservoirs is influenced by the local runoff, which can be significant enough to mask the impacts of the Corps operations, depending on the center and size of the storm. During Alabama Power's license renewal application process, Alabama Power submitted to the Corps HEC-RAS modeling covering the area from the Carters and Allatoona reservoirs down to Weiss reservoir. Alabama Power suggested in scoping comments for this ACT Manual process that the Corps utilize the modeling tools already available. Further, in the scoping comments Alabama Power not only suggested the Corps use the available tools but use them to evaluate the proposed changes at Weiss and Logan Martin. The DEIS fails to explain why the Alabama Power HEC-RAS model was not used. If the HEC-RAS model had been used, flooding along river reaches and associated elevations could have been analyzed, rather than using HEC-ResSim to evaluate flow at specific gauges. It is not clear to Alabama Power with the information provided by the Corps that any impacts to flooding at Rome could be properly evaluated.

It is unclear as to how the Corps plans to use the flood study methodology in any future studies including any additional studies requested by the Corps for the Weiss and Logan Martin proposed guide curve changes. To be clear, we believe that Alabama Power has previously submitted all of the models, studies, etc. necessary to support the operational proposals in the pending FERC relicensing applications for the Coosa Projects and the Martin Project. To the extent that Alabama Power would be expected to do additional studies, more information as well as the hourly HEC ResSim model would have to be made available to properly evaluate various operations.

Finally, the DEIS also states that "In updating water control plans and manuals, the Corps will consider improvements that can be made in managing Allatoona Lake for flood risk management." (DEIS 1-41) However, it is not clear whether or how the Corps has considered improvements in the operation of Allatoona in the interest of flood risk management. Rather, on page DEIS 4-49 there is an unsupported statement that "the Allatoona Lake guide curve *would likely* result in improved flood risk management operations at Allatoona Lake." <*emphasis added*> However, DEIS 6-121 says "changes in magnitude of flood flows and corresponding channel forming influence of those flows in the Etowah and Coosa Rivers downstream of Allatoona Lake would be considered negligible between the No Action Alternative and the [Proposed Action Alternative] phased guide curve." "Negligible" changes and "would likely result in improved flood risk management" seem to be conflicting characterizations, and neither conclusion appears to be supported by any data. And given that the Corps defines "flood risk management" to be limited to seasonal drawdown, it is difficult to see how the proposed Allatoona guide curve would improve on the flood risk management benefits of Allatoona Lake.

B. Flood Risk Management vs. Flood Control

Throughout the DEIS, the phrase "flood risk management" is used as an apparent substitute for the more commonly used phrase "flood control." For example, the DEIS states on page ES-5 "P.L. 83-436 stipulated that the license(s) require provisions for flood risk management storage and for future navigation, with operation for those purposes performed in accordance with reasonable rules and regulations of the Secretary of the Army." However, the text of that statute doesn't mention "flood risk management." Rather, Section 9 of P.L. 83-436 says "The operation and maintenance of the dams shall be subject to reasonable rules and regulations of the Secretary of the Army in the interest of flood control and navigation." Nevertheless, DEIS 5-3 says "WCMs developed for the APC projects are used to guide operations for flood risk management and navigation" and "the Corps is responsible for the review and approval of the flood risk management plans . . . for the APC storage projects Weiss, H. Neely Henry and Logan Martin Lakes on the Coosa River and R.L. Harris Lake on the Tallapoosa River."

If the Corps intends for "flood risk management" to mean the exact same thing as "flood control," it should make that clear statement somewhere in the DEIS, because if the two are not exactly the same thing, then the use of "flood risk management" could be viewed as either expanding or contracting the historical "flood control" purposes of the various reservoirs as embodied in Public Law 436, the FERC licenses and existing reservoir regulation manuals for these projects. Given that the term "flood risk management" is defined in the DEIS Glossary at DEIS 11-3 to mean "Water management operations to draw down reservoirs beginning in the fall through winter and into early spring to provide additional storage capacity to protect life and property in the basin," "flood risk management" appears to include reservoir drawdown only. It would therefore appear that the Corps is limiting its flood control authority for Alabama Power's projects to just the fall and winter drawdown aspects of those projects rather than both drawdown and use of flood easement above the respective full pool elevations for flood control operations. If this is the Corps' understanding of its flood control authority, it would be helpful for the Corps to make this declaration very clearly. If not, the Corps should reconsider its use of the phrase "flood risk management" instead of the well understood and statutorily significant phrase "flood control."

The DEIS also uses the term "flood damage reduction storage," but does not define this term in the DEIS Glossary. The use of this undefined term results in some confusing statements in the DEIS. Moreover, on page 7-6 of the Draft ACT Master Manual, there is the statement, "The operation of four APC dams (Weiss, Logan Martin and H. Neely Henry on the Coosa and R. L. Harris on the Tallapoosa) are subject to rules and regulations in the interest of flood management reduction and navigation . . . ." Perhaps the phrase "flood management reduction" in this statement is a typographical mistake, but it highlights the confusion that can be created by attempts to use something other than "flood control" to describe flood control.

Response

HEC-RAS model not required because analyses was for single locations, not reaches. USACE is currently coordinating with APC on additional studies and data requirements that may be needed to address any guide curve revisions. Revisions to the operation of the Allatoona Project for flood risk management that were within the scope and constraints of the study, have already been analyzed and addressed.

Since 2006, USACE has adopted and transitioned to use of the term "flood risk management" in lieu of the traditional terms "flood control" and "flood damage reduction." This term more appropriately characterizes the USACE mission in managing and reducing risk of loss of life and property damage associated with flood events. Therefore, "flood risk management" has been used throughout this EIS to describe that mission area in lieu of the traditional terminology. A statement has been added at the beginning of the EIS Executive Summary and EIS document (in Section 1.1) to clarify the use of this term.

The term "flood damage reduction storage" in Section 2.1.1.1.4.5 has been changed to "flood risk management storage." The term "flood management reduction" on page 7-6 of the ACT Master Manual has been changed to "flood risk management."

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Comment

XI. Drought Contingency Plan and ADROP

In the draft Drought Contingency Plan, Table 7 entitled "ACT Basin Drought Regulation Plan Matrix" contains several Jordan flow targets that are not consistent with Alabama Power's ADROP. Table 7 indicates that Jordan will release 1,800 +/- cfs when the basin is in DIL 2 and DIL 3 conditions. Under ADROP, DIL 2 and DIL 3 conditions provide for a range of Jordan releases from 1,600 to 2,000 +/- cfs. Based on conversations with Corps staff in Mobile, Alabama Power understands that the 1,800 cfs midpoint in this range was selected for purposes of modeling the drought plan. Nevertheless, the 1,600 to 2,000 +/- cfs range of release from Jordan when in DIL2 and DIL 3 still remains an important part of Alabama Power's ADROP plan.

As previously noted, the Corps has mischaracterized the 4,640 cfs flow release from the Jordan, Bouldin and Thurlow projects as the 7Q10 at Montgomery. For clarity, all references to 7Q10 in the ACT Drought Contingency Plan, as it relates to flow at Montgomery, should be stated as the "Montgomery flow target."

The draft Drought Contingency Plan in various places characterizes Montgomery flow target as a "navigation" flow. This characterization is not accurate because the Montgomery flow target does not fully support navigation below Claiborne Dam. Indeed, the DEIS makes this point at page 6-67 by saying "The established minimum flow of 4,640 cfs (weekly average at Montgomery downstream of APC's JBT projects) has never actually been sufficient to fully support navigation channel depths downstream." Because there is a separate Navigation Plan included in the draft ACT Manual, mischaracterizing the Montgomery flow target as a navigation flow in the Drought Contingency Plan is unnecessary.

Table 8 "Low Basin Inflow Guide" on page E-F-25 in the draft Drought Contingency Plan identifies the current required basin flows necessary to meet both the Montgomery flow target flow release and fill each respective Alabama Power reservoir. These basin flow needs are based on current guide curves for the reservoirs, so future changes to these curves (for example, Martin, Logan Martin and Weiss) will result in changes to the basin flow requirements in Table 8.

The Drought Contingency Plan is included in each individual reservoir water control manual in addition to the Master Manual. Alabama Power recommends removing the Drought Contingency Plan from each individual manual so that it appears only in the Master Manual. If and when the Drought Contingency Plan is modified in the future, it will be much easier to amend if changes do not require reopening each individual reservoir manual.

Finally, as Alabama Power has explained in previous communications with the Corps, some of the reductions in flow from Jordan and Thurlow under ADROP and the Drought Contingency Plan will require FERC approval.

Response

USACE concurs with the APC comment regarding the Jordan release target for ADROP. The Jordan release of 1,800 +/- in DIL 2 and DIL 3 (April to May) has been changed to 1,600 to 2000 +/-.

Verbiage in the WCMs and EIS regarding the flow target based on releases from Jordan, Bouldin, and Thurlow Dams has been revised. A better description of the evolution of the 4,640 cfs flow target has been included. Also, terminology used will be "4,640 cfs from Jordan, Bouldin, Thurlow (JBT)" instead of "flow at Montgomery" or "7Q10 at Montgomery".

The Drought Contingency Plan will be included in each ACT Master Manual Appendix (representing each individual project WCM). The individual project WCMs are used independently from the Master Manual and will provide a more complete document for each reservoir project.

The following statement was added to the Drought Contingency Plan: "Some flow reductions from Jordan and Thurlow are listed in Table 7. ACT Basin Drought Regulation Plan Matrix will require FERC approval."

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Comment

XII. Attachments with Additional Comments and Information

Attached to this letter are documents containing other miscellaneous comments and documents containing revised standard number tables for Alabama Power's projects.

XIII. Conclusion

Again, Alabama Power appreciates the opportunity to provide the Corps with comments on the DEIS and updated manuals for the ACT river basin. We support the Corps' effort to update the ACT Master Manual and individual reservoir regulation manuals for the basin. Alabama Power is also supports many elements of the Corps' proposed manuals and DEIS but there remain serious procedural and substantive problems with the Corps' proposal As we have explained in these comments, the Corps must reassess the proposed changes at Allatoona given the authorized purposes of Allatoona along with many of the assumptions made in the Corps' baseline. The Corps must also conduct additional studies to better predict and analyze impacts downstream that may result from the changes in the operation of Lake Allatoona. And, the DEIS must include as part of the reasonable alternatives analysis the specific operational changes to the Coosa River Project and the Martin Dam Project currently under licensing consideration at FERC. Lastly, as the Corps continues its process to revise the ACT manuals, it must make all relevant data available to the public and initiate a new public comment period.

Should you have any questions, please do not hesitate to contact me.

Response

[NOTE: This is the closing statement in the APC comment letter. All comments summarized here have been addressed in detail in response to the specific comments in other portions of the letter.]

The comments summarized in this paragraph have been adequately addressed in response to previous comments in the APC letter.

Comment ID 0064.016

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Comment

Attachment A

The purpose of Dynamic Solutions, LLC's review of the ACT EIS and modeling support was to evaluate the appropriateness and validity of the approach and models used by the USACE in developing the water control plan. The documents reviewed include:

• ACT Environmental Impact Statement, Volume 1;
• ACT River Basin Master Water Control Manual;
• Appendix A (Allatoona Dam and Lake Water Control Manual);
• Appendix D (H. Neely Henry Dam and Lake Water Control Manual);
• Appendix H (Carters Dam and Lake and Carters Reregulation Dam Water Control Manual);
• Appendix I (R. L. Harris Dam and Lake Water Control Manual);
• EIS Volume 3_Appendix B, Pertinent Correspondence;
• EIS Volume 3_Appendix C, ACT HEC-ResSim Modeling Report; and
• EIS Volume 3_Appendix D, ACT HEC-5Q WQ Modeling Report

We also reviewed the HEC-ResSim Hydro Model and the HEC-5Q Water Quality Model of the ACT Basin provided by the USACE.

GENERAL COMMENTS
1. The choice of models to use for this planning-level analysis was appropriate. The models are set up correctly and generally reflect the processes occurring in the system.
2. A summary list of the assumptions considered for the study along with a discussion of the expected implications should be included in the document.
3. Good modeling practice demands a careful and systematic treatment of both model sensitivity and uncertainty. Both model sensitivity and uncertainty should be addressed as part of this study.
4. Although multiple objectives are given, the document needs to provide an overall explanation of the water resources objectives.
5. Rather than treating each project discretely, explain why a multi-objective optimization for the system was not developed.

EIS COMMENTS
1. Hydrologic-based definition of wet, dry and normal years needs to be provided prior to other analysis and discussion in the EIS report.
2. A six-hour time step was used in the water quality HEC-5Q model. However, power generation can be varied in less than six hours for different operation schedules/zones. Explain how this was resolved in the model simulation and alternative analysis.
3. It is inappropriate to assume that total suspended solids (TSS) discharged from point sources are 100% organic although we believe that this assumption has a minor impact on modeled water quality results. Provide justification for this assumption.
4. The Draft EIS report presents longitudinal profiles of model results only as the relative difference between the baseline and

alternative plans. The Draft EIS report also presents model results as a data table of relative differences of median values by river mile for representative average, wet and dry years. The Draft EIS report discusses the potential impact of proposed action alternative on the median values of water quality constituents. Since compliance with water quality criteria, however, is not always based on the median value, the emphasis in the EIS report on changes in median values does not provide adequate information to evaluate the "worst-case" consequences of the proposed alternative. The "worst-case" impact of the proposed alternative on dissolved oxygen, for example, is given by the lower end 5th percentile statistic of the model results rather than the median. Similarly for nutrients and chlorophyll, the "worst-case" impact is given by the upper end 95th percentile statistic of the model results rather than the median value. Although model results shown in Appendix D are presented as absolute values, the results shown are not aggregated over the same time periods as those presented in the Draft EIS report. Since absolute values of the water quality model results are not provided in the Draft EIS report, it is difficult to evaluate changes in actual water quality conditions between the baseline no action scenario and implementation of the proposed alternative plan. The data presented in Table 6.1-7 gives the relative differences between the baseline and the proposed alternative plan only as median values for the representative average, wet and dry years. Data needs to be provided in the table to include the absolute value of the baseline water quality concentration to provide a reference for evaluation. Additional data tables also need to be compiled to provide the absolute value and the average, wet and dry year statistics for the lower percentile (5th) and upper percentile (95th). Additional longitudinal profile plots of water quality results (as absolute values) should also be included in Appendix D of the Draft EIS that match the same time aggregation periods for the representative average, wet and dry years presented in the Draft EIS.

5. To appropriately and accurately evaluate impacts of an operational change on water quality, the baseline (No Action Alternative) model needs to be first calibrated to the observed data. Any conclusions drawn based on the non-calibrated model to predict impacts of proposed operational changes on water quality, otherwise, are misleading.

RESSIM HYDRO MODEL COMMENTS

1. Reading the navigation section, they state that requirements shift between 7.5 and 9-ft depths depending on the conditions in the basin. Because dredging occurs in the summer and fall, the flows required to achieve these depths are less in those seasons. Since dredging is clearly dependent on the Congressional budgeting process, it seems the Corps cannot guarantee meeting dredging requirements each year (see page 41 for a report disclaimer on those ground). An unbiased analysis would not assume that perfect dredging occurs every summer and fall.

2. The curve from the wet year (1992-1994) was used as the constraining flow-depth curve in the HEC-RES SIM model. The justification for using the 1992-1994 period is given as "After careful consideration and discussions with the Corps navigation experts …". Neither the logic of that assumption nor its impacts are addressed. The choice of a period to ease or restrict flow requirements should be explained and justified by further analyses.

3. The level for the winter pool at H. Neely Henry was specified at 505 feet for "Baseline" while it has operated at 507 feet since 2003, and 507 feet was used for the other alternatives including "Plan G." Please provide additional clarification about the reasoning for the 505 feet winter pool in the "Baseline" scenario.

4. Streamflows from the "Baseline" model generally match the observed streamflows in the system during critical (growing season in drought years) time periods. Stream gage records for the Coosa, Oostanaula, and Etowah rivers were analyzed and compared with output from the HEC-RES SIM model. Relevant flow statistics and frequency distributions for times of critical flow were compared and found to be similar. This indicates that the baseline model reasonably represents historical flow conditions in the system. For more detailed analysis and discussion, see Appendix A.

HEC-5Q WATER QUALITY MODEL COMMENTS

1. The modeling support documentation lacks reported calibration to existing flow and water quality data. The baseline model was setup to mimic "typical" conditions but calibration of the model was not completed so we do not know if the model is capable of producing accurate results and if the model is appropriate to use further for alternative analysis.
2. The model tends to overpredict the lower quartile of observed oxygen records at each of the station locations near the State line during "worst-case" May-October, dry year hydrologic conditions, even when modeled flows are statistically similar to the observed flows for the same hydrologic conditions. The document should provide an explanation as to why the model overpredicts oxygen under low-flow conditions even though the model provides statistically good agreement with historical streamflow records. For more detailed analysis and discussion, see Appendices A and B.

APPENDIX A - FLOW

1. Summary of Key Issues and Findings Related to Flow

Flow data used by the USACE for input to the HEC-RESSIM model was based on assignment of reservoir operating rules for the Baseline Scenario rather than historical flow releases from Carters and Allatoona reservoirs. In the absence of model results based on historical flow data for reservoir releases, the Alabama Power Company is concerned that the Baseline Scenario may not be able to provide a reasonable representation of the impact of "worst-case" hydrologic conditions on flow and water quality conditions upstream of Weiss Reservoir. The objective of the analysis described in this memo is therefore, to perform an evaluation of the comparison between Baseline Scenario model results and observed "worst-case" hydrologic conditions. "Worst-case" conditions in a year are defined by low flow growing season months during drought conditions. Model results and observed flow data were used to compile summary statistics and frequency distributions based on filtering of flow records for the 1 May- 31 Oct growing season during the dry years of record from 2000-2008. Model results and observed flow data was extracted for stations downstream of Carters Reservoir on the Coosawattee River, Allatoona Reservoir on the Etowah River and the Oostanaula River and Coosa River near Rome, GA.

In general, there is reasonable statistical agreement between model results and observed flow records during the "worst-case" May-Oct dry years from 2000-2008, with the exception of the gages just downstream of Carters Reservoir and Allatoona Reservoir. Frequency distribution plots and summary statistics are used to quantitatively evaluate how well the model represents observed low-flow conditions. An evaluation of the ability of the model to represent the impact of "worst-case" hydrologic conditions on flow and water quality loading at the upstream end of Weiss Reservoir is best demonstrated with an analysis of flow in the Coosa River at the USGS gage near Rome GA. At this location, the model results for "worst-case" dry conditions for the 5th percentile flow (891 cfs) are in good statistical agreement with the 5th percentile of the observed flow (1020 cfs). At this level the model undershoots the observed flow by 13%. The model results for the median flow during dry conditions show very good statistical agreement with the model median results (1876 cfs) only 1% higher than the observed median flow (1860 cfs). The results for the 95th percentile model flow (4287 cfs) also show good statistical agreement with the 95th percentile for model flow (4287 cfs) only 6% lower than the observed flow (4541 cfs). Table 1 presents the summary statistics and Figure 1A presents the time series and Figure 1B shows the frequency distribution plots for flow on the Coosa River near Rome GA. Figure 1C presents a detailed plot of the frequency distribution for the lower range of flow less than the median flow.

Additional simulated flow data were analyzed at two locations: USGS 02397000 Coosa River near Rome, GA and USGS 02394000 Etowah River above Cartersville, GA. The additional simulated data included the proposed Plan G alternative, a new baseline scenario with no power rules at Allatoona (baseline with no power), and Plan G with no power rules at Allatoona (Plan G with no power).

<Table 1- Summary statistics for observed and simulated flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.> Please see original letter for this table.

<Figure 1A - Time series (A) of observed and simulated baseline flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.> Please see original letter for this figure.

<Figures 1B and 1C - Frequency distribution (B) and low flow detail of frequency distribution (C) of observed and simulated baseline flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. > Please see original letter for these figures.

2. Methodology Used for Flow Analysis

As shown in Table 2, an independent check based on USGS flow data obtained for the gage (02397000) on the Coosa River near Rome, GA shows that the choice of 2002, 2003, and 2007 as representative years for average, wet, and dry conditions is appropriate. Based on USGS conventions, hydrologic conditions defined as average, wet and dry for a specified year and season are defined relative to longterm average flow. Normal average conditions are defined by a flow ratio ranging from 0.75 to 1.5; wet conditions are defined by a ratio greater than 1.5; and dry conditions are defined by a ratio less than 0.75. Hydrologic conditions during May-Oct 2002 were very close to "dry" conditions based on a ratio of 0.75 computed for the year. For the analysis of flow and dissolved oxygen data, 2002 was defined as a "dry" year rather than an "average" year. Table 2 presents the average of flow for each year from 2000- 2008 for the May-Oct growing season compared to the long-term (1950-2011) average flow of 4,320 cfs for the same time of year. Similar flow ratios are also computed for each year based on annual average flow conditions. Observed flow data records for the USGS station 02397000 for the Coosa River near Rome GA for 2000-2008 are presented in Figure 2 with the records shown for the May-Oct dry years. The long-term May-Oct average from 1950-2011 is shown as a reference flow for identification of average, wet and dry years using the annual flow ratios described above.

Observed flow data is downloaded for the gages listed in Table 3 and shown in Figure 3. Simulated flow data is extracted from the HWMS model for the baseline scenario at model segments matching the locations of the gages listed in Table 2. Observed flow data is not available at the USGS station 02397530 at the AL-GA state line. Minimum flows of 240 cfs are specified for flow downstream of Carters and Allatoona reservoirs. Minimum flows for USGS-02397000 Coosa River near Rome GA are specified as monthly 7Q10 flows for drought flow triggers. Monthly 7Q10 data for the Coosa River is taken from Table 7.1-2 in Draft EIS, page 6-59. Time series plot, frequency distribution plots, summary statistics and data inventories are generated for observed flow data and model flow results for each gage. Results of the analysis of the observed flow data are summarized in Table 4. Table 5 shows summary statistics and frequency distribution plots are compiled for the May-Oct growing season for the dry years to characterize "worst-case" hydrologic conditions for flow and dissolved oxygen.

<The author included a number of charts, tables, and graphs.   Please see the original letter for the following:>

<Table 2 - Flow Ratio for Growing Season (May-Oct) compared to Long Term Growing Season Average Flow for Coosa River USGS station near Rome, GA.>

<Figure 2 - Observed flow for USGS Gage 02397000 for Coosa River near Rome, GA. Dry periods are indicated with red data points.>

<Table 3 - Summary of USGS Gage Stations Used for Flow Analysis>

<Figure 3 - Location of USGS gages used for comparison of observed flow data to model results>

<Table 4 - Summary of Dry conditions, 2000-2008, May-Oct Observed Flow>

<Table 5 - Summary statistics for observed and simulated flow at USGS gage 02388500 on the Oostanaula River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.>

<Figures 4A and 4B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02388500 on the Oostanaula River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.>

<Table 6 - Summary statistics for observed and simulated flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.>

<Figures 5A and 5B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.>

<Figures 5C and 5D - Time series (C) and frequency distribution (D) of observed and simulated baseline with no power flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.>

<Figures 5E and 5F - Time series (C) and frequency distribution (D) of observed flow and comparison of simulated baseline with baseline with no power flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.>

<Figures 5G and 5H - Time series (E) and frequency distribution (F) of observed and simulated Plan G flow at USGS gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.>

<Figures 5I and 5J - Time series (G) and frequency distribution (H) of observed and simulated Plan G with no power flow at USGS

gage 02394000 on the Etowah River above Cartersville, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.>

<Table 7 - Summary statistics for observed and simulated flow at USGS gage 02395980 on the Etowah River at GA Loop 1. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.>

<Figures 6A and 6B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02395980 on the Etowah River at GA Loop 1. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.>

<Table 8 - Summary statistics for observed and simulated flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.>

<Figures 7A and 7B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.>

<Figures 7C and 7D - Time series (C) and frequency distribution (D) of observed and simulated baseline with no power flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000- 2008, May-Oct growing season for "Dry" years.>

<Figures 7E and 7F - Time series (E) and frequency distribution (F) of observed and simulated Plan G flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.>

<Figures 7G and 7H - Time series (G) and frequency distribution (H) of observed and simulated Plan G with no power flow at USGS gage 02397000 on the Coosa River near Rome, GA. Data extracted for 2000- 2008, May-Oct growing season for "Dry" years.>

<Table 9 - Summary statistics for observed and simulated flow at USGS gage 02382500 on the Coosawattee River at Carters, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.>

<Figures 8A and 8B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02382500 on the Coosawattee River at Carters, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years.>

<Table 10 - Summary statistics for observed and simulated flow at USGS gage 02383500 on the Coosawattee River at Pine Chapel, GA. Data extracted for 2000-2008, May-Oct growing season for "Dry" years. Mean +/- 2 Standard Error represents 95% confidence interval.>

<Figures 9A and 9B - Time series (A) and frequency distribution (B) of observed and simulated baseline flow at USGS gage 02383500 on the Coosawattee River at Pine Chapel, GA. Data extracted for 2000- 2008, May-Oct growing season for "Dry" years.>

APPENDIX B - Dissolved Oxygen

1. Summary of Key Issues and Findings Related to Dissolved Oxygen

Section 6 of the Draft EIS presents results of the HEC-5Q water quality model for dissolved oxygen as (a) a longitudinal profile along the Coosa River from River Mile 650 to 350 for the growing season months of May-October for the dry-weather year of 2007 (Figure 6.1-65) and (b) summary table of median oxygen statistics computed for January-December for average (2002), wet (2003) and dry (2007) years by river mile of the model domain (Table 6.1-7). The model results for dissolved oxygen are presented in the Draft EIS as the relative difference between the Baseline No Action scenario and the Alternative Plan scenarios. In the absence of data presented in Figure 6.1-65 and Table 6.1-7 that informs the reader about the predicted dissolved oxygen concentration for the Baseline No Action scenario under the same hydrologic conditions for the same months of the year at different river mile locations, it is difficult to evaluate the significance of the relative change in dissolved oxygen that results from simulations of the proposed action and the alternative plan scenarios.

Appendix D of the Draft EIS presents model results and observed data from USGS, ADEM and GAEPD stations compiled by the U.S. Army Corps of Engineers for dissolved oxygen as longitudinal profiles along the Coosa River (Figures 3-49, 4-14, 4-24, 4-25), vertical profiles in Weiss Reservoir (Figure 3-6), and time series (Figure 3-45) and frequency distributions (Figure 4-9) at the AL/GA Stateline station located on the Coosa River upstream of Weiss Reservoir. Although the longitudinal profiles presented in the Draft EIS Section 6 and Appendix D show the 5th, 50th, and 95th percentile statistics of the model results to depict the temporal variability of model results, there is no consistent set of longitudinal profile plots or summary table of statistics for results by river mile that allows a reviewer to evaluate the model results and observed data under "worst-case" hydrologic conditions during the growing season months of May- October for either the representative dry year of 2007 or other dry years of record from 2000-2008. Model results are presented as: (a) a composite of all years from 2000-2008 for all months from January- December; (b) a composite of all years from 2000-2008 for growing season months of May-October; or (c) the representative dry year of 2007 for all months from January-December.

The model results presented in the Draft EIS do not allow a reviewer to clearly evaluate the impact of the Baseline Scenario, the proposed action and alternative plan scenarios on dissolved oxygen at key locations under "worst-case" dry year conditions during the growing season months of May-October. The Alabama Power Company is concerned that the results presented in the Draft EIS may not provide an adequate representation of the impact of "worst-case" hydrologic conditions on dissolved oxygen conditions in the Coosa River at the AL/GA Stateline and in Weiss Lake near the dam.

The objective of the analysis described in this memo is, therefore, to perform an evaluation of the comparison between Baseline Scenario model results and observed "worst-case" dry year hydrologic conditions for the May-October growing season. Model results and observed data were used to compile summary statistics and frequency distributions for oxygen based on filtering data records for the 1 May- 31 October growing season during the dry years of record from 2000-2008. The methodology used to define dry years during 2000-2008 is documented in the flow analysis (Appendix A). Model results and observed dissolved oxygen data were extracted for stations on the Coosa River at the AL/GA Stateline and in Weiss Lake near the dam (Figure 1). Station data at the AL/GA stateline was obtained from the EPA and USGS Water Quality Portal while Alabama Power Company (APC) provided oxygen records for Weiss Lake at the station near the dam (Table 1).

<Table 1 - Summary of Stations Used for Dissolved Oxygen Analysis.> Please see original letter for table.

<Figure 1 - Upper Panel: Location of USGS and GAEPD stations used for comparison of observed data to model results for the Coosa River at the AL/GA Stateline. Lower Panel: Location of station used for comparison of observed oxygen data to model results at Weiss Lake near the dam.> Please see original letter for figure.

2. Summary and Conclusions

The Draft EIS clearly states (page 6-77) that the HEC-5Q water quality model has not been developed (or calibrated) to reproduce historical water quality records. The intent of the model instead was to capture the wide range of hydrologic conditions that influence water quality. The water quality model was developed to represent the effect of streamflow, external loads, and reservoir operations under average, wet, and dry hydrologic conditions observed during the 2000-2008 period.

Our review of model performance under "worst-case" May-October, dry year hydrologic conditions demonstrates that the water quality model consistently overpredicts the lower quartile of observed dissolved oxygen records at each of the station locations evaluated. For compliance with dissolved oxygen water quality criteria, the "worst-case" dry year hydrologic conditions during May-October and the lower quartile (5th, 10th, and 25thpercentile) statistics define the best hydrologic and statistical indicators for dissolved oxygen. In the Draft EIS, the median values of the difference between the baseline and proposed alternative presented in Table 6.1-7, even for the representative dry year of 2007, do not accurately portray the potential "worst-case" impact of the proposed plan on compliance with oxygen criteria. Since the baseline model overpredicts observed oxygen records, simulated predictions of the potential impact of the proposed alternative plan on dissolved oxygen under "worst-case" hydrologic conditions will provide reviewers with an overly optimistic assessment of the potential adverse impact of the proposed or alternative plans for reservoir operations. Details of the analysis of results are presented in the following section. An overview evaluation of each of the stations follows.

Coosa River at the AL/GA Stateline. The model overpredicts observed records by 0.9-1.6 mg/L. The model predicts a range of 6.7-7.0 mg/L while the observations show 5.0-6.1 mg/L for the 5th, 10th and 25th percentile statistics (Table 2). Under "worst-case" May-October dry year conditions, the flow model shows statistically good agreement with observed flow records for the Coosa River near Rome, GA. The water quality model, however, is not able to capture the effect of "worst-case" low-flow hydrologic conditions, even with a good simulation of streamflow at this location, on dissolved oxygen in the Coosa River at this location.

Weiss Lake Near the Dam. Within the surface layer (K=8), the model overpredicts observed records by 0.4-1.3 mg/L. The model predicts a range of 6.3-7.1 mg/L while the observations show a lower range of 5.0-6.7 mg/L for the 5th, 10th and 25th percentile statistics (Table 3). The statistical agreement between the model and observations is not as good as the surface layer in the sub-surface layers (K=7, 6, 5, 4) of the Weiss Lake station. For the sub-surface layers, the model overpredicts observed records by a wide range of 3.2-6.1 mg/L. The model shows a range of 3.7-6.9 mg/L for DO in the sub-surface layers while the observations show much lower DO levels ranging from 0.1-3.6 mg/L for the 5th, 10th and 25th percentile statistics (Table 3).

3. Detailed Analysis of Dissolved Oxygen Data

Coosa River at AL/GA Stateline

Locations of the USGS and GAEPD stations used for the comparison of model results to observed water quality records are shown in Figure 2. HEC-5Q model results were extracted for in this reach of the Coosa River for the model segment identified as Segment

08. Figure 3 shows the time series comparison of baseline model results and observed dissolved oxygen records. Observed DO records are shown for the May-October growing season period for average, wet, and dry years. Model data and observations for the Coosa River at the AL/GA Stateline are presented by the COE in Figure 3-45 in Appendix D of the Draft EIS. As can be seen in Figure 3, the data extracted from the HEC-5Q model for this detailed analysis of oxygen data matches the time series of oxygen presented by the COE in Figure 3-45 in Appendix D for the Stateline location. The comparison shown in the upper and lower panels of Figure 3 demonstrates that the HEC-5Q model results extracted for this analysis by Dynamic Solutions (lower panel) can replicate the water quality model results presented by the COE (upper panel).

As can be seen in the time series plot (Figure 3), the water quality model consistently overpredicts the seasonal summer low oxygen conditions for most of the years of record from 2000-2008. In particular, the model does not reproduce the lowest oxygen levels recorded during the extreme dry conditions of 2007 where some of the observations are less than the 5 mg/L water quality criteria.

Observed records and model results were filtered to extract May-October dry year data to compile summary statistics (Table 2) and frequency distribution plots (Figure 4). Figure 4 shows a comparison of the model baseline results and the observed oxygen data for May-October dry years and January- December all years. As can be seen with the frequency distribution and the summary statistics presented in Table 2, the model overpredicts observed DO for the first and second quartiles. The model shows reasonable statistical agreement for the third quartile, and the model underpredicts the observed DO data for the fourth quartile. The lower panel of Figure 4 shows details of the model results for the low oxygen conditions for the first quartile. The 5th percentile of the observed May-October DO data for the dry years is 5 mg/L while the 5th percentile of the baseline model result for the same hydrologic condition is 6.6 mg/L. The comparison between the composite model results and composite observed DO data for all months and years shows a similar distribution pattern for the lower and upper quartiles where the model overpredicts the lower oxygen distribution and underpredicts the higher end of the distribution.

Analysis of flow results obtained with the HEC-RES SIM model shows that the modeled baseline flow results are in statistically good agreement with the observed flow records for the USGS gage on the Coosa River near Rome, GA (Figure 5). As shown in the frequency distribution (lower panel of Figure 5) and Table 2 for streamflow, the baseline model results (891 cfs) are 12% lower than the observed flow (1,020 cfs) for the "worst-case" flow conditions at the 95th percentile. Since the flow model results are in statistically good agreement with observed flow, even under "worst-case" hydrologic conditions, one would expect that the simulated results for dissolved oxygen would also show comparable statistically good agreement for the same "worst-case" low-flow conditions since streamflow is a major driver for oxygen in the water quality model. The 5th percentile model results for oxygen, however, are 33% higher than the observed data by 1.7 mg/L under the same "worst-case" May-October, dry year conditions.

<Figure 2 - Location of stations used for the Coosa River at the AL/GA Stateline.> Please see original letter for figure.

<Table 2 - Summary statistics for observed and simulated dissolved oxygen. Data extracted for 2000- 2008, May-October for Dry years. Mean +/- 2 Standard Error represents 95% confidence interval.> Please see original letter for table.

<Figure 3- Time series of observed and simulated (baseline) oxygen in the Coosa River at AL/GA Stateline. Upper panel is from COE Figure 3-45 of Appendix D, Draft EIS. Lower panel is model data extracted from HEC-5Q by Dynamic Solutions.> Please see original letter for figure.

<Figure 4A - Frequency distributions of observed and simulated (Baseline) dissolved oxygen in the Coosa River at AL/GA

Stateline. Observed data and comparison to model results for 2000-2008 May-October dry years (blue line, red filled circles) and composite 2000-2008 (light blue line, black open circles). Lower panel shows details of frequency distribution for lower quartile.> Please see original letter for figure.

<Figure 4B - Time series (upper panel) and frequency distribution (lower panel) comparison of observed and simulated (Baseline and Baseline No Power) dissolved oxygen at the Stateline Coosa River. Observed data shown for 2000-2008, May-Oct for average, wet, and dry years.> Please see original letter for figure.

<Figure 4C - Time series (upper panel) and frequency distribution (lower panel) comparison of observed and simulated (Plan G and Plan G No Power) dissolved oxygen at the Stateline in the Coosa River. Observed data shown for 2000-2008, May-Oct for average, wet and dry years.> Please see original letter for figure.

<Figure 5 - Observed and simulated flow at USGS gage 02397000 on Coosa River near Rome, GA. Observed flow for 2000-2008, May-October for Dry years of record. Upper panel shows time series. Lower panel shows frequency distributions of model and observe data for low-flow conditions.> Please see original letter for figure.

Weiss Lake near the Dam

The location of the APC station in Weiss Lake used for comparison of model results to observed water quality records is shown in Figure 6. Water quality model results were extracted from the HEC-5Q model for the Weiss Lake model segment (Segment 03) representing the forebay area near the dam. The water column depth of 62 ft for the station is derived from the normal pool elevation for Weiss Lake of 564 ft and a bottom elevation of 502 ft at the station location near the dam. Vertical profiles provided oxygen records at 5 ft intervals from 0 to a maximum depth of 40 ft. The Weiss Lake water quality model assigned 8 equal thickness layers to represent vertical gradients in the reservoir. Observed oxygen data and model results were filtered to extract May-October dry year data to compile summary statistics for the surface layer (K=8) and sub-surface layers (K=7, K=6, K=5, K=4) data (Table 3). Observed data was not available for the bottom layers (K=1 and K=2) and there was only a single observation recorded for Layer 3.

<Figure 6 - Location of stations used for comparison of observed oxygen data to model results at Weiss Lake near the dam> Please see original letter for figure.

<Table 3 - Summary statistics for observed and simulated dissolved oxygen at Weiss Lake Station near the Dam. Data extracted for 2000-2008, May-October growing season for Dry years. Mean +/- 2 Standard Error represents 95% confidence interval.> Please see original letter for table.

The upper panel of Figure 7 shows the time series of vertical profile DO data from surface to near bottom collected during the average, wet and dry years for 2000-2008. The lower panel shows only the dry year records with the vertical layer index. The surface layer is K=8 and the deepest near bottom observation is K=3. Observations are not available for the lower two layers (K=1 and K=2) for the lake station.

The upper panel of Figure 8 shows the time series comparison of baseline model results and observed dissolved oxygen records for the surface layer (K=8). The lower panel shows the frequency distribution for DO data extracted for May-October for the dry years for the surface layer (K=8). Observed DO records are shown in the time series plot for the May-October growing season period for average, wet and dry years. As can be seen in the time series plot, the water quality model provides a reasonable statistical representation of the seasonally varying low DO conditions for the surface layer. The model, however, underpredicts the observed high oxygen levels that are most apparent in the dry and average years. As noted in Appendix D of the Draft EIS, high algal productivity under the low-flow, longer retention time conditions, most likely contributes to the high observed levels of DO that are not reproduced by the model.

Baseline model results and observed dissolved oxygen records for sub-surface layers (K=7, K=6, K=5, K=4) are presented in Figure 9 through Figure 12. The upper panel in each figure shows the time series comparison of model results to average, wet and dry year observations for the depth layer. The lower panel of each figure shows the frequency distribution for DO data extracted for May-October for the dry years. Observed DO records are shown in the time series plot for the May-October growing season period for average, wet, and dry years. As can be seen in the time series and frequency distribution plots for each sub-surface layer, the water quality model overpredicts the seasonal summer low oxygen conditions for most of the years of record from 2000-2008. The 5th percentile statistics for dry year May- October observations and model results (Table 3) are used as an indicator of "worst-case" conditions for comparison of the observed data with model results for the sub-surface layers. Model performance is evaluated for each sub-surface layer by the difference between the model and observed data and the relative error. The model overpredicts observed DO levels by a range of 3.2-5.4 mg/L for the sub-surface layers with the smallest discrepancy (3.2 mg/L) seen for layer 4 and the largest discrepancy (5.4 mg/L) identified for layer 5. The relative error of the model ranges from 190% for layer 7, 346% for layer 6, 5400% for layer 5 and 640% for layer 4.

Observed records and model results were filtered to extract May-October dry year data to compile summary statistics (Table 3) and frequency distribution plots (Figure 10 through Figure 13) for the subsurface layers (K=7, K=6, K=5, K=4). The lower panel of each figure shows a comparison of the frequency distribution for the model baseline results and the observed oxygen data for May-October dry years and January-December composite of all years. As can be seen with the frequency distribution and the summary statistics presented in Table 3, the model overpredicts observed DO for the entire distribution of data for "worst-case" dry year, May- October conditions. Observed data, for example, shows that ~50-80% of the May-October dry year samples for Layer 5 and Layer 6 are less than 5 mg/L. By contrast, the model indicates that less than 5% of the model results for Layer 5 and Layer 6 are lower than 5 mg/L for the same hydrologic conditions. For the deepest layer with observations (K=4), records show 60% of the observed values are less than 5 mg/L while the model shows that 35% of the simulated DO values are less than 5 mg/L. The comparison between the composite model results and composite observed DO data for all months and years shows similar distribution patterns where the model tends to overpredict the oxygen distribution for all quartiles.

<Figure 7 - Time series of observed DO for Weiss Reservoir near the dam. Upper panel shows time series observations for all depth profile samples (surface to near bottom). Average, wet and dry year samples are marked with green, blue and red filled circles. Lower panel shows time series observations for May- Oct dry years for depth samples marked by different symbols from surface (K=8) to near bottom (K=3)> Please see original letter for figure.

<Figure 8 - Observed and simulated (Baseline) dissolved oxygen in Weiss Reservoir near the dam for surface layer (K=8). Observed data shown for 2000-2008, May-Oct growing season for average, wet and dry years. Upper panel shows time series. Lower panel shows frequency distribution of May-Oct, dry years and Jan-Dec, all years.> Please see original letter for figure.

<Figure 9 - Observed and simulated (Baseline) dissolved oxygen in Weiss Reservoir near the dam for near surface layer (K=7). Observed data shown for 2000-2008, May-Oct growing season for average, wet and dry years. Upper panel shows time series. Lower panel shows frequency distribution of May-Oct, dry years and Jan-Dec, all years.> Please see original letter for figure.

<Figure 10 - Observed and simulated (Baseline) dissolved oxygen in Weiss Reservoir near the dam for subsurface layer (K=6). Observed data shown for 2000-2008, May-Oct growing season for average, wet and dry years. Upper panel shows time series. Lower panel shows frequency distribution of May-Oct, dry years and Jan-Dec, all years.> Please see original letter for figure.

<Figure 11 - Observed and simulated (Baseline) dissolved oxygen in Weiss Reservoir near the dam for subsurface layer (K=5). Upper panel shows time series with observed data 2000-2008, May-Oct for average, wet and dry years. Lower panel shows frequency distribution of May-Oct, dry years and Jan-Dec, all years.> Please see original letter for figure.

<Figure 12 - Observed and simulated (Baseline) dissolved oxygen in Weiss Reservoir near the dam for subsurface layer (K=4). Upper panel shows time series with observed data 2000-2008, May-Oct for average, wet and dry years. Lower panel shows frequency distribution of May-Oct, dry years and Jan-Dec, all years.> Please see original letter for figure.

Response

General Comments

Section 1 and 4 of the EIS provide detailed information on the underlying assumptions and water resource objectives associated with the ACT WCM update process. Application of the HEC-ResSim and HEC-5Q models are discussed in detail in the modeling reports to the EIS (Appendices C and D) and in the published documentation on those models referenced in each of the modeling reports. While the ACT WCM update process treats the operation of projects as a system, each project has specifically authorized purposes that must be met. The approach used in developing the WCM update was determined to be the most effective way to develop a plan that would balance meeting the authorized project purposes in the ACT Basin.

EIS

1. Wet and dry years are defined in Section 2.1.1.2.3.1.1 (3rd paragraph) and Section 6.1.2 (5th paragraph).

2. To use a six-hour time-step in the HEC-5Q model, the daily flows generated by HEC-ResSim were linearly interpolated.

3. The TSS levels recorded at these locations are predominantly particulate organic matter (POM). Therefore, a strong relationship between these TSS measurements and BOD is expected. TSS vs. BOD was plotted for all the discharge sites (municipal and industrial) in Alabama. While there is some variability, the fit is statistically significant. Furthermore, all major discharge sites measured BOD.

There were 9 dischargers with flows > 5 MGD and 6 dischargers with flows > 10 MGD. For flows > 5 MGD, 82% of reported measurements (255 out of 311) contained BOD. For flows > 10 MGD, 93% of reported measurements (216 out of 232) had BOD. The remainder of these measurements contained TSS only.

Therefore, the TSS/BOD relationship was primarily applied to small discharge sites (flows less than 5 MGD), which have a minor impact on the system. In the HEC-5Q modeling report (Appendix D), the figure captions have been modified to label TSS as POM (particulate organic matter) and text has been added to indicate that the POM is measured and reported as TSS.

4. The EIS focused on evaluating the differences between each alternative and the No Action alternative. Therefore, the differences are shown in several tables and plots in the EIS. However, plots of the absolute values, as well as the differences, were created for each of the combination of parameters, hydrologic periods, and growing seasons. These are available for evaluation. Furthermore, all model output, as well as post-processed results, are available in the HEC-DSS file provided for evaluation.

5. The HEC-5Q model coefficients were adjusted using the observed data to provide reasonable long-term, system-wide, approximations of water quality concentrations. The ability to predict individual values was not emphasized. Therefore, the word "calibration" was not used in the report. Since constant loading values were used instead of time series of the actual values, and modeled instead of observed flows were used as inputs, the HEC-5Q model was not expected or required to replicate individual historic concentration values. Adjusting the model to replicate individual extreme values and particular times and locations can harm the ability of the model to provide reasonable estimates for the majority of time periods throughout the system. Therefore, the focus of this analysis was to achieve reasonable responses over the system for the entire analysis period, using a consistent set of model coefficients, which were derived using observed data.

HEC-ResSim Hydro Model Components

1. Navigation channel conditions are constant for each alternative and allows for proper comparative reservoir operation impact analysis. Similar assumptions of reservoir physical characteristic such full availability of all hydropower units and spillway gates are incorporated into the modeling. USACE recognizes that the navigation channel flow requirement to support a 7.5 or 9 foot channel may not be the same each year. The proposed plan includes the flexibility to adjust the flow requirement based on the navigation channel condition. Therefore, including a fixed channel condition in the model does not bias the analysis.

2. Based on the experience of Mobile District navigation experts who are familiar with the channel response to dredging, the high flow template was selected as the representative condition for normal operation. Navigation reliability anticipated storage usage and past hydrologic conditions were considered in the selection process.

3. It is anticipated that the interim H. Neely Henry guide curve (507’) will become permanent at the conclusion of the ACT Basin manual update, by including as an alternative operation. Using the original guide curve (505’), as a component of the baseline, allows the project team to perform an effects analysis. The NEPA documentation supporting the basin manual update provides the effects analysis required to remove the interim label.

4. Noted. No response required.

HEC-5Q Water Quality Model Components

1. The HEC-5Q model coefficients were adjusted using the observed data to provide reasonable long- term, system-wide, approximations of water quality concentrations. The ability to predict individual values was not emphasized. Therefore, the word "calibration" was not used in the report. Since constant loading values were used instead of time series of the actual values, and modeled instead of observed flows were used as inputs, the HEC-5Q model was not expected or required to replicate individual historic concentration values. Adjusting the model to replicate individual extreme values and particular times and locations can harm the ability of the model to provide reasonable estimates for the majority of time periods throughout the system. Therefore, the focus of this analysis was to achieve reasonable responses over the system for the entire analysis period, using a consistent set of model coefficients, which were derived using observed data.

2. The observed data represent the average over the euphotic zone, while the modeled data represent the surface layer. Rather than focus replicating super-saturated values, the adjustment of the model was conservative, focusing on minimum dissolved oxygen values. Differences may also be due to differences in vertical location of the computed and observed values or the time of day measurements are taken (during peak algal production).

Appendix A

The ResSim model is not intended to replicate the historic flows. Reservoir operation has evolved over time and the demands are fixed for each year. Additionally, deviations from normal operation are not incorporated into the model. During the extreme drought period of 2007 and 2008, drought operations to aid public health concerns downstream were implemented. Therefore, it is not surprising that low flow extremes in the model may not compare well to observed values. The consequent USACE analysis is limited to modeling results to exclude bias from operations that deviate from normal. However, USACE has expanded the modeling to incorporate a drier hydrology to support sensitivity analysis.

Appendix B

The EIS focused on evaluating the differences between each alternative and the No Action alternative. The same meteorological forcing, precipitation, point-source discharges, and model coefficients were used to model each alternative. Only the system operations modeled by HEC-ResSim differed between alternatives, and these differences were relatively minor. Therefore, the differences are shown in several tables and plots in the EIS. However, plots of the absolute values, as well as the differences, were created for each of the combination of parameters, hydrologic periods, and growing seasons. These are available for evaluation. Furthermore, all model output, as well as post-processed results, are available in the HEC-DSS file provided for evaluation.

The water quality modeling report (Appendix D) summarized model performance and presented the types of plots used for the analysis. Therefore, it only included one plot of each type or for each combination of analysis parameters. Time series plots were created of the absolute (actual) values of the data for the modeling period. These show predicted values during the "worst case" low flow conditions. Furthermore, occurrence plots of the absolute (actual) value were created for three hydrologic period types, including a low flow period. The analysis of the effects of alternative operating plans is contained in the main body of the EIS. Several thousand plots were created for the analysis. Therefore, only a sub-set of the plots could be included in the EIS. These plots are available upon request.

Comment ID 0064.017

Author Name: Bowden, Matthew

Organization: ALABAMA POWER COMPANY

Comment

Attachment B

MASTER MANUAL COMMENTS

2-23 line 22 Insert Bouldin in list of APC projects

2-23 line 32 Delete "Harris, Martin, Yates" since this references the Coosa River

2-23 line 16-17 Delete

2-24 line 11 This section repeats an earlier section.

4-1 Section 4-04 line 45&46 The fact that Martin, et al. were constructed prior to P.L. 83-436 is not the reason why there is no "Corps flood risk management authorization" for those projects. P.L. 83-436 had a very specific purpose. It did not convey flood risk management authority on the Corps for every Alabama Power project that would be subsequently constructed.

4-8 line 15-18 Harris was developed in the 70s/80s

4-9 line 13 P.L 89-789 doesn't say that specifically.

4-9 line 36 Martin does not have 60 feet of drawdown for power due to operational concerns at 45 ft.

4-11 line 42 generating capacity is 128,250 not 135,500

4-12 line 11 should be 17'x30'

4-12 line 41 should be 35 total gates

Section 5 see comments in Henry and Harris appendices

Section 6 see comments in Henry and Harris appendices

7-2 line 21 states the individual manuals for the ACT prescribe regulation guide curves and action zones. This is not true for the APC projects.

7-6 lines 4-6 If the goal is "no higher stages" and "below flood stage," this would indicate that duration is not part of the equation.

7-18 Section on Deviations (Variances?) is confusing. Who approves, when,etc.? Need better description. Suggest using language from individual manuals on Harris and Henry

8-1 Section VIII does not address any effects on APC projects

8-3 Section 8-05 Water Quality section - lumps all ACT projects together and says operations aren't performed to meet specific water quality standards however this is not true for APC projects

8-3 line 25 change principally intended to purpose. The 4640 navigation flow provides incidental benefits to …

8-1 Section 8-03 See APC comments on this section in Henry and Harris appendices

ACT Drought Contingency Plan - Apply to all areas where this is contained

E-C-23 in low basin inflow section delete for navigation

E-C-27 The last sentence refers to the ACT Matrix however it only refers to operations at APC and not Corps projects and should be re-titled

Change Required Basin Inflow to Total Basin inflow needed in all locations

Change all calculations computed from 1st and 15th to 1st and 3rd Tuesday

Add all Triggers that are computed are compared to the current months trigger

E-C-28 line 17 change and to or

Some of the comments in the EIS comment letter apply to the Master manual and will not be revisited here

Henry WCM comments:

The Corps should specify and justify any changes from the prior manual.

iii line 29-30 delete "…when navigation support may not be reduced …." Don't characterize contents of document that doesn't exist.

xi PERTINENT DATA

Under Tailwater - All turbine discharge numbers should be considered approximate.

I - INTRODUCTION

1-01 line 35: Change to In conjunction with the ACT Basin Master Water Control Manual, this manual provides a general reference source for H. Neely Henry water control regulation, guidance for water management decision making, and training for new personnel.

1-2 line 23 change System Operations Supervisor to Reservoir Management Supervisor

1-2 line 29 change "the two agencies" to "the Corps and APC."

1-02 line 33 after control insert operations, and change low flow regulations to navigation flow support

CHANGE 1-05 LINE 20 "Power Delivery System" TO "Transmission Department"

CHANGE 1-05 LINE 23 "GEM-Hydro" TO "Hydro Services"

Page 2-3 lines 13 & 14 Change 310,700 to 317,100 and change 534.4 to 532.5 and change spillway design flood to the PMF for H. Neely Henry Reservoir.

Page 3-2 line 25-44 Inconsistent with same section in Harris manual and seems out of place here

Page 3-2 lines 43 and 44 suggest APC coordinated with the Corps on drought operations at Carters and Allatoona which is not the case

Page 3-3 line 16 change system generating requirements to APC system power demand

CHANGE Page 4-1 4.01 LINE 4 CHANGE TO SAY "It flows west to the Alabama State line,"

Page 4-8 line 10 states the largest storms recorded pre-dam however it does not mention the largest USGS recorded event in 1886 of 115,000

Page 4-9 line 10-12 Delete last sentence

Page 4-10 line 21-22 What is the definition of major damage center?

Page 4-10 line 31 says that the Tallapoosa projects are downstream of Henry on the Coosa which is not true. Also table 4-7 shows this as well.

V DATA COLLECTION

This section should be rewritten to describe APC's data collection methods

Section 5-04 describes a process that the Corps uses to handle data. It should be noted this is a Corps process and not an APC process.

Page 5-5 lines 43-44 and page 5-6 line 1-2 Delete Water resources information for the H. Neely Henry is available to the public at the Corps' website, http://www.sam.usace.army.mil/water/. The site contains real-time information, historical data and general information

Page 5-6 line 13 CHANGE TO If the automatic data collection and transfer are not working, operators will, upon request, fax or email daily or hourly project data to the Water Management Section for manual input to the database

5-6 lines 16-23 Delete "notify the Corps Water Management Section. A coordinated effort between APC and the Corps will insure proper notifications to local law enforcement, etc. Change to "begin notifications of local law enforcement, government officials, and emergency management agencies in accordance with APCs Emergency Action Plan for Henry Dam. "

6-1 line 2-4 Delete second sentence of 6-01. It is incorrect

6-1 line 21 change Chief of Engineering Division to Water Management Section and add "(5) Evaluate special water control plan variance requests submitted by APC Reservoir Management and provide approval or disapproval'

Page 6-1 line 29 delete "or forecast of inflow"

Page 6-1 line 29-34 Delete The model has the capability of forecasting inflow and the effects of discharge in accordance to flood control regulations on the reservoir as well as downstream locations. The model is used to assist in accomplishing the intent of the regulation plan and in the day-to-day operation.

Page 6-2 line1- add during normal operations to the end of the sentence.

Page 6-2 is describing a Corps and SERFC process. It is unclear from this section if the Corps or SERFC are running out what if scenarios for forecasting or if release decisions are being made based on these what if scenarios. APC does not receive inflow forecasts for actual rain or what if scenarios into APC reservoirs from the SERFC except periodically upon request during flood conditions. APC does not make flood control release decisions based on anticipated rain but rather with the rules set by the Corps for flood control operations at each plant.

7-1 line 4 delete the 30,383 acre-feet of storage within the 508 to 505 feet NGVD29 range of power-pool drawdown, add change hydro-generation will also augment the flow of the river downstream.

Page 7-1 line 6-8 DELETE "and environmental purposes."

Page 7-1 line 14 change Alabama Control Center to Reservoir Management section

Page 7-1 section c describes the evacuation at Henry for flood control as pre-flood. While it may be this in a sense it is tied to actual stages at Gadsden that occur during a flood event not pre-evacuated ahead of any increased inflows.

7-1 lines 29 and 33 Delete pre-flood

7-3 line 3 delete in advance of an impending flood

Page 7-4 line 35 should read Reservoir Management Section (not operator)

Page 7-4 line 40-41 change These flows are also significant as an environmental or water quality minimum flow to "These flows also benefit downstream water quality."

Page 7-5 line 4 Change "The revisions to the minimum low flow requirements are described" to "The drought contingency plan flows are described…"

Page 7-5, line 20-22 - Replace "A skimming weir has been constructed near the dam to pull this better oxygenated water through the turbine units. However, even with the weir, dissolved oxygen levels in the releases from the dam can result in tailwater dissolved oxygen levels which violate State dissolved oxygen criteria" with "Dissolved oxygen levels in the releases from the dam can result in tailwater dissolved oxygen levels that are at times less than State dissolved oxygen criteria."

Page 7-5 line 35 change system requirements to APC system power demand

Page 8-1 line 9 change 505 to 507

Page8-1 Section 8-02 is not representative of current flood control operations

Page 8-2 line 20-21 - Delete "Dissolved oxygen levels in the tailwater can drop below State standards during the late summertime period."

Page 8-2 line 46 - Alabama Power questions why the Corps included the sentence beginning at line 46, on page 8-2 as Neely Henry does not experience substantial daily or weekly fluctuations in lake levels associated with hydropower peaking operations.

Page 8-2 line 24 Change Tugaloo to Tallapoosa.

Page 8-3 line 6 add approximately before 6 percent

Page 8-3 line 10 add typically before produced

Page 8-3 line 13 add approximately before turbine capacity

Page 8-3 Not sure where Table 8-1 numbers come from

Page 8-4 line 18 & 19 Incorrect statement, no instream flow requirements exist below HNHenry Dam.

Page 8-4 line 24 Change to "Drought operations in accordance with Table 7-5, Tallapoosa River flows."

Pg 8-4 Section 8-09 line 11-16 is not accurate and should be deleted or reworded

Page 9-1 line 7 has GA entities listed in the Henry manual that should be removed

Page 9-3 Section 9-03 Delete entire section

Plate 7-1 Delete black start level

Plate 7-1 is the old rule curve. This needs to be changed.

Plate 7-2 is the old flood control procedures. These need to be changed.

Plate 2-10 Step 512 is inaccurate according to our Exhibits

PLATE 2-9 The legend box should read "Indicates Elevation TO Which…" Not WO

PLATE 2-10 The legend box should read "Indicates Elevation TO Which…" Not WO

PLATE 2-10 The legend box misspelled "downstream" and "from"

PLATE 2-12 The recreational facilities listed are both out of date and incomplete. Suggest removing

Table 2.6-12 The data listed is 15 years old and needs to be updated to reflect modern numbers

Harris WCM comments:

The Corps should specify and justify any changes from the prior manual.

iii line 27-28 delete "…when navigation support may not be reduced …." Don't characterize contents of document that doesn't exist.

xiii "RESERVOIR"

Under power plant change (best gate) to (approximate full gate) and change 6500 to 8000

1-1 line 40: Change to: In conjunction with the ACT Basin Master Water Control Manual, this manual provides a general reference source for R. L. Harris water control regulation, guidance for water management decision making, and training for new personnel.

CHANGE 1-05 LINE 20 "Power Delivery System" TO "Transmission Department"

CHANGE 1-05 LINE 23 "GEM-Hydro" TO "Hydro Services"

1-2 line 28 Change System Operations Supervisor to Reservoir Management Supervisor

1-2 line 17 Change to: Other pertinent information regarding the R. L. Harris Project and other APC Tallapoosa River projects are contained within the Federal Energy Regulatory Commission (FERC) license for the Tallapoosa and Martin Projects; should read "licenses for the Harris, Martin, and Yates/Thurlow Projects".

1-2 line 33 change "the two agencies" to "the Corps and APC."

1-2 line 37 after control insert operations, and change low flow regulations to navigation flow support

2-1 line 19 Add potential before water supply, after users add subject to FERC license requirements

2-2 line 27 "summertime" change to "maximum summer full pool"

2-3 line 4 Add approximately before 13,000 cfs

2-3 line 9 delete from the Alabama Control Center in Birmingham, Alabama

2-3 line 15-20 Change to: Development of project lands for recreational purposes is in accordance with the Land Use Plan approved by the FERC. There are presently seven public boat ramps available with plans for additional ramps as recreational activity increases. Located on the west side of the dam is a public tailrace fishing platform and associated parking and restroom facilities. Public hiking and nature trails are also available on project lands.

IV WATERSHED CHARACTERISTICS

4-1 line 15-22 sentence is duplicated

Page 4-4 line 3-4 Delete sentence

Page 4-4 line 5& 6 Change to: siltation is the major source of impairment on the Tallapoosa River; however, the vast majority of the water bodies on the 2010 303d list are not within the Harris Project.

Table 4-2 page 4-6 is to meant to represent mid ACT basin stations and most of these stations are not in the mid ACT. Same for Table 4-3, 4-4, 4-5

Page 4-9 line 3, in section 4-06 Storms and Floods, after gage add and substantial rainfall and runoff within the basin

Page 4-11 line 40 What is the definition of major damage center? Flood control operations at Harris are based on stage height at Wadley

V DATA COLLECTION

This section should be rewritten to accurately describe APC's data collection methods

Section 5-03 describes a process that the Corps uses to handle data. It should be noted this is a Corps process and not an APC process

Page 5-4 lines 39-42 Delete Water resources information for the R. L.Harris Project is available to the public at the Corps' website, http://www.sam.usace.army.mil/water/. The site contains real-time information, historical data and general information

Page 5-5 Change to: If the automatic data collection and transfer are not working, operators will, upon request, fax or email daily or hourly project data to the Water Management Section for manual input to the database.

5-5 line 24 delete the operator on duty should

5-5 lines 25-27 Delete "notify the Corps Water Management Section. A coordinated effort between APC and the Corps will insure proper notifications to local law enforcement, etc. Change to "begin notifications of local law enforcement, government officials, and emergency management agencies in accordance with APCs Emergency Action Plan for Harris Dam. "

VI HYDROLOGIC FORECASTS

6-1 line 2-4 Delete second sentence of 6-01

6-1 line 30-33 delete The model has the capability of forecasting inflow and the effects of discharge in accordance to flood control regulations on the reservoir as well as downstream locations. The model is used to assist in accomplishing the intent of the regulation plan and in the day-to-day operation.

6-1 line 21,change Chief of Engineering Division to Water Management Section and add "(5) Evaluate special water control plan variance requests submitted by APC Reservoir Management and provide approval or disapproval'

6-2 line 2 add during normal operations to the end of the sentence.

Section 6-02 on page 6-2 is describing a Corps and SERFC process. It is unclear from this section if the Corps or SERFC are running out what if scenarios for forecasting or if release decisions are being made based on these what if scenarios. APC does not receive inflow forecasts for actual rain or what if scenarios into APC reservoirs from the SERFC except periodically upon request during flood conditions. APC does not make flood control release decisions based on anticipated rain but rather with the rules set by the Corps for flood control operations at each plant.

VII WATER CONTROL PLAN

7-1 line 3 Delete the 207,000 acre-feet of storage within the 793 to 768 feet NGVD29 range of powerpool drawdown, add hydro-generation will also augment the flow of the river downstream. "

7-1 Change to The power guide curve, which defines the upper limit of the power-pool, varies seasonally. The maximum storage for flood control operations is about 100,000 acre-feet. Hydrogeneration releases will be made for operations, and in accordance to the prescribed operating plans for flood control, to keep the reservoir elevation at or below the seasonal elevation specified by the power guide curve. Reservoir regulation during major storms may require special consideration and the operation may deviate from these schedules with the approval of the Corps.

Page 7-1 line 14 DELETE "and environmental purposes."

Page 7-1 line 19 change Alabama Control Center to Reservoir Management section

Page 7-1 Section 7-04 line 31 delete "or is predicted to in the near future

Page 7-1 Section 7-04 line 30 after 13000 add "and 16000"

Page 7-2 line 10 after interchangeably add however currently APC does not operate by 7-05

Page 7-2 line 3 after 144 hours, add " APC does not use predicted QPF to make release decisions".

Page 7-2 line 12 should be 6 hrs rather than 3hrs to be consistent with the old manual.

7-2, line 20, change District Commander to Water Management Section

7-2, line 21, add (i.e., a variance)

7-2 line 23 change South Atlantic Division Office to Water Management Section Mobile

Page 7-2 line 40 should read Reservoir Management Section (not operator)

Page 7-2, section 7-08, line 46, change These flows are also significant as an environmental or water quality minimum flow to "These flows also benefit downstream water quality."

Page 7-3, line 4 change "minimum" to "navigation"

Page 7-3 line 12 Change "The revisions to the minimum low flow requirements are described" to "The drought contingency plan flows are described…"

Page 7-3 line 14 RECREATION, compare this to current Harris manual; also change "full" to "stable" and add "elevation" after "pool"; change "recedes … pool" to "level drops excessively" change "becomes" to "may become", change "effects caused by" to "impacts resulting from"

Page 7-3 line 42, add, "although weekend peaking power operations also occur."

Page 7-3, line 44 states that in normal operations the power plant will be operated in accordance with "APC system power requirements". There are no power requirements from the specific hydro plants. change to "to provide APC system power demand."

VIII-EFFECT OF WATER CONTROL PLAN

Page 8-1 Section 8-02 Were these floods routed with the original or amended MOU flood control procedures at Harris?

Page 8-1 line 27 What does "Basin Model Regulation" refer too?

Page 8-3 line 11 add approximately before 6 percent

Page 8-3 line 16 add typically before produced

Page 8-3 line 19 add approximate before best gate

Page 8-3 line 34 add AND Coosa after Tallapoosa

Page 8-4 line 10 Change to "Drought operations in accordance with Table 7-5, Tallapoosa River flows."

Pg 8-4 Section 8-09 line 11-16 is not accurate and should be deleted or reworded

IX-WATER CONTROL MANAGEMENT

Section 9-01 b line 22 and 24 change Coosa River Project to Harris

Page 9-3 Section 9-03 Delete entire section

PLATES

Plate 2-2 is Henry and should be Harris

Plates 2-7 thru 2-18 tables are not updated with current information provided by APC. Terminology and numbers should be updated.

Plates 4-11 and 4-12 should be summary data rather than discharge hydrographs

Plate 7-1 Delete black start level identified that should be removed

Plate 7-3 change from 3 consecutive hours to 6. Also add approximately before 13,000 [BEST GATE] and 16,000 [FULL GATE]

Suggested Changes to the ResSim ACT Model

Henry

Change the Power Plant outlet elevation to 500 ft. The model has the plant elevation as 480 ft, but this is for the spillway crest. The unit limit is 500 ft.

Logan Martin

Change the Power Plant outlet minimum elevation to 452.5 ft to match the Inactive elevation in Operations. The model currently has it at 452.0 ft.

Jordan

Change the Power Plant outlet elevation range to 249-267 ft from 248-268 ft.

Martin

Change the Power Plant outlet maximum elevation to 500 ft, from 490 ft, to match the top of dam elevation.

Harris

Change Dam length at top of dam to 3,242 ft.

Response

Comments have been incorporated into the documents with revisions made and inconsistencies corrected as appropriate.

Comment ID 0064.018

Author Name: Bowden, Matthew

Organization: ALABAMA POWER COMPANY

Comment

Attachment C

PERTINENT DATA

GENERAL

Other names of project: Lock 3
Dam Dam site location
River: Coosa
Miles above mouth of Coosa River: 146.8
Miles above mouth of Mobile River: 506.2

RESERVOIR

Top of power pool (May through Oct) - feet NGVD29: 508
Top of power pool (Dec through Mar) - feet NGVD29: 507
Storage volume at 508- acre feet: 120,851
Power storage, elevation 505-508 - acre feet: 30,383
Inactive storage, below elevation 480 - acre feet: 1,547

Full power pool (May through Oct), elev 508 - acres: 11,236
Full power pool (Dec through Mar), elev 507 - acres: 10,478
Shoreline (elev 508) - miles: 339

STREAMFLOW (at damsite)

Average discharge for Period of Record (1967 - 2009) - cfs: 9,979
Maximum daily discharge (Nov. 2004) - cfs: 89,129
Minimum daily discharge - cfs: 0
Spillway design flood peak discharge - cfs: 310,700

TAILWATER

Maximum spillway design flood - feet NGVD29: 518.8
Full gate turbine discharge (Logan Martin elev. 460)
1 Unit Operating (8,900 cfs) - feet NGVD29: 464.2
2 units operating (17,800 cfs) - feet NGVD29: 468.0
3 units operating (26,700 cfs) - feet NGVD29: 471.3

DAM

Total length including dikes - feet: 4,908
Total length of non-overflow section - feet: 253
Maximum height from roadway to foundation - feet: 100
Elevation, top of dam - feet NGVD29: 539
Elevation, top of parapet - feet NGVD29: 541

SPILLWAY

Type: concrete-gravity
Net length - feet: 305
Elevation of crest - feet NGVD29: 480
Type of gates: Tainter
Number of gates (29'x 40'): 6
Elevation of top of gates in closed position - feet NGVD29: 509
Maximum discharge capacity (pool elev. 534.4) - cfs: 310,700

POWER PLANT

Three units each consisting of a 27,000 kva generator driven by a fixed blade vertical turbine rated 33,500 hp at design head of 35 ft

OPERATING DATA

Gross static head at full power pool (elev. 508 ft NGVD29) - feet: 43.0
Minimum head (full-gate discharge - 26,700 cfs) - feet: 36.7

<EXHIBIT A: SUPPLEMENTARY PERTINENT DATA> Author included this exhibit, which is a table listing information on the projects in the ACT basin, such as FERC license number, total area encompassed by existing project boundary (land and water) acres, length of river between projects, date of dam construction, elevation, length of powerhouse, length of spillway, pool elevation, etc. Please see original comment letter for this information.

Response

Pertinent data for APC projects have been revised as requested.

From: Mark Colson
To: ACT-WCM
Cc: [redacted]
Subject: 20130531 - BCA Comment on ACT DEIS
Date: Friday, May 31, 2013 2:28:01 PM
Attachments: 20130531 - Draft BCA Comment on ACT DEIS.pdf

Please find the attached comment letter from the Business Council of Alabama regarding the "Draft Environmental Impact Statement Update of the Alabama-Coosa-Tallaspposa River Basin Water Control Manual."

If you have any questions, please contact BCA Senior Vice President for Intergovernmental Affairs Anita Archie at [redacted] or [redacted]

Respectfully submitted,

Mark M. Colson

Chief of Staff &
Executive Director of ProgressPAC

Direct: 334-240-8724

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BUSINESS COUNCIL
OF ALABAMA

May 31, 2013

VIA U.S. Mail & E-Mail
Colonel Steven J. Roemhildt
U.S. Army Corps of Engineers
Mobile District
Attention: PD-EI (ACT-DEIS)
P.O. Box 2288
Mobile, AL 36628
act-wcm@usace.army.mil

Re: Draft Environmental Impact Statement
Update of the Alabama-Coosa-Tallapoosa River Basin Water Control Manual

Dear Colonel Roemhildt:

The Business Council of Alabama (BCA) appreciates this opportunity to submit comments on the above referenced Draft Environmental Impact Statement (DEIS). The Business Council of Alabama is Alabama's foremost voice for business. The BCA is a non-partisan statewide business association representing the interests and concerns of nearly one million working Alabamians through its member companies and its partnership with the Chamber of Commerce Association of Alabama. BCA is Alabama's exclusive affiliate to the U.S. Chamber of Commerce and the National Association of Manufacturers.

BCA's members are directly affected by water management decisions implemented by the Corps of Engineers. These members depend on adequate water resources and will be impacted if the Corps operations trigger drought conditions more often and if the Corps operations diminish water quality.

The Corps response to the lower flows during drought conditions under the proposed alternative is that "[w]ater management activities may affect water quality under low flow conditions such that the state regulatory agencies may consider reevaluation of NPDES permits to confirm the system's assimilative capacity." (DEIS p. 6-112, and DEIS Executive Summary p. ES-48). However, the USACOE does not include this consideration as a part of their evaluation of the proposed alternative and does not include the potential costs to NPDES permit holders of complying with new restrictive permit limitations.

Under the discussion of Mitigation the Corps states:

> "Reevaluation of wasteload allocations from point sources in the upper Coosa River and Alabama River may be appropriate to ensure that current discharge permits do not violate water quality standards when in-stream flow changes from the No Action Alternative. Georgia EPD and ADEM base discharge permits on 7Q10 conditions; the system's 7-day minimum flow from the previous 10-year period. In some permits, restrictions are placed on discharges during low-flow conditions. Georgia EPD and ADEM may determine that it would be appropriate to reevaluate stream flows in the upper Coosa River and Alabama River to ensure that NPDES permitted facilities do not violate water quality standards under extreme low-flow conditions. Some current NPDES permits limit or restrict discharges during low-flow conditions similar to what occurred in 2007. The water quality model developed during this EIS made assumptions regarding point source discharges that might not apply during low-flow conditions. The states may elect to update NPDES permits to limit discharges during certain in-stream flow conditions." (DEIS p. 6-196, and DEIS Executive Summary p. ES-70).

This reevaluation of 7Q10 flows is clearly within the responsibility of the USACOE as a part of their evaluation of the alternatives under NEPA. (40 CFR Part 1502.23). The cost of this evaluation should not be placed on the State of Alabama and the cost of any subsequent changes in NPDES permits must be considered as a part of the alternatives analysis.

It is inappropriate for the Corps to not fully consider the impacts of its proposed action and to simply place the burden of diminished water quality on current and future NPDES permit holders.

Thank you for the opportunity to provide these comments. Please do not hesitate to contact us if you have any questions or require any additional information.

Sincerely,

William J. Canary
President and CEO
Business Council of Alabama

cc:
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Comment

The Business Council of Alabama (BCA) appreciates this opportunity to submit comments on the above referenced Draft Environmental Impact Statement (DEIS). The Business Council of Alabama is Alabama's foremost voice for business. The BCA is a non-partisan statewide business association representing the interests and concerns of nearly one million working Alabamians through its member companies and its partnership with the Chamber of Commerce Association of Alabama. BCA is Alabama's exclusive affiliate to the U.S. Chamber of Commerce and the National Association of Manufacturers.

BCA's members are directly affected by water management decisions implemented by the Corps of Engineers. These members depend on adequate water resources and will be impacted if the Corps operations trigger drought conditions more often and if the Corps operations diminish water quality.

The Corps response to the lower flows during drought conditions under the proposed alternative is that "[w]ater management activities may affect water quality under low flow conditions such that the state regulatory agencies may consider reevaluation of NPDES permits to confirm the system's assimilative capacity." (DEIS p. 6-112, and DEIS Executive Summary p. ES-48). However, the USACOE does not include this consideration as a part of their evaluation of the proposed alternative and does not include the potential costs to NPDES permit holders of complying with new restrictive permit limitations.

Under the discussion of Mitigation the Corps states:

"Reevaluation of wasteload allocations from point sources in the upper Coosa River and Alabama River may be appropriate to ensure that current discharge permits do not violate water quality standards when in-stream flow changes from the No Action Alternative. Georgia EPD and ADEM base discharge permits on 7Q10 conditions; the system's 7-day minimum flow from the previous 10-year period. In some permits, restrictions are placed on discharges during low-flow conditions. Georgia EPD and ADEM may determine that it would be appropriate to reevaluate stream flows in the upper Coosa River and Alabama River to ensure that NPDES permitted facilities do not violate water quality standards under extreme low-flow conditions. Some current NPDES permits limit or restrict discharges during low-flow conditions similar to what occurred in 2007. The water quality model developed during this EIS made assumptions regarding point source discharges that might not apply during low-flow conditions. The states may elect to update NPDES permits to limit discharges during certain in-stream flow conditions." (DEIS p. 6-196, and DEIS Executive Summary p. ES-70).

This reevaluation of 7Q10 flows is clearly within the responsibility of the USACOE as a part of their evaluation of the alternatives under NEPA. (40 CFR Part 1502.23). The cost of this evaluation should not be placed on the State of Alabama and the cost of any subsequent changes in NPDES permits must be considered as a part of the alternatives analysis.

It is inappropriate for the Corps to not fully consider the impacts of its proposed action and to simply place the burden of diminished water quality on current and future NPDES permit holders.

Thank you for the opportunity to provide these comments. Please do not hesitate to contact us if you have any questions or require any additional information.

Response

As stated in the EIS, in the drought of 2006 - 2008, USACE generally responded by reducing hydropower generation at Allatoona and Carters Lakes dropping the reservoir pools in summer and fall. Working closely with APC, states, and affected stakeholders releases were made to assist with public health and safety throughout the basin and will continue to do so during similar extreme circumstances. In 2007, the USACE also supported an APC request to reduce the 4,640 cfs flow target at Montgomery to 3,700 cfs. In response to worsening drought conditions in 2007, APC further reduced the target flow even below 3,700 cfs. The drought plan incorporated to this EIS formalizes the experience learned from past drought. In doing so, the USACE's objective to develop a drought management plan as required by USACE regulations can be fulfilled and management decisions can be made to decrease the overall impact to all authorized project purposes.

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SeFPC,Inc.

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May 31, 2013

VIA EMAIL AND U.S. MAIL

Commander
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Attn: PD-EI (ACT-DEIS)
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RE: Alabama Coosa-Tallapoosa Draft Water Control Plan

Dear Colonel Roemhildt:

On behalf of the Southeastern Federal Power Customers, Inc. ("SeFPC" or "Power Customers"), I am providing comments on the draft Water Control Manual ("WCM") for the Alabama-Coosa-Tallapoosa ("ACT") River Basin released by the U.S. Army Corps of Engineers ("Corps of Engineers") on March 1, 2013. The members of the SeFPC either directly purchase capacity and energy marketed by the Southeastern Power Administration ("SEPA") or represent municipally owned utilities and rural electric cooperatives that have power purchase agreements with SEPA. As advocates for hydropower production at the Corps projects throughout the Southeast, the SeFPC has a vested interest in any proposed change at a Corps of Engineers project that provides capacity and energy marketed by SEPA.

As explained below, the Power Customers believe that the Corps of Engineers has understated the decrease in hydropower production that will occur if the proposed changes outlined in the draft WCM are adopted. Some of the proposed changes in the draft WCM appear to depart from the Congressional intent outlined in the underlying authorizations for the Federal projects. As we have seen in litigation involving the Apalachicola-Chattahoochee-Flint ("ACF") River Basin, the original authorizations for the projects under the jurisdiction of the Corps of Engineers set the parameters of the operations. Fundamentally, any WCM adopted by the Corps of Engineers must abide by the intent of Congress as expressed in these authorizing statutes.

The proposed WCM raises many questions of a technical nature that warrant further inquiry and resolution before the Corps of Engineers issues a Record of Decision ("ROD"). As noted in their comments, the Power Customers believe that the Corps has failed to explain fully certain concepts, inviting further inquiry which necessitates follow up responses. These questions are noted below and will likely require the Corps to revise the draft WCM before moving forward with the final Environmental Impact Statement ("EIS").

Representing the Interests of Cooperative and Municipal Systems Serving Over 6 Million Customers

In the comments, below, the SeFPC highlights important standards that the Corps of Engineers must follow in the development of a WCM and the standards that govern activities conducted pursuant to the National Environmental Policy Act ("NEPA"). There are important socioeconomic considerations that underlie the operations of the project for hydropower purposes – consistent with the statutory authorizations – that should be included in any final EIS. The latter sections of the comments are devoted to technical considerations that should instigate further revision of the draft WCM. In concluding comments, the Power Customers provide several recommendations for the Corps of Engineers to consider.

Section I. Legal Standards

The Corps of Engineers' obligation to revise the draft WCM emerges from the obligations imposed by the National Environmental Policy Act ("NEPA") and the particular responsibility to follow faithfully the statutory mandates governing the operations of the Corps of Engineers' multipurpose projects in the ACT River Basin. The Congressional mandates are truly significant in setting the baseline from which the Corps of Engineers should measure potential impacts of alternative actions. Where the draft WCM relies upon a baseline that deviates from the fundamental operational principles set forth in Acts of Congress, the Corps of Engineers has set the improper base of study for the EIS. Indeed, if the foundation for a study is improperly set, the Corps of Engineers is simply unable to complete its obligations under NEPA, let-alone, comply with Congressional intent.

The Corps of Engineers' development of a WCM for the ACT is a particularly noteworthy endeavor in light of the absence of an updated WCM for nearly two decades. The obligation to comply with NEPA is equally momentous. Indeed, an agency has the responsibility to meet NEPA's obligations at the outset because a violation of NEPA cannot be cured by a post hoc consultation.[1] In fact the failure of the Corps of Engineers to update the WCM for the past two decades has led to the accumulation of indirect impacts, the precise type of adverse effects that the NEPA process identifies as a matter of course.[2]

As discussed in more detail in the comments, the SeFPC explains that the legislative history that guided the Corps of Engineers construction of multipurpose projects in the ACT directs the orientation of any WCM. While the Corps of Engineers is afforded deference by a Court reviewing compliance with NEPA, the Court will still evaluate whether the proposed alternative remains consistent with the law.[3] With explicit instructions from Congress to maximize hydropower production in the ACT, the Corps of Engineers has adopted a conflicting approach with its proposed operational design that will diminish the value of the hydropower

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[1] *See* C.A.R.E. Now, Inc. v. Fed. Aviation Admin., 844 F.2d 1569, 1572 (11th Cir. 1988) *See also* Commonwealth of Mass. v. Watt, 716 F.2d 946, 952 (1st Cir. 1983) (NEPA is "aimed at presenting governmental decision-makers with relevant environmental data before they commit themselves to a course of action.")

[2] *See* 40 C.F.R. § 1508.8.

[3] Review of agency decision-making is conducted under the Administrative Procedure Act ("APA"), which provides that an agency's decision may be overturned only if that decision is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A); see also Miccosukee Tribe of Indians of Fla. v. United States, 566 F.3d 1257, 1264 (11th Cir. 2009).

resource.[4] In light of these impacts, and the failure to identify mitigating actions, the SeFPC asks the Corps to revise significant portions of the draft WCM.

II. Congressional Intent Supporting Hydropower Development and Generation

The draft WCM recognizes that Congress authorized the construction and operation of the multipurpose projects through a series of law and accompanying House Documents.[5] Notwithstanding the acknowledgement of early deliberations in Congress on the development of the ACT River Basin, the Corps fails to include any discussion on the guidance that supported the authorization of the Allatoona Reservoir. As the U.S. Court of Appeals for the Eleventh Circuit has observed, the underlying Chief of Engineers' reports that support the authorization provide the foundation for the Corps operations.[6] Indeed, ignoring the Chief of Engineers' reports that support the authorizations imperils the Corps of Engineers operations of its projects.

The SeFPC does not disagree with the Corps of Engineers conclusions that the Allatoona project was authorized by the Flood Control Act of 1941, Public Law 229, on August 18, 1941. However, the Corps of Engineers review of the legislative history in the draft WCM inexplicably stops with the citation to the Flood Control Act of 1941. The authorizing statute specifically approves the construction of Allatoona Reservoir, "in accordance with the recommendation of the Chief of Engineers in House Document Numbered 674, Seventy Sixth Congress, third session…"[7]

House Document Number 674 provides important and invaluable guidance to the Corps of Engineers on how the Allatoona project shall be operated. As first explained by Major General Schley, the Board of Engineers for Rivers and Harbors recommended the construction of the Allatoona Reservoir "for the control of floods, regulation of stream flow for navigation, and the development of hydroelectric power…"[8] Brigadier General Tyler later explained in that the "Allatoona Reservoir constructed in the combined interests of the flood control and power development would provide needed flood protection…and would make possible the development of a substantial block of hydroelectric power."[9]

House Document Number 674 also included extensive findings of District Engineer Colonel Park who repeatedly stated that the Allatoona Reservoir would be constructed for

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[4] In materials posted on the Mobile District's web page, the Corps of Engineers declares that the "EIS will include a description of the baseline environmental and ***socioeconomic conditions*** against which effects of the proposed action are evaluated. It will also identify potential consequences and appropriate mitigation (methods to lessen adverse impacts) measures."(emphasis added) http://www.sam.usace.army.mil/Missions/PlanningEnvironmental/ACTMasterWaterControlManualUpdate/ACTNEPAProcess.aspx

[5] *See* Section 3.0 et seq., Master Water Control Manual, Alabama-Coosa-Tallapoosa.

[6] *In re Tri-State Water Rights Litigation*, 644 F. 3d 1160, 1193 (11th Cir. 2011) ("Even heightened deference cannot lead this Court to ignore the plain and expressed will of Congress, especially where, as here, the Corps' interpretation has not been consistent.")

[7] Flood Control Act of 1941, Public Law 228, August 18, 1941.

[8] House Document Number 674, p. 2.

[9] *Id* at 5.

flood control and power purposes.[10] Colonel Park unequivocally recommended that the "Allatoona development be authorized as a flood-control and ***power project***…"[11] This conclusion was not presented without extensive findings; it was preceded by a detailed discussion in which factors such as rainfall were evaluated because of the "necessity of determining the storage required for power development at the Allatoona dam…"[12]

Notwithstanding the clear guidance provided by House Document Number 674, the draft WCM states that the Allatoona Reservoir is federally authorized for other project purposes including recreation, water quality, water supply and fish and wildlife support.[13] None of these additional "purposes" were mentioned in House Document Number 674 and the Corps of Engineers quoted in it are clear in delineating the bifurcated storage at the Allatoona Project between two lone purposes, hydropower production and flood risk management.[14] The addition of these new "purposes" by the Corps at Lake Allatoona is without support, yet forms a foundational error for the EIS.

The draft WCM does reference House Document Number 414 as evidence of Congressional guidance on how the Allatoona reservoir would fit into a comprehensive scheme of development in the ACT River Basin. In House Document Number 414, Brigadier General Robins recommended the development of the ACT River Basin for navigation, flood control, and power development.[15] More notably, the Brigadier General's report reserved the authority and discretion for the Secretary of War and the Chief of Engineers to modify projects "particularly for the purpose of increasing the development of hydroelectric power."[16] While Congress adopted House Document Number 414 to authorize the development on the ACT, the Brigadier General's reserved discretion to ***increase hydroelectric power*** was directly referenced in statutory text in the Rivers and Harbors Act of 1945.[17]

The Corps of Engineers, however, obscures the importance of hydropower development in the references to the House Document Number 414 when the draft WCM explains that Congress expanded the role of flood control management and hydropower development. While the SeFPC agrees with the Corps of Engineers conclusion that House Document Number 414 did build upon a more comprehensive vision of the potential development of the ACT River Basin, it remains clear that the draft WCM has omitted the authority, if not obligation, to maximize hydropower development in the River Basin. Indeed,

[10] *See Id,* pp. 21, 31-33, 36-40.
[11] *Id.* p. 40. (Emphasis added).
[12] *Id. p. 21.*
[13] Draft WCM, table 1.1.
[14] Corps of Engineers regulations clearly delineate the limitations on operations where there is an impact on Congressionally authorized purposes. *See* ER 1101-2-100. ("Storage reallocation for recreation which significantly affects other authorized purposes, or involves major structural or operational changes, requires Congressional approval.")
[15] House Document Number 414, p. 6.
[16] *Id.*
[17] Rivers and Harbors Act of 1945, Public Law 14, March 2, 1945. ("Initial and ultimate development of the Alabama Coosa River and tributaries for navigation, flood control power development and other purposes as outlined in House Document Numbered 414, Seventy-seventh Congress is hereby authorized…with such modifications thereof from time to time as in the discretion of the Secretary of War and Chief of Engineers may be advisable for the purposes of ***increasing*** the development of hydroelectric power.")("Emphasis added.)

the reservation of discretion to augment one purpose must also be read as an endorsement of the limitations on the Corps for the other project purposes.

The only subsequent law passed by Congress that would appear to limit this discretion can be found in Public Law 436, in which Congress suspended the comprehensive development of the ACT River System to permit private power development on the Coosa River.[18] However, as set forth in Section 13, "[n]othing in this Act shall be deemed to affect in any way the authorization of the development of the Alabama-Coosa River and tributaries other than that portion of the development involving projects on the Coosa River…"[19] Nothing in Public Law 436 changed the Congressional authorization for the Corps of Engineers projects previously authorized by Congress.

III. Socioeconomic Considerations

The legislative history referenced above also expressed the understanding of Congress that the development of hydropower in the ACT was not only essential to the surrounding communities, but also made the construction of the projects feasible from a cost benefit analysis.[20] A discussion of the economics underlying the construction and operation of the projects, as well as the impact on the communities that rely on the hydropower produced at the Corps of Engineers projects in the ACT River Basin is notably absent from the draft WCM. Indeed, notwithstanding the Corps of Engineers declaration that the NEPA process will consider socioeconomic factors, the term socioeconomic is mentioned once in the entire draft WCM.[21] Undoubtedly, the Corps of Engineers fails a fundamental obligation under NEPA with an omission of any discussion of the indirect impacts of reduced hydropower generation that will ensue with the adoption of the WCM.

This oversight is hardly permissible with the extensive legislative history documenting the need and value of hydropower in the ACT River Basin. For example, House Document 674 spoke to the balancing of economic interests in the construction of Allatoona Reservoir. As noted by Brigadier General Tyler, "[b]enefits that would accrue to the project are substantially in excess of annual charges and in the opinion of the [Rivers and Harbors Board] the improvement is economically justified."

However, when the Corps of Engineers proposes action zones in the draft WCM that will greatly diminish if not eliminate hydropower production, there is an absence of any discussion on the socioeconomic impact of reduced hydropower operations.[22] The failure to identify and discuss these impacts has the effect of skewing the conclusions reached on preferred alternatives and mitigation plans for direct and indirect impacts. It is a noteworthy and significant oversight that undermines the foundation of the Corps of Engineers' NEPA process.

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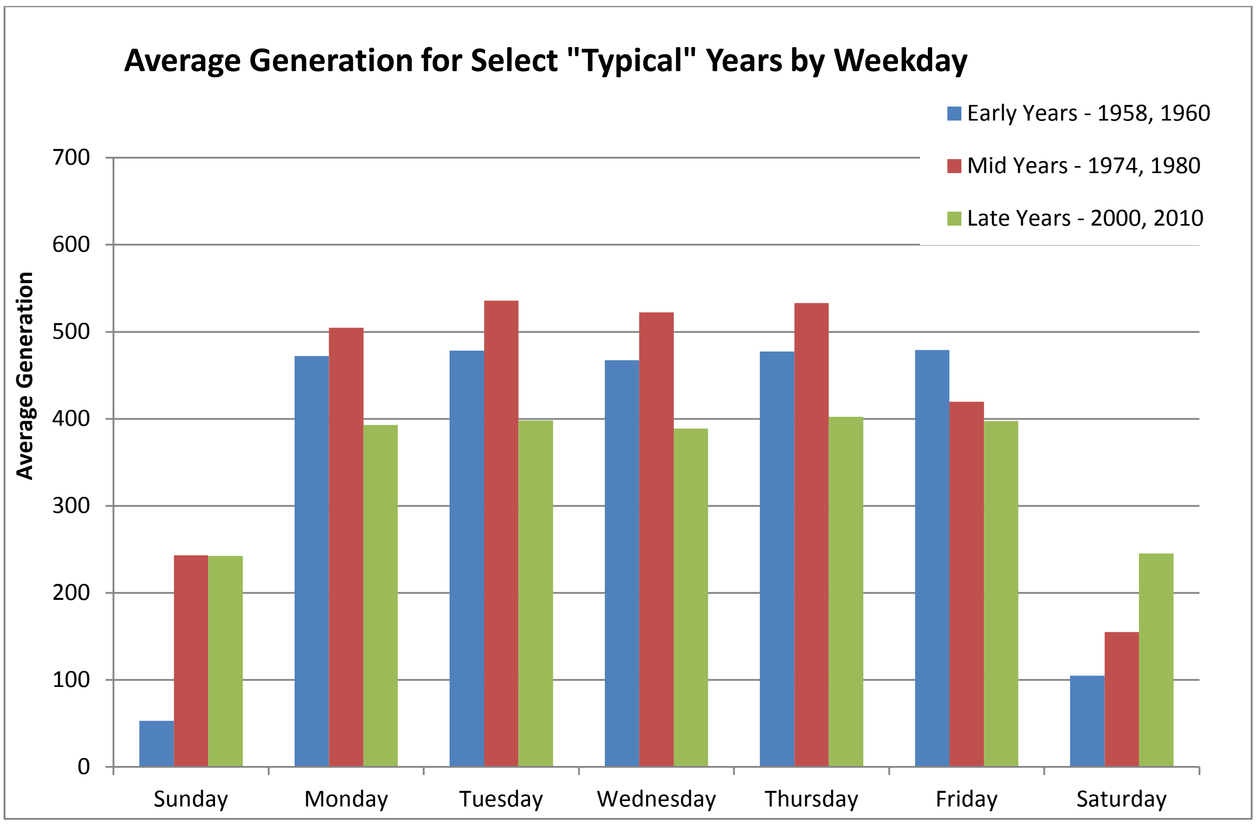
[18] *See* Section 2, Public Law 436, June 28, 1954.
[19] *Id.*
[20] *See* House Document Number 414, pp. 4-6.
[21] Draft WCM, at Section 3.01, p. E-C-4.
[22] As discussed below, the draft WCM contains many erroneous technical conclusions that adversely affect conclusions reached in the WCM.

IV. Baseline Calculations

In the absence of a WCM that has not been updated in two decades, the question arises on the proper baseline for determining the No Action Alternative. While the 1993 Revised WCM is the proper point for evaluation as the Baseline or No Action Alternative, the Corps of Engineers uses what they term "current conditions" as the operating criteria for the Baseline or No Action Alternative. The accurate baseline or No Action Alternative should be the 1993 WCM.

As an alternative, current conditions could provide the appropriate alternative for the Corps of Engineers. However, if this baseline is chosen, the Corps of Engineers must include all changes to the operations of the project that have occurred since 1993. Indeed, at Lines 31 – 33, Page ES-21 of Volume 1 of the Draft EIS, "incremental changes in project operations have occurred because of changes to hydropower contracts and operating schedules…" However, the chart below depicts that there has been a methodical erosion of weekday peaking power by shifting more and more of the generation to the weekend.



Ideally, the Corps of Engineers should determine all the incremental changes in operations since 1951, including all of the incremental changes not in the 1962 WCM revision, 1993 Interim Revision and the 2013 Revision. While the Corps of Engineers has stated that "it is not possible to describe in a single set of reservoir operations that apply to the entire period since the completion of the 1951 ACT Master Manual" the infrequent attention to updating the

WCM needlessly shirks responsibilities under NEPA to identify indirect impacts. Indeed, the NEPA process cannot start from an arbitrary year that provides convenient modeling for future intended uses of the reservoirs on the ACT.

V. Technical Errors

The draft WCM leaves unanswered several questions but also highlights fundamental errors in the Corps of Engineers' modeling of the impacts associated with the new operating regime. These errors can be categorized in several different areas. The comments below separate technical concerns and associated questions into different topic areas including the impacts associated with conclusions pertaining to:

1. Lake levels and operating zones;
2. Water Supply Impacts;
3. Hydropower Generation Impacts;
4. Increased Minimum Flows;
5. Rule Curve Modification; and
6. General Modeling Concerns.

Lake Levels and Operating Zones

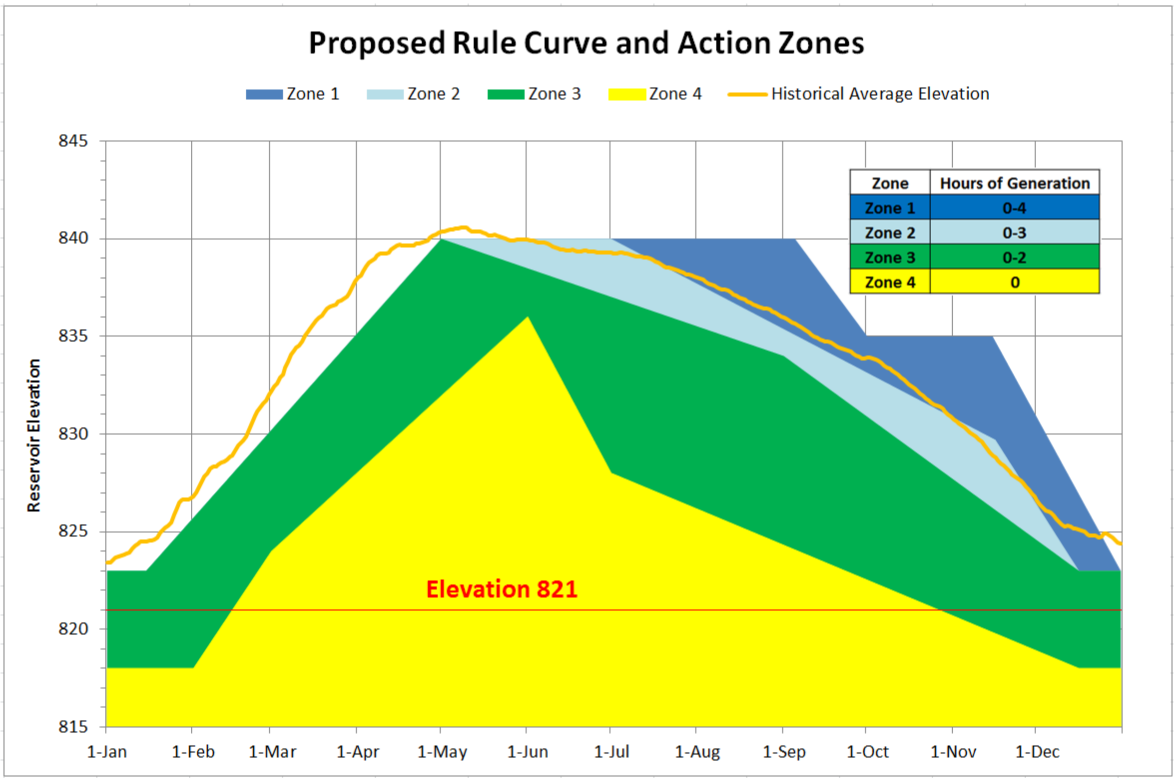
Strikingly, the proposed Alternative G includes radically new operating zones which specifically limit hydropower generation to zero hours per day when the elevation of the reservoir goes below the top of Zone 4. In some cases, the top of Zone 4 is as high as Elevation 836. However, the Corps is clear with their position that "253,000 ac-ft. between elevations 800 and 835 is reserved for power generation and conservation.[23] Reducing the hydropower generation to zero hours in Zone 4 is not only an adverse and significant change because of the loss of hydropower, there is no suspension of cost responsibilities.

In addition, the Corps' intent with regard to generation in the proposed Zone 1 through Zone 3 is unclear in the EIS and associated documentation. The EIS document depicts the generation in Zone 1 through Zone 3 as a range (zero to three hours in Zone 1, zero to 2 hours in Zone 2, and zero to 1 hour in Zone 3). This non-detailed description requires clarification as to how many hours of generation will be allocated to hydropower under the proposed Alternative G. Please reference the graphical depiction of the proposed guide curve and action zones for the Allatoona Reservoir below.

Furthermore, a review of the historical average elevation at the Allatoona Reservoir clearly indicates that on average, the proposed Alternative G would result in less than 4 hours of generation being available to hydropower during the times of year that the resource is most important. This will have significant hydropower impacts and is a departure from current operations, Corps policy, and Congressional intent.

[23] *See* Page A1-6, Section 1-25; "Storage allocation" in the December 1993 Appendix A Allatoona Reservoir, Alabama - Coosa River Basin Water Control Manual." (Elevation 835 has been revised in previous studies to a seasonal Elevation 840 and the storage to hydropower has been adjusted to 284,580 ac-ft.).

In fact, the Power Customers believe the revised operations as captured in the proposed Rule Curve are contrary to the intent of Congress as set forth in House Document Number 674. In discussing the precise parameters of the Allatoona Reservoir, Colonel Powell explained that there would be power generation occurring at an elevation of 821. However, as captured in the graph below, for key months during the year when peaking power is needed, the Corps would not generate power at elevation 821. The proposed action zones also curtail significant hydropower generation at elevations much higher than elevation 821 during the most critical periods of year. This is a significant operational change and departure from the current approved Water Control Manual and practice in which some generation occurs at the Allatoona Project. The changed operations at Lake Allatoona must be revised to be consistent with Congressional intent and provide for power generation when the pool level reaches an elevation of 821.



In fact, the four (4) new zones actually penalize hydropower during the most critical times of the year. Hydropower is totally curtailed, zero generation, in Zone 4 (Figure ES-6, Page ES-28 Draft Allatoona WCM). Zone 4 is reached at Elevation 836 in June, Elevation 828 in July, and Elevation 827 in August. Furthermore, the Alternative G Action Zones are radically different from the Action Zones in the 1993 WCM. Indeed, the two (2) Zones in the 1993 WCM provide much "greater flexibility to meet power demands." However, from a historical perspective, any time the Allatoona Reservoir was below Action Zone 2 the 1993 WCM allowed for two hours of generation. Ultimately, the Corps of Engineers fails to provide an adequate analysis of the differences between the existing Action Zones and the Alternative G Action Zone.

Water Supply Storage

The water supply storage contracts for the City of Cartersville and Cobb-Marietta Water Authority provide for the permanent transfer of this storage to those two entities. In aggregate, 19,511 acre-feet of Conservation Storage has been reallocated to water supply. The HEC ResSIM Model supporting the Draft EIS uses 284,580 ac-ft. in the Conservation Storage. Since water supply is the sole user of the water supply storage, its allocated portion of Conservation Storage should be removed from that available to all other users. Therefore, the Model should reflect 265,069 ac-ft. in usable Conservation Storage.

The existing water supply storage contracts for the City of Cartersville and Cobb-Marietta Water Authority were based on a Critical Yield at Allatoona of 1,160 cfs (750 MGD). Since the execution of these contracts hydrologic/climatology of the Etowah River Basin has deteriorated to the point that current critical yield for Allatoona is 729 cfs (470 MGD).The existing water supply storage reallocation cannot support the contract. There is 37% reduction in the critical yield, yet the Corps of Engineers has not recognized this in the Hec ResSIM Model nor have they recognized this in the necessary reallocation of storage to meet the requirements of the No Action Alternative.

The failure to revise the critical yield requires an exhaustive analysis of the Critical Yield for Lake Allatoona. The analysis performed in a February 2010 Report to Congress at the direction of Congress in Energy and Water Development and Related Agencies Appropriations Act, 2010 (H.R. 3183; Public Law 111-85), appears to be incomplete and therefore does not reflect an accurate critical Yield.[24] In fact, figure B-30 does not indicate the reservoir ever returned to Full Pool following the drought. If in fact the simulation has been truncated prior to the reservoir returning to full pool, then the Critical Yield has been overstated and is inaccurate.

The absence of a revised critical yield for the Allatoona Reservoir is not the only issue left unresolved by draft WCM. In our review, we cannot determine why the Corps of Engineers has elected to use the full period of record unimpaired flow set as input hydrology to the Hec ResSIM Model but only uses monthly average withdrawal and return data for water supply withdrawals and returns and only for 2006. Furthermore, as revealed in the litigation on the operation of the Corps of Engineers projects in the ACT River Basin, the Corps of Engineers has notified the Cobb-Marietta Water Authority that under certain conditions they have violated the terms of their water supply storage contract by withdrawing from their storage more water than their storage will yield.[25] This overreliance on storage has not been captured in the draft WCM, nor has the Corps of Engineers indicated how it will address this breach of contract.

In considering the current water supply contracts in place at Allatoona, it is also important to consider the limitations of the authority that facilitated the contracts in the first instance. While the Water Supply Act of 1958 provides the authority for the Corps of

[24] Draft WCM at p. B-38.
[25] *See* State of Alabama v. U.S. Army Corps of Engineers, Case 1:90 CV-1331 (U.S. District Court, Northern District of Alabama)

Engineers to add water supply where Congress has not included it as an authorized project purpose, this authority is clearly limited to ensure that the conveyance of storage does not adversely affect existing project operations or require a major operational or structural change.[26] To the extent that the boundaries of the Water Supply Act of 1958 were nearly met in developing the existing water supply contracts, the draft WCM should reflect as such. In other words, the Corps of Engineers must recognize that the conveyance of storage has a cumulative impact on other project purposes; the mere exercise of authority under the Water Supply Act does not reset the baseline for determining impacts on authorized project purposes.

On a related matter, while the draft WCM does not explicitly endorse a specific policy on return flows, it remains clear that this issue is far from resolved and will inform operations in the future. As such, the Corps must explain how a policy on return flows will affect water supply operations. For example, there is a need to further elaborate on why the No Action Alternative and the Alternative G uses 2006 water supply withdrawals and returns when the Baseline Alternative should use the water withdrawals occurring in 1993, the date of the last WCM update. In fact, the use of monthly average withdrawals and returns greatly underestimates the impact of water supply especially so during dry or drought periods. If Alternative G is the Corps recommended "operating conditions" the model should be modified to perform under the dry or drought conditions on a daily time-step in order to verify the "operating condition" can, in fact, successfully function during the extreme period.

Hydropower Impacts

The draft WCM includes several errors with regard to the hydropower production, including the Corps of Engineers repeated devaluation of capacity benefits provided by its projects.[27] In all documentation for the development of the Allatoona Project, it is clearly identified that this resource will be a peaking power resource generating during peak hours Monday through Friday. The methodology for calculating impacts to hydropower in the Draft WCM simply address all energy as peaking energy whether it is produced on peak, off peak, weekday or weekend. This methodology greatly underestimates the impact to hydropower customers from the devaluation of capacity. Customers must meet standards for capacity to serve load as well as planning reserves. The draft WCM does not recognize the impact to integrated resource planning and planning reserve requirements.

Furthermore, in the methodology for calculating impacts to hydropower in the draft WCM, the Corps of Engineers does not take into account the value of "ancillary services" provided by hydropower. The impact to hydropower must include the value of reserves, transmission stability, ability to offer "black start" support, etc. The loss of energy and capacity also reduces the value provided to downstream non-Federal projects for headwater benefits.

[26] 43 U.S.C. § 390b(d)

[27] SEPA markets capacity and energy from the Corps of Engineers multipurpose projects. A firm energy resource, which can be scheduled and displace other resources, requires an identification of capacity and energy. The production of energy alone does not provide the same economic benefit as a project that affords capacity that can be scheduled with accompanying energy.

Nonetheless, the Corps of Engineers has not explained how the Draft Allatoona WCP and Alternative G, i.e., the proposed Plan in the Draft Manual, "mimic seasonal demands for hydropower and provide greater flexibility to meet power demands…" In the current WCM (1993 Revision), the Corps of Engineers has provided for two hours "peak power generation each day" in Zone 2 (Appendix A, Chart 1-11 1993 Allatoona WCM). Zone Two is defined as Elevation 836, seasonally adjusted. Yet, the Draft WCM plans for four (4) Zones that have no relationship at all to seasonal demands for hydropower as purported by the Corps.

If we compare the Corps of Engineers' 1993 Action Zones (Appendix A, Chart 1-11 1993 Allatoona WCM) to the Proposed Alternative G Action Zones, (Figure ES-6, Page ES-28 Draft Allatoona WCM) over 60% of the conservation storage has been lost from hydropower production. However, in the Corps of Engineers cost allocation study for the Allatoona Project, fully 285,000 ac-ft. of storage was assigned to hydropower. Base on the revised Action Zones of the Draft WCM, hydropower now has access to less than 114,000 ac-ft. of storage. Inexplicably, the Corps of Engineers' analysis does not take this into account.

Increased Minimum flow

The draft WCM does not explain why minimum flows from the Carter's Reregulation Dam ("Carter's") have been increased by 300% during the winter and spring "refill" period of the year. The Corps of Engineers' statement that "minimum flow requirement would remain 240 cfs from Carters Reregulation Dam" is incorrect. By adding two action zones in the draft WCP for Carter's, the Corps of Engineers has significantly modified the minimum flow requirements from the Reregulation Dam. Based on the language on Page ES-24, Lines 1-3 and the Figure ES-4, the minimum flow is not 240 cfs. The minimum flow is as follows if the reservoir is in Zone 1:

Month of the Year	Minimum Flow	Long Term Mean Monthly Flow
January	660 cfs	619 cfs
February	790 cfs	724 cfs
March	665 cfs	797 cfs
April	770 cfs	721 cfs
May	620 cfs	584 cfs
June	475 cfs	445 cfs
July	400 cfs	383 cfs
August	325 cfs	308 cfs
September	250 cfs	259 cfs
October	275 cfs	262 cfs
November	350 cfs	340 cfs
December	465 cfs	455 cfs

As the highlighted Months in the above table indicate, the minimum flow requirement in Zone 1 exceeds the Long Term Mean Monthly Flow in the Coosawattee River into Carter's Reservoir. As long as the Reservoir is in Zone 1, storage must be used to augment flows to meet the minimum flow requirements, especially during drought periods. Since Carters is a Pumped Storage project and minimum flows are actually being met by releases from the Reregulation Dam, the Zone 1 minimum flow releases support deterioration in the capacity of the project. It is also exacerbated by the fact that with water in the forebay and reregulation pond, much greater evaporation is occurring which requires additional releases to make up for these reductions further impacting storage in the forebay. The Corps is using Carters to provide flows in the Coosawattee River that exceed the "natural" flows throughout all but two (2) months out of the year as long as the reservoir level is maintained above Zone 2.

Rule Curve Modification

Throughout the Comprehensive Study and the interstate compact discussions for the ACT River Basin, the Corps of Engineers has explicitly stated they will not reallocate from Flood Control Storage for any other purpose than flood control. Yet, the current proposed Alternative G reallocates storage out of the Allatoona Flood Control Pool to the Conservation Pool from late October through December. In fact, the Corps of Engineers clearly articulates "[m]anagement measures that suggest use of flood storage for purposes other than flood storage were not considered."[28] Clearly the Corps has reallocated storage from Flood Control to other purposes by modifying the Rule Curve in Alternative G.

General Modeling Issues

The Corps uses the "unimpaired flow set" developed during the Comprehensive Study in the 1990's amended (amended what?) to bring the flow up to date as far as 2008. The unimpaired flow set is the basis for all of the hydrologic modeling supporting the selected Proposed Alternative. It is troubling that the Corps of Engineers implies in the draft WCM that the unimpaired flow set is a flow set that has been approved by the stakeholders.

A review of past practices, however, reveals this flow set has never been approved at any level. The unimpaired flow set developed for the ACT's Hec ResSIM model uses the same techniques that were employed on the ACF basin. On the ACF basin, these techniques have been the center of significant controversy. Indeed, the unimpaired flow set has not been vetted by any Federal Agency, has not been approved as meeting any Federal requirements and therefore, should be subject to its own review and comment prior to its use in this analysis.

Finally, the Corps of Engineers should provide the validation for each node or control point where the Corps has used the Drainage Basin Ratio Method to provide incremental flows or inflows in the main stem of the Etowah River or streams connecting to the Etowah River, such as at Kingston.

VI. CONCLUSION

While the Power Customers welcome progress on a WCM for the ACT River Basin, the Corps of Engineers' draft document released on March 1, 2013 fails in numerous ways. The failure to follow thoroughly the expressed intent of Congress in maximizing hydropower production undermines the foundation of the proposed WCM and the NEPA process. In a rather revealing statement, the Corps of Engineers admits that "[a]ny proposed changes to the ACT Basin water control operations that would significantly affect other project purposes or

[28] Draft WCM, p ES-11.

require substantial structural modifications would require feasibility-level studies and congressional authorization. Such studies are inconsistent with the purpose and need of updating the WCM."[29]

The SeFPC encourages the Corps of Engineers to revise the WCM in a manner that abides by Congressional intent regarding hydropower production, clarifies key policy initiatives such as crediting for return flows, and provides the clarity and transparency needed for the Corps of Engineers to meet competing demands in the ACT in upcoming years.

I am available to answer any questions that you may have regarding the comments captured above.

Sincerely,

/S/

Richard K. Feathers
Chairman
Water Storage Reallocation Committee
Southeastern Federal Power Customers, Inc.

[29] *Id,* at p. ES-1.

Comment ID 0070

Comment ID 0070.001

Author Name: Feathers, Richard

Organization: Southeastern Federal Power Customers, Inc.

Comment

On behalf of the Southeastern Federal Power Customers, Inc. ("SeFPC" or "Power Customers"), I am providing comments on the draft Water Control Manual ("WCM") for the Alabama-Coosa-Tallapoosa ("ACT") River Basin released by the U.S. Army Corps of Engineers ("Corps of Engineers") on March 1, 2013. The members of the SeFPC either directly purchase capacity and energy marketed by the Southeastern Power Administration ("SEPA") or represent municipally owned utilities and rural electric cooperatives that have power purchase agreements with SEPA. As advocates for hydropower production at the Corps projects throughout the Southeast, the SeFPC has a vested interest in any proposed change at a Corps of Engineers project that provides capacity and energy marketed by SEPA.

As explained below, the Power Customers believe that the Corps of Engineers has understated the decrease in hydropower production that will occur if the proposed changes outlined in the draft WCM are adopted. Some of the proposed changes in the draft WCM appear to depart from the Congressional intent outlined in the underlying authorizations for the Federal projects. As we have seen in litigation involving the Apalachicola-Chattahoochee-Flint ("ACF") River Basin, the original authorizations for the projects under the jurisdiction of the Corps of Engineers set the parameters of the operations. Fundamentally, any WCM adopted by the Corps of Engineers must abide by the intent of Congress as expressed in these authorizing statutes.

The proposed WCM raises many questions of a technical nature that warrant further inquiry and resolution before the Corps of Engineers issues a Record of Decision ("ROD"). As noted in their comments, the Power Customers believe that the Corps has failed to explain fully certain concepts, inviting further inquiry which necessitates follow up responses. These questions are noted below and will likely require the Corps to revise the draft WCM before moving forward with the final Environmental Impact Statement ("EIS").

In the comments, below, the SeFPC highlights important standards that the Corps of Engineers must follow in the development of a WCM and the standards that govern activities conducted pursuant to the National Environmental Policy Act ("NEPA"). There are important socioeconomic considerations that underlie the operations of the project for hydropower purposes - consistent with the statutory authorizations - that should be included in any final EIS. The latter sections of the comments are devoted to technical considerations that should instigate further revision of the draft WCM. In concluding comments, the Power Customers provide several recommendations for the Corps of Engineers to consider.

Response

Comment noted. No response necessary.

Comment ID 0070.002

Author Name: Feathers, Richard

Organization: Southeastern Federal Power Customers, Inc.

Comment

Section I. Legal Standards

The Corps of Engineers' obligation to revise the draft WCM emerges from the obligations imposed by the National Environmental Policy Act ("NEPA") and the particular responsibility to follow faithfully the statutory mandates governing the operations of the Corps of Engineers' multipurpose projects in the ACT River Basin. The Congressional mandates are truly significant in setting the baseline from which the Corps of Engineers should measure potential impacts of alternative actions. Where the draft WCM relies upon a baseline that deviates from the fundamental operational principles set forth in Acts of Congress, the Corps of Engineers has set the improper base of study for the EIS. Indeed, if the foundation for a study is improperly set, the Corps of Engineers is simply unable to complete its obligations under NEPA, let-alone, comply with Congressional intent.

The Corps of Engineers' development of a WCM for the ACT is a particularly noteworthy endeavor in light of the absence of an updated WCM for nearly two decades. The obligation to comply with NEPA is equally momentous. Indeed, an agency has the responsibility to meet NEPA's obligations at the outset because a violation of NEPA cannot be cured by a post hoc consultation. <Footnote 1> In fact the failure of the Corps of Engineers to update the WCM for the past two decades has led to the accumulation of indirect impacts, the precise type of adverse effects that the NEPA process identifies as a matter of course. <Footnote 2>

As discussed in more detail in the comments, the SeFPC explains that the legislative history that guided the Corps of Engineers construction of multipurpose projects in the ACT directs the orientation of any WCM. While the Corps of Engineers is afforded deference by a Court reviewing compliance with NEPA, the Court will still evaluate whether the proposed alternative remains consistent with the law. <Footnote 3> With explicit instructions from Congress to maximize hydropower production in the ACT, the Corps of Engineers has adopted a conflicting approach with its proposed operational design that will diminish the value of the hydropower resource. <Footnote 4> In light of these impacts, and the failure to identify mitigating actions, the SeFPC asks the Corps to revise significant portions of the draft WCM.

Footnote 1: See C.A.R.E. Now, Inc. v. Fed. Aviation Admin., 844 F.2d 1569, 1572 (11th Cir. 1988) See also Commonwealth of Mass. v. Watt, 716 F.2d 946, 952 (1st Cir. 1983) (NEPA is "aimed at presenting governmental decision-makers with relevant environmental data before they commit themselves to a course of action.")

Footnote 2: See 40 C.F.R. § 1508.8.

Footnote 3: Review of agency decision-making is conducted under the Administrative Procedure Act ("APA"), which provides that an agency's decision may be overturned only if that decision is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A); see also Miccosukee Tribe of Indians of Fla. v. United States, 566 F.3d 1257, 1264 (11th Cir. 2009).

Footnote 4: In materials posted on the Mobile District's web page, the Corps of Engineers declares that the "EIS will include a description of the baseline environmental and *socioeconomic conditions* against which effects of the proposed action are evaluated. It will also identify potential consequences and appropriate mitigation (methods to lessen adverse impacts) measures."(*emphasis added*)
http://www.sam.usace.army.mil/Missions/PlanningEnvironmental/ACTMasterWaterControlManualUpdate/ACTNEPAProcess.aspx

Response

USACE disagrees with the comment. USACE operates the multipurpose projects in the ACT to balance all project purposes as Congress intended. Congress did not intend that the USACE operate the reservoirs just to maximize hydropower.

Comment ID 0070.003

Author Name: Feathers, Richard

Organization: Southeastern Federal Power Customers, Inc.

Comment

II. Congressional Intent Supporting Hydropower Development and Generation

The draft WCM recognizes that Congress authorized the construction and operation of the multipurpose projects through a series of law and accompanying House Documents. <Footnote 5> Notwithstanding the acknowledgement of early deliberations in Congress on the development of the ACT River Basin, the Corps fails to include any discussion on the guidance that supported the authorization of the Allatoona Reservoir. As the U.S. Court of Appeals for the Eleventh Circuit has observed, the underlying Chief of Engineers' reports that support the authorization provide the foundation for the Corps operations. <Footnote 6> Indeed, ignoring the Chief of Engineers' reports that support the authorizations imperils the Corps of Engineers operations of its projects.

The SeFPC does not disagree with the Corps of Engineers conclusions that the Allatoona project was authorized by the Flood Control Act of 1941, Public Law 229, on August 18, 1941. However, the Corps of Engineers review of the legislative history in the draft WCM inexplicably stops with the citation to the Flood Control Act of 1941. The authorizing statute specifically approves the construction of Allatoona Reservoir, "in accordance with the recommendation of the Chief of Engineers in House Document Numbered 674, Seventy Sixth Congress, third session…" <Footnote 7>

House Document Number 674 provides important and invaluable guidance to the Corps of Engineers on how the Allatoona project shall be operated. As first explained by Major General Schley, the Board of Engineers for Rivers and Harbors recommended the construction of the Allatoona Reservoir "for the control of floods, regulation of stream flow for navigation, and the development of hydroelectric power…" <Footnote 8> Brigadier General Tyler later explained in that the "Allatoona Reservoir constructed in the combined interests of the flood control and power development would provide needed flood protection…and would make possible the development of a substantial block of hydroelectric power." <Footnote 9>

House Document Number 674 also included extensive findings of District Engineer Colonel Park who repeatedly stated that the Allatoona Reservoir would be constructed for flood control and power purposes. <Footnote 10> Colonel Park unequivocally recommended that the "Allatoona development be authorized as a flood-control and power project…" <Footnote 11> This conclusion was not presented without extensive findings; it was preceded by a detailed discussion in which factors such as rainfall were evaluated because of the "necessity of determining the storage required for power development at the Allatoona dam…" <Footnote 12>

Notwithstanding the clear guidance provided by House Document Number 674, the draft WCM states that the Allatoona Reservoir is federally authorized for other project purposes including recreation, water quality, water supply and fish and wildlife support. <Footnote 13> None of these additional "purposes" were mentioned in House Document Number 674 and the Corps of Engineers quoted in it are clear in delineating the bifurcated storage at the Allatoona Project between two lone purposes, hydropower production and flood risk management. <Footnote 14> The addition of these new "purposes" by the Corps at Lake Allatoona is without support, yet forms a foundational error for the EIS.

The draft WCM does reference House Document Number 414 as evidence of Congressional guidance on how the Allatoona reservoir would fit into a comprehensive scheme of development in the ACT River Basin. In House Document Number 414, Brigadier General Robins recommended the development of the ACT River Basin for navigation, flood control, and power development. <Footnote 15> More notably, the Brigadier General's report reserved the authority and discretion for the Secretary of War and the Chief of Engineers to modify projects "particularly for the purpose of increasing the development of hydroelectric power." <Footnote 16> While Congress adopted House Document Number 414 to authorize the development on the ACT, the Brigadier General's reserved discretion to *increase hydroelectric power* was directly referenced in statutory text in the Rivers and Harbors Act of 1945. <Footnote 17> (*emphasis added*)

The Corps of Engineers, however, obscures the importance of hydropower development in the references to the House Document Number 414 when the draft WCM explains that Congress expanded the role of flood control management and hydropower development. While the SeFPC agrees with the Corps of Engineers conclusion that House Document Number 414 did build upon a more comprehensive vision of the potential development of the ACT River Basin, it remains clear that the draft WCM has omitted the authority, if not obligation, to maximize hydropower development in the River Basin. Indeed, the reservation of discretion to augment one purpose must also be read as an endorsement of the limitations on the Corps for the other project purposes.

The only subsequent law passed by Congress that would appear to limit this discretion can be found in Public Law 436, in which Congress suspended the comprehensive development of the ACT River System to permit private power development on the Coosa River. <Footnote 18> However, as set forth in Section 13, "[n]othing in this Act shall be deemed to affect in any way the authorization of the development of the Alabama-Coosa River and tributaries other than that portion of the development involving projects on the Coosa River…" <Footnote 19> Nothing in Public Law 436 changed the Congressional authorization for the Corps of Engineers projects previously authorized by Congress.

Footnote 5: See Section 3.0 et seq., Master Water Control Manual, Alabama-Coosa-Tallapoosa.

Footnote 6: In re Tri-State Water Rights Litigation, 644 F. 3d 1160, 1193 (11th Cir. 2011) ("Even heightened deference cannot lead this Court to ignore the plain and expressed will of Congress, especially where, as here, the Corps' interpretation has not been consistent.")

Footnote 7: Flood Control Act of 1941, Public Law 228, August 18, 1941.

Footnote 8: House Document Number 674, p. 2.

Footnote 9: Id at 5.

Footnote 10: See Id, pp. 21, 31-33, 36-40.

Footnote 11: Id. p. 40. (Emphasis added).

Footnote 12: Id. p. 21.

Footnote 13: Draft WCM, table 1.1.

Footnote 14: Corps of Engineers regulations clearly delineate the limitations on operations where there is an impact on Congressionally authorized purposes. See ER 1101-2-100. ("Storage reallocation for recreation which significantly affects other authorized purposes, or involves major structural or operational changes, requires Congressional approval.")

Footnote 15: House Document Number 414, p. 6.

Footnote 16: Id.

Footnote 17: Rivers and Harbors Act of 1945, Public Law 14, March 2, 1945. ("Initial and ultimate development of the Alabama Coosa River and tributaries for navigation, flood control power development and other purposes as outlined in House Document Numbered 414, Seventy-seventh Congress is hereby authorized…with such modifications thereof from time to time as in the discretion of the Secretary of War and Chief of Engineers may be advisable for the purposes of *increasing* the development of hydroelectric power.")("*Emphasis added.*)

Footnote 18: See Section 2, Public Law 436, June 28, 1954.

Footnote 19: Id.

Response

The Allatoona Project was designed and constructed as a multipurpose project. USACE does not prioritize authorized project purposes but operates the projects in a balanced approach to meet all authorized project purposes.

USACE could find no reference to the House Document 414 in the Allatoona WCM as described in the comment.

Comment ID 0070.004

Author Name: Feathers, Richard

Organization: Southeastern Federal Power Customers, Inc.

Comment

III. Socioeconomic Considerations

The legislative history referenced above also expressed the understanding of Congress that the development of hydropower in the ACT was not only essential to the surrounding communities, but also made the construction of the projects feasible from a cost benefit analysis. <Footnote 20> A discussion of the economics underlying the construction and operation of the projects, as well as the impact on the communities that rely on the hydropower produced at the Corps of Engineers projects in the ACT River Basin is notably absent from the draft WCM. Indeed, notwithstanding the Corps of Engineers declaration that the NEPA process will consider socioeconomic factors, the term socioeconomic is mentioned once in the entire draft WCM. <Footnote 21> Undoubtedly, the Corps of Engineers fails a fundamental obligation under NEPA with an omission of any discussion of the indirect impacts of reduced hydropower generation that will ensue with the adoption of the WCM.

This oversight is hardly permissible with the extensive legislative history documenting the need and value of hydropower in the ACT River Basin. For example, House Document 674 spoke to the balancing of economic interests in the construction of Allatoona Reservoir. As noted by Brigadier General Tyler, "[b]enefits that would accrue to the project are substantially in excess of annual charges and in the opinion of the [Rivers and Harbors Board] the improvement is economically justified."

However, when the Corps of Engineers proposes action zones in the draft WCM that will greatly diminish if not eliminate hydropower production, there is an absence of any discussion on the socioeconomic impact of reduced hydropower operations. <Footnote 22> The failure to identify and discuss these impacts has the effect of skewing the conclusions reached on preferred alternatives and mitigation plans for direct and indirect impacts. It is a noteworthy and significant oversight that undermines the foundation of the Corps of Engineers' NEPA process.

Footnote 20: See House Document Number 414, pp. 4-6.

Footnote 21: Draft WCM, at Section 3.01, p. E-C-4.

Footnote 22: As discussed below, the draft WCM contains many erroneous technical conclusions that adversely affect conclusions reached in the WCM.

Response

The impacts to Hydropower production are stated in the draft EIS in section 6.6.3. The Proposed Action Alternative has less than a 1% decrease in system hydropower over the No Action Alternative.

Comment ID 0070.005

Author Name: Feathers, Richard

Organization: Southeastern Federal Power Customers, Inc.

Comment

IV. Baseline Calculations

In the absence of a WCM that has not been updated in two decades, the question arises on the proper baseline for determining the No Action Alternative. While the 1993 Revised WCM is the proper point for evaluation as the Baseline or No Action Alternative, the Corps of Engineers uses what they term "current conditions" as the operating criteria for the Baseline or No Action Alternative. The accurate baseline or No Action Alternative should be the 1993 WCM.

As an alternative, current conditions could provide the appropriate alternative for the Corps of Engineers. However, if this baseline is chosen, the Corps of Engineers must include all changes to the operations of the project that have occurred since 1993. Indeed, at Lines 31 - 33, Page ES-21 of Volume 1 of the Draft EIS, "incremental changes in project operations have occurred because of changes to hydropower contracts and operating schedules…" However, the chart below depicts that there has been a methodical erosion of weekday peaking power by shifting more and more of the generation to the weekend.

<Chart: 'Average Generation for Select "Typical" Years by Weekday.' Please see original letter for this chart.>

Ideally, the Corps of Engineers should determine all the incremental changes in operations since 1951, including all of the incremental changes not in the 1962 WCM revision, 1993 Interim Revision and the 2013 Revision. While the Corps of Engineers has stated that "it is not possible to describe in a single set of reservoir operations that apply to the entire period since the completion of the 1951 ACT Master Manual" the infrequent attention to updating the WCM needlessly shirks responsibilities under NEPA to identify indirect impacts. Indeed, the NEPA process cannot start from an arbitrary year that provides convenient modeling for future intended uses of the reservoirs on the ACT.

Response

USACE disagrees with the comment. The No Action Alternative accurately represents current water management operations at projects throughout the basin. The No Action Alternative meets the letter and intent of NEPA requirements.

In the Council on Environmental Quality's memorandum of March 23, 1981, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, the response to Question No. 3 addressing the No-Action Alternative states: "the 'no action' alternative may be thought of in terms of continuing with the present course of action until that action is changed." Consequently, for purposes of the ACT WCM update process, 'no action' reflects current reservoir operations as they have evolved over time in response to laws, regulations, policy, and new technical information. Basing the description of 'no action' on a pre-NEPA 1962 WCM as a basis for comparison to alternative WCM update plans would not accurately reflect current baseline operations or be consistent with 'no action' as defined in the CEQ memorandum. In the EIS, USACE endeavored not only to describe the Affected Environment in terms of current conditions in the ACT basin but also to incorporate a historical perspective on natural and human resources in the basin dating back to the early 1950's when Allatoona Dam and Lake was completed and placed in operation.

Comment ID 0070.006

Author Name: Feathers, Richard

Organization: Southeastern Federal Power Customers, Inc.

Comment

V. Technical Errors

The draft WCM leaves unanswered several questions but also highlights fundamental errors in the Corps of Engineers' modeling of the impacts associated with the new operating regime. These errors can be categorized in several different areas. The comments below separate technical concerns and associated questions into different topic areas including the impacts associated with conclusions pertaining to:

1. Lake levels and operating zones;
2. Water Supply Impacts;
3. Hydropower Generation Impacts;
4. Increased Minimum Flows;
5. Rule Curve Modification; and
6. General Modeling Concerns.

Response

No response necessary. See individual comment responses for comment ID numbers 0061.007 through 0061.012.

Comment ID 0070.007

Author Name: Feathers, Richard

Organization: Southeastern Federal Power Customers, Inc.

Comment

Lake Levels and Operating Zones

Strikingly, the proposed Alternative G includes radically new operating zones which specifically limit hydropower generation to zero hours per day when the elevation of the reservoir goes below the top of Zone 4. In some cases, the top of Zone 4 is as high as Elevation 836. However, the Corps is clear with their position that "253,000 ac-ft. between elevations 800 and 835 is reserved for power generation and conservation. <Footnote 23> Reducing the hydropower generation to zero hours in Zone 4 is not only an adverse and significant change because of the loss of hydropower, there is no suspension of cost responsibilities.

In addition, the Corps' intent with regard to generation in the proposed Zone 1 through Zone 3 is unclear in the EIS and associated documentation. The EIS document depicts the generation in Zone 1 through Zone 3 as a range (zero to three hours in Zone 1, zero to 2 hours in Zone 2, and zero to 1 hour in Zone 3). This non-detailed description requires clarification as to how many hours of generation will be allocated to hydropower under the proposed Alternative G. Please reference the graphical depiction of the proposed guide curve and action zones for the Allatoona Reservoir below.

Furthermore, a review of the historical average elevation at the Allatoona Reservoir clearly indicates that on average, the proposed Alternative G would result in less than 4 hours of generation being available to hydropower during the times of year that the resource is most important. This will have significant hydropower impacts and is a departure from current operations, Corps policy, and Congressional intent.

In fact, the Power Customers believe the revised operations as captured in the proposed Rule Curve are contrary to the intent of Congress as set forth in House Document Number 674. In discussing the precise parameters of the Allatoona Reservoir, Colonel Powell explained that there would be power generation occurring at an elevation of 821. However, as captured in the graph below, for key months during the year when peaking power is needed, the Corps would not generate power at elevation 821. The proposed action zones also curtail significant hydropower generation at elevations much higher than elevation 821 during the most critical periods of year. This is a significant operational change and departure from the current approved Water Control Manual and practice in which some generation occurs at the Allatoona Project. The changed operations at Lake Allatoona must be revised to be consistent with Congressional intent and provide for power generation when the pool level reaches an elevation of 821.

<Chart: "Proposed Rule Curve and Action Zones." Please see original letter for this chart.>

In fact, the four (4) new zones actually penalize hydropower during the most critical times of the year. Hydropower is totally curtailed, zero generation, in Zone 4 (Figure ES-6, Page ES-28 Draft Allatoona WCM). Zone 4 is reached at Elevation 836 in June, Elevation 828 in July, and Elevation 827 in August. Furthermore, the Alternative G Action Zones are radically different from the Action Zones in the 1993 WCM. Indeed, the two (2) Zones in the 1993 WCM provide much "greater flexibility to meet power demands." However, from a historical perspective, any time the Allatoona Reservoir was below Action Zone 2 the 1993 WCM allowed for two hours of generation. Ultimately, the Corps of Engineers fails to provide an adequate analysis of the differences between the existing Action Zones and the Alternative G Action Zone.

Footnote 23: See Page A1-6, Section 1-25; "Storage allocation" in the December 1993 Appendix A Allatoona Reservoir, Alabama - Coosa River Basin Water Control Manual." (Elevation 835 has been revised in previous studies to a seasonal Elevation 840 and the storage to hydropower has been adjusted to 284,580 ac-ft.).

Response

The Allatoona project will continue to be operated to meet the authorized project purposes in a balanced manner. The updated manual includes a description of typical hydropower range within the four action zones. This range recognizes the conditions when it is prudent reservoir operation to only release the minimum required flow of 240 cfs. This results in no peaking operation and discharging through the small unit only. The zero hours of typical generation in zone 4 does not mean peaking operation cannot or will not occur. While in this zone 4, peaking generation is typically not the primary reason for making releases. Releases associated with power generation will conjunctively support multiple project purposes downstream. The economic analysis contained in the EIS indicates that energy benefits will be impacted by less than 1% and slight increase in dependable capacity. The evidence does not indicate that there will be a reduction in available generation under the proposed action alternative.

During the most recent droughts, the public misinterpreted the language describing the reservoir operation in action zones 1 and 2. The generation values were viewed as absolute values with no flexibility. Additional language in the drought plan was overlooked indicating that peaking operation would be curtained or suspended. This occurred in drought recover years; 1986, 1988 and 2008. Coordination regarding USACE hydropower operation occurs weekly with SEPA. Allatoona's contribution to the system energy demands is considered in the reservoir operation decision. Development of the action zones is described in the Modeling Report and EIS, which contain details on the rationale.

Comment ID 0070.008

Author Name: Feathers, Richard

Organization: Southeastern Federal Power Customers, Inc.

Comment

Water Supply Storage

The water supply storage contracts for the City of Cartersville and Cobb-Marietta Water Authority provide for the permanent transfer of this storage to those two entities. In aggregate, 19,511 acre-feet of Conservation Storage has been reallocated to water supply. The HEC ResSIM Model supporting the Draft EIS uses 284,580 ac-ft. in the Conservation Storage. Since water supply is the sole user of the water supply storage, its allocated portion of Conservation Storage should be removed from that available to all other users. Therefore, the Model should reflect 265,069 ac-ft. in usable Conservation Storage.

The existing water supply storage contracts for the City of Cartersville and Cobb-Marietta Water Authority were based on a Critical Yield at Allatoona of 1,160 cfs (750 MGD). Since the execution of these contracts hydrologic/climatology of the Etowah River Basin has deteriorated to the point that current critical yield for Allatoona is 729 cfs (470 MGD).The existing water supply storage reallocation cannot support the contract. There is 37% reduction in the critical yield, yet the Corps of Engineers has not recognized this in the Hec ResSIM Model nor have they recognized this in the necessary reallocation of storage to meet the requirements of the No Action Alternative.

The failure to revise the critical yield requires an exhaustive analysis of the Critical Yield for Lake Allatoona. The analysis performed in a February 2010 Report to Congress at the direction of Congress in Energy and Water Development and Related Agencies Appropriations Act, 2010 (H.R. 3183; Public Law 111-85), appears to be incomplete and therefore does not reflect an accurate critical Yield. <Footnote 24> In fact, figure B-30 does not indicate the reservoir ever returned to Full Pool following the drought. If in fact the simulation has been truncated prior to the reservoir returning to full pool, then the Critical Yield has been overstated and is inaccurate.

The absence of a revised critical yield for the Allatoona Reservoir is not the only issue left unresolved by draft WCM. In our review, we cannot determine why the Corps of Engineers has elected to use the full period of record unimpaired flow set as input hydrology to the Hec ResSIM Model but only uses monthly average withdrawal and return data for water supply withdrawals and returns and only for 2006. Furthermore, as revealed in the litigation on the operation of the Corps of Engineers projects in the ACT River Basin, the Corps of Engineers has notified the Cobb-Marietta Water Authority that under certain conditions they have violated the terms of their water supply storage contract by withdrawing from their storage more water than their storage will yield.

<Footnote 25> This overreliance on storage has not been captured in the draft WCM, nor has the Corps of Engineers indicated how it will address this breach of contract.

In considering the current water supply contracts in place at Allatoona, it is also important to consider the limitations of the authority that facilitated the contracts in the first instance. While the Water Supply Act of 1958 provides the authority for the Corps of Engineers to add water supply where Congress has not included it as an authorized project purpose, this authority is clearly limited to ensure that the conveyance of storage does not adversely affect existing project operations or require a major operational or structural change. <Footnote 26> To the extent that the boundaries of the Water Supply Act of 1958 were nearly met in developing the existing water supply contracts, the draft WCM should reflect as such. In other words, the Corps of Engineers must recognize that the conveyance of storage has a cumulative impact on other project purposes; the mere exercise of authority under the Water Supply Act does not reset the baseline for determining impacts on authorized project purposes.

On a related matter, while the draft WCM does not explicitly endorse a specific policy on return flows, it remains clear that this issue is far from resolved and will inform operations in the future. As such, the Corps must explain how a policy on return flows will affect water supply operations. For example, there is a need to further elaborate on why the No Action Alternative and the Alternative G uses 2006 water supply withdrawals and returns when the Baseline Alternative should use the water withdrawals occurring in 1993, the date of the last WCM update. In fact, the use of monthly average withdrawals and returns greatly underestimates the impact of water supply especially so during dry or drought periods. If Alternative G is the Corps recommended "operating conditions" the model should be modified to perform under the dry or drought conditions on a daily time-step in order to verify the "operating condition" can, in fact, successfully function during the extreme period.

Footnote 24: Draft WCM at p. B-38.

Footnote 25: See State of Alabama v. U.S. Army Corps of Engineers, Case 1:90 CV-1331 (U.S. District Court, Northern District of Alabama)

Footnote 26: 43 U.S.C. § 390b(d)

Response

USACE concurs with storage amounts listed on contracts. The contracted storage space is available to the water supply user within the conservation storage pool and storage accounting tracks the available volume. USACE disagrees with the concept of reducing the conservation storage by water supply contracted amount. The Water Supply Act authorizes the operation for water supply from the conservation storage.

Disagree that the critical yield analysis documented in the February 2010 Report to Congress is overstated and inaccurate. The available unimpaired hydrologic period, 1939-2008 did not include the full recovery the Allatoona reservoir during most critical period in 2007-2008. However, the reservoir began the recovery in the fall of 2008. The report clearly states the recovery period extends beyond 2008. The basin returned the normal rainfall and observed inflow exceeded the computed yield indicating the reservoir would continue to refill. The unimpaired flow has been extended to include years 2009 through 2011 and the critical yield analysis has been updated to include these additional years. The critical yield results from the 2010 report remain the same for Allatoona Lake.

The baseline condition (No Action Alternative) reflects actual withdrawals by CCMWA and city of Cartersville from Allatoona Lake as well as the city of Chatsworth from Carters Lake. Actual withdrawals are represented by year 2006 values, the year of highest net withdrawals in the basin. For all other alternatives, the Allatoona water supply numbers are limited to the contractually authorized water supply allocations. Using the same water supply numbers for each reservoir alternative operation allows for proper comparative impact analysis.

USACE recognizes the need for additional water policy guidance associated with water supply storage accounting and these issues are being addressed under National policy review.

Comment ID 0070.009

Author Name: Feathers, Richard

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Comment

Hydropower Impacts

The draft WCM includes several errors with regard to the hydropower production, including the Corps of Engineers repeated devaluation of capacity benefits provided by its projects. <Footnote 27> In all documentation for the development of the Allatoona Project, it is clearly identified that this resource will be a peaking power resource generating during peak hours Monday through Friday. The methodology for calculating impacts to hydropower in the Draft WCM simply address all energy as peaking energy whether it is produced on peak, off peak, weekday or weekend. This methodology greatly underestimates the impact to hydropower customers from the devaluation of capacity. Customers must meet standards for capacity to serve load as well as planning reserves. The draft WCM does not recognize the impact to integrated resource planning and planning reserve requirements.

Furthermore, in the methodology for calculating impacts to hydropower in the draft WCM, the Corps of Engineers does not take into account the value of "ancillary services" provided by hydropower. The impact to hydropower must include the value of reserves, transmission stability, ability to offer "black start" support, etc. The loss of energy and capacity also reduces the value provided to downstream non-Federal projects for headwater benefits.

Nonetheless, the Corps of Engineers has not explained how the Draft Allatoona WCP and Alternative G, i.e., the proposed Plan in the Draft Manual, "mimic seasonal demands for hydropower and provide greater flexibility to meet power demands…" In the current WCM (1993 Revision), the Corps of Engineers has provided for two hours "peak power generation each day" in Zone 2 (Appendix A, Chart 1-11 1993 Allatoona WCM). Zone Two is defined as Elevation 836, seasonally adjusted. Yet, the Draft WCM plans for four (4) Zones that have no relationship at all to seasonal demands for hydropower as purported by the Corps.

If we compare the Corps of Engineers' 1993 Action Zones (Appendix A, Chart 1-11 1993 Allatoona WCM) to the Proposed Alternative G Action Zones, (Figure ES-6, Page ES-28 Draft Allatoona WCM) over 60% of the conservation storage has been lost from hydropower production. However, in the Corps of Engineers cost allocation study for the Allatoona Project, fully 285,000 ac-ft. of storage was assigned to hydropower. Base on the revised Action Zones of the Draft WCM, hydropower now has access to less than 114,000 ac-ft. of storage. Inexplicably, the Corps of Engineers' analysis does not take this into account.

Footnote 27: SEPA markets capacity and energy from the Corps of Engineers multipurpose projects. A firm energy resource, which can be scheduled and displace other resources, requires an identification of capacity and energy. The production of energy alone does not provide the same economic benefit as a project that affords capacity that can be scheduled with accompanying energy.

Response

1st paragraph – The analysis addresses both capacity and energy benefits. The total impact to the system is the sum of the capacity and energy benefits. USACE utilized the average availability method in calculating the capacity benefits. Explanations of this procedure can be found in EM 1110-2-1701. Under the guidance, this method is considered the most reliable since the regional energy system is predominantly thermal. Peak and Off-peak pricing is considered in calculating both capacity and energy value. Section 6.6.3.1.1 explains the derivation of peak and off-peak pricing. Section 6.6.3.1.3 describes the seasonal variation in peak and off peak hours for the region confirmed by SEPA. Eleven daily peaking hours were defined for the winter period from October 1 through March 31(5:00 am to 9:00 am and 3:00 pm to 10:00 pm, Monday through Friday). Six daily peaking hours were defined for the summer period from April 1 through September 30 (1:00 pm to 7:00 pm, Monday through Friday). All other hours are considered off-peak. The hydropower impacts computed for this analysis are for the National Economic Development (NED) account - energy and capacity values as outlined in EM 1110-2-1701, Hydropower, Section 9-5f.

2nd paragraph – USACE agrees that the methodology for calculating impacts to hydropower does not address “ancillary services” provided by hydropower. As mentioned above, the analysis only considers NED benefits- capacity and energy. Currently, USACE, among other groups, is seeking methods to value ancillary services. At this point there is no agreed upon methodology. USACE also concurs that the current analysis does not consider headwater benefits. Calculations to consider these benefits would require an additional modeling effort.

3rd paragraph – The hydropower impact analysis indicates the annual hydropower benefit reduction of less than 1%. Allatoona is multipurpose project with the ability to peak through the entire conservation pool range. The model reflects the typical hydropower peaking demand. The proposed alternative includes a typical peaking hydropower demand of zero hours in Action Zone 4 and represents a drought operation. While in Action Zone 4, typically the primary purpose for the release is not for hydropower. However, releases made from Action Zone 4 will normally pass through the turbine to meet peak energy demand. The actual 2007 summer/fall operation is an example this operation.

4th paragraph – A more detailed description of the action zones is available in the HEC-ResSim Modeling Report (EIS Vol. 3, Appendix C). Section 3.B.6.a (Allatoona Dam Measures, Action Zones) in the modeling report states:
“These action zones were derived by evaluating the historic demand for hydropower. There is a distinctive seasonal demand for the hydropower, with highest demand occurring June through August. The top of Zone 2 is revised to have a similar shape to the average pool elevation. This allows for greater generation when storage is above Zone 2 during above normal conditions. The storage in Zone 3 is used to provide reliable hydropower without depleting storage. Zone 4 represents a drought level zone where only minimum flow requirements are released.”

Comment ID 0070.010

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Comment

Increased Minimum Flow

The draft WCM does not explain why minimum flows from the Carter's Reregulation Dam ("Carter's") have been increased by 300% during the winter and spring "refill" period of the year. The Corps of Engineers' statement that "minimum flow requirement would remain 240 cfs from Carters Reregulation Dam" is incorrect. By adding two action zones in the draft WCP for Carter's, the Corps of Engineers has significantly modified the minimum flow requirements from the Reregulation Dam. Based on the language on Page ES-24, Lines 1-3 and the Figure ES-4, the minimum flow is not 240 cfs. The minimum flow is as follows if the reservoir is in Zone 1:

<Table: Minimum Flow, listed by Month of the Year, Minimum Flow, and Long Term Mean Monthly Flow. Please see original letter for this table.>

As the highlighted Months in the above table indicate, the minimum flow requirement in Zone 1 exceeds the Long Term Mean Monthly Flow in the Coosawattee River into Carter's Reservoir. As long as the Reservoir is in Zone 1, storage must be used to augment flows to meet the minimum flow requirements, especially during drought periods. Since Carters is a Pumped Storage project and minimum flows are actually being met by releases from the Reregulation Dam, the Zone 1 minimum flow releases support deterioration in the capacity of the project. It is also exacerbated by the fact that with water in the forebay and reregulation pond, much greater evaporation is occurring which requires additional releases to make up for these reductions further impacting storage in the forebay. The Corps is using Carters to provide flows in the Coosawattee River that exceed the "natural" flows throughout all but two (2) months out of the year as long as the reservoir level is maintained above Zone 2.

Response

In 1970, the Georgia State Water Quality Control Board expressed concern over possible effects of operation of Carters Dam on water quality on the upper Coosa River and requested increased minimum flows at Mayo's Bar. A guaranteed minimum continuous release of 240 cfs was established from the Reregulation Dam. The 240 cfs minimum flow represents the 7-day average 10-year frequency low flow (7Q10) at the reregulation dam site. Areas below the project are assured of this minimum flow during dry periods as long as sufficient water exists at the project. The minimum flow requirement would remain 240 cfs from Carters Reregulation Dam. Refined operations at Carters Lake would include the use of two action zones to manage downstream releases. The top of the new action zone 2 begins at elevation 1,066 ft in January, increasing to 1,070.5 ft in May, dropping to 1,070 ft by October, and returning to elevation 1,066 ft through December. When Carters Lake is in action zone 1, releases at Carters Reregulation Dam would be equal to the seasonal minimum flow recommended by USFWS during the development of the water control plan update. The seasonal minimum flow releases in the proposed action (Plan G) were derived based on mean monthly flows upstream of Carters Lake. If and when Carters Lake elevation drops into zone 2, minimum flow releases from Carters Reregulation Dam would drop back to 240 cfs until the Carters Lake level recovers into zone 1. The development of measures to provide for seasonal minimum flows downstream of the reregulation dam is described in USACE and USFWS coordination documentation in Appendix B, Part 2.

Comment ID 0070.011

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Comment

Rule Curve Modification

Throughout the Comprehensive Study and the interstate compact discussions for the ACT River Basin, the Corps of Engineers has explicitly stated they will not reallocate from Flood Control Storage for any other purpose than flood control. Yet, the current proposed Alternative G reallocates storage out of the Allatoona Flood Control Pool to the Conservation Pool from late October through December. In fact, the Corps of Engineers clearly articulates "[m]anagement measures that suggest use of flood storage for purposes other than flood storage were not considered." <Footnote 28> Clearly the Corps has reallocated storage from Flood Control to other purposes by modifying the Rule Curve in Alternative G.

Footnote 28: Draft WCM, p ES-11.

Response

Non-concur. No reallocation of storage resulted from shifting the guide curve at Allatoona. The amount of seasonal/permanent flood risk management storage is the same. There has been no increase in flood risk in the pool or downstream.

Comment ID 0070.012

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Comment

General Modeling Issues

The Corps uses the "unimpaired flow set" developed during the Comprehensive Study in the 1990's amended (amended what?) to bring the flow up to date as far as 2008. The unimpaired flow set is the basis for all of the hydrologic modeling supporting the selected Proposed Alternative. It is troubling that the Corps of Engineers implies in the draft WCM that the unimpaired flow set is a flow set that has been approved by the stakeholders.

A review of past practices, however, reveals this flow set has never been approved at any level. The unimpaired flow set developed for the ACT's Hec ResSIM model uses the same techniques that were employed on the ACF basin. On the ACF basin, these techniques have been the center of significant controversy. Indeed, the unimpaired flow set has not been vetted by any Federal Agency, has not been approved as meeting any Federal requirements and therefore, should be subject to its own review and comment prior to its use in this analysis.

Finally, the Corps of Engineers should provide the validation for each node or control point where the Corps has used the Drainage Basin Ratio Method to provide incremental flows or inflows in the main stem of the Etowah River or streams connecting to the Etowah River, such as at Kingston.

Response

USACE disagrees with the commenter's conclusion that the unimpaired data set is not the appropriate dataset; the dataset methodology for the development of the unimpaired dataset for the ACT Basin was approved by the states of Alabama and Georgia and the Federal partners during the Comprehensive Study conducted during the 1990s.

Methodology for the development of the unimpaired dataset for the ACT Basin was approved by the states of Alabama, Georgia, Florida and Federal partners during the Comprehensive Study conducted during the 1990's. Data gaps and errors were reviewed, corrected, and incorporated into the dataset. The unimpaired data set has been updated on two separate occasions. The unimpaired data set currently reflects 2011 data, the most recent year that USACE had complete data from the states. The states work with USACE by providing the water use data. The states are provided the unimpaired flow dataset for review and comment before finalizing. This is consistent with practices of the Comprehensive Study. The approved methodology included use of the Drainage Basin Ratio Method where needed.

Comment ID 0070.013

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Comment

VI. CONCLUSION

While the Power Customers welcome progress on a WCM for the ACT River Basin, the Corps of Engineers' draft document released on March 1, 2013 fails in numerous ways. The failure to follow thoroughly the expressed intent of Congress in maximizing hydropower production undermines the foundation of the proposed WCM and the NEPA process. In a rather revealing statement, the Corps of Engineers admits that "[a]ny proposed changes to the ACT Basin water control operations that would significantly affect other project purposes or require substantial structural modifications would require feasibility-level studies and congressional authorization. Such studies are inconsistent with the purpose and need of updating the WCM." <Footnote 29>

The SeFPC encourages the Corps of Engineers to revise the WCM in a manner that abides by Congressional intent regarding hydropower production, clarifies key policy initiatives such as crediting for return flows, and provides the clarity and transparency needed for the Corps of Engineers to meet competing demands in the ACT in upcoming years.

I am available to answer any questions that you may have regarding the comments captured above.

Footnote 29: Id, at p. ES-1.

Response

It was not Congressional intent, nor the USACE intent in revising the WCMs, to maximize hydropower production at the expense of other project purposes. ACT projects were authorized, designed, and constructed as multipurpose projects. The projects are operated in such a way as to meet all authorized project purposes. Analyses indicate there will be no significant impact on hydropower benefits associated with the proposed revisions to the projects.

Comment Number: 2013-0059

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Attachments: ACT DEIS Comments.pdf

Comments:

Please find attached to this message comments on the Alabama-Coosa-Tallapoosa Water Control Manual Draft Environmental Impact Statement. These comments are submitted by the Southern Environmental Law Center on behalf of Alabama Rivers Alliance, American Rivers, Coosa River Basin Initiative, Coosa Riverkeeper, Georgia River Network, and Lake Watch. Thank you and kindest regards, Lauren Joy Southern Environmental Law Center. (Please see following letter.)

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May 31, 2013

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RE: Comments on the Alabama-Coosa-Tallapoosa Master Water Control Manual Update Draft Environmental Impact Statement

Dear Colonel Nelson:

On behalf of Alabama Rivers Alliance, American Rivers, the Coosa River Basin Initiative, the Coosa Riverkeeper, Georgia River Network, and Lake Watch, the Southern Environmental Law Center ("SELC") offers the following comments on the Draft Environmental Impact Statement ("DEIS") for the proposed Alabama-Coosa-Tallapoosa ("ACT") *Master Water Control Manual* ("WCM" or "Master Manual") update.

SELC submitted scoping comments on the ACT WCM update on October 17, 2008 and attended a public meeting regarding the DEIS on March 26, 2013 in Rome, Georgia. In the discussion below we identify several shortcomings in the DEIS that require greater attention under the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321, *et seq*. We have also included a number of suggestions to improve the updated master WCM drafted by the Army Corps of Engineers ("Corps").

I. BACKGROUND

The Corps is updating the Master Manual for the first time since 1951. The Corps must use this rare opportunity to fully consider the range of possible water management strategies for the entire ACT Basin that would meet Congressionally-authorized purposes. The authorized purposes for the Corps' ACT projects include flood risk management, hydropower, navigation, recreation, water quality, water supply, and fish and wildlife conservation. Since 1951, the Corps has made incremental changes in the operation of specific ACT projects, has added new projects, and has updated a number of the individual-project water control manuals. The Corps is understandably updating the Master Manual to reflect these incremental changes that have occurred since 1951, but in order to comply with NEPA the Corps must also consider new or alternative management measures that reasonably meet the ACT projects' authorized purposes.

WCMs dictate how the Corps regulates reservoir and dam projects. The WCMs typically include background information on the project, water storage and release schedules (through guide curves and action zones), and drought contingency operations. The ACT WCM governs Corps management of its projects in the ACT Basin, covering 22,800 square miles in Georgia and Alabama. Within the ACT Basin, the Corps manages six dam projects:

1) Allatoona Lake and Dam (Etowah River, Georgia)
2) Carters Lake and Carters Dam (Coosawattee River, Georgia)
3) Carters Reregulation Dam (Coosawattee River, Georgia)[1]
4) Robert F. Henry Lock and Dam and R.E. "Bob" Woodruff Lake (Alabama River, Alabama)
5) Millers Ferry Lock and Dam and William "Bill" Dannelly Lake (Alabama River, Alabama)
6) Claiborne Lock and Dam and Lake (Alabama River, Alabama)

The three Alabama River projects are run-of-river projects that do not have significant conservation storage capacity compared to Lake Allatoona and Carters Lake. Yet management of the run-of-river projects, particularly those with hydropeaking operations, can still have significant impacts on downstream aquatic life in the ACT Basin. This is particularly important given that the ecologically-rich Mobile-Tensaw Delta lies directly downstream from the Corps' lower ACT projects. In addition to its own projects, the Corps also reviews and approves flood risk management plans and Reservoir Regulation Manuals for four Alabama Power Company ("APC") projects in the ACT Basin:

1) Weiss Dam (Coosa River, Alabama)
2) H. Neely Henry Dam (Coosa River, Alabama)
3) Logan Martin Dam (Coosa River, Alabama)
4) R.L. Harris Dam (Tallapoosa River, Alabama)

Additionally, the Corps maintains the navigation channel on the Alabama River between Mile 0 and Mile 72, at the Claiborne Lock and Dam. The Corps' proposed action for purposes of its NEPA analysis includes updating the Master Manual and updating nine project-level WCMs, included as appendices to the Master Manual.

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[1] Carters Dam and Reregulation Dam are managed as one system.

II. NEPA PURPOSE AND NEED

NEPA requires a federal agency to create an environmental impact statement for any major federal action significantly affecting the quality of the human environment.[2] By its very nature, NEPA is a forward-looking statute, requiring federal agencies to take a hard look at a particular project to assess its impacts and alternatives so that the agency will make informed decisions with full knowledge of a project's effects on the environment.

The "Purpose and Need" section of an EIS briefly defines "the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action."[3] "Agencies are afforded considerable, although not unlimited discretion to define the purpose and need of a project."[4]

The Corps' stated purpose and need for the ACT WCM update is to "determine how the federal projects in the ACT Basin should be operated for their authorized purposes, in light of current conditions and applicable law, and to implement those operations through updated water control plans and manuals."[5] This purpose and need generally describes what the Corps is trying to achieve with its ACT WCM update. However, as described in greater detail below, the Corps has unfortunately undermined this statement of purpose and need. The Corps has excluded from consideration suggested management measures that could reasonably meet the Corps' stated purpose of determining how federal projects in the ACT Basin *should* be operated in light of current conditions in the basin and applicable law. The Corps has developed a scope for its actual analysis that is currently too narrow to meet the requirements of NEPA.

III. SCOPE OF THE DEIS

NEPA requires the Corps to take a broad, independent view of the scope of the project, its purpose, and its impacts. Agencies must define the scope so that they can consider all "reasonable alternatives" to the proposed action.[6] This is known as the "rule of reason."[7] Courts "have interpreted this [reasonableness] requirement to preclude agencies from defining the

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[2] NEPA § 102 (C), 42 U.S.C. § 4332 (C).
[3] 40 C.F.R. § 1502.13.
[4] Nw. Ecosystem Alliance v. Rey, 380 F. Supp. 2d 1175, 1185 (W.D. Wash. 2005).
[5] U.S. Army Corps of Engineers, Draft Environmental Impact Statement (2013), at 1-1.
[6] See, e.g., 40 C.F.R. § 1502.14; Alaska Wilderness Recreation & Tourism Ass'n v. Morrison, 67 F.3d 723, 729 (9th Cir. 1995) ("The goal of [NEPA] is to ensure that federal agencies infuse in project planning a thorough consideration of environmental values. The consideration of alternatives requirement furthers that goal by guaranteeing that agency decisionmakers have before them and take into proper account all possible approaches to a particular project.").
[7] Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 195 (D.C. Cir. 1991).

objectives of their actions in terms so unreasonably narrow they can be accomplished by only one alternative."[8]

The Corps' current scope of the ACT WCM update is too narrow. Rather than taking a broad and independent view of the scope of its WCM update, its purpose, and impacts, the Corps has instead excluded a number of reasonable management alternatives and suggestions raised by SELC, the U.S. Fish and Wildlife Service ("FWS"), and other commenters during the scoping process.

The Corps used nine "screening criteria" to exclude a number of important management measures from consideration under the DEIS. In its DEIS, the Corps has provided a description of those management measures that were eliminated pursuant to these "screening criteria," which include but are not limited to the following:

1) Proposed changes to ACT Basin operations that would require "feasibility-level studies and congressional authorization";[9]
2) Measures proposing use of flood storage space for purposes other than flood storage, such as raising Lake Allatoona's conservation pool by 2 feet;
3) Suggested measures for increasing water supply for Metro Atlanta or other areas;
4) Suggested management measures "outside the Corps' authority to implement," such as "establish[ing] broad-based water conservation measures, impos[ing] surcharges on water supply storage used to supply needs outside the ACT Basin, or limit[ing] growth in the Atlanta area";[10]
5) Suggestions that the Corps should alter minimum flow requirements from its projects to ensure that other entities meet Clean Water Act requirements;
6) Suggestions to alter dam releases such as reducing peak flows for hydropower to "provide windows of no peak flows during spawning season";[11] altering dam operations at Lake Allatoona to more closely resemble a natural flow regime, or "minimiz[ing] the amount of water being released from Allatoona Lake during droughts";[12]
7) Management measures to mitigate "for the construction of the Carters Lake Project, for considering construction of structural measures to improve the water quality of releases, or for recommending restoration of habitat for federally listed species";[13]
8) Suggestions for actions relating to APC projects on the Coosa and Tallapoosa Rivers, which are characterized as "beyond the Corps' authority to address."[14]

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[8] Colo. Envtl. Coal. v. Dombeck, 185 F.3d 1162, 1174 (10th Cir. 1999).
[9] Id. at 1-7.
[10] Id. at 4-5.
[11] Id.
[12] Id.
[13] Id. at 4-5 – 4-6.
[14] Id. at 4-6.

By eliminating these alternative management measures, the Corps has adopted a scope that is too narrow for the purpose and need of this project and has arbitrarily excluded important and reasonable suggestions for management activities in the ACT Basin. The Corps should reconsider the application of its "screening criteria" for purposes of the DEIS scoping and instead evaluate the suggestions and measures listed above as part of a comprehensive alternatives analysis.

Additionally, the Corps should broaden the scope of its DEIS alternatives and impact analyses to include APC's proposed changes to APC-owned dam operations under the Federal Energy Regulatory Commission ("FERC") relicensing process. Specifically, the Corps should consider the potential impacts of concurring with APC's proposed changes to guide curves at Logan Martin Lake and Weiss Lake, over which the Corps has flood control authority. As noted by the Corps:

> The component parts of the master WCM would be nine project-level WCMs, presented as appendices. Only two of the four Alabama Power Company (APC) projects in the basin with Corps WCMs will be included in this WCM update. Additional studies would be required for Logan Martin Lake and Weiss Lake to address flood damage reduction prior to updating the manuals at those facilities. The Corps and APC will develop and execute separate Memoranda of Understanding that address only navigation and drought operations for Logan Martin and Weiss Lakes. Operations at those projects will be incorporated in the Master Manual Update.[15]

In adopting this approach, the Corps has artificially hamstrung its ability to complete a full and comprehensive analysis of the ACT Basin operations because it has separated out additional studies that would be required for changes in storage at Logan Martin and Weiss Lake.

IV. <u>CONSIDERATION OF ALTERNATIVES</u>

Because the Corps has too narrowly limited the scope of its DEIS, the Corps' alternatives analysis is likewise too narrow. The Corps should broaden its alternatives analysis, which is "the heart of the environmental impact statement."[16] The alternatives analysis is meant to offer "a clear basis for choice among options by the decisionmaker and the public."[17] In its alternatives analysis the Corps should "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated."[18] The agency must include a thorough discussion of

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[15] Response from U.S. Army Corps of Engineers to U.S. Fish and Wildlife Service Planning Aid Letter (June 3, 2011), at p. 3.
[16] 40 C.F.R. § 1502.14.
[17] <u>Id.</u>
[18] <u>Id.</u>

available alternatives to a project that fulfill the project's underlying purpose and need, including "reasonable alternatives *not within the jurisdiction of the lead agency*."[19] The Corps must also "[i]nclude appropriate mitigation measures not already included in the proposed action or alternatives."[20]

FWS has noted similar concerns with the narrowness of the Corps' alternatives analysis. In its Draft Fish and Wildlife Coordination Act Report, FWS states:

> Neither the Corps' Proposed Action nor the No Action Alternative, because of the limited scope of the proposed updates, will address all of the Service's conservation concerns in the ACT basin. These concerns include lack of improvement to water quality, lack of support for reintroduction and enhancements for listed species, minimal mimicking of components of the natural flow regime, no reduction of effects of hydropower peaking flows, and no recognition that fish passage at ACT dams is within the scope of the current effort.[21]

This is particularly apparent in the Environmental Consequences portion of the DEIS, where many of the analyses of the alternatives' impacts are the same or very similar for Alternative Plans D, F, and G. Minor changes to the Allatoona guide curve appear to be the only significant differences between alternatives D, F, and G, which were the only alternatives actually carried forward for analysis under the environmental effects portion of the DEIS.

We urge the Corps to reconsider its alternatives selection and analysis with particular attention to several management measures that have been prematurely excluded under the Corps' "screening criteria."

The Corps should reconsider altering minimum flow requirements for Lake Allatoona and Carters Lake to more closely resemble natural flows and improve water quality downstream of those projects. The Corps has proposed to do this for Carters Lake under proposed Action Zone 1 (non-drought conditions), but it may be possible for the Corps to more closely mimic natural flow variations under Action Zone 2 (drought conditions) as well. It is not clear from the DEIS whether the Corps has considered changing the current minimum flow requirement of 240 cubic feet per second ("cfs") for Carters Reregulation Dam or Allatoona Dam. The minimum flow of 240 cfs for these projects represents the annual 7Q10 flow, which is used for measuring water quality and waste assimilation under the Clean Water Act but is generally not considered protective of aquatic life.[22] The Corps should more thoroughly analyze whether this minimum

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[19] Id. (emphasis added).
[20] Id.
[21] U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at p. 29.
[22] In recognition of the importance of variable stream flow for aquatic life, Georgia has adopted an interim instream flow policy that incorporates a monthly 7Q10 requirement for surface water withdrawal permits, to replace the previous annual 7Q10 requirement. See Georgia DNR Water Issues White Paper, Appendix B (May 2001),

flow threshold is appropriate or ideal given that water quality and fish and wildlife conservation are authorized purposes for both Lake Allatoona and Carters Lake.

The Corps should reconsider its decision to exclude from its alternatives consideration any changes to water supply allocations in the ACT Basin. Water supply is an authorized purpose of both Lake Allatoona and Carters Lake. We are aware of at least one recent request, by the State of Georgia, for increased water supply storage in Lake Allatoona. While we do not take a position on the appropriateness of that request, it illustrates that the Corps is ignoring alternatives to water management operations in the ACT Basin by not addressing potential changes to water supply in its alternatives analysis. The Corps' water supply allocation decisions in fact have important implications for the entire ACT Basin. For example, in 2012, United States District Court Judge Bowdre dismissed Alabama's lawsuit against the Corps because there was no final agency action to challenge.[23] Through the lawsuit, Alabama attempted to limit withdrawals of water from the ACT Basin in Georgia, and the judge's decision hinged on what actions the Corps had undertaken up until that time. Now, however, the Corps is moving towards final action in updating its Master Manual, and this is the appropriate time to examine water supply allocations within Corps projects in the basin. An analysis of water supply alternatives is also warranted because of the potential indirect impacts such decisions may have on the development of other water supply reservoirs in or around the ACT Basin, particularly in the Metro Atlanta region of Georgia.[24]

The Corps should also consider in its alternatives analysis whether it should abandon certain minimum flow and operational requirements aimed at maintaining navigation along the Alabama River. In its alternatives analysis, the Corps only considers options to support navigation, even though commercial navigation at Alabama River projects has declined in recent years. FWS suggested in its 2010 Planning Aid Letter that the Corps conduct "a cost benefit analysis comparing the operation and maintenance of the current navigational channel and system of locks and dams on the Alabama River versus the costs and economic benefits associated with maintaining the same system for maximum environmental benefits."[25] FWS also suggested that "[a] summary of the number of commercial barges and other craft that have and are currently utilizing the navigational system should be made available as part of the DEIS."[26] We concur in these suggestions. The Corps must incorporate current commercial barge data into its alternatives analysis and consider the full range of reasonable navigation operation alternatives. Similarly, the Corps must analyze all direct, indirect, and cumulative impacts of

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available at
http://www.georgiaepd.org/Files_PDF/gaenviron/GADNR_InterimInstreamFlowProtectionStrategy_2001.pdf.

[23] Alabama v. U.S. Army Corps Eng'rs, No. 1:90-cv-01331-KOB (N.D. Ala. dismissed July 3, 2012).

[24] As in the ACT Basin, the Corps' decisions and actions in the Apalachicola-Chattahoochee-Flint Basin have significant implications for water supply allocation among states. See, e.g., Florida v. U.S. Army Corps Eng'rs (In re MDL-1824 Tri-State Water Rights Litig.), 644 F.3d 1160 (11th Cir. 2011) (holding water supply is authorized purpose of Lake Lanier).

[25] U.S. Fish and Wildlife Service, Planning Aid Letter (May 3, 2010), at p. 6.

[26] Id.

proposed navigation operations and dredging that may result from those operations in the DEIS impacts section.

FWS has suggested a number of additional management alternatives in its correspondence with the Corps that merit additional attention in the Corps' alternatives selection. For example, the Corps should consider applying a more adaptive management approach to its ACT operations.[27] This would involve including in the WCMs plans for additional and ongoing research and monitoring of project impacts. The Corps should consider the possibility of making structural changes to certain projects in the ACT Basin to improve downstream water quality.[28] It should consider additional measures to improve fish and aquatic organism passage beyond current operations at Allatoona Lake, Claiborne Lock and Dam, and Millers Ferry Lock and Dam.[29] Regarding temperature, the Corps should gather more data on temperature below its dams and compare it with what would occur in an unimpaired flow scenario.[30] If these figures differ significantly, FWS recommended that the Corps consider alternatives that would more closely resemble unimpaired temperatures.[31] Allatoona Dam is a hydropeaking operation, meaning that flow below the dam varies between 250 cfs and 7,500 cfs each weekday.[32] FWS suggested that the Corps consider alternatives that more closely mimic unimpaired flow releases from Corps projects.[33] FWS also suggested that the Corps implement a non-peaking window for hydropower production at Lake Allatoona during the time of year most sensitive for aquatic organisms downstream of the project. We support these recommendations, which would help to comprise the robust alternatives analysis required under NEPA.

V. EVALUATION OF DIRECT, INDIRECT, AND CUMULATIVE IMPACTS

The environmental consequences section of the DEIS "forms the scientific and analytic basis for the comparisons" of the alternatives including the proposed action.[34] "Agencies shall … identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement."[35] This section must also, among other requirements, include "[m]eans to mitigate adverse environmental impacts" if not addressed in the alternatives analysis.[36] Council on Environmental Quality ("CEQ") regulations

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[27] U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at pp. 28–29.
[28] Id. at 21.
[29] Id. at 24–26.
[30] See id. at 21–22.
[31] See id. The Corps should incorporate the FWS analysis of DO and temperature in the ACT Basin into its DEIS environmental impacts section. See id. at 20–24.
[32] U.S. Fish and Wildlife Service, Planning Aid Letter (May 3, 2010), at pp. 25–26.
[33] Id. at 26; U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at pp. 18–20.
[34] 40 C.F.R. § 1502.16.
[35] 40 C.F.R. § 1502.24.
[36] Id.

require that an EIS include "a full and fair discussion of significant environmental impacts" which should be "discussed in proportion to their significance."[37]

Direct and Indirect Impacts

CEQ regulations require federal agencies to consider both direct and indirect effects of a proposed action. Direct impacts are defined as those impacts which are "caused by the action and occur at the same time and place."[38] Indirect effects are defined as effects "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."[39] Importantly, where the agency lacks relevant and adequate evidence or scientific information, courts have required that the agency note the lack of information in the DEIS and further seek and include such additional evidence or scientific information if it is essential to the analysis, and if the costs of obtaining the additional information are not exorbitant.[40]

Changes to Lake Allatoona's guide curve can affect communities and species that are located many miles downstream, as well as water quality in the lake itself. Revisions to the ACT WCM have consequences for the ongoing uses of Lake Allatoona, for the amount of water released downstream, and for the aquatic habitat in the lake and the rest of the Etowah and Coosa River Basins. Because of these substantial direct impacts, the Corps must rely upon an objective and transparent body of scientific data to underpin its analysis of different water releases from this lake.

Our primary concern with the direct and indirect impacts analysis lies with the Corps' assessment of the impacts of its alternatives on biological resources. In its impacts analysis, the Corps has failed to adequately describe impacts of its proposed actions to wildlife, fish and aquatic resources, and protected species. Additionally, there is a lack of analysis in each of the sections of dredging impacts (for navigation) in the Alabama River downstream of the Claiborne Dam, despite the fact that dredging for navigation is contemplated in each of the alternatives considered in the impacts section of the DEIS.

In the Corps' analysis of the impacts to wildlife, the Corps states that "[t]he effects of implementing the No Action Alternative and [other alternatives] on wildlife resources would be expected to be negligible."[41] The Corps states that water quantity and stream flow changes would minimally affect wildlife and that only water quality changes may impact wildlife. The Corps should include a more thorough analysis of the potential effects of changes in water quantity or stream flow impacts on wildlife, particularly in light of the addition of a drought plan to the ACT WCM, proposed changes to the guide curve at Lake Allatoona, and the addition of

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[37] 40 C.F.R. §§ 1502.1, 1502.2(b).
[38] 40 C.F.R. § 1508.8(a).
[39] 40 C.F.R. § 1508.8(b).
[40] See 40 C.F.R. § 1502.22; Alaska v. Andrus, 580 F.2d 465 (D.C. Cir. 1978, rev'd on other grounds, W. Oil & Gas Ass'n v. Alaska, 439 U.S. 922 (1978).
[41] U.S. Army Corps of Engineers, Draft Environmental Impact Statement (2013), at 6-137.

action zones including Action Zone 1 with a more natural streamflow at Carters Lake. Regarding water quality, although the Corps briefly describes the predicted water quality changes based on its water quality impacts analysis, the Corps does not point to studies of wildlife and water quality or explain its reasoning for why "overall changes in water quality … would be expected to have little effect on wildlife resources, and would most likely not be adverse effects."[42] This is the Corps' conclusion for each river segment throughout the ACT Basin despite varying predictions for changes in dissolved oxygen, nitrogen, water temperature, phosphorus, and chlorophyll *a*. This lack of reasoning as to both water quantity and water quality impacts on wildlife renders the Corps' ultimate determination of little to no impact arbitrary and conclusory.

In contrast to its wildlife impacts analysis, the Corps offers more analysis of the water quantity and stream flow impacts in its discussion of fish and aquatic species. However, the Corps still includes within each river segment analysis a conclusory statement that there would be no adverse effects on fish and aquatic resources, without a full explanation of how predicted changes to water quantity, water quality, or streamflow would actually impact these resources. To comply with CEQ regulations, the Corps must include references to scientific or other resources relied upon in its EIS and explain how it reached its conclusions. The Corps must provide a more thorough analysis of the fish and aquatic species impact in order to satisfy the requirements of NEPA.

The Corps must also include a thorough analysis of environmental impacts to protected species. FWS suggested to the Corps that updated surveys be conducted as part of the EIS process for federally-listed fishes and freshwater mollusks to "accurately assess the potential impacts of the Corps' alternative actions."[43] According to FWS in its 2008 scoping comments, the last comprehensive surveys of the federally-listed or endangered mussels and fish in the Georgia portion of the ACT Basin were conducted in 1997 and 1998.[44] Since 2008, FWS has indicated in correspondence with the Corps that some additional surveys studies have been conducted.[45] These surveys and studies must be incorporated into the Corps' environmental impacts analysis to enable effective review of the DEIS. In the DEIS impacts analysis as currently drafted, the Corps simply asserts that little information is known about the impacts to protected species and that "dedicated studies to address the impacts of the proposed operational changes on protected species are not available and are beyond the scope of this effort."[46] The Corps should include analysis of any relevant studies that have been conducted for protected species in the ACT Basin, and the Corps should reconsider its position that gathering additional information is beyond the scope of its NEPA obligations.

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[42] Id. at 6-137 (Etowah River); see also id. at 6-138 – 6-146 (other ACT reaches).
[43] Letter from U.S. Fish and Wildlife Service to U.S. Army Corps of Engineers (Oct. 16, 2008), at p. 2.
[44] Id.
[45] See U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at pp. 17–18 (citing various studies conducted in 2011).
[46] U.S. Army Corps of Engineers, Draft Environmental Impact Statement (2013), at 6-153 – 6-158.

The Corps should bolster its analysis of environmental impacts to the Mobile-Tensaw Delta and Mobile Bay. Although the Corps includes in the DEIS's environmental consequences section descriptions of impacts to different segments of the Alabama-Coosa-Tallapoosa system (for example, the Coosawattee River downstream of Carters Reregulation Dam and the Etowah River downstream of Allatoona Lake), its analysis abruptly stops at the Alabama River below Claiborne Dam.[47] The Corps should include throughout its impacts section an analysis of the environmental impacts of its proposed action on the Delta and Bay in addition to upstream portions of the ACT Basin. The Corps should also more explicitly note and explain the impacts of Millers Ferry hydropeaking operations on the downstream waterways.

Additionally, in its discussion of recreation impacts, the Corps should ensure that it analyzes impacts to recreation activities along the Alabama River in addition to impacts to recreational activities at Lake Allatoona and Carters Lake. The DEIS as currently drafted only includes an analysis of recreation impacts to Lake Allatoona and Carters Lake.[48] A discussion of recreation impacts on reaches of the Alabama River should include an analysis of impacts to recreational boating activities on the river in addition to impacts to shoreline activities.

Understanding the impacts of the Corps' proposed action to wildlife, fish and aquatic resources, protected species, and recreation throughout the entire ACT Basin is integral to completing an adequate EIS, the purpose of which is to allow the agency to make informed decisions with a full understanding of a proposed project's effects on the environment. The DEIS currently lacks this evaluation of impacts. The impacts analysis is also limited because the Corps compares the proposed alternatives to a baseline of existing Corps operations rather than pre-dam, unimpaired flow conditions.

Cumulative Impacts

Cumulative impacts result from the "incremental impacts on the environment from an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."[49] These impacts can arise from "individually minor but collectively significant actions taking place over a period of time."[50] Cumulative impacts are particularly significant in a highly-regulated system such as the ACT Basin.

"NEPA requires that where several actions have a cumulative or synergistic environmental effect, this consequence must be considered in an EIS."[51] "The purpose of the cumulative impact analysis is to provide readers with a complete understanding of the

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[47] The Corps should further its analysis of predicted impacts to fish and aquatic life in the estuary by assessing, for example, the impacts of dredging for navigation on fish and aquatic life. See id. at 6-151 – 6-152.
[48] See id. at 6-185 – 6-188.
[49] 40 C.F.R. § 1508.7.
[50] Id.
[51] City of Tenakee Springs v. Clough, 915 F.2d 1308, 1312 (9th Cir. 1990).

environmental effects a proposed action will cause."[52] "Separating the cumulative effects of related actions into discrete environmental impact statements eliminates the context necessary for readers to comprehend fully a project's overall environmental effects."[53] The cumulative impacts section should assess:

> (1) the area in which effects of the proposed project will be felt;
>
> (2) the impacts that are expected in that area from the proposed project;
>
> (3) other actions -- past, proposed, and reasonably foreseeable -- that have had or are expected to have had or are expected to have impacts in the same area;
>
> (4) the impacts or expected impacts from these other actions; and
>
> (5) the overall impact that can be expected if the individual impacts are allowed to accumulate.[54]

"The duty to discuss cumulative impacts in an EIS is mandatory."[55]

The Corps should thoroughly analyze the cumulative impacts of its own projects coupled with the ongoing federal relicensing process of APC dams in the ACT Basin, along with the cumulative effects of those dam operations on the overall health of the river system. As the Corps has already pointed out in its DEIS, "[f]low conditions [in the Alabama River at Montgomery, Alabama] are principally affected by water management activities at APC projects upstream on [the Coosa and Tallapoosa Rivers]."[56] The environmental impacts of the dams along the Coosa River are particularly significant and deserve a thorough analysis within the Corps' DEIS, particularly since the Corps operates projects both above and below the APC dams. In a March 2013 report, the World Wildlife Federation highlighted the Coosa River as "the most developed river in Alabama" with "one of the largest extinction rates in North America during the 20th century, with the extinction or extirpation of nearly 40 freshwater species."[57] It is not possible for the Corps to analyze the impacts of updating the ACT WCM on the whole ACT Basin without considering the cumulative impacts of water management at APC projects in conjunction with management of the Corps projects. As one example, the EIS should include a more thorough analysis of the potential environmental consequences of APC raising the winter pool levels of Weiss and Logan Martin Lakes, which APC has proposed as part of the

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[52] N.C. Alliance for Transp. Reform, Inc. v. U.S. Dep't of Transp., 151 F. Supp. 2d 661, 698 (M.D.N.C. 2001).
[53] Id.
[54] Fritiofson v. Alexander, 772 F.2d 1225, 1245 (5th Cir. 1985), abrogated on other grounds, Sabine River Auth. v. U.S. Dep't of Interior, 951 F.2d 669 (5th Cir. 1992).
[55] City of Carmel-By-The-Sea v. U.S. Department of Transp., 123 F.3d 1142, 1160 (9th Cir. 1997).
[56] Id. at 6-58.
[57] World Wildlife Federation, The Seven Sins of Dam Building 10 (2013) (internal quotation marks omitted), *available at* http://awsassets.panda.org/downloads/seven_sins_of_dam_building_wwf.pdf.

FERC relicensing process. In its DEIS, the Corps has eliminated this possibility from its analysis in an effort to improperly narrow the scope of its DEIS.

Additionally, FWS pointed out in its Draft Fish and Wildlife Coordination Act Report that several reservoirs in various planning and construction stages need to be thoroughly discussed in the EIS, including a discussion of their cumulative impacts on the watershed. According to FWS, these include: 1) Hickory Log Creek Reservoir, 2) Russell Creek Reservoir, 3) Richland Creek Reservoir, 4) Shoal Creek Reservoir, and 5) Calhoun Creek Reservoir.[58] The Corps includes some discussion of proposed reservoirs, but must ensure that it fully analyzes all reservoirs proposed for the ACT Basin and their cumulative impacts on the watershed, including growth-inducing impacts, in combination with the Corps' regulation of its projects in the ACT Basin. The Corps should also ensure that it has included in its analysis each proposed reservoir in the ACT Basin; for example, there is currently no analysis of the proposed Calhoun Creek Reservoir in the DEIS. The City of Dawsonville's proposed Calhoun Creek Reservoir would withdraw water from the Etowah River and the Chestatee River and ultimately transfer it to the Etowah or Chattahoochee River basins. In May 2013, the City of Dawsonville applied for $20 million from the Georgia Governor's Water Supply Program to acquire real property for the reservoir.[59] These additional reservoirs will have significant cumulative impacts on the ACT Basin as a whole, particularly the upper portion of the basin.

Similarly, the Corps should ensure that it includes in its cumulative impacts discussion a thorough analysis of reasonably foreseeable requests for additional water supply storage in Lake Allatoona or Carters Lake. For example, the Corps should include a discussion of Georgia's recent request for additional water supply from Lake Allatoona within its alternatives analysis. Increasing water supply storage availability in Lake Allatoona may have far less detrimental impact to the environment than the cumulative impact of the many current proposed or planned water supply reservoirs in the ACT Basin. Similarly, the Corps should include a robust discussion of impacts of existing and proposed interbasin transfers into and out of the ACT Basin on the basin as a whole and the Corps' management alternatives.

The Corps should address in its cumulative impacts section the impacts to the Mobile-Tensaw Delta and Mobile Bay from the Corps' operations in the ACT Basin in conjunction with its operations in the Black Warrior-Tombigbee River Basin. Each of these systems contributes to the flow and water quality of the Delta and Mobile Bay and should be analyzed together in the cumulative analysis section. In the DEIS, the Corps states that "[f]low alteration is not without potential effects on the estuary, especially on commercial fisheries, but the data on that impact are mixed."[60] The EIS must explain what specific data it is referring to and why the results are

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[58] U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at p. 14.
[59] To access application materials, see Georgia Environmental Finance Authority, GEFA News: Governor's Water Supply Program Applications Received, GEFA (May 9, 2013), https://www.gefa.org/index.aspx?recordid=557&page=50 (last visited May 30, 2013).
[60] U.S. Army Corps of Engineers, Draft Environmental Impact Statement (2013), at 6-195.

mixed. The Corps should additionally explain its reasoning for why it summarily finds that "[t]he proposed updates to the ACT Master Manual are likely to have inconsequential effects on the ecological function of the Mobile Bay estuary."[61]

The Corps should also fully evaluate as part of the cumulative impacts analysis any and all plans, proposals, or permits for additional hydropower facilities for any of its projects in the ACT Basin. For example, FERC has granted a preliminary permit to Northbrook Energy, LLC to pursue new hydropower production at Carters Dam.[62] In the past, there have also been proposals to add private hydropower projects to Claiborne Lock and Dam, which does not currently have a hydropower facility.[63] This is important to the cumulative impacts discussion because hydropower facilities, particularly peaking hydropower facilities, can degrade downstream fish and wildlife habitat and water quality, and impair the passage of migratory fishes.[64]

Mitigation

The Corps is required by CEQ regulations to consider and discuss mitigation in the scope of the EIS, in the alternatives analysis, and in its final decision.[65] According to CEQ regulations,

> "Mitigation" includes:
>
> (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
>
> (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
>
> (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
>
> (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
>
> (e) Compensating for the impact by replacing or providing substitute resources or environments.[66]

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[61] Id.
[62] Id. at 2-28.
[63] According to FWS, FERC has already issued a preliminary permit to Hydro Green Energy LLC to study the possible addition of hydropower to Claiborne Dam. U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at p. 19.
[64] See, e.g., U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at p. 19.
[65] 40 C.F.R. §§ 1508.25, 1502.14.
[66] 40 C.F.R. § 1508.20.

As the Corps has noted in its DEIS, mitigation can include "measures to avoid, reduce, minimize, or compensate for adverse impacts that could result from a selected course of action, in this case, the update of the Master Manual for the ACT Basin."[67] Mitigation is construed liberally for purposes of NEPA, and mitigation does not necessarily need to affect the particular action in question; instead, it can take the form of a separate action that would offset environmental impacts.

The Corps stated in the DEIS that "[i]mplementing Plan D, Plan F, or the Proposed Action Alternative may result in adverse effects on water quality at various locations in the ACT Basin during low-flow conditions that may necessitate reevaluation of NPDES permits. Affected water quality parameters include water temperature and pollutants (nitrogen, phosphorus, and chlorophyll *a*)."[68] Despite this finding, the Corps states in its mitigation analysis that, "[o]n the basis of the analysis of the Proposed Action Alternative and other alternatives, specific compensatory mitigation measures would not be required."[69] The Corps provides no evidence to support such a conclusion, which is flatly inconsistent with its earlier statement that adverse effects on water quality are foreseeable environmental consequences of alternative Corps operations.

One potential mitigation opportunity that may be considered a "separate action" from updating the WCM but could mitigate for potential adverse impacts from the proposed action alternative involves dissolved oxygen. According to the Corps in its DEIS, dissolved oxygen levels may decrease in parts of the ACT basin during dry-weather conditions as a result of the proposed action alternative.[70] The Corps also states that the "timing and quantity of flow influences the system's ability to assimilate oxygen-demanding pollutants" which can impact dissolved oxygen levels.[71] Specifically regarding the Allatoona project, the Corps' water quality and environmental assessment showed that the tailrace downstream of Allatoona Dam does not always meet state water quality standards for dissolved oxygen.[72] From 1968 to 1986 an oxygen diffuser was used to improve dissolved oxygen levels downstream of Lake Allatoona.[73] FWS suggested that the Corps consider modifying Allatoona dam operations to install a method to increase diffused oxygen levels below the dam; FWS went on to suggest methods such as "aerating turbines, surface-water pumps, low-pressure air blowers, aerating weirs, and oxygen injection systems."[74] The Corps should evaluate this suggestion in both its alternatives analysis and its mitigation analysis.

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[67] U.S. Army Corps of Engineers, Draft Environmental Impact Statement (2013), at 6-196.
[68] Id. at 6-196.
[69] Id. at 6-197.
[70] Id. at 6-85.
[71] Id. at 6-87.
[72] Id. at 2-118; see also U.S. Fish and Wildlife Service, Planning Aid Letter (May 3, 2010), at p. 26.
[73] U.S. Fish and Wildlife Service, Planning Aid Letter (May 3, 2010), at p. 26.
[74] U. S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at p. 21.

The Corps should also consider developing and implementing ongoing monitoring programs to gather more information about the impacts of Corps projects on downstream water quality, aquatic life, and protected species. The Corps asserted that there is a lack of information regarding impacts of its ACT dams on downstream protected species. Greater information gathering and monitoring would improve this situation. Similarly, the Corps should consider opportunities to augment or reintroduce mollusks and fishes into riverine habitats downstream of its ACT dams.[75]

Finally, the Corps should use the ACT WCM update as an opportunity to adopt mitigation measures for the loss of aquatic resources due to the building of Carters Dam in the 1970s. As suggested by FWS, the Corps should calculate the "[t]errestrial and stream impacts … and mitigation measures should be implemented."[76]

VI. SUGGESTIONS TO IMPROVE THE REVISED WCM DOCUMENT

We would also like to suggest some revisions and pose questions that may improve the language of the updated Master Manual as currently drafted.

In general, the Corps could improve the Master Water Control Manual by giving more attention to stream and river flows. The Corps has many opportunities to address and increase knowledge of total basin flow history and the relation of flows to drought and water quality.

In Section 2-05b, "Precipitation" should include information about periods of time when precipitation was lacking. (p. 2-11)

In Section 2-06a, entitled "Storms and Floods," the Corps should address more than periods of high flow and their consequences. (p. 2-13 thru 2-19) The Corps includes an excellent definition of drought and brief descriptions of historic drought throughout the ACT basin in Exhibit C, the Drought Contingency Plan for the ACT (see pp. E-C-4 and E-C-6). This information should be included in Section 2-06a with a description of how municipalities, industries and other basin constituencies were affected and responded (for example, did municipalities and industrial water consumers issue conservation orders or ration supplies?). Additionally, the section could be re-titled "Storms, Floods, and Droughts." The Corps may also find a U.S.G.S. publication – "Droughts in Georgia" – helpful for identifying other significant drought periods that occurred in the Coosa basin, including the 1924-27 drought.[77]

In Chapter III, "General History of the Basin," in addition to information regarding historic drought, the Corps should include history of water quality investigations that took place in the Coosa River basin. For example, the National Resources Committee apparently completed

[75] Id. at p. 29.
[76] Id.
[77] U.S.Geological Survey, Droughts in Georgia, U.S. Geological Open-File report 00-380 (October 2000).

an assessment of the Coosa River in the late 1930s, and the U.S. Public Health Service apparently convened a conference to collect public input after fish kills and citizen complaints about pollution in Lake Weiss in the 1960s.[78] Additionally, the Corps should revisit historic agency and Congressional documents and testimony regarding ACT water projects with an eye to drought and water quality references. Including this type of information in the WCM will demonstrate to all basin constituents the basin-wide and historic connections between drought, water quality, and healthy steam flows.

Section 2-10 "Economic Data," should use the most up-to-date population data – from the 2010 Census or estimates – available from the U.S. Census Bureau (p. 2-25). 2010 data is utilized in Section 4-09, "Economic Data," and the data use should be consistent throughout the document. (p. 4-13)

In Section 2-11 "Land Use," what does the term "desert pavement" refer to? (p. 2-28)

Regarding communication (Section 5-06 "Communication With Project;" Section 7-04 "Standing Instruction to Damtender"), we hope that lessons learned about communication and data sharing between the National Weather Service and the Corps during the 2010 Cumberland River flood of record in Nashville, Tennessee have been incorporated into the Mobile District's "Flood Emergency Action Plans" (Section 8-03).[79]

Section 7-10 "Hydroelectric Power:" How has the Corps – in consultation with the Southeast Power Administration ("SEPA"), Southeastern Electrical Reliability Corporation ("SERC"), the Southern Company and other parties – evaluated what changes to Corps peak operations and discharges will occur as more base generation sources (that is, coal-fired generators) are retired in the southeast? (p. 7-9)

VII. CONCLUSION

The Corps has not updated its Master Water Control Manual for the ACT Basin since 1951. At this time the Corps has an excellent opportunity, as the Corps points out in its statement of purpose and need, to determine how its projects in the ACT Basin *should* be managed. To this end, we encourage the Corps to fully consider the appropriateness of the scope of its DEIS, the range of reasonable alternatives considered, and the full impacts of those alternatives. The Corps should improve the scope and depth of its analysis before this EIS is finalized, pursuant to NEPA's requirements.

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[78] Craig Colten, "Southern Pollution Permissiveness: Another Regional Myth?, Southeastern Geographer 48, 1 (2008): 75-96.

[79] Communication Breakdowns Led to Confusion on Severity of Nashville Flooding, Tennessean, Oct. 17, 2010, *available at* http://www.tennessean.com/article/20101017/NEWS01/10170364/Communications-breakdowns-led-to-confusion-on-severity-of-flooding?odyssey=mod|newswell|text|PROJECTS01|s (last visited May 30, 2013).

We look forward to participating in the NEPA process as it moves forward. Thank you for your consideration of these comments. Please contact us if you have any further questions.

Sincerely yours,

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Comment ID 0059

Comment ID 0059.001

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Comment

On behalf of Alabama Rivers Alliance, American Rivers, the Coosa River Basin Initiative, the Coosa Riverkeeper, Georgia River Network, and Lake Watch, the Southern Environmental Law Center ("SELC") offers the following comments on the Draft Environmental Impact Statement ("DEIS") for the proposed Alabama-Coosa-Tallapoosa ("ACT") Master Water Control Manual ("WCM" or "Master Manual") update.

SELC submitted scoping comments on the ACT WCM update on October 17, 2008 and attended a public meeting regarding the DEIS on March 26, 2013 in Rome, Georgia. In the discussion below we identify several shortcomings in the DEIS that require greater attention under the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321, et seq. We have also included a number of suggestions to improve the updated master WCM drafted by the Army Corps of Engineers ("Corps").

I. BACKGROUND

The Corps is updating the Master Manual for the first time since 1951. The Corps must use this rare opportunity to fully consider the range of possible water management strategies for the entire ACT Basin that would meet Congressionally-authorized purposes. The authorized purposes for the Corps' ACT projects include flood risk management, hydropower, navigation, recreation, water quality, water supply, and fish and wildlife conservation. Since 1951, the Corps has made incremental changes in the operation of specific ACT projects, has added new projects, and has updated a number of the individual-project water control manuals. The Corps is understandably updating the Master Manual to reflect these incremental changes that have occurred since 1951, but in order to comply with NEPA the Corps must also consider new or alternative management measures that reasonably meet the ACT projects' authorized purposes.

WCMs dictate how the Corps regulates reservoir and dam projects. The WCMs typically include background information on the project, water storage and release schedules (through guide curves and action zones), and drought contingency operations. The ACT WCM governs Corps management of its projects in the ACT Basin, covering 22,800 square miles in Georgia and Alabama. Within the ACT Basin, the Corps manages six dam projects:

1) Allatoona Lake and Dam (Etowah River, Georgia)

2) Carters Lake and Carters Dam (Coosawattee River, Georgia)

3) Carters Reregulation Dam (Coosawattee River, Georgia) <Footnote 1>

4) Robert F. Henry Lock and Dam and R.E. "Bob" Woodruff Lake (Alabama River, Alabama)

5) Millers Ferry Lock and Dam and William "Bill" Dannelly Lake (Alabama River, Alabama)

6) Claiborne Lock and Dam and Lake (Alabama River, Alabama)

The three Alabama River projects are run-of-river projects that do not have significant conservation storage capacity compared to Lake Allatoona and Carters Lake. Yet management of the run-of-river projects, particularly those with hydropeaking operations, can still have significant impacts on downstream aquatic life in the ACT Basin. This is particularly important given that the ecologically-rich Mobile-Tensaw Delta lies directly downstream from the Corps' lower ACT projects. In addition to its own projects, the Corps also reviews and approves flood risk management plans and Reservoir Regulation Manuals for four Alabama Power Company ("APC") projects in the ACT Basin:

1) Weiss Dam (Coosa River, Alabama)

2) H. Neely Henry Dam (Coosa River, Alabama)

3) Logan Martin Dam (Coosa River, Alabama)

4) R.L. Harris Dam (Tallapoosa River, Alabama)

Additionally, the Corps maintains the navigation channel on the Alabama River between Mile 0 and Mile 72, at the Claiborne Lock and Dam. The Corps' proposed action for purposes of its NEPA analysis includes updating the Master Manual and updating nine project-level WCMs, included as appendices to the Master Manual.

II. NEPA PURPOSE AND NEED

NEPA requires a federal agency to create an environmental impact statement for any major federal action significantly affecting the quality of the human environment. <Footnote 2> By its very nature, NEPA is a forward-looking statute, requiring federal agencies to take a hard look at a particular project to assess its impacts and alternatives so that the agency will make informed decisions with full knowledge of a project's effects on the environment.

The "Purpose and Need" section of an EIS briefly defines "the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." <Footnote 3> "Agencies are afforded considerable, although not unlimited discretion to define the purpose and need of a project. " <Footnote 4>

The Corps' stated purpose and need for the ACT WCM update is to "detem1ine how the federal projects in the ACT Basin should be operated for their authorized purposes, in light of current conditions and applicable law, and to implement those operations through updated water control plans and manuals." <Footnote 5> This purpose and need generally describes what the Corps is trying to achieve with its ACT WCM update. However, as described in greater detail below, the Corps has unfortunately undermined this statement of purpose and need. The Corps has excluded from consideration suggested management measures that could reasonably meet the Corps' stated purpose of determining how federal projects in the ACT Basin should be operated in light of current conditions in the basin and applicable law. The Corps has developed a scope for its actual analysis that is currently too narrow to meet the requirements of NEPA.

III. SCOPE OF THE DEIS

NEPA requires the Corps to take a broad, independent view of the scope of the project, its purpose, and its impacts. Agencies must define the scope so that they can consider all "reasonable alternatives" to the proposed action. <Footnote 6> This is known as the "rule of reason." <Footnote 7> Courts "have interpreted this [reasonableness] requirement to preclude agencies from defining the objectives of their actions in terms so unreasonably narrow they can be accomplished by only one alternative." <Footnote 8>

The Corps' current scope of the ACT WCM update is too narrow. Rather than taking a broad and independent view of the scope of its WCM update, its purpose, and impacts, the Corps has instead excluded a number of reasonable management alternatives and suggestions raised by SELC, the U.S. Fish and Wildlife Service ("FWS"), and other commenters during the scoping process.

The Corps used nine "screening criteria" to exclude a number of important management measures from consideration under the DEIS. In its DEIS, the Corps has provided a description of those management measures that were eliminated pursuant to these "screening criteria," which include but are not limited to the following:

1) Proposed changes to ACT Basin operations that would require "feasibility-level studies and congressional authorization"; <Footnote 9>

2) Measures proposing use of flood storage space for purposes other than flood storage, such as raising Lake Allatoona's conservation pool by 2 feet;

3) Suggested measures for increasing water supply for Metro Atlanta or other areas;

4) Suggested management measures "outside the Corps' authority to implement," such as "establish[ing] broad-based water conservation measures, impos[ing] surcharges on water supply storage used to supply needs outside the ACT Basin, or limit[ing] growth in the Atlanta area"; <Footnote 10>

5) Suggestions that the Corps should alter minimum flow requirements from its projects to ensure that other entities meet Clean Water Act requirements;

6) Suggestions to alter dam releases such as reducing peak flows for hydropower to "provide windows of no peak flows during spawning season"; <Footnote 11> altering dam operations at Lake Allatoona to more closely resemble a natural flow regime, or "minimiz(ing] the amount of water being released from Allatoona Lake during droughts"; <Footnote 12>

7) Management measures to mitigate "for the construction of the Carters Lake Project, for considering construction of structural measures to improve the water quality of releases, or for recommending restoration of habitat for federally listed species"; <Footnote 13>

8) Suggestions for actions relating to APC projects on the Coosa and Tallapoosa Rivers, which are characterized as "beyond the Corps' authority to address." <Footnote 14>

By eliminating these alternative management measures, the Corps has adopted a scope that is too narrow for the purpose and need of this project and has arbitrarily excluded important and reasonable suggestions for management activities in the ACT Basin. The Corps should reconsider the application of its "screening criteria" for purposes of the DEIS scoping and instead evaluate the suggestions and measures listed above as part of a comprehensive alternatives analysis.

Additionally, the Corps should broaden the scope of its DEIS alternatives and impact analyses to include APC's proposed changes to APC-owned dam operations under the Federal Energy Regulatory Commission ("FERC") relicensing process. Specifically, the Corps should consider the potential impacts of concurring with APC's proposed changes to guide curves at Logan Martin Lake and Weiss Lake, over which the Corps has flood control authority. As noted by the Corps:

The component parts of the master WCM would be nine project-level WCMs, presented as appendices. Only two of the four Alabama Power Company (APC) projects in the basin with Corps WCMs will be included in this WCM update. Additional studies would be required for Logan Martin Lake and Weiss Lake to address flood damage reduction prior to updating the manuals at those facilities. The Corps and APC will develop and execute separate Memoranda of Understanding that address only navigation and drought operations for Logan Martin and Weiss Lakes. Operations at those projects will be incorporated in the Master Manual Update. <Footnote 15>

In adopting this approach, the Corps has artificially hamstrung its ability to complete a full and comprehensive analysis of the ACT Basin operations because it has separated out additional studies that would be required for changes in storage at Logan Martin and Weiss Lake.

IV. CONSIDERATION OF ALTERNATIVES

Because the Corps has too narrowly limited the scope of its DEIS, the Corps' alternatives analysis is likewise too narrow. The Corps should broaden its alternatives analysis, which is "the heart of the environmental impact statement." <Footnote 16> The alternatives analysis is meant to offer "a clear basis for choice among options by the decisionmaker and the public." <Footnote 17> In its alternatives analysis the Corps should "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." <Footnote 18> The agency must include a thorough discussion of available alternatives to a project that fulfill the project's underlying purpose and need, including "reasonable alternatives not within the jurisdiction of the lead agency. " <Footnote 19> The Corps must also "[i]nclude appropriate mitigation measures not already included in the proposed action or alternatives." <Footnote 20>

FWS has noted similar concerns with the narrowness of the Corps' alternatives analysis. In its Draft Fish and Wildlife Coordination Act Report, FWS states:

Neither the Corps' Proposed Action nor the No Action Alternative, because of the limited scope of the proposed updates, will address all of the Service's conservation concerns in the ACT basin. These concerns include lack of improvement to water quality, lack of support for reintroduction and enhancements for listed species, minimal mimicking of components of the natural flow regime, no reduction of effects of hydropower peaking flows, and no recognition that fish passage at ACT dams is within the scope of the current effort. <Footnote 21>

This is particularly apparent in the Environmental Consequences portion of the DEIS, where many of the analyses of the alternatives' impacts are the san1e or very similar for Alternative Plans D, F, and G. Minor changes to the Allatoona guide curve appear to be the only significant differences between alternatives D, F, and G, which were the only alternatives actually carried forward for analysis under the environmental effects portion of the DEIS.

We urge the Corps to reconsider its alternatives selection and analysis with particular attention to several management measures that have been prematurely excluded under the Corps' "screening criteria."

<Portions of the text are bolded or italicized. Please see original document for details.>

Footnote 1: Carters Dam and Reregulation Dam are managed as one system.

Footnote 2: 2 NEPA § 102 (C), 42 U.S.C. § 4332 (C).

Footnote 3: 40 C.F.R. § 1502.13.

Footnote 4: Nw. Ecosvstem Alliance v. Rev. 380 F. Supp. 2d 11 75, 1185 (W.O. Wash. 2005).

Footnote 5: U.S. Army Corps of Engineers, Draft Environmental Impact Statement (20 13), at 1-1.

Footnote 6: See, e.g., 40 C.F.R. § 1502.14; Alaska Wilderness Recreation & Tourism Ass'n v. Morrison, 67 F.3d 723, 729 (9th Cir. 1995) ("The goal of [NEPA] is to ensure that federal agencies infuse in project planning a thorough consideration of environmental values. The consideration of alternatives requirement furthers that goal by guaranteeing that agency decisionmakers have before them and take into proper account all possible approaches to a project.").

Footnote 7: Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 195 (D.C. Cir. 1991).

Footnote 8: Colo. Envtl. Coal. v. Dombeck, 185 F.3d 1162, 1174 (10th Cir. 1999).

Footnote 9: Id. at 1-7.

Footnote 10: Id. at 4-5.

Footnote 11 Id.

Footnote 12: Id.

Footnote 13: Id. At 4-5 through 4-6.

Footnote 14: Id. At 4-6.

Footnote 15: Response from U.S. Army Corps of Engineers to U.S. Fish and Wildlife Service Planning Aid Letter (June 3, 2011), at p. 3.

Footnote 16: 40 C.F.R. § 1502.14.

Footnote 17: ld.

Footnote 18: Id.

Footnote 19: Id. (emphasis added).

Footnote 20: Id.

Footnote 21: U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 20 12), at p. 29.

Response

USACE disagrees that the scope is too narrow. The purpose of the WCM is to provide guidance to USACE Water Managers on how to make daily decisions regarding reservoir levels and water releases. USACE is correct to limit its range of alternatives to those that only fulfill that purpose and within the constraints of authorized project purposes and other applicable laws.

Comment ID 0059.002

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

V. EVALUATION OF DIRECT, INDIRECT, AND CUMULATIVE IMPACTS

The environmental consequences section of the DEIS "forms the scientific and analytic basis for the comparisons" of the alternatives including the proposed action. <Footnote 34> "Agencies shall ... identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement." <Footnote 35> This section must also, among other requirements, include "[m]eans to mitigate adverse environmental impacts" if not addressed in the alternatives analysis. <Footnote 36> Council on Environmental Quality ("CEQ") regulations require that an EIS include "a full and fair discussion of significant environmental impacts" which should be "discussed in proportion to their significance." <Footnote 37>

Direct and Indirect Impacts

CEQ regulations require federal agencies to consider both direct and indirect effects of a proposed action. Direct impacts are defined as those impacts which are "caused by the action and occur at the same time and place." <Footnote 38> Indirect effects are defined as effects "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." <Footnote 39> Importantly, where the agency lacks relevant and adequate evidence or scientific information, courts have required that the agency note the lack of information in the DEIS and further seek and include such additional evidence or scientific information if it is essential to the analysis, and if the costs of obtaining the additional information are not exorbitant. <Footnote 40>

<Portions of the text are bolded or italicized. Please see original document for details.>

Footnote 34: 40 C.F.R. § 1502.16.

Footnote 35: 40 C.F.R. § 1502.24.

Footnote 36: Id.

Footnote 37: 40 C.F.R. §§ 1502.1, 1502.2(b).

Footnote 38: 40 C.F.R. § 1508.8(a).

Footnote 39: 40 C.F.R. § 1508.8(b).

Footnote 40: See 40 C.F.R. § 1502.22; Alaska v. Andrus, 580 F.2d 465 (D.C. Cir. 1978, rev'd on other grounds, W. Oil & Gas Ass'n v. Alaska, 439 U.S. 922 (1978).

Response

USACE will comply with all Federal laws including NEPA.

Comment ID 0059.003

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

Changes to Lake Allatoona's guide curve can affect communities and species that are located many miles downstream, as well as water quality in the lake itself. Revisions to the ACT WCM have consequences for the ongoing uses of Lake Allatoona, for the amount of water released downstream, and for the aquatic habitat in the lake and the rest of the Etowah and Coosa River Basins. Because of these substantial direct impacts, the Corps must rely upon an objective and transparent body of scientific data to underpin its analysis of different water releases from this lake.

Our primary concern with the direct and indirect impacts analysis lies with the Corps' assessment of the impacts of its alternatives on biological resources. In its impacts analysis, the Corps has failed to adequately describe impacts of its proposed actions to wildlife, fish and aquatic resources, and protected species. Additionally, there is a lack of analysis in each of the sections of dredging impacts (for navigation) in the Alabama River downstream of the Claiborne Dam, despite the fact that dredging for navigation is contemplated in each of the alternatives considered in the impacts section of the DEIS.

In the Corps' analysis of the impacts to wildlife, the Corps states that "[t]he effects of implementing the No Action Alternative and [other alternatives] on wildlife resources would be expected to be negligible." <Footnote 41> The Corps states that water quantity and stream flow changes would minimally affect wildlife and that only water quality changes may impact wildlife. The Corps should include a more thorough analysis of the potential effects of changes in water quantity or stream flow impacts on wildlife, particularly in light of the addition of a drought plan to the ACT WCM, proposed changes to the guide curve at Lake Allatoona, and the addition of action zones including Action Zone I with a more natural streamflow at Carters Lake. Regarding water quality, although the Corps briefly describes the predicted water quality changes based on its water quality impacts analysis, the Corps does not point to studies of wildlife and water quality or explain its reasoning for why "overall changes in water quality... would be expected to have little effect on wildlife resources, and would most likely not be adverse effects." <Footnote 42> This is the Corps' conclusion for each river segment throughout the ACT Basin despite varying predictions for changes in dissolved oxygen, nitrogen, water temperature, phosphorus, and chlorophyll a. This lack of reasoning as to both water quantity and water quality impacts on wildlife renders the Corps' ultimate determination of little to no impact arbitrary and conclusory.

In contrast to its wildlife impacts analysis, the Corps offers more analysis of the water quantity and stream flow impacts in its discussion of fish and aquatic species. However, the Corps still includes within each river segment analysis a conclusory statement that there would be no adverse effects on fish and aquatic resources, without a full explanation of how predicted changes to water quantity, water quality, or streamflow would actually impact these resources. To comply with CEQ regulations, the Corps must include references to scientific or other resources relied upon in its EIS and explain how it reached its conclusions. The Corps must provide a more thorough analysis of the fish and aquatic species impact in order to satisfy the requirements of NEPA.

The Corps must also include a thorough analysis of environmental impacts to protected species. FWS suggested to the Corps that updated surveys be conducted as part of the EIS process for federally-listed fishes and freshwater mollusks to "accurately assess the potential impacts of the Corps' alternative actions." <Footnote 43> According to FWS in its 2008 scoping comments, the last comprehensive surveys of the federally-listed or endangered mussels and fish in the Georgia portion of the ACT Basin were conducted in 1997 and 1998. <Footnote 44> Since 2008, FWS has indicated in correspondence with the Corps that some additional surveys studies have been conducted. <Footnote 45> These surveys and studies must be incorporated into the Corps' environmental impacts analysis to enable effective review of the DEIS. In the DEIS impacts analysis as currently drafted, the Corps simply asserts that little information is known about the impacts to protected species and that "dedicated studies to address the impacts of the proposed operational changes on protected species are not available and are beyond the scope of this effort." <Footnote 46> The Corps should include analysis of any relevant studies that have been conducted for protected species in the ACT Basin, and the Corps should reconsider its position that gathering additional information is beyond the scope of its NEPA obligations.

<Portions of the text are bolded or italicized. Please see original document for details.>

Footnote 41: U.S. Army Corps of Engineers, Draft Environmental Impact Statement (20 13), at 6-137.

Footnote 42: Id. at 6-137 (Etowah River); see also Id. at 6-138 - 6-146 (other ACT reaches).

Footnote 43: Letter from U.S. Fish and Wildlife Service to U.S. Army Corps of Engineers (Oct. 16, 2008), at p. 2.

Footnote 44: Id.

Footnote 45: See U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at pp. 17-18 (citing various studies conducted in 2011).

Footnote 46: U.S. Army Corps of Engineers, Draft Environmental Impact Statement (20 13), at 6-153 through - 6-158.

Response

Impacts due to dredging of the navigation channel in the Alabama River have been previously evaluated in the Environmental Impact Statement for the Alabama-Coosa Rivers, Alabama and Georgia (Operation and Maintenance)(USACE 1976) and the Final Supplement to the same document (USACE 1987).

Minor adjustments to the navigation maintenance plan have occurred since 1987, but no major updates or revisions have been necessary. Dredging plans are reviewed for continued compliance with the Clean Water Act (CWA) and other relevant requirements, including NEPA, every five years in conjunction with renewal of state water quality certification under Section 401 of the CWA. That process was most recently completed when the state of Alabama issued water quality certification for continued maintenance dredging and dredged material disposal for the Alabama River on March 31, 2009.

Impacts to water quality were evaluated in detail using the HEC-5Q water quality model as discussed in Section 6.1.2. Results of that effort indicated there would be only slight differences between the various alternatives.

USACE has complied with all Federal laws in updating the Water Control Manuals, including NEPA and the Endangered Species Act (ESA). USACE completed Section 7 consultation with the USFWS for the proposed action (Plan G) pursuant to the ESA. For the proposed action, USACE determined either "no effect" or "may affect, but not likely to adversely affect" federally listed species or their critical habitat. The USFWS concurred with the USACE determination by letter dated March 20, 2014. Copies of consultation documentation and correspondence may be found in Appendix B, Part 3.

Comment ID 0059.004

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

The Corps should bolster its analysis of environmental impacts to the Mobile-Tensaw Delta and Mobile Bay. Although the Corps includes in the DEIS's environmental consequences section descriptions of impacts to different segments of the Alabama-Coosa-Tallapoosa system (for example, the Coosawattee River downstream of Carters Reregulation Dam and the Etowah River downstream of Allatoona Lake), its analysis abruptly stops at the Alabama River below Claiborne Dam. <Footnote 47> The Corps should include throughout its impacts section an analysis of the environmental impacts of its proposed action on the Delta and Bay in addition to upstream portions of the ACT Basin. The Corps should also more explicitly note and explain the impacts of

Millers Ferry hydropeaking operations on the downstream waterways.

<Portions of the text are bolded or italicized. Please see original document for details.>

Footnote 47: The Corps should further its analysis of predicted impacts to fish and aquatic life in the estuary by assessing, for example, the impacts of dredging for navigation on fish and aquatic life. See id. at 6-151 - 6-152.

Response

The Proposed Action Alternative for update of the ACT WCM would have an overall negligible effect on hydrodynamic or salinity conditions in the Mobile River, Mobile-Tensaw Delta, and Mobile Bay as compared to the No Action Alternative (existing conditions/current operations). As pointed out in Section 2 of the draft EIS, the ACT basin contributes roughly only 50 percent of the total flow in the Mobile River below the juncture of the Alabama and Tombigbee Rivers. USACE projects in the Black Warrior-Tombigbee River basin operate as run-of-river projects with no conservation storage and little ability to manage or modify the flow regime. Modeling of the ACT basin for the No Action Alternative and the Proposed Action Alternative reveal that differences in the flow regime at the most downstream points in the basin (e.g., Claiborne Lock and Dam) are generally negligible. For these reasons, the Mobile-Tensaw Delta and the Mobile Bay further downstream are not likely to be affected any differently by the Proposed Action Alternative than current water management operations in the ACT basin. Pertinent paragraphs in Section 6.9 of the EIS have been revised and updated to in response to this comment.

Comment ID 0059.005

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

Additionally, in its discussion of recreation impacts, the Corps should ensure that it analyzes impacts to recreation activities along the Alabama River in addition to impacts to recreational activities at Lake Allatoona and Carters Lake. The DEIS as currently drafted only includes an analysis of recreation impacts to Lake Allatoona and Carters Lake. <Footnote 48> A discussion of recreation impacts on reaches of the Alabama River should include an analysis of impacts to recreational boating activities on the river in addition to impacts to shoreline activities.

Footnote 48: See id. at 6-185- 6-188.

Response

The EIS has been revised to include a discussion at the Alabama River projects.

Comment ID 0059.006

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

Understanding the impacts of the Corps' proposed action to wildlife, fish and aquatic resources, protected species, and recreation throughout the entire ACT Basin is integral to completing an adequate EIS, the purpose of which is to allow the agency to make informed decisions with a full understanding of a proposed project's effects on the environment. The DEIS currently lacks this evaluation of impacts. The impacts analysis is also limited because the Corps compares the proposed alternatives to a baseline of existing Corps operations rather than pre-dam, unimpaired flow conditions.

Response

The USACE will comply with all federal laws including NEPA. The USACE's analysis of impacts is presented in Section 6 of the EIS. The correct baseline will measure proposed changes from the existing condition, not from pre-dam conditions.

Comment ID 0059.007

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

Cumulative Impacts

Cumulative impacts result from the "incremental impacts on the environment from an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." <Footnote 49> These impacts can arise from "individually minor but collectively significant actions taking place over a period of time." <Footnote 50> Cumulative impacts are particularly significant in a highly-regulated system such as the ACT Basin.

"NEPA requires that where several actions have a cumulative or synergistic environmental effect, this consequence must be considered in an EIS." <Footnote 51> "The purpose of the cumulative impact analysis is to provide readers with a complete understanding of the environmental effects a proposed action will cause." <Footnote 52> "Separating the cumulative effects of related actions into discrete environmental impact statements eliminates the context necessary for readers to comprehend fully a project's overall environmental effects." <Footnote 53> The cumulative impacts section should assess:

(1) the area in which effects of the proposed project will be felt;

(2) the impacts that are expected in that area from the proposed project;

(3) other actions --past, proposed, and reasonably foreseeable -- that have had or
are expected to have had or are expected to have impacts in the same area;

(4) the impacts or expected impacts from these other actions; and

(5) the overall impact that can be expected if the individual impacts are allowed to
accumulate. <Footnote 54>

"The duty to discuss cumulative impacts in an EIS is mandatory." <Footnote 55>

Footnote 49: 40 C.F.R. § 1508.7.

Footnote 50: ld.

Footnote 51: City of Tenakee Springs v. Clough, 915 F.2d 1308, 1312 (9th Cir. 1990).

Footnote 52: N.C. Alliance for Transp. Ref01m. Inc. v. U.S. Dep't of Transp., !51 F. Supp. 2d 661, 698 (M.D.N.C. 2001).

Footnote 53: ld.

Footnote 54: Fritiofson v. Alexander, 772 F.2d 1225, 1245 (5th Cir. 1985), abrogated on other grounds, Sabine River Auth. v. U.S. Dep't of Interior, 951 F.2d 669 (5th Cir. 1992).

Footnote 55: City of Carmel-By-The-Sea v. U.S. Department of Transp., 123 F.3d 1142, 1160 (9th Cir. 1997).

Response

USACE will comply with all Federal laws including NEPA. Cumulative impacts are evaluated in Section 6.9 of the EIS.

Comment ID 0059.008

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

Mitigation
The Corps is required by CEQ regulations to consider and discuss mitigation in the scope of the EIS, in the alternatives analysis, and in its final decision. <Footnote 65> According to CEQ regulations, "Mitigation" includes:
(a) A voiding the impact altogether by not taking a certain action or parts of an action.
(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
(e) Compensating for the impact by replacing or providing substitute resources or environments. <Footnote 66>

As the Corps has noted in its DEIS, mitigation can include "measures to avoid, reduce, minimize, or compensate for adverse impacts that could result from a selected course of action, in this case, the update of the Master Manual for the ACT Basin." <Footnote 67> Mitigation is construed liberally for purposes of TEPA, and mitigation does not necessarily need to affect the particular action in question; instead, it can take the form of a separate action that would offset environmental impacts.

The Corps stated in the DEIS that "[i]mplementing Plan D, Plan F, or the Proposed Action Alternative may result in adverse effects on water quality at various locations in the ACT Basin during low-flow conditions that may necessitate reevaluation of NPDES permits. Affected water quality parameters include water temperature and pollutants (nitrogen, phosphorus, and chlorophyll a)." <Footnote 68> Despite this finding, the Corps states in its mitigation analysis that, "[o]n the basis of the analysis of the Proposed Action Alternative and other alternatives, specific compensatory mitigation measures would not be required." <Footnote 69> The Corps provides no evidence to support such a conclusion, which is flatly inconsistent with its earlier statement that adverse effects on water quality are foreseeable environmental consequences of alternative Corps operations.

One potential mitigation opportunity that may be considered a "separate action" from updating the WCM but could mitigate for potential adverse impacts from the proposed action alternative involves dissolved oxygen. According to the Corps in its DEIS, dissolved oxygen levels may decrease in parts of the ACT basin during dry-weather conditions as a result of the proposed action alternative. <Footnote 70> The Corps also states that the "timing and quantity of flow influences the system's ability to assimilate oxygen-demanding pollutants" which can impact dissolved oxygen levels. <Footnote 71> Specifically regarding the Allatoona project, the Corps' water quality and environmental assessment showed that the tailrace downstream of Allatoona Dam does not always meet state water quality standards for dissolved oxygen. <Footnote 72> From 1968 to 1986 an oxygen diffuser was used to improve dissolved oxygen levels downstream of Lake Allatoona. <Footnote 73> FWS suggested that the Corps consider modifying Allatoona dam operations to install a method to increase diffused oxygen levels below the dam; FWS went on to suggest methods such as "aerating turbines, surface-water pumps, low-pressure air blowers, aerating weirs, and oxygen injection systems." <Footnote 74> The Corps should evaluate this suggestion in both its alternatives analysis and its mitigation analysis.

The Corps should also consider developing and implementing ongoing monitoring programs to gather more information about the impacts of Corps projects on downstream water quality, aquatic life, and protected species. The Corps asserted that there is a lack of information regarding impacts of its ACT dams on downstream protected species. Greater information gathering and monitoring would improve this situation. Similarly, the Corps should consider opportunities to augment or reintroduce mollusks and fishes into riverine habitats downstream of its ACT dams. <Footnote 75>

Finally, the Corps should use the ACT WCM update as an opportunity to adopt mitigation measures for the loss of aquatic resources due to the building of Carters Dam in the 1970s. As suggested by FWS, the Corps should calculate the "[t]errestrial and stream impacts ... and mitigation measures should be implemented." <Footnote 76>

Footnote 65: 40 C.F.R. §§ 1508.25, 1502.14.

Footnote 66: 40 C.F.R. § 1508.20.

Footnote 67: U.S. Army Corps of Engineers, Draft Environmental Impact Statement (2013), at 6-196.

Footnote 68: Id. at 6-196.

Footnote 69: ld. at 6-197.

Footnote 70: Id. at 6-85.

Footnote 71: Id. at 6-87.

Footnote 72: Id. at 2-118; see also U.S. Fish and Wildlife Service, Planning Aid Letter (May 3, 2010), at p. 26.

Footnote 73: U.S. Fish and Wildlife Service, Planning Aid Letter (May 3, 2010), at p. 26.

Footnote 74: U. S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at p. 21.

Footnote 75: Id. at p. 29.

Footnote 76: Id.

Response

Mitigation considerations for the proposed ACT WCM update are addressed in Section 6.10 of the EIS. Mitigation, if required, would be required for impacts associated with the Proposed Action Alternative. As indicated throughout Section 6 impacts are minor compared to the No Action Alternative. The reduced DO levels modeled for the Proposed Action Alternative would occur only under unusual drought conditions and would be accompanied by increases in DO in other locations. Because of the lack of identified significant impacts, no specific mitigation requirements are expected for this project. As stated in Section 6.10 water management inherently involves adapting to unforeseen circumstances. Because unforeseen conditions in the ACT Basin may potentially lead to adverse environmental impacts associated with water management activities, actions will be taken within applicable authorities and policies, and in coordination with stakeholders, to address such conditions when they occur (as described in Section 6.10).

Comment ID 0059.009

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

VI. SUGGESTIONS TO IMPROVE THE REVISED WCM DOCUMENT

We would also like to suggest some revisions and pose questions that may improve the language of the updated Master Manual as currently drafted.

In general, the Corps could improve the Master Water Control Manual by giving more attention to stream and river flows. The Corps has many opportunities to address and increase knowledge of total basin flow history and the relation of flows to drought and water quality.

In Section 2-05b, "Precipitation" should include information about periods of time when precipitation was lacking. (p. 2-11)

In Section 2-06a, entitled "Storms and Floods," the Corps should address more than periods of high flow and their consequences. (p. 2-13 thru 2-19) The Corps includes an excellent definition of drought and brief descriptions of historic drought throughout the ACT basin in Exhibit C, the Drought Contingency Plan for the ACT (see pp. E-C-4 and E-C-6). This information should be included in Section 2-06a with a description of how municipalities, industries and other basin constituencies were affected and responded (for example, did municipalities and industrial water consumers issue conservation orders or ration supplies?). Additionally, the section could be re-titled "Storms, Floods, and Droughts." The Corps may also find a U.S.G.S. publication - "Droughts in Georgia" - helpful for identifying other significant drought periods that occurred in the Coosa basin, including the 1924-27 drought. <Footnote 77>

In Chapter III, "General History of the Basin," in addition to information regarding historic drought, the Corps should include history of water quality investigations that took place in the Coosa River basin. For example, the National Resources Committee apparently completed an assessment of the Coosa River in the late 1930s, and the U.S. Public Health Service apparently convened a conference to collect public input after fish kills and citizen complaints about pollution in Lake Weiss in the 1960s. <Footnote 78> Additionally, the Corps should revisit historic agency and Congressional documents and testimony regarding ACT water projects with an eye to drought and water quality references. Including this type of information in the WCM will demonstrate to all basin constituents the basin-wide and historic connections between drought, water quality, and healthy steam flows.

Section 2-10 "Economic Data," should use the most up-to-date population data - from the 2010 Census or estimates- available from the U.S. Census Bureau (p. 2-25). 2010 data is utilized in Section 4-09, "Economic Data," and the data use should be consistent throughout the document. (p. 4-13)

In Section 2-11 "Land Use," what does the term "desert pavement" refer to? (p. 2-28)

Regarding communication (Section 5-06 "Communication With Project;" Section 7-04 "Standing Instruction to Damtender"), we hope that lessons learned about communication and data sharing between the National Weather Service and the Corps during the 2010 Cumberland River flood of record in Nashville, Tennessee have been incorporated into the Mobile District's "Flood Emergency Action Plans" (Section 8-03). <Footnote 79>

Section 7-10 "Hydroelectric Power:" How has the Corps- in consultation with the Southeast Power Administration ("SEPA"), Southeastern Electrical Reliability Corporation ("SERC"), the Southern Company and other parties - evaluated what changes to Corps peak operations and discharges will occur as more base generation sources (that is, coal-fired generators) are retired in the southeast? (p. 7-9)

Footnote 77: U.S. Geological Survey, Droughts in Georgia, U.S. Geological Open-File report 00-380 (October 2000).

Footnote 78: Craig Colten, "Southern Pollution Permissiveness: Another Regional Myth?, Southeastern Geographer 48, 1 (2008): 75-96.

Footnote 79: Communication Breakdowns Led to Confusion on Severity of Nashville Flooding, Te1messean, Oct. 17, 2010, available at http://www.tennessean.com/article/20101017/NEWS01/10170364/Communications-breakdowns-ledto-confusion-on-severity-of-flooding?odyssey=mod|newswell|text|PROJECTS01|s (last visited May 30, 2013).

Response

USACE appreciates the reviewer's suggestions on how to improve the Water Control Manuals. However, USACE has specific guidelines on what should be included in the manuals and those regulations have been followed to produce the current draft documents.

USACE is currently updating the economic data found in the WCMs, as reviewer suggested.

Desert pavement is a surface covered with closely packed, interlocking angular or rounded rock fragments of pebble and cobble size.

Flood Emergency Action Plans are updated periodically to incorporate any improvements necessary.

Future hydropower demands were incorporated in the studies associated with updating the WCMs.

Comment ID 0059.010

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

VII. CONCLUSION

The Corps has not updated its Master Water Control Manual for the ACT Basin since 1951. At this time the Corps has an excellent opportunity, as the Corps points out in its statement of purpose and need, to determine how its projects in the ACT Basin should be managed. To this end, we encourage the Corps to fully consider the appropriateness of the scope of its DEIS, the range of reasonable alternatives considered, and the full impacts of those alternatives. The Corps should improve the scope and depth of its analysis before this EIS is finalized, pursuant to NEPA's requirements.

We look forward to participating in the NEPA process as it moves forward. Thank you for your consideration of these comments. Please contact us if you have any further questions.

Response

USACE has followed all applicable laws in updating the Water Control Manuals and preparing the EIS.

Comment ID 0059.011

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

The Corps should reconsider altering minimum flow requirements for Lake Allatoona and Carters Lake to more closely resemble natural flows and improve water quality downstream of those projects. The Corps has proposed to do this for Carters Lake under proposed Action Zone 1 (non-drought conditions), but it may be possible for the Corps to more closely mimic natural flow variations under Action Zone 2 (drought conditions) as well. It is not clear from the DEIS whether the Corps has considered changing the current minimum flow requirement of 240 cubic feet per second ("cfs") for Carters Reregulation Dam or Allatoona Dam. The minimum flow of 240 cfs for these projects represents the annual 7Q10 flow, which is used for measuring water quality and waste assimilation under the Clean Water Act but is generally not considered protective of aquatic life <Footnote 22> The Corps should more thoroughly analyze whether this minimum flow threshold is appropriate or ideal given that water quality and fish and wildlife conservation are authorized purposes for both Lake Allatoona and Carters Lake.

Footnote 22: In recognition of the importance of variable stream flow for aquatic life, Georgia has adopted an interim instream flow policy that incorporates a monthly 7QI0 requirement for surface water withdrawal permits, to replace the previous annual 7QI0 requirement. See Georgia DNR Water Issues White Paper, Appendix B (May 2001), available at http://www .georgiaepd.org/Files_PDF/gaenviron/GADNR_InterimInstreamFlowProtectionStrategy_2001.pdf.

Response

Improvement of flow conditions downstream of all USACE dams in the ACT Basin for fish and wildlife benefit as part of the WCM plan update have been the subject of ongoing coordination with the USFWS since 2003. Thus, improvement of downstream flow conditions, consistent with other project purposes, has been the subject of extensive consideration and dialogue with the USFWS and other interested parties for a number of years. The reregulation dam downstream of Carters Lake inherently provides the flexibility and capacity to modify releases to the Coosawattee River to more closely mimic natural flows for fish and wildlife. There is no similar mechanism downstream of Allatoona Lake to reregulate flows, and the hydropower units at the project cannot physically be operated to mimic a more natural flow regime as recommended by USFWS. Other measures to modify downstream flows during normal operations, such as using the spillways in lieu of hydropower generation, are not feasible due to hydropower peaking limitations.

Millers Ferry Lock and Dam and R.F. Henry Lock and Dam act essentially as run-of-river projects, meaning that they pass releases from upstream projects and local inflows through the hydropower units in a peaking mode on a daily, or near daily, basis. Because of the run-of-river nature of these projects, the overall effects of hydropower generation at these projects on the natural flow regime is much less dramatic, and no potential changes to operations that would provide a measurable improvement in downstream fish and wildlife conditions, on balance with other project purposes, have been determined to be justified. Claiborne Lock and Dam has an uncontrolled spillway; upstream releases and local inflows simply pass over the dam without modification.

Comment ID 0059.012

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

The Corps should reconsider its decision to exclude from its alternatives consideration any changes to water supply allocations in the ACT Basin. Water supply is an authorized purpose of both Lake Allatoona and Carters Lake. We are aware of at least one recent request, by the State of Georgia, for increased water supply storage in Lake Allatoona. While we do not take a position on the appropriateness of that request, it illustrates that the Corps is ignoring alternatives to water management operations in the ACT Basin by not addressing potential changes to water supply in its alternatives analysis. The Corps' water supply allocation decisions in fact have important implications for the entire ACT Basin. For example, in 2012, United States District Court Judge Bowdre dismissed Alabama's lawsuit against the Corps because there was no final agency action to challenge. <Footnote 23> Through the lawsuit, Alabama attempted to limit withdrawals of water from the ACT Basin in Georgia, and the judge's decision hinged on what actions the Corps had undertaken up until that time. Now, however, the Corps is moving towards final action in updating its Master Manual, and this is the appropriate time to examine water supply allocations within Corps projects in the basin. An analysis of water supply alternatives is also warranted because of the potential indirect impacts such decisions may have on the development of other water supply reservoirs in or around the ACT Basin, particularly in the Metro Atlanta region of Georgia. <Footnote 24>

Footnote 23: Alabama v. U.S. Army Corps Eng'rs, No. I:90-cv-0 1331-KOB (N.D. Ala. dismissed July 3, 2012).

Footnote 24: As in the ACT Basin, the Corps' decisions and actions in the Apalachicola-Chattahoochee-Flint Basin have significant implications for water supply allocation among states. See. e.g., Florida v. U.S. Army Corps Eng'rs (In re MDL-1824 Tri-State Water Rights Litig.), 644 F.3d 11 60 (II th Cir. 20 II) (holding water supply is authorized of Lake Lanier).

Response

A reallocation of storage at Allatoona Lake for water supply is outside the scope of the WCM update process. Any request for a reallocation of storage for water supply would need to be addressed after the completion of the WCM update process.

Comment ID 0059.013

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

The Corps should also consider in its alternatives analysis whether it should abandon certain minimum flow and operational requirements aimed at maintaining navigation along the Alabama River. In its alternatives analysis, the Corps only considers options to support navigation, even though commercial navigation at Alabama River projects has declined in recent years. FWS suggested in its 2010 Planning Aid Letter that the Corps conduct "a cost benefit analysis comparing the operation and maintenance of the current navigational channel and system of locks and dams on the Alabama River versus the costs and economic benefits associated with maintaining the same system for maximum environmental benefits." <Footnote 25> FWS also suggested that "[a] summary of the number of commercial barges and other craft that have and are currently utilizing the navigational system should be made available as part of the DEIS." <Footnote 26> We concur in these suggestions. The Corps must incorporate current commercial barge data into its alternatives analysis and consider the full range of reasonable navigation operation alternatives. Similarly, the Corps must analyze all direct, indirect, and cumulative impacts of proposed navigation operations and dredging that may result from those operations in the DEIS impacts section.

Footnote 25: U.S. Fish and Wildlife Service, Planning Aid Letter (May 3, 20I0), at p. 6.

Footnote 26: Id.

Response

Navigation is an authorized project purpose of the ACT projects and as such cannot be abandoned. The impacts of the proposed action and other alternatives have been evaluated in compliance with NEPA in this EIS. Impacts due to dredging and other activities to maintain the authorized navigation channel in the Alabama River have been previously evaluated in the Final EIS for the Alabama-Coosa Rivers, Alabama and Georgia (Operation and Maintenance)(USACE 1976) and the Final Supplement to the same document (USACE 1987).

In general, releases from USACE projects in the ACT basin that meet other project purposes (e.g., hydropower, water quality, etc.) collaterally support downstream navigation flow needs. With the establishment of a drought management plan for the ACT basin under the proposed action alternative, releases would be limited when one or more of the drought triggers established under the plan (low state line flow, low basin inflow, or low composite storage in APC lakes) has been reached. During these periods, flow will not likely be sufficient to sustain a 7.5 ft or 9 ft deep navigation channel below Montgomery. At all other times, flow should be sufficient to support navigation. Thus, the plan as proposed balances requirements for navigation with the other authorized project purposes. The plan does not support navigation releases at the expense of other purposes, but rather it encourages conservation of reservoir storage when drought conditions emerge.

Comment ID 0059.014

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

FWS has suggested a number of additional management alternatives in its correspondence with the Corps that merit additional attention in the Corps' alternatives selection. For example, the Corps should consider applying a more adaptive management approach to its ACT operations. <Footnote 27> This would involve including in the WCMs plans for additional and ongoing research and monitoring of project impacts.

Footnote 27: U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at pp. 28-29.

Response

USACE disagrees. Although USFWS provided generalized aspects of a water management alternative, they did not provide a complete alternative that could be modeled. For example, although an adaptive management approach has been suggested, no water management plan that provides operational guidelines was provided. The WCM's are periodically reviewed and updated as needed per USACE regulations. USACE will continue to coordinate with stakeholders, including USFWS, during drought and other exceptional circumstances to balance all project purposes. However, it is outside the scope of the current project to consider structural modifications or additional studies.

Comment ID 0059.015

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

The Corps should consider the possibility of making structural changes to certain projects in the ACT Basin to improve downstream water quality. <Footnote 28>

Footnote 28: Id. at 21.

Response

With respect to structural modifications to projects to improve water quality or other conditions, Section 4.6, pages 4-5 and 4-6, of the EIS describes structural modifications as being outside of the scope of the WCM update. Other authorities that exist that could address degraded environmental conditions from past project-related activities include: Section 216 of the River and Harbor and Flood Control Act of 1970 (Review of Completed Projects); Section 1135 of WRDA 1986, as amended (Project Modifications for Improvement of the Environment); and Section 206 of 7 WRDA 1996, as amended (Small Aquatic Ecosystem Restoration Projects).

Comment ID 0059.016

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

It should consider additional measures to improve fish and aquatic organism passage beyond current operations at Allatoona Lake, Claiborne Lock and Dam, and Millers Ferry Lock and Dam. <Footnote 29>

Footnote 29: Id. at 24-26.

Response

The referenced footnote refers to the USFWS FWCA Report. USACE considered the comments provided in the referenced December 2012 FWCAR. USACE provided a response to those comments in a letter dated February 8, 2013. Both documents may be found in Appendix B, Pertinent Correspondence. As discussed in that response, the proposed action is limited to updating the USACE water management guidelines for managing the storage and release of water from USACE reservoirs and reservoirs owned by the Alabama Power Company over which USACE has flood risk management responsibility. Most of the conservation measures recommended in the FWCAR are outside the scope of the current project. Other recommendations are potentially within scope but cannot be practicably implemented without severely impacting authorized project purposes. The proposed action represents an approach that balances all project purposes and would provide improvements for the aquatic environment. USACE currently is operating Claiborne and Millers Ferry locks for fish passage in coordination with the USFWS, the Nature Conservancy and other basin stakeholders and will continue to cooperate in such efforts in the future.

Comment ID 0059.017

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

Regarding temperature, the Corps should gather more data on temperature below its dams and compare it with what would occur in an unimpaired flow scenario. <Footnote 30> If these figures differ significantly, FWS recommended that the Corps consider alternatives that would more closely resemble unimpaired temperatures. <Footnote 31>

Footnote 30: See Id. at 21-22.

Footnote 31: See Id. The Corps should incorporate the FWS analysis of DO and temperature in the ACT Basin into its DEIS environmental impacts section. See id. at 20-24.

Response

USACE is using the best available scientific data in preparing the WCM update. There is no legal obligation meet unimpaired flow conditions and therefore comparisons with that scenario would yield little useful information. USACE considered the USFWS analysis of DO and temperature as they provided in the FWCAR and USACE provided an appropriate response. In regards to DO, USACE stated "The Service recognizes that there would be no change caused by the PAA but focuses on known existing and ongoing low DO especially at Lake Allatoona. USACE also recognizes the need for improved downstream DO. However, as part of a water management strategy that could be written into an operational manual, nothing has been identified that would improve DO." Regarding water temperature, USACE indicated in the response that modeled water temperature decreases during a severe drought would be less than one degree C.

Comment ID 0059.018

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

Allatoona Darn is a hydropeaking operation, meaning that flow below the dam varies between 250 cfs and 7,500 cfs each weekday. <Footnote 32> FWS suggested that the Corps consider alternatives that more closely mimic unimpaired flow releases from Corps projects. <Footnote 33> FWS also suggested that the Corps implement a non-peaking window for hydropower production at Lake Allatoona during the time of year most sensitive for aquatic organisms downstream of the project. We support these recommendations, which would help to comprise the robust alternatives analysis required under NEPA.

Footnote 32: U.S. Fish and Wildlife Service, Planning Aid Letter (May 3, 2010), at pp. 25-26.

Footnote 33: Id. at 26; U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at pp. 18-20.

Response

Hydropower is an authorized purpose of the project and the facility is designed as a peaking plant. Peaking hydropower provides the greatest economic return. Although the Proposed Action Alternative would result in an insignificant decrease (approximately 0.6%) in hydropower production, the authorized project purpose would continue to be met year round. Any non-peaking hydropower production window would necessarily eliminate that project purpose during that time period. Such a result would constitute a significant impact on that project purpose and such alternatives were eliminated from the scope of the study.

Comment ID 0059.019

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

The Corps should thoroughly analyze the cumulative impacts of its own projects coupled with the ongoing federal relicensing process of APC dams in the ACT Basin, along with the cumulative effects of those dam operations on the overall health of the river system. As the Corps has already pointed out in its DEIS, "[f]low conditions [in the Alabama River at Montgomery, Alabama] are principally affected by water management activities at APC projects upstream on [the Coosa and Tallapoosa Rivers]." <Footnote 56> The environmental impacts of the dams along the Coosa River are particularly significant and deserve a thorough analysis within the Corps' DEIS, particularly since the Corps operates projects both above and below the APC dams. In a March 2013 report, the World Wildlife Federation highlighted the Coosa River as "the most developed river in Alabama" with "one of the largest extinction rates in North America during the 20th century, with the extinction or extirpation of nearly 40 freshwater species." <Footnote 57> It is not possible for the Corps to analyze the impacts of updating the ACT WCM on the whole ACT Basin without considering the cumulative impacts of water management at APC projects in conjunction with management of the Corps projects. As one example, the EIS should include a more thorough analysis of the potential environmental consequences of APC raising the winter pool levels of Weiss and Logan Martin Lakes, which APC has proposed as part of the FERC relicensing process. In its DEIS, the Corps has eliminated this possibility from its analysis in an effort to improperly narrow the scope of its DEIS.

Footnote 56: ld. at 6-58.

Footnote 57: World Wildlife Federation, The Seven Sins of Dam Building 10 (2013) (internal quotation marks omitted), available at http://awsassets.panda.org/downloads/seven _sins_ of_ dam_ building_ wwf.pdf.

Response

APC proposed guide curve revisions for Weiss and Logan Martin Lakes on the Coosa River and Lake Martin on the Tallapoosa River are not considered to be reasonably foreseeable for purposes of the cumulative impacts analysis for the ACT WCM update. The June 2013 FERC license for the APC Coosa River projects, issued following public review of the draft ACT WCM EIS, did not include revised winter guide curves for Weiss and Logan Martin Lakes. APC has proposed guide curve revisions for Lake Martin, currently under an ongoing FERC relicensing process, but those revisions were not included in the proposed action in the June 2013 draft FERC EIS. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment ID 0059.020

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

Additionally, FWS pointed out in its Draft Fish and Wildlife Coordination Act Report that several reservoirs in various planning and construction stages need to be thoroughly discussed in the EIS, including a discussion of their cumulative impacts on the watershed. According to FWS, these include: I) Hickory Log Creek Reservoir, 2) Russell Creek Reservoir, 3) Richland Creek Reservoir, 4) Shoal Creek Reservoir, and 5) Calhoun Creek Reservoir. <Footnote 58> The Corps includes some discussion of proposed reservoirs, but must ensure that it fully analyzes all reservoirs proposed for the ACT Basin and their cumulative impacts on the watershed, including growth-inducing impacts, in combination with the Corps' regulation of its projects in the ACT Basin. The Corps should also ensure that it has included in its analysis each proposed reservoir in the ACT Basin; for example, there is currently no analysis of the proposed Calhoun Creek Reservoir in the DEIS. The City of Dawsonville's proposed Calhoun Creek Reservoir would withdraw water from the Etowah River and the Chestatee River and ultimately transfer it to the Etowah or Chattahoochee River basins. In May 2013, the City of Dawsonville applied for $20 million from the Georgia Governor's Water Supply Program to acquire real property for the reservoir. <Footnote 59> These additional reservoirs will have significant cumulative impacts on the ACT Basin as a whole, particularly the upper portion of the basin.

Footnote 58: U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at p. 14.

Footnote 59: To access application materials, see Georgia Environmental Finance Authority, GEFA News: Governor's Water Supply Program Applications Received, GEFA (May 9, 2013), https://www.gefa.org/index.aspx?recordid=557&page=50 (last visited May 30, 2013).

Response

USACE has evaluated the impacts of the proposed reservoirs based on the extent that information is available about each one. That evaluation is presented in Section 6.9. In general, little definitive information is available regarding the various regional reservoirs in the basin with the exception of Hickory Log Creek reservoir, which is currently constructed. Table 2.1-6 presents known reservoirs either constructed or with a pending permit. Hydrology of the existing reservoirs has been captured in the USACE RES-SIM analysis. Final size and operational parameters of the unpermitted reservoirs is not known. In Table 2.1-20 all known potential reservoir locations are presented based on past studies. However, no information is available as to whether such reservoirs are actively being considered by any entity.

Comment ID 0059.021

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

Similarly, the Corps should ensure that it includes in its cumulative impacts discussion a thorough analysis of reasonably foreseeable requests for additional water supply storage in Lake Allatoona or Carters Lake. For example, the Corps should include a discussion of Georgia's recent request for additional water supply from Lake Allatoona within its alternatives analysis. Increasing water supply storage availability in Lake Allatoona may have far less detrimental impact to the environment than the cumulative impact of the many current proposed or planned water supply reservoirs in the ACT Basin. Similarly, the Corps should include a robust discussion of impacts of existing and proposed interbasin transfers into and out of the ACT Basin on the basin as a whole and the Corps' management alternatives.

Response

The proposed action for the ACT WCM update does not include the pending request for reallocation of additional storage from Allatoona Lake to water supply. However, the sensitivity of the proposed action alternative to the effects of this potential reallocation action and other expected future water supply demands in the basin was evaluated in additional model runs conducted following coordination of the draft EIS. The results of the sensitivity analysis are presented in Section 6 (Environmental Consequences) of the final EIS. The cumulative effects analysis (Section 6.9) was also updated to reflect this additional information.

Comment ID 0059.022

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

The Corps should address in its cumulative impacts section the impacts to the Mobile-Tensaw Delta and Mobile Bay from the Corps' operations in the ACT Basin in conjunction with its operations in the Black Warrior-Tombigbee River Basin. Each of these systems contributes to the flow and water quality of the Delta and Mobile Bay and should be analyzed together in the cumulative analysis section. In the DEIS, the Corps states that "[f]low alteration is not without potential effects on the estuary, especially on commercial fisheries, but the data on that impact are mixed." <Footnote 60> The EIS must explain what specific data it is referring to and why the results are mixed. The Corps should additionally explain its reasoning for why it summarily finds that "[t]he proposed updates to the ACT Master Manual are likely to have inconsequential effects on the ecological function of the Mobile Bay estuary." <Footnote 61 >

Footnote 60: U.S. Army Corps of Engineers, Draft Environmental Impact Statement (2013), at 6-195.

Footnote 61: Id.

Response

USACE believes that the Proposed Action Alternative for update of the ACT WCM would have an overall negligible effect on resources and ecological function of the Mobile-Tensaw Delta and Mobile Bay as compared to the No Action Alternative (existing conditions/current operations). As pointed out in Section 2 of the draft EIS, the ACT Basin contributes roughly only 50 percent of the total flow in the Mobile River below the juncture of the Alabama and Tombigbee Rivers. USACE projects in the Black Warrior-Tombigbee River basin operate as run-of-river projects with no conservation storage and little ability to manage or modify the flow regime. Modeling of the ACT Basin for the No Action Alternative and the Proposed Action Alternative reveal that differences in the flow regime at the most downstream points in the basin (e.g., Claiborne Lock and Dam) are generally negligible. For these reasons, the Mobile-Tensaw Delta and the Mobile Bay further downstream are not likely to be affected any differently by the Proposed Action Alternative than current water management operations in the ACT Basin. Pertinent paragraphs in Section 6.9 of the EIS have been revised and updated to in response to this comment.

Comment ID 0059.023

Author Name: Joy, Lauren, Rogers, Gilbert/

Organization: Southern Environmental Law Center (SELC)

Comment

The Corps should also fully evaluate as part of the cumulative impacts analysis any and all plans, proposals, or permits for additional hydropower facilities for any of its projects in the ACT Basin. For example, FERC has granted a preliminary permit to Northbrook Energy, LLC to pursue new hydropower production at Carters Dam. <Footnote 62> In the past, there have also been proposals to add private hydropower projects to Claiborne Lock and Dam, which does not currently have a hydropower facility. <Footnote 63> This is important to the cumulative impacts discussion because hydropower facilities, particularly peaking hydropower facilities, can degrade downstream fish and wildlife habitat and water quality, and impair the passage of migratory fishes. <Footnote 64>

Footnote 62: Id. at 2-28.

Footnote 63: According to FWS, FERC has already issued a preliminary permit to Hydro Green Energy LLC to study the possible addition of hydropower to Claiborne Dam. U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at p. 19.

Footnote 64: See. e.g., U.S. Fish and Wildlife Service, Draft Fish and Wildlife Coordination Act Report (Dec. 21, 2012), at p. 19.

Response

The potential for future non-Federal hydropower development at USACE projects in the ACT basin is discussed in Sections 2.1.1.1.4.1 and 2.1.1.1.4.16 in the EIS. The cumulative impacts analysis specifically addresses potential for non-Federal hydropower development, both in the Executive Summary (page ES-68) and in Section 6.9. These sections have been updated in the final EIS to reflect the most current information available regarding the status of non-Federal hydropower development activities at Claiborne Lock and Dam and the Carters Reregulation Dam.

The USACE evaluation, based on available information, indicates that cumulatively there would be little to no impacts to flow and water quality conditions downstream of those projects. In addition, there would a separate NEPA evaluation required as part of any final approval of such a project. As noted in the comment and in the EIS, there have been several proposals for private hydropower development at USACE projects and it is not clear when or if any specific proposal would be implemented.

Comment Number: 2013-0006

Name: Thomas Foster

Affiliation: Lake Allatoona Association

Date: 3/24/2013 11:28:42 PM

Address:
[redacted]
Acwotrh, GA 30101

Attachments: None.

Comments:

The main purpose of Lake Allatoona has changed over the last 60 years. It was built for flood control and power generation but now serves a much more important function - it is a drinking water reservoir serving approximately one million people. This purpose transcends flood control and power generation, especially since there has been no threat of flooding for the past 33 years that I have been familiar with and using the lake - even when the lake rose 15ft. in October during storms 5-6 years ago to 855.

The lake has been paid for many times over with the amount of power generated over the last 60+ years. The most essential demand on the lake is now water quantity and quality as a drinking water resource. How can the COE ignore this precedence when over a million people depend on this lake for their drinking water supply? This far outweighs its original purpose. Water quantity and quality go hand in hand. It makes no sense to draw the lake down 17ft, in the winter when you have the same amount of pollution and runoff coming in when it is at full pool. The development around the lake in the last 15 years alone dictate changes in the way the lake is managed.

The Rule Curve which dictates lake levels at different times of year is outdated and there is no reason to operate the lake the same way as 50 -60 years ago.

Most people would rather pay a little more on their electric bill than see the lake being pulled down in June and July to generate power. They would rather be seeing better water quality coming to their home and not have to worry about greater concentrations of pollution, especially types the water treatment plant cannot remove(hydrocarbons,leachate from landfills, urine,prescription drugs, certain bacteria, etc.). The politicians use buzz words like highly treated wastewater being returned to the lake - that is not happening- The pollutants mentioned above are passing right through the wastewater plant and right back to the lake.

I fail to understand why other states feel they are entitled to water from Lake Allatoona during drought conditions - we are not manufacturing water on Lake Allatoona! If there is no rain or inflow to the lake, there should not be more water discharged than is coming in - power generation should be curtailed in times of drought to maintain water quality.

The COE was commissioned to manage the lake for a different purpose. It is now time to recognize it must serve a greater purpose and manage it as a drinking water reservoir for one million people.

Lake Martin has no right to request raising their lake 2-3ft. at the sacrifice of lowering Allatoona. As we monitored lake levels and generation schedules last year, was there any reason Lake Logan Martin was down only 1 ft. while Allatoona was down 5ft. during drought conditions? Is the populace of Logan Martin and Lake Martin greater or more important than the populace that depends on Allatoona?

What right does Gwinnett County have to request water from Lake Allatoona when they have Lake Lanier as a resource. Why would Governor Nathan Deal even consider that proposition? Has anyone considered less development when resources like water are not available? Should the people that depend on Allatoona for their drinking water be sacrificed for people deemed more important?

Water is too important to become a political football. One million people have a significant voice.

Comment ID 0006

Comment ID 0006.001

Author Name: Foster, Thomas

Organization: Lake Allatoona Association

Comment

The main purpose of Lake Allatoona has changed over the last 60 years. It was built for flood control and power generation but now serves a much more important function - it is a drinking water reservoir serving approximately one million people. This purpose transcends flood control and power generation, especially since there has been no threat of flooding for the past 33 years that I have been familiar with and using the lake - even when the lake rose 15ft. in October during storms 5-6 years ago to 855.

The lake has been paid for many times over with the amount of power generated over the last 60+ years. The most essential demand on the lake is now water quantity and quality as a drinking water resource. How can the COE ignore this precedence when over a million people depend on this lake for their drinking water supply? This far outweighs its original purpose. Water quantity and quality go hand in hand. It makes no sense to draw the lake down 17ft, in the winter when you have the same amount of pollution and runoff coming in when it is at full pool. The development around the lake in the last 15 years alone dictate changes in the way the lake is managed.

The Rule Curve which dictates lake levels at different times of year is outdated and there is no reason to operate the lake the same way as 50 -60 years ago.

Response

One of the main purposes for updating the WCMs is to re-evaluate operations due to changes within the basin. Revisions are then made where warranted to maintain a balanced operation to meet all authorized project purposes.

Comment ID 0006.002

Author Name: Foster, Thomas

Organization: Lake Allatoona Association

Comment

Most people would rather pay a little more on their electric bill than see the lake being pulled down in June and July to generate power. They would rather be seeing better water quality coming to their home and not have to worry about greater concentrations of pollution, especially types the water treatment plant cannot remove (hydrocarbons, leachate from landfills, urine, prescription drugs, certain bacteria, etc.). The politicians use buzz words like highly treated wastewater being returned to the lake -that is not happening- The pollutants mentioned above are passing right through the wastewater plant and right back to the lake.

Response

Hydropower generation is an authorized project purpose. Wastewater treatment and discharge criteria are regulated by the State.

Comment ID 0006.003

Author Name: Foster, Thomas

Organization: Lake Allatoona Association

Comment

I fail to understand why other states feel they are entitled to water from Lake Allatoona during drought conditions - we are not manufacturing water on Lake Allatoona! If there is no rain or inflow to the lake, there should not be more water discharged than is coming in - power generation should be curtailed in times of drought to maintain water quality.

The COE was commissioned to manage the lake for a different purpose. It is now time to recognize it must serve a greater purpose and manage it as a drinking water reservoir for one million people.

Lake Martin has no right to request raising their lake 2-3ft. at the sacrifice of lowering Allatoona. As we monitored lake levels and generation schedules last year, was there any reason Lake Logan Martin was down only 1 ft. while Allatoona was down 5ft. during drought conditions? Is the populace of Logan Martin and Lake Martin greater or more important than the populace that depends on Allatoona?

What right does Gwinnett County have to request water from Lake Allatoona when they have Lake Lanier as a resource. Why would Governor Nathan Deal even consider that proposition? Has anyone considered less development when resources like water are not available? Should the people that depend on Allatoona for their drinking water be sacrificed for people deemed more important?

Water is too important to become a political football. One million people have a significant voice.

Response

Comment noted. USACE projects are multipurpose projects and are operated to meet all authorized project purposes in a balanced manner.

PUBLIC COMMENTS
ABOUT DRAFT ACT WATER CONTROL MANUAL AND
DRAFT EIS TO BECOME PART OF PUBLIC RECORD

* * * * * * *

Held at the Old Pitman Theater, Broad Street, Gadsden, Alabama, on the 27th day of March, 2013, at 4:00 p.m.

REPORTED BY:
Robin Reynolds, CCR
Board Certified Court Reporter

MR. MIKE RILEY:

I'm Mike Riley, R-I-L-E-Y. And I'm the President of Logan Martin Lake Protection Association.

And the comment that I would like to make would be that LMLPA very much would love to see the variance on Logan Martin raised two feet at winter drawdown, and that we are going to pursue that further with Alabama Power and advise the Corps of Engineers of us doing so.

Comment ID 0019

Comment ID 0019.001

Author Name: Riley, Mike

Organization: Logan Martin Lake Protection Association

Comment

I'm Mike Riley, R-I-L-E-Y. And I'm the President of Logan Martin Lake Protection Association.

And the comment that I would like to make would be that LMLPA very much would love to see the variance on Logan Martin raised two feet at winter drawdown, and that we are going to pursue that further with Alabama Power and advise the Corps of Engineers of us doing so.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Logan Martin Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

PUBLIC COMMENTS
ABOUT DRAFT ACT WATER CONTROL MANUAL AND
DRAFT EIS TO BECOME PART OF PUBLIC RECORD

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Held at the Old Pitman Theater, Broad Street, Gadsden, Alabama, on the 27th day of March, 2013, at 4:00 p.m.

REPORTED BY:
Robin Reynolds, CCR
Board Certified Court Reporter

MR. WILLIAM JIMMY COPELAND:

Located at [redacted] Rainbow City, Alabama. On Neely Henry shore. I'm a member the Neely Henry Lake Association. I've worked with the Lake Association in addressing the re-licensing with Alabama Power on getting the FERC re-licensed, Federal Energy Regulatory Commission.

And we've worked on that for about five years. And they still haven't got the license, waiting on this environmental impact statement to be approved. And all I want to say is, I am very familiar with the revised Corp information, the manual, and the revised lake level for Neely Henry. On the lake level for Neely Henry is 507 in the winter and 508 in the summer. And we have tested that out for decades, and it's worked, and nobody has got flooded out as a result. It's increased available water and recreation. It's a win-win for everybody. There is no downside, no bad environmental impacts or anything.

So I just would like to see them get on with the program, get the license to Alabama Power Company, and approve this environmental impact statement, revise those temporary curves that we have been operating on for about ten years, over ten years now, and get on with the show.

Comment ID 0021

Comment ID 0021.001

Author Name: Copeland, William

Organization: NEELY HENRY LAKE ASSOCIATION

Comment

I'm a member of the Neely Henry Lake Association. I've worked with the Lake Association in addressing the re-licensing with Alabama Power on getting the FERC re-licensed, Federal Energy Regulatory Commission.

And we've worked on that for about five years. And they still haven't got the license, waiting on this environmental impact statement to be 2 approved. And all I want to say is, I am very familiar with the revised Corp information, the manual, and the revised lake level for Neely Henry. On the lake level for Neely Henry is 507 in the winter and 508 in the summer. And we have tested that out for decades, and it's worked, and nobody has got flooded out as a result. It's increased available water and recreation. It's a win-win for everybody. There is no downside, no bad environmental impacts or anything.

So I just would like to see them get on with the program, get the license to Alabama Power Company, and approve this environmental impact statement, revise those temporary curves that we have been operating on for about ten years, over ten years now, and get on with the show.

Response

Comment noted. The FERC license for Alabama Power Company Coosa River projects has now been granted with the revised lake level for the H. Neely Henry project incorporated.

PUBLIC COMMENTS
ABOUT DRAFT ACT WATER CONTROL MANUAL AND
DRAFT EIS TO BECOME PART OF PUBLIC RECORD

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Held at the Old Pitman Theater, Broad Street, Gadsden, Alabama, on the 27th day of March, 2013, at 4:00 p.m.

REPORTED BY:
Robin Reynolds, CCR
Board Certified Court Reporter

MR. HAP BRYANT:

Located at [redacted] [redacted] Southside, Alabama.

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I'm in the Neely Henry Lake Association. My comment is the Corp is doing a wonderful job. We are well pleased and we'll real proud of the winter water level variance in the flow for the wintertime. It has worked out and hs been 100 percent win-win for everybody.

And our only concern is future dams that Georgia is building on Etowah and Carter -- whatever river goes into Carter. They've got a lot of it. And they also interbase and transfer of water. They are doing that out of Altoona feeding Marietta. It's been going on for years.

Comment ID 0022

Comment ID 0022.001

Author Name: Bryant, Hap

Organization: NEELY HENRY LAKE ASSOCIATION

Comment

I'm in the Neely Henry Lake Association. My comment is the Corp is doing a wonderful job. We are well pleased and we'll real proud of the winter water level variance in the flow for the wintertime. It has worked out and has been 100 percent win-win for everybody.

And our only concern is future dams that Georgia is building on Etowah and Carter -- whatever river goes into Carter. They've got a lot of it. And they also interbase and transfer of water. They are doing that out of Altoona feeding Marietta. It's been going on for years.

Response

Comment noted. Water resource projects under the purview of the state of Georgia and local government jurisdictions in Georgia (such as, requests for new or increased storage reallocation in existing reservoirs, new reservoirs, or interbasin transfers) are beyond the scope of the proposed ACT WCM update process. However, the cumulative effects of the Proposed Action Alternative along with other present and reasonably foreseeable water resource projects in the ACT Basin by others are discussed in Section 6.10 of the EIS.

Comment Number: 2013-0024

Name: Kelly Stephens

Affiliation: Neely Henry Lake Association

Date:

Address:
[redacted]
Gadsen, AL 35901

Attachments: None.

Comments:

First, I would like to express my appreciation for the Corps' support for making permanent 507' winter pool level for Neely Henry Lake. This is a positive for our area in economic and recreational terms, as well as for property values. Also, I want to complement the Corps on its maintenance of high quality facilities on the reservoirs it manages. Finally, I want to say that I appreciate what a daunting task it is to manage, to the satisfaction of all water users, the flows and water levels on the river systems and reservoirs that the Corps manages, especially with the variability of the weather.

Comment ID 0024

Comment ID 0024.001

Author Name: Stephens, Kelly

Organization: NEELY HENRY LAKE ASSOCIATION

Comment

First, I would like to express my appreciation for the Corps' support for making permanent the 507' winter pool level for Neely Henry Lake. This is a positive for our area in economic and recreational terms, as well as for property values. Also, I want to complement the Corps on its maintenance of high quality facilities on the reservoirs it manages. Finally, I want to say that I appreciate what a daunting task it is to manage, to the satisfaction of all water users, the flows and water levels on the river systems and reservoirs that the Corps manages, especially with the variability of the weather.

Response

Comment noted.

Lake Allatoona Association
Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

General Guidance

Background
The Water Control Manual (WCM) is the Corps' guideline for the management of Lake Allatoona. The Corps writes the Manual with input from all interested parties (stakeholders). The Manual becomes operationally sacrosanct, is followed closely and/or used as a justification for actions or inaction. The Manual is infrequently updated. A stated reason for the infrequent updates is that proposed changes in Lake management must be scrutinized in an Environmental Impact Study (EIS). The EIS process is costly and that cost is used by the Corps as a principal reason for maintaining the status quo in lake operations.

The Lake Allatoona Association has been excited at the prospect that an update to the WCM is in progress and that the supporting EIS was undertaken and funded. The draft WCM and the draft EIS are now available for review and comment. Of concern is that the proposed operational changes in the management of the lake are minimal and, as a result, the EIS is very narrow in scope.

However, the LAA believes that this is a good opportunity for those who care about the Lake to let the USACE know what they think and to ask pointed questions that the USACE must answer in this legally-required, formal process. Hopefully, we can take advantage of this once-in-twenty-year opportunity to find out why the Corps does things the way that it does.

In no way, shape, or form does the LAA intend to recommend any changes that would increase the risk of flooding to downstream communities. We believe that, using current information and modern technology that the USACE could greatly improve its management of the Lake, primarily through the better management of the water level.

The USACE's Timeline

- April 2013 – DEIS Public Comment Period
- Summer 2013 – Publish final EIS
- Summer 2013 Record of Decision signed and Master Manual submitted for approval
- October 2013 – Master Manual approval

How to Comment

USACE invites all interested parties to submit comments. The public comment period began on March 1st and will end after 60 days (we assume that date is April 29th). Comments may be submitted via the following methods:

- Onsite at open houses through comment cards or the court reporter. The open houses will be as follows:
  - Georgia
    - Monday, March 25: 5:00 pm–8:00 pm at Cobb Conference Center, 755 Cobb Place Blvd, NW, Kennesaw, GA 30144
    - Tuesday, March 26: 5:00 pm–8:00 pm at The Forum Civic Center, 2 Government Plaza, Rome, GA 301901
  - Alabama
    - Wednesday, March 27: 4:00 pm–7:00 pm at the Senior Activity Center, 623 Broad Street, Gadsden, AL 35901
    - Thursday, March 28: 5:00 pm–8:00 pm at Auburn University-Montgomery, Center for Lifelong Learning, 75 Techna Center Drive, Montgomery, AL 36117
- Digitally by email or on the ACT Master Water Control Manual Update page: http://www.sam.usace.army.mil/Missions/PlanningEnvironmental/ACTMasterWaterControlManualUpdate
- By letter addressed to: Commander, U.S. Army Corps of Engineers, Mobile District, Attn: PD-EI (ACT-DEIS), P.O. Box 2288, Mobile AL 36628

Lake Allatoona Association

Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Economics & Jobs

Outline

The USCOE states that Allatoona generates an estimated 250 million dollars annually from business around the Lake. This is based on their historic draw down because business is negatively impacted by a limited recreational period. Extended recreational periods would substantially enhance upon the economics around to Lake to include more dollars generated for marinas, bait and tackle shops, gas stations, restaurants. All of these improvements taken together would generate what we need - JOBS.

Comments

- The new Draft Water Control Manual (WCM) states that Water Management Personnel are aware of recreational effects caused by reservoir fluctuations but there the WCM provides no specific requirements to maintain recreational levels. Unfortunately, other project functions usually determine releases and resulting lake levels.
- The USCOE in the Draft WCM expresses Impact Lines which are Lake levels that impact recreational pool levels, with negative impacts defined by the USACOE as follows:
    - Initial Impact Line (837 feet): recreational usage and the economy begin to feel the impact.
    - Recreational Impact Line (835 feet): all swim areas will be exposed. Two Boat Ramps will be closed. Marina business will be severely reduced.
    - Water Access Impact Line (828 feet): most severe effects on recreation. Half of the boat ramps will be closed. There will be hazards to navigation. Marinas will experience increased costs of moving docks and some slips will be unusable.
- The USCOE in the new Draft WCM has changed the Fall drawdown to hold the 835 feet from Sept. 5th thru Nov. 15th. Then from Nov. 15th they would draw down to 823 feet by Dec. 31st. The 823 feet would hold until Jan. 16th with a rise to 840 feet by April 30th.
- The economic benefits for the drawdown for Hydropower and Water Supply are in competition with the economic benefits around the Lake for recreational use. This is a double-edged sword. The USACOE should seek to get a more appropriate (greater) return (i.e. market-based) for the water removed for Hydropower and Water Supply.

Questions

1. The extended draw down to 835 feet by Nov. 15th is an improvement, but the USCOE's proposed Recreational Impact Line will cause all swim areas to be closed and will cause all of the marina business to be severely impacted. Why was the Initial Impact Line of 837 feet or even 840 feet until November 15th not recommended?
2. The drawdown in the Draft WCM shows the Lake level from Nov. 15th at 835 feet to 823 feet by Dec. 31st. What reason is there for the Lake to be at 823 feet on Dec. 31st?
3. Since the Dec. 31st 823 feet level is only held until Jan. 16th, why would keeping the lake at a higher level during that time frame be an issue? This higher level would be beneficial for all of the Lake's legislated purposes and would greatly boost areas economics and JOBS.
4. An earlier recreation period would certainly be economically beneficial for businesses around the lake. Why not have the lake at full conservational pool (840 feet) by April 1st?

Lake Allatoona Association

Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Recreation

Outline

The value of the Lake in terms of recreational resources and quality of life has dramatically increased since the 1940's when the Lake was planned. Plans back then placed complete emphasis on the lake's value as to electric power and flood control – very little to no value was assigned to the use of water for quality of life and recreation uses. The four county area of the lake in the early 1950's was a very rural and poor southern Appalachian community made up of less than 100,000 people. Rural electrification was a paramount need for the area. Today, these same counties contain over 1 million people in a densely populated suburban society. The USACE has not changed its operations of the lake to recognize this dramatic shift of value.

During January and February of 2013, over 50 billion gallons of water have been needlessly drained from the lake (on top of at least that amount previously drained-out in December and January for routine winter drawdown) and dumped into the Gulf of Mexico to the benefit of nothing; this has resulted in absolutely wasted water. This happens most every year. The result of this outdated practice is that the Lake's recreational and quality of life uses are quite often dramatically impacted in the dry late-summer months. It is not uncommon for the majority of the Lake's beaches, ramps, and other recreational access points to be inaccessible to the public beginning in late July or early August. This is a travesty and a waste of our national resource.

This lake annually is one of, if not the most, heavily used USACE lakes in the nation. Annual use in most years approaches and, often, exceeds 7 million people. Small changes across a range of USACE operational practices could result in conservation of the wasted spring season water. This conservation would allow for significant improvement in lake levels and recreational uses in the later summer dry season months. Two feet of water retained in April, carefully managed, would provide for two feet higher water level in August and September.

The fact that the lake's 37,000 acres are exempted by the federal government from local property tax assessments means that about $ 3 million has been removed from (primarily) Cherokee and Bartow County tax rolls; that amount would exceed the entire county general fund budgets of those two counties. If this amount was collected at prevailing rates, it would result in elimination of all, or almost all, such county property taxes.

The Lake's counties, in addition to shouldering the financial burden of the lake, should be able to benefit from the enormous quality of life and recreation value of the water that passes through it. The USAE must be directed to give appropriate consideration to the modern-day value of water to our local economy and to change its operations accordingly to preserve the water instead of wastefully dumping it away to the ocean.

Comments

- The USACE states in its draft EIS on the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water in the lake as is possible to provide for extended recreation uses.
- The USACE should immediately conduct a comprehensive financial analysis that would analyze the comparative costs and benefits of water use for local power generation as compared to use for recreation and improved local quality of life.

- The USACE in its draft EIS to its WCM update states that it does not provide navigation releases from Allatoona. That being the case, the USACE should openly provide a full analysis of its past practices in support of Alabama Power Company's (APC) hydro-power release requests, to demonstrate that APC's associated water release practices do not damage recreational benefits by using Allatoona water to support navigation in Alabama.
- The USACE should modernize its daily routine to effectively be proactive in seeking to conserve Lake water in the face of developing drought conditions and seasonal water use demand/benefits, rather than continue its practice of reactive decision-making that wastes water downstream and, thereby, limits recreational uses.
- The USACE should commission a new feasibility study as to the merits of purchasing flood easements in the Cartersville Etowah River corridor to increase flood risk management through increased discharge capacities, allowing for improved dry season recreational uses and also drought-insurance water conservation.
- The USACE should commission a new feasibility study as to the merits of constructing downstream Etowah reregulation storage capacities to increase flood risk management through increased discharge capacities, allowing for improved dry season recreational uses and drought-insurance water conservation.
- The USACE should commission a new feasibility study as to the merits of constructing, downstream from Carter Dam, Oostanaula reregulation storage facilities. This will allow the USACE to increase its ability to manage flood risk, allowing for improved dry season recreational uses and drought-insurance water conservation.
- The USACE should immediately commission a modernized update of its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities and the actual flood event history of the past 60 years. The study should include a detailed analysis of modern-day flood risk management margins as compared to the original 1950 design criteria.
- The USACE should publically disclose, in a format like its 5-week Lake level forecast curves, April-through-September lake levels compared to its shown "historical average elevation", that could have resulted if zero-benefit water releases to the Gulf had not occurred.

Questions

1. Please explain why the 5-week lake level forecast is so routinely way out of line with actual results during the reservoir re-filling season? Please describe in detail how the USACE's daily practices actively use various real-time local weather and hydrographic data to develop its operating decisions as to reservoir outflow decisions to conserve water to the benefit of local area recreational benefits.
2. Please explain, in detail, the specific USACE procedures that are used during the dry season months that result in water conservation decisions that benefit local recreational uses at the expense of downstream (APC) power generation support.
3. In light of the modern-day (huge) value of the lake water, please explain why the USACE Zone 2 management policies (based on historically outdated criteria that give insignificant weight to water supply and recreation needs) are woefully inadequate to conserve water for its highest uses for water supply and to prepare for developing drought conditions?
4. Please provide a cost analysis that demonstrates that the subsidies given to hydropower generation through water discharges are more beneficial than the value of local recreation and quality of life uses from 7 million annual users and hundreds of millions of dollars of local economic potential.
5. Please provide an analysis that shows how much of a subsidy is given to electric companies by virtue of the artificially low (as compared to prevailing peak-season electricity market rates) cost of generated power by the releases of water during the dry season months of July, August and September.

6. Please provide a cost analysis that demonstrates that the subsidies given to the occasional Alabama River barge shipment (rather than being diverted to rail shipments) is more beneficial than the beneficial economic, quality of life and recreational value of the water.
7. How much of Alabama Power's typical request of water releases goes to provide for Alabama River navigation support during the dry season months of July, August and September? How about for 2012?
8. If Alabama Power is approved to raise the level of the Lake Martin reservoir, how will the USACE insure and publically disclose that Allatoona water does not indirectly get used to provide for that capacity, since reduced Tallapoosa River flows would at some point have to be offset by Coosa River flows to meet stated USACE navigational, power generation, and environmental flows?
9. What is the cost per ton expenditure annually by all USACE operations to provide for the barge shipments along the Alabama River between Montgomery and Claiborne Lock? How much water volume is provided annually to support such shipments (separate from M&I contracts and low-flow minimums)?
10. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, as compared to that in the 1950's, please explain why flood risk management criteria and policies do not today provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950.
11. Please provide details as to how the USACE uses and integrates NOAA field data and major weather system forecasting information to conserve water, rather than to just release water needlessly downstream because the rule-curve dictates so.
12. In light of modern weather system forecasting capabilities, please explain why excess early spring inflows should not be used conserve valuable water through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging to drought–period water supply requirements and to routine recreation needs.
13. Please explain why the enormous local economic benefit of Lake water from prospective water supply (at least $500 million annually) and recreation (at least $250 annually) does not justify revaluating decades-dated criteria that sends water downstream for much less beneficial purposes. Why does the USACE not exercise its discretion and seek appropriate beneficial use of such a modern-day valuable asset as the water flowing through Allatoona?

Lake Allatoona Association
Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Environmental Impacts

Outline

There are many significant environmental impacts that result from the USACE management of the Lake and, particularly, the management of the water level. Just two are discussed here.

The greatest concern is that the low water levels in the winter, spring, and fall leave many acres of bare soil exposed for months to rain and wind erosion. This is likely the worst case of exposed soil in the State of Georgia and it is managed by an arm of the federal government. Leaving about 400 acres of barren soil left uncontained for 3 to 5 months each year has a huge detrimental effect to the Lake's water quality. For many months, every rain event causes significant erosion of this exposed soil that is carried towards the center of the Lake. The short-term results include vast plumes of sediment in all parts of the Lake.

Another significant negative impact of the USACE's water level management practices is the concentration of pollutants during the winter, spring, and fall seasons. Unfortunately, there is a significant amount of pollutants in the Lake due to poor management of the lands (drainage basin) surrounding the Lake which results in various pollutants entering the Lake (e.g. herbicides, fertilizers, oils, etc.). When the Lake level is dropped for the large majority of the year, these pollutants are concentrated in the smaller amount of water in the Lake.

Comments

- The Corps eliminates from consideration any changes in the conservation pool level or winter pool level. These two parameters are the most crucial in terms of potential environmental impact. An open assessment of how the Lake could or should be managed must include an assessment of the merits of the historic full pool level and the historic winter pool level.
- The Corps eliminates from consideration any measures that would change the minimum releases or minimum flows to ensure other entities meet federal clean water compliance requirements. This begs the question as to what extent minimum releases and minimum flows were evaluated.
- The Corps eliminates from consideration any measures that would significantly affect hydropower at Allatoona.

Questions

1. In order to manage the Lake in an "optimal" manner, it seems prudent to assess the ramifications of changing the full pool and winter pool levels. They are the most crucial constraints affecting all of the Lake's authorized purposes: recreation, water supply, hydropower, flood control. If these parameters are outside the scope of updating the WCM, how and by whose authority would those parameters be evaluated to ensure they are set at reasonably optimal levels?
2. The only significant change in the year-round water level of the Lake contained in the draft WCM Alternative Plan G (Proposed Action Alternative) is a revision to guide curves and action zones that will result in a phased fall drawdown which would result in a slight increase in water level in the fall and winter. Was a full range of changes to the guide curves considered with an eye to keeping as much water in the Lake as possible without unduly increasing flood control risk? Was the proposed guide curve change offered because it is the least likely to face opposition?
3. There are a number of minimum releases, maximum flow, maximum withdrawal parameters in place that affect the lake's operation and management. Were these max./min. requirements reviewed in Toto (as a group)?

4. Did the Corps conduct a full assessment of the value and cost of the hydropower operation at Lake Allatoona? Does the requirement to have a hydropower function "cost" the lake's operation more than "benefit" it, in the sense that operational decisions are made simply because of the requirement to produce electricity? With all competing requirements in managing the lake, does the Corps support continued hydropower production?
5. There is an environmental and economic value in retaining more water in Lake Allatoona. The risks of doing so should be manageable. The Corps formulates draft alternatives to be considered in updating the WCM, thus limiting the scope of any update severely. Quoted from the EIS: "The range of actions, alternatives, and effects considered in this EIS are driven by the requirements set forth by Congress and Corps policies for project operation." Please help us break down that broad statement. How and by what authority can the public achieve a comprehensive zero-based-budget-type assessment of how the lake should be managed?

Lake Allatoona Association

Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Water Supply & Drought Storage

Outline

The value of each gallon of water that passes through the Lake has dramatically increased since the 1940's. The Lake plan then and since has focused almost entirely on flood control and electric power – very little to no value has been assigned to the use of water for local consumption or use. The USACE has not changed its operations of the Lake to recognize this dramatic shift of value.

Nothing we seek would compromise the overriding purpose of flood risk management. We merely wish the USACE to take advantage of modern technologies without increasing the risk of flooding. We ask the USACE to use best-management practices and be proactive to conserve precious water assets. Our proposed changes are minor tweaks to a complex system, but which would have an enormous benefit due to the modern-day high value of water.

During January and February of 2013, over 50 billion gallons of water were needlessly drained from the Lake (on top of at least that amount previously drained-out in December and January for routine winter drawdown) and dumped into the Gulf of Mexico to the benefit of nothing; this was absolutely wasted water. This happens most every year. At current local water utility costs, this waste represents over $200 million of wasted water this year in just two months! Further, if just 20% of that wasted water had been retained for use moving into the historic drought of 2006, the entire drought restriction impact for Cobb, Cherokee, Paulding and Bartow Counties could have been prevented. If the USACE would adopt our proposal, there would have been no drought impact to water supply (locally) in 2006/2007.

The fact that the lake's 37,000 acres are exempted by the federal government from local property tax assessments means that about $ 3 million has been removed from (primarily) Cherokee and Bartow County tax rolls; that amount would exceed the entire county general fund budgets of those two counties. If this amount was collected at prevailing rates, it would result in elimination of all, or almost all, such county property taxes.

The USACE states in its draft EIS on the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water and follow court mandates to consider the water supply potential of the lake – including raising operational pool levels across all months as is possible and cease the routine dumping of water into the ocean.

Comments

- The USACE should conduct a comprehensive financial analysis that would analyze the comparative costs and benefits of water use for local power generation as compared to use for water supply.
- The USACE in its draft EIS to its WCM update states that it does not provide navigation releases from Allatoona. That being the case, the USACE should openly provide a full analysis of its past practices in support of Alabama Power Company's hydro-power release requests, to demonstrate that APC's associated water release practices do not, indirectly, use Allatoona water to support navigation in Alabama.
- The USACE should modernize its procedures to be proactive in seeking conservation of lake water in the face of developing drought conditions and seasonal water use demand/benefits, rather than continue tardy reactive decision-making that wastes water downstream. As an example, the USACE has the ability during normal seasons to lower the Lake over two feet within 24 to 36 hours and the National Weather Service Forecasts now provide the USACE more than a week of advance notice of major rain-making systems.
- The USACE should conduct updated or new feasibility studies regarding strategies to increase Lake-water retention without increasing flood risks - through increased discharge capacities and drought-insurance water conservation. In addition, the USACE should purchase flood easements in the Cartersville Etowah River corridor (instead of decreasing discharge capabilities by 33%) and construct downstream Etowah and Oostanaula river reregulation storage facilities.

- The USACE should modernize its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities and the actual flood event history of the past 60 years, to demonstrate the historically improved flood control margins over the 1950's assumed design criteria.
- The USACE should publically disclose, in the format of its 5-week Lake level forecast, an April-through-September lake levels comparison of its "historical average elevation" compared to the levels that could have resulted if wasteful ocean water dumps had not occurred.

Questions

1. Please explain why the 5-week lake level forecast so routinely and commonly way out of line with actual results during the reservoir re-filling season? Please describe in detail how the USACE's daily practices use various real-time local weather and hydrographic data to develop its operating decisions as to reservoir outflow decisions so as to conserve water.
2. Please explain, in detail, the specific USACE procedures that are used during the dry-season-months that result in water conservation decisions at the expense of downstream (APC) power generation support.
3. Please explain where, if any, the USACE Zone 2 management policies look forward rather backward, to conserve water for local use, when there are developing drought conditions?
4. Please provide a cost analysis that shows a comparison of hydropower generation water costs and benefits as compared to the market value of locally sold water (about ½ cent per gallon).
5. Please provide a cost analysis of the subsidies given to electric companies through the artificially low (as compared to prevailing peak-season electricity market rates) costs charged them for water releases to generate power during the dry season months of July, August and September.
6. Please provide a cost analysis that compares the subsidies given to the occasional Alabama River barge shipment through Alabama Power water releases that are based on Allatoona water (focused on such shipments' alternate rail shipping costs) to the market value of locally sold water (about ½ cent per gallon).
7. How much of Alabama Power's typical request of water releases goes to provide for Alabama River navigation support during the dry season months of July, August and September?
8. If Alabama Power is approved to raise the level of its Lake Martin reservoir, how will the USACE insure and publically disclose that Allatoona water does not indirectly get used to provide for that capacity, since reduced Tallapoosa River flows would at some point have to be offset by Coosa River flows to meet stated USACE downstream navigational, power generation and environmental flows?
9. What is the annual total USACE cost per ton (water flow, dredging, lock and dam management) to provide for the barge shipments along the Alabama River between Montgomery and Claiborne Lock? How much water volume is provided annually to support such shipments (separate from M&I contracts and low-flow minimums)?
10. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, and the large value of water locally, please explain why flood risk management criteria and policies cannot be tweaked and improved to provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950.
11. Please provide details as to how the USACE uses and integrates NOAA field data and major weather system forecasting information to conserve water, rather than to just release water needlessly downstream simply because the rule-curve dictates so.
12. In light of modern weather system forecasting capabilities, please explain why excess and valuable early spring Lake water inflows should not be conserved through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging to drought–period water supply requirements and to routine recreation needs.

Lake Allatoona Association

Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Clean Water / Water Quality

Outline

The value of each gallon of water that passes through the Lake has dramatically increased since the 1940's when the Lake was planned. Plans back then placed complete emphasis on the Lake's value as to electric power and flood control - no value was assigned to the use of water for local consumption or recreation use. The USACE has not changed its operations of the Lake to recognize this dramatic shift in value.

Beginning in 1972, multiple legislation and regulatory initiatives have been implemented on the federal, state and local levels that require careful attention to improving and protecting the quality of our water resources.

The long-standing procedures by the USACE to dramatically drawdown the Lake and thus expose hundreds of acres of barren shoreline to severe erosion and sediment run-off needs to be reassessed. It is arguable that the USACE practice on the Lake results in the largest exposed/uncontained disturbed site in the State of Georgia. Leaving about 400 acres of barren soil left uncontained for 3 to 5 months each year has a huge detrimental effect to the Lake's water quality.

Repeated late winter and early spring incremental flood filling, followed by rapid drawdowns also result in added siltation and resulting water quality degradation.

USACE policies and practices should be modernized and updated to give consideration to the impact of its outdated pool operations on water quality.

Comments

- The USACE states in its draft EIS on the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water in the Lake as is possible and to give appropriate weight to the negative water quality impacts of its practices.
- The court system has definitively ruled that water supply should be included as a high priority for the USACE in operating the Lake. The USACE should take all steps necessary to comport its Lake operations with that mandate – including raising operational pool levels across all months to minimize sedimentation degradation of the water-supply uses.
- The USACE should commission a new feasibility study as to the merits of purchasing flood easements in the Cartersville Etowah River corridor to increase flood risk management through increased discharge capacities and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures.
- The USACE should commission a new feasibility study as to the merits of constructing downstream Etowah reregulation storage capacities to increase flood risk management through increased discharge capacities and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures
- The USACE should commission a new feasibility study as to the merits of constructing downstream from Carter Dam, Oostanaula reregulation storage capacities, to increase flood risk management and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures
- The USACE should immediately commission a modernized update of its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities

and the actual flood event history of the past 60 years. The study should include a detailed analysis of modern-day flood risk management margins as compared to the original 1950 design criteria which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures

- The USACE should publically disclose (in a format similar to its 5-week Lake level forecast curves), April-through-September Lake levels, that could have resulted if zero-benefit water releases to the Gulf had not occurred. These levels should be compared to the shown "historical average elevation".

Questions

1. Please explain why the USACE believes it is exempt from soil erosion and sedimentation laws and regulations that all other elements of society must follow
2. Explain what engineering considerations are given to the impact of soil erosion occurring during periods of low lake levels and the resulting exposed bare soils on the shores of Lake Allatoona
3. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, as compared to that in the 1950's, please explain why flood risk management criteria and policies do not today provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950 which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures.
4. In light of modern weather system forecasting capabilities, please explain why excess early spring inflows should not be used conserve valuable water through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging drought –period water supply requirements and to routine recreation needs which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures
5. Please explain why the enormous local economic benefit of Lake water from prospective water supply (at least $500 million annually) and recreation (at least $250,000,000 annually) does not justify revaluating decades-dated criteria that sends water downstream for much less beneficial purposes. Why does the USACE not exercise its discretion and propose specific intent to seek appropriate beneficial use of such a modern-day valuable asset as water flowing through Allatoona which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures?
6. Please provide details on alternatives that the USACE has considered for seasonal surface treatment/protection use to minimize exposed shoreline erosion and sedimentation through modern environmental practices.

Lake Allatoona Association

Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Fishing

Outline

Lake Allatoona is heavily used for fishing from boats and from the shoreline. Several tournaments are held on the Lake every year. Fishing contributes significantly to the local economy.

Comments

- When the Lake water level is dropped, it causes a hardship for those fishing from boats
- We have to beach our $50,000-plus boats on the rocky shores because there are no docks floating in the wintertime.
- There is a lot of revenue that is lost to the areas around Lake Allatoona due to the low lake levels over the winter months.
- The constantly varying lake levels in the spring have an adverse effect on the fish spawn. The USACE should work harder to have the levels rise steadily in the spring.
- Overall, the fishermen are more concerned with winter water levels than summer water levels

Questions

- Does the lake really need to be dropped to 817 below full pool in the winter?
- Would it be possible to try and stop at 821 feet below full pool?
- Is it possible to extend a couple of the docks further out so they would float even when the lake is at 817 feet below full pool?

Comment ID 0028

Comment ID 0028.001

Author Name: UNKNOWN, UNKNOWN

Organization: Lake Allatoona Association

Comment

General Guidance

Background
The Water Control Manual (WCM) is the Corps' guideline for the management of Lake Allatoona. The Corps writes the Manual with input from all interested parties (stakeholders). The Manual becomes operationally sacrosanct, is followed closely and/or used as a justification for actions or inaction. The Manual is infrequently updated. A stated reason for the infrequent updates is that proposed changes in Lake management must be scrutinized in an Environmental Impact Study (EIS). The EIS process is costly and that cost is used by the Corps as a principal reason for maintaining the status quo in lake operations.

The Lake Allatoona Association has been excited at the prospect that an update to the WCM is in progress and that the supporting EIS was undertaken and funded. The draft WCM and the draft EIS are now available for review and comment. Of concern is that the proposed operational changes in the management of the lake are minimal and, as a result, the EIS is very narrow in scope.

However, the LAA believes that this is a good opportunity for those who care about the Lake to let the USACE know what they think and to ask pointed questions that the USACE must answer in this legally-required, formal process. Hopefully, we can take advantage of this once-in-twenty-year opportunity to find out why the Corps does things the way that it does.

In no way, shape, or form does the LAA intend to recommend any changes that would increase the risk of flooding to downstream communities. We believe that, using current information and modern technology that the USACE could greatly improve its management of the Lake, primarily through the better management of the water level.

The USACE's Timeline
• April 2013 - DEIS Public Comment Period
• Summer 2013 - Publish final EIS
• Summer 2013 Record of Decision signed and Master Manual submitted for approval
• October 2013 - Master Manual approval

How to Comment
USACE invites all interested parties to submit comments. The public comment period began on March 1st and will end after 60 days (we assume that date is April 29th). Comments may be submitted via the following methods:
• Onsite at open houses through comment cards or the court reporter. The open houses will be as follows:
  o Georgia
    - Monday, March 25: 5:00 pm-8:00 pm at Cobb Conference Center, 755 Cobb Place Blvd, NW, Kennesaw, GA 30144

- Tuesday, March 26: 5:00 pm-8:00 pm at The Forum Civic Center, 2 Government Plaza, Rome, GA 301901

o Alabama

- Wednesday, March 27: 4:00 pm-7:00 pm at the Senior Activity Center, 623 Broad Street, Gadsden, AL 35901
- Thursday, March 28: 5:00 pm-8:00 pm at Auburn University-Montgomery, Center for Lifelong Learning, 75 Techna Center Drive, Montgomery, AL 36117

• Digitally by email or on the ACT Master Water Control Manual Update page: http://www.sam.usace.army.mil/Missions/PlanningEnvironmental/ACTMasterWaterControlManualUpdate

• By letter addressed to: Commander, U.S. Army Corps of Engineers, Mobile District, Attn: PD-El (ACT-DEIS), P.O. Box 2288, Mobile AL 36628

Response

Refer to responses to comments in Lake Allatoona Association comment letter dated April 23, 2013 (Comment ID number 0039).

Comment ID 0028.002

Author Name: UNKNOWN, UNKNOWN

Organization: Lake Allatoona Association

Comment

Economics & Jobs

Outline

The USCOE states that Allatoona generates an estimated 250 million dollars annually from business around the Lake. This is based on their historic draw down because business is negatively impacted by a limited recreational period. Extended recreational periods would substantially enhance upon the economics around to Lake to include more dollars generated for marinas, bait and tackle shops, gas stations, restaurants. All of these improvements taken together would generate what we need - JOBS.

Comments

• The new Draft Water Control Manual (WCM) states that Water Management Personnel are aware of recreational effects caused by reservoir fluctuations but there the WCM provides no specific requirements to maintain recreational levels. Unfortunately, other project functions usually determine releases and resulting lake levels.

• The USCOE in the Draft WCM expresses Impact Lines which are Lake levels that impact recreational pool levels, with negative impacts defined by the USACOE as follows:

o Initial Impact Line (837 feet): recreational usage and the economy begin to feel the impact.

o Recreational Impact Line (835 feet): all swim areas will be exposed. Two Boat Ramps will be closed. Marina business will be severely reduced.

o Water Access Impact Line (828 feet): most severe effects on recreation. Half of the boat ramps will be closed. There will be hazards to navigation. Marinas will experience increased costs of moving docks and some slips will be unusable.

• The USCOE in the new Draft WCM has changed the Fall drawdown to hold the 835 feet from Sept. 5th thru Nov. 15th. Then from Nov. 15th they would draw down to 823 feet by Dec. 31st. The 823 feet would hold until Jan. 16th with a rise to 840 feet by April 30th.
• The economic benefits for the drawdown for Hydropower and Water Supply are in competition with the economic benefits around the Lake for recreational use. This is a double-edged sword. The USACOE should seek to get a more appropriate (greater) return (i.e. market-based) for the water removed for Hydropower and Water Supply.

Questions
1. The extended draw down to 835 feet by Nov. 15th is an improvement, but the USCOE's proposed Recreational Impact Line will cause all swim areas to be closed and will cause all of the marina business to be severely impacted. Why was the Initial Impact Line of 837 feet or even 840 feet until November 15th not recommended?
2. The drawdown in the Draft WCM shows the Lake level from Nov. 15th at 835 feet to 823 feet by Dec. 31st. What reason is there for the Lake to be at 823 feet on Dec. 31st?
3. Since the Dec. 31st 823 feet level is only held until Jan. 16th, why would keeping the lake at a higher level during that time frame be an issue? This higher level would be beneficial for all of the Lake's legislated purposes and would greatly boost areas economics and JOBS.
4. An earlier recreation period would certainly be economically beneficial for businesses around the lake. Why not have the lake at full conservational pool (840 feet) by April 1st? Lake Allatoona Association Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Recreation

Outline

The value of the Lake in terms of recreational resources and quality of life has dramatically increased since the 1940's when the Lake was planned. Plans back then placed complete emphasis on the lake's value as to electric power and flood control - very little to no value was assigned to the use of water for quality of life and recreation uses. The four county area of the lake in the early 1950's was a very rural and poor southern Appalachian community made up of less than 100,000 people. Rural electrification was a paramount need for the area. Today, these same counties contain over 1 million people in a densely populated suburban society. The USACE has not changed its operations of the lake to recognize this dramatic shift of value.

During January and February of 2013, over 50 billion gallons of water have been needlessly drained from the lake (on top of at least that amount previously drained-out in December and January for routine winter drawdown) and dumped into the Gulf of Mexico to the benefit of nothing; this has resulted in absolutely wasted water. This happens most every year. The result of this outdated practice is that the Lake's recreational and quality of life uses are quite often dramatically impacted in the dry late-summer months. It is not uncommon for the majority of the Lake's beaches, ramps, and other recreational access points to be inaccessible to the public beginning in late July or early August. This is a travesty and a waste of our national resource.

This lake annually is one of, if not the most, heavily used USACE lakes in the nation. Annual use in most years approaches and, often, exceeds 7 million people. Small changes across a range of USACE operational practices could result in conservation of the wasted spring season water. This conservation would allow for significant improvement in lake levels and recreational uses in the later summer dry season months. Two feet of water retained in April, carefully managed, would provide for two feet higher water level in August and September.

The fact that the lake's 37,000 acres are exempted by the federal government from local property tax assessments means that about $ 3 million has been removed from (primarily) Cherokee and Bartow County tax rolls; that amount would exceed the entire county general fund budgets of those two counties. If this amount was collected at prevailing rates, it would result in elimination of all, or almost all, such county property taxes.

The Lake's counties, in addition to shouldering the financial burden of the lake, should be able to benefit from the enormous quality of life and recreation value of the water that passes through it. The USAE must be directed to give appropriate consideration to the modern-day value of water to our local economy and to change its operations accordingly to preserve the water instead of wastefully dumping it away to the ocean.

Comments

- The USACE states in its draft EIS on the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water in the lake as is possible to provide for extended recreation uses.
- The USACE should immediately conduct a comprehensive financial analysis that would analyze the comparative costs and benefits of water use for local power generation as compared to use for recreation and improved local quality of life.
- The USACE in its draft EIS to its WCM update states that it does not provide navigation releases from Allatoona. That being the case, the USACE should openly provide a full analysis of its past practices in support of Alabama Power Company's (APC) hydro-power release requests, to demonstrate that APC's associated water release practices do not damage recreational benefits by using Allatoona water to support navigation in Alabama.
- The USACE should modernize its daily routine to effectively be proactive in seeking to conserve Lake water in the face of developing drought conditions and seasonal water use demand/benefits, rather than continue its practice of reactive decision-making that wastes water downstream and, thereby, limits recreational uses.
- The USACE should commission a new feasibility study as to the merits of purchasing flood easements in the Cartersville Etowah River corridor to increase flood risk management through increased discharge capacities, allowing for improved dry season recreational uses and also drought-insurance water conservation.
- The USACE should commission a new feasibility study as to the merits of constructing downstream Etowah reregulation storage capacities to increase flood risk management through increased discharge capacities, allowing for improved dry season recreational uses and drought-insurance water conservation.
- The USACE should commission a new feasibility study as to the merits of constructing, downstream from Carter Dam, Oostanaula reregulation storage facilities. This will allow the USACE to increase its ability to manage flood risk, allowing for improved dry season recreational uses and drought-insurance water conservation.
- The USACE should immediately commission a modernized update of its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities and the actual flood event history of the past 60 years. The study should include a detailed analysis of modern-day flood risk management margins as compared to the original 1950 design criteria.

• The USACE should publically disclose, in a format like its 5-week Lake level forecast curves, April-through- September lake levels compared to its shown "historical average elevation", that could have resulted if zero-benefit water releases to the Gulf had not occurred.

Questions

1. Please explain why the 5-week lake level forecast is so routinely way out of line with actual results during the reservoir re-filling season? Please describe in detail how the USACE's daily practices actively use various real-time local weather and hydrographic data to develop its operating decisions as to reservoir outflow decisions to conserve water to the benefit of local area recreational benefits.
2. Please explain, in detail, the specific USACE procedures that are used during the dry season months that result in water conservation decisions that benefit local recreational uses at the expense of downstream (APC) power generation support.
3. In light of the modern-day (huge) value of the lake water, please explain why the USACE Zone 2 management policies (based on historically outdated criteria that give insignificant weight to water supply and recreation needs) are woefully inadequate to conserve water for its highest uses for water supply and to prepare for developing drought conditions?
4. Please provide a cost analysis that demonstrates that the subsidies given to hydropower generation through water discharges are more beneficial than the value of local recreation and quality of life uses from 7 million annual users and hundreds of millions of dollars of local economic potential.
5. Please provide an analysis that shows how much of a subsidy is given to electric companies by virtue of the artificially low (as compared to prevailing peak-season electricity market rates) cost of generated power by the releases of water during the dry season months of July, August and September.
6. Please provide a cost analysis that demonstrates that the subsidies given to the occasional Alabama River barge shipment (rather than being diverted to rail shipments) is more beneficial than the beneficial economic, quality of life and recreational value of the water.
7. How much of Alabama Power's typical request of water releases goes to provide for Alabama River navigation support during the dry season months of July, August and September? How about for 2012?
8. If Alabama Power is approved to raise the level of the Lake Martin reservoir, how will the USACE insure and publically disclose that Allatoona water does not indirectly get used to provide for that capacity, since reduced Tallapoosa River flows would at some point have to be offset by Coosa River flows to meet stated USACE navigational, power generation, and environmental flows?
9. What is the cost per ton expenditure annually by all USACE operations to provide for the barge shipments along the Alabama River between Montgomery and Claiborne Lock? How much water volume is provided annually to support such shipments (separate from M&I contracts and low-flow minimums)?
10. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, as compared to that in the 1950's, please explain why flood risk management criteria and policies do not today provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950.
11. Please provide details as to how the USACE uses and integrates NOAA field data and major weather system forecasting information to conserve water, rather than to just release water needlessly downstream because the rule-curve dictates so.
12. In light of modern weather system forecasting capabilities, please explain why excess early spring inflows should not be used conserve valuable water through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging to drought-period water supply requirements and to

routine recreation needs.
13. Please explain why the enormous local economic benefit of Lake water from prospective water supply (at least $500 million annually) and recreation (at least $250 annually) does not justify revaluating decadesdated criteria that sends water downstream for much less beneficial purposes. Why does the USACE not exercise its discretion and seek appropriate beneficial use of such a modern-day valuable asset as the water flowing through Allatoona?

Response

Refer to responses to same comments in Lake Allatoona Association comment letter dated April 23, 2013 (Comment ID number 0039.003).

Comment ID 0028.003

Author Name: UNKNOWN, UNKNOWN

Organization: Lake Allatoona Association

Comment

Environmental Impacts

Outline
There are many significant environmental impacts that result from the USACE management of the Lake and, particularly, the management of the water level. Just two are discussed here.

The greatest concern is that the low water levels in the winter, spring, and fall leave many acres of bare soil exposed for months to rain and wind erosion. This is likely the worst case of exposed soil in the State of Georgia and it is managed by an arm of the federal government. Leaving about 400 acres of barren soil left uncontained for 3 to 5 months each year has a huge detrimental effect to the Lake's water quality. For many months, every rain event causes significant erosion of this exposed soil that is carried towards the center of the Lake. The short-term results include vast plumes of sediment in all parts of the Lake.

Another significant negative impact of the USACE's water level management practices is the concentration of pollutants during the winter, spring, and fall seasons. Unfortunately, there is a significant amount of pollutants in the Lake due to poor management of the lands (drainage basin) surrounding the Lake which results in various pollutants entering the Lake (e.g. herbicides, fertilizers, oils, etc.). When the Lake level is dropped for the large majority of the year, these pollutants are concentrated in the smaller amount of water in the Lake.

Comments
• The Corps eliminates from consideration any changes in the conservation pool level or winter pool level. These two parameters are the most crucial in terms of potential environmental impact. An open assessment of how the Lake could or should be managed must include an assessment of the merits of the historic full pool level and the historic winter pool level.

• The Corps eliminates from consideration any measures that would change the minimum releases or minimum flows to ensure other entities meet federal clean water compliance requirements. This begs the question as to what extent minimum releases and minimum flows were evaluated.
• The Corps eliminates from consideration any measures that would significantly affect hydropower at Allatoona.

Questions
1. In order to manage the Lake in an "optimal" manner, it seems prudent to assess the ramifications of changing the full pool and winter pool levels. They are the most crucial constraints affecting all of the Lake's authorized purposes: recreation, water supply, hydropower, flood control. If these parameters are outside the scope of updating the WCM, how and by whose authority would those parameters be evaluated to ensure they are set at reasonably optimal levels?
2. The only significant change in the year-round water level of the Lake contained in the draft WCM Alternative Plan G (Proposed Action Alternative) is a revision to guide curves and action zones that will result in a phased fall drawdown which would result in a slight increase in water level in the fall and winter. Was a full range of changes to the guide curves considered with an eye to keeping as much water in the Lake as possible without unduly increasing flood control risk? Was the proposed guide curve change offered because it is the least likely to face opposition?
3. There are a number of minimum releases, maximum flow, maximum withdrawal parameters in place that affect the lake's operation and management. Were these max./min. requirements reviewed in Toto (as a group)?
4. Did the Corps conduct a full assessment of the value and cost of the hydropower operation at Lake Allatoona? Does the requirement to have a hydropower function "cost" the lake's operation more than "benefit" it, in the sense that operational decisions are made simply because of the requirement to produce electricity? With all competing requirements in managing the lake, does the Corps support continued hydropower production?
5. There is an environmental and economic value in retaining more water in Lake Allatoona. The risks of doing so should be manageable. The Corps formulates draft alternatives to be considered in updating the WCM, thus limiting the scope of any update severely. Quoted from the EIS: "The range of actions, alternatives, and effects considered in this EIS are driven by the requirements set forth by Congress and Corps policies for project operation." Please help us break down that broad statement. How and by what authority can the public achieve a comprehensive zero-based-budget-type assessment of how the lake should be managed?

Response

Refer to responses to same comments in Lake Allatoona Association comment letter dated April 23, 2013 (Comment ID number 0039.004).

Comment ID 0028.004

Author Name: UNKNOWN, UNKNOWN

Organization: Lake Allatoona Association

Comment

Water Supply & Drought Storage

Outline

The value of each gallon of water that passes through the Lake has dramatically increased since the 1940's. The Lake plan then and since has focused almost entirely on flood control and electric power - very little to no value has been assigned to the use of water for local consumption or use. The USACE has not changed its operations of the Lake to recognize this dramatic shift of value.

Nothing we seek would compromise the overriding purpose of flood risk management. We merely wish the USACE to take advantage of modern technologies without increasing the risk of flooding. We ask the USACE to use bestmanagement practices and be proactive to conserve precious water assets. Our proposed changes are minor tweaks to a complex system, but which would have an enormous benefit due to the modern-day high value of water.

During January and February of 2013, over 50 billion gallons of water were needlessly drained from the Lake (on top of at least that amount previously drained-out in December and January for routine winter drawdown) and dumped into the Gulf of Mexico to the benefit of nothing; this was absolutely wasted water. This happens most every year. At current local water utility costs, this waste represents over $200 million of wasted water this year in just two months! Further, if just 20% of that wasted water had been retained for use moving into the historic drought of 2006, the entire drought restriction impact for Cobb, Cherokee, Paulding and Bartow Counties could have been prevented. If the USACE would adopt our proposal, there would have been no drought impact to water supply (locally) in 2006/2007.

The fact that the lake's 37,000 acres are exempted by the federal government from local property tax assessments means that about $ 3 million has been removed from (primarily) Cherokee and Bartow County tax rolls; that amount would exceed the entire county general fund budgets of those two counties. If this amount was collected at prevailing rates, it would result in elimination of all, or almost all, such county property taxes.

The USACE states in its draft EIS on the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water and follow court mandates to consider the water supply potential of the lake - including raising operational pool levels across all months as is possible and cease the routine dumping of water into the ocean.

Comments

• The USACE should conduct a comprehensive financial analysis that would analyze the comparative costs and benefits of water use for local power generation as compared to use for water supply.
• The USACE in its draft EIS to its WCM update states that it does not provide navigation releases from Allatoona. That being the case, the USACE should openly provide a full analysis of its past practices in support of Alabama Power Company's hydro-power release requests, to demonstrate that APC's associated water release practices do not, indirectly, use Allatoona water to support navigation in Alabama.
• The USACE should modernize its procedures to be proactive in seeking conservation of lake water in the face of developing drought conditions and seasonal water use demand/benefits, rather than continue tardy reactive decision-making that wastes water downstream. As an example, the USACE has the ability during normal seasons to lower the Lake over two feet within 24 to 36 hours and the National Weather Service Forecasts now provide the USACE more than a week of advance notice of major rain-

making systems.
• The USACE should conduct updated or new feasibility studies regarding strategies to increase Lake-water retention without increasing flood risks - through increased discharge capacities and drought-insurance water conservation. In addition, the USACE should purchase flood easements in the Cartersville Etowah River corridor (instead of decreasing discharge capabilities by 33%) and construct downstream Etowah and Oostanaula river reregulation storage facilities.
• The USACE should modernize its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities and the actual flood event history of the past 60 years, to demonstrate the historically improved flood control margins over the 1950's assumed design criteria.
• The USACE should publically disclose, in the format of its 5-week Lake level forecast, an April-through-September lake levels comparison of its "historical average elevation" compared to the levels that could have resulted if wasteful ocean water dumps had not occurred.

Questions
1. Please explain why the 5-week lake level forecast so routinely and commonly way out of line with actual results during the reservoir re-filling season? Please describe in detail how the USACE's daily practices use various real-time local weather and hydrographic data to develop its operating decisions as to reservoir outflow decisions so as to conserve water.
2. Please explain, in detail, the specific USACE procedures that are used during the dry-season-months that result in water conservation decisions at the expense of downstream (APC) power generation support.
3. Please explain where, if any, the USACE Zone 2 management policies look forward rather backward, to conserve water for local use, when there are developing drought conditions?
4. Please provide a cost analysis that shows a comparison of hydropower generation water costs and benefits as compared to the market value of locally sold water (about 1/2 cent per gallon).
5. Please provide a cost analysis of the subsidies given to electric companies through the artificially low (as compared to prevailing peak-season electricity market rates) costs charged them for water releases to generate power during the dry season months of July, August and September.
6. Please provide a cost analysis that compares the subsidies given to the occasional Alabama River barge shipment through Alabama Power water releases that are based on Allatoona water (focused on such shipments' alternate rail shipping costs) to the market value of locally sold water (about 1/2 cent per gallon).
7. How much of Alabama Power's typical request of water releases goes to provide for Alabama River navigation support during the dry season months of July, August and September?
8. If Alabama Power is approved to raise the level of its Lake Martin reservoir, how will the USACE insure and publically disclose that Allatoona water does not indirectly get used to provide for that capacity, since reduced Tallapoosa River flows would at some point have to be offset by Coosa River flows to meet stated USACE downstream navigational, power generation and environmental flows?
9. What is the annual total USACE cost per ton (water flow, dredging, lock and dam management) to provide for the barge shipments along the Alabama River between Montgomery and Claiborne Lock? How much water volume is provided annually to support such shipments (separate from M&I contracts and low-flow minimums)?
10. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, and the large value of water locally, please explain why flood risk management criteria and policies cannot be tweaked and improved to provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as

compared with the way things have been done since 1950.
11. Please provide details as to how the USACE uses and integrates NOAA field data and major weather system forecasting information to conserve water, rather than to just release water needlessly downstream simply because the rule-curve dictates so.
12. In light of modern weather system forecasting capabilities, please explain why excess and valuable early spring Lake water inflows should not be conserved through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging to drought-period water supply requirements and to routine recreation needs.

Response

Refer to responses to same comments in Lake Allatoona Association comment letter dated April 23, 2013 (Comment ID number 0039.007).

Comment ID 0028.005

Author Name: UNKNOWN, UNKNOWN

Organization: Lake Allatoona Association

Comment

Clean Water / Water Quality

Outline
The value of each gallon of water that passes through the Lake has dramatically increased since the 1940's when the Lake was planned. Plans back then placed complete emphasis on the Lake's value as to electric power and flood control - no value was assigned to the use of water for local consumption or recreation use. The USACE has not changed its operations of the Lake to recognize this dramatic shift in value.

Beginning in 1972, multiple legislation and regulatory initiatives have been implemented on the federal, state and local levels that require careful attention to improving and protecting the quality of our water resources.

The long-standing procedures by the USACE to dramatically drawdown the Lake and thus expose hundreds of acres of barren shoreline to severe erosion and sediment run-off needs to be reassessed. It is arguable that the USACE practice on the Lake results in the largest exposed/uncontained disturbed site in the State of Georgia. Leaving about 400 acres of barren soil left uncontained for 3 to 5 months each year has a huge detrimental effect to the Lake's water quality.

Repeated late winter and early spring incremental flood filling, followed by rapid drawdowns also result in added siltation and resulting water quality degradation.

USACE policies and practices should be modernized and updated to give consideration to the impact of its outdated pool operations on water quality.

Comments

• The USACE states in its draft EIS on the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water in the Lake as is possible and to give appropriate weight to the negative water quality impacts of its practices.

• The court system has definitively ruled that water supply should be included as a high priority for the USACE in operating the Lake. The USACE should take all steps necessary to comport its Lake operations with that mandate - including raising operational pool levels across all months to minimize sedimentation degradation of the water-supply uses.

• The USACE should commission a new feasibility study as to the merits of purchasing flood easements in the Cartersville Etowah River corridor to increase flood risk management through increased discharge capacities and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures.

• The USACE should commission a new feasibility study as to the merits of constructing downstream Etowah reregulation storage capacities to increase flood risk management through increased discharge capacities and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures

• The USACE should commission a new feasibility study as to the merits of constructing downstream from Carter Dam, Oostanaula reregulation storage capacities, to increase flood risk management and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures

• The USACE should immediately commission a modernized update of its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities and the actual flood event history of the past 60 years. The study should include a detailed analysis of modern-day flood risk management margins as compared to the original 1950 design criteria which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures

• The USACE should publically disclose (in a format similar to its 5-week Lake level forecast curves), Aprilthrough- September Lake levels, that could have resulted if zero-benefit water releases to the Gulf had not occurred. These levels should be compared to the shown "historical average elevation".

Questions

1. Please explain why the USACE believes it is exempt from soil erosion and sedimentation laws and regulations that all other elements of society must follow

2. Explain what engineering considerations are given to the impact of soil erosion occurring during periods of low lake levels and the resulting exposed bare soils on the shores of Lake Allatoona

3. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, as compared to that in the 1950's, please explain why flood risk management criteria and policies do not today provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950 which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures.

4. In light of modern weather system forecasting capabilities, please explain why excess early spring inflows should not be used conserve valuable water through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow

minimum mismatch, so that late summer pool levels are not so damaging drought -period water supply requirements and to routine recreation needs which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures

5. Please explain why the enormous local economic benefit of Lake water from prospective water supply (at least $500 million annually) and recreation (at least $250,000,000 annually) does not justify revaluating decades-dated criteria that sends water downstream for much less beneficial purposes. Why does the USACE not exercise its discretion and propose specific intent to seek appropriate beneficial use of such a modern-day valuable asset as water flowing through Allatoona which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures?

6. Please provide details on alternatives that the USACE has considered for seasonal surface treatment/protection use to minimize exposed shoreline erosion and sedimentation through modern environmental practices.

Response

Refer to responses to same comments in Lake Allatoona Association comment letter dated April 23, 2013 (Comment ID number 0039.002).

Comment ID 0028.006

Author Name: UNKNOWN, UNKNOWN

Organization: Lake Allatoona Association

Comment

Fishing

Outline

Lake Allatoona is heavily used for fishing from boats and from the shoreline. Several tournaments are held on the Lake every year. Fishing contributes significantly to the local economy.

Comments

• When the Lake water level is dropped, it causes a hardship for those fishing from boats

• We have to beach our $50,000-plus boats on the rocky shores because there are no docks floating in the wintertime.

• There is a lot of revenue that is lost to the areas around Lake Allatoona due to the low lake levels over the winter months.

• The constantly varying lake levels in the spring have an adverse effect on the fish spawn. The USACE should work harder to have the levels rise steadily in the spring.

• Overall, the fishermen are more concerned with winter water levels than summer water levels

Questions

• Does the lake really need to be dropped to 817 below full pool in the winter?

• Would it be possible to try and stop at 821 feet below full pool?

• Is it possible to extend a couple of the docks further out so they would float even when the lake is at 817 feet below full pool?

Response

Refer to responses to same comments in Lake Allatoona Association comment letter dated April 23, 2013 (Comment ID number 0039.005).

LAKE Allatoona ASSOCIATION

April 23, 2013

Commander, U.S. Army Corps of Engineers, Mobile District
Attn: PD-EI (ACT-DEIS)
P.O. Box 2288, Mobile, AL 36628

RE: Comments regarding update of ACT Water Control Manual

Dear Sir or Madam:

Thank you for the opportunity to submit comments regarding the Corps of Engineers' ("Corps") revision of the Water Control Manual ("WCM") for the Alabama-Coosa-Tallapoosa Flint River ("ACT") system. The Lake Allatoona Association is the community-based non-profit organization of like-minded lake resource users whose sole-purpose is to seek improved lake water quality and levels through activity as "The Voice of Lake Allatoona". Our below and attached comments are constructively offered to that end.

The CORPS has a serious responsibility with the overriding flood risk management task of Allatoona Lake. Nothing that we believe or seek is offered to compromise that task. However given the now enormous value that our Lake water has to literally over a million people for water supply and recreational quality of life, we believe that changes are in order, from the way things have been done with single focus on flood control since 1950, to the detriment of water supply and recreational quality-of-life purposes.

In 1950, the CORPS' best weather forecasting tools were nothing like what it now has routine access to through NOAA and other sources; seasonal forecast capabilities of lake inflows give exponentially improved abilities to manage lake outflows. In 1950 the CORPS hydrologic models were weak shadows of what it uses today from hundreds of real time stream flow gauges and sophisticated HEC RAS runoff models. In 1950, rural Bartow, Cherokee, Cobb and Paulding Counties' populations totaled less than 100,000 people and the water was so invaluable then that its use was most often not even metered. Today the Lake is directly surrounded by over 1 million people who are paying about $5 dollars for every 1000 gallons of water.

In light of these enormous changes, LAA has thoughtfully sponsored a comprehensive set of recommendations for positive change to Allatoona's water levels, with connected improved levels of lake water quality. LAA calls this program "2-4-6-8, Allatoona Clean"; in summary that label refers to the nominal outcomes that LAA seeks – namely: A 2-foot increase in summer pool levels, such summer pool level beginning 4-weeks earlier than it presently does, such summer pool level held higher for 6-weeks longer than it is presently, and an 8-foot reduction in the winter season drawdown. The 2-4-6-8, Allatoona Clean proposal is not offered as the only solution and its particular numbers are not sacred. Rather, it was offered in the past and is again offered to prompt discussion and debate around the central proposition that the Lake's water levels could be managed differently to the benefit of certain of the Lake's "purposes" and without detrimental effect on the chiefly emphasized "purpose" of flood control. That 3-page document was provided to the CORPS in 2010, and is attached for your ease of reference.

Within the above outlined context, LAA had hoped to find that the WCM update would have addressed such a critical issue as the need to improve operations relating to Allatoona Lake's very important water supply and recreation quality-of-life characteristics. Instead, we are very disappointed to see that the revision's scope had been severely restricted such that no consideration has been given (except for projections of minor reductions in late recreation season power generation releases) in the update to implement Allatoona Lake water conservation measures that could prove of great value toward serving water supply and recreation needs.

The public deserves a zero-based, bottoms-up review of how the Lake is managed, to include consideration of retaining more water in the lake year-round. While the laws and regulations may require that the Corps offer an opportunity for public comment, it is disingenuous to do so when, in fact, the parameters of the review are so constrained as to be make the process a token effort and the solicitation of public comment a form of patronization within a process that results in no meaningful improvements, modernization or recognition of 21st century realities and needs as relates to Allatoona Lake.

Therefore, to provide the CORPS comments on the Draft EIS on the WCM, LAA attaches six compilations of about 40 specific questions or requests provided by our membership on each Key Issue of: Economics, Recreation, Fishing, Water Supply and Drought Storage, Water Quality, Environment.

In summary, LAA believes that the CORPS could pay attention to a range of detail different from how it established over 60 years ago to not only manage flood risks but also to conserve and not wastefully dump water to the ocean, thus using the full potential of the Lake's water to benefit local water supply and recreational purposes across all four seasons without increasing flood risks that were foreseen in 1950.

Sincerely,

Lake Allatoona Association
Board of Directors

attachments

PO Box 756
Acworth, Ga. 30101
www.lakeallatoonaassoc.com

Lake Allatoona Association

Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Clean Water / Water Quality

Outline

The value of each gallon of water that passes through the Lake has dramatically increased since the 1940's when the Lake was planned. Plans back then placed complete emphasis on the Lake's value as to electric power and flood control - no value was assigned to the use of water for local consumption or recreation use. The USACE has not changed its operations of the Lake to recognize this dramatic shift in value.

Beginning in 1972, multiple legislation and regulatory initiatives have been implemented on the federal, state and local levels that require careful attention to improving and protecting the quality of our water resources.

The long-standing procedures by the USACE to dramatically drawdown the Lake and thus expose hundreds of acres of barren shoreline to severe erosion and sediment run-off needs to be reassessed. It is arguable that the USACE practice on the Lake results in the largest exposed/uncontained disturbed site in the State of Georgia. Leaving about 400 acres of barren soil left uncontained for 3 to 5 months each year has a huge detrimental effect to the Lake's water quality.

Repeated late winter and early spring incremental flood filling, followed by rapid drawdowns also result in added siltation and resulting water quality degradation.

USACE policies and practices should be modernized and updated to give consideration to the impact of its outdated pool operations on water quality.

Comments

- The USACE states in its draft EIS on the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water in the Lake as is possible and to give appropriate weight to the negative water quality impacts of its practices.
- The court system has definitively ruled that water supply should be included as a high priority for the USACE in operating the Lake. The USACE should take all steps necessary to comport its Lake operations with that mandate – including raising operational pool levels across all months to minimize sedimentation degradation of the water-supply uses.
- The USACE should commission a new feasibility study as to the merits of purchasing flood easements in the Cartersville Etowah River corridor to increase flood risk management through increased discharge capacities and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures.
- The USACE should commission a new feasibility study as to the merits of constructing downstream Etowah reregulation storage capacities to increase flood risk management through increased discharge capacities and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures
- The USACE should commission a new feasibility study as to the merits of constructing downstream from Carter Dam, Oostanaula reregulation storage capacities, to increase flood risk management and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures
- The USACE should immediately commission a modernized update of its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities

and the actual flood event history of the past 60 years. The study should include a detailed analysis of modern-day flood risk management margins as compared to the original 1950 design criteria which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures

- The USACE should publically disclose (in a format similar to its 5-week Lake level forecast curves), April-through-September Lake levels, that could have resulted if zero-benefit water releases to the Gulf had not occurred. These levels should be compared to the shown "historical average elevation".

Questions

1. Please explain why the USACE believes it is exempt from soil erosion and sedimentation laws and regulations that all other elements of society must follow
2. Explain what engineering considerations are given to the impact of soil erosion occurring during periods of low lake levels and the resulting exposed bare soils on the shores of Lake Allatoona
3. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, as compared to that in the 1950's, please explain why flood risk management criteria and policies do not today provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950 which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures.
4. In light of modern weather system forecasting capabilities, please explain why excess early spring inflows should not be used conserve valuable water through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging drought –period water supply requirements and to routine recreation needs which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures
5. Please explain why the enormous local economic benefit of Lake water from prospective water supply (at least $500 million annually) and recreation (at least $250,000,000 annually) does not justify revaluating decades-dated criteria that sends water downstream for much less beneficial purposes. Why does the USACE not exercise its discretion and propose specific intent to seek appropriate beneficial use of such a modern-day valuable asset as water flowing through Allatoona which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures?
6. Please provide details on alternatives that the USACE has considered for seasonal surface treatment/protection use to minimize exposed shoreline erosion and sedimentation through modern environmental practices.

Lake Allatoona Association

Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Economics & Jobs

Outline

The USCOE states that Allatoona generates an estimated 250 million dollars annually from business around the Lake. This is based on their historic draw down because business is negatively impacted by a limited recreational period. Extended recreational periods would substantially enhance upon the economics around to Lake to include more dollars generated for marinas, bait and tackle shops, gas stations, restaurants. All of these improvements taken together would generate what we need - JOBS.

Comments

- The new Draft Water Control Manual (WCM) states that Water Management Personnel are aware of recreational effects caused by reservoir fluctuations but there the WCM provides no specific requirements to maintain recreational levels. Unfortunately, other project functions usually determine releases and resulting lake levels.
- The USCOE in the Draft WCM expresses Impact Lines which are Lake levels that impact recreational pool levels, with negative impacts defined by the USACOE as follows:
  - Initial Impact Line (837 feet): recreational usage and the economy begin to feel the impact.
  - Recreational Impact Line (835 feet): all swim areas will be exposed. Two Boat Ramps will be closed. Marina business will be severely reduced.
  - Water Access Impact Line (828 feet): most severe effects on recreation. Half of the boat ramps will be closed. There will be hazards to navigation. Marinas will experience increased costs of moving docks and some slips will be unusable.
- The USCOE in the new Draft WCM has changed the Fall drawdown to hold the 835 feet from Sept. 5th thru Nov. 15th. Then from Nov. 15th they would draw down to 823 feet by Dec. 31st. The 823 feet would hold until Jan. 16th with a rise to 840 feet by April 30th.
- The economic benefits for the drawdown for Hydropower and Water Supply are in competition with the economic benefits around the Lake for recreational use. This is a double-edged sword. The USACOE should seek to get a more appropriate (greater) return (i.e. market-based) for the water removed for Hydropower and Water Supply.

Questions

1. The extended draw down to 835 feet by Nov. 15^{th} is an improvement, but the USCOE's proposed Recreational Impact Line will cause all swim areas to be closed and will cause all of the marina business to be severely impacted. Why was the Initial Impact Line of 837 feet or even 840 feet until November 15^{th} not recommended?
2. The drawdown in the Draft WCM shows the Lake level from Nov. 15^{th} at 835 feet to 823 feet by Dec. 31^{st}. What reason is there for the Lake to be at 823 feet on Dec. 31^{st}?
3. Since the Dec. 31^{st} 823 feet level is only held until Jan. 16^{th}, why would keeping the lake at a higher level during that time frame be an issue? This higher level would be beneficial for all of the Lake's legislated purposes and would greatly boost areas economics and JOBS.
4. An earlier recreation period would certainly be economically beneficial for businesses around the lake. Why not have the lake at full conservational pool (840 feet) by April 1^{st}?

Lake Allatoona Association

Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Environmental Impacts

Outline

There are many significant environmental impacts that result from the USACE management of the Lake and, particularly, the management of the water level. Just two are discussed here.

The greatest concern is that the low water levels in the winter, spring, and fall leave many acres of bare soil exposed for months to rain and wind erosion. This is likely the worst case of exposed soil in the State of Georgia and it is managed by an arm of the federal government. Leaving about 400 acres of barren soil left uncontained for 3 to 5 months each year has a huge detrimental effect to the Lake's water quality. For many months, every rain event causes significant erosion of this exposed soil that is carried towards the center of the Lake. The short-term results include vast plumes of sediment in all parts of the Lake.

Another significant negative impact of the USACE's water level management practices is the concentration of pollutants during the winter, spring, and fall seasons. Unfortunately, there is a significant amount of pollutants in the Lake due to poor management of the lands (drainage basin) surrounding the Lake which results in various pollutants entering the Lake (e.g. herbicides, fertilizers, oils, etc.). When the Lake level is dropped for the large majority of the year, these pollutants are concentrated in the smaller amount of water in the Lake.

Comments

- The Corps eliminates from consideration any changes in the conservation pool level or winter pool level. These two parameters are the most crucial in terms of potential environmental impact. An open assessment of how the Lake could or should be managed must include an assessment of the merits of the historic full pool level and the historic winter pool level.
- The Corps eliminates from consideration any measures that would change the minimum releases or minimum flows to ensure other entities meet federal clean water compliance requirements. This begs the question as to what extent minimum releases and minimum flows were evaluated.
- The Corps eliminates from consideration any measures that would significantly affect hydropower at Allatoona.

Questions

1. In order to manage the Lake in an "optimal" manner, it seems prudent to assess the ramifications of changing the full pool and winter pool levels. They are the most crucial constraints affecting all of the Lake's authorized purposes: recreation, water supply, hydropower, flood control. If these parameters are outside the scope of updating the WCM, how and by whose authority would those parameters be evaluated to ensure they are set at reasonably optimal levels?
2. The only significant change in the year-round water level of the Lake contained in the draft WCM Alternative Plan G (Proposed Action Alternative) is a revision to guide curves and action zones that will result in a phased fall drawdown which would result in a slight increase in water level in the fall and winter. Was a full range of changes to the guide curves considered with an eye to keeping as much water in the Lake as possible without unduly increasing flood control risk? Was the proposed guide curve change offered because it is the least likely to face opposition?
3. There are a number of minimum releases, maximum flow, maximum withdrawal parameters in place that affect the lake's operation and management. Were these max./min. requirements reviewed in Toto (as a group)?

4. Did the Corps conduct a full assessment of the value and cost of the hydropower operation at Lake Allatoona? Does the requirement to have a hydropower function "cost" the lake's operation more than "benefit" it, in the sense that operational decisions are made simply because of the requirement to produce electricity? With all competing requirements in managing the lake, does the Corps support continued hydropower production?
5. There is an environmental and economic value in retaining more water in Lake Allatoona. The risks of doing so should be manageable. The Corps formulates draft alternatives to be considered in updating the WCM, thus limiting the scope of any update severely. Quoted from the EIS: "The range of actions, alternatives, and effects considered in this EIS are driven by the requirements set forth by Congress and Corps policies for project operation." Please help us break down that broad statement. How and by what authority can the public achieve a comprehensive zero-based-budget-type assessment of how the lake should be managed?

Lake Allatoona Association
Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Fishing

Outline

Lake Allatoona is heavily used for fishing from boats and from the shoreline. Several tournaments are held on the Lake every year. Fishing contributes significantly to the local economy.

Comments

- When the Lake water level is dropped, it causes a hardship for those fishing from boats
- We have to beach our $50,000-plus boats on the rocky shores because there are no docks floating in the wintertime.
- There is a lot of revenue that is lost to the areas around Lake Allatoona due to the low lake levels over the winter months.
- The constantly varying lake levels in the spring have an adverse effect on the fish spawn. The USACE should work harder to have the levels rise steadily in the spring.
- Overall, the fishermen are more concerned with winter water levels than summer water levels

Questions

- Does the lake really need to be dropped 17 below full pool in the winter?
- Would it be possible to try and stop at 831 feet below full pool?
- If not Is it possible to extend a couple of the docks further out so they would float even when the lake is at the lowest winter draw-down level?

Lake Allatoona Association

Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Recreation

Outline

The value of the Lake in terms of recreational resources and quality of life has dramatically increased since the 1940's when the Lake was planned. Plans back then placed complete emphasis on the lake's value as to electric power and flood control – very little to no value was assigned to the use of water for quality of life and recreation uses. The four county area of the lake in the early 1950's was a very rural and poor southern Appalachian community made up of less than 100,000 people. Rural electrification was a paramount need for the area. Today, these same counties contain over 1 million people in a densely populated suburban society. The USACE has not changed its operations of the lake to recognize this dramatic shift of value.

During January and February of 2013, over 50 billion gallons of water have been needlessly drained from the lake (on top of at least that amount previously drained-out in December and January for routine winter drawdown) and dumped into the Gulf of Mexico to the benefit of nothing; this has resulted in absolutely wasted water. This happens most every year. The result of this outdated practice is that the Lake's recreational and quality of life uses are quite often dramatically impacted in the dry late-summer months. It is not uncommon for the majority of the Lake's beaches, ramps, and other recreational access points to be inaccessible to the public beginning in late July or early August. This is a travesty and a waste of our national resource.

This lake annually is one of, if not the most, heavily used USACE lakes in the nation. Annual use in most years approaches and, often, exceeds 7 million people. Small changes across a range of USACE operational practices could result in conservation of the wasted spring season water. This conservation would allow for significant improvement in lake levels and recreational uses in the later summer dry season months. Two feet of water retained in April, carefully managed, would provide for two feet higher water level in August and September.

The fact that the lake's 37,000 acres are exempted by the federal government from local property tax assessments means that about $ 3 million has been removed from (primarily) Cherokee and Bartow County tax rolls; that amount would exceed the entire county general fund budgets of those two counties. If this amount was collected at prevailing rates, it would result in elimination of all, or almost all, such county property taxes.

The Lake's counties, in addition to shouldering the financial burden of the lake, should be able to benefit from the enormous quality of life and recreation value of the water that passes through it. The USAE must be directed to give appropriate consideration to the modern-day value of water to our local economy and to change its operations accordingly to preserve the water instead of wastefully dumping it away to the ocean.

Comments

- The USACE states in its draft EIS on the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water in the lake as is possible to provide for extended recreation uses.
- The USACE should immediately conduct a comprehensive financial analysis that would analyze the comparative costs and benefits of water use for local power generation as compared to use for recreation and improved local quality of life.

- The USACE in its draft EIS to its WCM update states that it does not provide navigation releases from Allatoona. That being the case, the USACE should openly provide a full analysis of its past practices in support of Alabama Power Company's (APC) hydro-power release requests, to demonstrate that APC's associated water release practices do not damage recreational benefits by using Allatoona water to support navigation in Alabama.
- The USACE should modernize its daily routine to effectively be proactive in seeking to conserve Lake water in the face of developing drought conditions and seasonal water use demand/benefits, rather than continue its practice of reactive decision-making that wastes water downstream and, thereby, limits recreational uses.
- The USACE should commission a new feasibility study as to the merits of purchasing flood easements in the Cartersville Etowah River corridor to increase flood risk management through increased discharge capacities, allowing for improved dry season recreational uses and also drought-insurance water conservation.
- The USACE should commission a new feasibility study as to the merits of constructing downstream Etowah reregulation storage capacities to increase flood risk management through increased discharge capacities, allowing for improved dry season recreational uses and drought-insurance water conservation.
- The USACE should commission a new feasibility study as to the merits of constructing, downstream from Carter Dam, Oostanaula reregulation storage facilities. This will allow the USACE to increase its ability to manage flood risk, allowing for improved dry season recreational uses and drought-insurance water conservation.
- The USACE should immediately commission a modernized update of its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities and the actual flood event history of the past 60 years. The study should include a detailed analysis of modern-day flood risk management margins as compared to the original 1950 design criteria.
- The USACE should publically disclose, in a format like its 5-week Lake level forecast curves, April-through-September lake levels compared to its shown "historical average elevation", that could have resulted if zero-benefit water releases to the Gulf had not occurred.

Questions

1. Please explain why the 5-week lake level forecast is so routinely way out of line with actual results during the reservoir re-filling season? Please describe in detail how the USACE's daily practices actively use various real-time local weather and hydrographic data to develop its operating decisions as to reservoir outflow decisions to conserve water to the benefit of local area recreational benefits.
2. Please explain, in detail, the specific USACE procedures that are used during the dry season months that result in water conservation decisions that benefit local recreational uses at the expense of downstream (APC) power generation support.
3. In light of the modern-day (huge) value of the lake water, please explain why the USACE Zone 2 management policies (based on historically outdated criteria that give insignificant weight to water supply and recreation needs) are woefully inadequate to conserve water for its highest uses for water supply and to prepare for developing drought conditions?
4. Please provide a cost analysis that demonstrates that the subsidies given to hydropower generation through water discharges are more beneficial than the value of local recreation and quality of life uses from 7 million annual users and hundreds of millions of dollars of local economic potential.
5. Please provide an analysis that shows how much of a subsidy is given to electric companies by virtue of the artificially low (as compared to prevailing peak-season electricity market rates) cost of generated power by the releases of water during the dry season months of July, August and September.

6. Please provide a cost analysis that demonstrates that the subsidies given to the occasional Alabama River barge shipment (rather than being diverted to rail shipments) is more beneficial than the beneficial economic, quality of life and recreational value of the water.
7. How much of Alabama Power's typical request of water releases goes to provide for Alabama River navigation support during the dry season months of July, August and September? How about for 2012?
8. If Alabama Power is approved to raise the level of the Lake Martin reservoir, how will the USACE insure and publically disclose that Allatoona water does not indirectly get used to provide for that capacity, since reduced Tallapoosa River flows would at some point have to be offset by Coosa River flows to meet stated USACE navigational, power generation, and environmental flows?
9. What is the cost per ton expenditure annually by all USACE operations to provide for the barge shipments along the Alabama River between Montgomery and Claiborne Lock? How much water volume is provided annually to support such shipments (separate from M&I contracts and low-flow minimums)?
10. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, as compared to that in the 1950's, please explain why flood risk management criteria and policies do not today provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950.
11. Please provide details as to how the USACE uses and integrates NOAA field data and major weather system forecasting information to conserve water, rather than to just release water needlessly downstream because the rule-curve dictates so.
12. In light of modern weather system forecasting capabilities, please explain why excess early spring inflows should not be used conserve valuable water through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging to drought–period water supply requirements and to routine recreation needs.
13. Please explain why the enormous local economic benefit of Lake water from prospective water supply (at least $500 million annually) and recreation (at least $250 annually) does not justify revaluating decades-dated criteria that sends water downstream for much less beneficial purposes. Why does the USACE not exercise its discretion and seek appropriate beneficial use of such a modern-day valuable asset as the water flowing through Allatoona?

Lake Allatoona Association

Key Issues in the Revision of the U. S. Army Corps of Engineers (USACE) Water Control Manual

Water Supply & Drought Storage

Outline

The value of each gallon of water that passes through the Lake has dramatically increased since the 1940's. The Lake plan then and since has focused almost entirely on flood control and electric power – very little to no value has been assigned to the use of water for local consumption or use. The USACE has not changed its operations of the Lake to recognize this dramatic shift of value.

Nothing we seek would compromise the overriding purpose of flood risk management. We merely wish the USACE to take advantage of modern technologies without increasing the risk of flooding. We ask the USACE to use best-management practices and be proactive to conserve precious water assets. Our proposed changes are minor tweaks to a complex system, but which would have an enormous benefit due to the modern-day high value of water.

During January and February of 2013, over 50 billion gallons of water were needlessly drained from the Lake (on top of at least that amount previously drained-out in December and January for routine winter drawdown) and dumped into the Gulf of Mexico to the benefit of nothing; this was absolutely wasted water. This happens most every year. At current local water utility costs, this waste represents over $200 million of wasted water this year in just two months! Further, if just 20% of that wasted water had been retained for use moving into the historic drought of 2006, the entire drought restriction impact for Cobb, Cherokee, Paulding and Bartow Counties could have been prevented. If the USACE would adopt our proposal, there would have been no drought impact to water supply (locally) in 2006/2007.

The fact that the lake's 37,000 acres are exempted by the federal government from local property tax assessments means that about $ 3 million has been removed from (primarily) Cherokee and Bartow County tax rolls; that amount would exceed the entire county general fund budgets of those two counties. If this amount was collected at prevailing rates, it would result in elimination of all, or almost all, such county property taxes.

The USACE states in its draft EIS on the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water and follow court mandates to consider the water supply potential of the lake – including raising operational pool levels across all months as is possible and cease the routine dumping of water into the ocean.

Comments

- The USACE should conduct a comprehensive financial analysis that would analyze the comparative costs and benefits of water use for local power generation as compared to use for water supply.
- The USACE in its draft EIS to its WCM update states that it does not provide navigation releases from Allatoona. That being the case, the USACE should openly provide a full analysis of its past practices in support of Alabama Power Company's hydro-power release requests, to demonstrate that APC's associated water release practices do not, indirectly, use Allatoona water to support navigation in Alabama.
- The USACE should modernize its procedures to be proactive in seeking conservation of lake water in the face of developing drought conditions and seasonal water use demand/benefits, rather than continue tardy reactive decision-making that wastes water downstream. As an example, the USACE has the ability during normal seasons to lower the Lake over two feet within 24 to 36 hours and the National Weather Service Forecasts now provide the USACE more than a week of advance notice of major rain-making systems.
- The USACE should conduct updated or new feasibility studies regarding strategies to increase Lake-water retention without increasing flood risks - through increased discharge capacities and drought-insurance water conservation. In addition, the USACE should purchase flood easements in the Cartersville Etowah River corridor (instead of decreasing discharge capabilities by 33%) and construct downstream Etowah and Oostanaula river reregulation storage facilities.

- The USACE should modernize its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities and the actual flood event history of the past 60 years, to demonstrate the historically improved flood control margins over the 1950's assumed design criteria.
- The USACE should publically disclose, in the format of its 5-week Lake level forecast, an April-through-September lake levels comparison of its "historical average elevation" compared to the levels that could have resulted if wasteful ocean water dumps had not occurred.

Questions

1. Please explain why the 5-week lake level forecast so routinely and commonly way out of line with actual results during the reservoir re-filling season? Please describe in detail how the USACE's daily practices use various real-time local weather and hydrographic data to develop its operating decisions as to reservoir outflow decisions so as to conserve water.
2. Please explain, in detail, the specific USACE procedures that are used during the dry-season-months that result in water conservation decisions at the expense of downstream (APC) power generation support.
3. Please explain where, if any, the USACE Zone 2 management policies look forward rather backward, to conserve water for local use, when there are developing drought conditions?
4. Please provide a cost analysis that shows a comparison of hydropower generation water costs and benefits as compared to the market value of locally sold water (about ½ cent per gallon).
5. Please provide a cost analysis of the subsidies given to electric companies through the artificially low (as compared to prevailing peak-season electricity market rates) costs charged them for water releases to generate power during the dry season months of July, August and September.
6. Please provide a cost analysis that compares the subsidies given to the occasional Alabama River barge shipment through Alabama Power water releases that are based on Allatoona water (focused on such shipments' alternate rail shipping costs) to the market value of locally sold water (about ½ cent per gallon).
7. How much of Alabama Power's typical request of water releases goes to provide for Alabama River navigation support during the dry season months of July, August and September?
8. If Alabama Power is approved to raise the level of its Lake Martin reservoir, how will the USACE insure and publically disclose that Allatoona water does not indirectly get used to provide for that capacity, since reduced Tallapoosa River flows would at some point have to be offset by Coosa River flows to meet stated USACE downstream navigational, power generation and environmental flows?
9. What is the annual total USACE cost per ton (water flow, dredging, lock and dam management) to provide for the barge shipments along the Alabama River between Montgomery and Claiborne Lock? How much water volume is provided annually to support such shipments (separate from M&I contracts and low-flow minimums)?
10. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, and the large value of water locally, please explain why flood risk management criteria and policies cannot be tweaked and improved to provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950.
11. Please provide details as to how the USACE uses and integrates NOAA field data and major weather system forecasting information to conserve water, rather than to just release water needlessly downstream simply because the rule-curve dictates so.
12. In light of modern weather system forecasting capabilities, please explain why excess and valuable early spring Lake water inflows should not be conserved through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging to drought–period water supply requirements and to routine recreation needs.

Lake Allatoona Association
Lake Allatoona & Upper Etowah River Basin
Water Management Position Paper

After years of discussion, negotiation and litigation regarding North Georgia water resources and their usage allocation, the recent Federal Court ruling has created focus on the issue at all levels. Upper Etowah River basin flows and Lake Allatoona (Lake) water storage and water quality are clearly involved in the overall issue. The Lake Allatoona Association (LAA), provides this document to outline its position and goals relating to its long-term goals for Lake management and the current issue of water allocation.

As the community-based voice of Lake Allatoona, LAA's mission is to improve our Lake's water quality and pool levels through encouragement of healthy lake use practices. The LAA links a large number of like-minded people to positively influence governments (federal, state and local) and citizens (e.g. boaters, adjoining owners, and recreational users) who work together to improve water quality and pool levels. Focused on the two keys to improvement – the US Congress and the US Army Corps of Engineers – LAA's large and growing membership base is committed to push the Congress and the Corps toward positive changes for Lake Allatoona's benefit.

The LAA's positions are a direct outgrowth of its responsibility for leadership and representation of local citizenry interests in stewardship of the God-given and mankind-enhanced environment with which our community has been blessed. The LAA believes that the execution of a combination of the below outlined recommended changes could result in routine Lake water levels improvements with a two foot increase in normal summer pool level, begun 4 weeks earlier, held 6 weeks longer, and an 8 feet winter pool drawdown reduction. Shorthand for this overall program is "2 – 4 – 6 – 8, Allatoona Clean".

This overall water level/stability improvement would support five important outcomes:

Desired Outcomes
1. Increase NW Georgia water supplies.
2. Reduce water quality degradation.
3. Improve Alabama River navigation water release capabilities.
4. Improve Lake Allatoona recreation benefits.
5. Continue to support power generation and flood control needs.

This Position Paper's following recommendations are directed toward the four entities which are critical to the Lake's operation and so-called water wars: US Army Corps of Engineers (USACE), B. State of Georgia (GA), C. State of Alabama (AL)) and D. the Southeastern Power Administration (SEPA).

A. U.S. Army Corps of Engineers (USACE)

1. USACE Lake Allatoona operations procedures should be modernized and updated to provide for proactive preservation of the Upper Etowah's precious and limited water flows through more appropriate flood control statistical methods and practices to allow for less wasted winter wet period water flows and increased winter storage.
2. USACE Lake Allatoona operations procedures should be modified to pay more attention and reduce the major exposures of barren shoreline from Lake level fluctuations. Improved practices should be implemented to better comport with existing state storm water runoff and sedimentation environmental laws regarding siltation and sedimentation control.
3. USAC should modernize the basis for its rule curve assumptions to provide for more effective deployment of Lake Allatoona's storage capability through proactive rather than reactive USACE basin management strategies. These techniques should utilize modern computer-based modeling software to "look ahead – not back" when developing discharge and generation plans. The Corps should use real-time actual local basin hydrology data and National Weather Service intelligence instead of historical averages when possible.
4. USACE should conduct a modernized and multi-disciplined flood retention risk analysis study and report on the feasibility of increasing Lake Allatoona's vertical pool storage target levels geared to a 2 foot increase in normal summer pool level; begun 4 weeks earlier; held 6 weeks longer; coupled with an 8 feet winter pool drawdown reduction.
5. USACE Lake Allatoona lake level management practices geared to fish spawning criteria at the expense of water storage factors should be modified.
6. USCAE Lake Allatoona policies should be corrected to give proper recognition to the annual $250 million economic development benefit and approximately 2000 local jobs creation benefits that accrue from the recreation purpose of the Lake's original development. For example, holding to the Rule Curve would support this original purpose allowing longer use of the Lake during the year.
7. USACE should provide significantly more transparency and real-time reporting in regards to: Altered Lake discharge volumes, reasons for such changes; Alabama River barge traffic utilization; coordination with Alabama Power as to water release cooperation, power generation costs, benefits and revenues; graphical-consolidated pool, discharge and inflow data to include USACE's Allatoona (Etowah) and Alabama Power's Martin (Tallapoosa); and lake water quality impairment practices.
8. USACE should cooperatively work with GA and AL, involving the U.S. Congress, to achieve the above objectives.
9. USACE should conduct a study to determine what the peak boat capacity is for the Lake. Excess peak period usage causes dangerous conditions and damaging Lakeshore erosion. As part of this study, the USACE should evaluate whether innovative marina and ramp usage peak period tariffs could mitigate such conditions.

B. State of Georgia (GA)

1. GA should not consider nor allow additional inter-basin transfers that would serve to reduce inflows and/or increase outflows from Lake Allatoona – not to Alabama's Tallapoosa basin nor to Georgia's Chattahoochee basin.
2. Existing GA erosion and sedimentation control efforts should be continued and intensified within the entirety of the Lake Allatoona drainage basin.
3. GA policies should reserve and allocate Lake Allatoona water consumption to the region which provides for its existence through public-use set-aside of its 25,000 plus acres and resultant annual sacrifice of over $5 million local property tax base revenues (Bartow, Cherokee, and Cobb plus Paulding and Gordon Counties).
4. GA should work with LAA and other involved entities to maximize, to the extent practical, watershed protection practices, particularly for specific sensitive sub-basins.
5. GA should cooperatively work with USACE and AL, involving the U.S. Congress, to achieve the above objectives.
6. GA should work with AL to identify mutual benefits from equitable, efficient and effective joint use of all regional river basin flows.
7. GA should initiate appropriate and comprehensive processes necessary to ensure wise and efficient citizenry water conservation and usage practices.
8. GA should develop and execute a Public Relations effort to ensure that the facts regarding water availability and use are widely known.
9. GA should ensure that any amount of water withdrawn from the Lake is returned after treatment to at least pre-withdrawal quality levels.
10. GA should consider placing a tax on boats by weight to help prevent Lakeshore damage by boat wave action. Monies raised should be used to fund Lakeshore restoration and armoring.
11. GA (EPD) and the local counties should collect Lake water samples to determine areas with serious water quality issues resulting from leaking septic tanks. The State should pass legislation requiring that lakeshore septic tanks and drain fields be periodically tested and, if found to be leaking, require repair or replacement.
12. GA should work with the USACE to implement shoreline hardening and other aggressive sedimentation/erosion techniques by adjoining property owners.

C. State of Alabama (AL)

1. AL should develop an Alabama River Basin management plan that would provide for more effective utilization of the flows that originate within its borders rather than focus on capturing control of the flow that comes to AL from Lake Allatoona (over 70% of the water that falls or flows into AL originates in AL).
2. AL should develop an Alabama River navigation management plan that more effectively deploys its extensive system of locks and dams to manage river flows presently provided carte blanch in favor of a very few beneficiaries' commodity transportation options.
3. AL should work with GA to identify mutual benefits from equitable, efficient and effective joint use of all regional river basin flows.
4. AL should develop and implement a comprehensive Alabama River basin water conservation plan.
5. AL should cooperatively work with USACE and GA, involving the U.S. Congress, to achieve the above objectives.

D. Southeastern Power Administration (SEPA)

1. USACE Lake Allatoona power generation practices should be modified so as to be based on market-based electricity pricing models rather than the current method which only seeks to recover end-of-life depreciation cost factors.
2. SEPA should provide significantly more transparency in regards to the generation of hydroelectric power, including the provision of online reporting of cost/benefits/revenues, hours of generation and "avoided" generation options.
3. SEPA, the USACE and Congress should acknowledge that the initial investment of federal expenditures has been returned in full from over 55 years of Allatoona generation revenues and relinquish some operations oversight and control to local communities.

Outcomes Associations to Recommendations

Desired Outcomes
1. Increase NW Georgia water supplies.
2. Reduce water quality degradation.
3. Improve Alabama River navigation water release capabilities.
4. Improve Lake Allatoona recreation benefits.
5. Continue to support power generation and flood control needs

Associated Supportive Recommendations

Outcome	A. USACE	B. GA	C. AL	D. SEPA
1	1,3,4,5,7,8	1,5,6,7,8	1,2,3,4,5	1,2,3
2	2,3,4,5,7,8	2,2,4,5,6,7,8,9,10,11,12	3,5	1,2,3
3	1,2,3,4,5,7,8	1,3,5,6,7,8	1,2,3,4,5	1,2,3
4	3,4,5,6,7,8,9	1,2,3,5,6,7,8,10,11,12	1,2,3,4,5	1,2,3
5	1,2,3,4,5,7,8	5,6,7,8	3,5	1,2,3

Comment ID 0039

Comment ID 0039.001

Author Name: Association, Lake Allatoona

Organization: Lake Allatoona Association

Comment

Thank you for the opportunity to submit comments regarding the Corps of Engineers' ("Corps") revision of the Water Control Manual ("WCM") for the Alabama-CoosaTallapoosa Flint River ("ACT") system. The Lake Allatoona Association is the community-based non-profit organization of like-minded lake resource users whose solepurpose is to seek improved lake water quality and levels through activity as "The Voice of Lake Allatoona". Our below and attached comments are constructively offered to that end.

The CORPS has a serious responsibility with the overriding flood risk management task of Allatoona Lake. Nothing that we believe or seek is offered to compromise that task. However given the now enormous value that our Lake water has to literally over a million people for water supply and recreational quality of life, we believe that changes are in order, from the way things have been done with single focus on flood control since 1950, to the detriment of water supply and recreational quality-of-life purposes.

In 1950, the CORPS' best weather forecasting tools were nothing like what it now has routine access to through NOAA and other sources; seasonal forecast capabilities of lake inflows give exponentially improved abilities to manage lake outflows. In 1950 the CORPS hydrologic models were weak shadows of what it uses today from hundreds of real time stream flow gauges and sophisticated HEC RAS runoff models. In 1950, rural Bartow, Cherokee, Cobb and Paulding Counties' populations totaled less than 100,000 people and the water was so invaluable then that its use was most often not even metered. Today the Lake is directly surrounded by over 1 million people who are paying about $5 dollars for every 1000 gallons of water.

In light of these enormous changes, LAA has thoughtfully sponsored a comprehensive set of recommendations for positive change to Allatoona's water levels, with connected improved levels of lake water quality. LAA calls this program "2-4-6-8, Allatoona Clean"; in summary that label refers to the nominal outcomes that LAA seeks -namely: A 2-foot increase in summer pool levels, such summer pool level beginning 4-weeks earlier than it presently does, such summer pool level held higher for 6-weeks longer than it is presently, and an 8-foot reduction in the winter season drawdown. The 2-4-6-8, Allatoona Clean proposal is not offered as the only solution and its particular numbers are not sacred. Rather, it was offered in the past and is again offered to prompt discussion and debate around the central proposition that the Lake's water levels could be managed differently to the benefit of certain of the Lake's "purposes" and without detrimental effect on the chiefly emphasized "purpose" of flood control. That 3-page document was provided to the CORPS in 2010, and is attached for your ease of reference.

<The author included the following attachment to their comment letter: "Lake Allatoona Association, Lake Allatoona & Upper Etowah River Basin Water Management Position Paper." Please see original letter for a copy of this document.>

Within the above outlined context, LAA had hoped to find that the WCM update would have addressed such a critical issue as the need to improve operations relating to Allatoona Lake's very important water supply and recreation quality-of-life characteristics.

Instead, we are very disappointed to see that the revision's scope had been severely restricted such that no consideration has been given (except for projections of minor reductions in late recreation season power generation releases) in the update to implement Allatoona Lake water conservation measures that could prove of great value toward serving water supply and recreation needs.

The public deserves a zero-based, bottoms-up review of how the Lake is managed, to include consideration of retaining more water in the lake year-round. While the laws and regulations may require that the Corps offer an opportunity for public comment, it is disingenuous to do so when, in fact, the parameters of the review are so constrained as to be make the process a token effort and the solicitation of public comment a form of patronization within a process that results in no meaningful improvements, modernization or recognition of 21st century realities and needs as relates to Allatoona Lake.

Therefore, to provide the CORPS comments on the Draft EISon the WCM, LAA attaches six compilations of about 40 specific questions or requests provided by our membership on each Key Issue of: Economics, Recreation, Fishing, Water Supply and Drought Storage, Water Quality, Environment.

In summary, LAA believes that the CORPS could pay attention to a range of detail different from how it established over 60 years ago to not only manage flood risks but also to conserve and not wastefully dump water to the ocean, thus using the full potential of the Lake's water to benefit local water supply and recreational purposes across all four seasons without increasing flood risks that were foreseen in 1950.

Response

Comment noted. Detailed responses to comments and questions from the Lake Allatoona Association are provided under Comment ID numbers 0039.002 through 0039.007 below.

Comment ID 0039.002

Author Name: Association, Lake Allatoona

Organization: Lake Allatoona Association

Comment

Clean Water / Water Quality

Outline
The value of each gallon of water that passes through the Lake has dramatically increased since the 1940's when the Lake was planned. Plans back then placed complete emphasis on the Lake's value as to electric power and flood control- no value was assigned to the use of water for local consumption or recreation use. The USACE has not changed its operations of the Lake to recognize this dramatic shift in value.

Beginning in 1972, multiple legislation and regulatory initiatives have been implemented on the federal, state and local levels that require careful attention to improving and protecting the quality of our water resources.

The long-standing procedures by the USACE to dramatically drawdown the Lake and thus expose hundreds of acres of barren shoreline to severe erosion and sediment run-off needs to be reassessed. It is arguable that the USACE practice on the Lake results in the largest exposed/uncontained disturbed site in the State of Georgia. Leaving about 400 acres of barren soil left uncontained for 3 to 5 months each year has a huge detrimental effect to the Lake's water quality.

Repeated late winter and early spring incremental flood filling, followed by rapid drawdowns also result in added siltation and resulting water quality degradation.

USACE policies and practices should be modernized and updated to give consideration to the impact of its outdated pool operations on water quality.

Comments

• The USACE states in its draft EISon the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water in the Lake as is possible and to give appropriate weight to the negative water quality impacts of its practices.
• The court system has definitively ruled that water supply should be included as a high priority for the USACE in operating the Lake. The USACE should take all steps necessary to comport its Lake operations with that mandate- including raising operational pool levels across all months to minimize sedimentation degradation of the water-supply uses.
• The USACE should commission a new feasibility study as to the merits of purchasing flood easements in the Cartersville Etowah River corridor to increase flood risk management through increased discharge capacities and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures.
• The USACE should commission a new feasibility study as to the merits of constructing downstream Etowah reregulation storage capacities to increase flood risk management through increased discharge capacities and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures
• The USACE should commission a new feasibility study as to the merits of constructing downstream from Carter Dam, Oostanaula reregulation storage capacities, to increase flood risk management and also drought insurance water conservation which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures
• The USACE should immediately commission a modernized update of its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities and the actual flood event history of the past 60 years. The study should include a detailed analysis of modern-day flood risk management margins as compared to the original1950 design criteria which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures
• The USACE should publically disclose (in a format similar to its 5-week Lake level forecast curves), Aprilthrough- September Lake levels, that could have resulted if zero-benefit water releases to the Gulf had not occurred. These levels should be compared to the shown "historical average elevation".

Questions

1. Please explain why the USACE believes it is exempt from soil erosion and sedimentation laws and regulations that all other elements of society must follow
2. Explain what engineering considerations are given to the impact of soil erosion occurring during periods of low lake levels and the resulting exposed bare soils on the shores of Lake Allatoona
3. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, as compared to that in the 1950's, please explain why flood risk management criteria and policies do not today provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950 which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures.
4. In light of modern weather system forecasting capabilities, please explain why excess early spring inflows should not be used conserve valuable water through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging drought -period water supply requirements and to routine recreation needs which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures
5. Please explain why the enormous local economic benefit of Lake water from prospective water supply (at least $500 million annually) and recreation (at least $250,000,000 annually) does not justify revaluating decades-dated criteria that sends water downstream for much less beneficial purposes. Why does the USACE not exercise its discretion and propose specific intent to seek appropriate beneficial use of such a modern-day valuable asset as water flowing through Allatoona which would provide for greater storage capacity to minimize water quality degradation that results from shoreline exposures?
6. Please provide details on alternatives that the USACE has considered for seasonal surface treatment/protection use to minimize exposed shoreline erosion and sedimentation through modern environmental practices.

Response

Response to Comments

USACE has examined the environmental impacts of the proposed operational changes during the updating water control manual process pursuant to current regulations. USACE will not be conducting a feasibility study as part of this water control manual update process. USACE has the discretion to raise the winter guide curve elevations but only to the extent that flood risk management would not be adversely affected.

Response to Specific Questions

1. USACE follows all appropriate laws that apply to the operation of its projects. Temporarily exposed soil within lake does not require a "soil-disturbing" permit.

2. There are no quantifiable impacts to soil erosion from the proposed operational changes at Allatoona. The Lake's shoreline management plan defines and regulates activities around the Lake that could impact soil erosion. Also, Allatoona is a multipurpose project and therefore designed to fluctuate seasonally. 82,000 acre-ft of inactive storage was designed into the project to prevent

sedimentation from impacting project purposes.

3 and 4. Even with increased forecasting capabilities, the exact quantity and location of rainfall/runoff cannot be determined accurately enough to successfully manage the rainfall before it actually occurs. Maintaining maximum flood storage is critical during actual flood events.

5. USACE does not prioritize authorized project purposes at its multipurpose projects. The "discretion" described in the comment would require a reallocation of storage which is outside the scope of the process to update the water control manuals.

6. Shoreline erosion is managed thru the Project's Shoreline Management Plan. Recent surveys of inlake sedimentation have determined that sedimentation rates are relatively low in most areas of the Lake. 82,00 acre-ft of inactive storage was designed into the project to prevent sedimentation from impacting project purposes.

Comment ID 0039.003

Author Name: Association, Lake Allatoona

Organization: Lake Allatoona Association

Comment

Economics & Jobs

Outline
The USCOE states that Allatoona generates an estimated 250 million dollars annually from business around the Lake. This is based on their historic draw down because business is negatively impacted by a limited recreational period. Extended recreational periods would substantially enhance upon the economics around to Lake to include more dollars generated for marinas, bait and tackle shops, gas stations, restaurants. All of these improvements taken together would generate what we need - JOBS.

Comments
• The new Draft Water Control Manual (WCM) states that Water Management Personnel are aware of recreational effects caused by reservoir fluctuations but there the WCM provides no specific requirements to maintain recreational levels. Unfortunately, other project functions usually determine releases and resulting lake levels.
• The USCOE in the Draft WCM expresses Impact Lines which are Lake levels that impact recreational pool levels, with negative impacts defined by the USACOE as follows:
  o Initial Impact Line (837 feet): recreational usage and the economy begin to feel the impact.
  o Recreational Impact Line (835 feet): all swim areas will be exposed. Two Boat Ramps will be closed. Marina business will be severely reduced.
  o Water Access Impact Line (828 feet): most severe effects on recreation. Half of the boat ramps will be closed. There will be hazards to navigation. Marinas will experience increased costs of moving docks and some slips will be unusable.
• The USCOE in the new Draft WCM has changed the Fall drawdown to hold the 835 feet from Sept. 5th thru Nov. 15th. Then from

Nov. 15th they would draw down to 823 feet by Dec. 31st. The 823 feet would hold until Jan. 16th with a rise to 840 feet by April 30th.
• The economic benefits for the drawdown for Hydropower and Water Supply are in competition with the economic benefits around the Lake for recreational use. This is a double-edged sword. The USACOE should seek to get a more appropriate (greater) return (i.e. market-based) for the water removed for Hydropower and Water Supply.

Questions
1. The extended draw down to 835 feet by Nov. 15th is an improvement, but the USCOE's proposed Recreational Impact Line will cause all swim areas to be closed and will cause all of the marina business to be severely impacted. Why was the Initial Impact Line of 837 feet or even 840 feet until November 15th not recommended?
2. The drawdown in the Draft WCM shows the Lake level from Nov. 15th at 835 feet to 823 feet by Dec. 31st. What reason is there for the Lake to be at 823 feet on Dec. 31st?
3. Since the Dec. 31st 823 feet level is only held until Jan. 16th, why would keeping the lake at a higher level during that time frame be an issue? This higher level would be beneficial for all of the Lake's legislated purposes and would greatly boost areas economics and JOBS.
4. An earlier recreation period would certainly be economically beneficial for businesses around the lake. Why not have the lake at full conservational pool (840 feet) by April 1st?

Response

Response to Comments

The comments are noted. They generally highlight specific factual information from the EIS and WCMs, related to recreation considerations at Allatoona Lake and conclude that the Proposed Action does not adequately address recreation interests and needs at the lake. The WCM update process is intended to develop an operational plan, with features to specifically address drought conditions when they occur, that would achieve the best overall balance among the federally authorized purposes of the reservoir projects in the ACT Basin, including recreation. The plan formulation and evaluation process is described in detail in Section 4 of the EIS.

Response to Questions

Raising the winter pool levels would negatively impact flood risk management capabilities. The guide curves are determined to provide the appropriate levels of flood risk management. During a normal year winter drawdown stops at 823. Drawdown to 817 has only occurred during drought operations. Hydropower rates are set in accordance with the project's authorizing language, Department of Energy regulations and approved by FERC.

Comment ID 0039.004

Author Name: Association, Lake Allatoona

Organization: Lake Allatoona Association

Comment

Environmental Impacts

Outline
There are many significant environmental impacts that result from the USACE management of the Lake and, particularly, the management of the water level. Just two are discussed here.

The greatest concern is that the low water levels in the winter, spring, and fall leave many acres of bare soil exposed for months to rain and wind erosion. This is likely the worst case of exposed soil in the State of Georgia and it is managed by an arm of the federal government. Leaving about 400 acres of barren soil left uncontained for 3 to 5 months each year has a huge detrimental effect to the Lake's water quality. For many months, every rain event causes significant erosion of this exposed soil that is carried towards the center of the Lake. The short-term results include vast plumes of sediment in all parts of the Lake.

Another significant negative impact of the USACE's water level management practices is the concentration of pollutants during the winter, spring, and fall seasons. Unfortunately, there is a significant amount of pollutants in the Lake due to poor management of the lands (drainage basin) surrounding the Lake which results in various pollutants entering the Lake (e.g. herbicides, fertilizers, oils, etc.). When the Lake level is dropped for the large majority of the year, these pollutants are concentrated in the smaller amount of water in the Lake.

Comments
• The Corps eliminates from consideration any changes in the conservation pool level or winter pool level. These two parameters are the most crucial in terms of potential environmental impact. An open assessment of how the Lake could or should be managed must include an assessment of the merits of the historic full pool level and the historic winter pool level.
• The Corps eliminates from consideration any measures that would change the minimum releases or minimum flows to ensure other entities meet federal clean water compliance requirements. This begs the question as to what extent minimum releases and minimum flows were evaluated.
• The Corps eliminates from consideration any measures that would significantly affect hydropower at Allatoona.

Questions
1. In order to manage the Lake in an "optimal" manner, it seems prudent to assess the ramifications of changing the full pool and winter pool levels. They are the most crucial constraints affecting all of the Lake's authorized purposes: recreation, water supply, hydropower, flood control. If these parameters are outside the scope of updating the WCM, how and by whose authoritywould those parameters be evaluated to ensure they are set at reasonably optimal levels?
2. The only significant change in the year-round water level of the Lake contained in the draft WCM Alternative Plan G (Proposed Action Alternative) is a revision to guide curves and action zones that will result in a phased fall drawdown which would result in a slight increase in water level in the fall and winter. Was a full range of changes to the guide curves considered with an eye to keeping as much water in the Lake as possible without unduly increasing flood control risk? Was the proposed guide curve change offered because it is the least likely to face opposition?

3. There are a number of minimum releases, maximum flow, maximum withdrawal parameters in place that affect the lake's operation and management. Were these max./min. requirements reviewed in Toto (as a group)?
4. Did the Corps conduct a full assessment of the value and cost of the hydropower operation at Lake Allatoona? Does the requirement to have a hydropower function "cost" the lake's operation more than "benefit" it, in the sense that operational decisions are made simply because of the requirement to produce electricity? With all competing requirements in managing the lake, does the Corps support continued hydropower production?
5. There is an environmental and economic value in retaining more water in Lake Allatoona. The risks of doing so should be manageable. The Corps formulates draft alternatives to be considered in updating the WCM, thus limiting the scope of any update severely. Quoted from the EIS: "The range of actions, alternatives, and effects considered in this EIS are driven by the requirements set forth by Congress and Corps policies for project operation." Please help us break down that broad statement. How and by what authority can the public achieve a comprehensive zero-based-budget-type assessment of how the lake should be managed?

Response

Response to Comments

The general scope of the ACT WCM update process, including management measures considered for detailed evaluation as well as those eliminated from further consideration, are fully discussed in Section 4 of the EIS. Responses to the specific questions offered in the comment letter regarding “environmental impacts” are provided below.

Response to Specific Questions

1. USACE operates to meet all authorized project purposes. A feasibility study conducted under Section 216 of the River and Harbor and Flood Control Act of 1970 (Review of Completed Projects) would be required to evaluate alternatives that would consider re-operation of a federal project.

2. Appendix M (entitled ‘Flood Modeling above Rome, Georgia’) of the HEC-ResSim modeling report (found in EIS Appendix C) details the range of guide curve change considered as part of this WCM update. Because the guide curve determines the available flood storage, which affects the peak and volume of the reservoir release during flood operations, any modification to the guide curve may have some direct impacts on the flood conditions downstream. Two flood damage sites are evaluated for this system. Downstream of Allatoona on the Etowah River, the flood damage site is Kingston. Further downstream of the confluence with the Oostanaula River on the Coosa River, the flood damage site is Rome-Coosa. A flood operation alternative is acceptable only if it does not significantly increase the flood frequency curves at Kingston and at Rome-Coosa. Analysis indicates the Phased Drawdown operation would no increase in flood frequency at Kingston or at Rome-Coosa. The ranges of guide curves evaluated were not selected with the intent of keeping as much water in the reservoir as possible.

3. Yes, there are number of minimum release, maximum flow, and withdrawal rules that are part of Allatoona’s operations within the ResSim model. These rules were reviewed to ensure the operation intent was properly represented during the District Quality Control (DQC) review, Agency Technical Review (ATR) and Independent External Peer Review (IEPR).

4. Hydropower is an authorized project purpose as set forth by Congress. USACE will continue to operate in a balanced manner to meet all authorized project purposes.

5. USACE is uncertain to what the commenter is specifically referring. A feasibility study under Section 216 of the River and Harbor and Flood Control Act of 1970 (Review of Completed Projects) would be required to investigate re-operation of a federal project. Refer to section 4.1 for further information on measures that were eliminated from further evaluation.

Comment ID 0039.005

Author Name: Association, Lake Allatoona

Organization: Lake Allatoona Association

Comment

Fishing

Outline
Lake Allatoona is heavily used for fishing from boats and from the shoreline. Several tournaments are held on the Lake every year. Fishing contributes significantly to the local economy.

Comments
• When the Lake water level is dropped, it causes a hardship for those fishing from boats
• We have to beach our $50,000-plus boats on the rocky shores because there are no docks floating in the wintertime.
• There is a lot of revenue that is lost to the areas around Lake Allatoona due to the low lake levels over the winter months.
• The constantly varying lake levels in the spring have an adverse effect on the fish spawn. The USACE should work harder to have the levels rise steadily in the spring.
• Overall, the fishermen are more concerned with winter water levels than summer water levels

Questions
• Does the lake really need to be dropped 17 below full pool in the winter?
• Would it be possible to try and stop at 831 feet below full pool?
• If not Is it possible to extend a couple of the docks further out so they would float even when the lake is at the lowest winter draw-down level?

Response

USACE operates to meet multiple project purposes including flood risk management. Alternatives were not considered that would adversely impact flood risk management at Lake Allatoona. During a normal year winter drawdown stops at 823. Drawdown to 817 has only occurred during drought operations. The current shoreline management plan at Lake Allatoona provides conditions for extending docks.

Comment ID 0039.006

Author Name: Association, Lake Allatoona

Organization: Lake Allatoona Association

Comment

Recreation

Outline
The value of the Lake in terms of recreational resources and quality of life has dramatically increased since the 1940's when the Lake was planned. Plans back then placed complete emphasis on the lake's value as to electric power and flood control- very little to no value was assigned to the use of water for quality of life and recreation uses. The four county area of the lake in the early 1950's was a very rural and poor southern Appalachian community made up of less than 100,000 people. Rural electrification was a paramount need for the area. Today, these same counties contain over 1 million people in a densely populated suburban society. The USACE has not changed its operations of the lake to recognize this dramatic shift of value.

During January and February of 2013, over 50 billion gallons of water have been needlessly drained from the lake (on top of at least that amount previously drained-out in December and January for routine winter drawdown) and dumped into the Gulf of Mexico to the benefit of nothing; this has resulted in absolutely wasted water. This happens most every year. The result of this outdated practice is that the Lake's recreational and quality of life uses are quite often dramatically impacted in the dry late-summer months. It is not uncommon for the majority of the Lake's beaches, ramps, and other recreational access points to be inaccessible to the public beginning in late July or early August. This is a travesty and a waste of our national resource.

This lake annually is one of, if not the most, heavily used USACE lakes in the nation. Annual use in most years approaches and, often, exceeds 7 million people. Small changes across a range of USACE operational practices could result in conservation of the wasted spring season water. This conservation would allow for significant improvement in lake levels and recreational uses in the later summer dry season months. Two feet of water retained in April, carefully managed, would provide for two feet higher water level in August and September.

The fact that the lake's 37,000 acres are exempted by the federal government from local property tax assessments means that about $ 3 million has been removed from (primarily) Cherokee and Bartow County tax rolls; that amount would exceed the entire county general fund budgets of those two counties. If this amount was collected at prevailing rates, it would result in elimination of all, or almost all, such county property taxes.

The Lake's counties, in addition to shouldering the financial burden of the lake, should be able to benefit from the enormous quality of life and recreation value of the water that passes through it. The USAE must be directed to give appropriate consideration to the modern-day value of water to our local economy and to change its operations accordingly to preserve the water instead of wastefully dumping it away to the ocean.

Comments

• The USACE states in its draft EISon the Allatoona WCM update that it has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water in the lake as is possible to provide for extended recreation uses.

• The USACE should immediately conduct a comprehensive financial analysis that would analyze the comparative costs and benefits of water use for local power generation as compared to use for recreation and improved local quality of life.

• The USACE in its draft EIS to its WCM update states that it does not provide navigation releases from Allatoona. That being the case, the USACE should openly provide a full analysis of its past practices in support of Alabama Power Company's (APC) hydro-power release requests, to demonstrate that APe's associated water release practices do not damage recreational benefits by using Allatoona water to support navigation in Alabama.

• The USACE should modernize its daily routine to effectively be proactive in seeking to conserve Lake water in the face of developing drought conditions and seasonal water use demand/benefits, rather than continue its practice of reactive decision-making that wastes water downstream and, thereby, limits recreational uses.

• The USACE should commission a new feasibility study as to the merits of purchasing flood easements in the Cartersville Etowah River corridor to increase flood risk management through increased discharge capacities, allowing for improved dry season recreational uses and also drought-insurance water conservation.

• The USACE should commission a new feasibility study as to the merits of constructing downstream Etowah reregulation storage capacities to increase flood risk management through increased discharge capacities, allowing for improved dry season recreational uses and drought-insurance water conservation.

• The USACE should commission a new feasibility study as to the merits of constructing, downstream from Carter Dam, Oostanaula reregulation storage facilities. This will allow the USACE to increase its ability to manage flood risk, allowing for improved dry season recreational uses and drought-insurance water conservation.

• The USACE should immediately commission a modernized update of its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities and the actual flood event history of the past 60 years. The study should include a detailed analysis of modern-day flood risk management margins as compared to the original 1950 design criteria.

• The USACE should publically disclose, in a format like its 5-week Lake level forecast curves, April-through-September lake levels compared to its shown "historical average elevation", that could have resulted if zero-benefit water releases to the Gulf had not occurred.

Questions

1. Please explain why the 5-week lake level forecast is so routinely way out of line with actual results during the reservoir re-filling season? Please describe in detail how the USACE's daily practices actively use various real-time local weather and hydrographic data to develop its operating decisions as to reservoir outflow decisions to conserve water to the benefit of local area recreational benefits.

2. Please explain, in detail, the specific USACE procedures that are used during the dry season months that result in water conservation decisions that benefit local recreational uses at the expense of downstream (APC) power generation support.

3. In light of the modern-day (huge) value of the lake water, please explain why the USACE Zone 2 management policies (based on historically outdated criteria that give insignificant weight to water supply and recreation needs) are woefully inadequate to conserve water for its highest uses for water supply and to prepare for developing drought conditions?

4. Please provide a cost analysis that demonstrates that the subsidies given to hydropower generation through water discharges are more beneficial than the value of local recreation and quality of life uses from 7 million annual users and hundreds of millions of dollars of local economic potential.
5. Please provide an analysis that shows how much of a subsidy is given to electric companies by virtue of the artificially low (as compared to prevailing peak-season electricity market rates) cost of generated power by the releases of water during the dry season months of July, August and September.
6. Please provide a cost analysis that demonstrates that the subsidies given to the occasional Alabama River barge shipment (rather than being diverted to rail shipments) is more beneficial than the beneficial economic, quality of life and recreational value of the water.
7. How much of Alabama Power's typical request of water releases goes to provide for Alabama River navigation support during the dry season months of July, August and September? How about for 2012?
8. If Alabama Power is approved to raise the level of the Lake Martin reservoir, how will the USACE insure and publically disclose that Allatoona water does not indirectly get used to provide for that capacity, since reduced Tallapoosa River flows would at some point have to be offset by Coosa River flows to meet stated USACE navigational, power generation, and environmental flows?
9. What is the cost per ton expenditure annually by all USACE operations to provide for the barge shipments along the Alabama River between Montgomery and Claiborne Lock? How much water volume is provided annually to support such shipments (separate from M&l contracts and low-flow minimums)?
10. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, as compared to that in the 1950's, please explain why flood risk management criteria and policies do not today provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950.
11. Please provide details as to how the USACE uses and integrates NOAA field data and major weather system forecasting information to conserve water, rather than to just release water needlessly downstream because the rule-curve dictates so.
12. In light of modern weather system forecasting capabilities, please explain why excess early spring inflows should not be used conserve valuable water through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging to drought-period water supply requirements and to routine recreation needs.
13. Please explain why the enormous local economic benefit of Lake water from prospective water supply (at least $500 million annually) and recreation (at least $250 annually) does not justify revaluating decadesdated criteria that sends water downstream for much less beneficial purposes. Why does the USACE not exercise its discretion and seek appropriate beneficial use of such a modern-day valuable asset as the water flowing through Allatoona?

Response

Response to Comments

As pointed out in the EIS (Sections 1.4.4.1 and 4.1), USACE does have discretionary authority to raise pool levels, but that authority is subject to conditions and constraints. As is the case with the proposed adjustments to winter guide curve levels at Allatoona Lake, such modifications can be made under that discretionary authority if USACE can document that the flood risk management purpose would not be adversely affected. Other suggested changes were not considered and evaluated in detail because they would have an adverse impact on flood risk management. The studies recommended in the comments exceed the scope of the ACT WCM update process. Responses to specific questions are provided below.

Responses to Specific Questions

1. Chapter 6 of the Allatoona Lake WCM (EIS Vol. 2, Appendix A) provides details on forecasting methodologies. The 5 week forecast is based on estimated inflow into the project for the next 5 week period. Southeast River Forecast Center provides forecasted inflows for the initial 5 days. Remaining period involves engineering judgment, current conditions, basin knowledge and longer term precipitation forecast. There is no expectation that the 5 week forecast will exactly match the actual operation. The information is provided for planning purposes and captures the current trend. Precipitation forecast reliability drops dramatically beyond 48 hours. As noted on the website, the 5 week reservoir level forecast is designed to provide a general idea of future levels. Various factors such as weather & system requirements may cause variations in the reservoir levels.

2. USACE has no management procedure in place to conserve water at the expense of downstream APC hydropower generation. Guide curves define the target amount of water to be held in a reservoir at specified times of the year. Action zones are used to manage the lakes at the highest level possible for recreation and other purposes, meet minimum hydropower needs at each project, and determine the amount of storage available for downstream purposes such as flood risk management, hydropower, navigation, water supply, water quality, and recreation. The procedures are explained in detailed in Chapter 7-Water Control Plan of the Allatoona Lake WCM.

3. In response to the question, the following details are provided from Chapter 6 (Hydrologic Forecasts) of the Lake Allatoona WCM:
"The Corps has developed techniques to conduct forecasting in support of the regulation of the ACT Basin. In addition, the Corps has a strong reliance on other federal agencies such as the NWS and the USGS to help maintain accurate data and forecast products to aid in making the most prudent water management decisions. The regulation of multipurpose projects requires scheduling releases and storage on the basis of both observed and forecasted hydrologic events throughout the basin. During both normal and below-normal runoff conditions, releases through the power plants are scheduled on the basis of water availability, to the extent reasonably possible, during peak periods to enhance revenue returned to the Federal Government. The release level and schedules are dependent on current and anticipated hydrologic events. The most efficient use of water is always a goal, especially during the course of a hydrologic cycle when below-normal streamflow is occurring. Reliable forecasts of reservoir inflow and other hydrologic events that influence streamflow are critical to the efficient regulation of the ACT System."

4. USACE operates to meet all authorized project purposes. The requested cost analysis is outside the scope of the WCM update. A feasibility study conducted under Section 216 (River and Harbor and flood control Act of 1970) would be required to evaluate alternatives that would consider re-operation of a federal project.

5. USACE operates to meet all authorized project purposes. The requested cost analysis is outside the scope of the WCM update. A feasibility study conducted under the Section 216 authority would be required to evaluate alternatives that would consider re-operation of a federal project.

6. USACE operates to meet all authorized project purposes. The requested cost analysis is outside the scope of the WCM update. A feasibility study conducted under the Section 216 authority would be required to evaluate alternatives that would consider re-operation of a federal project.

7. APC releases minimum flow from their projects according to their FERC license. The currently is no specific requirement to support navigation other than minimum weekly combined release of 4,640 cfs from Jordan, Bouldin and Thurlow. The Proposed Action includes a concept that identifies Alabama Power minimum flow targets to support navigation based on inflow, state line flow and available storage.

8. Raising the level of Lake Martin was outside the scope of the WCM update, thus no analysis is included in the EIS. In the event of an approved FERC Martin Reservoir rise, USACE will continue to operate federal projects to meet the authorized project purposes.

9. USACE operates to meet all authorized project purposes. The requested cost analysis is outside the scope of the WCM update. Navigation is supported indirectly through releases from Allatoona and Carters Dams used to support other project purposes, mainly hydropower.

10. Chapter 6 of the Allatoona WCM describes in detail the hydrologic forecast techniques. Section 7-05 of includes the detailed description of the Flood Risk Management operation. Modern analytical tools, coordination with other agencies and basin knowledge are critical inputs to the flood risk management operation. The reservoir operation has evolved since the 1950’s to incorporate the more advanced analytical tools.

11. Chapter 6 of the Allatoona WCM describes in detail the hydrologic forecast techniques. Section 7-05 of includes the detailed description of the Flood Risk Management operation.

12. Section 7-15 of the Allatoona WCM details the procedure to deviate from normal operation. During drought periods, USACE may request a deviation to support an early refill of the reservoir utilizing higher spring inflows.

13. USACE operates in a balanced manner to meet all authorized purposes. USACE considered a full array of alternatives under the WCM update process. The measures within the array of alternatives that were evaluated were derived from public scoping comments as well as from within USACE. This process is documented in Section 4 of the DEIS. A feasibility study conducted under the Section 216 authority would be required to evaluate alternatives that would consider re-operation of a federal project.

Comment ID 0039.007

Author Name: Association, Lake Allatoona

Organization: Lake Allatoona Association

Comment

Water Supply & Drought Storage

Outline
The value of each gallon of water that passes through the Lake has dramatically increased since the 1940's. The Lake plan then and since has focused almost entirely on flood control and electric power- very little to no value has been assigned to the use of water for local consumption or use. The USACE has not changed its operations of the Lake to recognize this dramatic shift of value.

Nothing we seek would compromise the overriding purpose of flood risk management. We merely wish the USACE to take advantage of modern technologies without increasing the risk of flooding. We ask the USACE to use best-management practices and be proactive to conserve precious water assets. Our proposed changes are minor tweaks to a complex system, but which would have an enormous benefit due to the modern-day high value of water.

During January and February of 2013, over 50 billion gallons of water were needlessly drained from the Lake (on top of at least that amount previously drained-out in December and January for routine winter drawdown) and dumped into the Gulf of Mexico to the benefit of nothing; this was absolutely wasted water. This happens most every year. At current local water utility costs, this waste represents over $200 million of wasted water this year in just two months! Further, if just 20% of that wasted water had been retained for use moving into the historic drought of 2006, the entire drought restriction impact for Cobb, Cherokee, Paulding and Bartow Counties could have been prevented. If the USACE would adopt our proposal, there would have been no drought impact to water supply (locally) in 2006/2007.

The fact that the lake's 37,000 acres are exempted by the federal government from local property tax assessments means that about $ 3 million has been removed from (primarily) Cherokee and Bartow County tax rolls; that amount would exceed the entire county general fund budgets of those two counties. If thisamount was collected at prevailing rates, it would result in elimination of all, or almost all, such county property taxes.

The USACE states in its draft EIS on the Allatoona WCM update thatit has discretion to raise pool operations levels. In light of the enormous societal value of lake water, the USACE should move immediately to modernize its regulations to conserve as much water and follow court mandates to consider the water supply potential of the lake - including raising operational pool levels across all months as is possible and cease the routine dumping of water into the ocean.

Comments
• The USACE should conduct a comprehensive financial analysis that would analyze the comparative costs and benefits of water use for local power generation as compared to use for water supply.
• The USACE in its draft EIS to its WCM update states that it does not provide navigation releases from Allatoona. That being the

case, the USACE should openly provide a full analysis of its past practices in support of Alabama Power Company's hydro-power release requests, to demonstrate that APC's associated water release practices do not, indirectly, use Allatoona water to support navigation in Alabama.

• The USACE should modernize its procedures to be proactive in seeking conservation of lake water in the face of developing drought conditions and seasonal water use demand/benefits, rather than continue tardy reactive decision-making that wastes water downstream. As an example, the USACE has the ability during normal seasons to lower the Lake over two feet within 24 to 36 hours and the National Weather Service Forecasts now provide the USACE more than a week of advance notice of major rain-making systems.

• The USACE should conduct updated or new feasibility studies regarding strategies to increase Lake-water retention without increasing flood risks- through increased discharge capacities and drought-insurance water conservation. In addition, the USACE should purchase flood easements in the Cartersville Etowah River corridor (instead of decreasing discharge capabilities by 33%) and construct downstream Etowah and Oostanaula river reregulation storage facilities.

• The USACE should modernize its flood risk management procedures, in order to account for the totality of modern major weather event forecasting capabilities and the actual flood event history of the past 60 years, to demonstrate the historically improved flood control margins over the 1950's assumed design criteria.

• The USACE should publically disclose, in the format of its 5-week Lake level forecast, an April-through-September lake levels comparison of its "historical average elevation" compared to the levels that could have resulted if wasteful ocean water dumps had not occurred.

Questions

1. Please explain why the 5-week lake level forecast so routinely and commonly way out of line with actual results during the reservoir re-filling season? Please describe in detail how the USACE's daily practices use various real-time local weather and hydrographic data to develop its operating decisions as to reservoir outflow decisions so as to conserve water.
2. Please explain, in detail, the specific USACE procedures that are used during the dry-season-months that result in water conservation decisions at the expense of downstream (APC) power generation support.
3. Please explain where, if any, the USACE Zone 2 management policies look forward rather backward, to conserve water for local use, when there are developing drought conditions?
4. Please provide a cost analysis that shows a comparison of hydropower generation water costs and benefits as compared to the market value of locally sold water (about 1/2 cent per gallon).
5. Please provide a cost analysis of the subsidies given to electric companies through the artificially low (as compared to prevailing peak-season electricity market rates) costs charged them for water releases to generate power during the dry season months of July, August and September.
6. Please provide a cost analysis that compares the subsidies given to the occasional Alabama River barge shipment through Alabama Power water releases that are based on Allatoona water (focused on such shipments' alternate rail shipping costs) to the market value of locally sold water (about 1/2 cent per gallon).
7. How much of Alabama Power's typical request of water releases goes to provide for Alabama River navigation support during the dry season months of July, August and September?
8. If Alabama Power is approved to raise the level of its Lake Martin reservoir, how will the USACE insure and publically disclose that Allatoona water does not indirectly get used to provide for that capacity, since reduced Tallapoosa River flows would at some point have to be offset by Coosa River flows to meet stated USACE downstream navigational, power generation and environmental

flows?
9. What is the annual total USACE cost per ton (water flow, dredging, lock and dam management) to provide for the barge shipments along the Alabama River between Montgomery and Claiborne Lock? How much water volume is provided annually to support such shipments (separate from M&l contracts and low-flow minimums)?
10. Given the abundance of available modern technology as to hydrologic and meteorological predictions and management, and the large value of water locally, please explain why flood risk management criteria and policies cannot be tweaked and improved to provide for more advanced discharge flexibilities, with significantly increased abilities to store more lake water at all times, as compared with the way things have been done since 1950.
11. Please provide details as to how the USACE uses and integrates NOAA field data and major weather system forecasting information to conserve water, rather than to just release water needlessly downstream simply because the rule-curve dictates so.
12. In light of modern weather system forecasting capabilities, please explain why excess and valuable early spring Lake water inflows should not be conserved through implementation of a higher pool level as a buffer to the typical/natural dry-season inflow/outflow minimum mismatch, so that late summer pool levels are not so damaging to drought-period water supply requirements and to routine recreation needs.

Response

Response to Comments

Water released from Allatoona Dam in accordance with authorized project purposes and is released in a manner that is intended to achieve an appropriate balance among project purposes, including recreation and other in-lake purposes, such as water supply. Allatoona Lake provides substantial economic benefits to the citizens of Cobb, Bartow, and Cherokee Counties as well as the entire northwest Georgia area.

Response to Specific Questions

1. Chapter 6 of Allatoona's WCM (EIS Appendix A) provides details on forecasting methodologies. The 5-week forecast is based on estimated inflow into the project for the next 5 week period. Southeast River Forecast Center provides forecasted inflows for the initial 5 days. Remaining period involves engineering judgment, current conditions, basin knowledge and longer term precipitation forecast. There is no expectation that the 5 week forecast will exactly match the actual operation. The information is provided for planning purposes and captures the current trend. Precipitation forecast reliability drops dramatically beyond 48 hours. As noted on the website, the 5 week reservoir level forecast is designed to provide a general idea of future levels. Various factors such as weather & system requirements may cause variations in the reservoir levels.

2. USACE has no management procedure in place to conserve water at the expense of downstream APC hydropower generation. Guide curves define the target amount of water to be held in a reservoir at specified times of the year. Action zones are used to manage the lakes at the highest level possible for recreation and other purposes, meet minimum hydropower needs at each project, and determine the amount of storage available for downstream purposes such as flood risk management, hydropower, navigation, water supply, water quality, and recreation. The procedures are explained in detailed in Chapter 7 (Water Control Plan) of the Allatoona WCM (EIS Appendix A).

3. Chapter 6 (Hydrologic Forecasts) of The Allatoona WCM (EIS Appendix A) addresses forecasting. The document states:

"The Corps has developed techniques to conduct forecasting in support of the regulation of 6 the ACT Basin. In addition, the Corps has a strong reliance on other federal agencies such as the NWS and the USGS to help maintain accurate data and forecast products to aid in making the most prudent water management decisions. The regulation of multipurpose projects requires scheduling releases and storage on the basis of both observed and forecasted hydrologic events throughout the basin. During both normal and below-normal runoff conditions, releases through the power plants are scheduled on the basis of water availability, to the extent reasonably possible, during peak periods to enhance revenue returned to the Federal Government. The release level and schedules are dependent on current and anticipated hydrologic events. The most efficient use of water is always a goal, especially during the course of a hydrologic cycle when below-normal streamflow is occurring. Reliable forecasts of reservoir inflow and other hydrologic events that influence streamflow are critical to the efficient regulation of the ACT System."

4. USACE operates to meet all authorized project purposes. The requested cost analysis is outside the scope of the WCM update. A feasibility study conducted under the authority of Section 216 (River and Harbor and Flood Control Act of 1970) would be required to evaluate alternatives that would consider re-operation of a federal project.

5. USACE operates to meet all authorized project purposes. The requested cost analysis is outside the scope of the WCM update. A feasibility study conducted under the Section 216 authority would be required to evaluate alternatives that would consider re-operation of a federal project.

6. USACE operates to meet all authorized project purposes. The requested cost analysis is outside the scope of the WCM update. A feasibility study conducted under the Section 216 authority would be required to evaluate alternatives that would consider re-operation of a federal project.

7. APC releases minimum flow from their projects according to their FERC license. The currently is no specific requirement to support navigation other than minimum weekly combined release of 4,640 cfs from Jordan, Bouldin, and Thurlow. The Proposed Action includes a concept that identifies APC minimum flow targets to support navigation based on inflow, state line flow and available storage.

8. Raising the level of Lake Martin was outside the scope of the WCM update, thus no analysis is included in the EIS. In the event of an approved FERC Martin Reservoir rise, USACE will continue to operate federal projects to meet the authorized project purposes.

9. USACE operates to meet all authorized project purposes. The requested cost analysis is outside the scope of the WCM update. Navigation is supported indirectly through releases from Allatoona and Carters Dams used to support other project purposes, mainly hydropower.

10. Chapter 6 of the Allatoona WCM describes in detail the hydrologic forecast techniques. Section 7-05 of includes the detailed description of the Flood Risk Management operation. Modern analytical tools, coordination with other agencies and basin

knowledge are critical inputs to the flood risk management operation. The reservoir operation has evolved since the 1950's to incorporate the more advanced analytical tools.

11. Chapter 6 of the Allatoona WCM describes in detail the hydrologic forecast techniques. Section 7-05 of includes the detailed description of the Flood Risk Management operation.

12. Section 7-15 of the Allatoona WCM details the procedure to deviate from normal operation. During drought periods, USACE may request a deviation to support an early refill of the reservoir utilizing higher spring inflows.

Comment ID 0039.008

Author Name: Association, Lake Allatoona

Organization: Lake Allatoona Association

Comment

Lake Allatoona Association
Lake Allatoona & Upper Etowah River Basin
Water Management Position Paper

After years of discussion, negotiation and litigation regarding North Georgia water resources and their usage allocation, the recent Federal Court ruling has created focus on the issue at all levels. Upper Etowah River basin flows and Lake Allatoona (Lake) water storage and water quality are clearly involved in the overall issue. The Lake Allatoona Association (LAA), provides this document to outline its position and goals relating to its long-term goals for Lake management and the current issue of water allocation.

As the community-based voice of Lake Allatoona, LAA's mission is to improve our Lake's water quality and pool levels through encouragement of healthy lake use practices. The LAA links a large number of like-minded people to positively influence governments (federal, state and local) and citizens (e.g. boaters, adjoining owners, and recreational users) who work together to improve water quality and pool levels. Focused on the two keys to improvement- the US Congress and the US Army Corps of Engineers- LAA's large and growing membership base is committed to push the Congress and the Corps toward positive changes for Lake Allatoona's benefit.

The LAA's positions are a direct outgrowth of its responsibility for leadership and representation of local citizenry interests in stewardship of the God-given and mankind-enhanced environment with which our community has been blessed. The LAA believes that the execution of a combination of the below outlined recommended changes could result in routine Lake water levels improvements with a two foot increase in normal summer pool level, begun 4 weeks earlier, held 6 weeks longer, and an 8 feet winter pool drawdown reduction. Shorthand for this overall program is "2- 4- 6-8, Allatoona Clean".

This overall water level/stability improvement would support five important outcomes:

Desired Outcomes

1. Increase NW Georgia water supplies.
2. Reduce water quality degradation.
3. Improve Alabama River navigation water release capabilities.
4. Improve Lake Allatoona recreation benefits.
5. Continue to support power generation and flood control needs.

This Position Paper's following recommendations are directed toward the four entities which are critical to the Lake's operation and so-called water wars: US Army Corps of Engineers (USACE), B. State of Georgia (GA), C. State of Alabama (AL)) and D. the Southeastern Power Administration (SEPA).

A. U.S. Army Corps of Engineers (USACE)

1. USACE Lake Allatoona operations procedures should be modernized and updated to provide for proactive preservation of the Upper Etowah's precious and limited water flows through more appropriate flood control statistical methods and practices to allow for less wasted winter wet period water flows and increased winter storage.

2. USACE Lake Allatoona operations procedures should be modified to pay more attention and reduce the major exposures of barren shoreline from Lake level fluctuations. Improved practices should be implemented to better comport with existing state storm water runoff and sedimentation environmental laws regarding siltation and sedimentation control.

3. USAC should modernize the basis for its rule curve assumptions to provide for more effective deployment of Lake Allatoona's storage capability through proactive rather than reactive USACE basin management strategies. These techniques should utilize modern computer-based modeling software to "look ahead - not back" when developing discharge and generation plans. The Corps should use real-time actual local basin hydrology data and National Weather Service intelligence instead of historical averages when possible.

4. USACE should conduct a modernized and multi-disciplined flood retention risk analysis study and report on the feasibility of increasing Lake Allatoona's vertical pool storage target levels geared to a 2 foot increase in normal summer pool level; begun 4 weeks earlier; held 6 weeks longer; coupled with an 8 feet winter pool drawdown reduction.

5. USACE Lake Allatoona lake level management practices geared to fish spawning criteria at the expense of water storage factors should be modified.

6. USCAE Lake Allatoona policies should be corrected to give proper recognition to the annual $250 million economic development benefit and approximately 2000 local jobs creation benefits that accrue from the recreation purpose of the Lake's original development. For example, holding to the Rule Curve would support this original purpose allowing longer use of the Lake during the year.

7. USACE should provide significantly more transparency and real-time reporting in regards to: Altered Lake discharge volumes, reasons for such changes; Alabama River barge traffic utilization; coordination with Alabama Power as to water release cooperation, power generation costs, benefits and revenues; graphical-consolidated pool, discharge and inflow data to include USACE's Allatoona (Etowah) and Alabama Power's Martin (Tallapoosa); and lake water quality impairment practices.

8. USACE should cooperatively work with GA and AL, involving the U.S. Congress, to achieve the above objectives.

9. USACE should conduct a study to determine what the peak boat capacity is for the Lake. Excess peak period usage causes dangerous conditions and damaging Lakeshore erosion. As part of this study, the USACE should evaluate whether innovative marina and ramp usage peak period tariffs could mitigate such conditions.

B. State of Georgia (GA)

1. GA should not consider nor allow additional inter-basin transfers that would serve to reduce inflows and/or increase outflows from Lake Allatoona - not to Alabama's Tallapoosa basin nor to Georgia's Chattahoochee basin.

2. Existing GA erosion and sedimentation control efforts should be continued and intensified within the entirety of the Lake Allatoona drainage basin.

3. GA policies should reserve and allocate Lake Allatoona water consumption to the region which provides for its existence through public-use set-aside of its 25,000 plus acres and resultant annual sacrifice of over $5 million local property tax base revenues (Bartow, Cherokee, and Cobb plus Paulding and Gordon Counties).

4. GA should work with LAA and other involved entities to maximize, to the extent practical, watershed protection practices, particularly for specific sensitive sub-basins.

5. GA should cooperatively work with USAGE and AL, involving the U.S. Congress, to achieve the above objectives.

6. GA should work with ALto identify mutual benefits from equitable, efficient and effective joint use of all regional river basin flows.

7. GA should initiate appropriate and comprehensive processes necessary to ensure wise and efficient citizenry water conservation and usage practices.

8. GA should develop and execute a Public Relations effort to ensure that the facts regarding water availability and use are widely known.

9. GA should ensure that any amount of water withdrawn from the Lake is returned after treatment to at least pre-withdrawal quality levels.

10. GA should consider placing a tax on boats by weight to help prevent Lakeshore damage by boat wave action. Monies raised should be used to fund Lakeshore restoration and armoring.

11. GA (EPD) and the local counties should collect Lake water samples to determine areas with serious water quality issues resulting from leaking septic tanks. The State should pass legislation requiring that lakeshore septic tanks and drain fields be periodically tested and, if found to be leaking, require repair or replacement.

12. GA should work with the USACE to implement shoreline hardening and other aggressive sedimentation/erosion techniques by adjoining property owners.

C. State of Alabama (AL)

1. AL should develop an Alabama River Basin management plan that would provide for more effective utilization of the flows that originate within its borders rather than focus on capturing control of the flow that comes to AL from Lake Allatoona (over 70% of the water that falls or flows into AL originates in AL).

2. AL should develop an Alabama River navigation management plan that more effectively deploys its extensive system of locks and dams to manage river flows presently provided carte blanch in favor of a very few beneficiaries' commodity transportation options.

3. AL should work with GA to identify mutual benefits from equitable, efficient and effective joint use of all regional river basin flows.

4. AL should develop and implement a comprehensive Alabama River basin water conservation plan.

5. AL should cooperatively work with USACE and GA, involving the U.S. Congress, to achieve the above objectives.

D. Southeastern Power Administration (SEPA)

1. USACE Lake Allatoona power generation practices should be modified so as to be based on market-based electricity pricing models rather than the current method which only seeks to recover end-of-life depreciation cost factors.

2. SEPA should provide significantly more transparency in regards to the generation of hydroelectric power, including the provision of online reporting of cost/benefits/revenues, hours of generation and "avoided" generation options.

3. SEPA, the USACE and Congress should acknowledge that the initial investment of federal expenditures has been returned in full from over 55 years of Allatoona generation revenues and relinquish some operations oversight and control to local communities.

Outcomes Associations to Recommendations

Desired Outcomes

1. Increase NW Georgia water supplies.

2. Reduce water quality degradation.

3. Improve Alabama River navigation water release capabilities.

4. Improve Lake Allatoona recreation benefits.

5. Continue to support power generation and flood control needs

Associated Supportive Recommendations

Outcome	A. USACE	B.GA	C.AL	D. SEPA
1	1,3,4,5,7,8	1,5,6,7,8	1,2,3,4,5	1,2,3
2	2,3,4,5,7,8	2,2,4,5,6,7,8,9,10,11,12	3,5	1,2,3
3	1,2,3,4,5,7,8	1,3,5,6,7,8	1,2,3,4,5	1,2,3
4	3,4,5,6,7,8,9	1,2,3,5,6,7,8,10,11,12	1,2,3,4,5	1,2,3
5	1,2,3,4,5,7,8	5,6,7,8	3,5	1,2,3

Response

Response to Lake Allatoona Association - Water Management Position Paper

The recommendations for USACE in the Water Management Position Paper at the end of the comment letter would require a feasibility level study for re-operation of the Allatoona project under Section 216 of the River and Harbor and Flood Control Act of 1970 (Review of Completed Projects). Implementation of recommendations that may result from such a study may require specific congressional authorization.

The recommendations for the states of Alabama and Georgia in the Water Management Position Paper at the end of the comment letter are outside the scope of the WCM update process and should be directed to the individual states for their consideration.

The recommendations for the Southeastern Power Administration (SEPA) in the Water Management Position Paper at the end of the comment letter are outside the scope of the WCM update process and should be directed to SEPA for consideration.

Comment Number: 2013-0041

Name: Kelly Stephens

Affiliation: Neely Henry Lake Association

Date: 5/22/2013 9:24:19 PM

Address:
[redacted]
Gadsden, AL 35901

Attachments: None.

Comments:

My name is Kelly Stephens and I am currently President of the Neely Henry Lake Association (NHLA). I submit the following comments on behalf of NHLA members. The NHLA is a non-profit organization that represents the interests of lakefront property owners and users of Neely Henry Lake on the Coosa River in Alabama. Our goal is to preserve, protect and improve the quality of life in and around Neely Henry Lake. We strive to improve safety and water quality by working together with local, state and federal agencies along with homeowners and all persons that use and appreciate our beautiful lake.

First, NHLA expresses concern regarding reduced water flows associated with the "Alternative Plan G (Proposed Action Alternative)" as described in lines 33-38 on page ES-41, and lines 18-21 on page ES-42 of the "ACT Draft EIS." Decreased water flows result in increased nutrient loading and decreased water quality. The resultant potential negative consequences for Neely Henry Lake include, but are not limited to, the following: 1) increased cost of water treatment and waste water treatment (many residents of the Neely Henry Lake area get their drinking water from the lake); 2) harm to fish and other aquatic life; 3) diminished property values; 4) diminished recreational value of the lake; 5) diminished ability of local communities to attract new businesses and residents; 6) negative impacts on local economies and tax revenues (Neely Henry Lake is the primary source of tourist revenue for the area); and 7) increased safety risks due to navigation hazards caused by lower lake levels. Currently authorized flow levels are necessary, under normal conditions, to maintain a sufficient quantity and quality of water in Neely Henry Lake.

NHLA is also concerned with negative consequences, as described above, likely to be resultant from the construction of proposed new reservoirs in the upper Coosa basin located in Georgia. Also troubling, is the possibility of increased interbasin transfer of water out of the upper Coosa basin to metro Atlanta.

NHLA is opposed to any such projects that will result in a reduction of water flows to the Coosa River and Neely Henry Lake.

NHLA asks the Corps to reject any plan that proposes to reduce water flows in the Coosa River. Failure to do so will result in serious negative consequences for residents who live on or near Neely Henry Lake and the communities around the lake whose economies are inextricably tied to the it. Maintenance of adequate water flows is a challenging task, especially when drought conditions occur. Any reduction in normal water flows greatly increases the degree of difficulty.

Lastly, I would like to express the NHLA's appreciation for the Corps' support of making permanent for Neely Henry Lake a winter pool level of 507' above mean sea level. This has positive consequences for residents, businesses and communities in the Neely Henry Lake area.

Thank you for the opportunity to submit comments in this matter.

Comment ID 0041

Comment ID 0041.001

Author Name: Stephens, Kelly

Organization: NEELY HENRY LAKE ASSOCIATION

Comment

My name is Kelly Stephens and I am currently President of the Neely Henry Lake Association (NHLA). I submit the following comments on behalf of NHLA members. The NHLA is a non-profit organization that represents the interests of lakefront property owners and users of Neely Henry Lake on the Coosa River in Alabama. Our goal is to preserve, protect and improve the quality of life in and around Neely Henry Lake. We strive to improve safety and water quality by working together with local, state and federal agencies along with homeowners and all persons that use and appreciate our beautiful lake.

First, NHLA expresses concern regarding reduced water flows associated with the "Alternative Plan G (Proposed Action Alternative)" as described in lines 33-38 on page ES-41, and lines 18-21 on page ES-42 of the "ACT Draft EIS." Decreased water flows result in increased nutrient loading and decreased water quality. The resultant potential negative consequences for Neely Henry Lake include, but are not limited to, the following: 1) increased cost of water treatment and waste water treatment (many residents of the Neely Henry Lake area get their drinking water from the lake); 2) harm to fish and other aquatic life; 3) diminished property values; 4) diminished recreational value of the lake; 5) diminished ability of local communities to attract new businesses and residents; 6) negative impacts on local economies and tax revenues (Neely Henry Lake is the primary source of tourist revenue for the area); and 7) increased safety risks due to navigation hazards caused by lower lake levels. Currently authorized flow levels are necessary, under normal conditions, to maintain a sufficient quantity and quality of water in Neely Henry Lake.

Response

No changes were made to the EIS in response to this comment. To address concerns regarding increased nutrient loading in Neely Henry Lake, the HEC-5Q water quality model results were evaluated for Neely Henry Reservoir chlorophyll a and nutrients (TN and TP) under Baseline, or No Action Alternative, conditions as well as under Plans D, F and G. This evaluation was consistent with work done in response to comments received from ADEM regarding Weiss Lake.

The HEC-5Q Neely Henry Reservoir model results were re-evaluated using the growing season averages for years 2000 through 2008. The model provided daily values for chlorophyll a at Mid Reservoir and Dam Pool stations in Neely Henry Reservoir. The various plan predictions were compared to the Baseline, or No Action Alternative, predictions. For the two stations the 2000 – 2008 average growing season chlorophyll a stayed the same or decreased. For Plans D, F, and G, the TN and TP growing season average loadings over the period from 2000 – 2008 remain at, or near, the same levels as the Baseline levels.

Overall, Plans D, F and G have little change from the predicted growing season average values for the Baseline, or No Action Alternative. Therefore, the Proposed Action Alternative would be expected to maintain, or improve, the quality of water in Neely Henry Lake.

Comment ID 0041.002

Author Name: Stephens, Kelly

Organization: NEELY HENRY LAKE ASSOCIATION

Comment

NHLA is also concerned with negative consequences, as described above, likely to be resultant from the construction of proposed new reservoirs in the upper Coosa basin located in Georgia. Also troubling, is the possibility of increased interbasin transfer of water out of the upper Coosa basin to metro Atlanta.

Response

The development of new reservoirs in Georgia involves an intensive planning, design, and permitting process by the State of Georgia. Also, USACE would require regulatory permits for wetland issues and for potential impacts to navigable waters of the US. During the current water control manual update process, the cumulative impacts of additional reservoirs over the whole ACT Basin, has been investigated, but potential impacts to selected locations (i.e., H. Neely Henry Lake) are outside the scope of this effort. Interbasin transfers of water is a state responsibility and outside the scope of the ACT WCM update.

Comment ID 0041.003

Author Name: Stephens, Kelly

Organization: NEELY HENRY LAKE ASSOCIATION

Comment

NHLA is opposed to any such projects that will result in a reduction of water flows to the Coosa River and Neely Henry Lake.

Response

Water resource projects by other interests (such as new or increased storage reallocation in existing reservoirs, new reservoirs, or interbasin transfers) are beyond the scope of the proposed ACT WCM update process. However, the cumulative effects of the Proposed Action Alternative along with other present and reasonably foreseeable water resource projects in the ACT Basin by others are discussed in Section 6.10 of the EIS.

Comment ID 0041.004

Author Name: Stephens, Kelly

Organization: NEELY HENRY LAKE ASSOCIATION

Comment

NHLA asks the Corps to reject any plan that proposes to reduce water flows in the Coosa River. Failure to do so will result in serious negative consequences for residents who live on or near Neely Henry Lake and the communities around the lake whose economies are inextricably tied to the it. Maintenance of adequate water flows is a challenging task, especially when drought conditions occur. Any reduction in normal water flows greatly increases the degree of difficulty.

Response

Comment noted. The Proposed Action Alternative does not negatively impact H. Neely Henry Lake. In fact, the lake levels would be higher during drought conditions with the Proposed Action Alternative as compared to the No Action Alternative (see draft EIS, Section 6.1.1.2.3.1.2).

Comment ID 0041.005

Author Name: Stephens, Kelly

Organization: NEELY HENRY LAKE ASSOCIATION

Comment

Lastly, I would like to express the NHLA's appreciation for the Corps' support of making permanent for Neely Henry Lake a winter pool level of 507' above mean sea level. This has positive consequences for residents, businesses and communities in the Neely Henry Lake area.

Thank you for the opportunity to submit comments in this matter.

Response

Comment noted. Thanks for your input.

Comment Letter 0054 (Mike Riley, Logan Martin Lake Protection Association)

From:	Mike Riley
To:	ACT-WCM
Subject:	Alabama-Coosa-Tallapoosa River Basin Water Control Manual Draft Environmental Impact Statement
Date:	Saturday, March 30, 2013 7:46:59 AM
Attachments:	image003.jpg Ltr to Corp of Engineers Supporting APCO Extension of 60 days.pdf

LMLPA respectfully submits the attached document for a 60 day extension.

Mike Riley

LMLPA Graphic (Small)

QUANTITY QUALITY SAFETY
LMLPA
LOGAN MARTIN LAKE PROTECTION ASSOCIATION
P.O. Box 2002
Pell City, AL 35125

March 30, 2013

Colonel Steven J. Roemhildt
Commander, Mobile District
U.S. Army Corps of Engineers
ATTN: PD-EI (ACT-DEIS)
Post Office Box 2288
Mobile, Alabama 36628

Subject: Draft Environment Impact Statement
Update of Water Control Manual for Alabama-Coosa-Tallapoosa Basin

Dear Colonel Roemhildt:

Logan Martin Lake Protection Association (LMLPA) wants to emphasize our support of Alabama Power Company's request of a 60-day extension to July 1, 2013 for parties to submit comments on the above referenced documents. Also, we would like to request an extension of the due date for comments on the documents. The complexity of the issues and the limited time period we believe a 60-day extension should not be a problem.

Sincerely,

Mike Riley
President

www.lmlpa.org

Comment ID 0054

Comment ID 0054.001

Author Name: Riley, Mike

Organization: Logan Martin Lake Protection Association

Comment

Logan Martin Lake Protection Association (LMLPA) wants to emphasize our support of Alabama Power Company's request of a 60-day extension to July 1, 2013 for parties to submit comments on the above referenced documents. Also, we would like to request an extension of the due date for comments on the documents. The complexity of the issues and the limited time period we believe a 60-day extension should not be a problem.

Response

USACE initially provided a 60-day period for public comment on the draft EIS (March 1- May 1, 2013). Based upon requests for a time extension for review, USACE extended the comment period an additional 30 days (to May 31, 2013). USACE considers that allowing 90 days for public review and comment on the draft EIS was adequate, twice the minimum 45-day comment period mandated for draft EISs per CEQ and USACE NEPA regulations.

Comment Number: 2013-0057

Name: Carolyn Landrem

Affiliation: Weiss Lake Improvement Association, Inc

Date: 5/30/2013 4:36:03 PM

Address:
P.O. Box 565
Cherokee
Centre, AL 35960

Attachments: Corp Comments.docx

Comments:

Please see following letter.

WLIA
WEISS LAKE IMPROVEMENT ASSOCIATION
P.O. Box 565
Centre, Alabama 35960

May 30, 2013

Colonel Steven J. Roemhildt
Mobile District, U.S. Army Corps of Engineers
P.O. Box2288
Mobile, Alabama 36628-0001

Re: Water Control Manual for Alabama-Coosa-Tallapoosa Basin

Dear Colonel Roemhildt:

Weiss Lake Improvement Association, a non-profit organization working to maintain, protect and enhance the quality of Weiss Lake and its fisheries for today's and future generations to enjoy, respectfully submit the following comments:

- Weiss Lake is a very nutrient rich lake and borders on being hyper eutrophic. Reduced outflows at Corps projects upstream will cause the water quality to further degrade. The flow of water into the lake and the retention time of the water in the lake affect the water quality as stated in a study conducted by Dr. David Bayne, The Potential Impact of Water Reallocation on Retention and Chlorophyll a Weiss Lake, 2003.
- Weiss Lake is located in Cherokee County, Alabama, a rural county dependent on the recreational and agricultural economic impact of the lake. Reduced flows and degraded water quality would have an impact on our economy and our ability to retain the current tourism dollars we currently are blessed with and to attract additional tourism, business and industry to Cherokee County.
- The Water Control Manual for the ACT Basin is a technical and voluminous document and not written in a manner that allows for everyday citizens that are affected by the requirements of this manual to properly understand. The complexity of the issues addressed in the manual and given the limited resources of organizations like ours, our ability to comment is dramatically restricted.
- This Water Control Manual for the ACT Basin did not consider the requested winter pool level increase by Alabama Power Company relicense application. The Army Corps of Engineers was involved in the relicensing process which began in the year 2000. The Alabama Power Company submitted the application in July of 2005 to the Federal Energy Regulatory Commission. In 2007 the Secretary of the Army directed that an update of the Master Water Control Manual for the ACT Basin be conducted. When you consider this timeline it would have been the best time for this request to be addressed, it was not. Now additional resources and time will be required to consider this request and amendments made to the Water Control Manual if the request is granted.

Your consideration of these comments is appreciated.

Carolyn Landrem

President, Weiss Lake Improvement Association, Inc.

Comment ID 0057

Comment ID 0057.001

Author Name: Landrem, Carolyn

Organization: Weiss Lake Improvement Association, Inc

Comment

Weiss Lake Improvement Association, a non-profit organization working to maintain, protect and enhance the quality of Weiss Lake and its fisheries for today's and future generations to enjoy, respectfully submit the following comments

- Weiss Lake is a very nutrient rich lake and borders on being hyper eutrophic. Reduced outflows at Corps projects upstream will cause the water quality to further degrade. The flow of water into the lake and the retention time of the water in the lake affect the water quality as stated in a study conducted by Dr. David Bayne, The Potential Impact of Water Reallocation on Retention and Chlorophyll a Weiss Lake, 2003.

- Weiss Lake is located in Cherokee County, Alabama, a rural county dependent on the recreational and agricultural economic impact of the lake. Reduced flows and degraded water quality would have an impact on our economy and our ability to retain the current tourism dollars we currently are blessed with and to attract additional tourism, business and industry to Cherokee County.

Response

A review of retention times in Weiss Lake found increased retention times in May and June of drought years 2007 and 1986. These increased retention times are consistent with Dr. Bayne's documentation and modeled results indicate increased chlorophyll a in May and June 2007. Further review of loads into Weiss Lake and water surface elevations reveal that the changes in water quality are related to a change in Weiss Lake operations from the APC's Drought Curve under the No Action Alternative. Plan G and other USACE alternatives operate Weiss Lake water levels to more closely mimic the project's Guide Curve.

Under Plan G retention times increase by 60 days in June 2007 because water levels are held higher. The greatest differences in retention times are seen in drought years 1986 and 2007. Minimal differences in monthly average retention times are observed in a wet weather year, 2003.

The HEC-5Q water quality model evaluated Weiss Lake chlorophyll a and nutrients (TN and TP) under the No Action Alternative as well as under Plans D, F and G. Based on the ACT DEIS, ADEM had concerns about how the proposed plans may impact Weiss Lake water quality, especially chlorophyll a. Alabama has a water quality standard for chlorophyll a in Weiss Lake of 20 ug/l during the summer growing season – April through October. The HEC-5Q Weiss Lake model results were re-evaluated using the growing season averages for years 2000 through 2008. The model outputted chlorophyll a daily values at 4 locations in Lake Weiss – 1) State Line, 2) Weiss_OUT1, 3) WeissOUT2 and 4) Dam Pool. The various Plan predictions were compared to the No Action Alternative. For all four stations the 2000 – 2008 average growing season chlorophyll a stayed the same or decreased. For the most critical year – 2007 was the year with highest predicted chlorophyll a – the growing season chlorophyll a decreased by over 10 percent.

Also the Plan D, F and G TN and TP growing season average loadings in to Lake Weiss (predicted at State Line) remain at the same levels as the No Action Alternative levels.

Comment ID 0057.002

Author Name: Landrem, Carolyn

Organization: Weiss Lake Improvement Association, Inc

Comment

- The Water Control Manual for the ACT Basin is a technical and voluminous document and not written in a manner that allows for everyday citizens that are affected by the requirements of this manual to properly understand. The complexity of the issues addressed in the manual and given the limited resources of organizations like ours, our ability to comment is dramatically restricted.

Response

Comment noted. However, the WCMs are written for USACE operators and water managers of the projects which necessitate the use of highly technical information. The outline of information presented in the WCMs is governed by USACE regulations in order to provide consistency among manuals for completeness and ease of use.

Comment ID 0057.003

Author Name: Landrem, Carolyn

Organization: Weiss Lake Improvement Association, Inc

Comment

- This Water Control Manual for the ACT Basin did not consider the requested winter pool level increase by Alabama Power Company relicense application. The Army Corps of Engineers was involved in the relicensing process which began in the year 2000. The Alabama Power Company submitted the application in July of 2005 to the Federal Energy Regulatory Commission. In 2007 the Secretary of the Army directed that an update of the Master Water Control Manual for the ACT Basin be conducted. When you consider this timeline it would have been the best time for this request to be addressed, it was not. Now additional resources and time will be required to consider this request and amendments made to the Water Control Manual if the request is granted.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0058

Name: Mike Riley

Affiliation: Logan Martin Lake Protection Association

Date: 5/31/2013 2:51:06 PM

Address:
P.O. Box 2002
St. Clair
Pell City, AL 35125

Attachments: Ltr to U.S. Corp oof Engineers Alabama-Coosa-Talla

Comments:

Please see following letter.

QUANTITY QUALITY SAFETY
LMLPA
LOGAN MARTIN LAKE PROTECTION ASSOCIATION
P.O. Box 2002
Pell City, AL 35125

May 31, 2013

Colonel Steven J. Roemhildt
Mobile District, U.S. Army Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628-0001

Subject: Alabama-Coosa-Tallapoosa Basin Water Control Manual Update

Dear Colonel Roemhildt:

Logan Martin Lake Protection Association (LMLPA), a non-profit organization working to advocate and promote the general welfare of Logan Martin Lake and that of the homeowners, businesses, and users of Logan Martin Lake and the surrounding areas, respectfully submits the following comments:

- Reduced outflows at Corps projects upstream could have a detrimental impact on many areas of Logan Martin, including water quality and recreation/lake level.

- A mission of LMLPA is to promote the general welfare of Logan Martin Lake. Reduced flows would have an impact on businesses in our region that depend on tourism dollars that are a direct result of Logan Martin Lake.

- The Water Control Manual for the ACT Basin did not consider the requested winter pool level increases by Alabama Power Company, which were fully supported and requested by LMLPA, in its relicense application to the FERC. The Army Corps of Engineers was deeply involved in the relicensing process from the beginning. During this relicensing process was the optimal time for this request to be addressed, but it was not. As a result, additional resources and time will be required to evaluate this request after the Water Control Manual is approved, whenever that may be, prolonging something that should have already happened.

- The Water Control Manual for the ACT Basin is a technical and voluminous document and not written in a way that the many stakeholder that will be directly affected by the requirements of this manual will understand. Our ability to effectively comment on every aspect of the Manuals is therefore limited. It could be beyond the comment period expiration before other issues have been realized and we reserve the right to submit further comments if need be.

www.lmlpa.org

Your consideration of these comments is appreciated.

Sincerely,

Mike Riley
President
Logan Martin Lake Protection Association

Comment ID 0058

Comment ID 0058.001

Author Name: Riley, Mike

Organization: Logan Martin Lake Protection Association

Comment

Logan Martin Lake Protection Association (LMLPA), a non-profit organization working to advocate and promote the general welfare of Logan Martin Lake and that of the homeowners, businesses, and users of Logan Martin Lake and the surrounding areas, respectfully submits the following comments:

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- A mission of LMLPA is to promote the general welfare of Logan Martin Lake. Reduced flows would have an impact on businesses in our region that depend on tourism dollars that are a direct result of Logan Martin Lake.

Response

Comment noted.

Comment ID 0058.002

Author Name: Riley, Mike

Organization: Logan Martin Lake Protection Association

Comment

- The Water Control Manual for the ACT Basin did not consider the requested winter pool level increases by Alabama Power Company, which were fully supported and requested by LMLPA, in its relicense application to the FERC. The Army Corps of Engineers was deeply involved in the relicensing process from the beginning. During this relicensing process was the optimal time for this request to be addressed, but it was not. As a result, additional resources and time will be required to evaluate this request after the Water Control Manual is approved, whenever that may be, prolonging something that should have already happened.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. The proposed modifications, not included in the current approved license, will be evaluated in the near future separate from the current manual updates.

Comment ID 0058.003

Author Name: Riley, Mike

Organization: Logan Martin Lake Protection Association

Comment

- The Water Control Manual for the ACT Basin is a technical and voluminous document and not written in a way that the many stakeholder that will be directly affected by the requirements of this manual will understand. Our ability to effectively comment on every aspect of the Manuals is therefore limited. It could be beyond the comment period expiration before other issues have been realized and we reserve the right to submit further comments if need be.

Your consideration of these comments is appreciated.

Response

[Note: This comment is a duplicate of comment 0057.002. Following is the response to that comment.]
Comment noted. However, the WCMs are written for USACE operators and water managers of the projects which necessitates the use of highly technical information. The outline of information presented in the WCMs is governed by USACE regulations in order to provide consistency among manuals for completeness and ease of use.

From:	Steve Forehand
To:	ACT-WCM
Subject:	Comments on Draft EIS and Draft WCM
Date:	Friday, May 31, 2013 5:04:02 PM
Attachments:	scans_russelllands_com_20130531_172153.pdf

Dear Sir or Madam:

Enclosed are comments from Lake Martin Resource Association, Inc. on the Draft environmental Impact Study and TH Draft Water Control Manual. Thank you for the opportunity to comment.

Steve R. Forehand

Lake Martin Resource Association
2544 Willow Point Road, Alexander City, AL 35010 256-329-0835

May 31, 2013

Colonel Steven J. Roemhildt
Mobile District, U.S. Army Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628-0001

Re: Draft Environmental Impact Statement
Update of Water Control Manual for Alabama-Coosa-Tallapoosa Basin

Dear Colonel Roemhildt:

I respectfully submit these comments on behalf of the Lake Martin Resource Association, Inc.("LMRA"). LMRA is a non-profit corporation currently comprised of 1,200 members. The Certificate of Incorporation of LMRA (formerly known as the Lake Martin Recreation Association, Inc.) states that its purpose is:

"To improve and increase the quality and quantity of recreational opportunities on the water and the land adjacent to the water that makes up the reservoir known as Lake Martin, the same being situated in East Alabama and in the Counties of Tallapoosa, Elmore and Coosa. It shall further be the purpose of this corporation to foster stable water conditions; improve the fish and stock of fish; organize and engage in recreational activities for people of all ages; improve markings and directions for people who use the waterway; to aid and develop the stopping of pollution of said water; to work with all appropriate federal, state, and local agencies to make this Lake a safe place for fishermen, skiers, boaters, and all other persons who want and wish to use this water and its adjacent areas for the purpose of recreation and sport."

LMRA was incorporated in 1970 and intervened in the re-licensing proceedings involving Alabama Power Company ("APCO") and the Federal Power Commission (now known as the Federal Energy Regulatory Commission or "FERC") on behalf of recreational users and property owners on Lake Martin. During the course of the re-licensing proceedings, LMRA played a central role in brokering compromise agreements among APCO, itself and other interveners to preserve the recreational uses of Lake Martin.

After reviewing the Draft Environmental Impact Statement (the "Draft EIS")and the Draft Master Water Control Manual (the "Draft WCM")for the Alabama-Coosa-Tallapoosa River Basin, LMRA would like to focus its comments on three main areas.

1. In the Draft EIS on page 2-49, at line 37, there is mention of APCO evaluating the possibility of raising winter guide curve elevation for Lake Martin. APCO has, in fact, completed this evaluation and submitted a license application to FERC that proposes a three foot higher winter elevation. Stakeholders have expressed support for even higher winter elevations that that proposed by APCO. LMRA believes the Draft EIS should take into account the proposed higher winter elevation so that no further delay will result if

FERC determines that higher winter elevation is appropriate for the license. The Draft EIS should also be revised to take into account the proposed increased winter elevation so that no inconsistency will exist between the Draft EIS and APCO's license application.

2. Table 2.1-5 from the Draft EIS shows that the Corps considers Lake Martin as having almost half of the conservation storage in the ACT Basin. This calculation appears to be based upon calculating storage in Lake Martin down to elevation 445' msl, which is the lowest level at which the turbines can pass water through the dam. There is nothing to suggest that the level of Lake Martin would ever be drawn down to such a level. This would violate the intent of the operating curve and the settlement agreement that APCO, LMRA and intervenors reached in the early 1970's. The Corps should use a more reasonable elevation to determine storage capacity in Martin. An elevation that takes into account project operating reality, drought contingency, drinking water withdrawal requirements and recreation interests on Lake Martin would be more appropriate than the lowest level at which water can enter the turbines at the dam. To use the 445' msl elevation as the storage capacity of Martin appears to cater to Atlanta's unrestrained use of upstream water. This creates the appearance that the Corps has determined that Atlanta's needs are more important than downstream users' needs and that the Corps is willing to sacrifice Lake Martin to protect Atlanta.

3. In the Draft EIS at pages ES-27, ES-28 and ES-29, there is a discussion of rule curve changes, including a change for Lake Alatoona. The Draft EIS appears to propose holding water at Lake Alatoona in the fall in the interest of recreation. This proposed holding of water at Lake Alatoona creates a serious detriment for downstream users of the water for the same recreation purposes, as well as users for navigation and fish and wildlife. Again, this appears to be a thinly veiled effort to make additional water available for Atlanta's unrestrained drinking water requirements. If this change in the Alatoona rule curve is being promoted in the name of recreation, why isn't recreation at all the other downstream lakes equally important?

LMRA appreciates the opportunity to comment on the Draft EIS and Draft WCM. We believe some additional work is necessary to make these documents fair and equitable to all users. We also believe the Corps should make every effort to be sure it does not favor Atlanta over downstream users.

Thank you for your consideration.

Steve R. Forehand

Steve R. Forehand
Legal Officer

SRF/mc

Comment ID 0063

Comment ID 0063.001

Author Name: Forehand, Steve

Organization: Lake Martin Resource Association, Inc.

Comment

I respectfully submit these comments on behalf of the Lake Martin Resource Association, lnc.("LMRA"). LMRA is a non-profit corporation currently comprised of 1 ,200 members. The Certificate of Incorporation of LMRA (formerly known as the Lake Martin Recreation Association, Inc.) states that its purpose is:

"To improve and increase the quality and quantity of recreational opportunities on the water and the land adjacent to the water that makes up the reservoir known as Lake Martin, the same being situated in East Alabama and in the Counties of Tallapoosa, Elmore and Coosa. It shall further be the purpose of this corporation to foster stable water conditions; improve the fish and stock of fish; organize and engage in recreational activities for people of all ages; improve markings and directions for people who use the waterway; to aid and develop the stopping of pollution of said water; to work with all appropriate federal, state, and local agencies to make this Lake a safe place for fishermen, skiers, boaters, and all other persons who want and wish to use this water and its adjacent areas for the purpose of recreation and sport."

LMRA was incorporated in 1970 and intervened in the re-licensing proceedings involving Alabama Power Company ("APCO") and the Federal Power Commission (now known as the Federal Energy Regulatory Commission or "FERC") on behalf of recreational users and property owners on Lake Martin. During the course of the re-licensing proceedings, LMRA played a central role in brokering compromise agreements among APCO, itself and other interveners to preserve the recreational uses of Lake Martin.

Response

Comment noted.

Comment ID 0063.002

Author Name: Forehand, Steve

Organization: Lake Martin Resource Association, Inc.

Comment

After reviewing the Draft Environmental Impact Statement (the "Draft EIS") and the Draft Master Water Control Manual (the "Draft WCM") for the Alabama-Coosa-Tallapoosa River Basin, LMRA would like to focus its comments on three main areas.

1. In the Draft EIS on page 2-49, at line 37, there is mention of APCO evaluating the possibility of raising winter guide curve elevation for Lake Martin. APCO has, in fact, completed this evaluation and submitted a license application to FERC that proposes a

three foot higher winter elevation. Stakeholders have expressed support for even higher winter elevations that that proposed by APCO. LMRA believes the Draft EIS should take into account the proposed higher winter elevation so that no further delay will result if FERC determines that higher winter elevation is appropriate for the license. The Draft EIS should also be revised to take into account the proposed increased winter elevation so that no inconsistency will exist between the Draft EIS and APCO's license application.

Response

The proposed revisions to Lake Martin operations found in APC's license application have not been approved by FERC. Modeling of Lake Martin will continue to be in accordance with the existing FERC license.

Comment ID 0063.003

Author Name: Forehand, Steve

Organization: Lake Martin Resource Association, Inc.

Comment

2. Table 2.1-5 from the Draft EIS shows that the Corps considers Lake Martin as having almost half of the conservation storage in the ACT Basin. This calculation appears to be based upon calculating storage in Lake Martin down to elevation 445' msl, which is the lowest level at which the turbines can pass water through the dam. There is nothing to suggest that the level of Lake Martin would ever be drawn down to such a level. This would violate the intent of the operating curve and the settlement agreement that APCO, LMRA and intervenors reached in the early 1970's. The Corps should use a more reasonable elevation to determine storage capacity in Martin. An elevation that takes into account project operating reality, drought contingency, drinking water withdrawal requirements and recreation interests on Lake Martin would be more appropriate than the lowest level at which water can enter the turbines at the dam. To use the 445' msl elevation as the storage capacity of Martin appears to cater to Atlanta's unrestrained use of upstream water. This creates the appearance that the Corps has determined that Atlanta's needs are more important than downstream users' needs and that the Corps is willing to sacrifice Lake Martin to protect Atlanta.

Response

The total conservation storage was used for modeling purposes for all the lakes in the ACT Basin. Conservation storage is defined as the volume between the top of the inactive pool and the bottom of the flood control pool. At Lake Martin, elevation 445.5 ft. msl represents the top of the inactive pool and elevation 491 ft. msl represents the bottom of the flood control pool.

Comment ID 0063.004

Author Name: Forehand, Steve

Organization: Lake Martin Resource Association, Inc.

Comment

3. In the Draft EIS at pages ES-27, ES-28 and ES-29, there is a discussion of rule curve changes, including a change for Lake

Alatoona. The Draft EIS appears to propose holding water at Lake Alatoona in the fall in the interest of recreation. This proposed holding of water at Lake Alatoona creates a serious detriment for downstream users of the water for the same recreation purposes, as well as users for navigation and fish and wildlife. Again, this appears to be a thinly veiled effort to make additional water available for Atlanta's unrestrained drinking water requirements. If this change in the Alatoona rule curve is being promoted in the name of recreation, why isn't recreation at all the other downstream lakes equally important?

LMRA appreciates the opportunity to comment on the Draft EIS and Draft WCM. We believe some additional work is necessary to make these documents fair and equitable to all users. We also believe the Corps should make every effort to be sure it does not favor Atlanta over downstream users.

Thank you for your consideration.

Response

USACE projects in the ACT Basin are congressionally-authorized multipurpose projects. USACE operates the projects in a balanced manner to meet all project purposes.

Comment Number: 2013-0001

Name: Glenn Brown

Affiliation: None provided.

Date: 3/21/2013 8:31:43 PM

Address:
[redacted]
Cedar Bluff, AL 35959

Attachments: None.

Comments:

I would like to see the winter pool elevation on Weiss Lake raised by 3 feet to elev. 561 as requested by Alabama Power Co. in their permit application. Carters Lake was built in the 70's providing additional flood control after Weiss Lake was opened in 1961. I have spent my whole adult life on Weiss Lake and know that flooding has decreased since Carters Lake was built. The impact on the citizens and business in Cherokee County would be tremendous,it would make Weiss Lake usable year round and would allow business to survive the winter draw down. I understand that Weiss Lake was built for power generation and flood control, but having Carters Lake and Lake Allatoona upstream in Georgia has changed the flood characteristics of Weiss Lake.

Your consideration in this matter is appreciated.

Comment ID 0001

Comment ID 0001.001

Author Name: Brown, Glenn

Organization: None provided

Comment

I would like to see the winter pool elevation on Weiss Lake raised by 3 feet to elev. 561 as requested by Alabama Power Co. in their permit application. Carters Lake was built in the 70's providing additional flood control after Weiss Lake was opened in 1961. I have spent my whole adult life on Weiss Lake and know that flooding has decreased since Carters Lake was built. The impact on the citizens and business in Cherokee County would be tremendous, it would make Weiss Lake usable year round and would allow business to survive the winter draw down. I understand that Weiss Lake was built for power generation and flood control, but having Carters Lake and Lake Allatoona upstream in Georgia has changed the flood characteristics of Weiss Lake.

Your consideration in this matter is appreciated.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0002

Name: Randall Foster

Affiliation: None provided.

Date: 3/24/2013 1:22:26 PM

Address:
[redacted]
Armuchee, GA 30105

Attachments: None.

Comments:

Keep lake Weiss level up to 562 feet at lest during winter.Have a camper and 3 lots on lake.We cannot get our boat off our boat lift if water is below 562.A lot of spring and fall fishing is lost because I cannot get boat in water off lift.Thanks you very much,Randy Foster

Comment ID 0002

Comment ID 0002.001

Author Name: Foster, Randall

Organization: None provided

Comment

Keep lake Weiss level up to 562 feet at lest during winter. Have a camper and 3 lots on lake. We cannot get our boat off our boat lift if water is below 562. A lot of spring and fall fishing is lost because I cannot get boat in water off lift.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0003

Name: Warney Conley

Affiliation: None provided.

Date: 3/24/2013 2:49:34 PM

Address:
[redacted]
Kennesaw, GA 30152

Attachments: None.

Comments:

The winter levels on lake weiss uhare too low.

3 feet down from summer pool would be very beneficial

To the entire lake community.

Cherokee co. Ala. needs a good economical boost.

Comment ID 0003

Comment ID 0003.001

Author Name: Conley, Warney

Organization: None provided

Comment

The winter levels on lake weiss uhare too low.

3 feet down from summer pool would be very beneficial

To the entire lake community.

Cherokee co. Ala. needs a good economical boost.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0004

Name: Bill Brumbelow

Affiliation: None provided.

Date: 3/24/2013 3:19:29 PM

Address:
[redacted]
Douglasville, GA 30135

Attachments: None.

Comments:

My wife and I own two pieces of property on Weiss Lake. We believe it is very important that the winter pool level only be dropped by 3 feet or less. The Cedar Bluff and Centre Commumnities need this to promote more people coming all year around for fishing and boating. This is a very important part of the revenue for this area.

This area has been hard hit by the current ecomonic situation and only lowering the water by three feet instead of six would help almost all of the merchants in one way or the other. Please don't let this be a rumor any more. Please make a new ruling to lower the level by only three feet or less.

Thank you for your assistance in this matter.

Bill and Leah Brumbelow

[redacted] Cedar Bluff, AL

Comment ID 0004

Comment ID 0004.001

Author Name: Brumbelow, Bill

Organization: None provided

Comment

My wife and I own two pieces of property on Weiss Lake. We believe it is very important that the winter pool level only be dropped by 3 feet or less. The Cedar Bluff and Centre Commumnities need this to promote more people coming all year around for fishing and boating. This is a very important part of the revenue for this area.

This area has been hard hit by the current ecomonic situation and only lowering the water by three feet instead of six would help almost all of the merchants in one way or the other. Please don't let this be a rumor any more. Please make a new ruling to lower the level by only three feet or less.

Thank you for your assistance in this matter.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0005

Name: Chris Baerman

Affiliation: None provided.

Date: 3/24/2013 9:28:37 PM

Address:
[redacted]
Acworth, GA 30101

Attachments: None.

Comments:

Why does USACE not hit the targeted water levels published for Allatoona Lake?

Why does USACE eliminate from consideration any changes in the conservation pool level or the winter pool level? Seems those two parameter are the most crucial constraints affecting all the lakeýs authorized purposes.

Comment ID 0005

Comment ID 0005.001

Author Name: Baerman, Chris

Organization: None provided

Comment

Why does USACE not hit the targeted water levels published for Allatoona Lake?

Why does USACE eliminate from consideration any changes in the conservation pool level or the winter pool level? Seems those two parameter are the most crucial constraints affecting all the lake's authorized purposes.

Response

The published guide curve for Allatoona Lake (and other lakes as well) is a lake-level guide for operating the projects. However, actual day-to-day operational decisions take into consideration many factors including the hydrologic conditions of the basin, both present and forecasted; the authorized project purposes and the desire to maintain a balance among all purposes; and physical/operational constraints of the projects; among others. Also, the USACE operates the projects in a "conservative" mindset, avoiding the storage of water above the guide curve for extended periods of time due to the reduction of available storage for flood risk management activities.

The constraints and criteria used to determine operational revisions to the projects are well defined in Section 4 "Water Management Alternative Formulation" of the EIS.

Comment Number: 2013-0007

Name: Terri Nelson

Affiliation: None provided.

Date: 3/25/2013 8:23:29 PM

Address:
[redacted]
Rome, GA 30161

Attachments: None.

Comments:

It is dangerous for the lake Weiss to be too low on the water level. Earlier this year, in a fishing tournament, a fisherman had to be sent to the hospital for hypothermia due to his boat getting stuck on ground in too shallow water. Draining 6 foot is too low. Needs to stay at full pool or just 3 foot drop.

Too difficult to launch boat or pull boat onto ramp, when your motor is dragging dry ground.

Comment ID 0007

Comment ID 0007.001

Author Name: Nelson, Terri

Organization: None provided

Comment

It is dangerous for the lake Weiss to be too low on the water level. Earlier this year, in a fishing tournament, a fisherman had to be sent to the hospital for hypothermia due to his boat getting stuck on ground in too shallow water. Draining 6 foot is too low. Needs to stay at full pool or just 3 foot drop.

Too difficult to launch boat or pull boat onto ramp, when your motor is dragging dry ground.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0008

Name: Steve Nelson

Affiliation: Home owner

Date: 3/25/2013 8:26:40 PM

Address:
[redacted]
Cedar Buff, GA 35959

Attachments: None.

Comments:

Dear WCM, I want to offer my support for any initiative that will increase the year-round water level of the lake. This would allow all the residents and visitors to use the lake year round. Area businesses would also benefit from this utility.

Thanks.

Steve Nelson

Comment ID 0008

Comment ID 0008.001

Author Name: Nelson, Steve

Organization: None provided

Comment

Dear WCM, I want to offer my support for any initiative that will increase the year-round water level of the lake. This would allow all the residents and visitors to use the lake year round. Area businesses would also benefit from this utility.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss and Logan Martin Projects are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0009

Name: H.D. Nelson

Affiliation: None provided.

Date: 3/25/2013 8:28:44 PM

Address:
[redacted]
Taylorsville, GA 30178

Attachments: None.

Comments:

I think the lake needs to stay at full pool or just drop 2 feet. 6 foot is way too low to drop it. Everybody could enjoy it more if you just drop it 2 feet. I've had to help people get unstuck from too shallow waters.

Comment ID 0009

Comment ID 0009.001

Author Name: Nelson, H.D.

Organization: None provided

Comment

I think the lake needs to stay at full pool or just drop 2 feet. 6 foot is way too low to drop it. Everybody could enjoy it more if you just drop it 2 feet. I've had to help people get unstuck from too shallow waters.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0010

Name: Joy Cordle

Affiliation: None provided.

Date: 3/25/2013 8:32:28 PM

Address:
[redacted]
Silver Creek, GA 30173

Attachments: None.

Comments:

Please stop dropping the water at Lake Weiss too low. On my day off, if I go to the lake, and the water is too low, I have ruined my day off.

Comment ID 0010

Comment ID 0010.001

Author Name: Cordle, Joy

Organization: None provided

Comment

Please stop dropping the water at Lake Weiss too low. On my day off, if I go to the lake, and the water is too low, I have ruined my day off.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0011

Name: Dean Nelson, Jr.

Affiliation: None provided.

Date: 3/25/2013 8:35:24 PM

Address:
[redacted]
Cedar Bluff, AL 35959

Attachments: None.

Comments:

I live on the lake Weiss, I would like to see the lake stay at full pool, where I could use it more often. It gets too low, I can not get my boat out. I like using the lake for fishing or boating.

Comment ID 0011

Comment ID 0011.001

Author Name: Nelson, Jr., Dean

Organization: None provided

Comment

I live on the lake Weiss, I would like to see the lake stay at full pool, where I could use it more often. It gets too low, I can not get my boat out. I like using the lake for fishing or boating.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0012

Name: Robert Brown

Affiliation: None provided.

Date: 3/25/2013 9:00:48 PM

Address:
[redacted]
Rome, GA 30165

Attachments: None.

Comments:

I would like to see the winter pool raised by 3 feet. I feel that this would be an economic and recreational boost for N.W. Georgia and N.E. Alabama. I feel that flood control impact would be minimal.

Comment ID 0012

Comment ID 0012.001

Author Name: Brown, Robert

Organization: None provided

Comment

I would like to see the winter pool raised by 3 feet. I feel that this would be an economic and recreational boost for N.W. Georgia and N.E. Alabama. I feel that flood control impact would be minimal.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0013

Name: Doug Brown

Affiliation: None provided.

Date: 3/25/2013 9:04:15 PM

Address:
[redacted]
Rome, GA 30165

Attachments: None.

Comments:

The winter lake level for Weiss Lake should be raised to elev. 561 It would make our lake more usable during winter months.

Comment ID 0013

Comment ID 0013.001

Author Name: Brown, Doug

Organization: None provided

Comment

The winter lake level for Weiss Lake should be raised to elev. 561 It would make our lake more usable during winter months.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0014

Name: Jeff Mitchell

Affiliation: None provided.

Date: 3/25/2013 9:07:48 PM

Address:
[redacted]
Cedar Bluff, AL 35959

Attachments: None.

Comments:

We have a lot on Lake Weiss and are concerned that the water levels are not maintained at a higher level longer throughout the year. There have been many times that Labor Day weekend in Sept has proven to be almost dry in some parts of the lake. This is concerning not only for the use of the lake, but for property values as well.

Comment ID 0014

Comment ID 0014.001

Author Name: Mitchell, Jeff

Organization: None provided

Comment

We have a lot on Lake Weiss and are concerned that the water levels are not maintained at a higher level longer throughout the year. There have been many times that Labor Day weekend in Sept has proven to be almost dry in some parts of the lake. This is concerning not only for the use of the lake, but for property values as well.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0015

Name: Richard Cantrell

Affiliation: None provided.

Date: 3/26/2013 3:58:17 PM

Address:
[redacted]
Cedar Bluff, AS 35959

Attachments: None.

Comments:

Water levels are too low in the fall.

Comment ID 0015

Comment ID 0015.001

Author Name: Cantrell, Richard

Organization: None provided

Comment

Water levels are too low in the fall.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0016

Name: Ann Butler

Affiliation: None provided.

Date: 3/26/2013 8:59:13 PM

Address:
[redacted]
Cedar bluff, AL 35959

Attachments: None.

Comments:

Please maintain higher water level year round.

Comment ID 0016

Comment ID 0016.001

Author Name: Butler, Ann

Organization: None provided

Comment

Please maintain higher water level year round.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. The proposed modifications, not included in the current approved license, will be evaluated in the near future separate from the current manual updates.

Comment Number: 2013-0017

Name: Glenn Brown

Affiliation: None provided.

Date: 3/26/2013 9:47:57 PM

Address:
[redacted]
Cedar Bluff, AL 35959

Attachments: None.

Comments:

I was very disappointed with the ACT meeting held in Rome, Ga. on March 26. The ACT meeting should have been named the GAC meeting, Georgia Allatoona Carters meeting. Nothing of concern or benefit to Alabamas lakes were available, so shy call it Alabama Coosa Tallapoosa. All I heard was we don't control Alabama Power Lakes(so why are you involved in our water control manual?)

Comment ID 0017

Comment ID 0017.001

Author Name: Brown, Glenn

Organization: None provided

Comment

I was very disappointed with the ACT meeting held in Rome, Ga. on March 26. The ACT meeting should have been named the GAC meeting, Georgia Allatoona Carters meeting. Nothing of concern or benefit to Alabamas lakes were available, so shy call it Alabama Coosa Tallapoosa. All I heard was we don't control Alabama Power Lakes(so why are you involved in our water control manual?)

Response

Comment noted. USACE has navigation and flood risk management operational authority for several Alabama River Projects, which is described in details in the Water Control Manuals.

Comment Number: 2013-0018

Name: Bob Taylor

Affiliation: None provided.

Date: 3/27/2013 8:11:57 AM

Address:
[redacted]
Cedar Bluff, AL 35959

Attachments: None.

Comments:

The people of Cherokee County have been hoping for several years that the Winter level of our lake would be raised from 6' low to 3' low. This would cause a significant increase in tourism during the winter months. This would benefit the local economy significantly. Many of our businesses suffer financial losses during the winter months, and many cannot survive the loss of tourism business. More fishermen would mean more tax revenue to help our community build better schools, and public services.

Alabama Power has recommended this change, and we now understand that the COE has decided that it will not happen.

Keeping our water levels up would also help maintain a better water quality for the public to use.

Comment ID 0018

Comment ID 0018.001

Author Name: Taylor, Bob

Organization: None provided

Comment

The people of Cherokee County have been hoping for several years that the Winter level of our lake would be raised from 6' low to 3' low. This would cause a significant increase in tourism during the winter months. This would benefit the local economy significantly. Many of our businesses suffer financial losses during the winter months, and many cannot survive the loss of tourism business. More fishermen would mean more tax revenue to help our community build better schools, and public services.

Alabama Power has recommended this change, and we now understand that the COE has decided that it will not happen.

Keeping our water levels up would also help maintain a better water quality for the public to use.

Response

APC proposed guide curve revisions for Weiss Lake on the Coosa River are not considered in this update. The June 2013 FERC license for the APC Coosa River projects, issued following public review of the draft ACT WCM EIS, did not include revised winter guide curves for Weiss Lake. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

PUBLIC COMMENTS
ABOUT DRAFT ACT WATER CONTROL MANUAL AND
DRAFT EIS TO BECOME PART OF PUBLIC RECORD

* * * * * * *

Held at the Old Pitman Theater, Broad Street, Gadsden, Alabama, on the 27th day of March, 2013, at 4:00 p.m.

REPORTED BY:
Robin Reynolds, CCR

Board Certified Court Reporter

MR. JERRY JOHNS:

Located at [redacted] Leesburg, Alabama. I want you to leave the water on, keep the water up and not pull it down over three feet.

(WHEREUPON MR. BILL WHITMIRE INTERJECTED THAT HIS COMMENT WOULD BE THE SAME AS MR. JOHNS.)

MR. JOHNS:

That's the biggest problem, sure enough, the water fluctuating; bring

3

it up, then pull it down, pull it up. We would like to see it drop in the fall, and, in the spring, bring it back up, but not over three feet. Our goes down like six or seven feet. I just don't see where they need to do that. I feel like it's hurting everything. Fishing has got real bad in the last couple of years. I don't know whether the current won't stay in long enough for them to spawn or what the deal is. But we are just not catching fish. That's it.

Comment ID 0020

Comment ID 0020.001

Author Name: Johns, Jerry

Organization: None provided

Comment

I want you to leave the water on, keep the water up and not pull it down over three feet.

(WHEREUPON MR. BILL WHITMIRE INTERJECTED THAT HIS COMMENT WOULD BE THE SAME AS MR. JOHNS.)

That's the biggest problem, sure enough, the water fluctuating; bring it up, then pull it down, pull it up. We would like to see it drop in the fall, and, in the spring, bring it back up, but not over three feet. Our goes down like six or seven feet. I just don't see where they need to do that. I feel like it's hurting everything. Fishing has got real bad in the last couple of years. I don't know whether the current won't stay in long enough for them to spawn or what the deal is. But we are just not catching fish. That's it.

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

PUBLIC COMMENTS
ABOUT DRAFT ACT WATER CONTROL MANUAL AND
DRAFT EIS TO BECOME PART OF PUBLIC RECORD

* * * * * * *

Held at the Old Pitman Theater, Broad Street, Gadsden, Alabama, on the 27th day of March, 2013, at 4:00 p.m.

REPORTED BY:
Robin Reynolds, CCR
Board Certified Court Reporter

MR. KEN SWAFFORD:

My name is Ken Swafford. I live in Riddles Bend on the Neely Henry Lake. I've lived there for 37 years.

And I'm here to tell the Corp of Engineers that I appreciate what they are doing, appreciate the impact study, very glad that the rule curve was changed on winter pool from 505 to 507. And I think that will make our lake much safer, much more boat friendly, and increase the property values of our homes on the water, and just make the all-around lake a better experience to live on, to fish on, and to work on. And I'm here just to thank them for that.

Comment ID 0023

Comment ID 0023.001

Author Name: Swafford, Ken

Organization: None provided

Comment

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Response

Comment noted.

From:	Mike Bearden
To:	ACT-WCM
Subject:	ACT Master Water Control Manual Update Comment
Date:	Wednesday, April 03, 2013 10:13:26 PM
Attachments:	CORPS Cobb Forum Question.pdf

This is to submit as an attachment the comment that I submitted in draft form to the Kennesaw open house recorder on March 25; minor edits to comport to context.

Thank you for your courtesies and information.

Mike Bearden

My name Mike Bearden, of Bartow County. My water utility provides my family's water supply from the lake, my local electricity provider is supplied power from the lake, former professional industrial sector clients and employers of mine depend on outflows from the lake, the Lake serves as a very important recreational/quality of life factor for my family, my friends and me, and I am a director of LAA – I comment and ask a two-part question because Allatoona Lake has always been a vitally important part of so much of my life and my community's quality of life.

The CORPS has a serious responsibility with the overriding flood risk management task of Allatoona Lake. Nothing that I believe or seek is offered to compromise that task at all - the CORPS maintains a single-minded focus to that vital task. However given the now enormous value that our Lake water has to literally over a million people for water supply and recreational quality of life, changes are in order from the way things have been done in attention to that task since 1950, to the detriment of other valuable purposes.

In 1950, the CORPS best weather forecasting tools derived from past history and the Farmers Almanac, today NOAA routinely provides 2 to 3 week advance notice of major rain-making systems. In 1950 the CORPS hydrologic models were maintained with slide rules and nomographs, today the CORPS has online access to hundreds of real time stream flow gauges and sophisticated HEC RAS runoff models. In 1950, rural Bartow, Cherokee , Cobb and Paulding Counties' populations totaled less than 100,000 people and the value of a unit volume of water for use was insignificant. Today the Lake is directly surrounded by over 1 million people who are paying about $5 dollars for every 1000 gallons of water.

In light of these enormous changes, please explain what the CORPS does different from what it established over 60 years ago to not only manage flood risks but also to conserve and not wastefully dump water to the ocean when it can be used to balance the Lake's water supply and recreational purposes. Secondly and related, please explain why winter, spring and summer Lake pool level changes were pointedly excluded from the WCM update, when modern-day management practices and technological advancements could be leveraged for just small proactive tweaks across dated CORPS practices to improve lake levels and significantly serve regional water supply and recreational purposes through conservation of now-wasted water; without increasing flood risks that were foreseen in 1950.

Comment ID 0026

Comment ID 0026.001

Author Name: Bearden, Mike

Organization: None provided

Comment

My name Mike Bearden, of Bartow County. My water utility provides my family's water supply from the lake, my local electricity provider is supplied power from the lake, former professional industrial sector clients and employers of mine depend on outflows from the lake, the Lake serves as a very important recreational/quality of life factor for my family, my friends and me, and I am a director of LAA - I comment and ask a two-part question because Allatoona Lake has always been a vitally important part of so much of my life and my community's quality of life.

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Response

USACE agrees that many advancements in hydrologic modeling and forecasting have occurred since 1950. One of the purposes of updating the WCMs is to capture these improvements. However, rainfall forecasting, in spite of improved technology, is still very imprecise when it comes to forecasting exactly where and how much rainfall will occur. Therefore, the USACE operates the federal projects conservatively in order to reduce flood risks downstream.

U.S. Army Corps of Engineers 3/26/2013

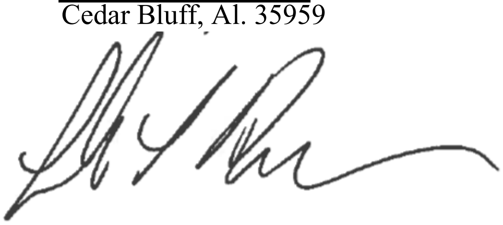
Subject: ACT Comments (Weiss Lake) Water Control Manual

I have been using Weiss Lake for recreational purposes for 50+ years. I would recommend raising the winter pool level on Weiss Lake by 3 feet to elev. 561. I feel that flood control which Weiss Lake was built for in the early 60's would not be affected. Carters Lake in North Georgia was built in the 1970's after the original Water Control Manual for Weiss Lake was developed. Carters Lake added a measure of flood control coming into Weiss Lake in addition to that offered by Lake Allatoona. Historical Data should show that flooding on Weiss Lake has been greatly reduced since Carters Lake was constructed. I have personally seen a reduction in flooding in my 50+ years on the lake. The economic impact on N.E. Alabama and N.W. Ga. Would be tremendous by making Weiss Lake usable year round, it would allow business to thrive due to year round use, whereas business cannot survive due to a lack of users on the lake because of the 6 foot winter draw down.

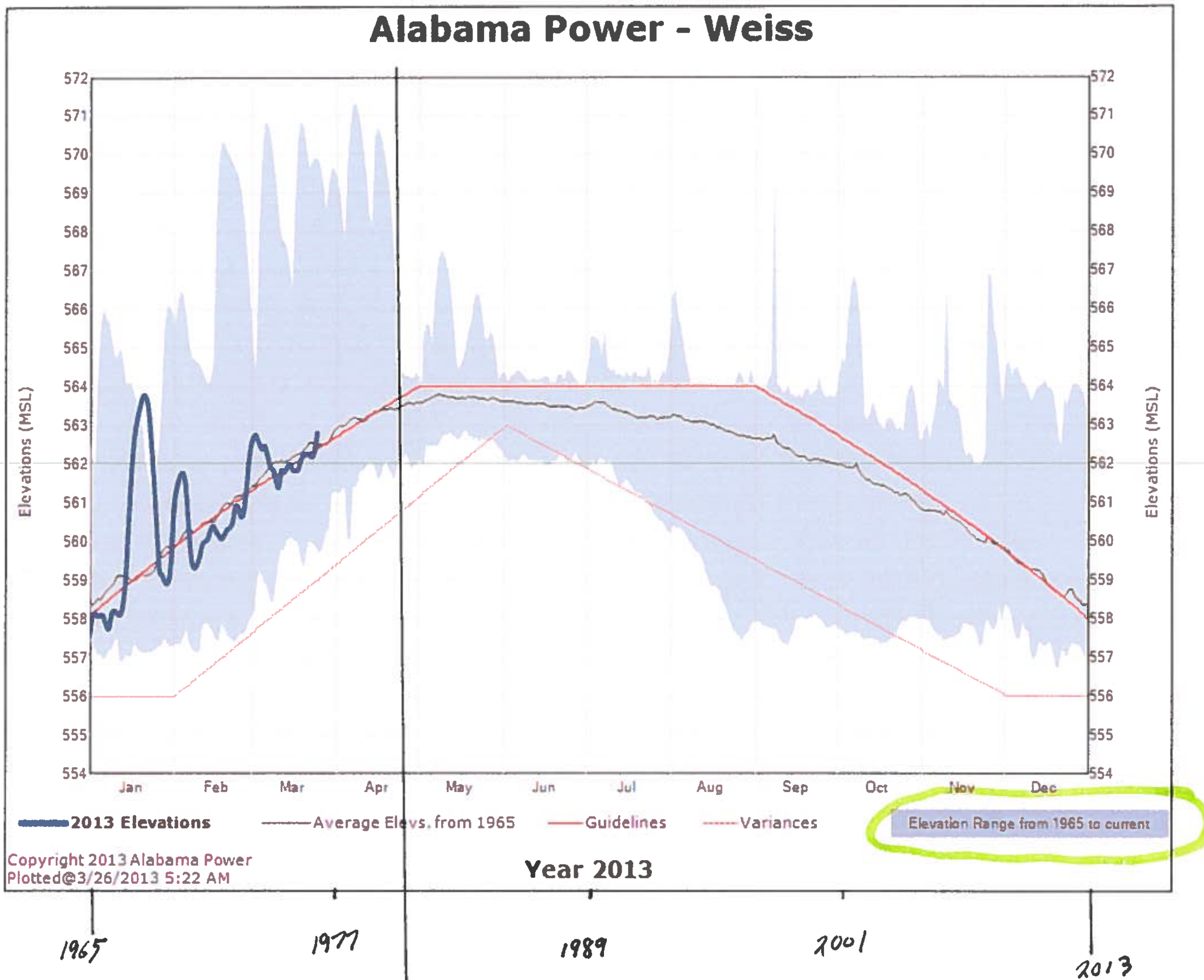
Alabama Power Co. recommended raising the winter pool elev. to 561 in their original permit application. I have not found any negative comments about raising the winter pool elev. in all of the documents supplied by the many agencies and organizations during the permitting process.

Your consideration in this matter is greatly appreciated,

Glenn L. Brown
[redacted]
Cedar Bluff, Al. 35959



Attachments/



CArters Lake Provides Flood Control

1 of 1

3/26/2013 9:55 AM

2.1.2 Proposed Operation

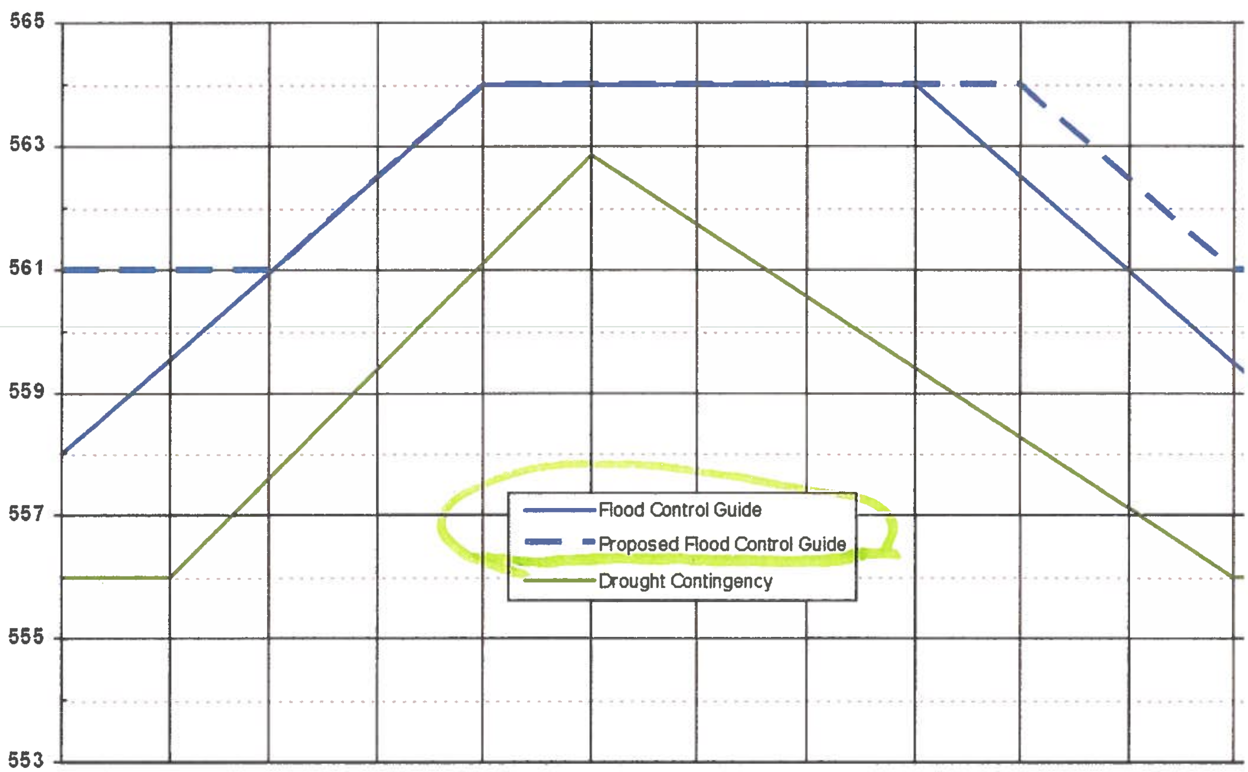
Through the Alabama Power Cooperative Approach (APCA) process, it was determined that the Weiss development should remain a multi-purpose storage project providing the benefits of hydroelectric generation, storage for power generation, flood control, navigation flow augmentation, maintenance of downstream water quality, municipal and industrial water supply, recreational opportunities, and serving as habitat for fish and wildlife.

The Weiss development will continue to normally operate to produce peaking power. It will be operated manually by remote control as described in Section 2.1.1. The current flexibility to load and unload the units as electric system conditions dictate will remain unchanged. The units will continue to be operated in the "spinning mode" when not loaded in order to provide generating reserve and reactive capability.

Through the APCA process, it was determined that a change in the Rule Curve would produce a net benefit to the Weiss development. The Proposed Rule Curve is shown in Figure B-2 and the Proposed Flood Control Regulation Schedule is presented in Table B-4. The proposed normal range of power pool drawdown is 3 feet between elevations 564.0 ft msl and 561.0 ft msl, amounting to 82,000 acre-feet. This storage will also be available seasonally for flood control. During periods of low stream flow, releases from storage below 561.0 ft msl will augment the flow of the river downstream. Above the top of the power pool and extending to elevation 572.0 ft msl, there is available for control of floods surcharge storage totaling 302,000 acre-feet, within which reservoir releases will be scheduled as dictated by the Induced Surcharge Curve. This will achieve significant improvement in downstream flow resulting from high to moderate frequency floods.

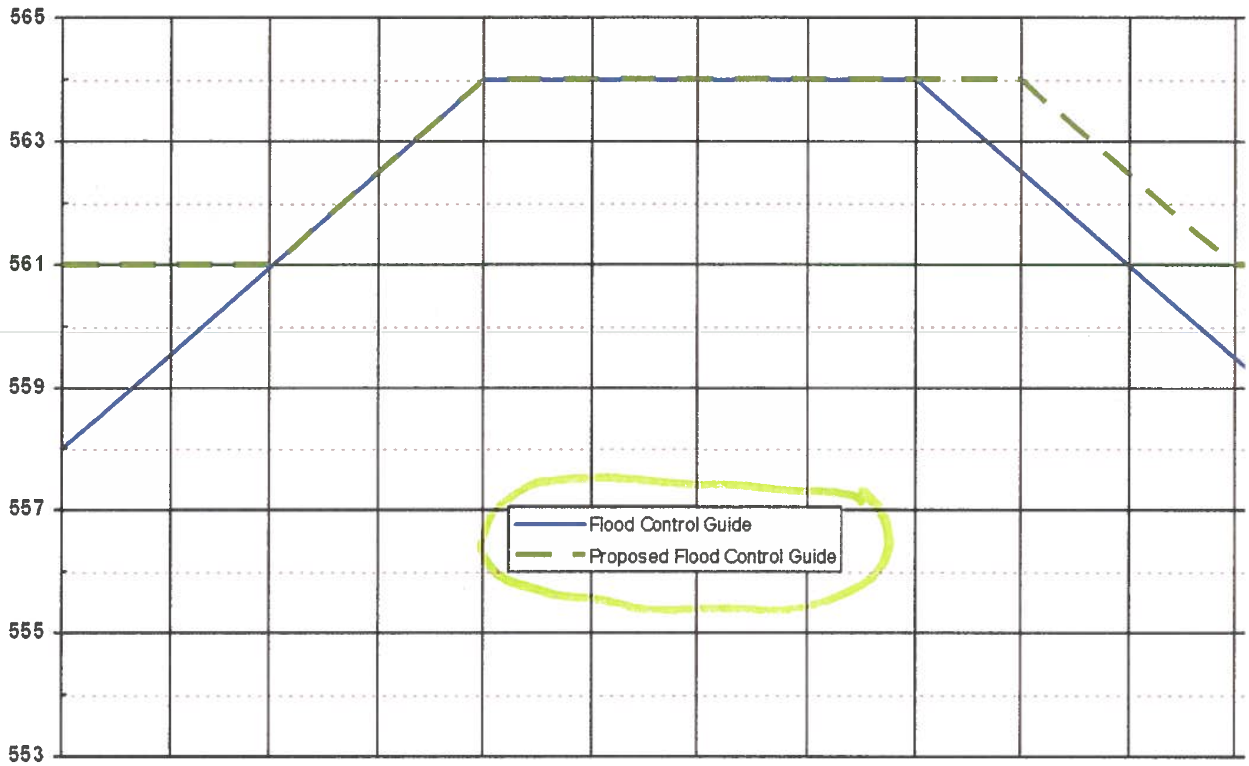
The Rule Curve delineates the storage in Weiss reservoir allocated to power generation and to flood control throughout the year. This seasonally varying curve is a division between the power and flood control pools and normally the reservoir level will be maintained at or below the curve except when storing floodwaters. The drawdown each year is to elevation 561.0 ft msl. Normally, the plant will operate on a weekly cycle and the power generated will be available for use in daily peak-load periods. At such times as the reservoir level is below the Rule Curve, the power plant will be operated in accordance with electric system requirements.

Figure B-2: Weiss Proposed Rule Curve



B-15

Figure B-1: Weiss Rule Curve



B-13

7.0 PLANS TO MODIFY EXISTING PROJECT FACILITIES

The economic benefit APC customers derive from the Coosa River developments is relative to all other power options available from alternative generating resources. Opportunities to enhance hydro operating efficiencies are economically weighed in light of "competing alternative power options." In recent years, turbine manufacturers have improved turbine design technology so that refurbishing hydro turbines to increase project efficiencies is an economical alternative. For the same flow, incremental increases in capacity and energy are available. These incremental power gains provide increases in renewable energy resources which are environmentally benign relative to alternative thermal resources.

For the long-term, upgrading hydro turbines will continue to be a viable economic alternative. During the short term, however, the timing for undertaking improvements at individual projects will be weighed with other competing capital projects, short-term resource needs, and purchase options that could become available.

APC has utilized the Alabama Power Cooperative Approach (APCA) to involve all stakeholders throughout the relicensing process. Their input, along with routine planned changes APC desires, has resulted in numerous changes to project operations. The changes include:

- **Weiss** - Higher winter pool level, seasonally varying flow in the Bypass reach below spillway, drought management plan
- **Henry** - Higher winter pool level, improved flood control release plan, drought management plan
- **Logan Martin** - Higher winter pool level, improved flood control plan, drought management plan
- **Lay** - Refurbishment of two Units
- **Jordan** - Refurbishment of Unit 4, improved recreational release schedule
- **Bouldin** - Refurbishment of one Unit
- **Weiss, Neely Henry and Logan Martin** – Revised Reservoir Regulation Manuals with the USACE

with FERC). Alabama Power has included an evaluation of this alternative in its APEA as a courtesy to these organizations in recognition of their interests in and recent efforts with respect to the Coosa River Project. Given this very abbreviated time frame, however, APC has analyzed this alternative to the best degree possible.

As fully described in the application, the Alabama Power Enhancement Proposal includes a substantial number of environmental, recreation and operational changes to the Project that will enhance these resources for decades to come. Although not an exhaustive list, these proposed enhancements include: higher winter pool levels at Weiss, Neely Henry and Logan Martin; minimum flow releases in the Weiss Bypass and the Jordan tailrace; a comprehensive shoreline management plan that calls for shoreline protection and enhancement as well as preservation of undeveloped lands; a partnership agreement with state and federal resource agencies for a habitat enhancement program and aquatic culture facility; a wildlife management plan that includes a waterfowl refuge at Weiss and barrier-free hunting areas on Jordan; turbine upgrades at four units; and a recreation plan for each development that includes facility and access improvements in the Coosa Basin. These measures, together with other proposed project enhancements, represent a commitment by APC of over $350,000,000 over the life of the new license. APC believes strongly that this level of investment in project enhancements fully justifies the issuance by the Commission of a fifty year license for the new Project 2146. This justification is particularly compelling given the consensus resolution of these complex issues among the vast majority of such a diverse group of stakeholders.

Though the filing of this application represents a significant milestone in the Coosa relicensing process, much work remains. Over the next six months, APC will continue to consult with the United States Army Corps of Engineers (USACE) with respect to the proposed changes in the flood control plans related to the winter pool elevation changes at Weiss, Neely Henry and Logan Martin. Based on our consultation over the past eighteen months, we expect the USACE will accept these changes through the issuance of revised regulation manuals once certain impediments faced by the USACE are resolved. In such event, APC will file these manuals as a supplement to the enclosed application. In addition, in the coming months, we will be finalizing an agreement with the Alabama Department of Conservation and Natural Resources and the United States Fish and Wildlife Service consistent with a term sheet, agreed to by Alabama Power and the agencies, that is included in the enclosed application. This agreement, once executed by the parties, will also be filed as a supplement to this application. Lastly, APC will prepare draft license articles that reflect the various measures proposed in the Alabama Power Enhancement Proposal. These draft articles will be provided to the Commission for its

Comment ID 0027

Comment ID 0027.001

Author Name: Brown, Glenn

Organization: None provided

Comment

I have been using Weiss Lake for recreational purposes for 50+ years. I would recommend raising the winter pool level on Weiss Lake by 3 feet to elev. 561. I feel that flood control which Weiss Lake was built for in the early 60's would not be affected. Carters Lake in North Georgia was built in the 1970's after the original Water Control Manual for Weiss Lake was developed. Carters Lake added a measure of flood control coming into Weiss Lake in addition to that offered by Lake Allatoona. Historical Data should show that flooding on Weiss Lake has been greatly reduced since Carters Lake was constructed. I have personally seen a reduction in flooding in my 50+ years on the lake. The economic impact on N.E. Alabama and N.W. Ga. Would be tremendous by making Weiss Lake usable year round, it would allow business to thrive due to year round use, whereas business cannot survive due to a lack of users on the lake because of the 6 foot winter draw down.

Alabama Power Co. recommended raising the winter pool elev. to 561 in their original permit application. I have not found any negative comments about raising the winter pool elev. in all of the documents supplied by the many agencies and organizations during the permitting process.

Your consideration in this matter is greatly appreciated,

<The author included additional graphs and information. See original comment letter.>

Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. The proposed modifications, not included in the current approved license, will be evaluated in the near future separate from the current manual updates.

Typed version of comment 2013-0029 (copy of original handwritten comment letter follows on the next pages).

I came here tonight expecting to hear that the winter level of Lake Weiss will be increased from 6' to 3'. What I learned is that the Corps of Engineers is not prepared to make this change because Weiss is considered a flood control lake.

The 6' winter level of Lake Weiss is causing significant economic problems for Cherokee County. When the water is 6' low fisherman don't come to Weiss. Many of our restaurants motels, and other businesses cannot keep their doors open because fisherman don't come in the winter.

During the summer our lake suffers from low water flow because much of the water is sent to the metro Atlanta area. This low water flow results in poor water for Lake Weiss.

Atlanta is no more important than the residents in the Coosa River Basin!

MOBILE DISTRICT

US Army Corps of Engineers

Submit Comments and Stay Informed

Thank you for submitting your comments on the U.S. Army Corps of Engineers Alabama-Coosa-Tallapoosa (ACT) River Basin Master Water Control Manual (WCM) Draft Environmental Impact Statement (EIS).

If you are not currently receiving information regarding the ACT EIS and would like to, please complete the mailing information below.

Submit this comment form at the public meeting or by U.S. mail to:

Tetra Tech, Inc.
61 St. Joseph Street, Suite 550
Mobile, AL 36602-3521

If you would like more information on the ACT River Basin or the EIS process please check the main ACT Master Water Control Manual Update page: http://www.sam.usace.army.mil/Missions/PlanningEnvironmental/ACTMasterWaterControlManualUpdate.

First name	Robert ~~Taylor~~
Last name	Taylor
Organization name	Lake Weiss resident
To be added to the mailing list, complete the following information.	
Address	[redacted]
City	Cedar Bluff,
County	Cherokee
State	Alabama
ZIP Code	35959
E-mail	[redacted]
Add to mailing list	☑ Yes ☐ No
Preferred delivery method*	☐ U.S. Mail ☑ E-mail

*Future updates will be provided by e-mail unless otherwise indicated.

Comments	I came here tonight expecting to hear that the winter level of Lake Weiss will be increased from 6' to 3'. What I learned is that the Corps of Engineers is not prepared to make this change because Weiss is considered a flood control lake. The 6' winter level of Lake Weiss is causing significant economic problems for Cherokee County. When the water is 6' low fishermen don't come to Weiss. Many of our Restaurants Motels, and other businesses cannot keep their doors open because fishermen don't come in the winter.
Resource Area to Which My Comment Is Related *(Choose all that apply)*	☑ Biological Resources ☑ Cultural Resources ☐ Data, Studies, & Analytical Tools ☑ Drought Operations ☑ Flood Risk Management ☑ Hydropower ☐ National Environmental Policy Act ☑ Navigation ☑ Socioeconomics & Recreation ☑ Water Management Recommendations ☑ Water Quality ☑ Water Supply ☐ Other: During the summer our lake suffers from low water flow because much of the water is sent to the metro Atlanta Area. This low water flow results in poor water for Lake Weiss. Atlanta is no more important than the residents in the Coosa River Basin!

Comment ID 0029

Comment ID 0029.001

Author Name: Taylor, Robert

Organization: None provided

Comment

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Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Commander , USACE, Mobile District
P O Box 2288
Mobile , AL. 36628

Attn : PD-EI(ACT-DEIS)
Comments on WCM Revisions
Lake Allatoona in ACT Basin

I have the following thoughts and comments concerning my review of the WCM rough draft for Lake Allatoona and ACT Basin .

My major concern that needs attention ,is the deviation between the Top of Conversation Pool Line and Historical Average Line starting on July 1 through November .This trend is getting worse every year .Everyone(Ga. EPD,Alabama Power ,navigation ,etc.) wants the water out of the Lake in late summer and fall when rainfall averages and inflow are low .

There is very little change in this revision considering how drastically the Lake has changed and how the full pool duration has shortened .The Lake has gone from a rural one for flood control to an urban one with 1,000,000 people and a large value on every gallon of water in it due to the following .

Land value ,taxes &visitation are very high .Probably your most visited lake for its size .As the lake gets smaller in summer it gets dangerous due to reduced area and is a huge economic and recreational loss .

The WCM revision correctly shows at 835 elevation or 5' low ,the Lake starts to become useless for recreation (an economic impact in the millions) Half the lakeside restaurants have closed & Red Top Mountain State Park Lodge has closed .

Flood control is the lake's main function and priority and rightly so .The winter drawdown is required .Now for the possible remedies to keep the lake level higher in late summer and fall. The answer is to properly prioritize all discharge functions by value to a fast growing urban area and give more attention to water control during this period.

The lake's #2 present priority seems to be hydroelectric power and it should not be in the future due to urbanization and so little power being produced here.The dam produces 0.063 % of the States ' power or 1/8 the power of Carters dam .The lost water cost greatly exceeds the benefit.

Even the Courts have said municipal water supply is a priority .This should be accounted for in the WCM along with future projections.It can account for 2 feet of pool elevation in the critical period per Governor Nathan Deal's letter dated 1/24/13 asking to triple the amount of water withdrawn. Through interbasin transfer of 15 Georgia counties,this water could be used outside the ACT basin. The Lake's worst threat .

Water should never be released for navigation if Lake is not full . Very little navigation exist today in ACT basin and is of negligible value.

Due to the increasing worth of a gallon of Lake Allatoona water ,all priorities on it should be addressed by the numbers by the WCM revision. The trend of the lake level to be lower earlier every summer needs to stabilize and it was not lower for decades in the past .This makes the Historical Average Line much worse than shown for the last decade.

Hopefully by dropping the Top of Conservation lake level to 835 on September 15, as considered , will not cause a future decline in the HistoricalAverage . Hopefully the deviation in the two will decrease without dropping the Top of Conservation line down to closer match actual pool elevation.

Time will tell and the future of this undervalued treasure is at stake.

Yours truly,

Glen Long

Glen Long P.E.
[redacted]
Atlanta ,Ga. 30328
[redacted]

Comment ID 0030

Comment ID 0030.001

Author Name: Long, Glenn

Organization: None provided

Comment

I have the following thoughts and comments concerning my review of the WCM rough draft for Lake Allatoona and ACT Basin .

My major concern that needs attention ,is the deviation between the Top of Conversation Pool Line and Historical Average Line starting on July 1 through November .This trend is getting worse every year .Everyone(Ga. EPD,Alabama Power ,navigation ,etc.) wants the water out of the Lake in late summer and fall when rainfall averages and inflow are low .

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Time will tell and the future of this undervalued treasure is at stake.

Response

Comments noted. According to the USACE analysis, the proposed revisions to Allatoona Lake Guide Curve will meet current water supply needs from the Lake.

Comment Number: 2013-0031

Name: Melba Rogers

Affiliation: Lake Weiss Homeowner

Date: 3/28/2013 4:47:35 PM

Address:
[redacted]
cedar bluff, AL 35959

Attachments: None.

Comments:

Alabama is light years behind the rest of the country!!!! I was born and raised in Al. but thisheritage fact has not blinded me to our backwardness. Since moving back to Al, I have been so disappointed with the politics and local government and the management of Lake Weiss. The level is w-a-a-y too low esp. in winter months to even take a boat on the water. It is a shallow lake to begin with and has so many trees, stumps and other obstacles. Boats are easily damaged and lives are threatned. Rumor is out that our lake is "poisioned". Perhaps the PCB's would not be disturbed as much if the lake levels did not flucuate so much. We don't have much to offer from ou lake anymore....Cherokee county and the residents are definately suffering from support of Corps of Engineers.

Comment ID 0031

Comment ID 0031.001

Author Name: Rogers, Melba

Organization: None provided

Comment

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Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current water control manual update process. If these potential guide curves revisions are considered further in the future, they will be addressed as a separate action by FERC and subject to USACE review and appropriate NEPA documentation.

Comment Number: 2013-0032

Name: Guy Andrews

Affiliation: None provided.

Date: 4/1/2013 9:29:34 AM

Address:
[redacted]
Cedar Bluff, AL 35959

Attachments: None.

Comments:

I support Alabama Power Corporation proposed project at Weiss Lake to raise the winter guide curve by 3 ft from elevation 558 ft to 561 ft from December 1 through March 1 with a constant rise in the Weiss Lake reservoir until the normal summer elevation of 564 ft is reached on May 1 and the summer guide curve extended from August 31 to September 30 with the same summer elevation as operated.

This is a very shallow lake and dangerous during the current winter guide curve.

Comment ID 0032

Comment ID 0032.001

Author Name: Andrews, Guy

Organization: None provided

Comment

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Response

The studies and analyses necessary to evaluate the flood operational impacts associated with the requested modifications to the winter pool levels at the Alabama Power Company Weiss Project are outside the scope of the current WCM update process. The proposed modifications, not included in the current approved license, will be evaluated in the near future separate from the current manual updates when additional manpower and funding become available.

Comment Number: 2013-0033

Name: Vince Persano

Affiliation: Lake Allatoona Association

Date: 4/10/2013 10:57:13 AM

Address:
[redacted]
Cartersville, GA 30120

Attachments: None.

Comments:

Disappointed in the fact that after over 60 years of historic data and enhanced weather detection technology that a broader based study to include flood water reallocation was not conducted wnich may have allowed a change in the summer and winter pools at Lake Allatoona. This outcome could have been very advantageous to todays demands on the lake by modifying levels to fill those needs which would also help to assure water quality and overall preservation of tne lake.

Comment ID 0033

Comment ID 0033.001

Author Name: Persano, Vince

Organization: Lake Allatoona Association

Comment

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Response

USACE agrees that many advancements in hydrologic modeling and forecasting have occurred since 1950. One of the purposes of updating the water control manuals is to capture these improvements. Rainfall forecasting, however, in spite of improved technology, is still very imprecise when it comes to forecasting exactly where and how much rainfall will occur. Therefore, USACE operates the projects conservatively in order to reduce flood risks downstream.

Sections 3 and 4 of the EIS describe the constraints associated with updating the water control manuals. Reallocation of flood storage was determined to be outside the scope of this effort.

* * * * * * * * * * * * * *

USACE

MOBILE DISTRICT PUBLIC MEETINGS

FOR THE ACT RIVER BASIN

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Cobb Conference Center

755 Cobb Place Boulevard, NW

Kennesaw, Georgia 30144

March 25, 2013

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MS. ROBERTSON: Tia, T-I-A, Robertson, R-O-B-E-R-T-S-O-N.

I would like to see Allatoona managed with water conservation as a higher priority and recreational use a higher priority. It has a big economic impact as well as quality of life impact on this area.

And I'll send an email. Thank you very much. I enjoyed the interaction. It was very helpful. It answered quite a few questions.

And I intend to contact my congressman to hopefully -- that's my understanding is that it takes congress to change the mission, I guess, of the corps, and that's my plan to get that to happen.

Thank you.

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Comment ID 0034

Comment ID 0034.001

Author Name: Robertson, Tia

Organization: None provided

Comment

I would like to see Allatoona managed with water conservation as a higher priority and recreational use a higher priority. It has a big economic impact as well as quality of life impact on this area.

And I'll send an email. Thank you very much. I enjoyed the interaction. It was very helpful. It answered quite a few questions.

And I intend to contact my congressman to hopefully -- that's my understanding is that it takes congress to change the mission, I guess, of the corps, and that's my plan to get that to happen.

Thank you.

Response

Allatoona Dam and Lake is a congressionally-authorized, multipurpose project. USACE does not prioritize authorized purposes but seeks to operate the projects in a balanced manner.

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USACE

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MR. CULPEPPER: Jerry Culpepper, C-U-L-P-E-P-P-E-R.

I'm concerned about the sediment raining down into the lake when the lake levels are low. When the rain comes, it hits the dirt and pushes it all into the lake, and I understand we've lost four to five feet over the 40 or 50 years. And I want to see, basically, what kind of study they've done about how we can keep some of that land from sliding down into the lake and, therefore, raising the bottom four or five feet. It seems like every time it rains, it just is muddy and the quality of water is just terrible. And that's one of my biggest concerns about the runoff during the winter when the lake is so low.

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Comment ID 0035

Comment ID 0035.001

Author Name: Culpepper, Jerry

Organization: None provided

Comment

I'm concerned about the sediment raining down into the lake when the lake levels are low. When the rain comes, it hits the dirt and pushes it all into the lake, and I understand we've lost four to five feet over the 40 or 50 years. And I want to see, basically, what kind of study they've done about how we can keep some of that land from sliding down into the lake and, therefore, raising the bottom four or five feet. It seems like every time it rains, it just is muddy and the quality of water is just terrible. And that's one of my biggest concerns about the runoff during the winter when the lake is so low.

Response

Section 5-03 of the Allatoona WCM (EIS Appendix B) describes the result of a sedimentation survey conducted in 2010. In summary, the heaviest sedimentation occurred in headwaters and mid-upper sections of tributaries, specifically those with urban areas upstream. The lake was designed with approximately 83,000 acre-feet of inactive storage below elevation 800 ft. that is used to store sediment in the lake.

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MS. KAY: Rhonda Kay, R-H-O-N-D-A K-A-Y.

I have two concerns. My first concern is that if they're going to release more water from the lake, then the lake level needs to be -- come up because I'm on the south end of the lake, and because I live on the south end of the lake, I lose water first. So if they're taking out more water, then my property values are going to go down because I'm going to be on a mud flat. So that's one issue that is quite important as far as that goes. Then if they're going to let more out, that means they need to bring it up so that I have, you know, water on my end so my property values are not devalued because I won't have any water.

And then as far as the water quality, it doesn't help the lake with silt and runoff and chemicals and everything else that we have already going into the lake when for the last 63 years we have left that end of the lake when they drain it from, let's say, September or October until January before it starts filling up, total dirt. To me, that's very toxic, and it does not help the water quality or help with any of the issues that we have with that and that needs to be addressed.

So if they brought it up and kept it where there was at least something to cover the dirt, then I feel like, you know, maybe that would improve. But, you know, I know that there are other things they have to take into consideration when it comes to that, but those are my -- my biggest issues are what my -- my biggest concerns are is how this is going to impact me. Saying it's not going to have any impact isn't correct. That will have an impact.

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Comment ID 0036

Comment ID 0036.001

Author Name: Kay, Rhonda

Organization: None provided

Comment

I have two concerns. My first concern is that if they're going to release more water from the lake, then the lake level needs to be -- come up because I'm on the south end of the lake, and because I live on the south end of the lake, I lose water first. So if they're taking out more water, then my property values are going to go down because I'm going to be on a mud flat. So that's one issue that is quite important as far as that goes. Then if they're going to let more out, that means they need to bring it up so that I have, you know, water on my end so my property values are not devalued because I won't have any water.

Response

Section 6.1.1.2.2 of the EIS describes the impacts on Allatoona Lake from the Proposed Action Alternative. Overall, there will not be greater releases from Allatoona Dam due to the Proposed Action Alternative. During drought periods, Allatoona Lake would be at a higher level under the Proposed Action Alternative (Plan G) than under the No Action Alternative.

Comment ID 0036.002

Author Name: Kay, Rhonda

Organization: None provided

Comment

And then as far as the water quality, it doesn't help the lake with silt and runoff and chemicals and everything else that we have already going into the lake when for the last 63 years we have left that end of the lake when they drain it from, let's say, September or October until January before it starts filling up, total dirt. To me, that's very toxic, and it does not help the water quality or help with any of the issues that we have with that and that needs to be addressed.

So if they brought it up and kept it where there was at least something to cover the dirt, then I feel like, you know, maybe that would improve. But, you know, I know that there are other things they have to take into consideration when it comes to that, but those are my -- my biggest issues are what my -- my biggest concerns are is how this is going to impact me. Saying it's not going to have any impact isn't correct. That will have an impact.

Response

The Allatoona Project is a multipurpose project and the lake was designed to be lowered in the winter to provide additional flood storage during the spring. Periodic drying in the shallow tributaries around the lake can help to prevent exotic species from growing and can also provide grassy habitat for juvenile fish when the lake refills in the spring.

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Kennesaw, Georgia 30144

March 25, 2013

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MR. HORNEY: John Horney, H-O-R-N-E-Y,
[redacted]
I live on the lake, BCCI community. I would like to know what is needed to be done to get a study, whether it be a hydrology study, to see what the real number is rather than drawing the lake down 17 feet, if there's another number that makes better sense given the technology that we have nowadays; weather forecasting, the usage of the water in the lake with the amount of people in the greater Atlanta metro area now versus what it was back when the lake was put in in the '50s. Also to see if the lake could be maybe raised a month sooner. Instead of May coming full pool maybe April or, you know, mid-March. It would benefit both recreation and the people that actually need the water in the area rather than send it all downstream if it's not needed. If the study can be done -- hydrology study -- to reduce the amount of water drawn down each year.

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Comment ID 0037

Comment ID 0037.001

Author Name: Horney, John

Organization: None provided

Comment

I live on the lake, BCCI community. I would like to know what is needed to be done to get a study, whether it be a hydrology study, to see what the real number is rather than drawing the lake down 17 feet, if there's another number that makes better sense given the technology that we have nowadays; weather forecasting, the usage of the water in the lake with the amount of people in the greater Atlanta metro area now versus what it was back when the lake was put in in the '50s. Also to see if the lake could be maybe raised a month sooner. Instead of May coming full pool maybe April or, you know, mid-March. It would benefit both recreation and the people that actually need the water in the area rather than send it all downstream if it's not needed. If the study can be done -- hydrology study -- to reduce the amount of water drawn down each year.

Response

USACE agrees that many advancements in hydrologic modeling and forecasting have occurred since 1950. One of the purposes of updating the water control manuals is to capture these improvements. Rainfall forecasting, however, in spite of improved technology, is still very imprecise when it comes to forecasting exactly where and how much rainfall will occur. Therefore, USACE operates the projects conservatively in order to reduce flood risks downstream.

Reallocation of flood risk management storage was determined to be outside the scope of this water control manual update process. A separate reallocation study is required to reallocate storage from one use to another.

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March 25, 2013

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MR. ROBERTS: Robby Robert.

First off, I'd like to say they do a great job on the lake all in all. But the biggest change I'd like to see is a little more consideration toward recreational on the lake by increasing the lake levels. I don't think the lake should be lower than 840 through Labor Day. It lowers the lake so much. When they lower it to 835, that five-foot difference has people, you know, looking at a whole lot less area. Five feet leaves a lot less lake, and there's all kind of rock issues out there Labor Day when they get down to 835 or below. And it's been a little below that for the last few years. And then I think they ought to start off a little higher than 840 at the start of the summer season. They need to get up to maybe 842 so that during the evaporation of, you know, July and August the lake doesn't come down as much where they can maintain it until Labor Day of 840. And I know that's their target, but unless they raise the going-in level, they're not going to ever hit it. And I talked to them about it, and they said, well, in our study that wasn't one of the parameters was going past 840 but I make a good point. The lake's going to evaporate a couple of feet in the hot summer when our rain is at its low level. So I think it would be a much safer place to be on the lake -- and I live there -- Labor Day weekend and the end of summer if they keep the lake level up to 840.

That's it. Like I said, they do a good job.

Comment ID 0038

Comment ID 0038.001

Author Name: Robert, Robby

Organization: None provided

Comment

First off, I'd like to say they do a great job on the lake all in all. But the biggest change I'd like to see is a little more consideration toward recreational on the lake by increasing the lake levels. I don't think the lake should be lower than 840 through Labor Day. It lowers the lake so much. When they lower it to 835, that five-foot difference has people, you know, looking at a whole lot less area. Five feet leaves a lot less lake, and there's all kind of rock issues out there Labor Day when they get down to 835 or below. And it's been a little below that for the last few years. And then I think they ought to start off a little higher than 840 at the start of the summer season. They need to get up to maybe 842 so that during the evaporation of, you know, July and August the lake doesn't come down as much where they can maintain it until Labor Day of 840. And I know that's their target, but unless they raise the going-in level, they're not going to ever hit it. And I talked to them about it, and they said, well, in our study that wasn't one of the parameters was going past 840 but I make a good point. The lake's going to evaporate a couple of feet in the hot summer when our rain is at its low level. So I think it would be a much safer place to be on the lake -- and I live there -- Labor Day weekend and the end of summer if they keep the lake level up to 840.

That's it. Like I said, they do a good job.

Response

The proposed revisions to the guide curve at Allatoona Lake would be beneficial to the purpose of recreation. The lake level would stay above the recreational "Initial Impact Level" longer with the Proposed Action Alternative than with the No Action Alternative (see Section 6.1.1.2.2.4 of the EIS).

KEITH R. MCLAUGHLIN
[redacted]
MARIETTA, GEORGIA 30066

April 19, 2013

Commander
U.S. Army Corps of Engineers
Mobile District
Attn: PD-EI (ACT-DEIS)
P.O. Box 2288
Mobile, Alabama 36628

Dear Sir;

The following are my comments on the Draft Environmental Impact Statement (DEIS) for the Alabama-Coosa-Tallapoosa (ACT) river basin. I have categorized my comments as General, Management Measures Eliminated from Further Consideration, Description of the Proposed Action and Alternatives, Affected Environment, Glossary, Environmental Consequences, and Other. Although my comments are focused more on Lake Allatoona and its drainage area; I believe that almost all of them, especially for the Affected Environment, and Environmental Consequences, apply to the other projects considered in the DEIS.

<u>GENERAL COMMENTS</u>

1. The USACE has preempted the purpose for comments on the DEIS. This "short circuiting" of the process, violates the requirements for decision making by Federal Agencies in the National Environmental Policy Act P.L. 91-190, 1969 (NEPA), The Council of Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500.2, 40 CFR 1500.3, 40 CFR 1502.2(g), 40 CFR 1503.4(a)(1)(2)(3)(4)(5), 40 CFR 1506.1, and USACE regulation ER 1110-2-240, 9(c)(d)). The Environmental Impact Statement (EIS) is a draft but the Water Control Manuals (WCM) are final drafts. It appears that the Final Drafts of the WCM have been prepared before the decision maker has made and documented their decision in the Record of Decision. This is in violation of 40 CFR 1500.2, 40 CFR 1500.3, 40 CFR 1502.3, 1506.1 and if not the letter, the spirit and intent of P.L. 91-190.

2. The USACE has preempted the NEPA process and is in violation of the requirements for decision making by Federal Agencies in the National Environmental Policy Act P.L. 91-190, 1969 (NEPA), The Council of Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500.2, 40 CFR 1500.3,40 CFR 1502.2(g), 40 CFR 1503.4(a)(1)(2)(3)(4)(5), 40 CFR 1506.1 and USACE ER 1110-2-240, 9(c)(d)). The Master Water Control Manual, Alabama-Coosa-Tallapoosa (ACT) River Basin, Alabama, Georgia, Final Draft, (FDMWCM) and the Alabama-Coosa-Tallapoosa River Basin Water Control Manual, Final Draft, Appendix A, Allatoona Dam and Lake, Etowah River, Georgia (FDWCMAE) are much less encyclopedic and more analytic than the DEIS. The information, data, and presentations in

the FDMWCM and FDWCMAE are more comprehensive, current, and pertinent to describing the affected environment than the encyclopedic and disjointed description of the affected environment in the DEIS. The writing styles are significantly different for the FDMWCM and FDWCMA compared to the writing style in the DEIS. It appears that **A**) The FDMWCM and FDWCMAE were prepared by different people than those who prepared the DEIS, **B**) The information in the FDMWCM and FDWCMAE was not shared with the preparers of the DEIS, and **C**) the preparers of the FDMWCM and FDWCMAE were working independently from the preparers of the DEIS and produced the FDMWCM and FDWCMAE independent from the DEIS. It appears that the FDMWCM, FDWCMAE, and the other Final Drafts of the Water Control Manuals were prepared before the decision maker has made and documented their decision in the Record of Decision. This is in violation of 40 CFR 1500.2, 40 CFR 1500.3, 40 CFR 15025.3, 40 CFR 1500.6, and if not the letter, the spirit and intent of P.L. 91-190.

3. In the interest of transparency, the USACE should iissue a Public Notice disclosing the preparers for the Final Drafts of the Water Control Manuals, and the respective time lines for the preparation of the DEIS and Water Control Manuals.

4.. The USACE should prepare a five-year action plan to address water quantity, quality, and timing (QQT) issues on lands not controlled by the USACE. The plan should include goals and objectives for working with other Federal Agencies and State, County, Municipal governments, Universities, Non Government Organizations, Private land owners, and individuals. It should be included as a mitigation measure in each alternative. This is needed since the USACE puts itself in a reactive (pp 6-119, Lines 1-6) rather than a proactive position in resolving issues (ie land use, stream and land surface erosion, the application of appropriate measures to control non point and point sources of pollution, impaired waters, TMDL's, and etc.) occurring in the ACT basin that affects the QQT of water entering Lake Allatoona and the other ACT reservoirs, streams/rivers. The five-year action plan would help the USACE achieve its mission (ER 1110-2-8154 6(b), 7(a)). Without working with others in the drainage area, including those with legal authority, the USACE unnecessarily risks its success as stewards of Lake Allatoona and the rest of the ACT; particularly when Federal and State water quality regulatory agencies are concerned with the eutrophication of lakes, suspended sediment, nutrients, and fecal coliform (pp 2-115, Lines 4-10, pp 2-117, Lines 39-42, pp 2-118, Lines 1-5, pp 2-134, Lines 17-23, pp 2-143, Lines 9-18, pp 2-151, Lines 23,24).

5. The USACE should include the drainage basin for Lake Allatoona in the EIS. It should be described in the Affected Environment (40 CFR 1502.15, 40 CFR 1508.3) and its effects disclosed in Environmental Consequences (40 CFR 1502.16). The hydrologic connection/relation between Lake Allatoona and its drainage basin is undeniable. This relationship is two ways, especially considering fish passage between Lake Allatoona and the tributaries in its basin (pp 2-115, Lines 4-10, pp 2-117, Lines 39-42, pp 2-118, Lines 1-5, pp 2-134, Lines 17-23, pp 2-143, Lines 9-18, pp 2-151, Lines 23,24, pp 2-198, Lines 23-45, pp 2-199, Lines 1-15, Final Draft, Appendix A, Allatoona Dam and Lake Etowah River Georgia ((FDWCMAE)), pp 4-2, Lines 20-26, pp 4-13, Lines 9-15 and Table 4-6, pp 4-14, Table 4-7, pp 5-6, Lines 8-18, pp 6-1 Lines 8-11,28-29, pp 6-2, Lines 25-32, pp 6-3, Lines 9-10).

MANAGEMENT MEASURES ELIMINATED FROM FURTHER CONSIDERATION

1. The USACE is arbitrary and capricious in its eliminating the alternative for raising Lake Allatoona two feet to a conservation pool elevation of 842 feet or to raise the winter pool above 823 feet (pp ES-11, Lines 3-5) for further consideration.

(a) To be in compliance with 40 CFR 1502.4(a), and PL 91-190, Section 102(E), the USACE should develop and analyze a greater range of alternatives that include a greater range of elevations for the winter and conservation pools than the current four alternatives. The USACE does have the discretionary authority to consider this and other alternatives that raise the conservation pool above 840 feet and/or raise the winter pool above 823 feet (pp 4-5, Lines 10-17) but chooses not to exercise it. This decision has prevented the development of a full range of alternatives for consideration.

(b) The USACE should disclose flood risk/hazard management that includes the flood pool and flood storage, (FDWCMAE, pp 7-4, Lines 8-13). Flood risk/hazard management is the management of the flood pool and flood storage..The flood pool for Lake Allatoona, is the area between the the bottom of the spill way elevation of approximately 860 feet down to the elevation of 840 feet (FDWCMAE, pp 7-1, Lines 28-38). Flood storage is the capacity available between 840 feet down to the bottom of the reservoir. This is consistent with EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-6a,b,d, and 11-1h which defines flood storage as any elevation from the bottom of the reservoir to the bottom of the spillway. To manage flood risk, the USACE can operate the Allatoona Dam to release water, if the winter pool is held at elevations greater than 823 feet (DEIS, pp 2-73, Lines 7-9, , pp 7-6, Lines 7-12). This gives the USACE the capability to retain the combined capacity in the flood pool and flood storage to handle forecasted floods. Doing this will increase the number of alternatives that can be considered.

(c) The USACE should use a "modified induced surcharge operation" similar to the induced surcharge operation for flood zones D and E illustrated in FDWMCAE, Appendix A, Plate 7-2. This modified induced surcharge operation is implemented when the water level of the Lake approaches a designated elevation in the flood pool. The modified induced surcharge operation would release water from Lake Allatoona at a rate up to 9500 cfs until the Lake level is at the elevation for the conservation pool. The objective would be to permit higher winter pools without significantly (40 CFR 1508.27) increasing flood risk. Doing this will increase the number of alternatives that can be considered.

(d) The USACE, to be in compliance with PL 91-190 and 40 CFR 1500.1(b), should disclose the difference and significance (40 CFR 1508,27) between various flood management strategies, (ie winter pools greater than those considered in the alternatives in the EIS) and the associated flood risks with and without modified induced surcharge operations.

(e) The USACE should correct its terminology for Flood storage, as used in the DEIS, to comply with EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-6a,b,d, and 11-1h. The EM defines flood storage as any elevation from the bottom of the reservoir up to the bottom of the spillway.

(f) Flood storage is cited as the primary reason for eliminating other alternatives for consideration, and prevented the consideration of other alternatives. To comply with P.L. 91-190, 40 CFR 5002.14, 40 CFR 1502.14, 40 CFR 1502.3, 40 CFR1502.6; 40 CFR 1508.8; the USACE should disclose by alternative: 1.) The capacity to retain water by the flood storage shown in the Management Curves for each alternative in the EIS, 2.) The return frequency, quantity of water, and peak flow of the flood that the flood storage is intended to contain, and 3) The flood risk and its significance (40 CFR 1508.27) associated with the flood storage shown in the Management Curves for each alternative in the EIS. The disclosures should be in the Affected Environment and Environmental Consequences.

g) The USACE to be in compliance with P.L. 91-190, 40 CFR 15002.14, 40 CFR1502.15, 40 CFR 1502.6 should demonstrate how the alternatives not considered effect regulated release rates (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-2 (a)(b)(c)(d)(e)(f)(g) and changing hydrology (EM 1110-2-1420, Part 3, Reservoir Storage Requirements,11-1c). Without this demonstration USACE is arbitrary and capricious in eliminating these alternatives for consideration.

(h) Perhaps the USACE is not considering other alternatives since more methods and greater/different skills of USACE personnel are required to implement them compared to those needed to implement the four alternatives that are considered. Admittedly the alternatives that are not considered may require greater skill in the operation of Lake Allatoona Dam. However, USACE, ER 110-2-240 7(e), assigns the responsibility for needed improvement of methods and staff training to Division and District commanders to operate Lake Allatoona. Therefore, methods and skills should not be a barrier to considering alternatives that are in addition to and/or different from the current four.

2. The USACE should consider and analyze the following alternative in the Environmental Impact Statement (EIS). The purpose for this alternative is to address the public issue/concern for a winter pool at an elevation greater than 823 feet and results in benefits that the current alternatives do not provide.

PROPOSED ALTERNATIVE

Prolong the draw down of water in Lake Allatoona by reducing the rate of water releases than any of the alternatives considered in the DEIS. The rate of this draw down should meet the fall water needs for fisheries in Lake Allatoona, (pp ES-58, Lines 31-34, pp 2-71, Lines 38,39, pp 6-148, Lines 8-13), prolong the availability of water for agricultural use down stream from Lake Allatoona (pp 2-241, Lines 3-16), help to supplement the supply of water for M&I use by Rome, Georgia (pp 2-28, Lines 32, 33), increase the number of days for Lake accessibility for all impact ranges (pp 6-185, lines 17-40, pp 6-186, Lines 1-2, Table 6.6-26). Unlike the Proposed Action in the DEIS, this alternative would be a "smoother" curve for draw down especially for the months of October through December so as to avoid the sudden drops in pool elevation occurring during these months (pp 6-162, Table 6.6.3). This would also aid in increasing water conservation (ER 1110-2-240 6(d)), and reduce the potential for shoreline erosion (Affected Environment, comment 15). The winter pool would be held at approximately 830 feet or higher depending upon the significance of the associated flood risk with the modified induced surcharge operation. (See Management Measures Eliminated from Consideration, comments 1(a)(b)(c)(d)(e)). There is flexibility in the production of hydropower by Lake Allatoona (pp ES-5, Lines 43-45, pp 2-68, Lines 20-27, pp 2-237, Lines 17-21, pp 2-239, Lines 12-13). Although some flexibility in power production is for critical drought periods; additional flexibility in power production has also been used in the Proposed Action. Therefore, flexibility in power production, in addition to drought conditions, should be included for this alternative

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

1. The USACE should consider more alternatives than the current four to be in compliance with P.L.91-190, Section 102(E), 40 CFR 1502.14 (See General Comments 1-2). The Proposed Action and the other alternatives fail to address the public issue/concern for a winter pool that is greater than 820 feet and, therefore, the range of alternatives is inadequate and the reasons for not considering these alternatives is arbitrary and capricious (See Management Measures Eliminated from Further Consideration, comments 1(a)(b)(c)(d)(e)(f)(g) and 2.). Exhibit 1 is a comparison of the Proposed Action and the other three alternatives. There is very little difference between/among the four alternatives considered in the EIS.

EXHIBIT 1: COMPARISON OF PROPOSED ACTION AND OTHER ALTERNATIVES

	ALTERNATIVES			
	G	**D**	**F**	**NO ACTION**
Implement a revised APCDOP.... (pp 5-11, Lines 7-8)	Yes	Yes	Yes	No
Provide for seasonal navigation... (pp 5-11, Lines 9-17)	Yes	Yes	Yes	Yes
APC projects on the Coosa and Tallapoosa Rivers... (pp 5-11, Lines 11-22)	Yes	Yes	Yes	Yes
The APC project H. Neely... (pp 5-12, Lines 1-3)	Yes	Yes	Yes	Yes
Specified flow requirements at Lake Allatoona... (pp 5-12, Lines 4-5)	Yes	Yes	Yes	Yes
Phased fall draw down and reduced hydro power generation...(pp 5-12, Lines 6-13)	Yes	No	No	No

EXHIBIT 1: COMPARISON OF PROPOSED ACTION AND OTHER ALTERNATIVES (Con't.)

	ALTERNATIVES			
	G	D	F	NO ACTION
The current minimum flow... (pp 5-12, Lines 14-21)	Yes	No	Yes	No
The Corps reserves 6,771 acre-feet for... (pp 5-12, Lines 22-24)	Yes	Yes	Yes	Yes
The Corps reserves 818 acre-feet for... (pp 5-12, Lines 25-26)	Yes	Yes	Yes	Yes
The Corps would continue to manage fish spawning operations...(pp5-12, Lines 27-34)	Yes	Yes	Yes	Yes
The Corps would continue migratory fish passage... (pp 5-12, Lines 35-36)	Yes	Yes	Yes	Yes
Refined operations at Carters Lake... (pp 5-10, Lines 35-36)	No	No	Yes	No
Refined operations at Allatoona Lake... (pp 5-10, Lines 3-10)	No	No	Yes	No
Two Action Zones...(pp 5-4, Lines 9-19)	No	No	No	Yes
Four Action Zones...(pp 5-7, Lines 26-29, pp 5-10, Lines 4-10, pp 5-12, Lines 6-10)	Yes	Yes	Yes	No
Winter Pool less than 823 feet elevation. (pp 5-5, pp 5-8, pp 5-11, pp 5-13, FDWCMAE, Plate 7-2)	No*	Yes	Yes	Yes

*Zone 4 in this alternative does go down to 818 feet (FDWCMAE, pp 7-3, Table 7-1, and Plate 7-1).

2 The USACE to be in compliance with 40 CFR 1502.14(f), and ER 1110-2-8154(8) should describe monitoring and mitigation measures associated with each alternative.

3, The USACE, to be in compliance with 40 CFR1502.14(f) should include the Five Year Action plan for addressing issues on lands that it does not control (See General Comment 4) as a mitigation measure for all alternatives.

4. The USACE, to be in compliance with 40 CFR 1502.14 (f) should work with others (See General Comment 4) to establish permanent channel cross sections through out the ACT as a monitoring and mitigation measure for all alternatives. The purpose for the permanent channel cross sections is to determine the degree of change in channel morphology due to USACE operations and/or by other land owners. These Channel Cross Sections should be representative of stream type (ie Rosgen, David.1996.Applied River Morphology.Wildland Hydrology. Pagosa Springs, Colorado, Chapters 3-8: Leopold, Luna B.1994.A View of the River. Harvard University Press, Cambridge, Massachusetts and London, England, pp 20-21), stream order, (ie Dunne, Thomas and Luna B. Leopold.1978. Water in Environmental Planning. W. H. Freeman Company, New York, pp 496-500; Leopold, Luna B.1994.A View of the River. Harvard University Press, Cambridge, Massachusetts and London, England, pp 223-232; Maxwell, James R., Clayton J. Edwards, Mark E. Jensen, Steven J.Paustian, Harry Parrott, and Donley M. Hill.1995.A Hierarchical Framework of Aquatic Ecological Units in North America (Neartic Zone). General Technical Report NC-176. United States Department of Agriculture, Forest Service, North Central Forest Experiment Station. Appendix A. The priority for establishing permanent channel cross sections should be for perennial, intermittent and ephemeral streams (Langbien, W. B. and Kathleen T. Iseri.1960.General Introduction and Hydrologic Definitions, Manual of Hydrology: Part 1. General Surface-Water. Geological Survey Water Supply Paper 1541. United States Printing Office, Washington,.pp 18.

5. To comply with the Federal Water Pollution Control Act of 1948 as amended (P.L. 80-845) and ER 1110-2-8154, the USACE should, by alternative, describe water quality management objectives.

6. To comply with the Clean Water Act (CWA) (P.L. 95-190) and ER 1110-2-8154, the USACE should, by alternative, describe the Best Management Practices (BMP's) to control Non Point Sources of Pollution on lands controlled by the USACE.

7. The USACE should complete, by alternative, a cost benefit analysis (40 CFR1502.23) This analysis should include power production, flood risk management, recreation, M&I water supply, agriculture, fisheries, water quality, and etc.

AFFECTED ENVIRONMENT

1. The USACE should edit/rewrite the Affected Environment to produce a product that is complete and in compliance with PL 90-191, 40 CFR 1500, USACE regulations and guidance. The description of the Affected Environment is more encyclopedic than analytic (40 CFR 1500.4(a)(b), 40 CFR 1502.15, 40 CFR 1502.2(a)). Most of the description for the Affected Environment is a compilation of data and information with little evaluation as to what its relationships are and how it pertains to the Affected Environment for the ACT.

2. The USACE should group the projects by Physiographic Province and describe the Affected Environment by Physiographic Province (FDMWCM, Plate 2-3).to be in compliance with 40 CFR 1500.4(a)b)(d)(e), 40 CFR 1502.15, 40 CFR 1502,29(a),and 40 CFR 1508.3. The area of the ACT basin is very varied and using Physiographic Provinces will help focus the

writeup for the Affected Environment (40 CFR 1502.15). The result will help in more clearly disclosing the Environmental Consequences for each alternative (40 CFR1502.16, 40 CFR 1508.8). The current writeup for the Affected Environment is incomplete, is a compilation of data and information that is usually extraneous and its presentation lacks clarity, continuity, and fails to disclose the interrelationship of the data and information and how it is pertinent to the affected environment.

3. Lake Acworth, an impoundment within Lake Allatoona, is not identified and described in the Affected Environment. To be in compliance with 40 CFR 1502.15 the USACE should include the following in the Affected Environment for the EIS:

(a) describe Lake Acworth in terms of its extent and relationship with flood hazard management, water levels, water quality, and etc in Lake Acworth and Lake Allatoona (FDWCMAE, pp 2-5, Lines 13-35, pp 4-13, Lines 6-7). The omission of Lake Acworth in the DEIS substantiates General comment 2.

(b) Explain why Lake Acworth is held at a "unfluctuating level" (FDWCMAE, pp 2-5, Lines 19-23) other than current contractual arrangements; rather than be managed to higher winter and conservation pools in the whole Lake Allatoona. The most appropriate to be in compliance with 40 CFR 152.04 is to consider flood risk management alternatives that involve fluctuating the water level in Lake Acworth to increase the elevations for winter and conservation pools for the entire Lake.

4. The USACE should comply with 40 CFR1502.15 and describe the Hickory Lake Project (FDWCMAE, pp 4-13, Lines 2-6) in terms of its extent and relationship with flood hazard management for Lake Allatoona, QQT of water inflow into Lake Allatoona, and etc. Currently the Hickory Log Creek Project, upstream from the Allatoona Dam is not identified and described in the EIS. The omission of the Hickory Lake Project in the DEIS substantiates General comment 2.

5. The USACE, to be in compliance with 40 CFR 1502.14, 1502.15, 1502.16, and P.L. 91-190 sections 102(2)(C)(iii), 102(2)(E), 102(2)(C)(i), (ii), (iv), and (v) should describe the erosion mentioned on pp ES-49, Lines 32-43, pp ES-50, Lines 1-16 in the affected environment, include the associated mitigation for this erosion by alternative, and the environmental consequences disclosed by alternative.

6. The USACE should edit/rewrite the information regarding shore line erosion (pp ES-50, Lines 1-5, 10-16, pp ES-69, Line 8, pp 2-167, Lines 32-36 and in the FDWCMAE pp 5-6, Lines 1-7, Lines 19-30).

(a) The description of shore line erosion in the FDWCMAE is much more informational and pertinent to describing affected environment than the encyclopedic and incomplete description in the DEIS. To comply with 40 CFR 1502.15, the USACE should edit/rewrite the EIS using the information in the FDWCMAE. This information should be supplemented with the extent (acres and miles) occurring in each class described in the FDWCMAE on pp 5-6, Lines 1-7. The USACE should include, to be in compliance with 40 CFR 1502.4, the mitigation measures for shoreline erosion as part of the description for each the alternative in "Description of Proposed Action and Alternatives" to be in compliance with 40 CFR 1502.4. The difference between the DEIS and FDWMCAE substantiates General comment #2..

(b) The USACE, to be in compliance with 40 CFR 1502.24 should include Websters' definition for shoreline in the Glossary. Webster defines shoreline as: "the line where a body of water and the shore meet".

(c) The USACE to comply with the CWA, 40 CFR 1502.14, ER 1110-2-8154 should describe for each alternative; the BMP's and mitigation measures to prevent erosion from the shoreline caused by runoff from land areas at higher elevations than the shoreline, direct impact by precipitation on the shoreline, wave action caused by prevailing winds and water craft use in the Lake, and other uses of the shoreline (ie fishing, docks and boat ramps, marinas etc.) The elevation, for "Shoreline erosion areas" is on pp 6-120, Environmental Consequences. The area between elevations 823 feet and 840 feet is terrestrial and subject to NPS of pollution control per the CWA.

7. Did the water quantity modeling referred to on pp 2-3, Lines 1-6, include flood risk management analyses? If not, please explain why flood risk management was not analyzed. If it was included, the results should be disclosed in the affected environment (40CFR 1502.15), any resulting mitigation measures included in the description of the alternatives (40 CFR 1502.14), and the effects in environmental consequences (40 CFR 1502.16).

8. The USACE should edit/rewrite the description for precipitation (pp 2-4, Lines 6-22, pp 2-5, Figures 2.1-2 and 2.1-3). The current description is extraneous and not pertinent. The "water management curves" for the alternatives are on a monthly basis. To be applicable and meaningful. average, maximum, and minimum precipitation should be presented on a monthly basis. This data should be available since it appears that the USACE is in compliance with ER 110-2-240 6e (See FDMWCM, pp 2-11, Lines 2-21, pp 2-12, Tables 2-7, 2-8, pp 2-13, Table 2-9 and FDWCMAE, .pp 4-4, Table 4-3 in the maximum and minimum monthly precipitation should be determined from the same precipitation records used to prepare the previously cited tables. The difference in fact and presentation of precipitation between the DEIS and the FDMWCM, FDWCMAE substantiates General comment 2.

9. The USACE should describe the amount of direct precipitation into the impoundments by month. Direct precipitation into the impoundments is useful in achieving water conservation and its efficient management (ER 1110-2-240, 6d). Extreme rainfall should be disclosed in the EIS (FDWMCAE pp 4-6, Table 4-4). To avoid being more encyclopedic than analytic, precipitation return frequencies associated with the extreme events should be presented.

10. The USACE should edit/rewrite the description for air temperature. The current description of Existing Climate is not pertinent (pp 2-168, Lines 12-28). The "water management curves" for the alternatives are on a monthly basis. To be applicable and meaningful average, maximum, and minimum air temperatures should be presented on a monthly basis. It appears that the

USACE is in compliance with ER 110-2-240. Refer to pp 2-8, Lines 2-18, pp 2-9, Table 2-4, pp 2-10, Table 2-5, pp-2-11, Table 2-6 in the FDMWCM, and pp 4-3, Lines 4-15 and Table 4-2 in the FDWCMAE. The average monthly air temperatures should be determined from the same air temperature records used to prepare the previously cited tables. This difference in fact and presentation between the EIS and the FDMWCM, FDWCMAE substantiates General comment 2. NOTE: The last columns in the cited air temperature tables in the FDMWCM and FDWCMAE appear to be mislabeled.

11. The USACE, to be in compliance with 40 CFR 1502.15, 40 CFR 1508.3, should describe evaporation from the Lake Surface, by monthly average, maximum, and minimum. Evaporation of water from lake surfaces is important to managing water efficiently (ER 1110-2-240 6(d)).

12. The USACE, to be in compliance with 40 CFR 1502.24, ER 1110-2-240 6(d)(e) should include for each alternative the monitoring of pan evaporation. This data is important for managing water efficiently (ER 1110-2-240 6(d)). ER 1110-2-240 6e; Dunne, Thomas and Luna B. Leopold.1978. Water in Environmental Planning. W. H. Freeman Company, New York, pp 95). One objective for monitoring pan evaporationwould be to verify the precision and accuracy of the indirect method (FDWCMAE,pp 4-9, Lines 6-8,10-13) currently used to estimate evaporation from the Lake surface.

13. The USACE, to be in compliance with 40 CFR 1502.24 should use the entire record for flow data. The reason for shortening the period of record for the cited gage (pp 2-10, Lines 15-18, Table 2.1-1, pp 2-161, Lines 22-23) is an unusual professional practice. By shortening the record, the flows resulting from storms in 1961, and 1964 are not accounted for, let alone other flows occurring during the period of record. Not using the entire period of record does have an effect on determining flow durations and return frequencies.

14. The USACE should reconstruct Table 2.1-1 in the EIS and other tables using the entire period of record. The return frequency for the Maximum, Minimum, and Mean Monthly Flows should be disclosed. The disclosure is pertinent to the efficient management of water (ER 1110-2-240 6d) and flood risk management (ER 1110-2-240 6g).

15. The USACE should present flood storage as used in the EIS; for the projects on pp 2-20, Table 2.1-4, pp 2-21, 2.3-5. This is important information since flood storage is used as the primary reason for not considering alternatives other than the current four (Management Measures Eliminated from Further Consideration, comment 1(f)). It is also important for the efficient management of water (ER 1110-2-240 6d) and flood risk management (ER 1110-2-240 6g)..

16. The USACE should discuss hydraulic conductivity in relation to shorelines of reservoirs and the environmental consequences with various rates drawing down water in the reservoirs. Hydraulic continuity (pp 2-63, Lines 4-8) also applies to shorelines of reservoirs and it is a good practice to prolong draw downs in reservoirs (Management Measures Eliminated from Further Consideration, comment 2) to help prevent shoreline erosion. As in streams, when the ground water flows into the reservoir, it can loosen and under cut the shoreline material thus increasing erosion and sediment rates , (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 11-1c).

17. The USACE should edit/rewrite the description for Recreation (pp 2-70-2-71).

(a) The recreation facilities should be presented on a map and designated as to their ownership, leased, flowage easements (FDWCMAE, pp 2-6, Lines 5-11).

(b) The economics for recreation use should be analyzed and described in the EIS. The analysis should include visitor days (pp 8-2, FDMWMC, Table 8-1, pp 8-3, Lines 13-15). The visitor days and associated economics should be the total and the portions related to each impact zone (pp 2-70, Lines 8-44, pp 2-71, Lines 1-3). The results of the analysis should be part of the Description of the Proposed Action and Alternatives (40 CFR 1502.14).

(c) The USACE should disclose, by alternative, the environmental consequences on recreation economics (40 CFR 1502.16). This analyses will define the economic impact disclosed on pp 2-70, Lines 14-25, 34-44, and pp 2-71, Lines 1-3..

18. The USACE, to be in compliance with 40 CFR 1500.4, 40 CFR1502.2(b), 40 CFR 1508.3, should edit/rewrite the information presented in the EIS on pages pp 2-92 lines 20-32, through pp 2-104, Lines 1-29. This information is extraneous, not pertinent, and is very encyclopedic. The exceptions are on pp.2-96, Lines 38-40, pp 2-98, Lines 19-23, pp 2-100, Lines 25-30, if the one reservoir in the ACT is identified by name and location, pp 2-100, lines 32-39. Also include Richland Creek Reservoir and Etowah Reservoir (pp 2-110, Table 2.1-22) if different from those alluded to in previously cited pages in this comment. The effects of the proposed projects in the ACT and the raising of Lake Allatoona storage should be addressed in Environmental Consequences (40 CFR 1502.16) using the methods and approaches in 40 CFR 1502.22.

19. The USACE, to be in compliance with 40 CFR 1500.4, 40 CFR 1502.2(b), 40 CFR 1508.3; should edit/rewrite the information on pp 2-108, Lines 1-43, pp 2-109, Lines 1-4. This information is extraneous, not pertinent, and encyclopedic. The water conservation measures that the USACE is applying to help achieve its efficient water management per CR 1110-2-240 6d are pertinent and should be disclosed.

20. The USACE should edit/rewrite the information on pp 2-118 This information is incomplete. On pp 4-11, FDWCMAE, the Allatoona Creek arm is mentioned in regards to chlorophyll a but not on pp 2-118 of the EIS. This difference in fact and presentation between the DEIS and FDWCMAE substantiates General comment 2.

21. The USACE should edit/rewrite the information displayed on pp 2-123 and pp 2-126 to quantify the miles/acres of impaired waters and TMDL's. Table 2.1-26 is pertinent and useful information for the reader of the EIS and should be included in the discussion.

22. The USACE should edit/rewrite the following: **A)** pp 2-137, to clarify the period of record for the data and compare the data to State Water Quality Standards, **B)** clarify if the data that is collected by the USACE at River Side Park by the local Ranger (FDWCMAE, pp 5-5, Lines 17-20) is included. **C)** clarify the objectives for the monitoring (pp 2-137-2-142 and FDWMAE, pp 5-5, Lines 17-17-22), irrespective of who does the monitoring (ER 1110-2-8154, Water Quality and Environmental Management for Corps Civil Works Projects), and

D) how data is used by USACE in its operations of the ACT (ER 1110-2-8154, Water Quality and Environmental Management for Corps Civil Works Projects). The apparent omission of data in the EIS but included in the FDWCMAE substantiates General comment 2

23 The USACE should develop run off curve numbers for the ACT basin and present the results using maps and tables (Dunne, Thomas and Luna B. Leopold.1978. Water in Environmental Planning. W. H. Freeman Company, New York, pp 291-298. and Chow, Ven Te.1964. Handbook Of Applied Hydrology. McGraw-Hill Book Company, New York, pp21-27, 21-28,21-30, 21-34, 21-35, 21-36, 21-37.). The curve numbers are a percent of runoff from the land surface for annual, seasonal, and storm flows. Knowing seasonal and average runoff from land surface and storm flows are significant contributions towards the USACE efficient water management (ER 1110-2-240 6d, EM 1110-2-1420 Part 3, Reservoir Storage Requirements, 10-2e).

24. The USACE, to be in compliance with 40 CFR 1502.24, should account for sediment entering streams and rivers from overland flow. An accounting of sediment from overland sources is necessary if the USACE is to identify the effects of its operations on water quality (ER 1110-2-8154), channel maintenance flows, and efficient water management (ER 1110-2-240 6d). The ACT is not a "self contained" system (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-2a,b,d). One approach to help account for sediment is the establishment of permanent channel cross sections (Description Of Proposed Action and Alternatives comment 4).

25 pp 2-161, Lines 17-22. See comment #13, Affected Environment. Appears to be a typo regarding dam construction (Line 22).

26. The USACE should ensure which statements made in lines pp 2-167, Lines 20-26, 32-36 and those occurring in the FDWCMAE, pp 5-5, Lines 35-44 and pp 5-6, Lines 1-33.are factual and edit the DEIS and FDWCMAE accordingly. This difference in fact and presentation between the DEIS and FDWCMAE substantiates General Comment 2.

27. The USACE should ensure which statements regarding miles of shoreline (pp 2-175, Line 8) and in the FDWCMAE, pp E-A-3 is factual and the DEIS and FDWCMAE edited accordingly. This difference in fact between the DEIS and FDWCMAE substantiates General comment 2.

28. The USACE, to comply with 40 CFR 1502.24, should edit/rewrite the DEIS using the most current data that is available. The DEIS uses Census Data that is not the most current and other data and information that is up to 12 years old (pp 2-31, Lines 19-33, pp 2-242, Lines 34-42). The FDMCM and FDWCMAE use current data/information. The USACE should edit/rewrite the Affected Environment using the updated data and information in the FDMWCM and FDWCMAE. This difference in fact and presentation between the DEIS and FDMWCM, FDWCMAE substantiates General comment 2.

29. The USACE should edit/rewrite the DEIS M&I discussion on pp 2-233 Lines 4-22, pp 2-234, Table 2.6-5, pp 235, Table 2.6-6 to include the very good presentations for M&I in FDMWCM, pp 4-14, Lines 12-16, pp 4-15, Lines 1-2, Table 4-5 and FDWCMAE, pp 4-19, Lines 15-27, pp 4-20, Table 4-18. The very good presentation in the FDMWCM, FDWCMAE substantiates General Comment 1.

30 DEIS pp 2-241, 2.6.1.5 Flood Risk Management. The USACE should describe: **A)** the time to and duration of peak flows, and quantity of water for the 500 year flood, average annual flood, the flood of record, floods of February, 1996, July,1994, May, 2003, September, 2009 and if used, "Pattern Floods (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-4c) and, **B)** the return frequency for the average annual flood, the flood of record, floods of February, 1996, July,1994, May, 2003, September, 2009, and, if used, "Pattern Floods" (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-4c) Much of this information is available (See FDMCM, FDWCMAE) in flood reports (ER 1110-2-240 13 h,i) or can be modeled using Unit Hydrographs (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-4e).

31. The USACE, to comply with 40 CFR 1502.5, 40 CFR 1508 and to assist in assessing flood risk management (ER 1110-2-240 6g); should impose the contour/elevation that the respective floods reached in the Flood Pool for Lake Allatoona (Previous comment #29) as a "birds eye" view for the entire Lake. The scale of this "birds eye" view should enable the reader to see the relationship of the various flood elevations to land ownership, facilities (private, leased, and operated by the USACE) and flood flowage easements..

32. The USACE should describe the return frequency, time to and duration of peak flows, and quantity of water, and if used, "Pattern Floods (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-4c) for flood storage as used in the DEIS. This storage is a major reason given for not considering other alternatives (Management Measures Eliminated from Further Consideration, comment 1(f)).

33 The USACE should edit/rewrite the economics for Agricultural Water Supply, (pp 2-241, Lines 3-16) using the economics for Agricultural Water Supply presented in FDMWCM, pp 4-14, Lines 4-10, Table 4-4, FDWCMAE, pp 4-19, Lines 4-12, Table 4-17. These tables are very good presentations for Agricultural Water Supply and associated economics. The effects of the alternatives on agricultural water supply and associated economics should be disclosed in the Environmental Consequences (40 CFR 1502.16). The difference between the DEIS and the FDMWCM, FDWCMAE regarding Agricultural Water Supply and associated economics substantiates General comment 2

34. The USACE should provide a historical perspective on stream sedimentation. Many of the channels in the ACT have/had stored sediment resulting in post European poor logging, farming, mining, and road building practices. A result of these poor practices was the sediment entering the streams being greater than the capability of stream flow to move and transport the sediment through the system. The result was stream channel aggradation or stored sediment in the channels. With improved logging, farming, mining and road building practices, runoff entering the streams is "hungry" for sediment and transports stored sediment as it seeks the original base line of the channel. The result is stream channel degradation. The sediment in the Little River and Etowah River embayments is probably from the stored sediment in the channels as well as from changes in land use and current "mismanagement" of lands in the Allatoona Lake basin. There are many good studies available that were conducted on Alcovy Creek, in

Gwinnett County, Georgia that provide an excellent understanding of land use practices and stored sediment in the streams. Establishing permanent channel cross sections can help determine if channel aggregation or degradation is occurring (Description of Proposed Actions and Alternatives, comment 4).

GLOSSARY

The Glossary for the DEIS has terms that are incorrectly defined and/or need to be added: The USACE should edit the DEIS, FDMWCM and FDWCMAE to correct the terminology and definitions and ensure their use is per their definitions.

(a) "Channel forming discharge" is incorrect terminology and definition. Bank Full Stage/Flow is the correct terminology and, by definition, it is the channel forming flow and is commonly referred to as the flood flow having a return frequency of 1.5 years. Therefore the current definition in the Glossary is incorrect when it defines Bank Full as 1.5 years or greater" (Leopold, Luna B.1994. A View of the River. Harvard University Press, Cambridge, Massachusetts, London, England pp 90, and Dunne, Thomas and Luna B. Leopold.1978. Water in Environmental Planning. W. H. Freeman Company, New York, pp 608-622).

(b) "Channel Capacity" should be defined in the Glossary. Usually channel capacity is associated with Bank Full Flow. Bank Full flow is usually less than the total depth of entrenched stream channels.

(c) "Bank Full Capacity" needs to be defined and the USACE should edit the DEIS, FDMWCM, and FDWCMAE to ensure its use is per its definition.

(d) Add "Shoreline" and define per Webster: "the line where a body of water and the shore meet".

ENVIRONMENTAL CONSEQUENCES

1. The USACE should edit/rewrite the disclosure of Environmental Consequences to conform with the requirements in PL 91-190, Section 102 (2)(C)(i)(ii),(iv),(v) and 40 CFR 1502.16.

2. The USACE should rewrite the Environmental Consequences to address the consequences by alternative, on the environment in Exhibit 2 in addition to that described in Affected Environment. The rewrite should include Environmental Consequences identified in previous and following sections of my comments. The consequences in Exhibit 2, need to be described in the Affected Environment, Description of Preferred Action and Alternatives.

EXHIBIT 2: ENVIRONMENTAL CONSEQUENCES THAT SHOULD BE ADDRESSED

Water Quantity	Flood Risk Management	Shoreline Erosion
Flood Storage	Dissolved Oxygen	Water Temperature

EXHIBIT 2: ENVIRONMENTAL CONSEQUENCES THAT SHOULD BE ADDRESSED (Con't.)

Evaporation	Lake Stratification	Chlorophyll a
Nutrients	Fecal Coliform	Flood Damage
Sediment	Biodiversity (Coosa River)	Protected Species
Mosquito Control	Hazardous Material Mg't.	Hydrocarbons
Storm Water Runoff	Solid waste Management	

3. The USACE, to comply with 40 CFR 1502.24 should use the entire period of record for modeling Environmental Consequences for lake levels (pp 6-1, Line 38, pp 6-8, Line 14, pp 6-9, Lines 5,11,14, pp 6-10, Line 7, pp 6-11, Lines 6,9,10, pp 6-12, Lines 4,16, pp 6-13, Lines 13,27,37), (Affected Environment, Comment #13). There are at least four more years of record available since 2008. The flood of September 2009, a significant event for Lake Levels, is included when the entire period of record is used.

4. pp 6-2, Lines 25-27, are another indication that the USACE should consider alternatives in addition to the current four.

5. pp 6-10, Figure 6.1-4, pp 6-11, Figure 6.1-5. The duration curves on these Figures are very informative. Figure 6.1-4 is another indication that the USACE should consider alternatives in addition to the current four.

6. pp 6-77, NPS loads, Lines 23-26. The USACE should include in the modeling of the Non Point Source (NPS) loads for the tributaries in the basin that flow into Lake Allatoona. This will help the USACE understand and disclose the cause and effects on sediment deposition in the Little River and Etowah River embayments, Fecal Coliform, Nutrients, Chlorophyll a, Lake Eutrophication and etc.

7. The USACE should reevaluate and correct the statement on pp 6-78, Lines 34-35 in light of sediment deposition in the Little River and Etowah River embayment areas, TMDL's, chlorophyll a, Fecal Coliform, shoreline erosion, and etc.

8. The USACE should identify mitigation measures for each alternative to address the apparent deterioration of water quality and the rate of lake eutrophication.

9. pp 6-79. The USACE should explain why water releases to maintain channels and to meet minimum flow requirements would not have the same effect on lowering water temperatures as releases for power production.

10. 6-119, Lines 3-6. The USACE should include appropriate mitigation and management measures in each alternative, other than No Action, to address deteriorating water quality.

11. USACE should demonstrate in the DEIS how its operation of the ACT has and/or is addressing water quality impairment that is caused by its operations or by other causes..

12. The USACE should cease assuming that deteriorating water quality conditions in its reservoirs are just a "background condition that management measures must function." (pp6-119, Lines 3-6) The continued use of this assumption hinders the USACE ability to identify opportunities to improve water quality, and detracts from the USACE being viewed as good stewards of the resources it is charged to manage and to be good stewards.

OTHER COMMENTS

DEIS

1. The USACE should edit pp 5-4, Lines 10-12 to clarify that water released from Lake Allatoona is incidental for Navigation and not for the purpose of Navigation.

2. The USACE should edit/rewrite Lake Stratification in the DEIS with the writeup in FDWCM, pp. 4-11, Lines 36-42, pp 4-12, Lines 1-35. The difference between the respective writeup substantiates General comment 2. The effects of each alternative on Lake Stratification should be disclosed in Environmental Consequences.

FDWCMAE

1. The USACE should edit/rewrite pp 4-2, Lines 20-26 to make it complete (Affected Environment, comment 33).

2. The USACE should edit/rewrite pp 4-5, Line 4, pp 4-7, Line 7,12 to disclose the return frequencies for these floods.

3. The USACE should use the very good presentation on pp 4-7, Lines 42-45, pp 4-9, Table 4-5, Figure 4-3 in the description of the Affected Environment in the DEIS. This description is more analytical and less encyclopedic than the current description in the DEIS. The difference between the DEIS and FDWCMAE substantiates General comment 2.

4 The USACE should edit/rewrite pp 4-10, Lines 1-10 to include the mitigation measures for water quality.

5.. The USACE should edit/rewrite the DEIS to include the very good writeup on population on pp 4-18, Lines 28-34, Table 4-16. This difference between the DEIS and FDWCMAE substantiates General comment 2.

6 The USACE should edit/rewrite the DEIS presentation on Agriculture using the very good presentation on pp 4-19, Lines 3-12, Table 4-17. This will permit a basis for comparison with other water uses such as recreation, power production, etc. The difference in describing agriculture in the DEIS and the FDWCMAE substantiates General comment 2.

7. The USACE should edit/rewrite DEIS and incorporate the very good presentation on pp 4-19, Lines 15-21, pp 4-20, Table 4-18.

8. The USACE should rewrite the DEIS Affected Environment to incorporate the very good writeup on sedimentation and shoreline erosion (pp 5-5, Lines 35-44, pp 5-6, lines 1-7). The Environmental Consequences, by alternative, on sedimentation and shoreline erosion should be disclosed. The difference between the DEIS and FDWCMAE substantiates General comment 2.

9. The USACE should edit/rewrite the Affected Environment and Environmental Consequences for mosquito control (pp 7-19, Lines 23-27). If the consequences are unknown then monitoring needs to be accomplished and in the interim can address per the procedures in in 40 CFR 1502.22. The omission of mosquito control in the DEIS but included in the FDWCMAE substantiates General comment 2.

10. The USACE should edit/rewrite the DEIS Affected Environment to incorporate the very good write up on historic floods (pp 8-2, Lines 18-21, 23-26, Table 8-2, pp 8-3, Lines 1-2, Table 8-3). The difference between the DEIS and FDWCMAE substantiates General comment 2.

11. The USACE should edit/rewrite the DEIS Affected Environment to incorporate the very good write up on pp 8-3, Lines 13-15. The difference between the DEIS and FDWCMAE substantiates General comment 2.

12 The USACE should edit/rewrite the DEIS Affected Environment and Environmental Consequences to address biodiversity (pp 8-5, Lines 10-13). This omission of biodiversity for the Coosa in the DEIS substantiates General comment 2.

13. The USACE should add the Monitoring objectives in Appendix A of the FDWCMAE to comply with ER 110-2-8154.

<u>FDMWCM</u>

1. The USCA should edit/rewrite the DEIS Affected Environment by incorporating the very good write up on Agriculture (pp 4-14, Lines 12-16, pp 4-15, Lines 1-2, Table 4-5, pp 4-15, Lines 4-19, Table 4-6. This writeup is more complete, pertinent, and informative than in the DEIS. This difference substantiates General comment 2.

Sir, my comments are intended to assist the USACE to produce a product that meets the letter, spirit, and intent of NEPA, (P.L. 91-191), CEQ and USACE regulations.

Sincerely;

Keith R.McLaughlin
Hydrologist, U.S. Forest Service (RET)

cc
Sean Nicholl, Lake Allatoona Association
Sarah Skinner, Metropolitan North Georgia Water Planning District

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Comment ID 0040

Comment ID 0040.001

Author Name: McLaughlin, Keith

Organization: None provided

Comment

1. The USACE has preempted the purpose for comments on the DEIS. This "short circuiting" of the process, violates the requirements for decision making by Federal Agencies in the National Environmental Policy Act P.L. 91-190, 1969 (NEPA), The Council ofEnvironmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500.2,40 CFR 1500.3,40 CFR 1502.2(g), 40 CFR 1503.4(a)(1)(2)(3)(4)(5), 40 CFR 1506.1, and USACE regulation ER 1110- 2-240, 9(c)(d)). The Environmental Impact Statement (EIS) is a draft but the Water Control Manuals (WCM) are final drafts. It appears that the Final Drafts of the WCM have been prepared before the decision maker has made and documented their decision in the Record of Decision. This is in violation of 40 CFR 1500.2,40 CFR 1500.3, 40 CFR 1502.3, 1506.1 and if not the letter, the spirit and intent of P.L. 91-190.

Response

Several work products were prepared prior to the draft provided for public review. The term "Final Draft" indicates only that it is the latest of those products not that it is the version that will be ultimately approved.

Comment ID 0040.002

Author Name: McLaughlin, Keith

Organization: None provided

Comment

2. The USACE has preempted the NEPA process and is in violation of the requirements for decision making by Federal Agencies in the National Environmental Policy Act P.L. 91-190, 1969 (NEPA), The Council of Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500.2,40 CFR 1500.3,40 CFR 1502.2(g), 40 CFR 1503.4(a)(1)(2)(3)(4)(5), 40 CFR 1506.1 and USACE ER 1110-2-240, 9(c)(d)). The Master Water Control Manual, Alabama-Coosa-Tallapoosa (ACT) River Basin, Alabama, Georgia, Final Draft, (FDMWCM) and the Alabama-Coosa-Tallapoosa River Basin Water Control Manual, Final Draft, Appendix A, Allatoona Dam and Lake, Etowah River, Georgia (FDWCMAE) are much less encyclopedic and more analytic than the DEIS. The information, data, and presentations in the FDMWCM and FDWCMAE are more comprehensive, current, and pertinent to describing the affected environment than the encyclopedic and disjointed description of the affected environment in the DEIS. The writing styles are significantly different for the FDMWCM and FDWCMA compared to the writing style in the DEIS. It appears that A) The FDMWCM and FDWCMAE were prepared by different people than those who prepared the DEIS, B) The information in the FDMWCM and FDWCMAE was not shared with the preparers of the DEIS, and C) the preparers of the FDMWCM and FDWCMAE were working independently from the preparers of the DEIS and produced the FDMWCM and FDWCMAE independent from the DEIS. It appears that the FDMWCM, FDWCMAE, and the other Final Drafts of the Water Control Manuals

were prepared before the decision maker has made and documented their decision in the Record of Decision. This is in violation of 40 CFR 1500.2, 40 CFR 1500.3, 40 CFR 15025.3,40 CFR 1500.6, and if not the letter, the spirit and intent of P.L. 91-190.

Response

Numerous individuals worked on the project collaboratively. Authors of the WCMs were primarily engineers with input from other members of the technical team. Authors of the draft EIS included those individuals as well as other technical specialists and technical writers.

Comment ID 0040.003

Author Name: McLaughlin, Keith

Organization: None provided

Comment

3. In the interest of transparency, the USACE should iissue a Public Notice disclosing the preparers for the Final Drafts of the Water Control Manuals, and the respective time lines for the preparation of the DEIS and Water Control Manuals.

Response

The WCMs were prepared by a team of technical specialists headed by hydrologic engineers. There is no requirement to publish specific authorship of the manuals. The List of Preparers of the draft EIS is included as an appendix. The WCMs and the draft EIS were prepared concurrently.

Comment ID 0040.004

Author Name: McLaughlin, Keith

Organization: None provided

Comment

4 .. The USACE should prepare a five-year action plan to address water quantity, quality, and timing (QQT) issues on lands not controlled by the USACE. The plan should include goals and objectives for working with other Federal Agencies and State, County, Municipal governments, Universities, Non Government Organizations, Private land owners, and individuals. It should be included as a mitigation measure in each alternative. This is needed since the USACE puts itself in a reactive (pp 6-119, Lines 1-6) rather than a proactive position in resolving issues (ie land use, stream and land surface erosion, the application of appropriate measures to control non point and point sources of pollution, impaired waters, TMDL's, and etc.) occurring in the ACT basin that affects the QQT of water entering Lake Allatoona and the other ACT reservoirs, streams/rivers. The five-year action plan would help the USACE achieve its mission (ER 1110- 2-8154 6(b), 7(a)). Without working with others in the drainage area, including those with legal authority, the USACE unnecessarily risks its success as stewards of Lake Allatoona and the rest of the ACT; particularly when

Federal and State water quality regulatory agencies are concerned with the eutrophication of lakes, suspended sediment, nutrients, and fecal coliform (pp 2-115, Lines 4-10, pp 2-117, Lines 39-42, pp 2-118, Lines 1-5, pp 2-134, Lines 17-23, pp 2-143, Lines 9-18, pp 2-151, Lines 23,24).

Response

Comment noted. However, the proposed 5-year action plan is outside the scope of USACE's authority. Individual watershed responsibilities lie with the states, local governments, and specific entities like the Metropolitan North Georgia Water Planning District. USACE supports these efforts and participates when there is an appropriate role for the agency.

Comment ID 0040.005

Author Name: McLaughlin, Keith

Organization: None provided

Comment

5. The USACE should include the drainage basin for Lake Allatoona in the EIS. It should be described in the Affected Environment (40 CFR 1502.15,40 CFR 1508.3) and its effects disclosed in Environmental Consequences (40 CFR 1502.16). The hydrologic connection/relation between Lake Allatoona and its drainage basin is undeniable. This relationship is two ways, especially considering fish passage between Lake Allatoona and the tributaries in its basin (pp 2-115, Lines 4-10, pp 2-117, Lines 39-42, pp 2-118, Lines 1-5, pp 2- 134, Lines 17-23, pp 2-143, Lines 9-18, pp 2-151, Lines 23,24, pp 2-198, Lines 23-45, pp 2-199, Lines 1-15, Final Draft, Appendix A, Allatoona Dam and Lake Etowah River Georgia ((FDWCMAE)), pp 4-2, Lines 20-26, pp 4-13, Lines 9-15 and Table 4-6, pp 4-14, Table 4-7, pp 5-6, Lines 8-18, pp 6-1 Lines 8-11,28-29, pp 6-2, Lines 25-32, pp 6-3, Lines 9-10).

Response

USACE is not fully clear regarding the meaning and intent of the comment. USACE interprets that the commenter desired to see a comprehensive discussion of the "Affected Environment" organized by physiographic province or drainage sub-basins across the ACT Basin rather than by specific natural or human resource category. As noted in the comment, the Etowah River sub-basin (including the Lake Allatoona watershed) is fully discussed in the pertinent section for each principal resource area (water quantity, water quality, land use, fish and wildlife resources, geology and soils, etc.). Presenting information by resource area across the ACT Basin was a better approach to writing the EIS than organizing information around specific sub-basins.

Comment ID 0040.006

Author Name: McLaughlin, Keith

Organization: None provided

Comment

MANAGEMENT MEASURES ELIMINATED FROM FURTHER CONSIDERATION

1. The USACE is arbitrary and capricious in its eliminating the alternative for raising Lake Allatoona two feet to a conservation pool elevation of 842 feet or to raise the winter pool above 823 feet (pp ES-11, Lines 3·5) for further consideration.

(a) To be in compliance with 40 CFR 1502.4(a), and PL 91-190, Section 102(E), the USACE should develop and analyze a greater range of alternatives that include a greater range of elevations for the winter and conservation pools than the current four alternatives. The USACE does have the discretionary authority to consider this and other alternatives that raise the conservation pool above 840 feet and/or raise the winter pool above 823 feet (pp 4-5, Lines 10-17) but chooses not to exercise it. This decision has prevented the development of a full range of alternatives for consideration.

(b) The USACE should disclose flood risk/hazard management that includes the flood pool and flood storage, (FDWCMAE, pp 7-4, Lines 8-13). Flood risk/hazard management is the management of the flood pool and flood storage .. The flood pool for Lake Allatoona, is the area between the the bottom of the spill way elevation of approximately 860 feet down to the elevation of 840 feet (FDWCMAE, pp 7-1, Lines 28·38). Flood storage is the capacity available between 840 feet down to the bottom of the reservoir. This is consistent with EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-6a,b,d, and 11-lh which defines flood storage as any elevation from the bottom of the reservoir to the bottom of the spillway. To manage flood risk, the USACE can operate the Allatoona Dam to release water, if the winter pool is held at elevations greater than 823 feet (DEIS, pp 2-73, Lines 7-9,, pp 7-6, Lines 7-12). This gives the USACE the capability to retain the combined capacity in the flood pool and flood storage to handle forecasted floods. Doing this will increase the number of alternatives that can be considered.

(c) The USACE should use a "modified induced surcharge operation" similar to the induced surcharge operation for flood zones D and E illustrated in FDWMCAE, Appendix A, Plate 7-2. This modified induced surcharge operation is implemented when the water level of the Lake approaches a designated elevation in the flood pool. The modified induced surcharge operation would release water from Lake Allatoona at a rate up to 9500 cfs until the Lake level is at the elevation for the conservation pool. The objective would be to permit higher winter pools without significantly (40 CFR 1508.27) increasing flood risk. Doing this will increase the number of alternatives that can be considered.

(d) The USACE, to be in compliance with PL 91-190 and 40 CFR 1500.1 (b), should disclose the difference and significance (40 CFR 1508,27) between various flood management strategies, (ie winter pools greater than those considered in the alternatives in the EIS) and the associated flood risks with and without modified induced surcharge operations.

(e) The USACE should correct its terminology for Flood storage, as used in the DEIS, to comply with EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 1 0-6a,b,d, and 11-lh. The EM defines flood storage as any elevation from the bottom of the reservoir up to the bottom ofthe spillway.

(f) Flood storage is cited as the primary reason for eliminating other alternatives for consideration, and prevented the consideration of other alternatives. To comply with P.L. 91-190,40 CFR 5002.14,40 CFR 1502.14,40 CFR 1502.3,40 CFR1502.6; 40 CFR 1508.8; the USACE should disclose by alternative: 1.) The capacity to retain water by the flood storage shown in the Management Curves for each alternative in the EIS, 2.) The return frequency, quantity of water, and peak flow of the flood that the flood storage is intended to contain, and 3) The flood risk and its significance (40 CFR 1508.27) associated with the flood storage shown in the Management Curves for each alternative in the EIS. The disclosures should be in the Affected Environment and Environmental Consequences.

g) The USACE to be in compliance with P.L. 91-190,40 CFR 15002.14, 40 CFR1502.15, 40 CFR 1502.6 should demonstrate how the alternatives not considered effect regulated release rates (EM Ill 0-2-1420, Part 3, Reservoir Storage Requirements, 10-2 (a)(b)(c)(d)(e)(f)(g) and changing hydrology (EM 1110-2-1420, Part 3, Reservoir Storage Requirements,ll-1c). Without this demonstration USACE is arbitrary and capricious in eliminating these alternatives for consideration.

(h) Perhaps the USACE is not considering other alternatives since more methods and greater/different skills of USACE personnel are required to implement them compared to those needed to implement the four alternatives that are considered. Admittedly the alternatives that are not considered may require greater skill in the operation of Lake Allatoona Dam. However, USACE, ER 110-2-240 7(e), assigns the responsibility for needed improvement of methods and staff training to Division and District commanders to operate Lake Allatoona. Therefore, methods and skills should not be a barrier to considering alternatives that are in addition to and/or different from the current four.

Response

1.(a) – (d) and (f) – (h) – As a key step in the formulation of alternative water management plans to be carried forward for detailed consideration as part of the ACT WCM update, USACE established nine criteria for screening potential water management measures, including those recommended during the public scoping process. One of those screening criteria was that "any proposed water management measure considered in the manual update process ...should maintain at least the current level of flood risk management protection." The EIS further stated the following on page 1-7:

"USACE operates projects in the ACT Basin to maintain the level of flood risk management that the U.S. Congress intended when authorizing the system and projects. Continued growth and development in the ACT Basin floodplain serves as an additional constraint on the level of flood risk management that must be provided. Any proposed action must not significantly alter the level of flood protection intended by Congress in its authorizing language or increase the current levels, frequency, and duration of flood protection."

Accordingly, management measures to raise Allatoona Lake 2 ft to a conservation pool elevation 842 ft or to raise the winter pool level above 823 ft were eliminated from consideration. Raising the pool at Allatoona Lake as suggested would reduce the available flood risk management storage and require a reallocation of that storage to some other purpose(s). USACE is not pursuing such action as part of this WCM update. This update is being conducted to determine how the federal projects in the ACT Basin should be operated for their authorized purposes, in light of current conditions and applicable law. If a congressionally funded study under the authority of Section 216 of the River and Harbor and Flood Control Act of 1970 (Review of Completed Projects) was being pursued, the concerns expressed by the commenter would be valid. That is not the case with the ACT WCM update process.

The minor adjustment to the Allatoona Lake guide curve included in the Proposed Action Alternative (referred to as the fall step-down) was evaluated by USACE and determined not to increase flood risk. Refer to EIS sections 6.1.1.1 and 6.6.5.4.

1.(e) – USACE disagrees with the commenter's definition of flood storage. EM 1110-2-1420 does not define flood storage as the commenter has described. Flood storage for a USACE reservoir is "the volume of reservoir storage between the elevation of the top of the conservation pool and top of the flood storage pool, specifically for storing peak inflows to the reservoir until those inflows can safely be passed through the downstream channel system." The definition of flood storage has been updated in the Glossary (Section 11) of the draft EIS.

Comment ID 0040.007

Author Name: McLaughlin, Keith

Organization: None provided

Comment

2. The USACE should consider and analyze the following alternative in the Environmental Impact Statement (EIS). The purpose for this alternative is to address the public issue/concern for a winter pool at an elevation greater than 823 feet and results in benefits that the current alternatives do not provide.

PROPOSED ALTERNATIVE

Prolong the draw down of water in Lake Allatoona by reducing the rate of water releases than any of the alternatives considered in the DEIS. The rate of this draw down should meet the fall water needs for fisheries in Lake Allatoona, (pp ES-58, Lines 31-34, pp 2-71, Lines 38,39, pp 6- 148, Lines 8-13), prolong the availability of water for agricultural use down stream from Lake Allatoona (pp 2-241, Lines 3-16), help to supplement the supply of water for M&I use by Rome, Georgia (pp 2-28, Lines 32, 33), increase the number of days for Lake accessibility for all impact ranges (pp 6·185, lines 17-40, pp 6-186, Lines 1-2, Table 6.6-26). Unlike the Proposed Action in the DEIS, this alternative would be a "smoother" curve for draw down especially for the months of October through December so as to avoid the sudden drops in pool elevation occurring during these months (pp 6-162, Table 6.6.3). This would also aid in increasing water conservation (ER 1110-2-240 6(d)), and reduce the potential for shoreline erosion (Affected Environment, comment 15). The winter pool would be held at approximately 830 feet or higher depending upon the significance of the associated flood risk with the modified induced surcharge operation. (See Management Measures Eliminated from Consideration, comments 1(a)(b)(c)(d)(e)). There is flexibility in the production of hydropower by Lake Allatoona (pp ES-5, Lines 43-45, pp 2-68, Lines 20-27, pp 2-237, Lines 17-21, pp 2-239, Lines 12-13). Although some flexibility in power production is for critical drought periods; additional flexibility in power production has also been used in the Proposed Action. Therefore, flexibility in power production, in addition to drought conditions, should be included for this alternative

Response

Raising the winter pool seven feet would require a reallocation study which is outside the scope of this update. The scope of this ACT WCM update does not include the action necessary to reallocate storage within the reservoir. A constraint of the WCM update was to not increase flood risk for the project. Holding the winter pool at Allatoona Lake would increase flood risk and therefore eliminated as a viable alternative.

Comment ID 0040.008

Author Name: McLaughlin, Keith

Organization: None provided

Comment

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

1. The USACE should consider more alternatives than the current four to be in compliance with P.L.91-190, Section 102(E), 40 CFR 1502.14 (See General Comments 1-2). The Proposed Action and the other alternatives fail to address the public issue/concern for a winter pool that is greater than 820 feet and, therefore, the range of alternatives is inadequate and the reasons for not considering these alternatives is arbitrary and capricious (See Management Measures Eliminated from Further Consideration, comments l(a)(b)(c)(d)(e)(t)(g) and 2.). Exhibit 1 is a comparison of the Proposed Action and the other three alternatives. There is very little difference between/among the four alternatives considered in the EIS.

<The author included the following exhibit in his letter: "EXHIBIT 1: COMPARISON OF PROPOSED ACTION AND OTHER ALTERNATIVES." Please see the original letter for this exhibit.>

2 The USACE to be in compliance with 40 CFR 1502.14(f), and ER 111 0-2-8154(8) should describe monitoring and mitigation measures associated with each alternative.

3, The USACE, to be in compliance with 40 CFR1502.14(t) should include the Five Year Action plan for addressing issues on lands that it does not control (See General Comment 4) as a mitigation measure for all alternatives.

4. The USACE, to be in compliance with 40 CFR 1502.14 (f) should work with others (See General Comment 4) to establish permanent channel cross sections through out the ACT as a monitoring and mitigation measure for all alternatives. The purpose for the permanent channel cross sections is to determine the degree of change in channel morphology due to USACE operations and/or by other land owners. These Channel Cross Sections should be representative of stream type (ie Rosgen, David.l996.Applied River Morphology. Wildland Hydrology. Pagosa Springs, Colorado, Chapters 3-8: Leopold, Luna B.1994.A View of the River. Harvard University Press, Cambridge, Massachusetts and London, England, pp 20-21), stream order, (ie Dunne, Thomas and Luna B. Leopold.l978. Water in Environmental Planning. W. H. Freeman Company, New York, pp 496-500; Leopold, Luna B.1994.A View

of the River. Harvard University Press, Cambridge, Massachusetts and London, England, pp 223-232; Maxwell, James R., Clayton J. Edwards, Mark E. Jensen, Steven J.Paustian, Harry Parrott, and Donley M. Hill.l995.A Hierarchical Framework of Aquatic Ecological Units in North America (Neartic Zone). General Technical Report NC-176. United States Department of Agriculture, Forest Service, North Central Forest Experiment Station. Appendix A. The priority for establishing permanent channel cross sections should be for perennial, intermittent and ephemeral streams (Langbien, W. B. and Kathleen T. lseri.l960.General Introduction and Hydrologic Definitions, Manual of Hydrology: Part I. General Surface-Water. Geological Survey Water Supply Paper 1541. United States Printing Office, Washington,.pp 18.

5. To comply with the Federal Water Pollution Control Act of 1948 as amended (P.L. 80-845) and ER 1110-2-8154, the USACE should, by alternative, describe water quality management objectives.

6. To comply with the Clean Water Act (CWA) (P.L. 95-190) and ER 1110-2-8154, the USACE should, by alternative, describe the Best Management Practices (BMP's) to control Non Point Sources of Pollution on lands controlled by the USACE.

7. The USACE should complete, by alternative, a cost benefit analysis (40 CFR1502.23) This analysis should include power production, flood risk management, recreation, M&I water supply, agriculture, fisheries, water quality, and etc.

Response

USACE has complied with applicable laws and regulations in the ACT WCM update process. Responses to specific the comments are as follows:

1. – USACE disagrees with the assertion that the array of alternatives is inadequate based on the criteria defined for the WCM update. Identification of specific public issues/concerns was one of the factors considered during the formulation of alternatives for the WCM update and EIS. Raising the guide curve and potentially impacting (or reallocating) flood storage at one or more of the USACE reservoirs and increasing the risk of downstream flooding was a water management option that was considered to be outside the scope of this WCM manual update process. The development of alternatives for evaluation and the role of public input is discussed in more detail in Sections 1 and 4 of the EIS.

2. – Monitoring activities, studies, and modeling related to the management of water quantity and quality in the ACT Basin are described in Sections 2.1.1.3 and 2.1.2.5 through 2.1.2.7. Water quantity and quality are the principal variables that affect, and are affected by, management of reservoirs in the ACT basin. Mitigation considerations for all water management alternative presented in the EIS are discussed in Section 6.11. These issues are sufficiently discussed in the EIS.

3. – USACE cooperates with other Federal agencies, the state, local government entities, and non-profit organizations on planning and watershed protection activities on lands not owned by USACE in the Allatoona and Carters Lake watersheds to the extent that available resources allow. Such watershed planning and protection activities (or the lack thereof) may affect conditions in those lakes, but USACE is not required to develop a formal plan to address watershed protection activities on non-USACE lands. USACE does have a shoreline management plan for Allatoona Lake that addresses a range of activities that may occur on project lands.

4. – Periodically, USACE will resurvey each of its reservoirs to assess how much sedimentation is occurring over time and its effect on reservoir storage and operations. Most recently, USACE reservoirs in the ACT basin were surveyed in 2009 and 2010 as discussed in Section 2.2.1.2.6.1 through 2.2.1.2.6.3 and Section 2.2.1.2.6.8. Section 2.2.1.2.6.7 has been updated to include reference to the 2009-2010 surveys for Allatoona Lake.

5. – USACE water management activities are conducted in compliance with pertinent Federal laws and regulations.

6. – Federal lands around Allatoona Lake are generally managed for recreation, fish and wildlife conservation, and general operational activities for the dam and lake. Project lands are managed to minimize non-point sources of pollution to the lake. Land management activities for these lands are addressed in the Operations Management and Shoreline Management Plans for the project. These documents are not a part of the update of the WCM.

7. – For the WCM update process, there is no requirement to develop a detailed or comprehensive cost-benefit analysis for the EIS. For project purposes or outputs where costs and benefits can be more readily quantified, such information is presented in Section 6. For other purposes, costs and benefits may not be easily quantified or would require an excessive level of effort without adding much value to the decision-making process. In those cases, a qualitative assessment is included in the EIS.

Comment ID 0040.009

Author Name: McLaughlin, Keith

Organization: None provided

Comment

AFFECTED ENVIRONMENT

1. The USACE should edit/rewrite the Affected Environment to produce a product that is complete and in compliance with PL 90-191,40 CFR 1500, USACE regulations and guidance. The description of the Affected Environment is more encyclopedic than analytic (40 CFR 1500.4(a)(b), 40 CFR 1502.15, 40 CFR 1502.2(a)). Most of the description for the Affected Environment is a compilation of data and information with little evaluation as to what its relationships are and how it pertains to the Affected Environment for the ACT.

2. The USACE should group the projects by Physiographic Province and describe the Affected Environment by Physiographic Province (FDMWCM, Plate 2-3).to be in compliance with 40 CFR 1500.4(a)b)(d)(e), 40 CFR 1502.15,40 CFR 1502,29(a),and 40 CFR 1508.3. The area of the ACT basin is very varied and using Physiographic Provinces will help focus the writeup for the Affected Environment (40 CFR 1502.15). The result will help in more clearly disclosing the Environmental Consequences for each alternative (40 CFR1502.16, 40 CFR 1508.8). The current writeup for the Affected Environment is incomplete, is a compilation of data and information that is usually extraneous and its presentation lacks clarity, continuity, and fails to disclose the interrelationship of the data and information and how it is pertinent to the affected environment.

3. Lake Acworth, an impoundment within Lake Allatoona, is not identified and described in the Affected Environment. To be in compliance with 40 CFR 1502.15 the USACE should include the following in the Affected Environment for the EIS:

(a) describe Lake Acworth in terms of its extent and relationship with flood hazard management, water levels, water quality, and etc in Lake Acworth and Lake Allatoona (FDWCMAE, pp 2-5, Lines 13-35, pp 4-13, Lines 6-7). The omission of Lake Acworth in the DEIS substantiates General comment 2.

(b) Explain why Lake Acworth is held at a "unfluctuating level" (FDWCMAE, pp 2-5, Lines 19-23) other than current contractual arrangements; rather than be managed to higher winter and conservation pools in the whole Lake Allatoona. The most appropriate to be in compliance with 40 CFR 152.04 is to consider flood risk management alternatives that involve fluctuating the water level in Lake Acworth to increase the elevations for winter and conservation pools for the entire Lake.

4. The USACE should comply with 40 CFR1502.15 and describe the Hickory Lake Project (FDWCMAE, pp 4-13, Lines 2-6) in terms of its extent and relationship with flood hazard management for Lake Allatoona, QQT of water inflow into Lake Allatoona, and etc. Currently the Hickory Log Creek Project, upstream from the Allatoona Dam is not identified and described in the EIS. The omission of the Hickory Lake Project in the DEIS substantiates General comment 2.

5. The USACE, to be in compliance with 40 CFR 1502.14, 1502.15, 1502.16, and P.L. 91-190 sections 102(2)(C)(iii), 102(2)(E), 102(2)(C)(i), (ii), (iv), and (v) should describe the erosion mentioned on pp ES-49, Lines 32-43, pp ES-50, Lines 1-16 in the affected environment, include the associated mitigation for this erosion by alternative, and the environmental consequences disclosed by alternative.

6. The USACE should edit/rewrite the information regarding shore line erosion (pp ES-50, Lines 1-5, 10-16, pp ES-69, Line 8, pp 2-167, Lines 32-36 and in the FDWCMAE pp 5-6, Lines 1-7, Lines 19-30).

(a) The description of shore line erosion in the FDWCMAE is much more informational and pertinent to describing affected environment than the encyclopedic and incomplete description in the DEIS. To comply with 40 CFR 1502.15, the USACE should edit/rewrite the EIS using the information in the FDWCMAE. This information should be supplemented with the extent (acres and miles) occurring in each class described in the FDWCMAE on pp 5-6, Lines 1-7. The USACE should include, to be in compliance with 40 CFR 1502.4, the mitigation measures for shoreline erosion as part of the description for each the alternative in "Description of Proposed Action and Alternatives" to be in compliance with 40 CFR 1502.4. The difference between the DEIS and FDWMCAE substantiates General comment #2.

(b) The USACE, to be in compliance with 40 CFR 1502.24 should include Websters' definition for shoreline in the Glossary. Webster defmes shoreline as: "the line where a body of water and the shore meet".

(c) The USACE to comply with the CWA, 40 CFR 1502.14, ER 1110-2-8154 should describe for each alternative; the BMP's and mitigation measures to prevent erosion from the shoreline caused by runoff from land areas at higher elevations than the shoreline, direct impact by precipitation on the shoreline, wave action caused by prevailing winds and water craft use in the Lake, and other uses of the shoreline (ie fishing, docks and boat ramps, marinas etc.) The elevation, for "Shoreline erosion areas" is on pp

6-120, Environmental Consequences. The area between elevations 823 feet and 840 feet is terrestrial and subject to NPS of pollution control per the CWA.

7. Did the water quantity modeling referred to on pp 2-3, Lines 1-6, include flood risk management analyses? If not, please explain why flood risk management was not analyzed. If it was included, the results should be disclosed in the affected environment (40CFR 1502.15), any resulting mitigation measures included in the description of the alternatives (40 CFR 1502.14), and the effects in environmental consequences (40 CFR 1502.16).

8. The USACE should edit/rewrite the description for precipitation (pp 2-4, Lines 6-22, pp 2-5, Figures 2.1-2 and 2.1-3). The current description is extraneous and not pertinent. The "water management curves" for the alternatives are on a monthly basis. To be applicable and meaningful. average, maximum, and minimum precipitation should be presented on a monthly basis. This data should be available since it appears that the USACE is in compliance with ER 110-2-240 6e (See FDMWCM, pp 2-11, Lines 2-21, pp 2-12, Tables 2-7,2-8, pp 2-13, Table 2-9 and FDWCMAE, .pp 4-4, Table 4-3 in the maximum and minimum monthly precipitation should be determined from the same precipitation records used to prepare the previously cited tables. The difference in fact and presentation of precipitation between the DEIS and the FDMWCM, FDWCMAE substantiates General comment 2.

9. The USACE should describe the amount of direct precipitation into the impoundments by month. Direct precipitation into the impoundments is useful in achieving water conservation and its efficient management (ER Ill 0-2-240, 6d). Extreme rainfall should be disclosed in the EIS (FDWMCAE pp 4-6, Table 4-4). To avoid being more encyclopedic than analytic, precipitation return frequencies associated with the extreme events should be presented.

10. The US ACE should edit/rewrite the description for air temperature. The current description of Existing Climate is not pertinent (pp 2-168, Lines 12-28). The "water management curves" for the alternatives are on a monthly basis. To be applicable and meaningful average, maximum, and minimum air temperatures should be presented on a monthly basis. It appears that the USACE is in compliance with ER 110-2-240. Refer to pp 2-8, Lines 2-18, pp 2-9, Table 2-4, pp 2-10, Table 2-5, pp-2-11, Table 2-6 in the FDMWCM, and pp 4-3, Lines 4-15 and Table 4-2 in the FDWCMAE. The average monthly air temperatures should be determined from the same air temperature records used to prepare the previously cited tables. This difference in fact and presentation between the EIS and the FDMWCM, FDWCMAE substantiates General comment 2. NOTE: The last columns in the cited air temperature tables in the FDMWCM and FDWCMAE appear to be mislabeled.

11. The USACE, to be in compliance with 40 CFR 1502.15,40 CFR 1508.3, should describe evaporation from the Lake Surface, by monthly average, maximum, and minimum. Evaporation of water from lake surfaces is important to managing water efficiently (ER 1110-2-240 6(d)).

12. The USACE, to be in compliance with 40 CFR 1502.24, ER 1110-2-240 6(d)(e) should include for each alternative the monitoring of pan evaporation. This data is important for managing water efficiently (ER 1110-2-240 6(d)). ER 1110-2-240 6e; Dunne, Thomas and Luna B. Leopold.1978. Water in Environmental Planning. W. H. Freeman Company, New York, pp 95). One objective for monitoring pan evaporationwould be to verify the precision and accuracy ofthe indirect method (FDWCMAE,pp 4-9, Lines 6-8,10-13) currently used to estimate evaporation from the Lake surface.

13. The USACE, to be in compliance with 40 CFR 1502.24 should use the entire record for flow data. The reason for shortening the period of record for the cited gage (pp 2-10, Lines 15-18, Table 2.1-1, pp 2-161, Lines 22-23) is an unusual professional practice. By shortening the record, the flows resulting from storms in 1961, and 1964 are not accounted for, let alone other flows occurring during the period of record. Not using the entire period of record does have an effect on determining flow durations and return frequencies.

14. The USACE should reconstruct Table 2.1-1 in the EIS and other tables using the entire period of record. The return frequency for the Maximum, Minimum, and Mean Monthly Flows should be disclosed. The disclosure is pertinent to the efficient management of water (ER 1110-2-240 6d) and flood risk management (ER 1110-2-240 6g).

15. The USACE should present flood storage as used in the EIS; for the projects on pp 2-20, Table 2.1-4, pp 2-21,2.3-5. This is important information since flood storage is used as the primary reason for not considering alternatives other than the current four (Management Measures Eliminated from Further Consideration, comment 1(f)). It is also important for the efficient management of water (ER 1110-2-240 6d) and flood risk management (ER 1110-2-240 6g) ..

16. The US ACE should discuss hydraulic conductivity in relation to shorelines of reservoirs and the environmental consequences with various rates drawing down water in the reservoirs. Hydraulic continuity (pp 2-63, Lines 4-8) also applies to shorelines of reservoirs and it is a good practice to prolong draw downs in reservoirs (Management Measures Eliminated from Further Consideration, comment 2) to help prevent shoreline erosion. As in streams, when the ground water flows into the reservoir, it can loosen and under cut the shoreline material thus increasing erosion and sediment rates, (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 11-1c).

17. The USACE should edit/rewrite the description for Recreation (pp 2-70-2-71).

(a) The recreation facilities should be presented on a map and designated as to their ownership, leased, flowage easements (FDWCMAE, pp 2-6, Lines 5-11).

(b) The economics for recreation use should be analyzed and described in the EIS. The analysis should include visitor days (pp 8-2, FDMWMC, Table 8-1, pp 8-3, Lines 13-15). The visitor days and associated economics should be the total and the portions related to each impact zone (pp 2-70, Lines 8-44, pp 2-71, Lines 1-3). The results of the analysis should be part of the Description of the Proposed Action and Alternatives (40 CFR 1502.14).

(c) The USACE should disclose, by alternative, the environmental consequences on recreation economics (40 CFR 1502.16). This analyses will defme the economic impact disclosed on pp 2-70, Lines 14-25, 34-44, and pp 2-71, Lines 1-3 ..

18. The USACE, to be in compliance with 40 CFR 1500.4,40 CFR1502.2(b), 40 CFR 1508.3, should edit/rewrite the information presented in the EIS on pages pp 2-92lines 20-32, through pp 2-104, Lines 1-29. This information is extraneous, not pertinent, and is very encyclopedic. The exceptions are on pp.2-96, Lines 38-40, pp 2-98, Lines 19-23, pp 2-100, Lines 25-30, if the one reservoir in the ACT is identified by name and location, pp 2-100, lines 32-39. Also include Richland Creek Reservoir and Etowah Reservoir (pp 2-110, Table 2.1-22) if different from those alluded to in previously cited pages in this comment. The effects of the proposed projects in the ACT and the raising of Lake Allatoona storage should be addressed in Environmental Consequences (40 CFR 1502.16) using the methods and approaches in 40 CFR 1502.22.

19. The USACE, to be in compliance with 40 CFR 1500.4,40 CFR 1502.2(b), 40 CFR 1508.3; should edit/rewrite the information on pp 2-108, Lines 1-43, pp 2-109, Lines 1-4. This information is extraneous, not pertinent, and encyclopedic. The water conservation measures that the USACE is applying to help achieve its efficient water management per CR Ill 0-2-240 6d are pertinent and should be disclosed.

20. The USACE should edit/rewrite the information on pp 2-118 This information is incomplete. On pp 4-11, FDWCMAE, the Allatoona Creek arm is mentioned in regards to chlorophyll a but not on pp 2-118 of the EIS. This difference in fact and presentation between the DEIS and FDWCMAE substantiates General comment 2.

21. The USACE should edit/rewrite the information displayed on pp 2-123 and pp 2-126 to quantify the miles/acres of impaired waters and TMDL's. Table 2.1-26 is pertinent and useful information for the reader of the EIS and should be included in the discussion.

22. The USACE should edit/rewrite the following: A) pp 2-137, to clarify the period of record for the data and compare the data to State Water Quality Standards, B) clarify if the data that is collected by the USACE at River Side Park by the local Ranger (FDWCMAE, pp 5-5, Lines 17- 20) is included. C) clarify the objectives for the monitoring (pp 2-137-2-142 and FDWMAE, pp 5-5, Lines 17-17 -22), irrespective of who does the monitoring (ER Ill 0-2-8154, Water Quality and Environmental Management for Corps Civil Works Projects), and D) how data is used by USACE in its operations of the ACT (ER 1110-2-8154, Water Quality and Environmental Management for Corps Civil Works Projects). The apparent omission of data in the EIS but included in the FDWCMAE substantiates General comment 2

23 The USACE should develop run off curve numbers for the ACT basin and present the results using maps and tables (Dunne, Thomas and Luna B. Leopold.1978. Water in Environmental Planning. W. H. Freeman Company, New York, pp 291-298. and Chow, Ven Te.1964. Handbook Of Applied Hydrology. McGraw-Hill Book Company, New York, pp21-27, 21-28,21-30,21-34, 21-35, 21-36, 21-37.). The curve numbers are a percent of runoff from the land surface for annual, seasonal, and storm flows. Knowing seasonal and average runoff from land surface and storm flows are significant contributions towards the USACE efficient water management (ER 1110-2-240 6d, EM 1110-2-1420 Part 3, Reservoir Storage Requirements, 10- 2e).

24. The USACE, to be in compliance with 40 CFR 1502.24, should account for sediment entering streams and rivers from overland flow. An accounting of sediment from overland sources is necessary if the USACE is to identify the effects of its operations on water quality (ER 111 0-2-8154), channel maintenance flows, and efficient water management (ER 1110-2-240 6d). The ACT is not a "self contained" system (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-2a,b,d). One approach to help account for sediment is the establishment of permanent channel cross sections (Description Of Proposed Action and Alternatives comment4).

25 pp 2-161, Lines 17-22. See comment #13, Affected Environment. Appears to be a typo regarding dam construction (Line 22).

26. The USACE should ensure which statements made in lines pp 2-167, Lines 20-26,32-36 and those occurring in the FDWCMAE, pp 5-5, Lines 35-44 and pp 5-6, Lines 1-33.are factual and edit the DEIS and FDWCMAE accordingly. This difference in fact and presentation between the DEIS and FDWCMAE substantiates General Comment 2.

27. The USACE should ensure which statements regarding miles of shoreline (pp 2-175, Line 8) and in the FDWCMAE, pp E-A-3 is factual and the DEIS and FDWCMAE edited accordingly. This difference in fact between the DEIS and FDWCMAE substantiates General comment 2.

28. The USACE, to comply with 40 CFR 1502.24, should edit/rewrite the DEIS using the most current data that is available. The DEIS uses Census Data that is not the most current and other data and information that is up to 12 years old (pp 2-31, Lines 19-33, pp 2-242, Lines 34-42). The FDMCM and FDWCMAE use current data/information. The USACE should edit/rewrite the Affected Environment using the updated data and information in the FDMWCM and FDWCMAE. This difference in fact and presentation between the DEIS and FDMWCM, FDWCMAE substantiates General comment 2.

29. The USACE should edit/rewrite the DEIS M&I discussion on pp 2-233 Lines 4-22, pp 2- 234, Table 2.6-5, pp 235, Table 2.6-6 to include the very good presentations for M&I in FDMWCM, pp 4-14, Lines 12-16, pp 4-15, Lines 1-2, Table 4-5 and FDWCMAE, pp 4-19, Lines 15-27, pp 4-20, Table 4-18. The very good presentation in the FDMWCM, FDWCMAE substantiates General Comment 1.

30 DEIS pp 2-241, 2.6.1.5 Flood Risk Management. The USACE should describe: A) the time to and duration of peak flows, and quantity of water for the 500 year flood, average annual flood, the flood of record, floods of February, 1996, July,l994, May, 2003, September, 2009 and if used, "Pattern Floods (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 1 0-4c) and, B) the return frequency for the average annual flood, the flood of record, floods of February, 1996, July,1994, May, 2003, September, 2009, and, if used, "Pattern Floods" (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 10-4c) Much of this information is available (See FDMCM, FDWCMAE) in flood reports (ER 1110-2-240 13 h,i) or can be modeled using Unit Hydro graphs (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 1 0-4e).

31. The USACE, to comply with 40 CFR 1502.5, 40 CFR 1508 and to assist in assessing flood risk management (ER 1110-2-240 6g); should impose the contour/elevation that the respective floods reached in the Flood Pool for Lake Allatoona (Previous comment #29) as a "birds eye" view for the entire Lake. The scale of this "birds eye" view should enable the reader to see the relationship of the various flood elevations to land ownership, facilities (private, leased, and operated by the USACE) and flood flowage easements ..

32. The USACE should describe the return frequency, time to and duration of peak flows, and quantity of water, and if used, "Pattern Floods (EM 1110-2-1420, Part 3, Reservoir Storage Requirements, 1 0-4c) for flood storage as used in the DEIS. This storage is a major reason given for not considering other alternatives (Management Measures Eliminated from Further Consideration, comment 1(t)).

33 The USACE should edit/rewrite the economics for Agricultural Water Supply, (pp 2-241, Lines 3-16) using the economics for Agricultural Water Supply presented in FDMWCM, pp 4- 14, Lines 4-10, Table 4-4, FDWCMAE, pp 4-19, Lines 4-12, Table 4-17. These tables are very good presentations for Agricultural Water Supply and associated economics. The effects of the alternatives on agricultural water supply and associated economics should be disclosed in the Environmental Consequences (40 CFR 1502.16). The difference between the DEIS and the FDMWCM, FDWCMAE regarding Agricultural Water Supply and associated economics

substantiates General comment 2

34. The USACE should provide a historical perspective on stream sedimentation. Many of the channels in the ACT have/had stored sediment resulting in post European poor logging, farming, mining, and road building practices. A result of these poor practices was the sediment entering the streams being greater than the capability of stream flow to move and transport the sediment through the system. The result was stream channel aggradation or stored sediment in the channels. With improved logging, farming, mining and road building practices, runoff entering the streams is "hungry" for sediment and transports stored sediment as it seeks the original base line of the channel. The result is stream channel degradation. The sediment in the Little River and Etowah River embayments is probably from the stored sediment in the channels as well as from changes in land use and current "mismanagement" of lands in the Allatoona Lake basin. There are many good studies available that were conducted on Alcovy Creek, in Gwinnett County, Georgia that provide an excellent understanding of land use practices and stored sediment in the streams. Establishing permanent channel cross sections can help determine if channel aggregation or degradation is occurring (Description of Proposed Actions and Alternatives, comment 4).

Response

1. – Section 2 (Affected Environment) is complete and compliant with pertinent CEQ and USACE NEPA regulations. As noted below in response to some of the specific comments, minor revisions and additions have been inserted into the final EIS where appropriate.

2. – Non-concur. Section 2 of the EIS is organized by resource area (e.g., water resources, geology and soils, land use) across the entire basin rather than by physiographic provinces within the basin. Section 2.2.1.1 specifically addresses the eco-regions in the ACT basin (synonymous with physiographic provinces). Section 2 is complete and fully compliant with pertinent CEQ and USACE NEPA regulations.

3. – Concur. A discussion of Lake Acworth has been added to Section 2.1.1.1.4.2. Acworth Lake is a sub-impoundment of Allatoona Lake, completed in 1950 as a feature of the original project. Acworth Lake Dam has a fixed crest spillway at elevation 848 (8 ft higher than the summer pool guide curve elevation for Allatoona Lake), and the sub-impoundment water level generally does not fluctuate. Acworth Lake does not appreciably contribute to the flood risk management function of Allatoona Lake.

4. – Section 2.1.1.1.4.17 specifically included a detailed discussion of Hickory Log Creek Dam and Lake. The project is also discussed in Section 6.10 of the EIS (Cumulative Impacts) Hickory Log Creek Dam and Reservoir has essentially no effect on the flood risk management function of Allatoona Lake. The total storage of Hickory Log Creek Lake (about 15,000 ac-ft) equals less than 5 percent of the permanent flood storage capacity of Allatoona Lake. Section 2.1.1.1.4.17 has been modified to include some information to compare storage in Allatoona and Hickory Log Creek Lakes.

5. – Non-concur. Section 2.2.1.2 of the EIS (Affected Environment – Soils) provides an overview of soil conditions in the ACT basin and shoreline erosion issues in the USACE reservoirs. The erosion discussion cited in the Executive Summary for the EIS is a brief summary of the more detailed discussion in Section 6.2 of the EIS.

6. – Discussion of sedimentation and shoreline erosion in the Executive Summary and EIS (Section 2.2.1.2.6) are considered adequate for purposes of updating the WCMs and rewriting the description will not be necessary. USACE concurs that the draft ACT Master Manual and project WCMs (included in Appendix A of the EIS) contain additional information on shoreline erosion, and the final EIS has been amended to reference pertinent shoreline erosion information in these documents. In addition, the Operations Management and Shoreline Management Plans for the projects, which are not part of the WCM update process, further address shoreline erosion and management issues. "Shoreline" has been included in the Glossary as requested. Portions of the lake bottom that are temporarily exposed when lake levels drop are not considered subject to non-point source regulation under the Clean Water Act.

7. – Water quantity modeling (reservoir operations) was performed using HEC ResSim (see Section 2.1.2.7.1 of the EIS). Since one of the screening criteria for potential water management measures to be considered for the WCM update was to maintain at least the current level of flood risk reduction afforded by USACE projects, flood risk analysis was only used in response to the proposed fall stepped-down guide curve at Allatoona Lake. That analysis indicated that the guide curve adjustment would not increase flood risk downstream of Lake Allatoona.

8. – Precipitation information presented in the draft EIS and draft WCMs (Appendix A to the EIS) is considered sufficient to provide a general overview of the Affected Environment. Section 2.1.1.1.1 of the EIS has been modified to reference additional precipitation information contained in the WCMs.

9. – Sufficient information on precipitation in the basin is presented in the draft EIS and WCMs (Appendix A to the EIS). Section 2.1.1.1.1 of the EIS has been modified to reference additional precipitation information contained in the WCMs, including more information on extreme events.

10. – The general overview of air temperature in Section 2.3.1.1 of the draft EIS is sufficient in relationship to the proposed WCM update, particularly since more detailed temperature data is presented in the draft ACT Master Manual and project WCMs (included in Appendix A if the EIS). The EIS has been modified to reference additional air temperature information contained in the WCMs

11. – Evaporation from the lakes is an important consideration in water management. However, evaporation rates are driven by climatic conditions outside the control of water managers and affect all water control plan alternatives in the ACT basin equally. Both the draft EIS and draft WCMs provide general information on evapotranspiration in the ACT basin, and the information is considered sufficient for updating the WCMs.

12. – USACE manages the water that enters the reservoirs from the watershed and accounts for evaporation in conducting its water management activities. The simulation of the alternatives listed in the draft EIS included an estimate of net evaporation-precipitation at all main stem reservoirs within the ACT Basin. The decision to monitor evaporation and its effect upon actual reservoir regulation is considered a special hydrologic analysis. Each individual office determines the necessity of the analysis and the technique. The Mobile District has initiated discussions with USGS to measure evaporation at the USACE storage reservoirs. No decision has been made at this time. This information was not considered necessary to adequately evaluate and compare water management alternatives for the ACT WCM update.

13. – Tables 2.1-1through 2.1-3 were intended to give the reader a general idea of the monthly mean, high, and low flows at selected stations in the basin following the completion of all the main stem storage reservoirs in the Alabama, Coosa, and Tallapoosa River basins. Thus, the flow data at the selected stations is based upon a consistent set of reservoir regulation conditions in the basin. The detailed analysis was not based on a limited 33-year or less period of record. Modeling of the ACT system with HEC ResSim utilized a full 70-year period of hydrologic record as stated numerous times in the draft EIS and the modeling report. The modeled period of record was updated to 73 years (1939-2011) following coordination of the draft EIS. The modeling report is Appendix B to the EIS.

14. – See response to comment no. 13 above.

15. – Flood storage volumes are presented in the detailed descriptions for each reservoir project in Section 2.1.1.4 (Surface Water: Reservoirs). The pool elevations for top of flood storage and flood storage volumes for Carters Lake and Allatoona Lakes are depicted in Figures 3.1-1 and 3.1-2, respectively. One of the principal criteria guiding the ACT WCM update process is that none of the alternatives evaluated will increase flood risk. Thus, most of the focus in the WCM update relates to how conservation storage is most effectively managed to meet the other authorized project purposes. Table 2.1-4 reflects the focus on the conservation storage in the ACT basin projects and is not intended to omit or ignore flood storage in any of the projects.

16. – Groundwater-surface water interaction is less significant and of less consequence at USACE reservoirs in north Georgia (Carters and Allatoona). In addition, while the degree of drawdown in these reservoirs may be more extreme over the year than the more downstream projects on the Alabama River, the rate of drawdown is generally slow enough that shoreline erosion from this source is of little consequence. Other than the extreme upstream ends of the Dannelly and Claiborne Lakes where hydropower generation at upstream dams causes daily pool fluctuations, the Alabama River lakes tend to fluctuate little and do not exhibit substantial erosion as a result of hydraulic conductivity. The current discussion in the EIS is considered to be sufficient.

17. – Section 2.1.1.2.1.4, was intended to provide general information on the project purpose of recreation for USACE projects in the ACT Basin, including how water management activities for the reservoirs affect recreational activities. This approach was commensurate with the manner in which other project purposes were addressed in Section 2.1.1.2.1. This section was not intended to provide a detailed description of recreation facilities at the USACE and APC projects, recreation economics, and recreational economic consequences. More detailed descriptions of recreation facilities are provided in Sections 2.4.1.3 (Land Use at ACT Basin Projects) and 2.6.1.6 (Socioeconomics – Recreation) as well as in the draft ACT Master Manual and individual water control manuals in Appendix A of the EIS. Language has been added to Section 2.1.1.2.1.4 to refer the reader to additional detailed recreation information. Section 2.6.1.6 includes information on recreational visitation by project. It is not possible to precisely correlate project visitation with specific lake level conditions, although visitation numbers are clearly impacted when lakes drop to extraordinarily low levels. Qualitative discussion of socio-economic consequences of the candidate water management alternatives is included in Section 6.6.6.

18. – The pages in the EIS that are referenced in this comment as “extraneous, not pertinent, and … very encyclopedic” address the various authorities and programs of the state of Georgia (and Metro North Georgia Water Planning District) that involve regulation, management, and development of water resources within Georgia. USACE disagrees with the commenter’s characterization of this text. These authorities and programs have a profound effect on the water resources that are available to, and managed at, USACE

reservoirs in the basin. Accordingly, USACE has concluded that these pages, as well as those that characterize water management programs in Alabama, are valid and should remain in the document. The 7th and 8th paragraphs in Section 2.1.1.2.5.1.6 specifically mention the proposed Richland Creek reservoir and explain that it is in the detailed planning/permitting stage of development (see Section 2.1.1.1.4.17). Table 2.1-20 is a list of possible future reservoir sites identified in a 2008 GEFA-funded study that have not been fully studied or vetted and may, or may not, ever be pursued. The Fulton County – Etowah Reservoir mentioned by the commenter does appear in Table 2.1-20 (29th entry) because the project concept has not been as fully developed to date as the Richland Creek project. Both projects are shown in the Metro Water District's long range plan for reservoir development, as reflected in Table 2.1-22. Raising the Allatoona Lake guide curve was not considered since that action would impact flood storage and was determined to be outside the scope of the WCM update.

19. – USACE does not agree that MNGWPD water conservation measures discussed in Section 2.1.1.2.5.1.9.3 are "extraneous and not pertinent." These measures have a direct effect on M&I water supply withdrawals and returns for the metro Atlanta area communities in the ACT basin, which in turn indirectly affects water management at Allatoona Lake.

20. – The list of impaired waters in Section 2.1.2.3.2 has been updated to include mention of the Allatoona Creek arm of Allatoona Lake.

21. – Figure 2.1-54 illustrates the extent of impaired waters. Further discussion of implemented TMDLs is not pertinent to an evaluation of alternatives under this action. Additional discussion of TMDLs in the basin can be found by referring to the cited TMDL documents.

22. – (A) Table 2.1-30 has been updated to indicate the period of record of the monitored data and their source. Since these data are used in listing discussions by States, further comparison with standards is not necessary. Violations of standards in these data would result in a listing of impairment on the 303(d) list; (B) Table 2.1-30 does not include the data described on page 5-5 of the Allatoona WCM (in EIS Appendix A). The data described on page 5-5 of the Allatoona WCM was not used in the water quality model calibration; (C) Text has been added to Section 2.1.2.5 of the EIS to document that the monitoring data presented in Table 2.1-30 were collected by States and EPA as part of their monitoring efforts and that these data are used in listing impaired segments; and (D) Section 2.1.2.5.1 of the draft EIS generally describes USACE water quality monitoring efforts at Federal projects. Section 2.1.2.5.1 also provides an example of how USACE monitoring data has been used at Allatoona Lake. Additional discussion of these data will not be included in the EIS. Section 2.1.2.5.1 of the EIS was updated to state that a "more detailed description of USACE water quality monitoring is provided in the project WCMs."

23. – The ACT Master Manual, as well as the individual Allatoona, and Carters manuals, include runoff information in Table 6-1, which is used to support the flood risk management operation of Allatoona and Carters. This information allows USACE to adequately estimate runoff down to Rome, GA, the flood damage reach area. Basin-wide run-off values are not required. However, the Mobile District is in the process of developing CWMS (Corps Water Management System) tools and models for the ACT basin for short term real time forecasting of reservoir operations and stream flows. This tool will allow USACE to estimate the run-off from forecast and improve water management efficiency.

24. – Sedimentation, including discussion of periodic surveys of USACE lakes to monitor sedimentation rates and the associated

effects on reservoir storage, is addressed in Sections 2.2.1.2 and in the draft ACT Master Manual and individual project manuals (Appendix A to the draft EIS). The information presented in the EIS is considered adequate to characterize sedimentation conditions for USACE reservoir projects in the ACT basin and their relationship to water management activities.

25. – Concur. The construction date for Allatoona Dam has been corrected and the text modified to account for the period from 1949 through 1979.

26. – The 2010 sediment surveys for Allatoona Lake which are summarized in the draft Allatoona WCM were not discussed in the draft EIS. The EIS (Section 2.2.1.2.6.7) has been updated accordingly.

27. – There is no difference between the draft EIS and draft Allatoona WCM regarding the number of miles of shoreline. Both documents state that Lake Allatoona has 270 miles of shoreline.

28. – Census data has been updated in the EIS to most current data available.

29. – Relevant data to generally describe industrial activities in the ACT basin, including information already contained in the draft WCM, has been summarized in EIS Section 2.6.1 to address consistency across documents.

30. – Section 2.6.1.5 was reserved for a discussion of the socio-economic aspects of flooding and flood risk management in the ACT basin, from a historical and current perspective. Consequently, the detailed hydrologic information requested by the commenter would not be appropriate for Section 2.6.1.5. Section 2.1.1.1 summarizes some of the extreme events identified in this comment and Section 2.1.1.2.1.1 generally describes flood risk management operations for the ACT basin projects. As part of the screening process for the WCM update, no water management measures were considered that would result in increased flood risk in the ACT basin (see Section 1.4.4 of the draft EIS). Thus, the WCM update process focused principally on measures to use the conservation storage in USACE lakes in the ACT basin to more effectively meet all the other authorized project purposes and to provide an effective drought management plan. The draft ACT Basin Master Manual and individual project WCMs (Appendix A to the EIS) include most of the detailed hydrologic information requested by the commenter, and the EIS has been amended, where appropriate, to refer the reader to this more detailed information.

31. – See response to comment 30 above.

32. – See response to comment 30 above.

33. – Pertinent summary information will be brought forward from the Master Manual and individual project WCMs to Section 2.6.1.4 of the EIS. Section 2.6.1.4 was also revised to reference additional details on agriculture and related water use in the ACT basin.

34. – Erosion and sedimentation conditions in the ACT basin, and factors influencing those conditions, are discussed in Sections 2.2 and 6.2 of the EIS (Geology and Soils, Affected Environment and Environmental Consequences, respectively). Land use (present and historical) is discussed in Section 2.4 of the EIS. The draft ACT Master Manual and project WCMs (included in Appendix A of

the EIS) contain additional technical information on erosion and sedimentation in the reservoirs and tributaries. The information presented in the draft EIS is considered sufficient to support the WCM update process without further revision.

Comment ID 0040.010

Author Name: McLaughlin, Keith

Organization: None provided

Comment

GLOSSARY

The Glossary for the DEIS has terms that are incorrectly defined and/or need to be added: The USACE should edit the DEIS, FDMWCM and FDWCMAE to correct the terminology and definitions and ensure their use is per their definitions.

(a) "Channel forming discharge" is incorrect terminology and definition. Bank Full Stage/Flow is the correct terminology and, by definition, it is the channel forming flow and is commonly referred to as the flood flow having a return frequency of 1.5 years. Therefore the current definition in the Glossary is incorrect when it defines Bank Full as 1.5 years or greater" (Leopold, Luna B.l994. A View of the River. Harvard University Press, Cambridge, Massachusetts, London, England pp 90, and Dunne, Thomas and Luna B. Leopold.1978. Water in Environmental Planning. W. H. Freeman Company, New York, pp 608-622).

(b) "Channel Capacity" should be defined in the Glossary. Usually channel capacity is associated with Bank Full Flow. Bank Full flow is usually less than the total depth of entrenched stream channels.

(c) "Bank Full Capacity" needs to be defined and the USACE should edit the DEIS, FDMWCM, and FDWCMAE to ensure its use is per its definition.

(d) Add "Shoreline" and define per Webster: "the line where a body of water and the shore meet".

Response

(a) – "Channel forming discharge" appears in Section 6.2 of the EIS (Environmental Consequences – Geology and Soils). It is a commonly used term in the context of a discussion of stream geomorphology. The definition of the term in Section 6.2 of the EIS and in the Glossary (Section 11) has been revised to delete the words "or greater" as suggested by the commenter.

(b) and (c) – The terms "bankfull capacity" and "channel capacity" are used synonymously in the Master Manual and Lake Allatoona WCM in the context of flood risk management. Bankfull capacity can generally be defined as "the discharge, or stage, at which a stream or river is at the top of its banks such that any further increase or rise would result in water moving into the flood plain."

(d) – The term "shoreline" has been added to the Glossary as requested by the commenter.

Comment ID 0040.011

Author Name: McLaughlin, Keith

Organization: None provided

Comment

ENVIRONMENTAL CONSEQUENCES

1. The USACE should edit/rewrite the disclosure ofEnvironmental Consequences to conform with the requirements in PL 91-190, Section 102 (2)(C)(i)(ii),(iv),(v) and 40 CFR 1502.16.

2. The USACE should rewrite the Environmental Consequences to address the consequences by alternative, on the environment in Exhibit 2 in addition to that described in Affected Environment. The rewrite should include Environmental Consequences identified in previous and following sections of my comments. The consequences in Exhibit 2, need to be described in the Affected Environment, Description of Preferred Action and Alternatives.

<The author included the following exhibit in his letter: "EXHIBIT 2: ENVIRONMENTAL CONSEQUENCES THAT SHOULD BE ADDRESSED." Please see the original letter for this exhibit.>

3. The USACE, to comply with 40 CFR 1502.24 should use the entire period of record for modeling Environmental Consequences for lake levels (pp 6-1, Line 38, pp 6-8, Line 14, pp 6-9, Lines 5,11,14, pp 6-10, Line 7, pp 6-11, Lines 6,9,10, pp 6-12, Lines 4,16, pp 6-13, Lines 13,27,37), (Affected Environment, Comment #13). There are at least four more years of record available since 2008. The flood of September 2009, a significant event for Lake Levels, is included when the entire period of record is used.

4. pp 6-2, Lines 25-27, are another indication that the USACE should consider alternatives in addition to the current four.

5. pp 6-10, Figure 6.1-4, pp 6-11, Figure 6.1-5. The duration curves on these Figures are very informative. Figure 6.1-4 is another indication that the USACE should consider alternatives in addition to the current four.

6. pp 6-77, NPS loads, Lines 23-26. The USACE should include in the modeling of the Non Point Source (NPS) loads for the tributaries in the basin that flow into Lake Allatoona. This will help the USACE understand and disclose the cause and effects on sediment deposition in the Little River and Etowah River embayments, Fecal Coliform, Nutrients, Chlorophyll a, Lake Eutrophication and etc.

7. The USACE should reevaluate and correct the statement on pp 6-78, Lines 34-35 in light of sediment deposition in the Little River and Etowah River embayment areas, TMDL's, chlorophyll a, Fecal Coliform, shoreline erosion, and etc.

8. The USACE should identify mitigation measures for each alternative to address the apparent deterioration of water quality and the rate of lake eutrophication.

9. pp 6-79. The USACE should explain why water releases to maintain channels and to meet minimum flow requirements would not have the same effect on lowering water temperatures as releases for power production.

10.6-119, Lines 3-6. The USACE should include appropriate mitigation and management measures in each alternative, other than No Action, to address deteriorating water quality.

11. USACE should demonstrate in the DEIS how its operation of the ACT has and/or is addressing water quality impairment that is caused by its operations or by other causes ..

12. The USACE should cease assuming that deteriorating water quality conditions in its reservoirs are just a "background condition that management measures must function." (pp6- 119, Lines 3-6) The continued use of this assumption hinders the USACE ability to identify opportunities to improve water quality, and detracts from the USACE being viewed as good stewards of the resources it is charged to manage and to be good stewards.

Response

1. – Revisions and updates to Section 6 (Environmental Consequences), where appropriate, have been made to the draft EIS as indicated in the responses to the specific comments listed below. These revisions and updates did not constitute a rewriting of Section 6 as suggested by the commenter.

2. – The Environmental Consequences section was organized by environmental and socio-economic resource areas. Within each resource area, the impacts associated with each alternative were discussed. The topics identified in Exhibit 2 were discussed in the draft EIS to varying levels of detail, depending on the degree of relevance of the specific topic to the update of the ACT WCM.

3. – USACE used a 70-year period of hydrologic record (1939 – 2008) for the model simulations of the alternative plans in the draft EIS, deemed at the time to encompass a sufficient range of hydrologic conditions to adequately evaluate the water management alternatives. Following coordination of the draft EIS, the model simulations were rerun with some minor refinement to the baseline (No Action) conditions (see Section 4.3.1 and 5.1) and a period of record extended through 2011, consistent with the commenter's request. The evaluation of the alternatives in the final EIS incorporates these updates.

4. – No specific response required. The basis for the formulation of the alternatives that were considered is presented in Section 4 of the EIS.

5. – No specific response required. The basis for the formulation of the alternatives that were considered is presented in Section 4 of the EIS.

6. – Non-point source loads from tributary streams were adequately considered in the modeling, which was performed to assess the

water quality impacts associated with the water management alternatives considered for the WCM update. See Appendix D to the EIS.

7. – USACE disagrees that the referenced statement is incorrect. No revision to the EIS is necessary.

8. – Regulation and management of water quality conditions within rivers, streams, and lakes in the ACT basin are principally within the purview and responsibility of the states of Georgia and Alabama. USACE has no control over activities outside the project boundaries that may affect water quality. USACE must rely largely on the states to conduct their programs to attain and maintain conditions in the lakes that meet state-designated water uses and support authorized project purposes affected by water quality conditions, such as recreation and fish and wildlife conservation. Where USACE can take specific water management actions to help sustain or improve water quality conditions, within the framework of the authorized project purposes and in conjunction with the ongoing efforts of the states, those actions are considered.

9. – There are no releases made at Allatoona Dam specifically for navigation. Releases that may support adequate navigation flows downstream occur during peak hydropower operations. Minimum flow releases are made through a small service hydropower unit at the project that runs continuously. Downstream water temperatures under either operational condition would be similar.

10. – See the response to comment 8 above.

11. – The draft EIS, in Section 6.1.2, documents that the current operation of USACE projects in the ACT basin is not the cause of any water quality impairments nor do the Proposed Action Alternative or other alternatives have an appreciable impact on water quality conditions in the basin. See also the response to comment 8 above.

12. – See the response to comment 8 above.

Comment ID 0040.012

Author Name: McLaughlin, Keith

Organization: None provided

Comment

DEIS

1. The USACE should edit pp 5-4, Lines 10-12 to clarify that water released from Lake Allatoona is incidental for Navigation and not for the purpose of Navigation.

Response

The cited page and line numbers may not be correct because they do not specifically address navigation. The cited text spoke about action zones in Allatoona Lake and how they are used for project operations. Nonetheless, in response to the comment about releases for navigation, releases are made from both the Allatoona and Carters projects to support all authorized project purposes. Both projects contribute to the navigation flow target downstream by way of their releases for other project purposes.

Comment ID 0040.013

Author Name: McLaughlin, Keith

Organization: None provided

Comment

DEIS

2. The USACE should edit/rewrite Lake Stratification in the DEIS with the writeup in FDWCM, pp. 4-11, Lines 36-42, pp 4-12, Lines 1-35. The difference between the respective writeup substantiates General comment 2. The effects of each alternative on Lake Stratification should be disclosed in Environmental Consequences.

Response

Section 2.1.2.2 of the EIS was updated to incorporate language about lake stratification from the WCM.

Comment ID 0040.014

Author Name: McLaughlin, Keith

Organization: None provided

Comment

FDWCMAE

1. The USACE should edit/rewrite pp 4-2, Lines 20-26 to make it complete (Affected Environment, comment 33).

2. The USACE should edit/rewrite pp 4-5, Line 4, pp 4-7, Line 7,12 to disclose the return frequencies for these floods.

3. The USACE should use the very good presentation on pp 4-7, Lines 42-45, pp 4-9, Table 4-5, Figure 4-3 in the description of the Affected Environment in the DEIS. This description is more analytical and less encyclopedic than the current description in the DEIS. The difference between the DEIS and FDWCMAE substantiates General comment 2.

4 The USACE should edit/rewrite pp 4-10, Lines 1-10 to include the mitigation measures for water quality.

5 .. The USACE should edit/rewrite the DEIS to include the very good writeup on population on pp 4-18, Lines 28-34, Table 4-16. This difference between the DEIS and FDWCMAE substantiates General comment 2.

6 The USACE should edit/rewrite the DEIS presentation on Agriculture using the very good presentation on pp 4-19, Lines 3-12, Table 4-17. This will permit a basis for comparison with other water uses such as recreation, power production, etc. The difference in describing agriculture in the DEIS and the FDWCMAE substantiates General comment 2.

7. The USACE should edit/rewrite DEIS and incorporate the very good presentation on pp 4- 19, Lines 15-21, pp 4-20, Table 4-18.

8. The USACE should rewrite the DEIS Affected Environment to incorporate the very good writeup on sedimentation and shoreline erosion (pp 5-5, Lines 35-44, pp 5-6, lines 1-7). The Environmental Consequences, by alternative, on sedimentation and shoreline erosion should be disclosed. The difference between the DEIS and FDWCMAE substantiates General comment 2.

9. The USACE should edit/rewrite the Affected Environment and Environmental Consequences for mosquito control (pp 7-19, Lines 23-27). If the consequences are unknown then monitoring needs to be accomplished and in the interim can address per the procedures in in 40 CFR 1502.22. The omission of mosquito control in the DEIS but included in the FDWCMAE substantiates General comment 2.

10. The USACE should edit/rewrite the DEIS Affected Environment to incorporate the very good write up on historic floods (pp 8-2, Lines 18-21, 23-26, Table 8-2, pp 8-3, Lines 1-2, Table 8-3). The difference between the DEIS and FDWCMAE substantiates General comment 2.

11. The USACE should edit/rewrite the DEIS Affected Environment to incorporate the very good write up on pp 8-3, Lines 13-15. The difference between the DEIS and FDWCMAE substantiates General comment 2.

12 The USACE should edit/rewrite the DEIS Affected Environment and Environmental Consequences to address biodiversity (pp 8-5, Lines 10-13). This omission of biodiversity for the Coosa in the DEIS substantiates General comment 2.

13. The USACE should add the Monitoring objectives in Appendix A of the FDWCMAE to comply with ER 110-2-8154.

FDMWCM

1. The USCA should edit/rewrite the DEIS Affected Environment by incorporating the very good write up on Agriculture (pp 4-14, Lines I2-I6, pp 4-15, Lines I-2, Table 4-5, pp 4-I5, Lines 4-19, Table 4-6. This writeup is more complete, pertinent, and informative than in the DEIS. This difference substantiates General comment 2.

Sir, my comments are intended to assist the USACE to produce a product that meets the letter, spirit, and intent of NEPA, (P.L. 9I-I9I), CEQ and USACE regulations.

Response

FDWCMAE

1. – The comment refers to the Sediment section under the Watershed Characteristics chapter. The purpose of this chapter is to give a general overview of the sediment conditions in the watershed of the project. USACE considers the current description adequate. The specific sediment data for the Allatoona Lake project describing the sediment ranges, the three surveys, and the results from these surveys, are described in Section 5-03 of the Manual.

2. – USACE typically does not compute the return frequencies for flood events, but will refer to those computed by USGS. While this is good information, knowing the return frequency for any particular flood event would not change the flood operation at the project.

3. – A statement has been added to Section 2.1.1.1 of the draft EIS to refer the reader to additional detailed information on rainfall and run-off characteristics in the ACT basin.

4. – Water quality in Allatoona Lake and downstream of Allatoona Dam generally meets designated uses, except as summarized in Section 4-08 of the Allatoona WCM (Appendix A). Regulation of activities in the watershed to address chlorophyll a and fecal coliform TMDLs is a state and local responsibility. No specific water quality mitigation measures by USACE are considered necessary at Lake Allatoona. The required minimum flow of 240 cfs from Allatoona Dam does provide water quality benefits downstream of the project.

5. – Section 2.6.1.7 of the draft EIS has been revised and updated to be consistent with population information presented in the draft ACT Master Manual and individual project manuals (Appendix A to the EIS).

6. – Section 2.6.1 (Socio-economics) of the draft EIS has been revised and updated to incorporate pertinent information on agriculture in the ACT basin from the draft ACT Master Manual and individual project manuals (Appendix A to the EIS). The EIS was also modified to include a statement referring the reader to additional information on agriculture in Appendix A of the EIS.

7. – A sentence referring the reader to additional economic data that is available in the Master Manual and individual project WCMs has been added to the socio-economics section of the EIS (Section 2.6).

8. – The EIS contains a sufficient discussion of sedimentation and shoreline erosion. A sentence has been added to Section 2.2.1.2.4 referring the reader to Appendix A of the EIS for additional information on sedimentation and erosion associated with ACT basin projects.

9. – Specific mosquito control activities are no longer conducted on USACE lakes in the ACT basin. The “Mosquito Control” sections have been deleted from the individual project WCMs (in Appendix A of the EIS).

10. – Section 2.1.1.1 of the draft EIS has been revised to state that additional detailed information regarding historic floods in the

ACT basin is available in the draft ACT Master Manual and individual water control manuals (Appendix A of the EIS).

11. – Section 2.6.1.6 of the draft EIS has been revised to state that additional detailed information regarding the value of recreation at USACE projects in the ACT Basin is available in the draft ACT Master Manual and individual water control manuals (Appendix A of the EIS).

12. – Section 2.5.3.1.4 (page 2-199) of the draft EIS contained the same statements about biodiversity in the Etowah River basin as the information cited by the commenter from the draft Allatoona Lake WCM. Accordingly, no further revision to the EIS in this regard was necessary.

13. – USACE water management activities are conducted in compliance with pertinent Federal laws and regulations.

FDMWCM

1. – See response to comment no. 6 above.

From: ACT-WCM
To: ACT-WCM; DIV.ACT.EIS; [redacted]
Subject: Mobile District Contact Form: Water Hyacinth Problems in Our River Systems
Date: Sunday, March 03, 2013 5:18:30 PM

This message was sent from the Mobile District website.

Message From: Jim C. Hall
Email: [redacted]
Response requested: Yes

Message:

Please address and control the water hyacinth in our River Systems.

Water Hyacinth Problems/Effects:

Eichhornia crassipes mats clog waterways, making boating, fishing and almost all other water activities, impossible
water flow through water hyacinth mats is greatly diminshed
an acre of water hyacinth can weigh more than 200 tons; infestations can be many, many acres in size;
mats may double their size in as little as 6-18 days (Mitchell 1976);
water hyacinth mats degrade water quality by blocking the air-water interface and greatly reducing oxygen levels in the water, eliminating underwater animals such as fish (Penfound & Earle 1948)
water hyacinth greatly reduces biological diversity: mats eliminate native submersed plants by blocking sunlight, alter emersed plant communities by pushing away and crushing them, and also alter animal communities by blocking access to the water and/or eliminating plants the animals depend on for shelter and nesting (Gowanloch 1944)
in Florida, millions of dollars a year used to be spent on water hyacinth control; finally getting the plant under "maintenance control" has greatly reduced that expenditure...

Comment ID 0050

Comment ID 0050.001

Author Name: Hall, Jim

Organization: Private Citizen

Comment

Please address and control the water hyacinth in our River Systems.

Water Hyacinth Problems/Effects:

Eichhornia crassipes mats clog waterways, making boating, fishing and almost all other water activities, impossible
water flow through water hyacinth mats is greatly diminshed
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in Florida, millions of dollars a year used to be spent on water hyacinth control; finally getting the plant under "maintenance control" has greatly reduced that expenditure...

Response

Aquatic weed control is outside the scope of the WCM update. USACE has a separate aquatic weed (including water hyacinth) management plan in place on the Alabama River Lakes.

Appendix B

Part II:
Fish and Wildlife Coordination Act Documentation

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United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE

247 South Milledge Avenue
Athens, Georgia 30605

West Georgia Sub Office
P.O. Box 52560
Ft. Benning, Georgia 31995-2560

Coastal Sub Office
4270 Norwich Street
Brunswick, Georgia 31520

JUN 19 2003

Colonel Robert B. Keyser
United States Army Corps of Engineers
Mobile District
PO Box 2288
Mobile, AL 36628-0001

Re: FWS Log NG-02-181-MURR
Carter's Reregulation Dam, FERC No. 11301

Dear Colonel:

This letter is intended to address the concerns of the U.S. Fish and Wildlife Service (Service) related to ongoing operations of Carters Reregulation Dam. Carters Reregulation Dam is located on the Coosawattee River in Murray County, Georgia. On July 30, 2001, the Federal Energy Regulatory Commission (FERC) granted Fall Line Hydro Company a license to construct a powerhouse facility with an installed generating capacity of 4.5 MW at the existing United States Army Corps of Engineers (Corps) dam. All land at the site, including the dam and flow releases, are under jurisdiction of the Corps. The following comments and recommendations are submitted under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq.*), the Fish and Wildlife Coordination Act (16 U.S.C. § 661 *et seq.*), and the Federal Power Act (FPA) (16 U.S.C. § 791a, *et seq.*).

The Coosawattee River downstream of the project provides valuable habitat for important aquatic resources, including the federally-threatened goldline darter (*Percina aurolineata*), the State endangered trispot darter (*Etheostoma trisella*), the federally-endangered triangular kidneyshell (*Ptychobranchus greeni*), and the Federal candidate Georgia rocksnail (*Leptoxis downei*). We are concerned with the effects of the current operation of the dam (minimum flow, ramping rates, and water temperature) and the future effects of hydropower generation at the dam (dissolved oxygen) on downstream aquatic resources. Additionally, we would like to bring to your attention two issues: the implementation of a signed Memorandum of Agreement (MOA) between the Corps and Fall Line Hydro that allows the retrofit of Carter's Reregulation Dam, constituting a Federal action, and thus requiring consultation under section 7(a)(2) of the ESA, and the Service's March 26, 2003, proposal to designate critical habitat under the ESA for eleven species of freshwater mussels downstream of your facility.

Effects of Current Operation of Carter's Reregulation Dam

Minimum Flow

We understand that the minimum flow for Carter's Reregulation Dam is 240 cfs, which represents a 7Q10 flow. This flow was not intended to establish base flow conditions for protecting aquatic organisms and their habitat. The 7Q10 flow is a standard used to establish effluent limits to prevent pollutant concentrations from exceeding acceptable concentrations under extreme low flow conditions. By hydrological definition, the 7Q10 flow is a ten-year drought event, and has been associated with catastrophic reductions in available habitat for aquatic life (Evans and England, 1995).

Ramping Rates

Carter's Reregulation Dam was constructed in 1974 to regulate extreme flows released from Carters Lake Dam and ensure continuous outflows to protect the Coosawattee River below the project. While the flows exiting Carter's Reregulation Dam are dampened to some extent, periodically, ramping rates still occur that are detrimental to downstream aquatic resources. These ramping rates could be reduced and used to mimic a more natural flow regime, using data from the upstream United States Geologic Survey gage (Gage No. 02380500, Coosawattee River near Ellijay) as a model. Streamflow can be considered a "master variable" that regulates the ecological integrity of aquatic systems and limits the distribution and abundance of riverine species. Although to a lesser frequency, the effects resulting from the current operation of Carter's Reregulation Dam are the same as the effects below a daily peaking facility. Extreme, repeated fluctuations have no natural analogue in freshwater systems and represent a harsh environment of frequent, unpredictable flow disturbance.

> "Many aquatic populations living in these environments suffer high mortality from physiological stress, from wash-out during high flows, and from stranding during rapid dewatering. Especially in shallow shoreline habitats, frequent atmospheric exposure for even brief periods can result in massive mortality of bottom-dwelling organisms and subsequent severe reductions in biological productivity. Moreover, the rearing and refuge functions of shallow shoreline or backwater areas, where many small fish species and the young of large species are found, are severely impaired by frequent flow fluctuations. In these artificially fluctuating environments, specialized stream or river species are typically replaced by generalist species that tolerate frequent and large variations in flow. Furthermore, life cycles of many species are often disrupted and energy flow through the ecosystem is modified. Short-term flow modifications clearly lead to a reduction in both the natural diversity and abundance of many native fish and invertebrates" (Poff et al., 1997).

Hydrologic and habitat variation can strongly affect reproductive success and/or juvenile survival in lotic fish populations. At a flow-regulated site in the Tallapoosa River, young-of-year (YOY) fish abundance was correlated with the persistence of shallow-water habitats. Habitat persistence was severely reduced by flow fluctuations resulting from pulsed water releases (Freeman et al., 2001). Stream discharge fluctuations have been found to negatively impact adult smallmouth bass *(Micropterus dolomieu)* by inhibiting spawning efforts, and YOY smallmouth bass by increasing turbidity (inhibits feeding, reduces prey availability, and disturbs fry orientation) and causing mortality associated with longitudinal displacement of eggs and fry. Fluctuations in discharge have been similarly seen to affect spawning and/or recruitment in a gamut of fishes, including various centrarchids, salmonids, cyprinids, catostomids, and percids (Starrett, 1951; Peterson and Kwak, 1999; Freeman et al., 2001).

Stream habitat subject to such fluctuations also becomes unsuitable for freshwater mussels. Artificial flows result in unstable habitats in the form of repeated dewatering of shallow water areas (causing stranding and precluding colonization) and the scouring action of bankfull discharges that cause unstable substrates (Watters 2000; Layzer and Crigger, 2001). These flows can affect fish host abundance and habitat use, thereby affecting the reproductive success and recruitment of freshwater mussels (Layzer and Crigger, 2001).

The Coosawattee River leaves Carter's Reregulation Dam and joins the Conasauga River to form the Oostanaula River. Approximately two-thirds of the flow of the Oostanaula is formed by the Coosawattee. As easily compared by hydrographs, the irregular flows leaving Carter's Reregulation Dam are impacting not only the remainder of the Coosawattee downstream, but also the Oostanaula (http://water.usgs.gov/waterwatch, United States Geological Survey, February 25, 2003). Therefore, we are concerned about several freshwater mollusk species that inhabit the upper Oostanaula, including the triangular kidneyshell (also occurs in the Coosawattee), Georgia rocksnail, and the Alabama spike (*Elliptio arca*). The triangular kidneyshell is found in the upper Oostanaula and is only found in the Coosa, Oostanaula, Holly Creek, and the Conasauga. The Georgia rocksnail is only found in the upper Oostanaula. Its distribution is the smallest distribution of any mollusk in the Mobile Basin. The Alabama spike is only found in two rivers, one of them the Oostanaula (Paul Johnson, Tennesee Aquarium and Southeast Aquatic Research Institute, 2003, pers. comm.).

Water Temperature

Cold, hypolimnetic discharges, such as released from Carter's Reregulation Dam, can slow growth and inhibit reproduction in freshwater mollusks. Cold water temperatures prevent hatching of the eggs of freshwater snails, and prevent the formation of gametes of freshwater mussels (Watters 2000; Paul Johnson, pers. comm.). Non-reproducing freshwater mussels have been translocated from a cold water discharge area to warmer waters and were able to reproduce within a year (Watters 2000). Cold, hypolimnetic discharges can also influence reproductive timing in fishes (Freeman et al., 2001).

Future Effects of Hydropower Generation at Carter's Reregulation Dam

Memorandum of Agreement

On April 26, 2002, a signed Memorandum of Agreement (MOA) between the Corps and Fall

Line Hydro Company was submitted to FERC. The MOA establishes access privileges to federally-owned facilities and the terms and conditions by which the Licensee shall reimburse the Mobile District for all reasonable costs associated with the development of this MOA and the Operations MOA as required by Article 307 of the FERC License, the review of design and construction criteria, plans and specifications, and inspection of construction activities as they relate to the structural integrity or operation of the Carters Re-Regulation Dam in conjunction with the proposed hydropower project (FERC Project No. 11301-001). However, implementation of this agreement constitutes a discretionary Federal action that may affect listed species. Consultation with the Service, as required under section 7(a)(2) of the ESA, has not occurred.

Dissolved Oxygen

We are simultaneously corresponding with FERC regarding the effects of their hydropower project, specifically dissolved oxygen, that could be detrimental to downstream aquatic resources. A copy of our June 4, 2003 letter is enclosed. Although it is our understanding that the Corps will continue to control flow releases, Fall Line Hydro proposes to modify current operations by passing the discharge flow from the Carters Reregulation storage reservoir through the project powerhouse and turbine generating units instead of passing river flow over the dam spillway as currently operated by the Corps. In Section 2 of FERC's June 21, 2001, Environmental Assessment (EA), it is stated that dissolved oxygen (DO) levels in the project pool are regularly depressed and that releases of anoxic water from the proposed project is likely, based on the data provided by the Corps and the applicant. The low DO is currently mitigated by reaeration as the water passes over the cascade spillway. The EA further states that rerouting flows through the proposed powerhouse instead of allowing water to cascade over the spillway could result in decreased oxygen levels in the Coosawattee River below the project which would adversely impact aquatic resources. Based on the data presented in the EA, the proposed modification to the project will likely result in water with depressed levels of dissolved oxygen that fails to meet the State of Georgia's water quality standards for the maintenance of aquatic life.

According to the water quality monitoring and management plan (as required by Article 403 of the FERC license), the licensee is required to measure DO concentration and water temperature in the project tailwaters during the first and second years of project operation. If measurements fail to meet the State standards immediately downstream of the project, then water released from the hydropower project will be temporarily reduced and water releases across the spillway will be temporarily increased. However, if measurements indicate that water releases from the project are deficient (in DO or water temperature), but are still better than spillway releases, then water will be released from the project at its maximum authorized rate of release. The licensee will be required to notify FERC of any deviations from the 5.0 mg/L requirement specified in License Article 403.

In light of our new and ongoing unresolved concerns, we do not consider 2 years of monitoring (1/25th of the 50-year license term) adequate to protect downstream federally-listed species throughout the license term. The first two years of operation, for example, could represent unseasonably wet years. We are of the view that the water quality monitoring should be conducted throughout the license term in order to facilitate any needed operational changes to protect downstream federally-listed aquatic species.

Critical Habitat

In addition to our concerns as outlined above, we draw your attention to a concurrent issue that needs to be addressed. On March 26, 2003, we proposed the designation of critical habitat for three threatened mussels and eight endangered mussels in the Mobile River Basin, including the triangular kidneyshell (68 Fed. Reg. 14752-14832). This designation includes the Oostanaula River from its confluence with the Etowah River upstream to the confluence of the Conasauga and Coosawattee Rivers, the Coosawattee River from its confluence with the Conasauga River upstream to Georgia State Highway 136, the Conasauga River from its confluence with the Coosawattee River upstream to the Murray County Road 2, and Holly Creek from its confluence with the Conasauga River upstream to the confluence with Rock Creek. If this proposal is made final, the provisions of section 7(a)(2) of the ESA will be invoked and the Corps will be required to ensure that the actions that it funds, authorizes, or carries out in this area are not likely to jeopardize the continued existence of an endangered or threatened species, or result in the destruction or adverse modification of critical habitat. The destruction or adverse modification of critical habitat is defined as a direct or indirect alteration that appreciably diminishes the value of the critical habitat for both the survival and recovery of the species (50 CFR 402.02).

Summary

We are concerned with the effects of the current operation of the dam (minimum flow, ramping rates, and water temperature) and the future effects of hydropower generation at the dam (dissolved oxygen) on downstream listed species. Your ongoing operation of Carter's Reregulation Dam and your decision to allow Fall Line Hydro Company to retrofit your structure for hydropower generation should be revisited in light of the critical habitat proposal. We recommend that the Corps engage in consultation with us so that the impacts on species and habitat can be adequately addressed.

We appreciate the opportunity to advise the Corps with this project. If you have any questions, please contact staff biologist Alice Palmer at (706) 613-9493 ext. 22.

Sincerely,

Sandra S. Tucker

Sandra S. Tucker
Field Supervisor

enclosure

cc: file
Magalie R. Salas, FERC, Washington, DC
Robert Davis, Fall Line Hydro, Lawrenceville, GA
Jerry Jones, USCOE, Mobile, AL
Sue Cielinski, USFWS, Atlanta, GA
Ralph Thompson, USFWS, Daphne, AL
Jerry Ziewitz, USFWS, Panama City, FL
John Biagi, GDNR, Social Circle, GA

References

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DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

15 AUG 2003

REPLY TO
ATTENTION OF

Inland Environment Team
Planning and Environmental Division

Ms. Sandra Tucker
Field Supervisor
U.S. Fish and Wildlife Service
247 South Milledge Avenue
Athens, Georgia 30605

Dear Ms. Tucker:

This correspondence is in response to your letter dated June 19, 2003, related to the ongoing operation of Carters Reregulation Dam. Based on the review of your letter, I agree that we need to initiate a dialogue with your office regarding concerns raised about potential effects on Federally listed species due to the current operation of Carters Lake hydropower facilities. The Carters Dam and Carters Reregulation Dam were completed in 1974 and provide a multipurpose project for flood control, hydropower, navigation, water quality, fish and wildlife enhancement, and recreation. The Reregulation Dam serves two purposes: as a lower pool for the pumped storage hydropower operation and to reregulate peaking flows from Carters Dam to provide a more stable downstream flow into the Coosawattee River. As we operate the facilities at these dams, we strive to balance the various authorized project purposes in an attempt to provide the best overall public benefit, while repaying the Federal Treasury for the capital investments at this project.

On the subject of the proposed Fall Line Hydro Company project at the Carters Reregulation Dam, we believe that the Endangered Species Act coordination/consultation should be directed to Fall Line Hydro Company and the Federal governing agency, the Federal Energy Regulatory Commission (FERC). The Federal Powers Act provides that FERC has the authority to license the development of hydropower projects by non-federal entities at U.S. Army Corps of Engineers (Corps) projects. The Corps would not receive benefits from such a non-federal hydropower facility. We view the Memorandum of Agreement (MOA) signed between the Corps and Fall Line Hydro Company to be a mechanism to ensure protection of Federal property, i.e., the reregulation dam, and to ensure no adverse impacts to our Federal project operations to meet the authorized project purposes.

Regarding the proposed designation of critical habitat for 11 mussel species within the Mobile River Basin, we understand from Mr. Paul Hartfield that the comment period, which closed on June 24, 2003, will reopen when the Economic Analysis Report is available for review.

Please notify us when that document is available and the comment period has been reopened. We look forward to reviewing this document.

While we recognize the need to initiate informal consultation with you on the effects of current operations, we stress that the pending Alabama-Coosa-Tallapoosa (ACT) Water Allocation Formula negotiations between the States of Alabama and Georgia could significantly affect our current project operations. Based on the MOA signed by the Governors of Alabama and Georgia on April 21, 2003, posting of the draft formula and supporting hydrologic models on May 1, 2003, and subsequent public review process, we believe that the states will reach formal agreement on ACT Water Allocation Formula in the near future.

We propose that our informal consultation related to the effects of our current operation be incorporated into our ongoing environmental evaluations related to the ACT Water Allocation Formula.

We plan to begin compiling historic flow regime and water quality data to facilitate our discussions. While we have some of the biological data on the Federally listed species, we would appreciate receiving copies of the materials referenced in your letter, as well as other literature related to life history information on these species.

We look forward to discussions with you on these matters and believe that such interdisciplinary and interagency dialogue is essential to identification of solutions to complex and controversial water resource issues. I am providing a copy of this letter to Ms. Magalie Salas, Federal Energy Regulatory Commission; Mr. Robert Davis, Fall Line Hydro Company; and Mr. John Biagi, Georgia Department of Natural Resources. Please contact Mr. Mike Eubanks, at (251) 694-3861, regarding initiation of this dialogue

Sincerely,

Robert B. Keyser
Colonel, Corps of Engineers
District Engineer

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

OCT 16 2008

In Reply Refer To:
FWS/R4/ES

Colonel Byron G. Jorns
District Engineer
U.S. Army Corps of Engineers, Mobile District
Post Office Box 2288 (Attn: Chuck Sumner)
Mobile, Alabama 36628-001

Dear Colonel Jorns:

The Fish and Wildlife Service (Service) appreciates the opportunity to provide comments during the public scoping process regarding the revision of the United States Army Corps of Engineers' (Corps) Water Control Manuals (WCM) for the Alabama-Coosa-Tallapoosa (ACT) River Basin. We submit the following comments under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*).

Federally-listed aquatic species, as well as critical habitat, exist throughout the ACT basin. Because the WCMs affect the ACT river basin, the Corps and the Service will need to coordinate closely to ensure any ESA issues, such as potential impacts to the listed species and critical habitat, are fully addressed. In addition, we consider this public scoping process, and subsequent meetings, an opportune juncture to improve aquatic habitats for all species in the ACT basin. We look forward to being an active stakeholder during the revision process.

General Comments

Service personnel participated in the Corps' September 11, 2008, Interagency Scoping Meeting to discuss the WCM updates and associated development of the Environmental Impact Statement (EIS). During that meeting, the Corps raised the idea of developing technical workgroups to address specific topics of information that need to be investigated as part of the revision process and asked for agency input on this matter. The Service supports the development of these workgroups and would be willing to actively participate in the technical workgroups applicable to our agency's mandates and trust resources.

TAKE PRIDE IN AMERICA

Comments regarding Corps Operations within Georgia

Surveys

Federally-listed and candidate freshwater mollusks and fishes inhabit the mainstem rivers of the Coosa Basin below Carters and Allatoona. Within the last eleven years these species are known to include the federally-threatened goldline darter (*Percina aurolineata*) in the Coosawattee River below Carters Reregulation Dam, potentially the federally-endangered Etowah darter (*Etheostoma etowahae*) in the Etowah River below Allatoona Dam, the federally-endangered triangular kidneyshell (*Ptychobranchus greeni*) in the Coosawattee and Oostanaula Rivers, shell material of the federally-endangered southern clubshell (*Pleurobema decisum*) in the Oostanaula and Coosa Rivers, and the Federal candidate species interrupted rocksnail (*Leptoxis formani*) in the Oostanaula River.

We recommend updated surveys be conducted for federally-listed fishes and freshwater mollusks to accurately assess the potential impacts of the Corps' alternative actions. Information gathered regarding many State-imperiled aquatic species as part of this survey effort would also be beneficial. The most recent comprehensive survey conducted for federally-listed mussels in these mainstem rivers was conducted in 1997 (Williams and Hughes 1997). The mainstem Coosawattee below Carters Reregulation Dam and the mainstem Etowah below Allatoona Dam have not had targeted surveys for federally-listed fishes since 1998 (Freeman 1998). Except for a Georgia Department of Natural Resources (GDNR) standardized sampling survey and collection efforts for an *Etheostoma* genetics study, we are not aware of these two stretches of mainstem river being surveyed for fishes since this time (Ritchea 2006; GDNR 2002 & 2003; Brett Albanese, GDNR, 2008, pers. comm.). Recent genetic studies have discovered federally-listed Etowah darters either exhibiting syntopy or hybridization with greenbreast darters (*Etheostoma jordani*) below Allatoona (Freeman et al. 2006). Additional tissue material is needed for nuclear genetic analysis using microsatellites to clarify the situation at hand. Therefore, any survey effort should be coordinated with these researchers to consider obtaining additional genetic material and to provide them the opportunity for further analysis, if feasible.

Operations at the Lake Allatoona Project

Current dam operations at Lake Allatoona have detrimental effects on water quality and the natural flow regime in the Etowah River downstream of Allatoona Dam. Suitable dissolved oxygen levels, water temperatures, and flow are necessary for survival, reproduction, and recruitment of fishes and mussels. A Corps water quality study and associated environmental assessment (EA) found that the tailrace waters do not always meet State dissolved oxygen water quality standards during periods of non-peak generation, sometimes dropping as low as 2 parts per million (Corps 2000). An oxygen diffuser was used from 1968 to 1986 to improved downstream dissolved oxygen levels, but has not been used since 1986. The 2000 EA selected a preferred alternative that consisted of rehabilitating the Allatoona powerhouse to increase dissolved oxygen levels in the tailrace. A finding of no significant impact was authorized in 2000 for this upgrade, but the powerhouse was never rehabilitated. We recommend that this WCM update consider installing some method to increase dissolved oxygen levels in the Etowah River downstream of Allatoona Dam. We do not know if tailrace temperatures are likewise altered as a result of dam operations at Lake Allatoona, but downstream water temperature data representing existing conditions should be compiled and analyzed. If adequate data does not exist to represent current conditions, we recommend these data be collected. If downstream water temperatures are, in fact, significantly different from temperatures that would naturally occur in an unimpaired scenario, we recommend the Corps consider a retrofit at Allatoona Dam that would more closely approximate natural water temperatures.

Allatoona Dam operates in a hydropeaking mode, generating power between two and six hours during normal operations each weekday. Weekend generation may occur if required to meet customer needs, but generally only the 250 cubic feet per second (cfs) minimum flow is released on the weekends. A typical weekday pattern of flows downstream of the dam exhibits fluctuations between 250 cfs and approximately 7,500 cfs (Corps 1998). Flow instability caused by daily peaking operations likely affects recruitment and reproductive success of many fishes (Irwin and Freeman 2002). Stream habitat below hydropeaking dams can also become unsuitable for mussels because of the alternate wetting and drying of riffles and scouring action of discharges. Additionally, regulated flow can affect the abundance and habitat use of fishes serving as host species for freshwater mussels (Layzer and Crigger 2001; Watters 2000). These host fishes may be less abundant or occupy different habitats that make the necessary contact with larval mussels unlikely, or if fishes are already infected with larval mussels, excysting juveniles may be distributed into unsuitable habitats (Layzer and Crigger 2001). Providing periods of stable flow without pulsed intervals of power generation should increase opportunities for fish to reproduce and for larvae to develop successfully (Irwin and Freeman 2002). A study on a regulated reach of the Tallapoosa River found young-of-year fish abundance was most frequently correlated with the persistence of shallow-water habitats (Freeman et al. 2001). We recommend the Corps consider dam operations at Allatoona Dam that would more closely mimic the natural flow regime, such as implementing a non-peaking window during the portion of the year that is most sensitive to aquatic organisms in the downstream Etowah River.

The current minimum flow for Allatoona Dam is 250 cfs, which represents the annual 7Q10 flow. A 7Q10 flow represents a ten-year drought event and is a standard used to establish effluent limits that prevent pollutant concentrations from exceeding acceptable concentrations under extreme low flow conditions. It was not intended to establish base flow conditions for protecting aquatic organisms and habitat, and has been associated with reductions in available habitat for fish and other aquatic life (Evans and England 1995). We recommend the minimum flow under existing conditions for Lake Allatoona be compared to an alternative that more closely approximates the natural flow regime. The flow alternatives that will be considered for the WCM updates should be analyzed for potential relative effects to the downstream riverine biota. This could be accomplished by using the Riverine Community Habitat Assessment and Restoration Concept (RCHARC), as was done in the Draft Environmental Impact Statement (DEIS) for the Water Allocation for the ACT Basin, or similar methodology based on the same concept. RCHARC is based on the premise that native riverine communities of aquatic organisms evolved under patterns of spatial and temporal variability in physical habitat that result from long-term natural flow regimes, and therefore, managing regulated streams to mimic the variability of natural streams will protect native riverine biodiversity (Corps 1998).

Operations at the Carters Lake Project

We are not aware of dissolved oxygen impairment in the Coosawattee River below Carters Reregulation Dam as a result of existing operations. We understand that the required minimum flow is released over a spillway and thus is subject to some aeration as it leaves Carters Reregulation Dam. However, the small amount of dissolved oxygen raw data we have reviewed, also summarized in a Federal Energy Regulatory Commission (FERC) Final Environmental Assessment (EA) for the Carters Reregulation Dam Hydropower Project (FERC 2001) were not collected during the recent prolonged period of drought operations. We do not know if tailrace temperatures are altered as a result of dam operations at the Carters Lake Project. Therefore, downstream dissolved oxygen and water temperature data for the Coosawattee River representing existing conditions should be compiled and analyzed. If adequate data does not exist to represent current conditions, we recommend these data be collected. If downstream water temperatures and dissolved oxygen levels are, in fact, significantly different from temperatures and dissolved oxygen levels that would naturally occur in an unimpaired scenario, we recommend the Corps consider a retrofit at Carters Reregulation Dam that would more closely mimic natural water temperatures and dissolved oxygen levels.

The two dams that make up the Carters Lake Project, Carters Dam and Carters Reregulation Dam, are used as a pumped-storage peaking facility. The Corps usually generates hydropower at Carters Dam for a few hours each weekday, and then the turbines reverse and pump water back up from the reregulation pool into Carters Lake when demand for electricity is low (usually during the night or on weekends) to have water available for the next peak use period (Corps 1998). Therefore, the flow exiting the reregulation pool into the lower Coosawattee River does not exhibit a hydropeaking flow regime. However, we recommend the Corps compile and analyze the ramping rates exiting Carters Reregulation Dam to the Coosawattee River under existing operations. If downstream ramping rates are significantly different from ramping rates that would naturally occur in an unimpaired scenario, we recommend the Corps consider a change in operations at Carters Reregulation Dam that would more closely mimic natural changes in flow, at least during the portion of the year that is most sensitive to aquatic organisms in the downstream Coosawattee River.

The current minimum flow for Carters Reregulation Dam is 240 cfs, which represents the annual 7Q10 flow. As mentioned above, a 7Q10 flow represents a ten-year drought event and is a standard used to establish effluent limits that prevent pollutant concentrations from exceeding acceptable concentrations under extreme low flow conditions. It was not intended to establish base flow conditions for protecting aquatic organisms and habitat, and has been associated with reductions in available habitat for fish and other aquatic life (Evans and England 1995). We recommend the minimum flow under existing conditions for Carters Reregulation Dam be compared to an alternative that more closely mimics the natural flow regime. The flow alternatives that will be considered for the WCM updates should be analyzed for potential relative effects to the downstream riverine biota by using the RCHARC, or similar methodology based on the same concept, as was done in the Draft Environmental Impact Statement (DEIS) for the Water Allocation for the ACT Basin (Corps 1998).

Mitigation for Carters Lake Project

The construction of Carter's Lake was authorized by the River and Harbor Act of March 2, 1945. Project construction was initiated in 1962 and was completed in 1975. The project is located on the Coosawattee River, 26.8 miles above its juncture with the Conasauga River, near the town of Carters in Murray, Gilmer, and Gordon Counties, Georgia. To date, no mitigation for aquatic resources has been developed. Mitigation for wildlife (including wetland and terrestrial ecosystems) has been debated but not resolved. Approximately 4,200 terrestrial acres were inundated, 40.9 miles of streams were impounded, 0.4 miles of stream were filled, and wetland loss is unknown. We recommend that these terrestrial and stream impacts for the development of Carters lake be included in the DEIS and as a result, mitigative measures be implemented.

If you have any questions regarding these Georgia-specific comments, please contact staff biologist Alice Lawrence at (706) 613-9493 ext. 222.

Comments regarding Corps Operations within Alabama

Threatened and Endangered Species - There are at least 12 extant federally-listed species found in mainstem river reaches of the ACT that have the potential to be affected by reservoir operations. These include:

Alabama sturgeon	*Scaphirhyncus suttkusi*	Endangered
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Threatened
Goldline darter	*Percina aurolineata*	Threatened
Tulotoma snail	*Tulotoma magnifica*	Endangered
Inflated heelsplitter	*Potamilus inflatus*	Threatened
Heavy pigtoe	*Pleurobema taitianum*	Endangered
Southern clubshell	*Pleurobema decisum*	Endangered
Triangular kidneyshell	*Ptychobranchus greenii*	Endangered
Fine-lined pocketbook	*Hamiota altilis*	Threatened
Interrupted rocksnail	*Leptoxis foremani*	Candidate
Rough hornsnail	*Pleurocera foremani*	Candidate
Wood stork	*Mycteria americana*	Endangered

You should also consider the federally-listed species found in tributary streams and nearby terrestrial habitats of the ACT basin that have the potential to be impacted by reservoir operations. These include:

Painted rocksnail	*Leptoxis taeniata*	Threatened
Cylindrical lioplax	*Lioplax cyclostomaformis*	Endangered
Lacy elimia	*Elimia crenetella*	Threatened
Blue shiner	*Cyprinella caerulea*	Threatened
Georgia rockcress	*Arabis georgiana*	Candidate
Price's potato-bean	*Apios priceana*	Threatened
AL canebrake pitcher-plant	*Sarracenia rubra alabamensis*	Endangered
Kral's water-plantain	*Sagittaria secundifolia*	Threatened

Harperella	*Ptilimnium nodosum*	Endangered
Georgia aster	*Symphyotrichum georgianum*	Candidate
Tennessee yellow-eyed grass	*Xyris tennesseensis*	Endangered
Mohr's Barbara's buttons	*Marshallia mohrii*	Threatened
Alabama leather-flower	*Clematis socialis*	Endangered
Green pitcher-plant	*Sarracenia oreophila*	Endangered

Note that Georgia rockcress, Georgia aster, and Price's potato-bean have been found on or near river bluffs overlooking mainstem ACT rivers and reservoirs.

Critical habitat for 10 species of mussels has also been designated throughout the ACT basin. These include:

Southern acornshell	*Epioblasma othcaloogensis*	Endangered
Ovate clubshell	*Pleurobema perovatum*	Endangered
Southern clubshell	*Pleurobema decisum*	Endangered
Upland combshell	*Epioblasma metastriata*	Endangered
Triangular kidneyshell	*Ptychobranchus greenii*	Endangered
Alabama moccasinshell	*Medionidus acutissimus*	Threatened
Coosa moccasinshell	*Medionidus parvulus*	Endangered
Southern pigtoe	*Pleurobema georgianum*	Endangered
Fine-lined pocketbook	*Hamiota altilis*	Threatened
Orange-nacre mucket	*Hamiota perovalis*	Threatened

Critical habitat for one species of fish is currently being proposed:

Alabama sturgeon	*Scaphirhyncus suttkusi*	Endangered

Because many of these species were isolated and fragmented due to reservoir development and water quality conditions, we encourage the Corps to participate with Federal and State agencies to develop a comprehensive monitoring plan to identify any remaining unknown or historically known populations in the basin.

The Service, working with State, other Federal, non-government, and private business partners, have identified potential re-introduction sites for recovery of listed aquatic species within the ACT basin. We would like to enlist the Corps as a partner in this large-scale recovery effort (O'Neil et. al 2008). In addition to aquatic recovery efforts, we would like the Corps to consider terrestrial habitats under their ownership as potential locations for outplanting of federally-listed plants should the need and opportunity arise.

Species of Greatest Conservation Need - In an effort to keep more species from becoming imperiled to the point of requiring Federal listing under the ESA, the Alabama Department of Conservation and Natural Resources has identified Species of Greatest Conservation Need (GCN) in the state; several of these are found within the ACT basin. The spotted rocksnail (*Leptoxis picta*), at least 2 species of mussels (painted clubshell, *Pleurobema chattanoogaense;* southern purple lilliput, *Toxolasma corvunculus*) and one species of fish (Alabama shad, *Alosa alabamae*) are found in mainstem ACT rivers. GCN bird species considered to be of high conservation concern that utilize wetlands and floodplain forests in interior Alabama include the least bittern (*Ixobrychus exilis*), American black duck (*Anus rubripes*), swallow-tailed kite (*Elanoides forficatus*), yellow rail (*coturnicops novaboracensis*), American woodcock (*Scolopax minor*) and the Swainson's warbler (*Limnothlypis swainsonii*). Any update to the Corps' WCM should address the potential of Corps reservoir operations to impact species that may be on the brink of requiring federal protection under the ESA.

Fish and Aquatic Organism Passage - Dams on the Alabama River have blocked historic migrations of more than a dozen species of fish for several decades, and have contributed to the decline of the critically imperiled Alabama sturgeon. High flows that overtop the dams and opening of dam locks at Claiborne and Miller's Ferry have been identified as methods to facilitate aquatic organism passage on the Alabama River. We recommend that the Corps continue to facilitate research on fish passage at Corps dams on the ACT, including research on timing and duration of attraction flows, monitoring and tracking of species through the lock and dam structures, and "dummy" locking, with the goal of implementing Corps reservoir operations that allow riverine species to travel their historic migration pathways.

Water Quality - The effect of reservoir operations on water quality should be addressed in the WCM update, including existing and potential effects to dissolved oxygen, temperature, pH, conductivity, nutrient and organic material dynamics, and various industrial and municipal discharges. A monitoring program addressing water quality in reservoirs and tailwaters should be designed and implemented to detect, report, and mitigate water quality issues that may impact benthic and pelagic species.

Flow Dynamics - A number of natural flow regime components (e.g., base, seasonal, and minimum/maximum flow levels, frequency/duration of low/high pulse flows, flow rise/fall rates and frequency of flow reversals) are important, even critical, to the long-term maintenance and protection of the basin's riverine fauna and habitats. These natural flow characteristics can provide a template for management strategies at water control facilities, as well as for future water management changes that may result from a basin-wide allocation formula. We recommend that the conservation and/or recovery of as many of these natural flow conditions as possible be fully considered in the development and implementation of the new WCM for the ACT basin. In Alabama, the effects to downstream aquatic biota and riverine ecology from diurnal hydropower peaking flows from the RF Henry and Miller's Ferry Dams, which are often described as run-of-the-river dams, should be examined.

Riparian and Wetland Habitats - The ecological integrity of riverine systems is intimately connected to the quality and quantity of streamside floodplain forests and wetlands. The review and updating of the WCM should address effects to the vegetation ecology of adjacent wetlands and floodplain forests, as well as the wildlife resources dependent upon them including migratory birds. For example, the federally endangered wood stork (*Mycteria americana*) relies on the shallow wetland areas adjacent to the Alabama River during the summer and fall each year for foraging.

Technical Working Group for Water Modelers - To facilitate information sharing and involvement with the WCM update process, we recommend that a technical working group of water modelers from interested stakeholders familiar with the HEC-ResSim Reservoir Simulation be formed and meet on a regular basis during and after the completion of the WCMs.

Integrated Drought Plan - The WCM update should integrate a basin-wide drought plan that addresses water allocation issues among stakeholders in Georgia and Alabama, as well as the operation of dams operated by Alabama Power Company on the Coosa and Tallapoosa Rivers. A drought plan should adequately identify water quality and quantity needs at various times of the year.

If you have any questions regarding these Alabama-specific comments, please contact staff biologist Dan Everson at (251) 441-5837.

Sincerely,

Acting

Noreen Walsh
Assistant Regional Director
Ecological Services
Southeast Region

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

IN REPLY REFER TO:

MAY 0 3 2010

Colonel Byron Jorns
US Army Corps of Engineers, Mobile District
P.O. Box 2288
Mobile, AL 36628-0001

Subject: Planning Aid Letter regarding the Alabama-Coosa-Tallapoosa Water Control Manual Updates

Dear Colonel Jorns:

We are providing your agency with a Planning Aid Letter (PAL) for the proposed Water Control Manual (WCM) Updates for the Alabama-Coosa-Tallapoosa (ACT) Basin in Georgia and Alabama. The purpose of the updates is to identify operating criteria and guidelines for managing water storage and release of water from U.S. Army Corps of Engineers (Corps) reservoirs. The resulting documents will guide water management operations. In the National Environmental Policy Act (NEPA) review, the Corps will address current operations, proposed changes in water management operations at the reservoir projects within the limits of the existing authorities, as well as potential impacts throughout the basin that would result from implementation of the updated manual.

The purpose of the PAL is to identify resource values and issues, identify federally protected species issues, and propose preliminary changes, mitigation, or enhancement opportunities to facilitate your decision-making as it relates to equal consideration of fish and wildlife resources. We submit the following comments and recommendations under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq.*), the Migratory Bird Treaty Act (MBTA)(49 Stat. 755, as amended; 16 U.S.C. § 702 *et seq.*), and the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq.*). These comments are based on previous studies and government documents as well as new datasets and information provided by State and Federal agencies. Continued efforts will be made to provide additional expertise and information in the form of another PAL and/or the draft FWCA reports. A separate consultation will occur regarding the potential impacts of the Corp's proposal on federally-listed threatened and endangered fish and wildlife species protected under the ESA.

We stress that in the following letter, our recommendations are preliminary. Monitoring of many important ecological parameters in the ACT following dam construction has been limited. Unfortunately, even 40 years after construction we lack critical data on the dissolved oxygen levels above and below Corps reservoirs, as well as effects of hydropower peaking flows on fish assemblages. New information often changes our understanding of ecological response to complex natural and human-influenced variables. Rather than attempt, in one document, to prescribe definitive management guidelines for possibly decades of dam operations, we would like to begin working with the Corps to build an adaptive management framework for operations that explicitly outlines goals and objectives of operations, continually monitors and analyzes ecosystem response, and adjusts operations accordingly based on what we have learned. Adaptive management of river systems helps to link the resistance and resilience of species and ecosystems to a natural range of flow variation. Management should occur over a geographic

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at the same location every year (Sparks 1998). Necessarily we will recommend research and monitoring as a primary component of dam operations.

1.0 PRIOR STUDIES OR REPORTS

A complete review of the many reports, analyses, lawsuits, and volumes of data associated with water management in the ACT is beyond the scope of this report, but we will reference several documents in this PAL that are important to management of fish and wildlife resources.

The US Fish and Wildlife Service (Service) previously made available a list of federally protected species and other species of concern in 2008 as part of the initial scoping for this project. Since then, critical habitat has been designated for the Alabama sturgeon in the Alabama and Cahaba Rivers (USFWS 2009). The rough hornsnail and interrupted rocksnail have been proposed for listing, and there is a proposal to designate critical habitat for them below Jordan Dam. Revisions to this list will continue to be provided as necessary as the draft and final FWCA reports are developed.

A Service recovery plan for federally listed aquatic species in the Mobile River Basin was completed in 2000, and had input from many partners in the basin including the Corps. The recovery plan outlines many of the issues that must be addressed to protect species that are listed under the ESA(USFWS 2000). Because the system of dams operated by the Corps has a significant influence on habitat availability and suitability in the ACT, an update to the WCMs for these dams has the potential to provide significant benefits for these species, as well as many other species not protected under the ESA.

2.0 GENERAL DESCRIPTION OF FISH AND WILDLIFE RESOURCE CONDITIONS

Aquatic resources within the ACT basin are heavily impacted by human development, including the construction and operation of dams, channelization, and dredging and water quality degradation (USFWS 2000, 2006; Atkins et al. 2004). Cumulatively, these activities are physically degrading habitats, decreasing or eliminating natural variability of water flows, and fragmenting populations of many aquatic organisms.

Dams constructed for hydropower generation, navigation, flood control, water supply, and recreation have impounded about 600 river miles of aquatic habitat in the ACT Basin (USFWS 2000), including more than 230 miles impounded by Corps dams (USACE 1998). Impoundments and flow regulation have induced changes in aquatic habitats by altering sediment deposition, flow patterns, rates of geomorphic channel adjustment, and water quality conditions throughout the river system. Dams also function as barriers to aquatic species movement. Consequently, many native species are extinct or extirpated from significant portions of the ACT Basin as a direct or indirect result of dam construction. (Bogan et al. 1995; USFWS 2000).

Channelization has occurred within every major river system within the ACT (USACE 1990, USFWS 2000). Activities for straightening, deepening, and/or enlarging stream and river channels were particularly concentrated in the Alabama River portion of the drainage (USACE 1990). The effects of channelization on aquatic habitats include loss of habitat diversity, substrate stability, and riparian canopy; accelerated bed and bank erosion; and altered depth (Brooks 1994). While channel dredging diminished in recent years, continued geomorphic response to channelization is manifested through channel erosion, channel filling, and headcutting (USFWS 2000).

Dredging to support vessel navigation in the Alabama River initially involved removal of shallow shoals and other historic aquatic habitats for species that are now imperiled (USFWS 2000). This removal destroyed benthic organisms and their habitats, eliminated habitat and prey for fishes and turtles, initiated and perpetuated upstream instability and erosion, and increased downstream turbidity (USFWS 2000). Initial habitat losses were severe, whereas current maintenance dredging and spoil disposal of seasonally accumulated sediments is thought to have less of an impact, only because many sensitive species have already been eliminated, and surviving species are distributed according to current patterns of deposition and erosion (Hartfield and Garner 1998).

The following sections will discuss several of the important issues that should be addressed in evaluating operational parameters in the Corps' updating of the WCMs for dams of the ACT Basin. This will be followed by a reach-by-reach discussion of fish and wildlife-related issues

2.1 Instream Flow

With the updates to the WCM, the Corps has an opportunity and obligation to help restore and/or maintain instream flows that provide habitat for all life stages of aquatic species (adult feeding, spawning, egg and larval survival, and nursery and rearing habitat). Instream flows are also necessary to enable migration of anadromous, catadromous, potadromous, and riverine fish over and around barriers (including necessary attraction flows for fishways), and to provide water quality to sustain biota and high quality habitats.

We recognize the operational constraints to achieving environmental flow objectives imposed by the many competing uses for water in Alabama and Georgia. However, opportunities still exist for providing flows for bypassed natural river channels downstream of hydropower projects, adjusting flows in highly regulated river sections downstream of hydropower dams, providing non-peaking flow windows during critical spawning periods, and providing adequate flows for water quality maintenance in water segments that have experienced species die-offs.

A number of natural flow regime components (e.g., base, seasonal, and minimum/maximum flow levels, frequency/duration/timing of low/high pulse flows, flow rise/fall rates and frequency of flow reversals) are important, even critical, to the long-term maintenance and protection of the basin's riverine fauna and habitats. These natural flow characteristics can provide a template for management strategies below Corps dams, as well as for future water management changes that may result from a basin-wide allocation formula. The frequency and magnitude of channel forming flows (generally high flows with a 1 to 2-year return interval) are important for maintaining natural rates of geomorphic change and habitat maintenance (Dunne and Leopold 1978). We recommend that conservation and/or recovery of as many of these natural flow regime components be fully considered in the development and implementation of the new WCM for the ACT basin.

Flow regulation has negatively affected biota and habitat throughout the basin. The effects to downstream aquatic biota and riverine ecology from daily hydropower peaking flows from the RF Henry and Miller's Ferry dams, which are often described as run-of-the-river dams, should be examined. The diversion of flows from a portion of the Coosa River near Weiss Reservoir caused desiccation of habitats and extirpation of multiple species. Hydropower peaking flows are also experienced by the aquatic organisms in the Etowah River below Allatoona Dam in Georgia. By design the Carters Reregulation Dam largely eliminates peak flow pulses from the Carters Reservoir Project, but the two dams comprising the project still eliminate much of the natural flow variability of the Coosawattee River, particularly the high flow component.

Thorough explanations of the physical, chemical, and ecological benefits from base flows, pulses, stable flow windows for spawning, and intra- and interannual flow variation are outside the scope of this letter; however we refer the reader to Junk et al 1989, Poff et al. 1997, Richter et al. 1998, Freeman et al. 2001, Postel and Richter 2003, and Mathews and Richter 2007 for fuller descriptions. The importance of baseflows, pulses, and flood flows are described within these resources.

In the middle portion of the ACT Basin, instream flow recommendations for re-licensing of hydropower dams owned by Alabama Power Company (APC) have largely followed the framework developed by the joint U.S. Environmental Protection Agency (EPA)/Service *Instream Flow Guidelines for the ACT* (Alabama-Coosa-Tallapoosa) *and ACF* (Apalachicola-Chattahoochee-Flint) *Basins Interstate Water Allocation Formula* (USFWS/EPA 1999). These flow regime guidelines are based on the principle that ecosystems evolved as a response to the natural flow regime, and that restoration of some natural flow regime components can restore structural and functional ecosystem elements that were lost or reduced as a consequence of flow regulation. Since the development of the 1999 flow guidelines, new flow analysis tools have been developed that facilitate more comprehensive descriptions of flow regimes and flow recommendations. One such tool is the Environmental Flow Components (EFCs) in Indicators of Hydrologic Alteration (IHA, Mathews and Richter 2007).

EFCs were used by the Service to develop flow guidelines for the ACF PAL for the WCM update, and for this PAL, we advocate the Corps follow a similar approach.

We recommend that water management in the ACT Basin, to the extent possible, be coordinated from headwaters to delta using methods and tools available in the resources cited in this section. This will require continued significant coordination with APC as well as State water resource agencies.

2.2 Water Quality

Water quality below several Corps dams, including Millers Ferry and Allatoona, does not meet State water quality standards. With the update to the WCM, the Corps has an opportunity and obligation to help maintain, restore, and/or enhance adequate water quality for the support of all life stages of aquatic species in the ACT Basin. Monitoring by the Alabama Department of Environmental Management (ADEM) in the summers of both 2008 and 2009 in several sections of the Alabama River indicated that dissolved oxygen levels occasionally dropped below 4.0 mg/L for several hours in the main channel, and on a few occasions dropped below 3.0 mg/L (ADEM preliminary datasonde data, 2008-2009). Data collected by the Service in the summer of 2009 on the Etowah River below Allatoona Reservoir indicated DO levels lower than 1.0 mg/L. (Figure 4). Low DO is a pervasive summer problem that needs to be addressed.

Water quality in all reaches needs to be adequate for successful reproduction and recruitment, as well as sustained growth of adults and juveniles (Watters 2000). DO and water temperature problems associated with inadequate instream flows, hypolimnetic discharges, stratification, and/or other causative reservoir discharge problems (e.g., the transport of pesticides, nutrients, biological/chemical oxygen demand-BOD/COD, and metals) should be identified and corrected at Corps dam facilities. Monitoring of water quality parameters to determine if ecological needs are met should be standard practice in dam operations, and ecological response to water quality changes should also be monitored.

2.3 Habitat Protection

The Corps has an opportunity and responsibility to protect and restore important riverine and associated aquatic habitats, and avoid additional losses of mainstem riverine habitat resulting from dam operations. These habitats include river bottoms, especially those supporting important structural and/or substrate features, shorelines, riparian zones, impacts from changing land uses, and associated wetland systems that serve as fish habitat and/or provide water quality and/or riverine morphological support functions.

Significant river-dependent habitats include the rich floodplain forests of the Alabama River, as well as the world-class wetlands and bottomland habitats of the Mobile-Tensaw Delta and Mobile Bay. Forest and grassland communities within the zone of annual, decadal and multi-decadal fluvial processes, including such disturbances as flooding and bank sloughing, are often distinctly different than communities outside that impact zone. Naturally, general moisture availability and the daily interaction between aquatic and terrestrial communities accounts for some of this unique riparian-zone character. However it's equally apparent that the regular fluvial processes of deposition and erosion and a fluctuating water table, influenced greatly by Corps dams, play a significant role in mediating species success and dominance within those communities. Forest communities of the Alabama River bluffs also have acted as refugia and "species highways" for eons of climate change (Bill Finch, The Nature Conservancy, per. comm. 2010), suggesting that Corps infrastructure and land use related to water management in the ACT Basin can directly impact terrestrial forest community composition and persistence as well.

As a result of habitat fragmentation and population isolation, many of the aquatic species of federal and state concern will require population management and manipulation to maintain genetic flow between isolated populations, to reintroduce species to restored habitats, and, in some cases, prevent extinction. Priority sub-basins important for refugia and maintaining genetic flow are listed in the following document, as are the reaches designated as Critical Habitat as defined by the Service (USFWS 2004). We will also include reaches that have been identified as potential reintroduction/augmentation sites (Hartfield et al. 2010). To reestablish species in currently unoccupied habitats, it will likely be necessary to reintroduce animals through an active culture and propagation program. The Alabama Department of Conservation and Natural Resources (ADCNR), Division of Wildlife and Freshwater Fisheries, has established a state-of-the-art facility, the Alabama Aquatic Biodiversity Center (AABC), located at the former Claude Harris Federal Fish Hatchery in Marion, Alabama, dedicated exclusively to the culturing and propagation of non-game aquatic species. The Corps can help greatly in this undertaking by partnering with the AABC and utilizing their authority and resources to help protect and restore important aquatic habitats and flow regimes for species of concern in the ACT Basin.

Mitigation for loss of significant aquatic habitat, including inundation of over 40 miles of once free-flowing streams, has yet to be developed for the Carters Dam project in Georgia, completed in 1975. Mitigation for terrestrial and stream impacts for this project are long overdue, and should be addressed in the Draft Environmental Impact Statement (DEIS).

2.4 Aquatic Organism Passage

Fish passage facilities and structures are lacking on all Corps dams in the ACT, which has long been a concern of the Service. Downstream passage in particular can be facilitated by appropriate timing and volume of water releases over spillways and through locking chambers. The Corps has an opportunity to help restore and maintain connectivity of aquatic habitats in the ACT by developing and implementing safe and effective means for upstream and downstream passage.

Ongoing studies determining the effectiveness of using attraction flows and opening of lock gates to allow fish passage should continue, and may result in significant benefits for some species of fish. However, genetic isolation of aquatic organisms, further loss of native biotic diversity, and a trend toward environmental degradation is likely to continue as the landscape of the ACT Basin becomes more developed. We would like to see a cost benefit analysis comparing the operation and maintenance of the current navigational channel and system of locks and dams on the Alabama River versus the costs and economic benefits associated with maintaining the same system for maximum environmental benefits. We suggest that the DEIS at minimum should consider the alternative of operating locks to maximize connectivity of river reaches for aquatic organisms. A summary of the number of commercial barges and other craft that have and are currently utilizing the navigational system should be made available as part of the DEIS.

3.0 REACH DESCRIPTIONS

This section describes target resources present and historically present, objectives, and information needs for river reaches of the ACT in Alabama and Georgia.

3.1 Mobile Bay Delta to Claiborne Lock and Dam (L&D)

3.1.1 River Reach General Description

The lower 81-mile reach of the Alabama River from Claiborne L&D to its mouth flows entirely within the East Gulf Coastal Plain before joining the lower Tombigbee River to form the Mobile River and the biologically rich Mobile-Tensaw Delta. This reach drains an area of low-relief topography consisting of broad, rounded ridges and V-shaped valleys of sand and clay and is highly influenced by releases from upstream impoundments.

3.1.2 Species

Fishes: Alabama shad, Alabama and Gulf sturgeons, American eel, Southeastern blue sucker, highfin carpsucker, paddlefish, quillback, skipjack herring, river redhorse, smallmouth buffalo, striped bass, southern walleye, and ironcolor shiner are species of Federal/State interest that likely continue to inhabit this reach of the Alabama River (Mettee and Shepherd 2001; Mettee et al. 1996; Boschung and Mayden, 2004). However, populations of many of these species have been significantly impacted by Claiborne L&D that is blocking or hindering access to upstream spawning and feeding areas, particularly those species requiring long migrations to complete portions of their life cycle (e.g., Gulf and Alabama sturgeon, American eel, and the Alabama shad). Frecklebelly madtom, bluenose shiner, ironcolor shiner, freckled darter and alligator gar are either absent or very rare in this reach. Other freshwater species of sportfishing interest include the black basses, crappie, catfish, and sunfishes (USFWS 2006).

Mollusks: Historically, this reach supported the Alabama moccasinshell, fine-lined pocketbook, orange-nacre mucket, ovate clubshell, southern acornshell, southern combshell, southern pigtoe, stirrupshell, rayed creekshell, heavy pigtoe, Alabama pearlshell, black sandshell, tulotoma snail, cylindrical lioplax, painted rocksnail, and upland combshell. Recent dive records from numerous locations in this reach indicate that the inflated heelsplitter, heavy pigtoe, spotted rocksnail and tulotoma snail are the only target species surviving in this reach (USFWS Alabama Field Office data). Important commercial mussel beds also occur within this reach (Hartfield and Garner 1998).

Reptiles: The Alabama red-bellied turtle, alligator snapping turtle, and Mississippi diamondback terrapin are restricted to the lower reaches of the Alabama River in Baldwin County and the Mobile Bay/Delta, Patterns of natural flow variability created the ecologically-rich habitats where these species have survived for millennia.

Plants: Georgia rockcress occurs on the steep upper banks of this reach of the Alabama River, and may rely on flooding to help reduce competition from other vegetation (USFWS Alabama Field Office data). High flow events that scour river bluffs are likely beneficial to this plant.

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.1.3 Objectives

Restore federally protected resident and migratory aquatic species to historic abundances in suitable remaining riverine habitats.

3.1.3.1 Instream flow

The flow regime in this reach is affected by peaking hydropower generation/flood control operations to some extent by the 15 upstream dams in the Alabama, Coosa and Tallapoosa Rivers, but a greater impact comes from the one or more pulse flows per day from hydropower peaking flows from Corps-operated turbines at Millers Ferry and R.F. Henry L&Ds (Braun 2004; see Figure 1). Operational guidelines for maintaining flows in this reach have largely focused on ensuring navigation capabilities for a very small number of commercial barges. This is facilitated in part by a 1972 agreement, commonly referred to as the "Forty-six Forty rule" describing an agreement between the Corps and Alabama Power Company (APC) to release a 7-day average of 4640 cfs from APC projects to maintain a 9-foot water elevation in the navigation channel of the Alabama River. However, downstream there are other significant commercial and ecological considerations: the frequency, timing and volume of freshwater released from upstream Corps dams have a profound impact on the ecology of the Mobile Bay and Mobile-Tensaw Delta, and are important factors for commercial and recreational fisheries in the Bay, including those for shrimp, blue crab and oyster (Braun 2004). The pattern of natural freshwater inflow into the Mobile Bay/Delta is characterized by being highly variable at multiple time scales. One of the flow parameters most affected by upstream water management is the loss of extreme low flow events. Braun (2004) estimated that flows lower than 2700 cfs would naturally occur below Claiborne Dam on average about every ten years, but now are likely to occur only every 60 years. Freshwater inflow significantly affects many important ecological processes including the shaping of bottom and bank habitat, inundation and exposure of habitat to air, salinity and water temperature gradients, circulation and distribution of nutrients and massive quantities of organic matter, and residence time of water within embayments (Braun 2004). Therefore, changes in the magnitude, timing and duration of flood and low-flow events, mediated in part by Corps dams, are a major factor in ecological maintenance and succession in the Bay and Delta. Maintaining a pattern of natural freshwater inflow into the Mobile Bay/Delta is therefore highly desirable from an economic as well as an ecological perspective.

3.1.3.2 Water quality

The Alabama River from the Mobile-Tensaw Delta to Claiborne L&D upstream has an ADEM stream use classification of fish and wildlife (ADEM 2000).

Dissolved oxygen

The water use classification for this reach has a 5.0 milligrams per liter (mg/L) DO standard except under extreme conditions due to natural causes, when it may range between 4.0 mg/L and 5.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

Recent water quality data indicate that DO concentrations have fallen below the state DO standard (5 mg/L) in the tailwaters of Claiborne L&D during the summer months, occasionally for days at time, but more commonly for several hours each day (USFWS Alabama Field Office file data, 2000-2002; ADEM preliminary data 2008-2009).

3.1.4 Habitat protection

Navigational dredging is a concern in this reach of the Alabama River. Dredging removes shoal habitats in river channels and changes natural patterns of erosion and deposition potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner, 1998). Land use practices along the mainstem of the Alabama River, as well as its tributaries, can degrade aquatic habitats critical to southern walleye and other fish species (USFWS 2006), and should be considered in Corps dam and reservoir operations.

In addition to dredging, impacts from nonpoint source pollution are significant. Pollutant and nutrient concentrations are important ecological considerations during periods of low flow, when aquatic species may already be stressed from lower DO and reduced habitat availability. Pollutant concentrations required under National Pollution Discharge Elimination System (NPDES) permits are often cited by industry on the Alabama River as a reason to maintain unnaturally high flow during periods of natural drought, despite the importance of low flows in shaping Delta ecology. Research is needed to determine which species are most impacted under low-flow/high pollutant concentration conditions, and the flow patterns that are most beneficial under varying pollutant loads. Within the reach, this includes pollution from agricultural (nutrients, sediment, bacteria, and pesticides), aquaculture (nutrients and bacteria), forestry (sediment, nutrients, and thermal changes), roads (sediment), urban/residential development (sediment, nutrients, bacteria, and pesticides), and mining (sediment) activities (AL Clean Water Partnership (CWP) 2005).

Priority sub-basins: Important tributaries that help maintain genetic flow and act as refugia in this reach include the Little River, Pine Log Creek, and Reedy/Little Reedy/Sandy Hill Creeks (Alabama Comprehensive Wildlife Conservation Strategy (CWCS) 2005). Flow parameters need to ensure connectivity with these streams.

Designated Critical Habitat: Critical habitat for the Alabama sturgeon was designated in 2009 in this reach (USFWS 2009). The only Alabama sturgeon captured in the past decade was caught in the tailwaters of Claiborne L&D in 2008, reinforcing the fact that the dam is a barrier to an extremely rare (but formerly abundant) species, and that the ecological integrity of the lower Alabama River is essential for keeping this species from becoming extinct.

3.1.5 Aquatic Organism Passage

Since 1969, the Claiborne L&D has impeded upstream passage of most, if not all, diadromous and migratory freshwater fish species under all but the highest spring flows (USACE 2000). Other than the occasional boat lockage or travel over the spillway, Claiborne L&D does not provide any means of upstream or downstream fish passage. Research conducted by the Geologic Survey of Alabama (GSA) indicates that a flow of 80,000 cfs is required to inundate the spillway structure (USFWS 2006). This occasionally occurs between February and April (USGS 2004). Contingent upon the timing of these flows, some stronger swimming fishes, like the blue sucker, appear to be capable of swimming upstream over the spillway. However, most fishes cannot swim upstream to historical spawning areas.

Use of the lock holds some promise for providing upstream fish passage. Recent Corps/Service studies indicate that slight modification in locking procedures can greatly increase the number of fish species passed. A 30-foot headwall in the lock might, however, limit the passage of some species. On-site consultation with Ben Rizzo, the Service's Senior Fishway Engineer, revealed that addition of a fish lift or vertical slot fishway would greatly enhance passage to a wider variety of species. Mr. Rizzo stated that these types of fishways can pass sturgeon. Providing fish passage at this facility would address Recovery Objective 2.4 of the Gulf Sturgeon Recovery/Management Plan and Objective 8.5.9.1 of the Gulf Striped Bass Fishery Management Plan. Mettee et al. (2005) suggests that more than 35 fish species could benefit from passage improvements at Claiborne and Millers Ferry L&Ds. The fisheries program at Auburn University, in cooperation with the Corps, is beginning research on the efficacy of alternative locking procedures, including the use of pumps for attraction flows. We encourage the Corps to continue to facilitate this research.

Research by GSA also indicates that a variety of aquatic species freely pass downstream over the fixed-crest spillway of Claiborne L&D (Mettee et al. 2005), though the losses associated with this are unknown. Sturgeon species are not likely to utilize spillways for downstream travel, and are effectively trapped between dams under most current conditions.

3.1.6 River Reach Research Needs

- Implement and develop monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- In cooperation with the Service and AABC, explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include the Alabama sturgeon and any species that has been identified as a primary host for a targeted mussel (USFWS 2005a).

- Develop a Geographic Information System (GIS) database that identifies, characterizes (e.g., bathymetry, current velocity, and substrate), and maps stable riverine habitats.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.2 Alabama River from Claiborne L&D to Millers Ferry L&D

3.2.1 River Reach General Description

This 60-mile reach of the Alabama River is contained entirely within the East Gulf Coastal Plain Province and encompasses Claiborne Reservoir, a 5,930-acre impoundment on its southern end (USACE 2001). Claiborne Reservoir is essentially a run-of-river impoundment that provides a 9-foot navigation channel up to Millers Ferry L&D. Unique habitats have developed in this reach as streamflow cuts down through the alluvial sediments to expose the limestone underlayment (Mettee et al. 1996). This results in streambeds with upland characteristics within the Coastal Plain (Mettee et al. 1996). The upper part of this reach experiences hydropower-influenced flows from the Millers Ferry hydropower facility.

3.2.2 Species

Fishes: Alabama shad, Alabama sturgeon, American eel, Southeastern blue sucker, highfin carpsucker, paddlefish, quillback, skipjack herring, river redhorse, smallmouth buffalo, striped bass, southern walleye, and ironcolor shiner are species of Federal/State interest that likely inhabit this reach of the Alabama River (Mettee et al. 1996; Boschung and Mayden 2004). Populations of many of these species have been significantly impacted by Claiborne L&D by being blocked or hindered from access to upstream spawning areas, particularly for those species that require long migrations to complete a part of their life cycle (e.g. Gulf and Alabama sturgeon, American eel, and the Alabama shad). Frecklebelly madtom, Gulf sturgeon, bluenose shiner, ironcolor shiner, freckled darter and alligator gar are either absent or very rare in this reach. Freshwater species of sportfishing interest that inhabit this reach include the striped bass, black basses, crappie, catfish, and sunfishes (USFWS 2006).

Mollusks: Historically, the Alabama moccasinshell, fine-lined pocketbook, orange-nacre mucket, ovate clubshell, southern acornshell, southern combshell, southern pigtoe, upland combshell, stirrupshell, rayed creekshell, heavy pigtoe, black sandshell, tulotoma snail, painted rocksnail, and cylindrical lioplax occurred in this reach. It is likely that the inflated heelsplitter, heavy pigtoe, and spotted rocksnail are still extant. Dive sampling in 2009 shows the tulotoma snail to still be extant (USFWS Alabama Field Office data). Valuable commercial mussel beds also occur within this reach (Hartfield and Garner 1998).

Plants: Georgia rockcress occurs on the steep upper banks of this reach of the Alabama River, and may rely on flooding to help reduce competition from other vegetation (USFWS Alabama Field Office data). High flow events that scour river bluffs are likely beneficial to this plant. Botanists have long noted that the bluffs found along and above Claiborne L&D are botanically very species-rich, with fluvial geomorphic processes influencing short and long-term vegetation dynamics (Bill Finch, The Nature Conservancy, pers. comm. 2010)

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.2.3 Objectives

The Corps has an opportunity to protect reservoir fisheries and water quality, as well as restore federally protected, resident and migratory aquatic species to historic abundances in remaining habitats.

3.2.3.1 Instream flow

The flow regime in this reach is affected by peaking hydropower generation at Millers Ferry L&D as well as peaking hydropower generation and flood control operations at 14 other upstream dams in the Alabama, Coosa and Tallapoosa Rivers. Currently, there are no minimum flows required downstream of Miller's Ferry L&D, although there is an agreement with APC to provide enough water to maintain a navigation channel for a very small number of commercial barges.

3.2.3.2 Water quality

The Alabama River from Claiborne L&D upstream to the Frisco Railroad crossing has ADEM's stream use classifications of swimming, and fish and wildlife (ADEM 2000). From the Frisco Railroad crossing upstream to river mile 131 the reach is classified as fish and wildlife (ADEM 2000). From river mile 131 upstream to Millers Ferry L&D the river is classified as public water supply (ADEM 2000). A portion of the main channel in this reach is included on the state's 303(d) listed waters due to organic enrichment/low dissolved oxygen and nutrients as a result of dam construction, industrial discharges, flow regulation/modification, non-irrigated crop production, and pasture grazing (ADEM 2002). ADEM (2004) lists Claiborne Lake as eutrophic.

Dissolved oxygen

Alabama water use classifications for this reach have a 5.0 mg/L DO standard, except under extreme conditions due to natural causes, DO may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should never be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

ADEM sampling from June-September 1983 revealed that the DO standard was met on all occasions in the Millers Ferry L&D tailrace, although August data closely approached the standard's limits (ADEM 1984). Comparisons of pre- and post-impoundment DO data indicate an 18% decline in average DO concentration (6.6 mg/L pre-impoundment to 5.4 mg/L post-impoundment) for August (ADEM 1984). Downstream effects of flow interruption and lower DO concentrations caused one major discharger to resort to a higher treatment, hold-and-release system for effluent discharge (ADEM 1984).

More recent water quality data indicate that DO concentrations fell below the state instantaneous DO standard (4 mg/L) in the tailwaters of Millers Ferry L&D during the summer months (FWS, Alabama Field Office file data, 2000-2002; ADEM preliminary data 2008-09).

3.2.4 Habitat protection

Navigational dredging is a concern in this reach of the Alabama River. Dredging removes shoal habitats and changes natural patterns of erosion and deposition, potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner 1998). Land use practices along the mainstem of the Alabama River, as well as its tributaries, can degrade aquatic habitats critical to southern walleye and other fish species.

In addition to dredging, nonpoint source pollution is a significant concern to be considered in Corps water management operations. Pollutant and nutrient concentrations are important ecological considerations during periods of low flow, when aquatic species may already be stressed from lower DO and reduced habitat availability. Pollutant concentrations required under NPDES permits are often cited by industry on the Alabama River as a reason to maintain unnaturally high flow during periods of natural drought, despite the importance of low flows in shaping Delta and river ecology. Research is needed to determine which species are most impacted under low-flow/high pollutant concentration conditions, and the flow patterns that are most beneficial under varying pollutant loads. Within the reach, this includes pollution from agriculture (nutrients, sediment, bacteria, and pesticides), aquaculture (nutrients and bacteria), forestry (sediment, nutrients, and thermal changes), roads (sediment and petroleum), urban/residential development (sediment, nutrients, bacteria, and pesticides), and mining (sediment and heavy metals) (AL CWP 2005).

Priority sub-basins: An important tributary that helps maintain genetic flow and acts as a refugia in this reach includes Limestone Creek (CWCS 2005). Flow parameters need to ensure connectivity with this stream.

Designated Critical Habitat: Critical habitat has been designated in this reach for the Alabama sturgeon, an extremely rare fish once found in abundance (USFWS 2009). The update to the WCM should consider research and monitoring to determine flow patterns that could help keep the species from becoming extinct.

Potential Reintroduction/Augmentation Site and Suitable Species: The Alabama River has been identified as a potential reintroduction/augmentation site for the inflated heelsplitter, orange-nacre mucket, heavy pigtoe, southern clubshell, and stirrupshell (Hartfield et al. 2010).

3.2.5 Aquatic organism passage

Other than the occasional boat lockage and traversing of the spillway, and some limited experiments with attraction flows and lock openings, Millers Ferry L&D does not currently allow any means of fish passage. However, modification of lock operation may hold some potential for providing upstream passage to migratory species. As shown at Claiborne L&D, Millers Ferry also has the potential to pass large numbers of riverine fishes, some of which are listed under the ESA. Under extremely limited sampled conditions, Mettee et al. (2005) collected 10 species in the Millers Ferry lock chamber in May 2004 by providing an attraction flow. Installation of an additional fishway device (e.g., a vertical slot fishway or fish lift) may also be required to help pass a wider variety of species, take advantage of attraction flows elsewhere below the lock and dam, and provide passage to another portion of the channel. Attraction flows stemming from hydropower generation could be problematic for fish passage since these occur downstream of the lock and dam and could draw migratory species away from the intended path of passage. Some type of mechanism to direct fish away from this area may also be warranted. Providing fish passage at this facility would address Recovery Objective 2.4 of the Gulf Sturgeon Recovery/Management Plan and Objective 8.5.9.1 of the Gulf Striped Bass Fishery Management Plan.

Mettee et al. (2005) suggests that more than 35 fish species could benefit from passage improvement at Claiborne and Millers Ferry L&Ds, not to mention opening-up access to the Cahaba River.

Downstream passage over the spillway at Millers Ferry L&D is possible for some migratory fish; however, turbine entrainment could have a severe negative impact on downstream migration. Screening of draft tube intakes and/or other devices that direct fish away from the turbines would be necessary to protect downstream migrants. A Corps plan to install debris diverters for the draft tubes has the potential of providing not only turbine protection, but also providing protection to downstream migrants. Modification of this device to protect migratory species should be seriously considered.

3.2.6 River Reach Research Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.
- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).
- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.
- Explore and implement opportunities to augment/reintroduce mollusks and fishes into appropriate habitats.
- Evaluate the effects of channelization and reservoir flowage on adjacent side-channel, shallow water, oxbow lake-type habitats. These areas provide important nursery areas for many fish species, and are an important foraging resource for listed species such as the wood stork. Flood events and flow patterns prior to dam construction maintained the sediment dynamics necessary for relatively stable, shallow water side-channel floodplain features, but reservoir flows and channelization may have now changed floodplain sediment dynamics to the point where many of these shallow water side channels can only be maintained through repeated dredging of their inlets (Stan Cook, ADCNR, pers. comm. 2010).
- Develop Geographic Information System (GIS) databases that identify, characterize (e.g., bathymetry, current velocity, and substrate), and map stable riverine habitats.
- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.3 Alabama River from Millers Ferry L&D to R.F. Henry L&D

3.3.1 River Reach General Description

The section of the Alabama River between Millers Ferry and R.F. Henry L&D is 103 miles long and is contained entirely within the East Gulf Coastal Plain Province. The reach encompasses Dannelly

Reservoir, a 17,200-acre impoundment formed by Millers Ferry L & D. Dannelly Reservoir is essentially a run-of-river impoundment that provides a 9-foot navigation channel up to R.F. Henry L & D. Although managed as a run-of-the-river impoundment, Millers Ferry L & D has a hydroelectric generating capacity of 75 MW (ADEM 1984), and hydropower peaking flows are experienced by aquatic species downstream of both Millers Ferry and R. F. Henry dams.

3.3.2 Species

Fishes: Alabama shad, Alabama sturgeon, American eel, Southeastern blue sucker, highfin carpsucker, paddlefish, quillback, skipjack herring, river redhorse, smallmouth buffalo, striped bass, and southern walleye are species of Federal/State interest that likely inhabit this reach of the Alabama River (Mettee et al. 1996; Boschung and Mayden 2004). Populations of many of these species have been significantly impacted downstream by Claiborne L&D by blocked or impaired access to upstream spawning areas, particularly for those species that require long migrations to complete a part of their life cycle (e.g. Gulf and Alabama sturgeon, American eel, and the Alabama shad). Frecklebelly madtom, Alabama sturgeon, bluenose shiner, ironcolor shiner, freckled darter and alligator gar are either absent or very rare in this reach. Freshwater species of sportfishing interest that inhabit this reach include the black basses, crappie, catfish, and sunfishes (USFWS 2006).

Mollusks: Historically, the Alabama moccasinshell, painted rocksnail, fine-lined pocketbook, orange-nacre mucket, ovate clubshell, rayed creekshell, southern combshell, stirrupshell, black sandshell, and cylindrical lioplax occurred in this reach. It is likely that the inflated heelsplitter and spotted rocksnail still occur here, and recent dive sampling indicates that the heavy pigtoe, southern clubshell, and tulotoma snail are still extant in this reach (USFWS Alabama Field Office data; Pierson 1991; ADCNR unpublished data 2009). This reach contains several locations of concentrated densities of commercial mussel species (Hartfield and Garner 1998).

Plants: Georgia rockcress and Price's potato-bean occur on and near the banks of this reach of the Alabama River (USFWS Alabama Field Office data). Georgia rockcress likely benefits from flood-induced scour that reduces competition from other plants.

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.3.3 Objectives

The Corps can help to protect reservoir fisheries and water quality as well as restore federally protected, resident and migratory aquatic species to historic abundances in remaining habitats.

3.3.3.1 Instream flow

The instream flow regime in this reach is affected by hydropower generation at R.F. Henry L&D as well as peaking hydropower generation/flood control operations at 13 other dams upstream in the Coosa and Tallapoosa Rivers. Currently, there are no required minimum flows downstream of R.F. Henry L&D, although there is an agreement with APC to release at least 4640 cfs from their upstream projects to provide a 9-foot navigation channel in the river.

3.3.3.2 Water quality

The Alabama River from Millers Ferry L&D upstream to Blackwell Bend has ADEM's stream use classification of swimming and fish and wildlife (ADEM 2000). From Blackwell Bend upstream to Henry L&D, the reach is classified as fish and wildlife (ADEM 2000). ADEM (2004) lists Dannelly Reservoir as eutrophic.

Dissolved oxygen

Water use classifications for this reach have a 5.0 mg/L DO standard, except under extreme conditions due to natural causes, it may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

ADEM sampling from June-September 1983 revealed that the DO standard was met on all occasions in the Henry L&D tailrace. However, comparisons of pre- and post-impoundment DO data indicate a 35% decline in average DO concentration (7.1 mg/L pre-impoundment to 4.6 mg/L post-impoundment) for August (ADEM 1984). While greater waste load demands were experienced in recent years, ADEM (1984) conceded that water quality effects from impoundment and power generation were evident.

DO concentrations occasionally fall below the state DO standard (4 mg/L) in the tailwaters of Henry L&D (USFWS Alabama Field Office data, 2000-2002; ADEM preliminary data 2008-09).

Forebay profiles taken at the Millers Ferry L&D from June-September 1983 showed a moderate tendency toward DO stratification in June and July (ADEM 1984). Stratification was of such a moderate nature that DO concentrations stayed above 4.0 mg/L all the way to the bottom of the forebay (about 55 feet); the rest of the sampling period concentrations were similar throughout the water column (ADEM 1984). As at other projects where forebay and tailrace DO concentrations were above the standard, the shorter reservoir retention period probably accounts for the more favorable water quality (ADEM 1984).

3.3.4 Habitat protection

Dredging has removed shoal habitats and changed natural patterns of erosion and deposition, potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner 1998). Land use practices along tributary streams can also degrade aquatic habitats critical to southern walleye and other fish species (USFWS 2006).

In addition to dredging, impacts from nonpoint source pollution are significant and need to be taken into account during dam and reservoir operations. Pollutant and nutrient concentrations are important ecological considerations during periods of low flow, when aquatic species may already be stressed from lower DO and reduced habitat availability. Pollutant concentrations required under NPDES permits are often cited by industry on the Alabama River as a reason to maintain unnaturally high flow during periods of natural drought, despite the importance of low flows in shaping Delta and river ecology. Research is needed to determine which species are most impacted under low-flow/high pollutant concentration conditions, and the flow patterns that are most beneficial under varying pollutant loads. Within the reach, this includes pollution from agricultural (nutrients, sediment, bacteria, and pesticides), aquaculture (nutrients and bacteria), forestry (sediment, nutrients, and thermal changes), roads (sediment), urban/residential development (sediment, nutrients, bacteria, and pesticides), and mining (sediment) activities (ALCWP 2005).

Priority sub-basins: Important tributaries that help maintain genetic flow and act as refugia in this reach include Bogue Chitto Creek, Big Swamp Creek, Cahaba River, Chilatchee Creek, Dry Cedar Creek, Little Mulberry Creek, and Mulberry Creek (ACWCS 2005; Bogan and Pierson 1993b). Flow parameters need to ensure connectivity with these streams.

Designated Critical Habitat: The Alabama River from the confluence of the Cahaba River (Alabama RM 198.1) upstream to the confluence with Big Swamp Creek (RM 183.5) is designated critical habitat for the southern clubshell and orange-nacre mucket. Bogue Chitto Creek from its confluence with the Alabama River (RM 169.8) upstream to U.S. Highway 80 is also designated critical habitat for the southern clubshell, Alabama moccasinshell, and orange-nacre mucket (USFWS 2004). Critical habitat for the Alabama sturgeon has been designated in the Alabama River to below R.F. Henry L&D, and in the Cahaba River to Centreville (USFWS 2009). The WCM update should focus on developing and implementing a flow regime that protects and enhances habitat for these species.

Potential Reintroduction/Augmentation Site and Suitable Species: The Alabama River has been identified as a potential reintroduction/augmentation site for the inflated heelsplitter, orange-nacre mucket, heavy pigtoe, southern clubshell, and stirrupshell (Hartfield et al. 2010).

3.3.5 Aquatic organism passage

Millers Ferry L&D is an impediment to upstream fish passage by migratory species, such as Alabama sturgeon, Gulf sturgeon, Alabama shad, paddlefish, smallmouth buffalo, southern walleye, and blue sucker. Downstream passage over the Henry L&D spillway is possible for some fish species; however, turbine entrainment could have a severe negative impact on downstream migration. Screening of draft tube intakes and/or other devices that direct fish away from the turbines is necessary to protect downstream migrants.

Modification of lock operations holds potential for providing upstream passage to migratory species. As has been shown at Claiborne L&D, relatively minor modifications in locking procedures can greatly increase upstream passage for some species. However, installation of a fishway device (e.g., a vertical slot fishway or fish lift) would help pass a greater abundance and wider variety of species through this facility. Downstream attraction flows stemming from hydropower generation could be problematic for fish passage, so some type of mechanism to divert migratory fish away from this area may also be warranted. Providing fish passage at this facility would address Recovery Objective 2.4 of the Gulf Sturgeon Recovery/Management Plan and Objective 8.5.9.1 of the Gulf Striped Bass Fishery Management Plan.

3.3.6 River Reach Research Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- In cooperation with the Alabama Aquatic Biodiversity Center, explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include the Alabama sturgeon and any other species that has been identified as a primary host species for a targeted mussel (USFWS 2005b).

- Develop a Geographic Information System (GIS) database that identifies, characterizes (e.g., bathymetry, current velocity, and substrate), and maps stable riverine habitats.

- Examine the effects of channelization and reservoir flowage on silting in of the inlets of adjacent side-channel, shallow water habitats. These areas provide important nursery areas for many fish species, and are an important foraging resource for listed species such as the wood stork. Flood events and flow patterns prior to dam construction maintained the sediment dynamics necessary for a relatively stable side-channel floodplain feature, but reservoir flows and channelization may have now changed floodplain sediment dynamics to the point where many of these shallow water side channels can only be maintained through repeated dredging of their inlets (Stan Cook, ADCNR pers. comm. 2010).

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.4 Alabama River from R.F. Henry L&D to Jordan/Bouldin Dams (Coosa River)

3.4.1 River Reach General Description

This reach contains the transition between the portion of the ACT Basin managed by the Corps and the section controlled primarily by dams operated by Alabama Power Company (APC) on the Coosa and Tallapoosa Rivers. The lower dam on this reach, R.F. Henry Dam, is operated by the Corps, while Jordan and Bouldin Dams are operated by APC. Ecological issues described below for this reach will need to be addressed by both the Corps and APC.

This 80-mile reach of the Alabama River is contained entirely within the East Gulf Coastal Plain Province and includes Woodruff Reservoir, a 12,510-acre impoundment formed by R.F. Henry L&D. Woodruff Reservoir is essentially a run-of-the-river impoundment that provides a 9-foot navigation channel up to Montgomery. Although managed as a run-of-river impoundment, R. F. Henry L & D does have a hydroelectric generating capacity of 68 MW (ADEM 1984). Aquatic species downstream of R.F. Henry are affected by hydropeaking flows not only from the R.F. Henry turbines, but also from the dams upstream on the Coosa and Tallapoosa Rivers. Another feature of this reach is the 5-mile long tailrace canal from Bouldin Dam that bypasses the main channel and enters the Coosa River 12 miles downstream of Jordan Dam. The tailrace downstream of Jordan Dam receives a continuous minimum flow ranging from 2,000 cfs during the summer-fall-winter months, to 4,000 cfs during the spring months. Due to this minimum flow, the Jordan tailrace has developed into a spotted bass fishery, and also offers one of the best restoration opportunities for mollusks and fishes in the entire Mobile River Basin. This unique area is located over a geologic formation known as the Fall Line, which is the transition zone between high gradient upland streams and low gradient coastal plain streams. The stretch of the Coosa upstream of the Fall Line was historically characterized by a series of shoals collectively called the Coosa Falls; however, the rivermen of the late 1800s often used more colorful terms for these areas like, the Narrows, Devil's Race, Butting Ram Shoals, Hell's Gap, and the Devil's Staircase -- most of which are now inundated by Jordan, Mitchell, and Lay reservoirs (Jackson 1995). These names were due in part to the rapid change in elevation the Coosa experienced over its last sixty miles before crossing the Fall Line and joining the Tallapoosa River near the town of Wetumpka. The last exposed remnant of this geologic formation is the stretch between Jordan Dam and Wetumpka known as Moccasin Shoals.

3.4.2 Species

Fish: Historically, the Alabama shad, Alabama sturgeon, American eel, and Gulf sturgeon occurred in this reach (Mettee et al. 1996; Boschung and Mayden 2004); however, populations of these species have been severely impacted by Claiborne, Millers Ferry, and R.F. Henry Dams which block or hinder fish access to upstream spawning areas. The southeastern blue sucker, highfin carpsucker, paddlefish, quillback, river redhorse, southern walleye, smallmouth buffalo, and striped bass are species of federal/state interest that continue to inhabit the mainstem and/or tributaries of this reach (Mettee et al. 1996; Boschung and Mayden 2004). Other freshwater species of state interest include black basses (e.g., the Jordan tailrace is recognized as a world class spotted bass fishery), crappie, catfish, freshwater drum and sunfishes (USFWS 2006).

Mollusks: Historically, the Alabama moccasinshell, fine-lined pocketbook, triangular kidneyshell, Coosa moccasinshell, southern pigtoe, orange-nacre mucket, ovate clubshell, southern purple lilliput, southern clubshell, southern combshell, stirrupshell, delicate spike, Alabama spike, black sandshell, Coosa creekshell, cylindrical lioplax, interrupted rocksnail, lacy elimia, painted rocksnail, teardrop elimia, cobble pebblesnail, flat pebblesnail, and spotted rocksnail occurred in this reach, many of which have been extirpated or are presumed extinct (Johnson 2002). Recent collections indicate that the fine-lined pocketbook may exist in this reach, along with the largest population of the tulotoma snail, which occurs in a reach approximately 3.5 miles downstream of Jordan Dam (Bogan and Pierson 1993a; Johnson 2002). A 1995 study reported a stable and healthy population of over 109 million tulotoma snails inhabiting this reach (Christman et al. 1995). Christman et al. (1995) also documented an increase in shoreline habitat use by the snail that was attributed to increased habitat availability resulting from the implementation of continuous minimum flow releases at Jordan Dam. The interrupted rocksnail (previously extirpated in Alabama) was reintroduced into the reach in 2003 after not being collected for nearly 50 years. This reach also supports one of the two known populations of the rough hornsnail (Mirarchi et al. 2004).

Plants: Georgia rockcress and Price's potato-bean occur on and near the banks of this reach of the Alabama River (USFWS Alabama Field Office data). Georgia rockcress likely benefits from flood-induced scour that reduces competition from other plants.

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.4.3 Objectives

The Corps has an opportunity in this reach to protect and enhance water quality, and reduce the effects of hydropower-induced flow pulses from upstream dams. The Corps can also help restore federally protected, resident and migratory aquatic species to historic abundances in remaining habitats. The area downstream of Jordan Dam to Wetumpka has been identified as an important reach for the augmentation/reintroduction of several target species (Hartfield et al. 2010; Johnson 2002).

3.4.3.1 Instream flow

The instream flow regime in this reach is affected by impoundment at R.F. Henry L&D, hydropower generation at Jordan and Bouldin Dams, as well as by peaking hydropower/flood control operations at 11 other upstream dams in the Coosa and Tallapoosa River basins in Alabama and Georgia. From 1928, the first year of operation for Jordan Dam, until 1992, no allowances were made for minimum flows in its tailwaters. Flow was exclusively determined by hydroelectric demand, reservoir spillage, and prevailing weather patterns. In fact, beginning in 1967 with the completion of the Bouldin Dam, discharge through this dam's 5.5-mile tailrace cut-off bypassed approximately 12 miles of river below Jordan Dam for extended periods. This situation basically continued until 1992 when APC, as a condition of Federal Energy Regulatory Commission (FERC) relicensing, was required to provide a minimum instream flow to the bypassed mainstem of 2,000 cfs in the summer-fall-winter months and 4,000 cfs during the spring months (APC/KA 2000a). Further operational modifications were subsequently made to allow for short periods of increased flow (up to 10,000 cfs) to enhance kayaking, whitewater rafting, and fishing (APC/KA 2000a). At present, adjustments to the minimum flow are made using a ramping schedule that decrease flow at the rate of about 67 cfs or 133 cfs/day (APC/KA 2000a) to avoid stranding aquatic species. Minimum releases were chosen as a management approach to reduce the adverse effects of intermittent and/or peaking discharges from Jordan and Bouldin Dams. These minimum flows have had a significant positive effect on water quality and the aquatic community downstream of Jordan Dam.

3.4.3.2 Water quality

The Alabama River from Henry L&D upstream to Pintlala Creek and Catoma Creek has ADEM's stream use classification of fish and wildlife and partially supports its designated use (ADEM 2004). Causes for impairment are listed as organic enrichment, and DO. The entire Bouldin Tailrace Canal and the Coosa River from its mouth to Jordan Dam his classified for fish and wildlife (ADEM 2000).

Dissolved oxygen

Water use classifications for this reach have a 5.0 mg/L DO standard, except under extreme conditions due to natural causes, it may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

ADEM sampling from May-September 1983 revealed that the DO standard was not met on two occasions in the Jordan Dam tailrace during July and August (ADEM, 1984). On these occasions DO levels were extremely low (1.1 mg/L and 1.6 mg/L, respectively). However since a continuous minimum flow was implemented in 1994 and continuous monitoring began in 1995, this standard is rarely violated (APC 2005). Recent water quality data collected by APC between 1995 and 2003 (APC 2005) indicates that the Jordan Dam tailrace is typically in compliance with the required state standard for DO (Figure 2).

Forebay profiles taken at the R.F. Henry Lock and Dam from June-September 1983 showed that a very slight DO stratification occurs in July and August, but subsides by September (ADEM 1984). Stratification was so slight in nature that DO concentrations stayed above 3.5 mg/L to the bottom of the forebay (about 55 feet); the rest of the sampling period concentrations were similar throughout the water column (ADEM 1984). As at other projects where forebay and tailrace DO concentrations were above the standard, the shorter reservoir retention period probably accounts for the more favorable water quality (ADEM 1984).

Erosion and sedimentation

Water releases through the Bouldin Dam into the Bouldin Tailrace Canal are causing excessive erosion and measures should be taken to implement a comprehensive bank stabilization strategy in this area (ADCNR 2000).

3.4.4 Habitat protection

Dredging has removed shoal habitats and changed natural patterns of erosion and deposition, potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner 1998). Land use practices along tributary streams can degrade aquatic habitats critical to southern walleye and other fish species.

Priority sub-basins: Catoma Creek and Pintlala Creek are important tributaries for genetic flow and refugia in this reach (ACWCS 2005). Flow parameters should maintain connectivity with these streams.

Designated Critical Habitat: The Coosa River from Alabama State Highway 111 upstream to Jordan Dam is designated critical habitat for the southern clubshell, ovate clubshell, southern acornshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, Coosa moccasinshell, southern pigtoe, and fine-lined pocketbook (USFWS 2004). Critical habitat for the interrupted rocksnail and rough hornsnail has also been proposed for this area.

Potential Reintroduction/Augmentation Site and Suitable Species: The mainstem of the Coosa River from Wetumpka upstream to Jordan Dam have been identified as a potential reintroduction/augmentation site for the Alabama moccasinshell, fine-lined pocketbook, ovate clubshell, southern acornshell, southern clubshell, southern pigtoe, triangular kidneyshell, upland combshell, Coosa moccasinshell, Alabama spike, delicate spike, tulotoma snail, cylindrical lioplax, flat pebblesnail, painted rocksnail, interrupted rocksnail, and lacy elimia (Hartfield et al. 2010).

3.4.5 Aquatic organism passage

Modification of lock operations holds potential for providing upstream passage to migratory species. As has been shown at Claiborne Lock and Dam, relatively minor modifications in locking procedures can greatly increase upstream passage for some species. However, installation of a fishway device (e.g., a vertical slot fishway or fish lift) would help pass a greater abundance and wider variety of species through this facility.

3.4.6 River Reach Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- In cooperation with the Alabama Aquatic Biodiversity Center, explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include the Alabama sturgeon and any other species that has been identified as a primary host species for a targeted mussel (USFWS 2005b).

- Determine if fish host restoration is needed to sustain mussel restoration efforts (Johnson 2002). Fish surveys conducted in the Jordan tailrace by APC in 1997 indicated that the site apparently lacks large populations of many common darters and minnows that are known mussel hosts.

- Develop a Geographic Information System (GIS) database that identifies, characterizes (e.g., bathymetry, current velocity, and substrate), and maps stable riverine habitats.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.5 Coosa River from Weiss Dam to Mouth of Etowah River

3.5.1 River Reach General Description

The Coosa River, from its origin at the confluence of the Oostanaula and Etowah Rivers in Georgia, flows in a westerly direction 60 miles to Weiss Dam, which is operated by APC (GAEPD 1998). Resource management issues in this reach are shared by the Corps and APC. This reach of the Coosa River is contained within the Valley and Ridge and Cumberland Plateau Provinces and includes Weiss Reservoir, a 30,200-acre impoundment on its southern end (APC/KA 2000b). Weiss Reservoir has 447 miles of shoreline and a maximum depth of 62 feet (APC 1995b). Weiss Dam is operated for peaking hydroelectric production with a generating capacity of 88 MW (ADEM 1984). Additionally, this reach contains the remnants of the Mayo's Bar Lock and Dam, a former Corps project constructed in the early 1900's about 8 miles downstream of Rome, Georgia.

3.5.2 Species

Fish: Alabama shad, American eel, Gulf sturgeon, Alabama sturgeon, lake sturgeon, freckled madtom, trispot darter, and the saddleback darter are thought to have occurred in the Coosa River and/or its tributaries, but have apparently been extirpated. The Southeastern blue sucker and river redhorse occur elsewhere in the Coosa River drainage but have been apparently extirpated from this reach (Freeman et al. 2005; Burkhead et al. 1997). The blue shiner, flame chub, lined chub, Coosa chub, burrhead shiner, river redhorse, stippled studfish, holiday darter, coldwater darter, goldstripe darter, rock darter, freckled darter, river darter, southern walleye, smallmouth buffalo and striped bass (self-sustained population) are species of Federal/State interest that continue to occur within the Coosa River and/or its tributaries (Mettee et al. 1996; Boschung and Mayden 2004; Pierson 1998; Burkhead et al. 1997; Freeman et al. 2006). The lake sturgeon is a species that has been recently reintroduced in the Coosa River in Georgia. Other freshwater species of sportfishing interest that inhabit riverine and lacustrine habitats in this reach include black basses, crappie, catfish, freshwater drum and sunfishes (USFWS 2006).

Mollusks: Historically, approximately 36 freshwater mussel species were known from the Coosa River and its tributaries (Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Coosa River and its tributaries included the Alabama spike, delicate spike, Alabama moccasinshell, cylindrical lioplax, fine-lined pocketbook, flat pebblesnail, heavy pigtoe, inflated heelsplitter, orange-nacre mucket, , southern acornshell, southern clubshell, southern pigtoe, Georgia pigtoe, triangular kidneyshell, southern purple lilliput, Alabama creekmussel, Coosa creekshell, and upland combshell (Burkhead et al. 1997; Williams and Hughes 1997; USFWS 2000). Recent records indicate that the Coosa moccasinshell is a species of Federal/State interest that continues to occur in tributaries of this reach (USFWS 2000). The southern clubshell and fine-lined pocketbook are still found in the Weiss Bypass channel, the old river channel prior to dam construction. Surveys of the mainstem Coosa River conducted in the late 1990's located live specimens of the flat floater, washboard, paper pondshell, and threehorn wartyback. Shell material of other species was identified for Coosa fiveridge, elephantear, fragile papershell, Alabama orb, Coosa orb, ridged mapleleaf, pistolgrip, butterfly, and the southern clubshell (Williams and Hughes 1997).

Plants: Harperella and Kral's water plantain are riverine plants that occur within the active channel of major tributaries of this reach. If surveys report these in the Coosa mainstem,flow dynamics could have a major influence on their ability to persist (USFWS 2000).

3.5.3 Objectives

The Corps has an opportunity to help protect reservoir fisheries, as well as restore resident and migratory aquatic species to historic abundances in remaining suitable riverine habitats.

3.5.3.1 Instream flow

Completion of Weiss Dam in 1961 resulted in bypassing flows around a 22-mile section of the mainstem Coosa River (hereafter referred to as "bypass channel"). The bypass channel is an important restoration location for mussels and other aquatic organisms formerly found in abundance in the Coosa River (Herod et al. 2001). Management of upper ACT Basin Corps projects in a manner that meets upstream ecosystem objectives and provides sufficient flows in the Weiss Bypass channel is of critical importance. The bypass channel is also adversely affected by the operation of Weiss Dam which, during peak generation, reverses flow in at least the lower 14 miles of the bypass channel. A continuous minimum flow should be determined and implemented to restore the riverine character of the bypass channel which could be facilitated by installing and using an appropriately-sized turbine or by releasing water through the project's spillway or trash gates (ADCNR 2000). We have recommended that APC, as part of the hydropower license on Weiss Dam, in general provide 10% of Coosa River flow coming into Weiss reservoir for the Weiss Bypass channel. However, this recommendation is only adequate if the Corps releases an adequate amount of water from Allatoona and Carters dams to meet downstream ecological needs.

3.5.3.2 Water quality

The Coosa River from the Weiss Dam powerhouse upstream to Spring Creek has ADEM's stream use classification of public water supply, swimming, and fish and wildlife classifications (ADEM 2000). From Spring Creek to the state line, swimming and fish and wildlife are the applicable classifications (ADEM 2000). The Coosa mainstem between Weiss Dam and the Georgia-Alabama state line is included on the state's 303(d) listed waters as partially supporting state water use classifications due to priority organics, nutrient enrichment and pH from flow regulation/modification and upstream sources (ADEM 2002).

The Coosa River at the Alabama-Georgia state line is classified by the Georgia Environmental Protection Division (GAEPD) for recreation and fishing (GAEPD 2001). From the state line upstream to the confluence of the Etowah and Oostanuala Rivers the classification is fishing (GAEPD 2001). Portions of the Coosa mainstem and Big Cedar Creek are on the Georgia 303(d) listed waters as not supporting its water use classification. This is a result of violations of water quality standards for metals and fecal coliform bacteria (GAEPD 1998).

Dissolved oxygen

Water use classifications for the Alabama portion of this reach require a 5.0 mg/L DO standard at all times; except under extreme conditions due to natural causes, it may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

Forebay profiles taken during August and September 1983 showed that Weiss Reservoir experienced temperature stratification, but only slight stratification with respect to DO concentration (ADEM 1984). As a consequence of this slight stratification in 1983, ADEM reported DO concentrations above 2.0 mg/L to a depth of 40 feet (ADEM 1984). The shallow depth of the reservoir and the frequency of generation observed suggests minimal retention times and thus a mixed instead of a stratified reservoir (ADEM 1984). Forebay sampling conducted by APC during June to October of 1990-1999 indicated that Weiss Reservoir may become more stratified than suggested by previous sampling (APC/KA 2000b). APC/KA (2000b) reported a stratification tendency at depths of 15 to 20 feet during mid summer that at times extended for 60 to 90 days. During a number of these stratification periods, DO concentrations were <2.0 mg/L at a depth of 15 feet (APC/KA 2000b).

3.5.4 Habitat protection

Along Weiss Reservoir, considerable natural shoreline habitat has been converted to vertical bulkheads which eliminate shallow shoreline habitat so important to juveniles of many game fish species (ADCNR 2000). The permitting process for shore stabilization should be modified to require other less destructive types of shoreline structures.

Priority sub-basins: Little River is an important tributary for genetic flow and refugia for this reach (ACWCS 2005).

Designated Critical Habitat: There are no areas designated as critical habitat on the existing mainstem of the Coosa in this reach or in any sub-basins, although it should be noted that a portion of the Weiss Bypass Channel is designated critical habitat for the southern acornshell, ovate clubshell, southern clubshell, upland combshell, triangular kidneyshell, Coosa moccasinshell, southern pigtoe and fine-lined pocketbook (USFWS 2004). Maintenance of natural flows through the Weiss Bypass channel will benefit these species

3.5.5 Aquatic organism passage

Species that once migrated through this area have for the most part been extirpated or have had access to the reach blocked by the continuous chain of reservoirs further downstream in the Coosa River. Local interest in raising the level of the Mayo Bar Lock and Dam (MBL&D) by two feet could however negatively impact striped bass upstream spawning movements from Weiss Reservoir and survival of their eggs and larvae in the Oostanaula River (USFWS 2006). However, if data become available that indicate Weiss Dam adversely affects resident/migratory species because of blockage of movements or entrainment, then fish passage/screening strategies should be developed and implemented.

3.5.6 River Reach Research Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include those that have been identified as a primary host species for a targeted mussel.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.6 Etowah River from Coosa River to Allatoona Reservoir

3.6.1 River Reach General Description

This approximately 48 mile stretch of the Etowah River flows generally westward from Allatoona Reservoir toward its confluence in western Georgia with the Oostanaula River, where together they form the Coosa River. The Etowah River below Allatoona Dam is contained within the Ridge and Valley Physiographic Province. Allatoona Reservoir is a 19,200-acre impoundment built for flood control, navigation, hydroelectric power and recreation, with a hydroelectric generating capacity of 80 MW (USACE 1998).

3.6.2 Species

Fish: American eel, lake sturgeon, blue shiner, lined chub, emerald shiner, southeastern blue sucker, river redhorse, freckled madtom, chain pickerel, coldwater darter, trispot darter, coal darter, and river darter are thought to have occurred in the Etowah River and/or its tributaries, but have apparently been extirpated The lake sturgeon is a species that has been recently reintroduced in the upper Coosa River Basin in Georgia. The Coosa chub, burrhead shiner, Etowah darter, Cherokee darter, rock darter, , amber darter, and freckled darter are species of Federal/State interest thought to still occur in the Etowah River and its tributaries (Freeman et al. 2006; Freeman 1998; USACE 2000; Burkhead et al. 1997). Surveys have been initiated in 2010 to evaluate persistence and spatial distribution of fishes in the mainstem Etowah River below Allatoona Dam.

Mollusks: Historically, approximately 40-50 freshwater mussel species were known from the Etowah River and its tributaries (Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Etowah River and its tributaries included the rayed creekshell, Alabama spike, delicate spike, Alabama moccasinshell, cylindrical lioplax, fine-lined pocketbook, flat pebblesnail, southern acornshell, southern clubshell, southern pigtoe, Georgia pigtoe, triangular kidneyshell, Alabama creekmussel, Coosa creekshell, and upland combshell (USFWS 2000, USACE 2000, Burkhead et al. 1997, Williams and Hughes 1997). Surveys have been initiated in 2010 to determine which species are still extant in the

Etowah River below Allatoona Dam. Surveys of the mainstem Etowah River below Allatoona Dam conducted in the late 1990's located live specimens of the fragile papershell and pistolgrip. Shell material of the elephantear was also identified (Williams and Hughes 1997).

3.6.3 Objectives

The Corps has an opportunity in this reach to protect and enhance water quality, instream flow, and reduce the effects of hydropower-induced flow pulses from upstream dams. The Corps also has an opportunity and responsibility to protect reservoir fisheries, as well as restore resident and some migratory aquatic species to historic abundances in remaining suitable riverine habitats.

State and federal agency representatives, private landowners, business owners, and conservation groups held a public stakeholder meeting at Red Top Mountain State Park, Georgia on August 8, 2009. The intent of this meeting was to openly discuss and develop a vision for upper ACT Basin water management, with the explicit intent to inform our collective efforts to update the WCM. Radio announcements, newspaper announcements, and fliers were distributed to advertise the meeting and harness public interest and participation. The Corps was invited to attend this meeting but no Corps representative was sent. Stakeholders at the meeting 1) agreed that water management in the upper ACT could be improved to benefit the multiple water uses and 2) developed a list of fundamental and means objectives for water management below upper ACT Corps projects (Figure 3). The Corps needs to engage this diverse group of stakeholders because this effort is broad in scope, encompasses multiple stakeholders, acknowledges multiple demands on water resources, and is intended to improve the WCM and flow management. It was generally agreed that an adaptive management approach to flow management would be beneficial.

3.6.3.1 Instream flow

The instream flow regime in this reach is affected by hydropower/flood control operations at Allatoona Dam. The hydropower facility generates power between 2 and 6 hours during normal operations each weekday. Power is generated on weekends as necessary, but generally only the minimum flow of 250 cfs (320 cfs with leakage) is released. Flow instability from hydropower fluctuations between 320 cfs and 7,500 cfs likely affects recruitment and reproduction of many fish species (*sensu* Freeman 2001), including those acting as host species for freshwater mussels (Layzer and Crigger 2001; Watters 2000). Providing longer periods of stable flow during critical spawning and rearing seasons should increase opportunities for recruitment and reproduction of freshwater organisms (*sensu* Freeman 2001). The minimum flow requirement at Allatoona Dam (250 cfs) was developed based on the 7Q10 flow calculation. Use of the 7Q10 was intended to facilitate estimation of the allowable pollutant concentrations, but was later adopted as a minimum flow requirement below dams. Thus, the 7Q10 minimum flow requirement does not address ramping rates, frequency, duration, timing, or magnitude of flows that are important flow components that affect the persistence of aquatic organisms. A more comprehensive flow management strategy is warranted. As we have shown in our PAL for the ACF, seasonal flow variation (e.g., magnitude, timing, duration, and frequency of low and high flows) need to be integrated into project operations so that the authorized project purpose of Fish and Wildlife is met.

3.6.3.2 Water quality

The Etowah River from the Oostanaula confluence to the Allatoona Dam is classified by the GAEPD for recreation and fishing (GAEPD 2001). Water temperature is an important ecological cue for reproduction, migration and other life history aspects of aquatic organisms. However, water temperatures below Allatoona Reservoir are lower than would naturally occur due to hypolimnetic release from

Allatoona Dam. Temperatures do not return to expected natural values until more than 25 miles downstream of the dam, which may explain why the Etowah darter does not occur in this reach (Duncan et al. 2010). Daily temperature fluctuations occur naturally, but are also affected by hydropeaking. Although the cooler temperatures found in the Etowah River support a recreational fishery for striped bass (Matt Thomas, GA DNR, pers. comm. 2010), temperature fluctuations that are induced by dam operations are likely to negatively affect both striped bass and non-game species.

Temperature and dissolved oxygen

Dissolved oxygen diffusers were installed and used in Lake Allatoona from 1968 to 1986. Since cessation of DO diffuser use, multiple studies showed that dissolved oxygen frequently falls below 2.0 mg/L (USACE 2000) below Allatoona Dam. DO measurements made by Georgia EPD in 2001 show that summer and fall months have the lowest DO concentrations and that DO concentrations are higher downstream near Cartersville, Georgia (Figure 4; EPA STORET data accessed in 2009). 100% of all DO measurements in August and September of 2009 below Allatoona Dam were below 4.0 mg/L, and were sometimes < 1.0 mg/L (Figure 5; USFWS unpublished data collected in 2009). These data unequivocally show that operation of Allatoona Dam violates Georgia state water quality standards and that dam operation does not meet the authorized purposes of Fish and Wildlife Management and Water Quality.

3.6.4 Habitat protection

This reach of river could benefit significantly from a flow regime that would allow shallow water habitats to persist long enough for important life stages of target species to develop.

Designated Critical Habitat: There are no areas designated as critical habitat on the Etowah River.

3.6.5 Aquatic Organism passage

Species that once migrated through this area have for the most part been extirpated or have had access to the reach blocked by the continuous chain of reservoirs further downstream in the Coosa River. Loss of connectivity between headwaters and lower reaches remains a serious concern for the ecological integrity of the system.

3.6.6 River Reach Research Needs

- Develop and implement and/or participate in monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.
- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).
- Implement and/or assist in surveys to determine distribution and abundance of rare and federally protected aquatic species in the watershed.
- Determine and implement non-peaking flow windows during portions of the year critical to aquatic organisms.

- Explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include those that have been identified as a primary host species for a targeted mussel.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.7 Oostanaula-Coosawattee Rivers below Carters Reservoir

3.7.1 River Reach General Description

Below Carters and Carters Reregulation Dams, the Coosawattee meets with the Conasauga and forms the Oostanaula River, which in turn becomes the Coosa at its confluence with the Etowah in Rome, Georgia. The Coosawattee River system flows westward. The river and tributaries drain the Southern Blue Ridge, Southern Ridge and Valley, and Piedmont physiographic provinces. Carters Dam on the Coosawattee River creates Carters Reservoir, a 3220-acre impoundment built for flood control, navigation, hydroelectric power and recreation (USACE 1998). Flows from Carters Dam are partly reregulated by Carters Rereg Dam, located immediately downstream.

3.7.2 Species

Fish: American eel, lake sturgeon, blue shiner, lined chub, bluehead chub, river chub, quillback, highfin carpsucker, southeastern blue sucker, freckled madtom, chain pickerel, coldwater darter, amber darter, coal darter, Coosa bridled darter, freckled darter, and river darter are thought to have occurred in the Oostanaula and Coosawattee Rivers and/or their tributaries, but have apparently been extirpated in at least portions of these river basins (Freeman et al. 2005; Freeman 1998; Burkhead et al. 1997). The lake sturgeon is a species that has been recently reintroduced into the upper Coosa River Basin in Georgia. The lined chub, Coosa chub, burrhead shiner, river redhorse, rock darter, trispot darter, goldline darter, freckled darter, river darter, southern walleye, smallmouth buffalo and striped bass are of Federal/State interest that occur within this reach and/or its tributaries (Mettee et al. 1996; Boschung and Mayden 2004; Pierson 1998; Freeman et al. 2005).

Mollusks: Historically, approximately 43 freshwater mussel species were known from the Oostanaula River and its tributaries and approximately 20 freshwater mussel species were known from the Coosawattee River and its tributaries (Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Oostanaula River and its tributaries included the rayed creekshell, Alabama spike, delicate spike, southern acornshell, southern clubshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, southern pigtoe, Georgia pigtoe, fine-lined pocketbook, cylindrical lioplax, flat pebblesnail, inflated heelsplitter, and Coosa creekshell (USFWS 2000; Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Coosawattee River and its tributaries included the Alabama spike, southern clubshell, Georgia pigtoe, and triangular kidneyshell (Williams and Hughes 1997). Surveys of the mainstem Oostanaula River conducted in the late 1990's located live specimens of the Coosa fiveridge, elephantear, southern pocketbook, fragile papershell, washboard, threehorn wartyback, triangular kidneyshell, Alabama orb, Coosa orb, ridged mapleleaf, pistolgrip, and paper pondshell. Shell material of the Alabama spike, southern combshell, Alabama heelsplitter, and southern clubshell was also identified (Williams and Hughes 1997). Surveys of the mainstem Coosawattee River below Carters Dam and a short reach above Carters Reservoir conducted in the late 1990's located live specimens of Alabama spike, fragile papershell, Pleurobema sp., purple heelsplitter, triangular kidneyshell, giant floater, Alabama orb, Coosa orb, ridged mapleleaf, pistolgrip, and paper pondshell. Shell material of other species was located for the elephantear and southern pocketbook (Williams and Hughes 1997). The Service also located live individuals and shell material of the threehorn wartyback in the mainstem Coosawattee below Carters Dam in 2007 (Alice Lawrence, USFWS, pers. comm. 2010).

3.7.3 Objectives

The Corps has an opportunity in this reach to protect and enhance water quality, instream flow, and reduce the effects of ramping from upstream dams. The Corps can also help to protect reservoir fisheries, as well as restore resident and migratory aquatic species to historic abundances in remaining suitable riverine habitats.

State and federal agency representatives, private landowners, business owners, and conservation groups held a public stakeholder meeting at Red Top Mountain State Park, Georgia on August 8, 2009. The intent of this meeting was to openly discuss and develop a vision for upper ACT Basin water management, with the explicit intent to inform our collective efforts to update the WCM. Radio announcements, newspaper announcements, and fliers were distributed to advertise the meeting and harness public interest and participation. The Corps was invited to attend this meeting but no Corps representative was sent. Stakeholders at the meeting 1) agreed that water management in the upper ACT could be improved to benefit the multiple water uses and 2) developed a list of fundamental and means objectives for water management below upper ACT Corps projects (Figure 3). The Corps needs to engage this diverse group of stakeholders because this effort is broad in scope, encompasses multiple stakeholders, acknowledges multiple demands on water resources, and is intended to improve the WCM and flow management. It was generally agreed that an adaptive management approach to flow management would be beneficial, but to facilitate the Corps modeling efforts, we recommend the approach for flow modeling used in the ACF PAL utilizing the methods of Mathews and Richter (2007).

3.7.3.1 Instream flow

The Carters Lake project is a hydroelectric pump-storage peaking facility, with hydropower generation occurring several hours each weekday. When electrical demand is low, water is pumped back into Carters Lake, which avoids the downstream problems associated with a hydropeaking flow regime. The minimum flow requirement at Carters Reregulation Dam (240 cfs) was developed based on the 7Q10 flow calculation. Use of the 7Q10 was intended to facilitate estimation of the allowable pollutant concentrations, but was later adopted as a minimum flow requirement below dams. Thus, the 7Q10 minimum flow requirement does not address ramping rates, frequency, duration, timing, or magnitude of flows that are important flow components that affect the persistence of aquatic organisms. A more comprehensive flow management strategy is warranted given the biodiversity and number of imperiled species below Carters Dam and Carters Rereg Dam. Seasonal flow variation (e.g., magnitude, timing, duration, and frequency of low and high flows) needs to be integrated into project operations so that the authorized project purpose of Fish and Wildlife is met.

3.7.3.2 Water quality

The Oostanaula River carries the GAEPD's water use classification of recreation and fishing (GAEPD 2001)

Temperature and dissolved oxygen

Tailrace temperatures and dissolved oxygen levels have not been collected and analyzed regularly below Carters Rereg Dam. Although data collected in August and September 2009 below Carters Rereg Dam show that DO levels meet state water quality standards (Figure 6), we recommend continuous monitoring as part of standard operating procedures for the project, particularly during the summer and fall.

3.7.4 Habitat protection

Despite the completion of the Carters Lake project in 1975, to date no mitigation for loss of significant aquatic resources has been developed. Mitigation for wildlife (including wetland and terrestrial ecosystems) has been debated but not resolved. Approximately 4,200 terrestrial acres were inundated, 40.9 miles of streams were impounded, 0.4 miles of stream were filled, and wetland loss is unknown. Terrestrial and stream impacts should be included in the DEIS and mitigation measures should be implemented.

Priority sub-basins: The Conasauga River and Holly Creek are important tributaries for genetic flow and refugia. Flow management needs to ensure adequate connectivity with these streams.

Designated Critical Habitat: Critical habitat has been designated for the southern acornshell, ovate clubshell, southern clubshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, Coosa moccasinshell, southern pigtoe, and fine-lined pocketbook in the following river reaches: (USFWS 2004)

1. Oostanaula River mainstem from confluence with the Etowah River upstream to the confluence of the Conasauga and Coosawattee Rivers.
2. Coosawattee River from its confluence with the Conasauga River upstream to GA Hwy. 136.
3. Conasauga River mainstem from its confluence with the Coosawattee River upstream to Murray County Rd 2.
4. Holly Creek mainstem from its confluence with the Conasauga River upstream to the confluence of Rock Creek.

3.7.5 Aquatic organism passage

Species that once migrated through this area have for the most part been extirpated or have had access to the reach blocked by the continuous chain of reservoirs further downstream in the Coosa River. Loss of connectivity between headwaters and lower reaches remains a serious concern for the ecological integrity of the system.

3.7.6 River Reach Information Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Implement surveys to determine distribution and abundance of rare, and federally protected aquatic species in the watershed.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

- Explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include those that have been identified as a primary host species for a targeted mussel.

4.0 SUMMARY

The Corps, in the DEIS for the WCM update, at minimum should address the following issues:

1. **Low DO below reservoirs, and meeting of State water quality standards**: we recommend that DO and temperature be monitored above and below Corps dams throughout the water column during summer low-flow periods to identify problem areas and develop courses of action. We will evaluate using:
    a. Total number of days with dissolved oxygen below a daily average of 5.0 mg/L;
    b. Total number of instantaneous "measurements" less than 4.0 mg/L;
    c. Monthly exceedance figures and box plots with outliers for dissolved oxygen (mg/L);
    d. Monthly exceedance figures and box plots with outliers for water temperature; and
    e. Average stream percent wastewater.

2. **Protection and enhancement of remaining free-flowing river habitats**: we recommend identification and mapping using a GIS, with characterization of substrates, analysis of patterns of sediment deposition and scour, and development of species inventories. We will evaluate using the percent of free-flowing stream channel identified as high quality habitat and available for aquatic species reintroductions by the AABC, as well as the percent of free-flowing stream channels impacted by dredging, sedimentation, and poor water quality conditions that do not meet State standards.

3. **Aquatic organism passage at dams, particularly in the upstream direction**: we recommend continuing to facilitate research on timing, duration and efficacy of using alternative locking procedures and attraction flows to re-establish ecological connectivity of the river system. We also recommend continued research on fish passage facilities and structures, and methods to screen aquatic organisms from effects of turbines. We will evaluate success by the number of priority species and individuals shown to successfully pass through Corps L&Ds.

4. **Temperature effects on species of concern from reservoirs and hydroelectric operations**: as with DO, we recommend monitoring to determine problem areas, and development of possible alternative storage and release protocols to minimize ecological degradation. We will evaluate using the percent of free-flowing stream channel impacted by reservoir-induced changes in water temperature.

5. **Minimum flows available for Weiss bypass channel**: with APC, develop minimal flows and patterns of natural flows released from upstream Corps dams to ensure viability of federally listed mollusk populations in the Weiss Bypass channel. We will evaluate by determining frequency, timing, and duration of inadequate water levels to support mussels and other aquatic species, and the frequency, timing and duration of backflow events from peaking flows from the Weiss Reservoir.

6. **Conservation and recovery of natural flow variability, and reduction of effects of hydropower peaking flows on species of concern:** we recommend that as many environmental flow components as possible be developed and implemented below Corps dams using the methods of Mathews and Richter (2007). We recommend research that identifies critical flow periods where peaking flows should be avoided to ensure viability of important spawning and rearing life stages. We will evaluate by comparing unaltered flow pattern estimates with USGS gage data and proposed flows in the DEIS. The potential change in frequency of low-flow events below Claiborne Dam is also of interest.

7. **Maintenance of floodplain connectivity to flood pulses:** we recommend developing patterns of natural flow that approximate pre-dam inundation frequency, timing and duration in free-flowing sections of the ACT Basin. We will evaluate by comparing estimated pre-dam flow parameters with USGS gage data to estimate changes in return intervals of bankfull and higher flood events, and changes in seasonal timing and duration of flood events. Similar to the ACF PAL, we are also interested in the frequency (% of days) of growing season (April-October) floodplain connectivity (acres) to the main channel; and frequency (% of years) of growing season (April-October) floodplain connectivity (acres) to the main channel.

8. **Potential for reintroductions, enhancements of listed species populations in the basin:** we recommend that the Corps develop a cooperative relationship with the AABC to develop adaptive management protocols and coordinate reintroductions and enhancement of habitat for federally listed species. We will evaluate using the percent of river reaches that are classified by the AABC as high quality habitat suitable for aquatic reintroductions by the AABC, and that meet State water quality guidelines.

9. **Restoration and maintenance of healthy water quality parameters for all life stages of aquatic species under a variety of flow conditions:** we recommend that the Corps develop monitoring programs that identify existing and potential water quality problems related to Corps dam and hydropower operations, and use their water management authority to limit and mitigate water quality issues that develop in Corps reservoirs and tailwaters. We will evaluate using the percent of the ACT mainstem river length that meets State water quality criteria during low-flow periods.

10. **Development of adaptive management protocols that include goals, objectives, research and monitoring to allow greater understanding of riverine ecosystem response to complex variables:** we recommend the Corp consider an approach explicitly designed to develop new information that can inform ongoing dam and reservoir operations. We will evaluate by comparing pre-and post WCM update operational guidelines and practices.

There are numerous other issues of importance including potential effects of climate change, and potential future water use scenarios in the ACT Basin. However, the above issues clearly need to be addressed in order to halt ongoing environmental damage to fish and wildlife resources.

To conclude, the Service feels strongly that the Corps should begin building an adaptive management framework for operations that explicitly outlines goals and objectives of operations, continually monitors and analyzes ecosystem response, and adjusts operations accordingly based on what we have learned. We strongly recommend research and monitoring be primary components of dam operations.

Because of Corps dam operations, many river segments do not meet State water quality standards. Corps dams do not provide adequate habitat for fish and wildlife. So that Corps projects meet their authorized purposes of water quality and fish and wildlife, we strongly recommend that the Corps work with the Service to comprehensively evaluate and modify the WCM.

The updating of the WCM should not commit the Corps to additional long-term continual degradation of this river system, recognized worldwide for its incredible biotic wealth. Instead, the Corps now has an opportunity and an obligation to use their authority and resources to protect and enhance the ecological integrity of the ACT Basin. If you have any questions about this PAL, in Alabama please contact Dan Everson at (251) 441-5837 or in Georgia, contact Will Duncan or Alice Lawrence at (706) 613-9493.

Sincerely.

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Figure 1. USGS gage data at Claiborne L&D during a low flow period showing daily pattern of high and low flows related to hydropower discharges from Millers Ferry and other dams upstream.

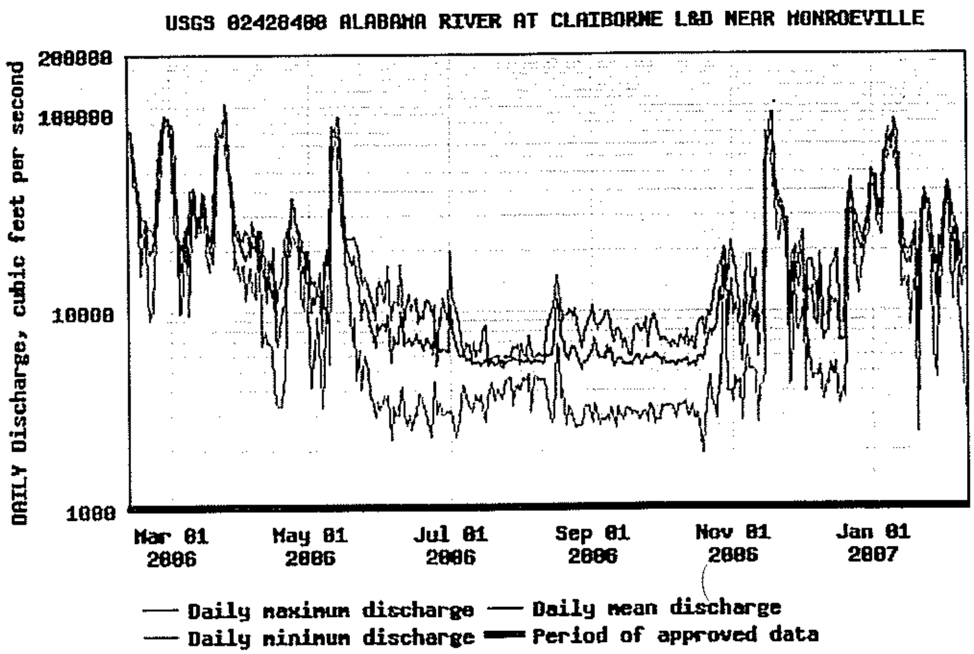


Figure 2. Continuous dissolved oxygen (DO) data collected in the Jordan Dam Tailrace, 1995-2000. Data extracted from APC's 401 Water Quality Application to ADEM, December 2005 (APC, 2005).

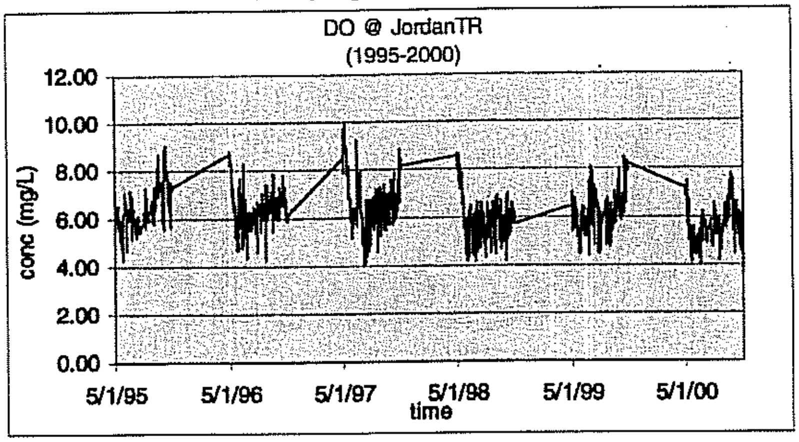


Figure 3. Fundamental (F) and Means (M) objectives developed by consensus at the stakeholders meeting on August 8, 2009 at Red Top Mountain State Park, Georgia.

F. Maximize potential for imperiled species
F. Maximize native aquatic biodiversity
F. Preservation of cool-water sport fishery (stripers, sturgeon)
M. No significant increase in summer water temperatures (late June – early Oct) above current conditions
F. Adequate flows for assimilation of waste and for municipal and industrial purposes
F. Optimizing economic value of the lakes
M. Maintaining lake levels for home owners (Allatoona only) and recreation (boat ramps), water supply
F. Maintaining reservoir and downstream water quality
M. Maintain appropriate supply and transport of bed sediment for instream habitat purposes
M. Mimic natural rates of bank erosion
M. Maintaining lake levels for reservoir and downstream water quality
M. Maintain adequate flows (e.g. magnitude, variability, timing, non-peaking window) for aquatic fauna downstream
M. Dissolved oxygen and temperature levels suitable for aquatic biota
F. Flood control
F. Hydropower generation
M. Meeting projected energy needs
F. Navigation in the lower Mobile Basin
F. Downstream recreational activities (paddling, fishing)
F. Preservation of cultural resources
F. Preservation of agricultural uses
F. Minimize impacts on fundamental objectives downstream

Figure 4. Dissolved oxygen concentrations in the Etowah River at one location upstream from Allatoona Reservoir (SR 53 near Dawsonville), and three locations below Allatoona Dam. Data obtained from EPA's STORET database. Primary data source is GA EPD.

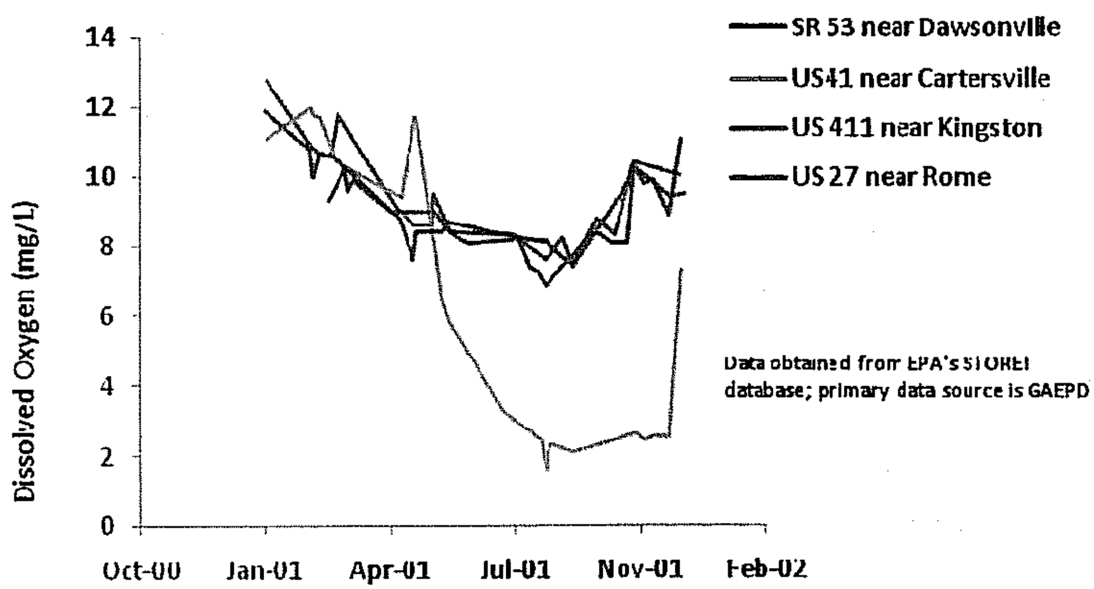


Figure 5. Temperature and dissolved oxygen data collected by the USFWS in the Etowah River approximately 400 meters below Allatoona Dam in August and September 2009.

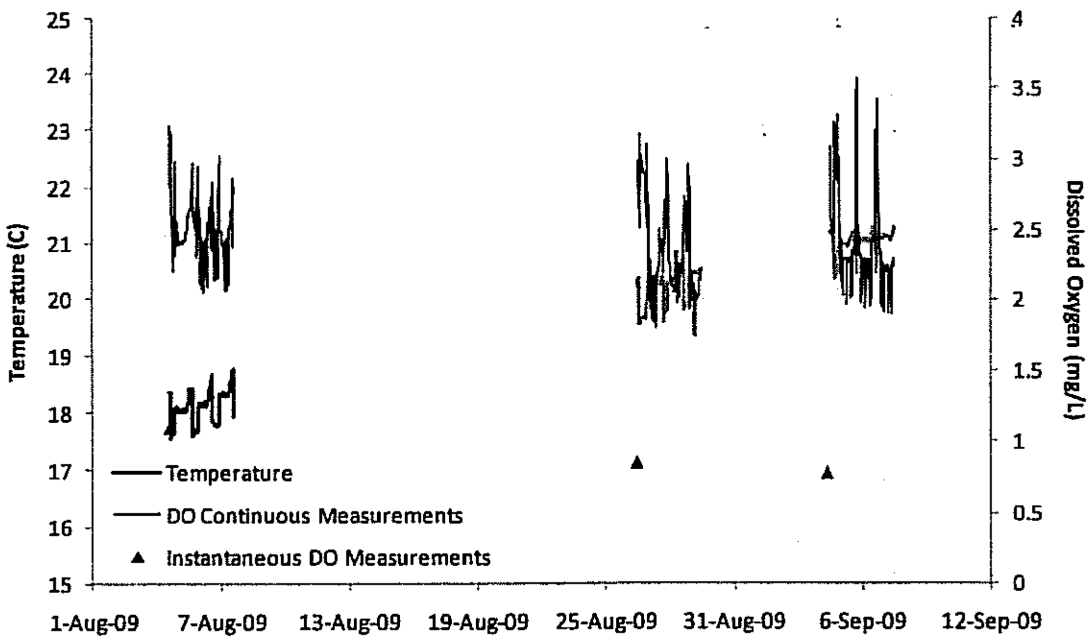
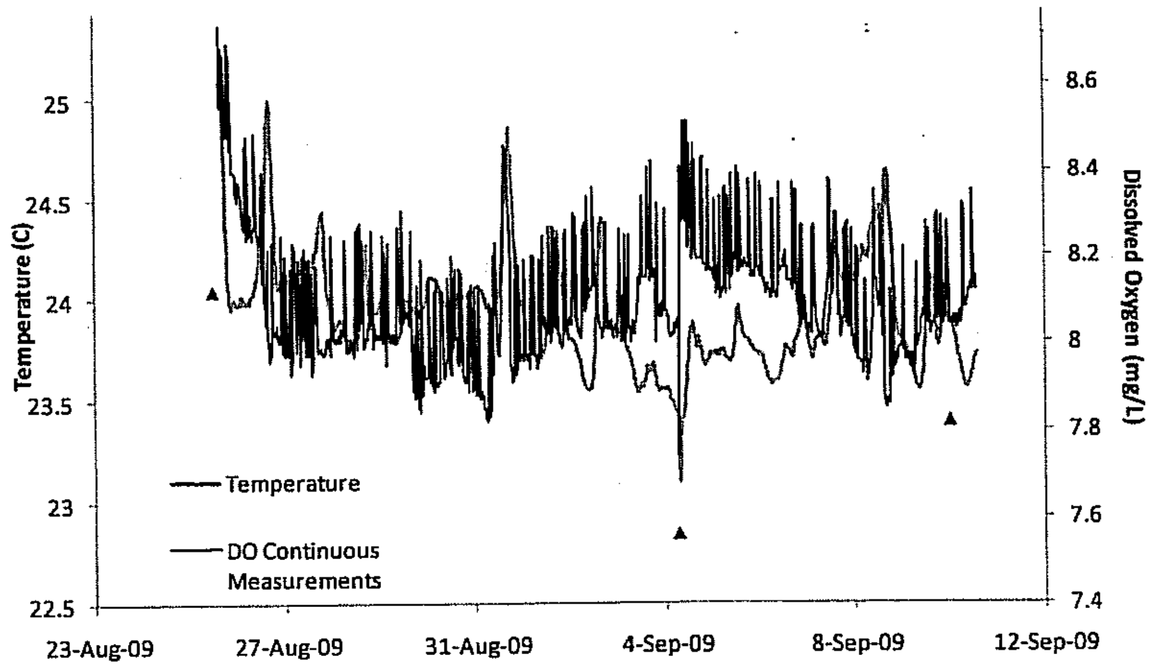


Figure 6. Temperature and dissolved oxygen data collected by the USFWS in the Coosawattee River approximately 400 meters downstream from Carter's Rereg Dam in August and September 2009.



DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, AL 36628-0001

REPLY TO
ATTENTION OF

June 6, 2011

Inland Environment Team
Planning and Environmental Division

Mr. William Pearson
Field Supervisor
U.S. Fish and Wildlife Service
1208-B Main Street
Daphne, Alabama 36526

Dear Mr. Pearson:

The enclosed document is in response to your May 3, 2010, Planning Aid Letter (PAL) and e-mailed supplement dated August 13, 2010 for the proposed Water Control Manual (WCM) Updates for the Alabama-Coosa-Tallapoosa River Basin in Georgia and Alabama. In the PAL, you identified the types of data and analyses the U.S. Fish and Wildlife Service (FWS) would need to evaluate the WCM alternatives pursuant to the Fish and Wildlife Coordination Act (FWCA - 48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq.*). This letter transmits the results of those analyses and/or our response. In addition, we are describing the proposed action and alternatives that are currently proposed to be carried forward for final evaluation in our Environmental Impact Statement (EIS).

Thank you for your assistance thus far in our effort to update these manuals. Based on our review of your letter and this response, we request that you provide us with your Draft FWCA Report at your earliest convenience. We are ready to assist with additional information or analyses. Should you have any questions, comments, or recommendations, please contact Mr. Chuck Sumner, (251) 694-3857, or email: lewis.c.sumner@sam.usace.army.mil.

Sincerely,

T. D. Robison for

Curtis M. Flakes
Chief, Planning and Environmental
Division

Enclosure

ACT Water Control Manual Update

Response to USFWS Planning Aid Letter dated May 3, 2010

U.S. Army Corps of Engineers, Mobile District

June 3, 2011

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1 Description of the Proposed Action and Alternatives

The Corps proposes to prepare an updated master Water Control Manual (WCM or Master Manual) for the Alabama, Coosa, and Tallapoosa Rivers (ACT) Basin. The component parts of the master WCM would be nine project-level WCMs, presented as appendices. Only two of the four Alabama Power Company (APC) projects in the basin with Corps WCMs will be included in this WCM update. Additional studies would be required for Logan Martin Lake and Weiss Lake to address flood damage reduction prior to updating the manuals at those facilities. The Corps and APC will develop and execute separate Memoranda of Understanding that address only navigation and drought operations for Logan Martin and Weiss Lakes. Operations at those projects will be incorporated in the Master Manual Update.

WCMs contain drought plans and action zones to assist the Corps in knowing when to reduce or increase reservoir releases and conserve storage in the Corps reservoirs. The individual manuals typically outline the regulation schedules for each project, including operating criteria, guidelines, and guide curves, and specifications for storage and releases from the reservoirs. The WCMs also outline the coordination protocol and data collection, management, and dissemination associated with routine and specific water management activities (such as flood-control operations or drought contingency operations). Operational flexibility and discretion are necessary to balance the water management needs for the numerous (and often competing) authorized project purposes at each individual project. In addition, there is a need to balance basin-wide water resource needs. Project operations also must be able to adapt to seasonal and yearly variations in flow and climatic conditions.

The following sections present the No Action Alternative and the Proposed Action Alternative.

1.1 No Action Alternative

The Council on Environmental Quality (CEQ) regulations require analysis of the *No Action Alternative* 40 CFR.1502.14. Inclusion of the No Action Alternative in this Environmental Impact Statement (EIS) complies with CEQ regulations and serves as a benchmark against which federal actions can be evaluated. On the basis of the nature of the proposed action, the No Action Alternative represents no change from the current management direction or level of management intensity. This alternative would represent continuation of the current water control operations at each of the federal projects in the ACT Basin. The Corps' operations have changed incrementally since completion of the 1951 ACT Master Manual. Except in very general terms, it is not possible to describe a single set of reservoir operations that apply to the entire period since completion of the 1951 ACT Master Manual.

Current operations under the No Action Alternative include the following.

- Operations consistent with the Master Manual of 1951 and project-specific WCMs. For the Corps, those manuals and their dates are Lake Allatoona (1993), Carters Lake and Carters Reregulation Dam (1975), Robert F. Henry Lock and Dam (1999), Millers Ferry Lock and Dam (1990), and Claiborne Lake (1993). For APC projects, the applicable manuals and their dates are Weiss Lake (1965), H. Neely Henry Lake, (1979), Logan Martin Lake (1968), and R.L. Harris Lake (2003).
- The Corps recognizes that APC operates 11 dams (10 reservoirs) under six FERC licenses, each one having specific operational requirements: (1) the Coosa River Project (FERC Project No. 2146), which includes the Weiss Lake, H. Neely Henry Lake, Logan Martin Lake, Lay Lake, and Bouldin Dam developments; (2) the Mitchell Lake Project (FERC Project No. 82); (3) the Jordan Dam and Lake Project (FERC Project No. 618); (4) Lake Martin Project (FERC Project No. 349)

(5) Yates Lake-Thurlow Lake (FERC Project No. 2407); and (6) R.L. Harris Lake Project, referred to as Crooked Creek Hydroelectric Project (FERC Project No. 2628). The FERC license for the Coosa River Project was issued in 1957. The FERC license for the Mitchell Lake Project was issued in 1975, and the FERC license for the Jordan Dam and Lake Project was issued in 1980. The licenses for those three projects expired on August 31, 2007. On July 28, 2005, APC applied for one new operating license that would combine all those projects as Project No. 2146. The FERC licenses could be amended in light of APC's request to modify winter pool levels at the Weiss Lake and Logan Martin Lake projects; however, the No Action Alternative does not include such modifications.

- The H. Neely Henry Lake, which operates under a revised guide curve (per a temporary variance initially granted by FERC in 2001 and effective pending relicensing of Project No. 2146), would return to operation under its original guide curve under the current FERC license.
- Specified flow requirements apply to several projects. Lake Allatoona and Carters Lake must provide for a minimum flow of 240 cubic feet per second (cfs). The Corps has a flow target of 6,600 cfs from Claiborne Lake where the actual ability to meet the target depends on releases provided by APC and intervening flows from the Cahaba River and other tributaries. In accordance with a 1972 Letter Agreement between the Corps and APC, APC ensures a combined 4,640-cfs release calculated at Montgomery, Alabama, on the basis of APC releases from JBT, for navigation during normal conditions.
- The Corps provides 6,371 acre-feet (ac-ft) of storage in Lake Allatoona for water supply for the City of Cartersville, Georgia and 13,140 ac-ft for the CCMWA. Total storage allocated to water supply is 19,511 ac-ft.
- The Corps provides 818 ac-ft in Carters Lake for water supply for Chatsworth, Georgia.
- The Corps would continue to manage fish spawning operations at Lake Allatoona, as outlined in District Regulation (DR) 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft Standing Operating Procedure (SOP) *Reservoir Regulation and Coordination for Fish Management Purposes* (Mobile District SOP 1130-2-9, draft, February 2005). During the largemouth bass spawning period, from March 15 to May 15, the Corps seeks to maintain generally stable or rising reservoir levels at Lake Allatoona. Generally stable or rising levels are defined as not lowering the reservoir levels by more than 6 inches, with the base elevation generally adjusted upward as levels rise from increased inflows or refilling of the reservoir.

The following subsections describe key operational elements that apply to evaluating the No Action Alternative.

1.1.1 General System Operations

The Corps operates its reservoirs in the ACT Basin to provide for the authorized purposes of flood damage reduction, navigation, hydropower, recreation, water supply, water quality, and fish/wildlife. The Corps considers each of those authorized project purposes when making operational decisions, and those decisions affect how water is stored and released from the projects. In general, to provide the authorized project purposes, flow must be stored during wetter times of each year and released from storage during drier periods of each year. Traditionally, that means that water is stored in the lakes during the spring and released for authorized project purposes in the summer and fall months. In contrast, some authorized project purposes such as lakeside recreation, water supply, and lake fish spawning are achieved by retaining water in the lakes, either throughout the year or during specified periods of each year. The flood damage reduction purposes at certain reservoirs requires drawing down reservoirs in the fall through winter months to store possible flood waters and refilling pools in the spring months to be used for multiple project purposes throughout the remainder of the year.

Certain APC projects (Weiss Lake, H. Neely Henry Lake, Logan Martin Lake, and R.L. Harris Lake) are also required to operate for flood damage reduction and navigation. MOUs for each of those APC projects concerning the operation of non-Corps projects have been adopted by the APC and the Corps. WCMs developed for the APC projects are used to guide operations for flood damage reduction and navigation. The MOUs clarify the operational responsibilities of the APC and Corps. Copies of the project MOUs are included in the current WCMs.

The conflicting water demands require that the system be operated in a balanced manner to meet all authorized purposes, while continuously monitoring the total system water availability to ensure that minimum project purposes can be achieved during critical drought periods. The balanced water management strategy for the Corps reservoirs in the ACT Basin does not prioritize any project purpose but seeks to balance all project authorized purposes. The intent is to maintain a balanced use of conservation storage among all the reservoirs in the system, rather than to maintain the pools at or above certain predetermined elevations.

The last major evaluations of the environmental consequences of the individual Corps reservoirs in the ACT Basin were included in project operations EISs completed in the 1970s. Since then, incremental changes in project operations have occurred because of changes in hydropower contracts and operating schedules, changes in navigation flow requirements, and other changes related to water quality, environment, or other uses of the system. Historical records maintained by the Corps illustrate the observed impacts of changes in operations or seasonal variations over time on pool levels and flow releases from Corps reservoirs. Comparing historic operations conditions with existing operations conditions provides a complete picture of the impacts related to changes in water demand and water resources management in the basin as well as a perspective on existing flows to plan for future changes.

1.1.2 Guide Curves and Action Zones

Guide curves define the target amount of water to be held in a reservoir at specified times of the year. Under the No Action Alternative, guide curves would remain as currently defined. Action zones are used to manage the lakes at the highest level possible for recreation and other purposes, meet minimum hydropower needs at each project, and determine the amount of storage available for downstream purposes such as flood damage reduction, hydropower, navigation, water supply, water quality, and recreation. In accordance with Engineer Regulation (ER) 1110-2- 241 *Use of Storage Allocated for Flood Control and Navigation at Non-Corps Projects,* the Corps is responsible for the review and approval of the flood damage reduction plans and Reservoir Regulation Manuals for the APC storage projects Weiss, H. Neely Henry, and Logan Martin Lakes on the Coosa River and R.L. Harris Lake on the Tallapoosa River. The purpose of the reservoir manuals is to define a plan of operation at the reservoirs during the occurrence or threatened occurrence of damaging flood conditions at downstream stations, when such conditions can be alleviated or partially alleviated by the operation of the dam and power plant in the interest of flood damage reduction. In addition, in the 1960s the Corps and APC developed MOUs to clarify the responsibilities of the two entities with regard to operation of the projects for flood damage reduction and other purposes and to provide for the orderly exchange of hydrologic data.

Guide curves have been defined for two of the Corps projects (Carters Lake and Lake Allatoona; and the four APC projects (Weiss, H. Neely Henry, Logan Martin, and R.L. Harris Lakes); no guide curves exist for Claiborne Lake, William “Bill” Dannelly Lake (Millers Ferry Lock and Dam), or R.E. “Bob” Woodruff Lake (Robert F. Henry Lock and Dam). Additionally, action zones have been defined at Lake Allatoona. The zones are used to manage the lake at the highest level possible while balancing the needs of all the authorized purposes. Action Zone 1 is the highest in each lake and defines a reservoir condition where all authorized project purposes should be met. The lake level at the top of Zone 1 is the normal

pool level or top of conservation pool (or the guide curve). As lake levels decline, Zone 2 defines increasingly critical system water shortages, and prescribes reductions in reservoir releases as pool levels drop as a result of drier than normal or drought conditions. The action zones also provide guidance on meeting minimum hydropower needs at each project as well as determining 1 the minimum releases for downstream purposes such as water supply and water quality. Under the No Action Alternative, the current guide curve and action zones (at Lake Allatoona) would continue to serve as the basis for Corps management of the reservoir. Figures 1.1-1 through 1.1-6 show the annual guide curves and action zones for pertinent Corps and APC projects. Each of the figures for the APC projects (Figures 1.1-3 through 1.1-6) depict a *drought curve*. Those drought curves have been established by APC for their drought operations under their Alabama Power Company Drought Operations Plan (APCDOP). Although used by APC for general planning, their drought curves have not been adopted by the Corps as part of the No Action alternative.

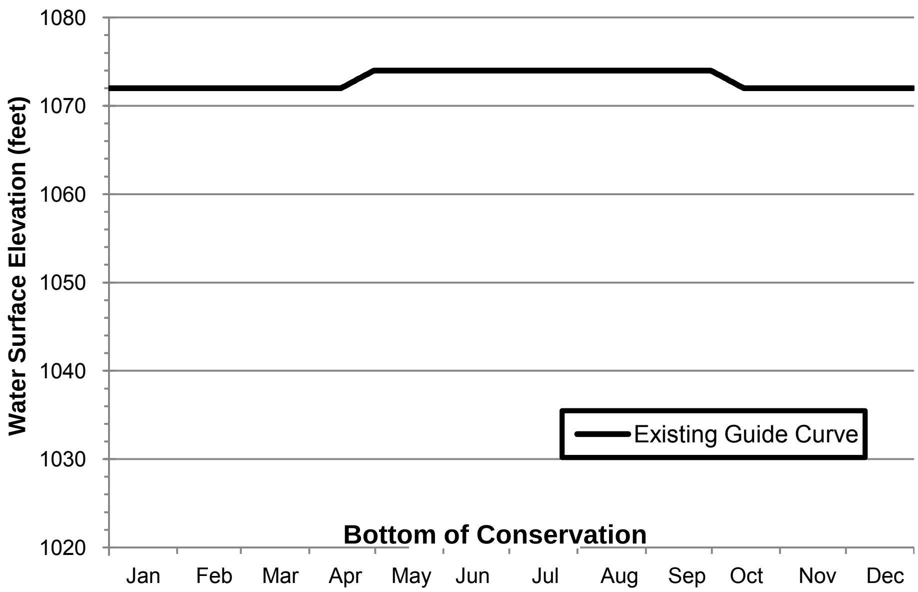

Figure 1.1-1. Carters Lake guide curve.

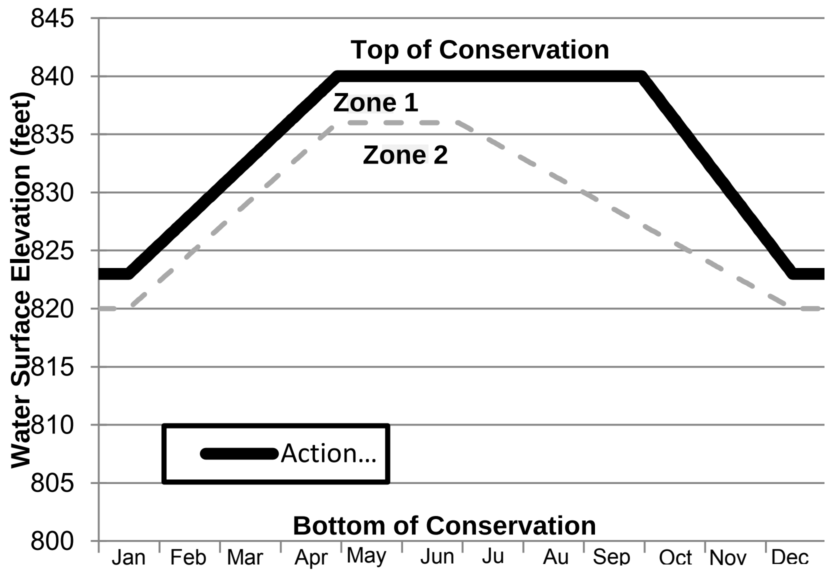

Figure 1.1-2 Lake Allatoona guide curves and action zones.

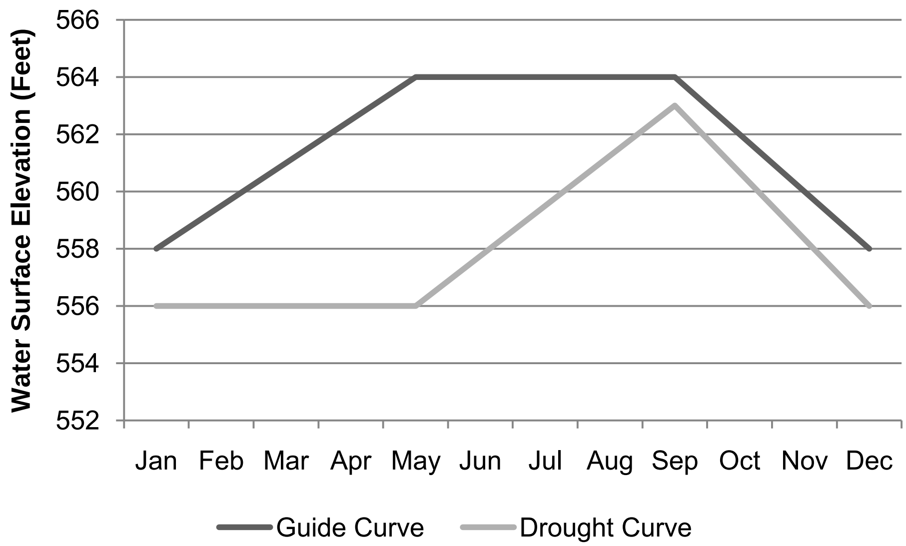

Figure 1.1-3 Weiss Lake guide curves.

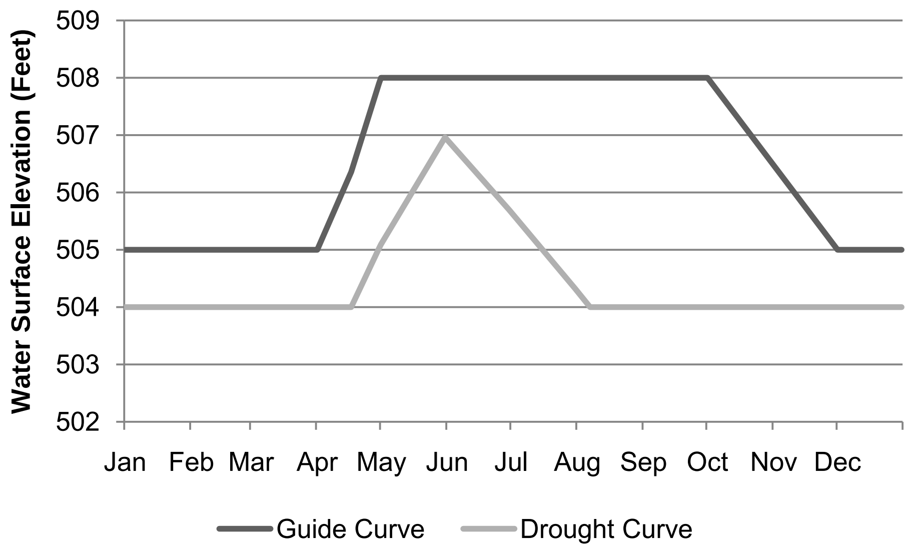

Figure 1.1-4 H. Neely Henry Lake guide curves.

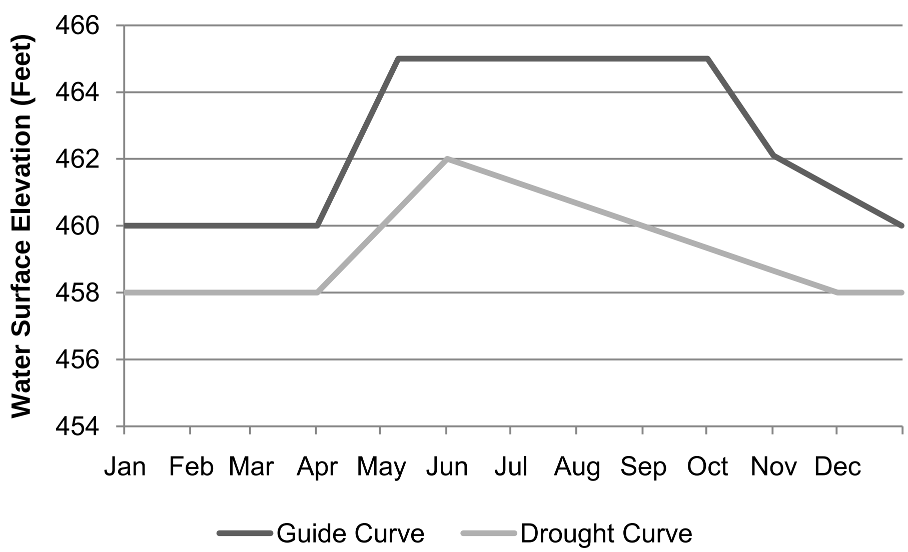

Figure 1.1-5 Logan Martin Lake guide curves.

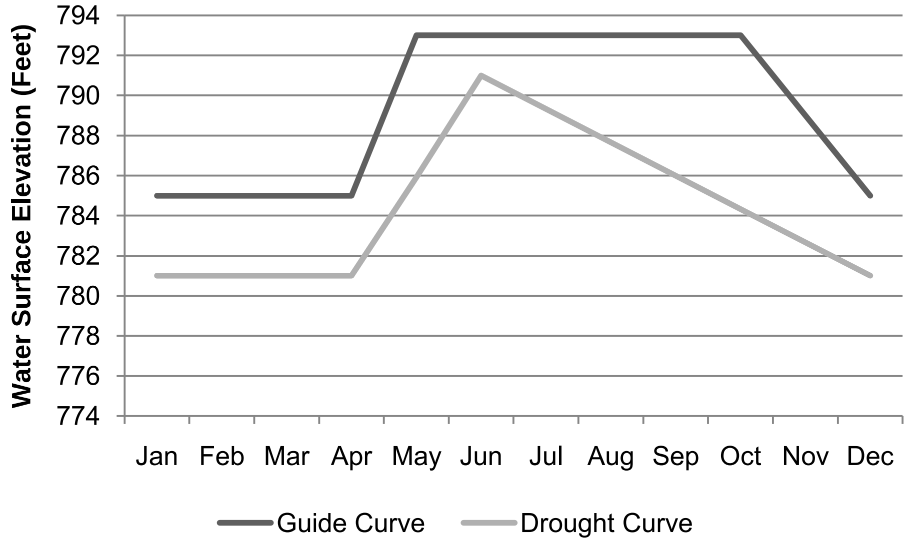

Figure 1.1-6 R.L. Harris Lake guide curves.

1.2 Proposed Action Alternative

Under the Proposed Action Alternative, the Corps would continue to operate federal projects in the ACT Basin in a balanced manner to achieve all authorized project purposes. Operations under the Proposed Action Alternative include the following.

- Implement a revised APCDOP with enhancements recommended by the USFWS. The revised APCDOP with USFWS enhancement is depicted in Table 1.2-1.
- Provide for seasonal navigation releases, coupled with seasonal maintenance dredging, to support commercial navigation in the Alabama River for a 9.0-ft or 7.5-ft channel depth as long as sufficient basin inflow above the APC projects is available. When sufficient flows cannot be provided to continue to support a minimum 7.5-ft navigation channel, navigation would be suspended and flows at Montgomery would be reduced to 4,640 cfs (7Q10) or lower if one or more of the drought operations triggers (low basin inflows, low composite conservation storage, or low state line flows) would be exceeded. APC projects on the Coosa and Tallapoosa Rivers would continue to operate under their current FERC licenses with specific operational requirements. FERC relicensing actions are underway for the Coosa River projects, and APC has requested to modify winter pool levels at the Weiss Lake and Logan Martin Lake projects. The Proposed Action Alternative does not include those proposed modifications by APC.
- The APC project, H. Neely Henry Lake (Coosa River), which operates with a revised guide curve under a FERC license variance (with Corps concurrence) would continue to operate under its revised guide curve (Figure 1.2-1).
- Specified flow requirements at Lake Allatoona would continue to provide for a 240-cfs minimum flow.
- The existing guide curve at Lake Allatoona would be revised to implement a phased fall drawdown period from early September through December (Figure 1.2-2). Refined operations at Lake Allatoona would include use of four action zones shaped to mimic the seasonal demands for hydropower (Figure 1.2.2). Modifications to the hydropower schedule would be put in place to provide greater operational flexibility to meet power demands while conserving storage. Specifically, under the Proposed Action Alternative, hydropower generation would be reduced during annual drawdown in the fall (September through October).
- The current minimum flow requirement would remain at 240 cfs from Carters Reregulation Dam. Refined operations at Carters Lake would include the use of two action zones to manage downstream releases. The top of the new Zone 2 begins at elevation 1,066 ft in January, increasing to 1,070.5 ft in May, dropping to 1,070 ft by October, and returning to elevation 1,066 ft through December (Figure 1.2-3). When Carters Lake is in Zone 1, minimum flow releases at Carters Reregulation Dam would be equal to the seasonal minimum flow. Those minimum flow releases are based on the mean monthly flow upstream of Carters Lake. If Carters Lake elevation drops into Zone 2, minimum flow releases from the Carters Reregulation Dam would be 240 cfs.
- The Corps provides 6,371 ac-ft of storage in Lake Allatoona for water supply for the City of Cartersville, Georgia and 13,140 ac-ft for the CCMWA. Total storage allocated to water supply is 19,511 ac-ft.
- The Corps provides 818 ac-ft in Carters Lake for water supply for the City of Chatsworth, Georgia.
- The Corps would continue to manage fish spawning operations at Lake Allatoona, as outlined in DR 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft SOP *Reservoir Regulation and Coordination for Fish Management Purposes* (Mobile District SOP 1130-2-9, draft, February 2005). During the largemouth bass spawning period, from March 15 to May 15, the Corps seeks to maintain generally stable or rising reservoir levels at Lake Allatoona. Generally stable or rising levels are defined as not lowering the

reservoir levels by more than 6 inches, with the base elevation generally adjusted upward as levels rise from increased inflows or refilling of the reservoir.

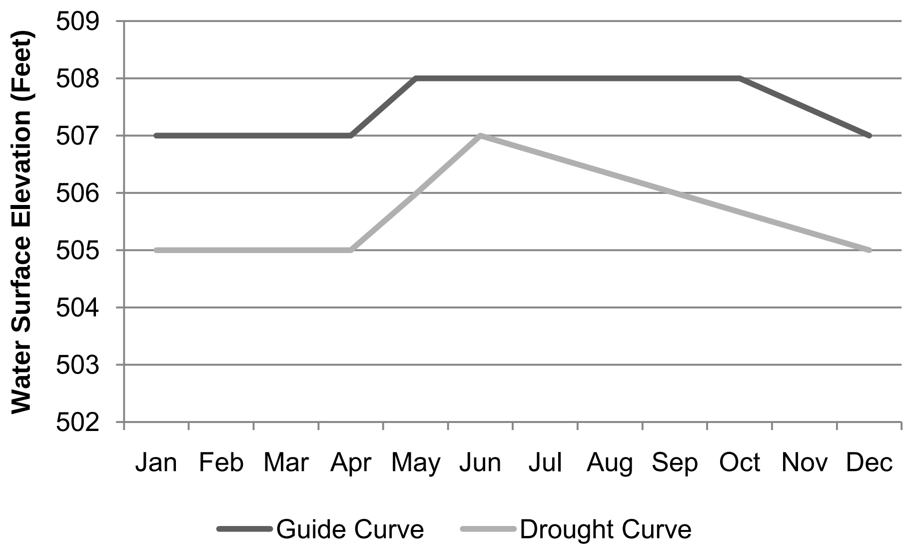

Figure 1.2-1 H. Neely Henry Lake revised guide curve.

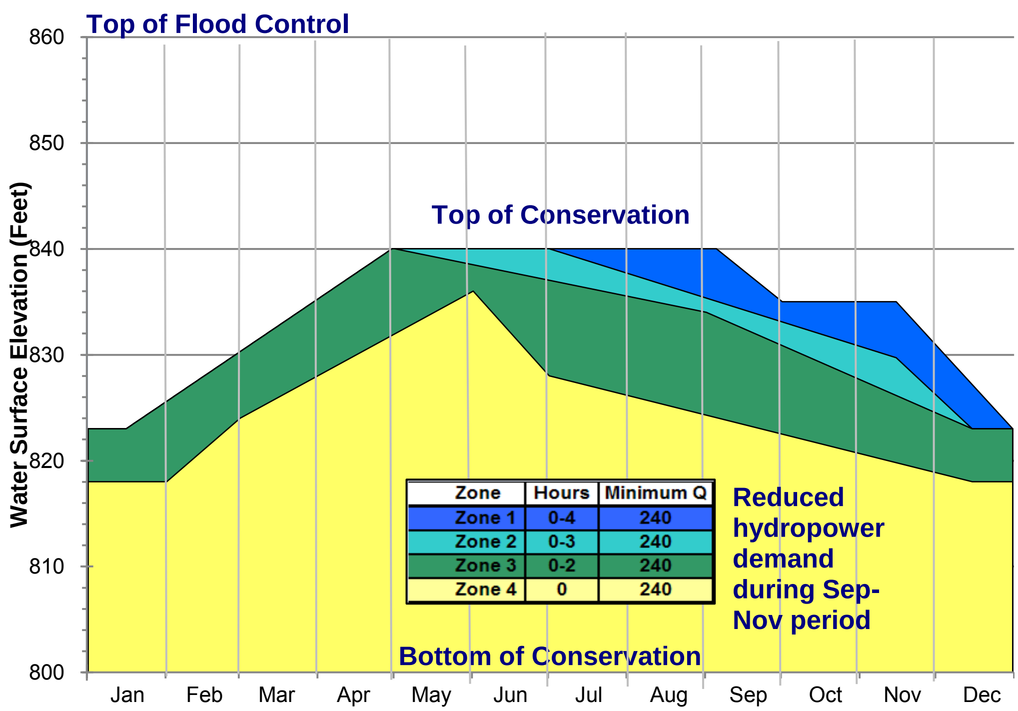

Figure 1.2-2 Operations under the Proposed Action Alternative at Lake Allatoona.

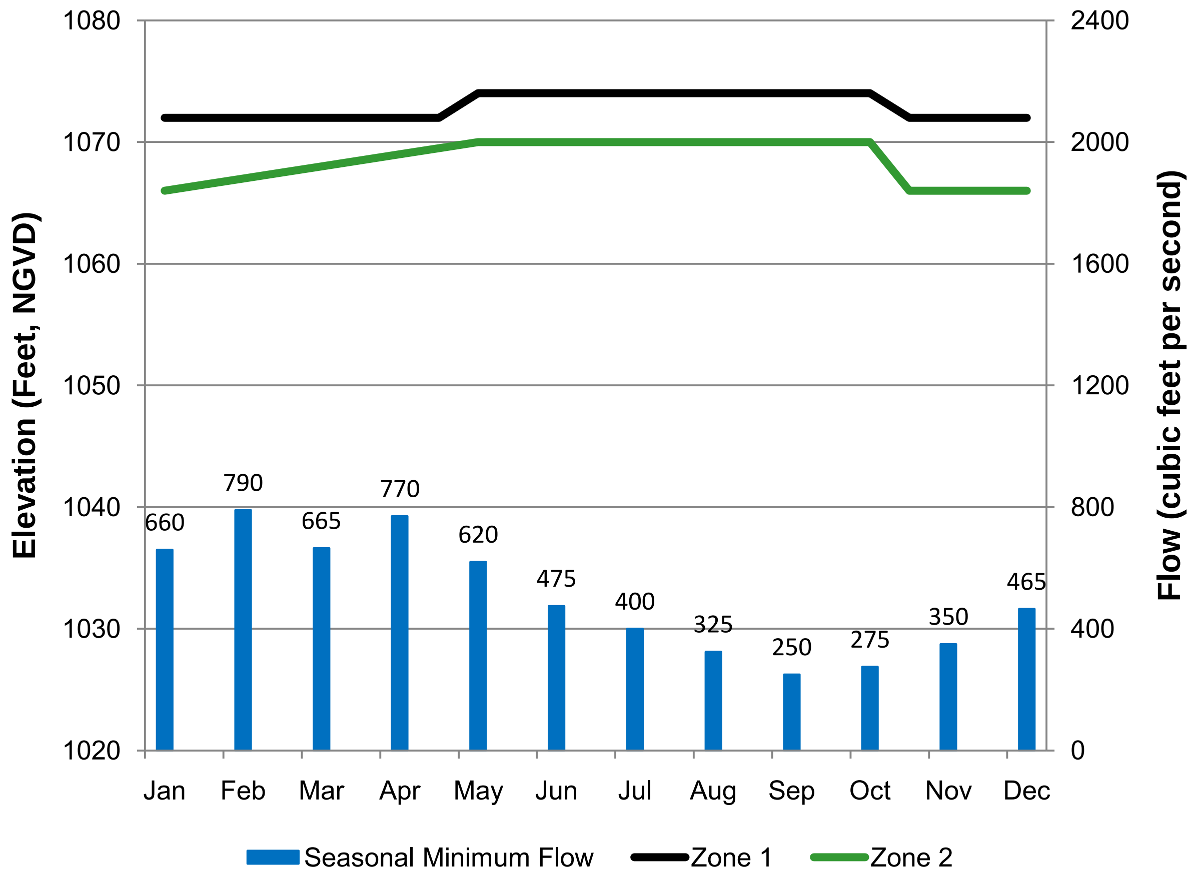

Figure 1-2.3 Carters Lake modified action zones.

1.2.1 Drought Management Plan

Both Alabama and Georgia have general statewide drought plans. Management measures to establish a drought management plan for the ACT basin were considered to meet the objectives to develop a drought management plan as required by Corps regulations and to incorporate changes made at APC projects into operations of the ACT Basin in the updated WCM. APC manages about 78 percent of the water stored in the ACT Basin.

During the drought of 2006–2008, the Corps did not have a drought plan applicable across the entire ACT Basin. The Corps generally responded to drought conditions by reducing hydropower generation at Lake Allatoona and Carters Lake as the reservoir pools dropped throughout the summer and fall. During previous droughts, the Corps coordinated frequently with APC, the states, and affected stakeholders—and the drought of 2006–2008 was no exception. During the drought, the Corps conducted biweekly water management conference calls with stakeholders from across the basin to gather information to better inform water management decision making. The Corps also supported, to a limited extent, an APC request to reduce the 4,640-cfs flow target at Montgomery by 20 percent (to 3,900 cfs).

In response to the 2006–2008 drought, APC worked closely with Alabama to develop the APC draft *Alabama Drought Operations Plan* (APCDOP) that specified operations at APC projects on the Coosa and Tallapoosa Rivers. That plan included the use composite system storage, state line flows, and basin inflow as triggers to drive drought response actions. Similarly, in response to the 2006–2008 drought, the Corps recognized that a basin-wide drought plan must incorporate variable hydropower generation requirements from its headwater projects in Georgia (Lake Allatoona and Carters Lake), a reduction in the level of navigation service provided on the Alabama River as storage across the basin declines, and that environmental flow requirements must still be met to the maximum extent practicable.

Building on the APCDOP and APC experience applying it to project operations, the Corps sought, in cooperation with APC, to develop a basin-wide drought plan composed of three components—headwater operations at Lake Allatoona and Carters Lake in Georgia; operations at APC projects on the Coosa and Tallapoosa Rivers; and downstream operations at Corps projects below Montgomery. The concept is graphically depicted in Figure 1.2-4 below.

1.2.1.1 Headwater Operations for Drought at Lake Allatoona and Carters Lake

Drought operations at Carters Lake and Lake Allatoona would consist of progressively reduced hydropower generation as pool levels decline. For instance, when Lake Allatoona is operating in normal conditions (Zone 1 operations), hydropower generation might be 0 to 4 hours per day. However, as the pool drops to lower action zones during drought conditions, generation could be reduced to 0 to 2 hours per day. As Carters Lake pool level might drop into a newly created Zone 2, minimum target flows would be reduced from seasonal varying values to 240 cfs.

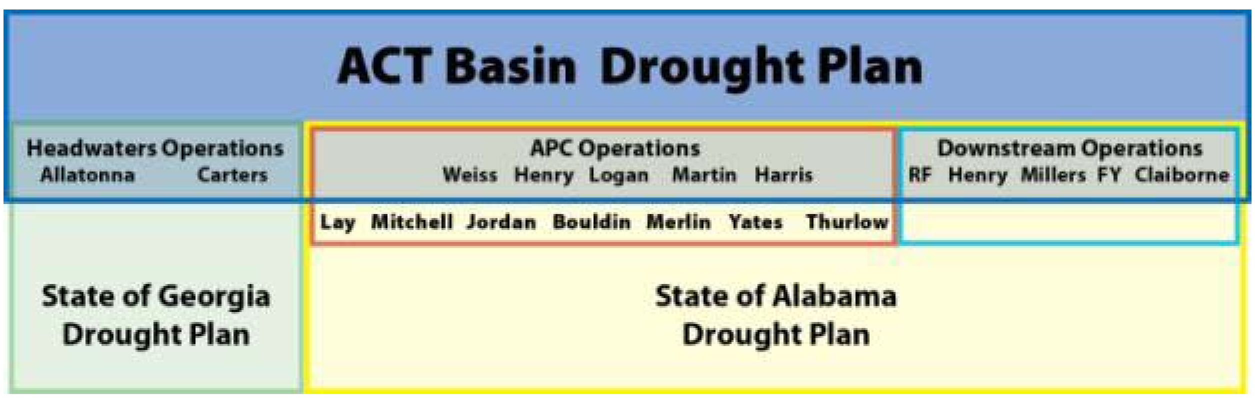

Figure 1.2-4 Schematic of the ACT Basin drought plan.

1.2.1.2 Operations at APC Projects on the Coosa, Tallapoosa, and Alabama Rivers

Under current operations, APC provides a minimum flow at Montgomery, Alabama, of 4,640 cfs (7-day average) based on the combined flows from the Tallapoosa and Coosa Rivers. The minimum flow target of 4,640 cfs was originally derived from the7Q10 flow at Claiborne Lake of 6,600 cfs. Those flows were established with the understanding that if APC provided 4,640 cfs, the Corps and intervening basin inflow would be able to provide the remaining water to meet 6,600 cfs at Claiborne Lake. As dry conditions continued in 2007, water managers understood that, if the basin inflows from rainfall were insufficient, the minimum flow target would not likely be achievable. With that understanding, the Corps considered updating drought operations in coordination with APC.

The APCDOP, described in the following paragraphs, served as the initial template for developing proposed drought operations for the ACT Basin. APCDOP operational guidelines for the Coosa, Tallapoosa, and Alabama Rivers have been defined in a matrix, on the basis of a Drought Intensity Level (DIL). The DIL is a drought indicator, ranging from zero to three. The DIL is determined on the basis of three basin drought criteria (or triggers). A DIL=0 indicates normal operations, while a DIL from 1 to 3 indicates some level of drought conditions. The DIL increases as more of the drought indicator thresholds (or triggers) are exceeded. The APCDOP matrix defines monthly minimum flow requirements for the Coosa, Tallapoosa, and Alabama Rivers as function of DIL and time of year. Such flow requirements are modeled as daily averages.

The combined occurrences of the drought triggers determine the DIL. Three intensity levels for drought operations are applicable to APC projects.

- DIL0—(normal operation) no triggers exceeded
- DIL1—(moderate drought) 1 of 3 triggers exceeded
- DIL2—(severe drought) 2 of 3 triggers exceeded
- DIL3—(exceptional drought) all 3 triggers exceeded

The indicators used in the APCDOP to determine drought intensity include the following:

1. Low basin inflow
2. Low composite conservation storage
3. Low state line flow

Each of those indicators is described in detail in Sections 1.2.2.3 through 1.2.2.5, below.

The DIL would be computed on the 1st and 15th of each month. Once a drought operation is triggered, the DIL can only recover from drought condition at a rate of one level per period. For example, as the system begins to recover from an exceptional drought with DIL=3, the DIL must be stepped incrementally back to zero to resume normal operations. In that case, even if the system triggers return to normal quickly, it will still take at least a month before normal operations can resume—conditions can improve only to DIL=2 for the next 15 days, then DIL=1 for the next 15 days, before finally returning to DIL=0.

For DIL=0, the matrix (Table 1.2-1) shows a Coosa River flow between 2,000 cfs and 4,000 cfs with peaking periods up to 8,000 cfs occurring. The required flow on the Tallapoosa River is a constant 1,200 cfs throughout the year. The navigation flows on the Alabama River are applied to the APC projects. The required navigation depth on the Alabama River is subject to the basin inflow.

For DIL=1, the Coosa River flow varies from 2,000 cfs to 4,000 cfs. On the Tallapoosa River, part of the year, the required flow is the greater of one-half of the inflow into Yates Lake and twice the Heflin USGS gage. For the remainder of the year, the required flow is one-half of Yates Lake inflow. The required flows on the Alabama River are reduced from the amounts when DIL=0.

For DIL=2, the Coosa River flow varies from 1,800 cfs to 2,500 cfs. On the Tallapoosa River, the minimum is 350 cfs for part of the year and one-half of Yates Lake inflow for the remainder of the year. The requirement on the Alabama River is between 3,700 cfs and 4,200 cfs.

For DIL=3, the flows on the Coosa River range from 1,600 cfs to 2,000 cfs. A constant flow of 350 cfs on the Tallapoosa River is required. It is assumed an additional 50 cfs will occur between Thurlow Lake and

the City of Montgomery water supply intake. Required flows on the Alabama River range from 2,000 cfs to 4,200 cfs.

In addition to the APCDOP, the DIL affects the navigation operations. When the DIL is equal to zero, APC projects are operated to meet navigation flow target or the 7Q10 flow as defined in the navigation measure section. Once DIL is greater than zero, drought operations will occur, and navigation operations are suspended.

Table 1.2-1
APCDOP with USFWS enhancements

<table>
<tr><th></th><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th colspan="2">Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td rowspan="4">Drought Level Response[a]</td><td colspan="13">DIL 0 - Normal Operations</td></tr>
<tr><td colspan="13">DIL 1: Low Basin Inflows or Low Composite or Low State Line Flow</td></tr>
<tr><td colspan="13">DIL 2: DIL 1 criteria + (Low Basin Inflows or Low Composite or Low State Line Flow)</td></tr>
<tr><td colspan="13">DIL 3: Low Basin Inflows + Low Composite + Low State Line Flow</td></tr>
<tr><td rowspan="4">Coosa River Flow[b]</td><td colspan="3">Normal Operation: 2,000 cfs</td><td colspan="2">4,000 (8,000)</td><td colspan="2">4,000 – 2,000</td><td colspan="6">Normal Operation: 2,000 cfs</td></tr>
<tr><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="3">4,000 +/- cfs</td><td>6/15 Linear Ramp down</td><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="3">Jordan 2,000 +/-cfs</td></tr>
<tr><td colspan="3">Jordan 1,800 +/-cfs</td><td colspan="3">2,500 +/- cfs</td><td>6/15 Linear Ramp down</td><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="3">Jordan 1,800 +/-cfs</td></tr>
<tr><td colspan="3">Jordan 1,600 +/-cfs</td><td colspan="4">Jordan 1,800 +/-cfs</td><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="2">Jordan 1,800 +/-cfs</td><td>Jordan 1,600 +/- cfs</td></tr>
<tr><td rowspan="4">Tallapoosa River Flow[c]</td><td colspan="13">Normal Operations: 1200 cfs</td></tr>
<tr><td colspan="4">Greater of: 1/2 Yates Inflow or
2 x Heflin Gage(Thurlow Lake releases > 350 cfs)</td><td colspan="6">1/2 Yates Inflow</td><td colspan="3">1/2 Yates Inflow</td></tr>
<tr><td colspan="4">Thurlow Lake 350 cfs</td><td colspan="6">1/2 Yates Inflow</td><td colspan="3">Thurlow Lake 350 cfs</td></tr>
<tr><td colspan="7">Maintain 400 cfs at Montgomery WTP
(Thurlow Lake release 350 cfs)</td><td colspan="3">Thurlow Lake 350 cfs</td><td colspan="3">Maintain 400 cfs at Montgomery WTP (Thurlow Lake release 350 cfs)</td></tr>
<tr><td rowspan="4">Alabama River Flow[d]</td><td colspan="13">Normal Operation: Navigation flow (4,640 cfs)</td></tr>
<tr><td colspan="4">4,200 cfs (10% 7Q10 Cut) - Montgomery</td><td colspan="6">Full Navigation - Montgomery (4,640 cfs)</td><td colspan="3">Reduce: Full – 4,200 cfs</td></tr>
<tr><td colspan="4">3,900 cfs (20% 7Q10 Cut) - Montgomery</td><td colspan="6">4,200 cfs (10% 7Q10 Cut) – Montgomery</td><td colspan="3">Reduce: 4,200 cfs-> 3,900 cfs Montgomery</td></tr>
<tr><td colspan="4">2,000 cfs
Montgomery</td><td colspan="3">3,900 cfs
Montgomery</td><td colspan="3">4,200 cfs (10% 7Q10 Cut) -
Montgomery</td><td colspan="3">Reduce: 4,200 cfs -> 2,000 cfs Montgomery (ramp thru October)</td></tr>
<tr><td rowspan="4">Guide Curve Elevation</td><td colspan="13">Normal Operations: Elevations follow Guide Curves as prescribed in License (Measured in Feet)</td></tr>
<tr><td colspan="13">Corps Variances: As Needed; FERC Variance for Lake Martin</td></tr>
<tr><td colspan="13">Corps Variances: As Needed; FERC Variance for Lake Martin</td></tr>
<tr><td colspan="13">Corps Variances: As Needed; FERC Variance for Lake Martin</td></tr>
</table>

a. Note these are based flows that will be exceeded when possible.
b .Jordan flows are based on a continuous +/- 5% of target flow.
c. Thurlow Lake flows are based on continuous +/- 5% of target flow: flows are reset on noon each Tuesday based on the prior day's daily average at

Heflin or Yates. d. Alabama River flows are 7-Day Average Flow.

1.2.1.3 Low Basin Inflow Trigger

The total basin inflow needed for navigation is the sum of the total filling volume plus 7Q10 flow (4,640 cfs). Table 1.2-2 lists the monthly low basin inflow criteria. All numbers are in cfs-days. The basin inflow value is computed daily and checked on the 1st and 15th of the month. If computed basin inflow is less than the value required, the low basin inflow indicator is triggered.

The basin inflow is total flow above the APC projects excluding Lake Allatoona and Carters Lake. It is the sum of local flows, minus lake evaporation and diversions. Figure 1.2-5 illustrates the local inflows to the Coosa and Tallapoosa basin. The basin inflow computation differs from the navigation basin inflow, because it does not include releases from Lake Allatoona and Carters Lake. The intent is to capture the hydrologic condition across APC projects in the Coosa and Tallapoosa basins.

Table 1.2-2
Low basin inflow guide (in cfs-days)

Month	Coosa Filling Volume	Tallapoosa Filling Volume	Total Filling Volume	7Q10 flow	Required Basin Inflow
Jan	629	0	629	4,640	5,269
Feb	647	1,968	2,615	4,640	7,255
Mar	603	2,900	3,503	4,640	8,143
Apr	1,683	2,585	4,268	4,640	8,908
May	242	0	242	4,640	4,882
Jun			0	4,640	4,640
Jul			0	4,640	4,640
Aug			0	4,640	4,640
Sep	–602	–1,304	–1,906	4,640	2,734
Oct	–1,331	–2,073	–3,404	4,640	1,236
Nov	–888	–2,659	–3,547	4,640	1,093
Dec	–810	–1,053	–1,863	4,640	2,777

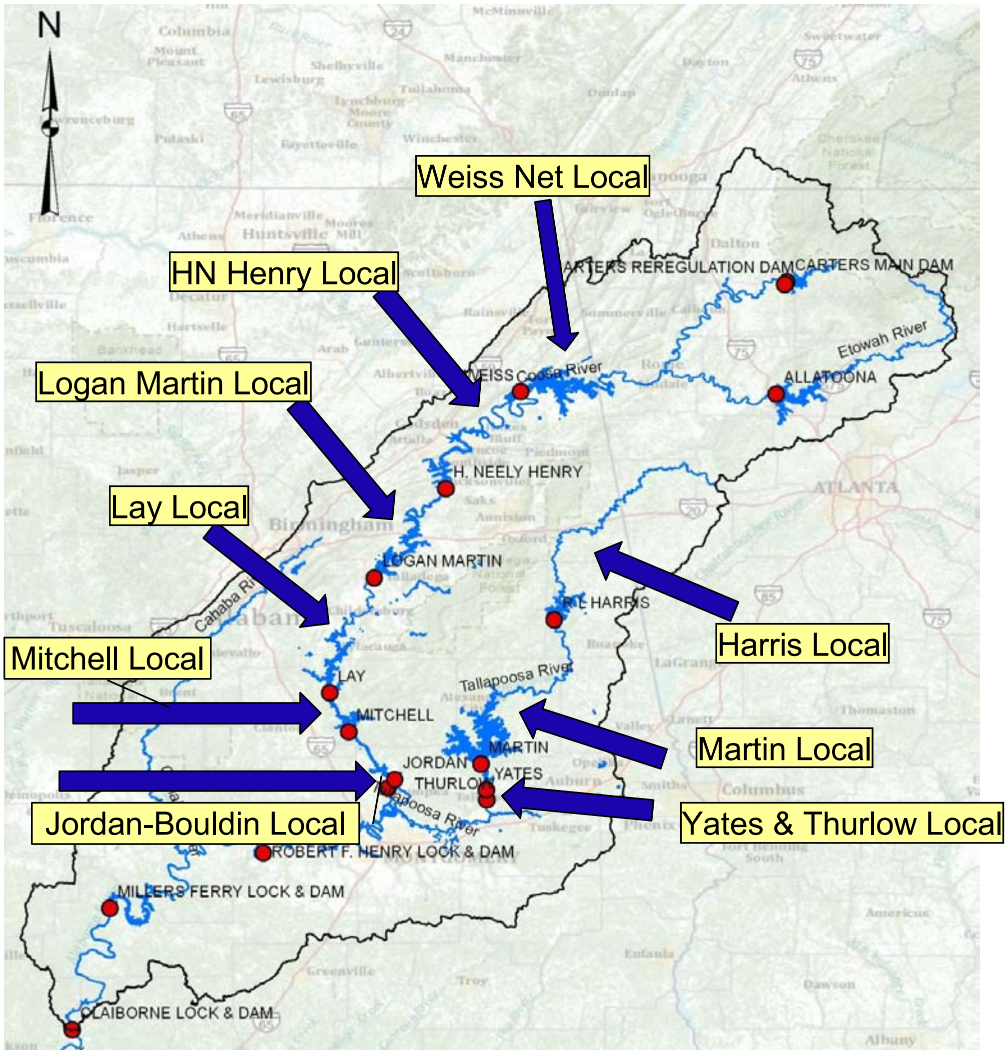

Figure 1.2-5 ACT Basin inflows.

1.2.1.4 State Line Flow Trigger

A low state line flow trigger occurs when the Mayo's Bar USGS gage measures a flow below the monthly historical 7Q10 flow. The 7Q10 flow is defined as the lowest flow over a 7-day period that would occur once in 10 years. Table 1.2-3 lists the Mayo's Bar 7Q10 value for each month. The lowest 7-day average flow over the past 14 days is computed and checked at the 1st and 15th of the month. If the lowest 7-day average value is less than the Mayo's Bar 7Q10 value, the low state line flow indicator is triggered. If the result is greater than or equal to the trigger value from Table 4.2-5, the flow is considered normal, and the state line flow indicator is not triggered. The term *state line flow* is used in developing the drought management plan because of the proximity of the Mayo's Bar gage to the Alabama-Georgia state line and because it relates to flow data upstream of the Alabama-based APC reservoirs. State line flow is used only as a source of observed data for one of the three triggers and does not imply that *targets* exist at that geographic location. The APCDOP does not include or imply any Corps operation that would result in water management decisions at Carters Lake or Lake Allatoona.

Table 1.2-3
State line flow trigger

Month	Mayo's Bar (7Q10 in cfs)
Jan	2,544
Feb	2,982
Mar	3,258
Apr	2,911
May	2,497
Jun	2,153
Jul	1,693
Aug	1,601
Sep	1,406
Oct	1,325
Nov	1,608
Dec	2,043

Note: Based on USGS Coosa River at Rome Gage (Mayo's Bar, USGS 02397000) observed flow from 1949 to 2006

1.2.1.5 Low Composite Conservation Storage in APC projects

Low composite conservation storage occurs when the APC projects' composite conservation storage is less than or equal to the storage available within the drought contingency curves for the APC reservoirs. Composite conservation storage is the sum of the amounts of storage available at the current elevation for each reservoir down to the drought contingency curve at each APC major storage project. The reservoirs considered for the trigger are R.L. Harris Lake, H. Neely Henry Lake, Logan Martin Lake, Lake Martin, and Weiss Lake projects. Figure 1.2-6 plots the APC composite zones. Figure 1.2-7 plots the APC low composite conservation storage trigger.

If the actual active composite conservation storage is less than or equal to the active composite drought one storage, the low composite conservation storage indicator is triggered. That computation is performed on 1st and 15th of each month, and is compared to the low state line flow trigger and basin inflow trigger.

1.2.1.6 Operations for Corps Projects Downstream of Montgomery

Drought operations of the Corps' Alabama River projects (R.E. "Bob" Woodruff Lake [Robert F. Henry Lock and Dam], and William "Bill" Dannelly Lake [Millers Ferry Lock and Dam]) will respond to drought operation of the APC projects. When combined releases from the APC projects are reduced to the 7Q10 flow of 4,640 cfs, the Corps' Alabama River projects will operate to maintain a minimum flow of 6,600 cfs below Claiborne Lake. When the APCDOP requires flows less than 4,640 cfs, the minimum flow at Claiborne Lake is equal to the inflow into Millers Ferry Lock and Dam. There is inadequate storage in the Alabama River projects to sustain 6,600 cfs, when combined releases from the APC projects are less than 4,640 cfs.

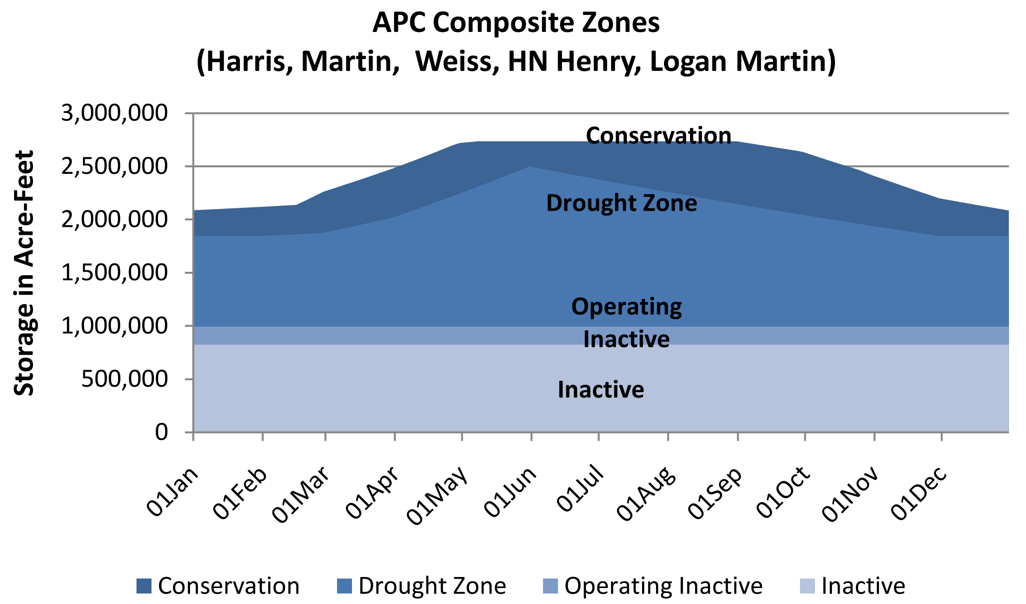

Figure 1.2-6 APC composite zones.

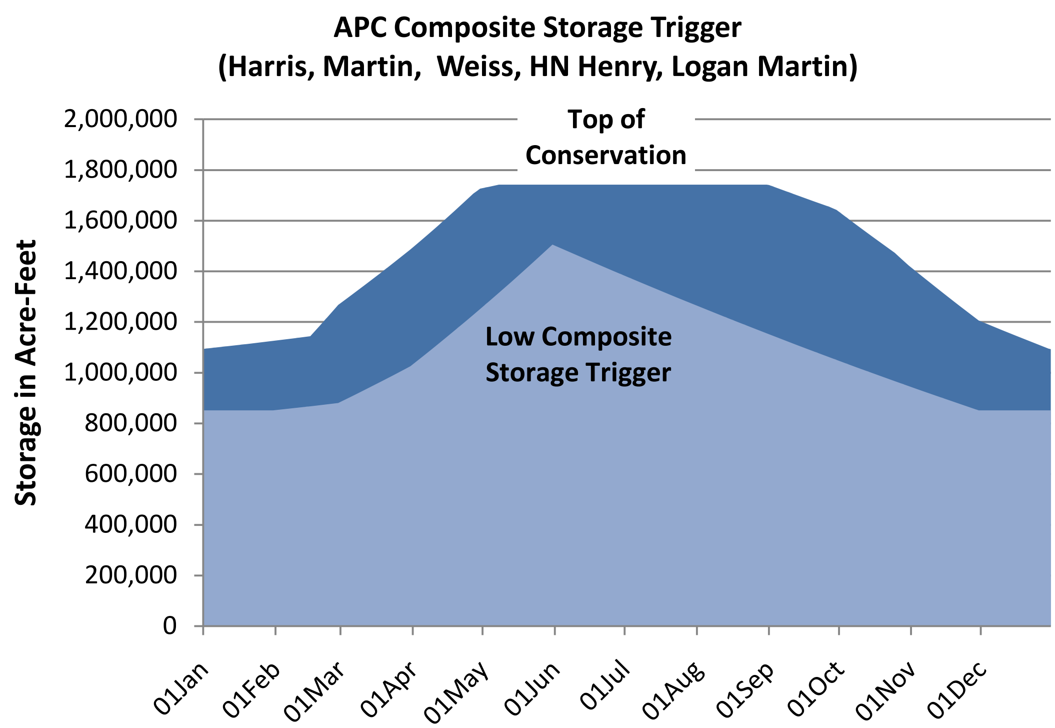

Figure 1.2-7 APC low composite conservation storage drought trigger.

2 RESPONSE TO PLANNING AID LETTER (PAL)

2.1 Low DO below reservoirs and meeting of State water quality standards.

In accordance with ER 1110-2-8154, *Water Quality and Environmental Management for Corps Civil Works Projects*, the Corps has an objective to ensure that water quality, as affected by a Corps project and its operation, is suitable for project purposes, existing water uses, and public safety and is in compliance with applicable federal and state water quality standards. The States currently monitor data throughout the summer low-flow period in reservoirs to ensure water quality standards are met.

Water quality was taken into account when updating water control plans and manuals. The information contained in the following sections demonstrates the effects of the No Action Alternative and Preferred Alternative on water quality.

HEC-ResSim model is being used to simulate flow operations in the ACT Basin. HEC-ResSim is a state-of-the-art tool for simulating flow operations in managed systems. It was developed by the Corps' Hydrologic Engineering Center (HEC) to help engineers and planners perform water resources studies in predicting the behavior of reservoirs and to help reservoir operators plan releases in real-time during day-to-day and emergency operations. Version 3.0 of the HEC-ResSim model was released in April 2007. The Corps HEC also developed HEC-5Q to provide an analytic tool for evaluating the water quality response. This model is linked with the HEC-ResSim model through an input of flows by reach. For this EIS, the enhanced HEC-5Q developed for the Columbia River Basin was generalized and improved to evaluate the effects of ACT project operations on basin water quality. The HEC-5Q model was linked with the HEC-ResSim model through an input of flows by reach to examine the effects on water quality in the mainstems of the ACT Basin. The HEC-5Q results presented in this section are for the modeled period (2001–2008).

The purpose of simulating conditions over this period (2001 – 2008) was not to capture historical changes in water quality; rather, the intent was to capture the range of potential hydrologic conditions that influence water quality. The modeled period includes wet, dry, and normal rainfall conditions, which allows a display of the water quality response to varying hydrologic conditions. The wet, dry, and normal rainfall years presented are 2003, 2007, and 2002, respectively. Those years were selected to represent the range of hydrologic conditions that can occur understanding that conditions can vary greatly over the entire basin.

The sections to follow present the change (or *delta*) in various modeled parameters between the No Action Alternative, Plan D, Plan F, and the Proposed Action Alternative. These four alternatives have been evaluated in detail; however, for the purpose of this response, only the Proposed Action Alternative will be described. The longitudinal occurrence profiles by rivermile (RM) illustrate how water quality varies along the reach, and how water quality might be affected by dams, other structures, or discharges from point and nonpoint sources. Presenting data in such a way illustrates the amount of time a concentration is higher or lower than a given value. In those plots, the 5th, 50th (or median), and 95th percent occurrences are illustrated. Those percentiles illustrate the range of concentrations that would be likely to occur. Such profiles illustrate the percentage of time a concentration of pollutant occurs as a *Percent Occurrence* at stations in mainstem sections of the ACT Basin.

The median values reflect the points at which 50 percent of the calculated values are higher and 50 percent are lower. The 95th percent occurrence and 5th percent occurrence bracket the range of high and low calculated values that rarely occur. For example, a DO plot showing a 5 percent occurrence level at 5 mg/L means that 5 percent of the observations were lower than that concentration. An occurrence

level of 95 percent at 12 mg/L shows that 95 percent of modeled concentrations fell below 12 mg/L. Conversely, that would indicate that 5 percent of the model values were higher than 12 mg/L. Presenting modeled results that way should help readers understand the response of the system without allowing the data from extreme events to skew the results. Note that the percent occurrence is the opposite of the percent exceedence.

It is also important to understand that critical conditions for water quality parameters vary under different flow and water temperature conditions. For example, water temperatures increase in warm weather months and in low stream flow conditions. In wet weather conditions, nutrient concentrations may increase. For this reason water quality conditions are defined for representative wet, dry, and normal weather conditions. State and federal agencies also define warm weather months, or the *growing season*, in different ways for regulatory purposes. The figures to follow illustrate annual conditions as well as growing seasons defined by May through October and April through November.

2.1.1 Total number of days with dissolved oxygen (DO) below a daily average of 5.0 mg/L

The total number of days with a daily average DO less than 5.0 mg/L was not calculated. However, the occurrence of DO was plotted and compared between alternatives at various locations in the basin. In general, the proposed operational changes would be expected to have a negligible effect on DO for much of the ACT Basin. In the figures presented below, the results generally overlay each other, and the differences between alternatives are indistinguishable. As described in the PAL, the lowest DO concentrations occur in dam tailraces. Despite low concentrations of dissolved oxygen in dam tailraces, the Proposed Action Alternative generally is equal to the No Action Alternative as illustrated in Figures 2.2-1 through 2.2-5.

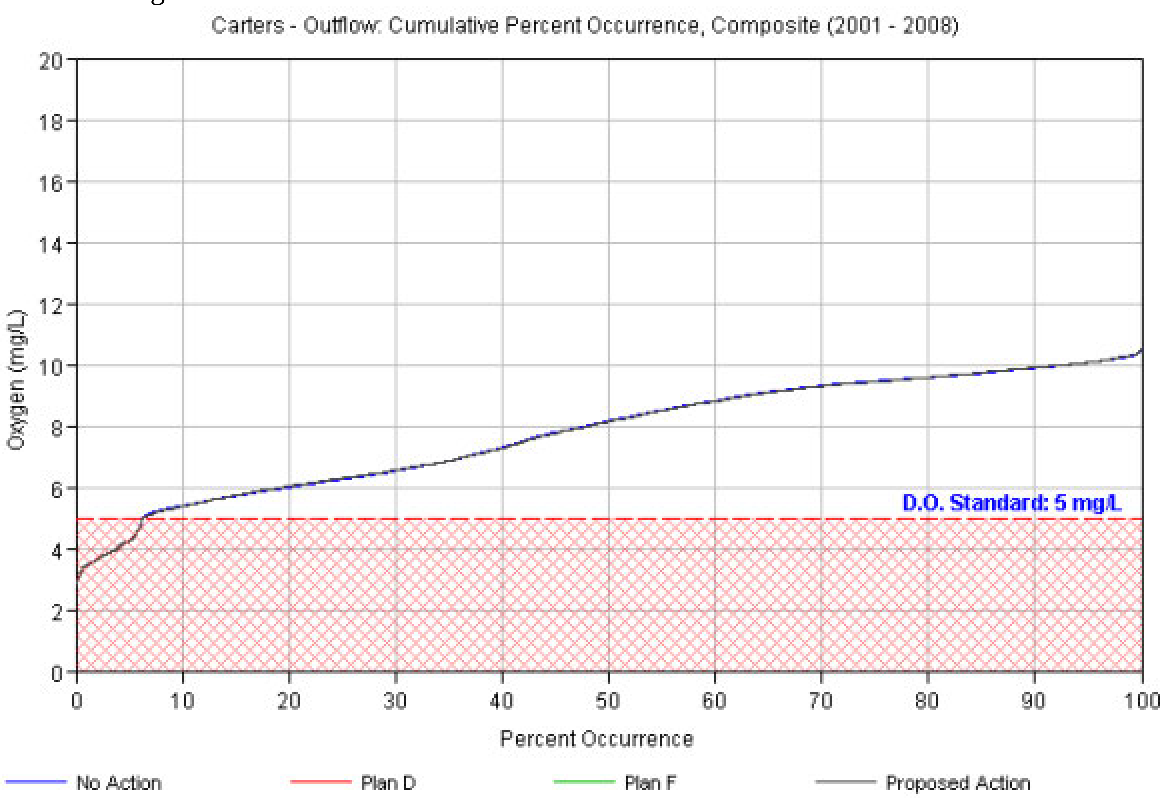

Figure 2.1-1 Carters Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

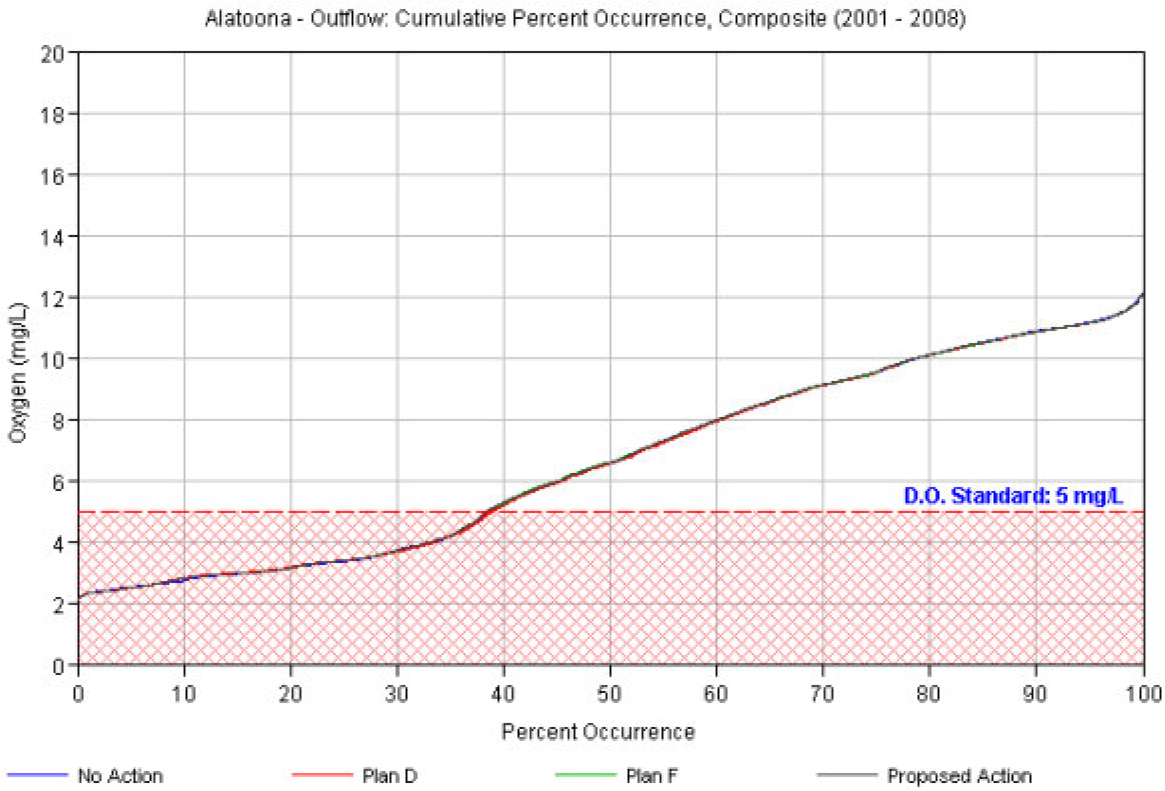

Figure 2.1-2 Allatoona Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

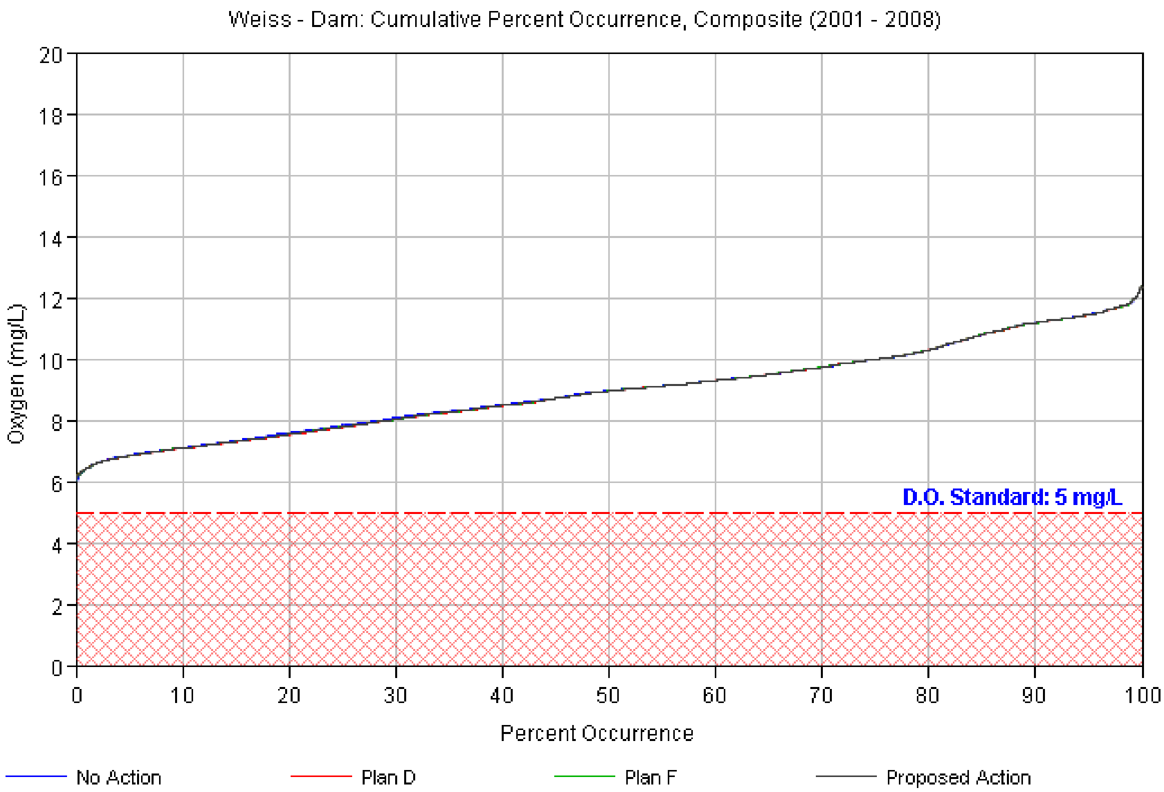

Figure 2.1-3 Weiss Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

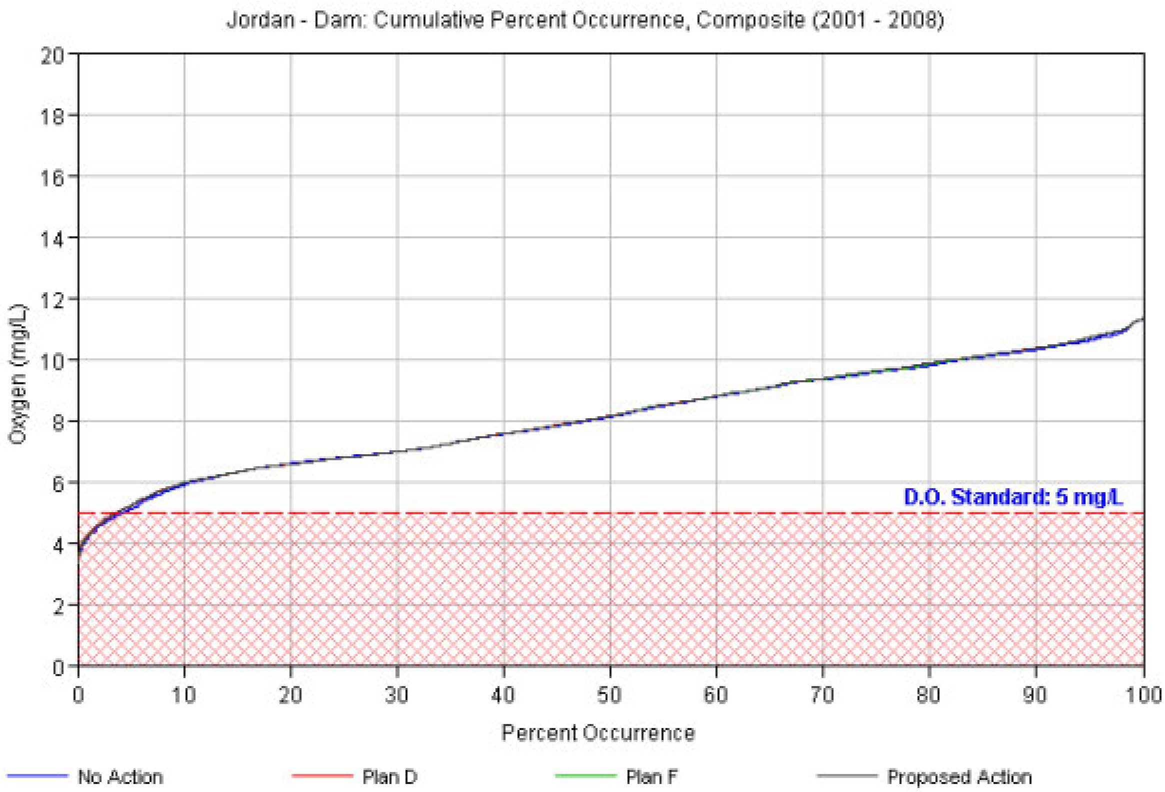

Figure 2.1-4 Jordan Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

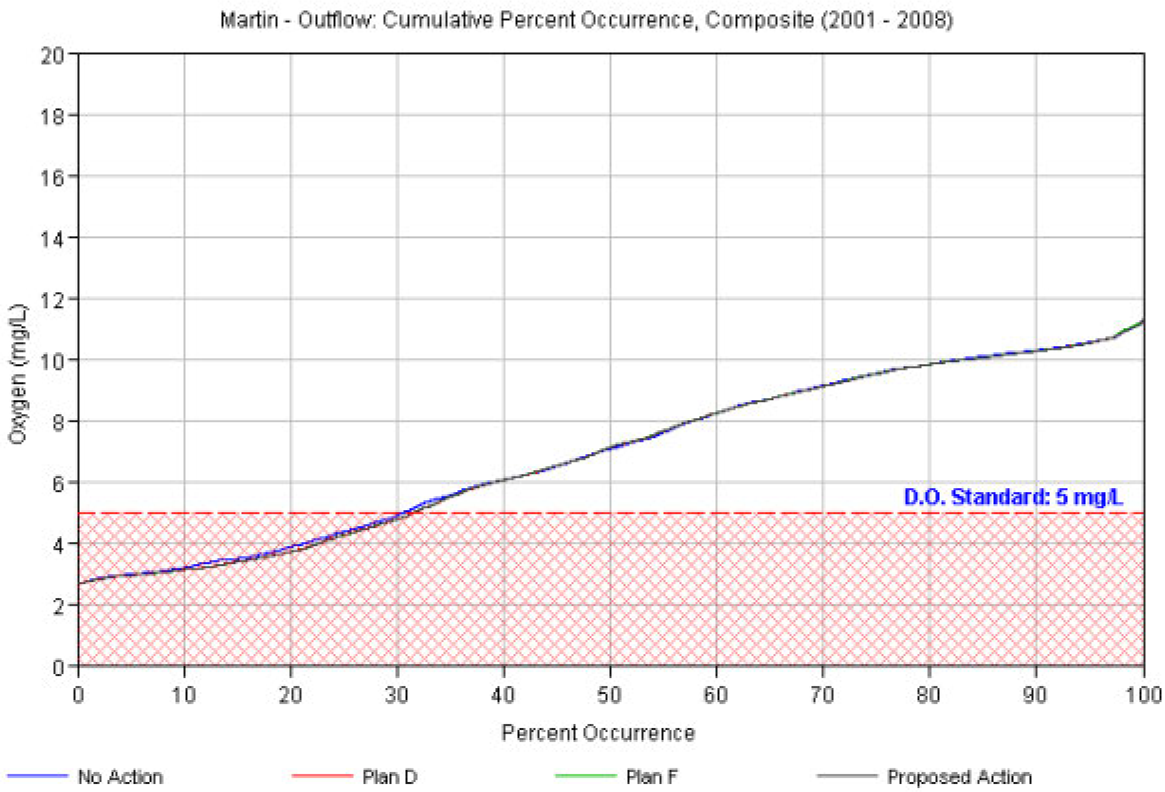

Figure 2.1-5 Martin Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

The previous figures illustrate the lowest DO concentrations in dam tailraces throughout the basin. Low DO also occurs at Cartersville, Georgia (Figure 2.1-6). However, again a comparison of the No Action Alternative to various alternatives illustrates little change.

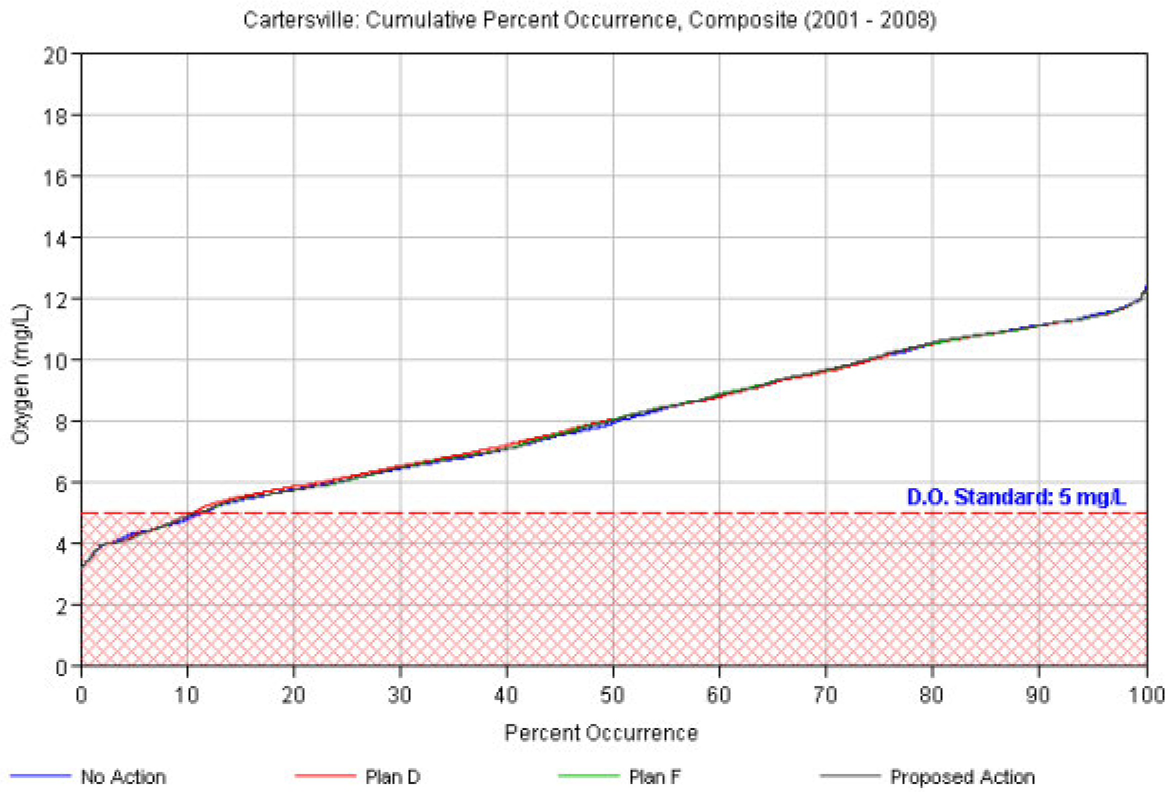

Figure 2.1-6 Cartersville, Georgia outflow dissolved oxygen for the modeled period (2000 – 2008).

The difference between the alternatives evaluated is the greatest downstream of Carters Lake (Figure 2.1-7) and at the confluence of the Coosa and Tallapoosa Rivers (between RM 300 and 350 on the Alabama River, Figure 2.1-8). Differences are the greatest during periods of dry weather conditions when drought operations are likely to be implemented. However, modeled differences from the No Action alternative are generally less than 0.5 mg/l.

Changes in releases from Carters Lake under the drought plan decrease DO downstream of the dam. DO recovers to concentrations near the No Action Alternative before Pine Chapel, 20 mi downstream (Figure 2.1-7).

In the Coosa River, changes in DO are also the greatest in a dry-weather year (Figure 2.1-9). In dry-weather periods, it would be expected that the Corps would operate for drought management. In much of the Coosa River, median DO concentrations during dry-weather periods would be expected near conditions similar to the No Action Alternative. However, DO downstream of Weiss Dam and Neely Henry Dam would be expected to be reduced during the growing season in dry-weather years. Downstream of Weiss Lake, median DO would be expected to decrease by nearly 1.0 mg/L. As illustrated in Figure 2.1-3, median DO over the modeled period is well above water quality standards at 8 mg/L. Median DO decreases by nearly 0.5 mg/L immediately downstream of Neely Henry Dam. Immediately

downstream of other reservoirs (Jordan Dam and Lake, Mitchell Dam, and Logan Martin Dam), the median DO concentrations would be expected to increase by as much as 0.5 mg/L by the Plan D, Plan F, and the Proposed Action Alternative.

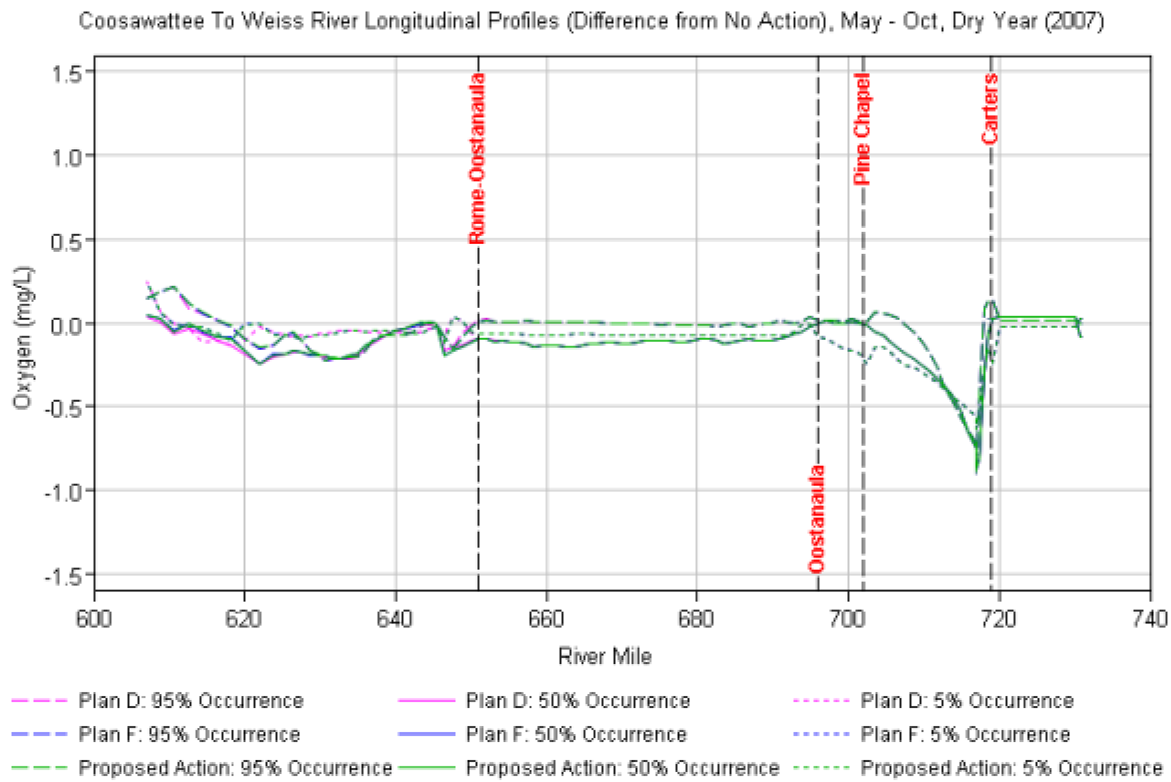

Figure 2.1-7 Oxygen longitudinal profile for May to October in a representative dry-weather year (2007) from Carters Lake downstream to Weiss Lake.

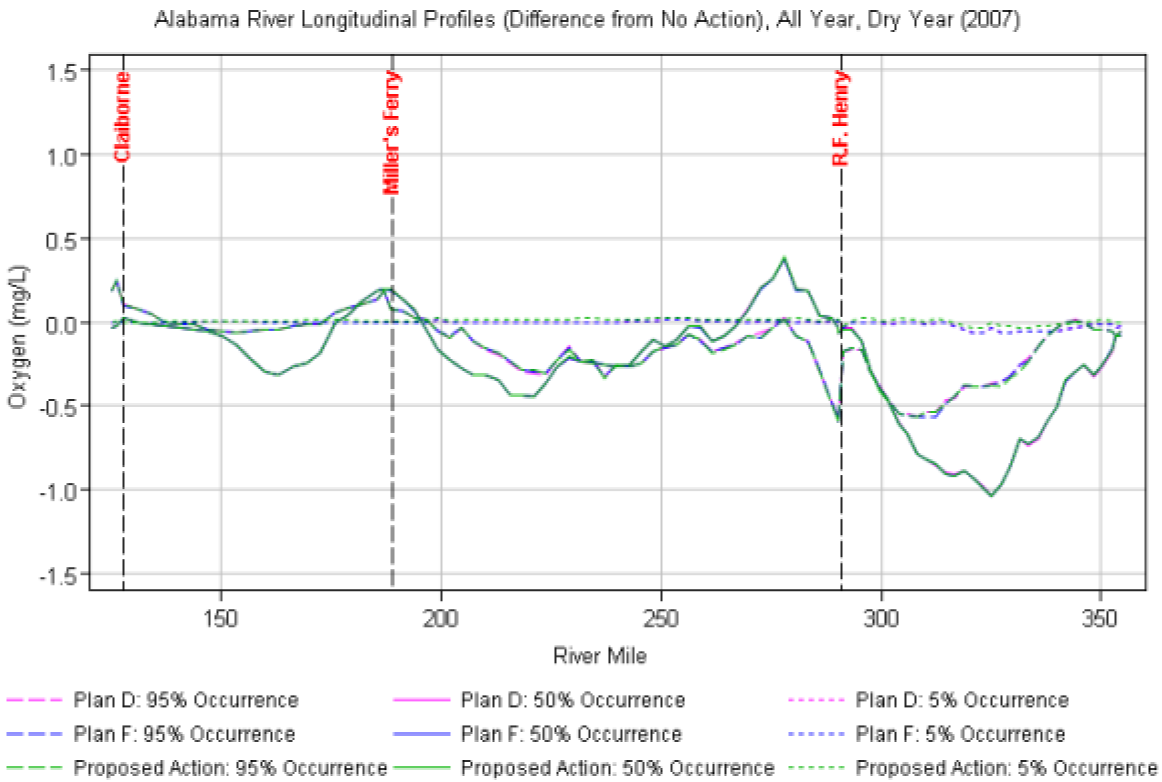

Figure 2.1-8 Alabama River oxygen longitudinal profile for a representative dry-weather year (2007).

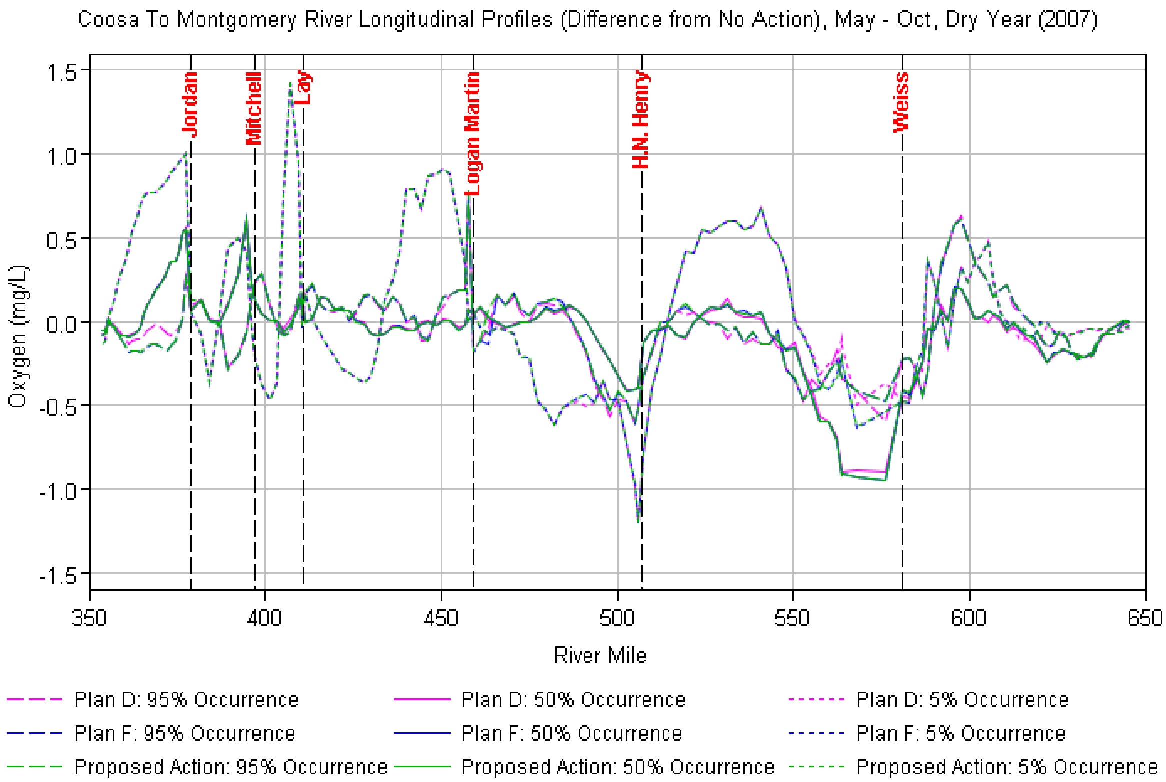

Figure 2.1-9 Coosa River oxygen longitudinal profile for May to October in a representative dry-weather year (2007).

In reservoirs with deep forebays, oxygen is often higher at the water surface and lower with depth through the water column. Reservoirs that release from deep water often release low oxygen water downstream. That is generally more pronounced in dry-weather years when inflows to reservoirs are low and retention times in reservoirs increase. That is illustrated by comparing Figures 2.1-7 and 2.1-10. The plots illustrate the Alabama River in a representative dry- and wet-weather year, respectively. The reason for the differences among alternatives is that each one uses different dam operations for drought management through a series of triggers. Those drought triggers change the way water is released during periods of drought in the ACT Basin.

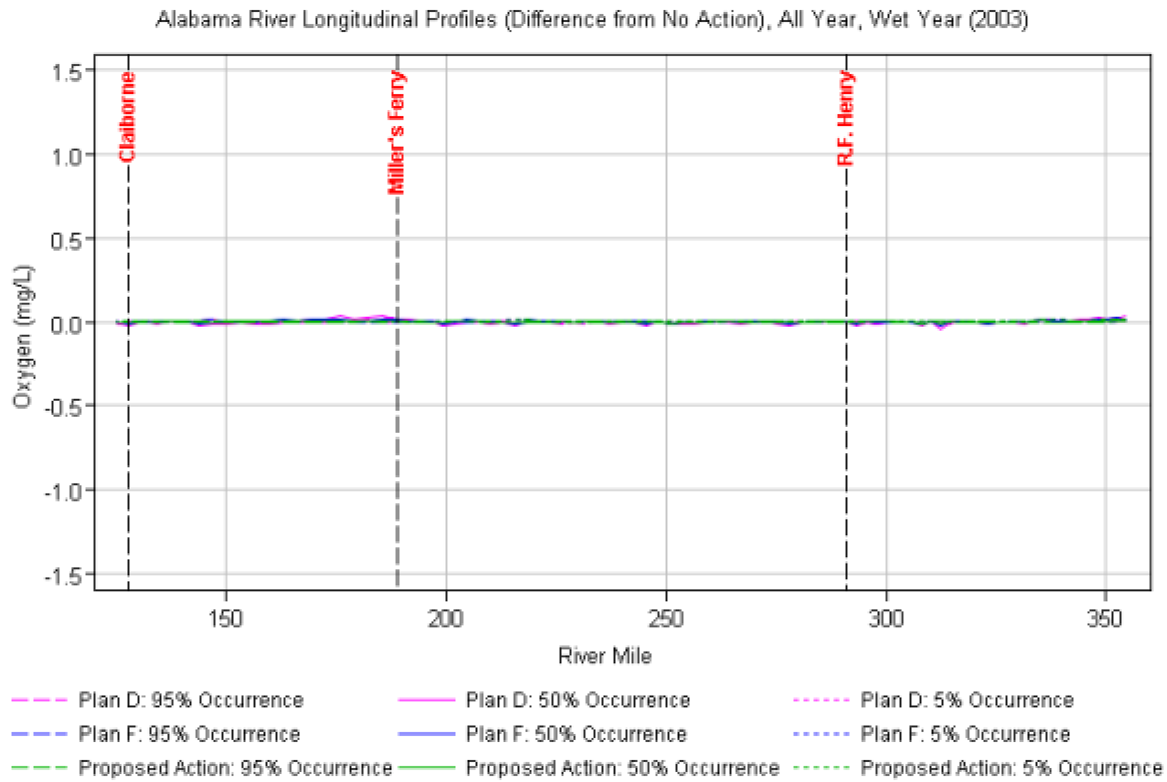

Figure 2.1-10 Alabama River oxygen longitudinal profile for a representative wet-weather year (2003).

Median DO downstream of Lake Allatoona in the Etowah River have little change for the No Action Alternative over the modeled period (Figure 2.1-11).

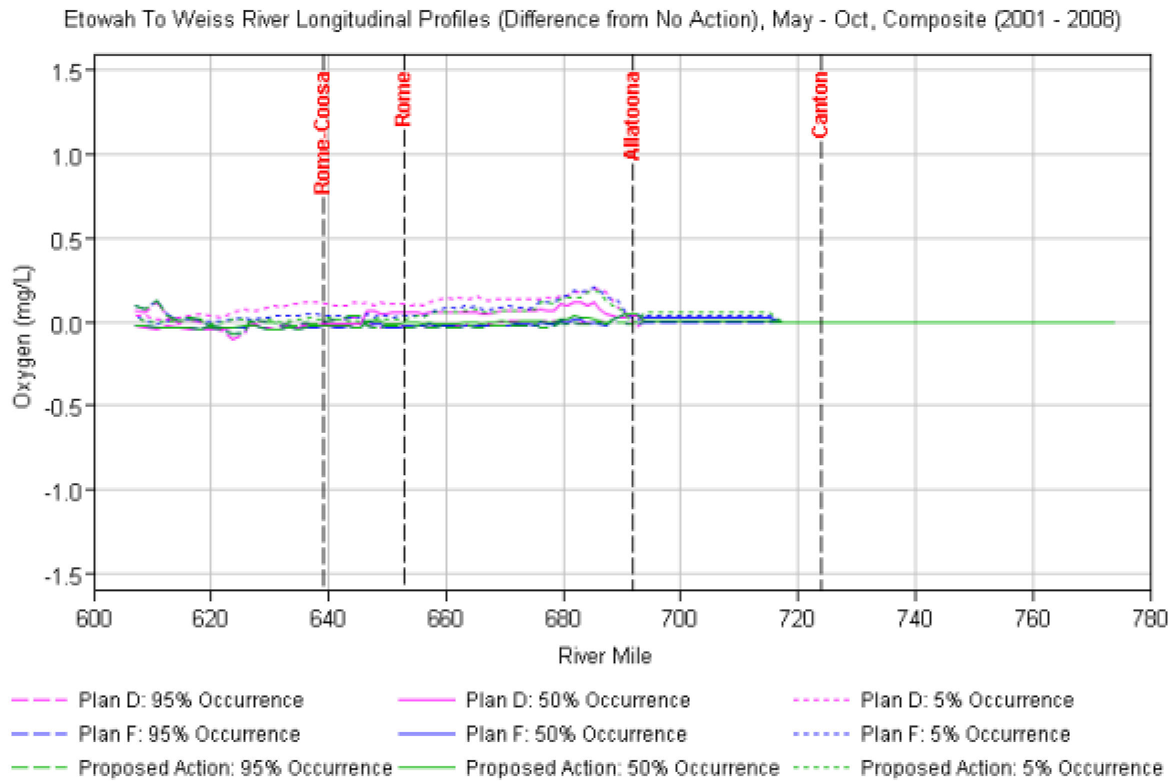

Figure 2.1-11 Etowah River oxygen longitudinal profile for May to October over the modeled period (2001 - 2008).

DO in the Tallapoosa River fluctuates immediately downstream of dams from May through October in a representative dry-weather year (Figure 2.1-12). Those fluctuations would be expected to occur at conditions near water quality standards; 4 mg/L downstream of dams.

In summary, our modeled evaluation of the impacts of the proposed action indicate that any declines in DO compared to the current operation of the Corps reservoirs would be isolated and usually less than 0.5 mg/l. Those declines would be most pronounced during extreme drought (5th percentile occurrence) and in some cases declines up to 1.0 mg/l could be seen. For the most part, the preceding graphs indicate that the proposed action would cause insignificant changes from the No Action alternative. In some cases the model indicates increases in DO up to about 1.0 mg/l. For Lake Allatoona releases, which the PAL identified as a specific concern, there would be little difference from current operations even in the extreme drought condition.

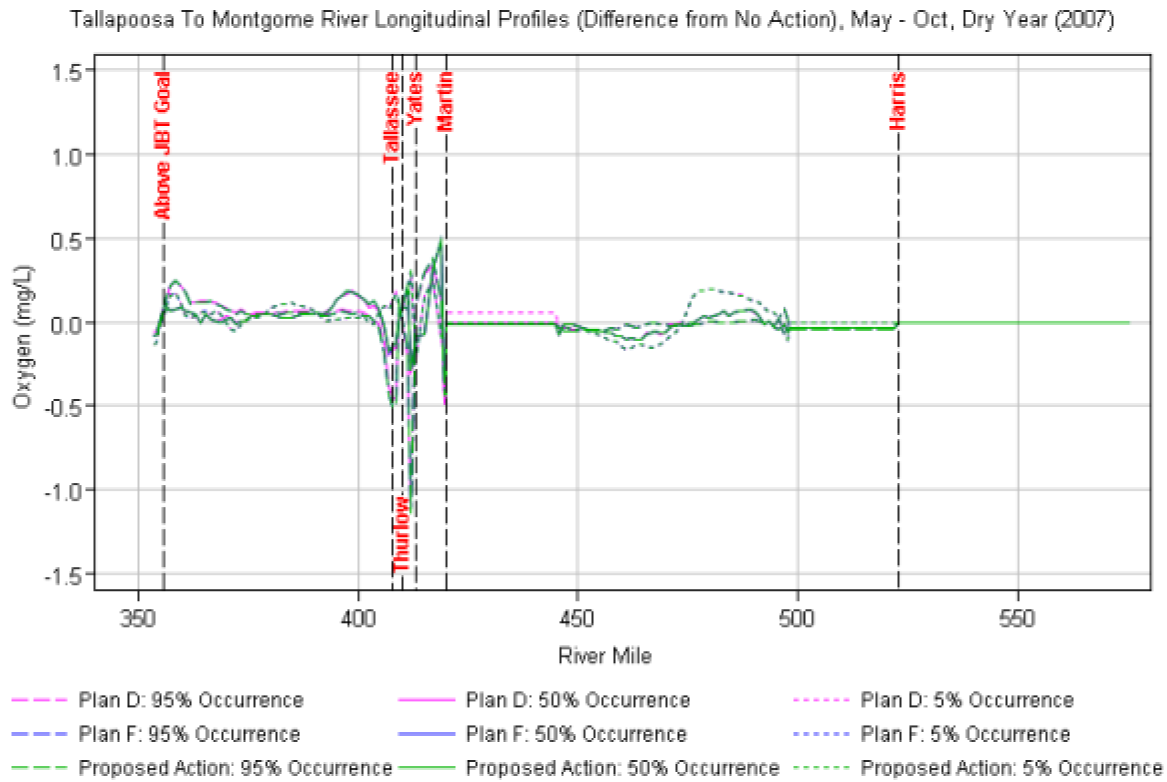

Figure 2.1-12 Tallapoosa River oxygen longitudinal profile for May to October in a representative dry-weather year (2007).

2.1.2 Total number of instantaneous "measurements" less than 4.0 mg/L

HEC5Q doesn't have the ability to simulate instantaneous DO. The river profile simulations suggest that DO values less than 4 mg/L are only expected at several tailrace locations (as illustrated in Figures 2.1-1 through 2.1-5).

2.1.3 Monthly exceedence figures and box plots with outliers for water temperature

Monthly exceedence figures for water temperature were not generated. The operational changes in the Proposed Action Alternative would be expected to affect water temperature along reaches of the ACT Basin where changes in DO were predicted. The largest fluctuations in water temperature were predicted at the confluence of the Coosa and Tallapoosa Rivers into the Alabama River. Along this reach the Proposed Action Alternative would be expected to increase median water temperatures by more than 1.8 °F (1°C) in a representative dry year (Figure 2.1-13).

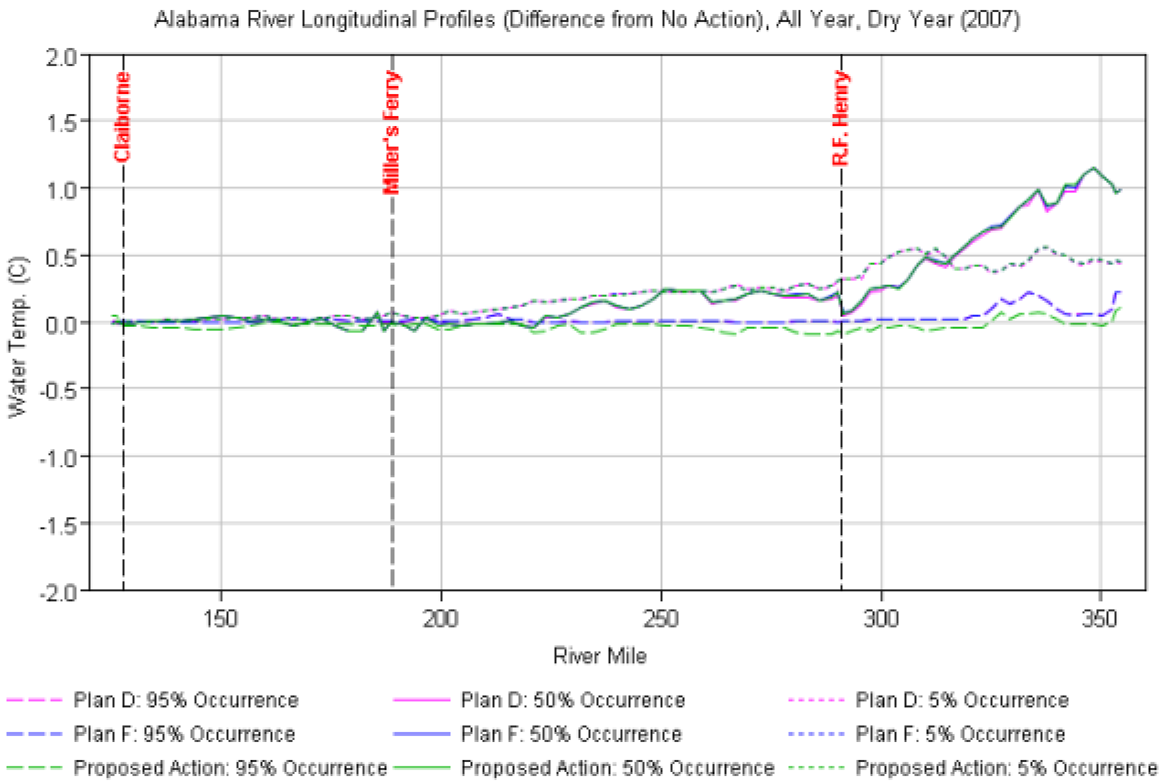

Figure 2.1-13 Alabama River longitudinal profile of water temperature in a representative dry-weather year (2007).

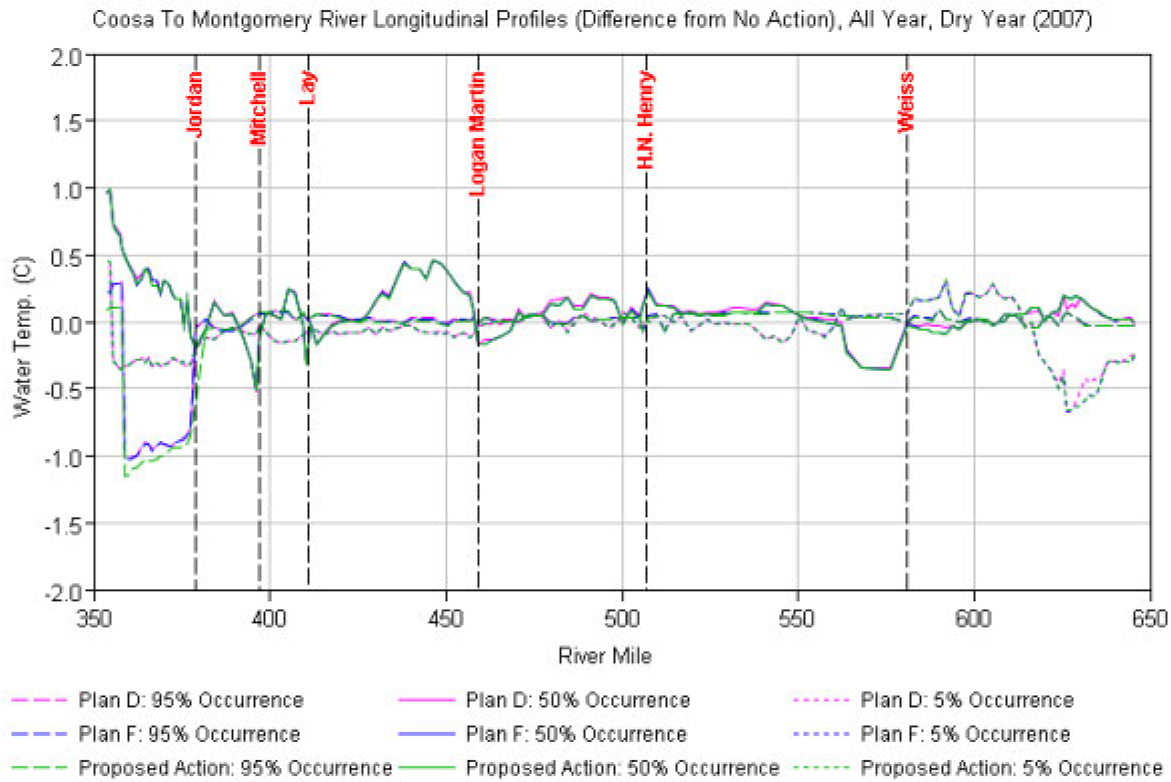

Figure 2.1-14 Coosa River water temperature longitudinal profile for a representative dry-weather year (2007).

The changes in modeled water temperature from the No Action Alternative have the greatest variation during periods when drought operations are likely to occur. However, the range of water temperatures predicted by the model as a change between various alternatives and the No Action Alternative would not be expected to be as great under observed conditions (Figure 2.1-14). APC operates Jordan Dam and Lake to ensure minimum flows (2,000 cfs) for protected species. The Corps HEC-ResSim modeled flows were less than what would actually be released during periods of drought. Therefore, as previously stated, water temperatures would not be expected to decrease as much as 1.8 °F (1 °C).

Little change in water temperature would be expected on the Alabama River over longer periods and when drought conditions have not triggered as seen in Figure 2.1-15. The Alabama River does not have reservoirs with storage but, instead, is dominated by reservoirs with run-of-river operations. Generally storage reservoirs have greater fluctuations in downstream water temperature.

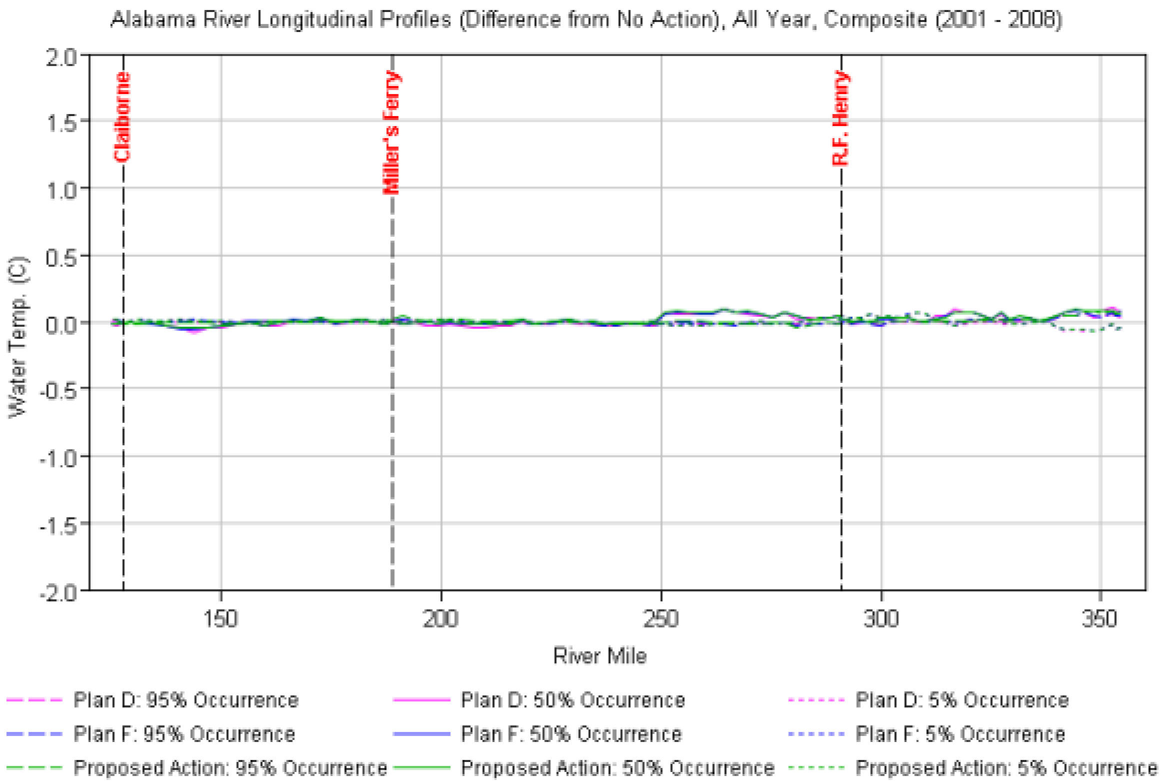

Figure 2.1-15 Alabama River water temperature longitudinal profile for the modeled period (2001–2008).

Water temperature fluctuations downstream of storage reservoirs would be expected directly downstream of Carters Lake. Water temperatures downstream of Carters Lake would be expected to decrease by around 0.7 °F (0.4 °C) and 1.5 °F (0.7 °C) as seen in Figures 2.1-16 and 2.1-17 respectively.

Median water temperatures downstream of the confluence of the Coosawattee and Oostanaula Rivers would be expected to increase by as much as 0.7 °F (0.4 °C) in dry-weather conditions (Figure 2.1-17). The health of aquatic species along the reach is a concern for stakeholders. Looking more closely at periods critical to aquatic species, when water temperatures are greatest, little to no change was modeled on the Oostanaula River (Figure 2.1-16). A decrease in water temperature downstream of Carters Lake during the growing season would likely benefit species. Changes in water temperature in the Coosawattee River would be expected to have negligible effects.

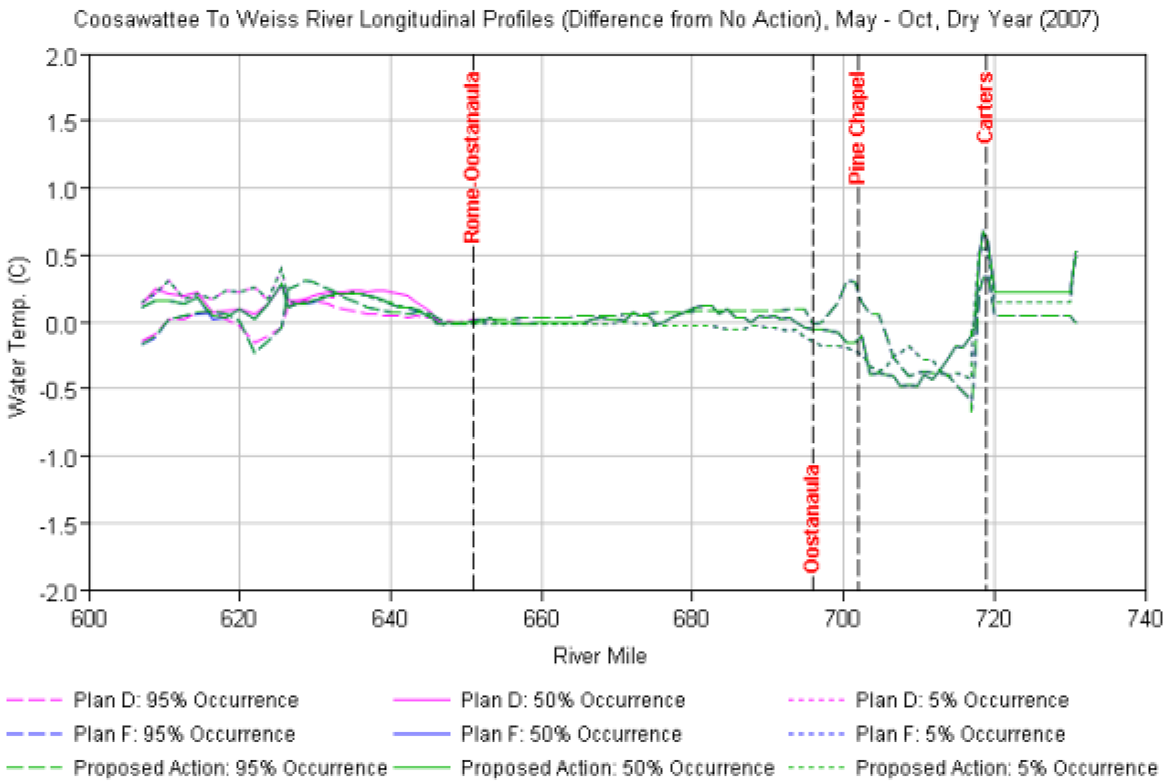

Figure 2.1-16 Water temperature longitudinal profile for a representative dry-weather year during the growing season from May through October (2007) from Carters Lake downstream to Weiss Lake.

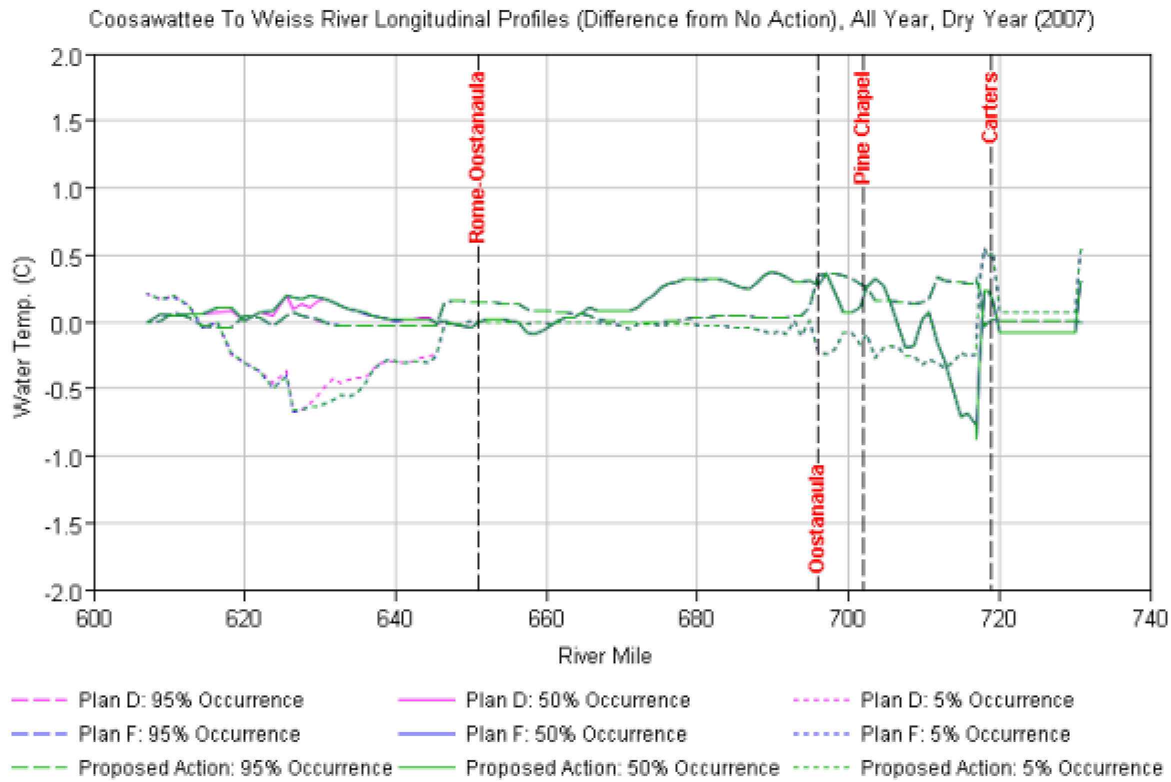

Figure 2.1-17 Water temperature longitudinal profile for a representative dry-weather year (2007) from Carters Lake downstream to Weiss Lake.

Similar to conditions downstream of Carters Lake, median water temperatures downstream of Lake Allatoona would be expected to decrease in dry years (Figure 2.1-18). A decrease in water temperature downstream of Lake Allatoona during the growing season in dry weather conditions would likely benefit aquatic species.

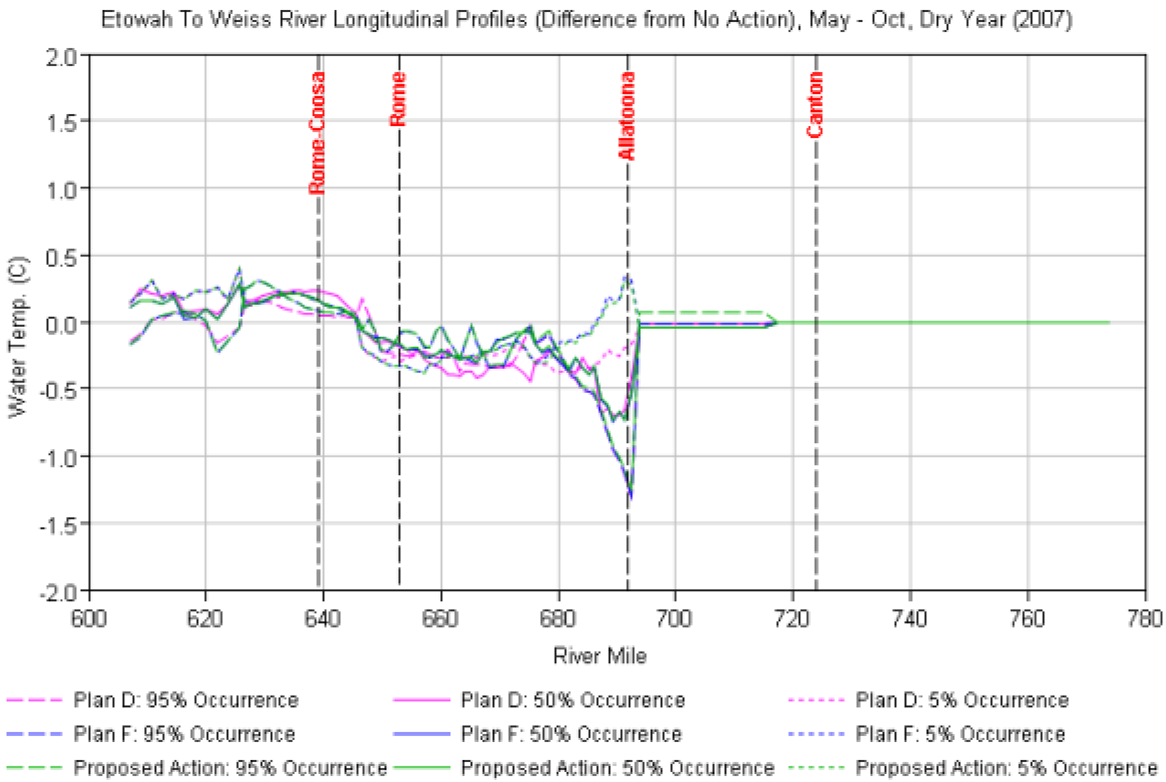

Figure 2.1-18 Etowah River water temperature longitudinal profile May through October for a representative dry-weather year (2007).

In the Tallapoosa River, over the modeled period, little change in water temperature would be expected (Figure 2.1-19). In reaches downstream of Lake Martin, water temperatures would be expected to decrease.

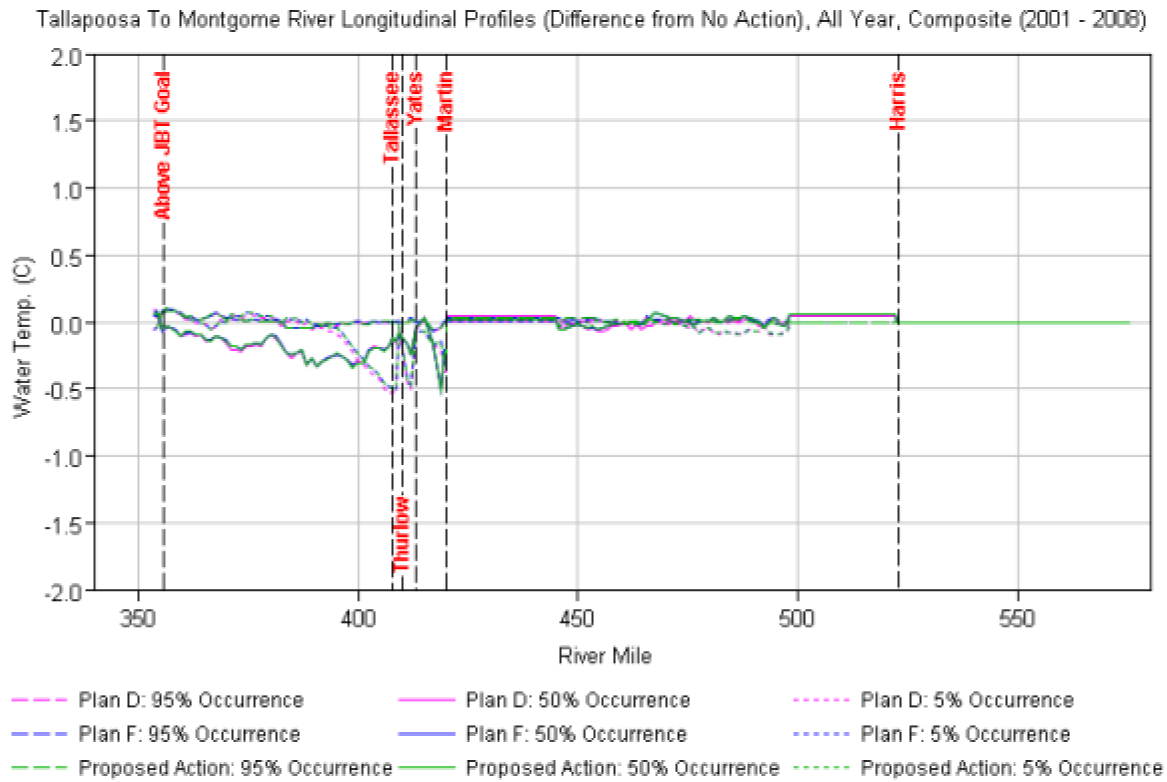

Figure 2.1-19 Tallapoosa River water temperature longitudinal profile for the modeled period (2001-2008).

2.1.4 Average stream percent wastewater

Figures 2.1-20 through 2.1-24 illustrate the percent of wastewater instream at various points in the ACT Basin for a period of low stream flow. From these plots it is clear that wastewater makes up less than 10 percent of the total flow in most cases. A ten mile reach downstream of Rome, Georgia and upstream of Weiss Lake may have a greater percentage of wastewater as illustrated in Figure 2.1-22.

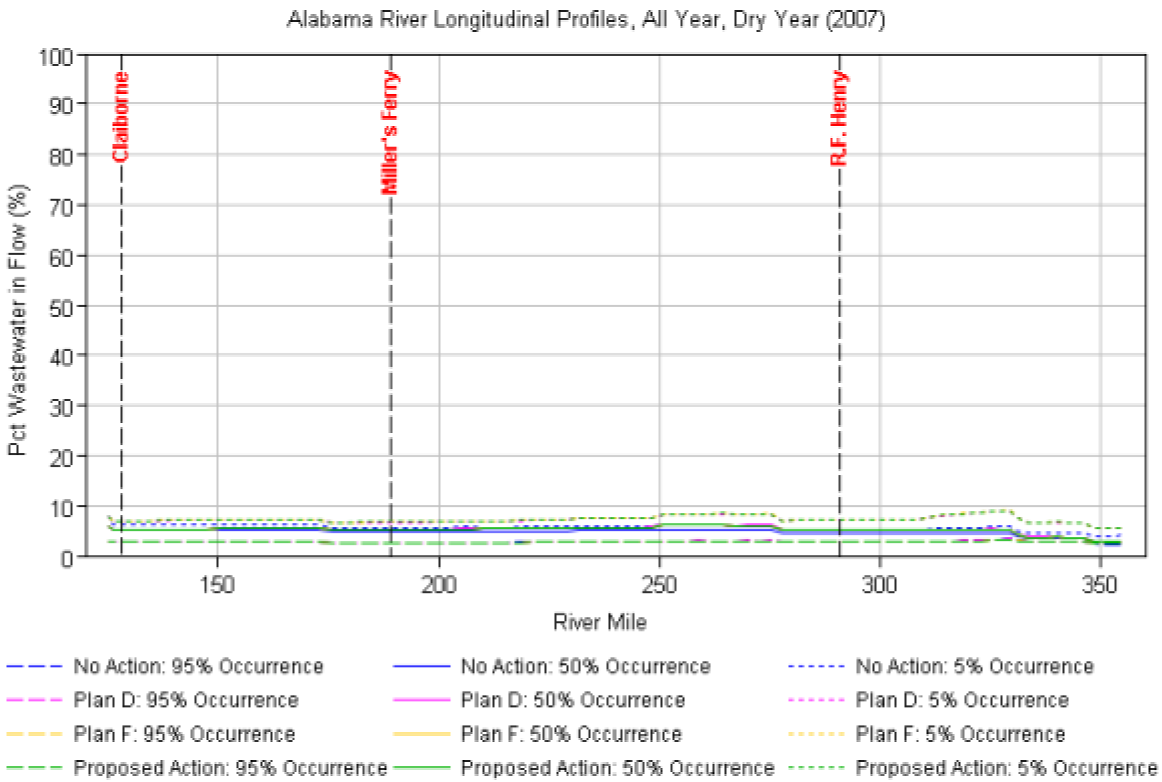

Figure 2.1-20 Alabama River longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

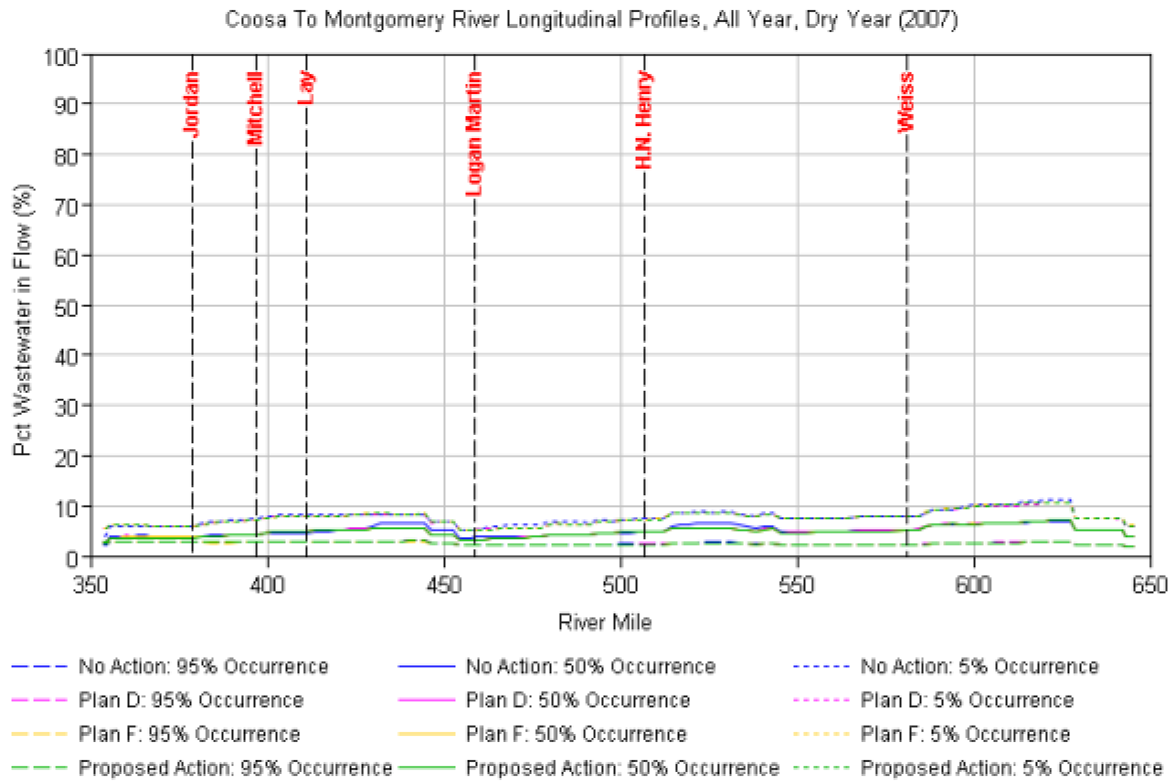

Figure 2.1-21 Coosa River longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

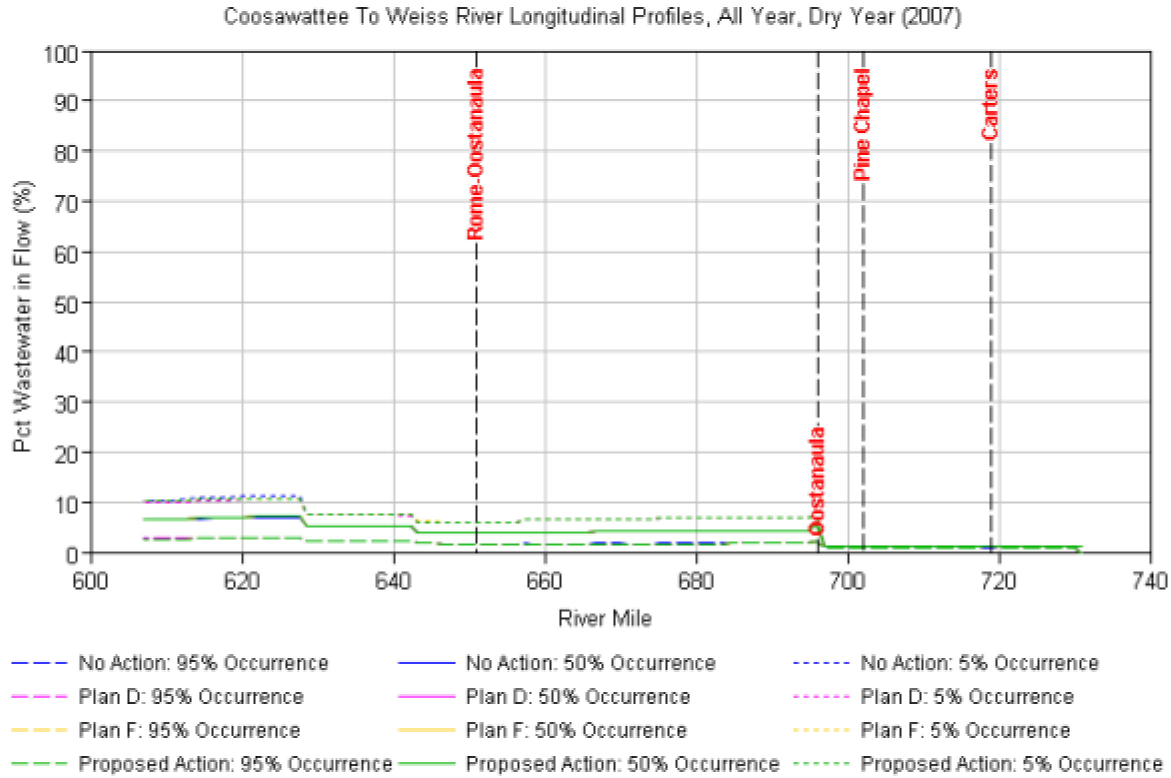

Figure 2.1-22 Coosa, Coosawattee, and Oostanaula rivers longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

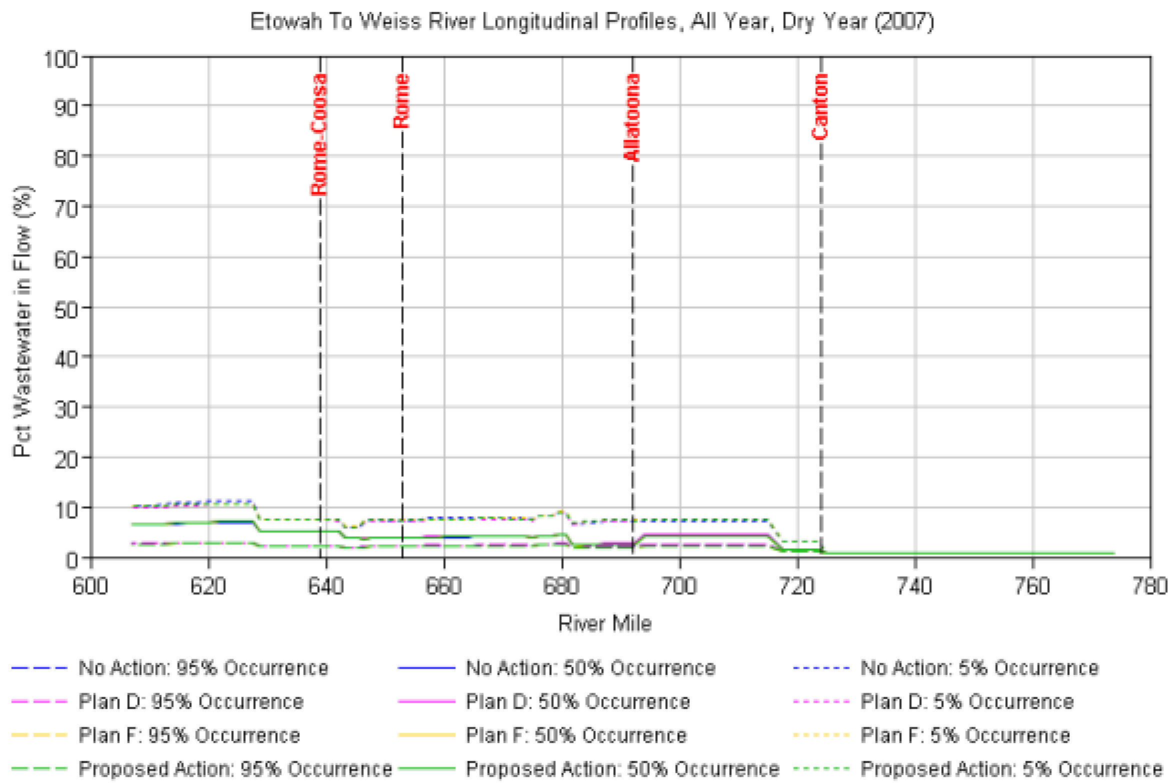

Figure 2.1-23 Etowah and Coosa rivers longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

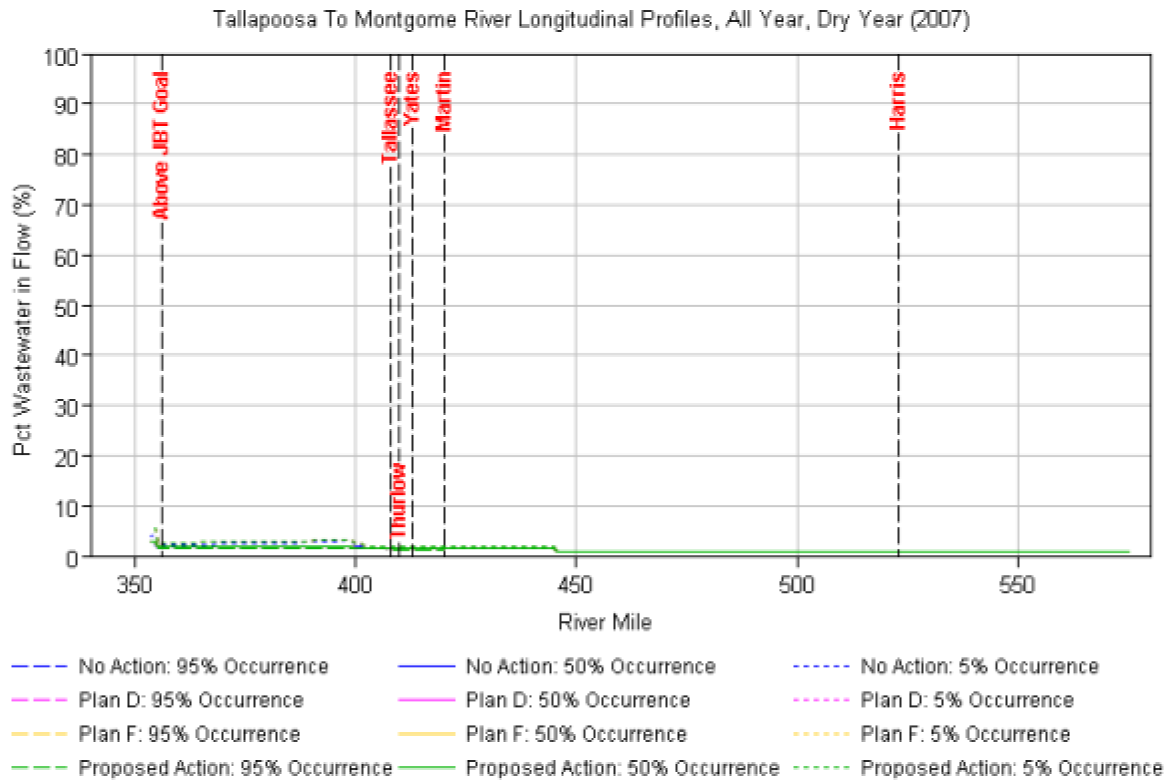

Figure 2.1-24 Tallapoosa River longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

2.2 Protection and enhancement of remaining free-flowing river habitats.

Identification and mapping of remaining free-flowing river habitats is generally beyond the scope of the current water control manual update. While the need is recognized, it is not a part of or affected by the Corps' effort to refine its operations to meet current conditions. The discussion that follows provides information that the Corps does have relevant to sediment transport, sedimentation, erosion and substrate characterization within our reservoirs.

The update of the ACT water control manual and plans focused on the operations of Corps reservoirs; therefore, it is most appropriate to focus on sediment transported by rivers rather than inputs from overland sources. However, comments are included where information was found that links land use change with an apparent effect on sediment loads. In general, the quantity and size of sediment transported by rivers is related to the size and frequency of dams in the river system. Impoundments behind dams serve as sediment traps where coarse bed material particles, typically sand and larger, settle in the lake headwaters where entering flows are slowed. Fine particles, typically silts and clays, can remain in suspension and pass through the lake downstream. Large impoundments typically trap most of

the sediment load retaining all the sand and coarser particles plus much of the silt- and clay-sized particles. Smaller, run-of-the-river impoundments tend to pass all sizes of suspended particles during low to moderate flows and coarser bed material particles during high flows. The impact of the impoundments on river form is that the upstream channels can aggrade sediment and undergo an increase in bed elevation, thus reducing the channel gradient. Below a dam the river typically becomes starved for sediment. The channel downstream of a dam might or might not respond to the reduction in sediment load. The channel response depends on how resistant to erosion the channel bed and banks are and how quickly sediment is replenished from downstream tributaries and upland erosion sources. A typical response for channels, with bed and banks composed of easily eroded sands, silts, or soft clays, is for the bed to degrade to a reduced elevation; the channel might also widen through bank erosion.

The four largest impoundments in the system—Lake Martin, Lake Allatoona, Carters Lake, and R.L. Harris Lake—act as sediment traps, retaining most of the sand and larger bed material. Lake Martin accounts for 31 percent of the storage volume in the basin. Lake Allatoona is next largest, with 13 percent, followed by Carters Lake and R.L. Harris Lake, each with 8 percent. Shoaling in Lake Martin is not considered to be a problem because of the huge volume of storage available. A summary of the 2000 Lake Allatoona sedimentation study is included in Section 2.2.2.7.

2.2.1 Tailwater Degradation

Tailwater degradation is the lowering of the river bed elevation immediately downstream of a dam. Three factors drive the occurrence and rate of tailwater degradation: a ready supply of sediment from upstream, erodibility of the bed material, and sufficient flow energy to transport the bed material. After a dam's construction, a large portion of the sediment (as much as 90 percent for large reservoirs) often becomes trapped in the lake above the dam. Flow below the dam, having lost its sediment load to the lake, now has excess capacity to transport sediment. If the bed and bank materials below the dam are composed primarily of erodible sands, silts, and clays, tailwater degradation occurs until either the gradient of the river is sufficiently reduced to dissipate the flow energy, or the bed erodes to a more durable material such as bedrock. A cursory investigation of the tailwater degradation below the ACT projects was made using available data.

2.2.1.1 Claiborne Lake

On the ACT system, the most downstream dam is Claiborne. The tailwater reach extends approximately 72.5 mi downstream to the mouth of the Tombigbee River. Construction on the project began in May 1965 and was completed in September 1976. The slope of the river below the dam is approximately 0.06 ft/mi. The pool has little storage, and it is considered a run-of-the-river project.

Flow and gage measurements have been made below the dam since 1980. They were collected and analyzed to evaluate the degradation below the dam. The tailwater is tidally influenced, and there is a noticeable hysteresis effect in the tailwater rating curve. However, some trends are noticeable. The data were used, along with the rating curves applicable during the time of the measurements, to relate the observed gage heights and flows to a theoretical flow of 10,000 cfs (Figure 2.2-1).

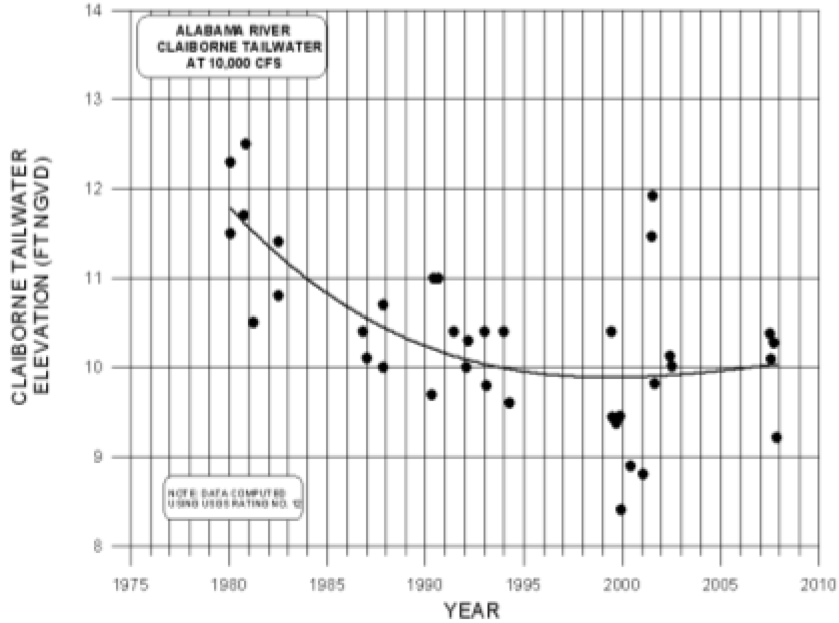

Figure 2.2-1 Claiborne Lake tailwater degradation.

A data gap exists between 1995 and 1999. In addition, the measurements after 2002 were all taken during extremely low flow and, thus, are less reliable because they are farther from the 10,000-cfs target. However, the data show a definite trend toward degradation from 1980 to 2000, perhaps caused by deepening and widening of the channel below the dam. From 2000 to 2007, the channel seems to be more stabilized. USGS has discontinued the rating curve at the site because of the variance in the gage caused by lockages, tides, and power generation at Millers Ferry Lock and Dam upstream.

2.2.1.2 Millers Ferry Lock and Dam and William "Bill" Dannelly Lake

Rating curve data are not available for Millers Ferry Lock and Dam tailwater.

2.2.1.3 Robert F. Henry Lock and Dam and R.E. "Bob" Woodruff Lake

Tailwater rating curve data are not available for Robert F. Henry Lock and Dam; however, historical sedimentation range surveys for the upper end of the Millers Ferry Lock and Dam pool (William "Bill" Dannelly Lake) were assessed for changes in the channel form. At range 30A, both widening and degradation have taken place since 1973 (Figure 2.2-2). However, the data show a drop in both widening and degradation rates since 1982. A trend plot of the sedimentation rates along the entire William "Bill" Dannelly Lake shows, for ranges 28A and 30A, bed degradation of about 0.5 ft per year from 1973 to 1982, and about 0.2 ft per year from 1980 to 1988 (Figure 2.2-3). For the next several ranges downstream from 28A, the bed has been at nearly a constant elevation. Data below range 20A indicate that the bed has been aggrading by several inches per year; thus, the scour is limited to the reach immediately below Robert F. Henry Lock and Dam.

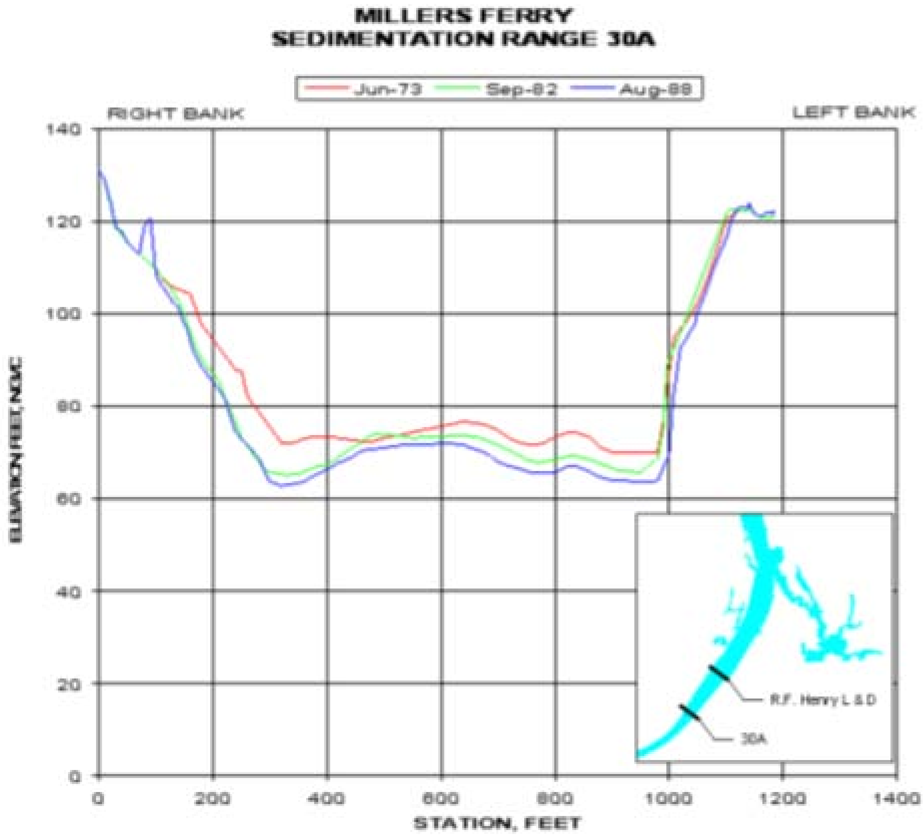

Figure 2.2-2 Tailwater degradation below Robert F. Henry Lock and Dam.

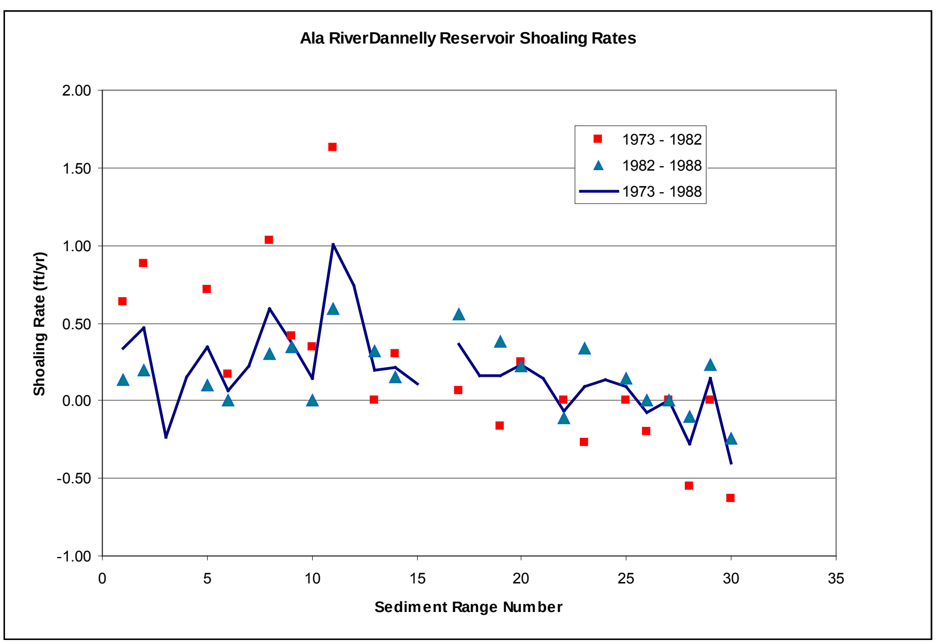

Figure 2.2-3 Shoaling rates for Millers Ferry Lock and Dam Pool, William "Bill" Dannelly Lake.

2.2.1.4 Logan Martin Lake

This APC dam was the second dam built as a part of an APC construction program that further developed the Coosa River in the late 1950s and the 1960s. Construction began in 1960, and operation began in 1964. No observable change has occurred in the tailwater rating curve developed for the project (Figure 2.2-4).

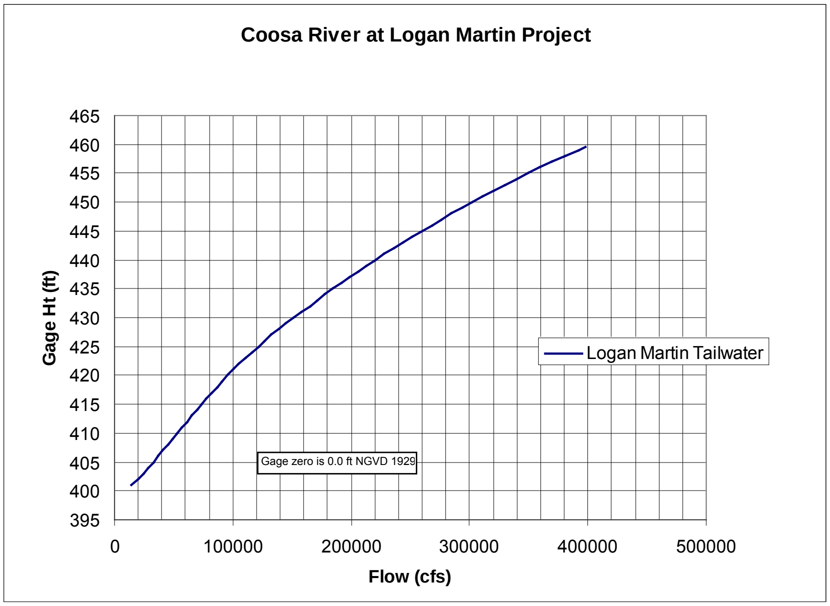

Figure 2.2-4 Logan Martin Lake tailwater rating curve.

2.2.1.5 H. Neely Henry Dam

This APC dam was part of an APC construction program that further developed the Coosa River in the late 1950s and the 1960s. Construction began in 1962, and operation began in 1966. No observable change has occurred in the tailwater rating curve developed for the project (Figure 2.2-5).

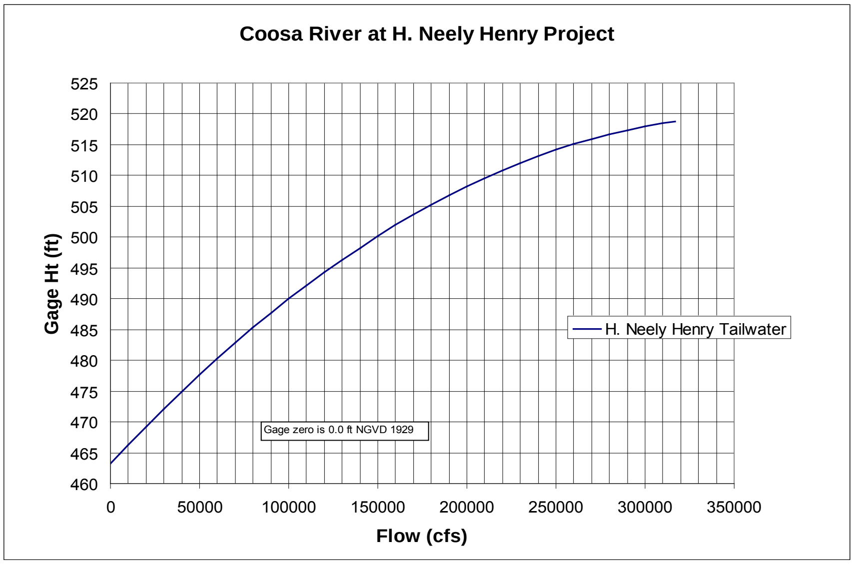

Figure 2.2-5 H. Neely Henry Dam tailwater rating curve.

2.2.1.6 Weiss Lake

This APC dam was part of an APC construction program that further developed the Coosa River in the late 1950s and the 1960s. Construction began in 1958, and operation began in 1961. There is a tailwater rating curve at both the power house and the spillway locations (Figure 2.2-6). No observable change has occurred in either of the tailwater rating curves developed for the project.

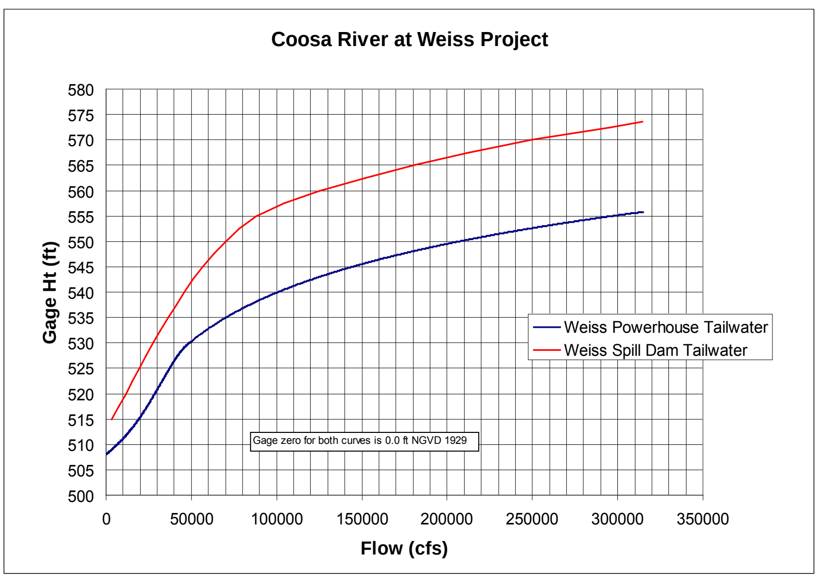

Figure 2.2-6 Weiss Lake tailwater rating curves.

2.2.1.7 R.L. Harris Lake

Construction began for this newest project on the Tallapoosa River in 1974, and operation began in 1983. No observable change has occurred in the tailwater rating curve developed for the project (Figure 2.2-7).

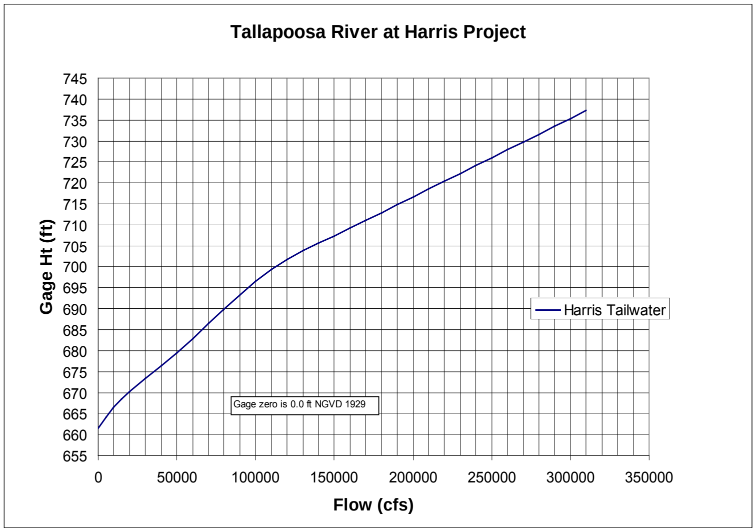

Figure 2.2-7 R.L. Harris Lake tailwater rating curve.

2.2.1.8 Carters Lake

Construction on Carters Lake was started in 1962 and completed in 1977. The USGS gage 0238500, (Coosawattee River at Carters) is at U.S. Hwy 411, just downstream of the Carters Reregulation Dam. Historic rating curve data extending from 1978 to 2008 at this gage were obtained from the USGS. The curves were plotted to determine the degree of movement in the curve over time (Figure 2.2-8).

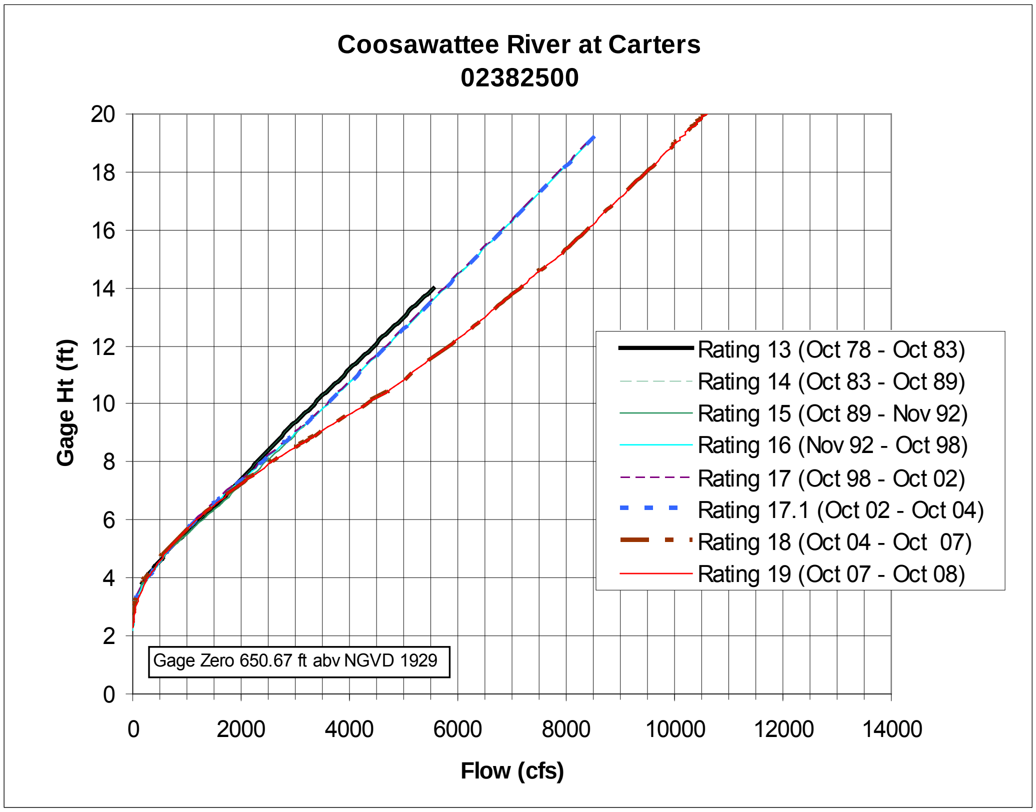

Figure 2.2-8 Carters Lake historic tailwater rating curves.

The curves show an obvious lowering of the tailwater of approximately 2–2.5 ft at flows above 3,000 cfs. However, the low flows do not appear to have been affected (Figure 2.2-9).

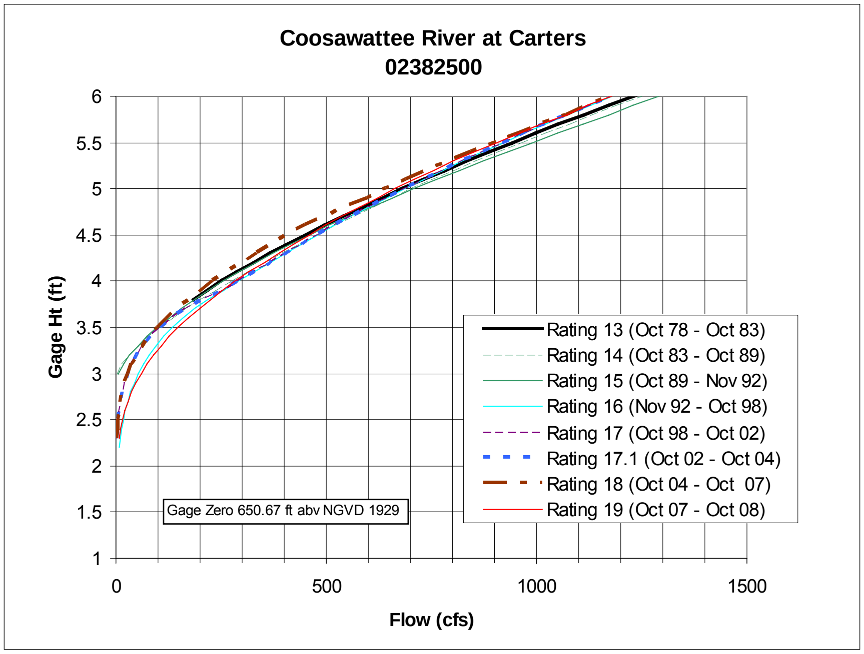

Figure 2.2-9 Carters Lake low-flow tailwater rating curves.

The lower part of the curve indicates that the channel has not degraded over time. The change in the upper part of the curve might have been because of the lack of high-flow data during the early years, and as more storms were observed, that part of the curve was well defined. Another possibility is that overbank clearing downstream might have occurred, or modifications to Hwy 411. The significant point is that the channel does not appear to have degraded. The presence of rock in the channel offers a reasonable and probable explanation for the lack of degradation.

2.2.1.9 Lake Allatoona

Construction on the dam was completed in 1950. The USGS gage 0239400, (Etowah River at Lake Allatoona, above Cartersville, Georgia) is 0.8 mi downstream from Lake Allatoona. Historic rating curve data extending from 1979 to 2008 at this gage were obtained from the USGS. The curves were plotted to determine the degree of movement in the curve over time (Figure 2.2-10). The curves show little difference over the period of record. The lower part of the curve shows no degradation over the 1979–2008 period, but degradation might have occurred during construction of the dam (Figure 2.2-11).

2.2.2 Impact of Existing Operations on River Channel Stability

A specific gage analysis was conducted at several USGS stream gaging stations in the basin to better understand the impact of dam operations on the stability of the rivers.

A cursory investigation of the condition of the pools was made to see if shoaling is a significant issue. Historic sediment ranges were evaluated where possible and other available data were used to estimate the appropriateness of using the existing area-capacity relationships in the modeling efforts.

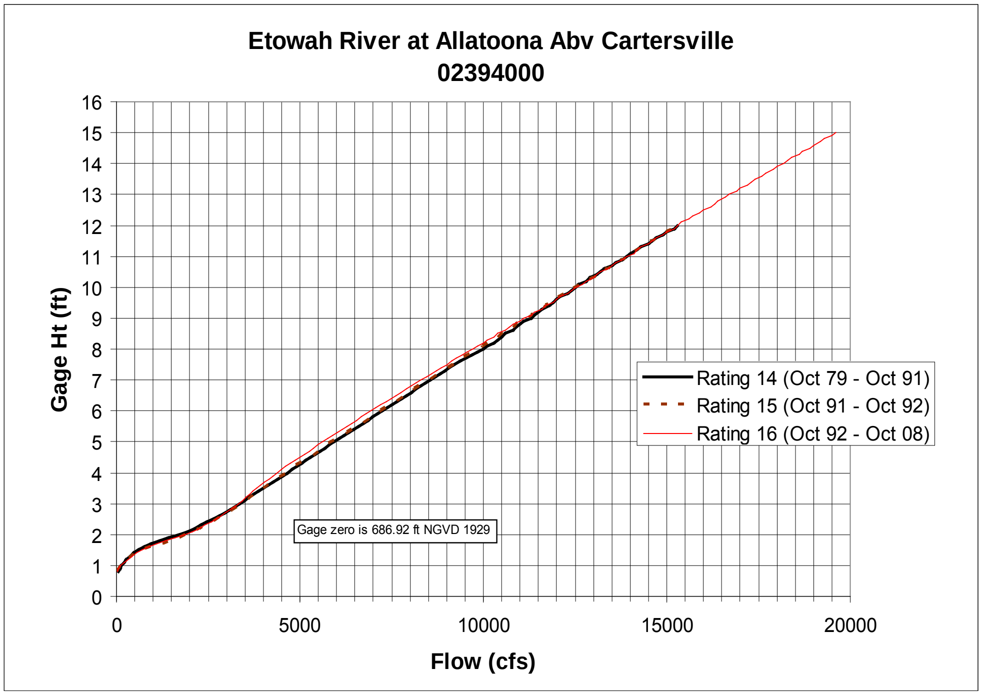

Figure 2.2-10 Lake Allatoona tailwater rating curve.

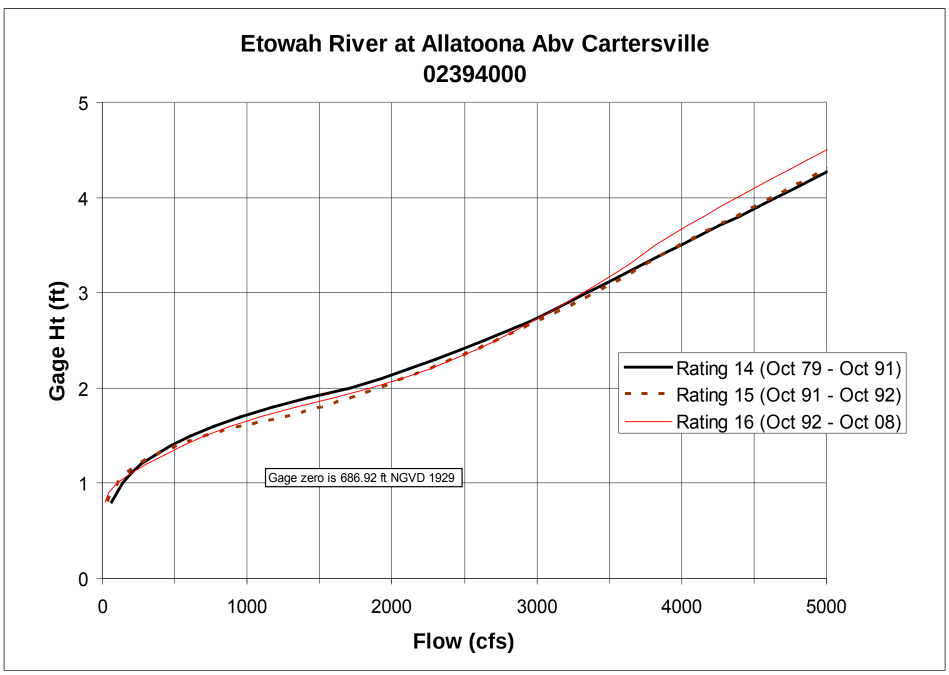

Figure 2.2-11 Lake Allatoona tailwater rating curve.

2.2.2.1 Claiborne Lake

Storage volume of the lake is listed at 96,360 ac-ft at elevation 35 ft. Sediment range surveys of the Claiborne Lake were made initially in 1982 and updated again in 2009. However, the pool has a relatively small amount of storage, and it is a run-of-the-river project. Operation of the project is not affected by the

storage lost to shoaling in the lake, and it is reasonable to assume that the existing area/capacity curve is adequate to use in modeling the system and to include in the present WCM update.

A table of the shoaling locations and total dredging amounts since 1981 is shown below (Table 2.2-1). The data show that the location of the greatest dredging/shoaling is at the Millers Ferry Lock and Dam lower approach at RM 133, although the frequency of dredging is greatest at the Claiborne Lake upper approach, with consecutive periods between dredging events of 2, 6, 5, and 12 years since 1985.

2.2.2.2 Millers Ferry Lock and Dam and William "Bill" Dannelly Lake

Storage volume of the lake is listed at 346,250 ac-ft at elevation 80.8 ft. Surveys of the 30 sediment ranges in William "Bill" Dannelly Lake were made initially in 1973, 1982, and again in 1988 (Figure 2.2-12). The surveys were repeated in 2009.

The sections show some shoaling in the lower part of the reservoir between 1973 and 1982, at a reduced rate between 1982 and 1988. All 30 ranges were compared using approximate methods on the basis of the channel elevation change for the two periods. Data were not available for all the sections in the 1982 survey, but rates were computed for all the available data (Figure 2.2-12).

Table 2.2-1
Claiborne Lake dredging 1981–2007

Mile	Bar name	Period	Dredged	Cubic yards
72.5	Claiborne Lock	05/28/85–05/31/85	34+45 to 41+95	8,706
	Upper Approach	05/24/87–05/26/87	NA	12,044
		07/22/93–07/23/93	0+00 to 4+50	9,451*
		06/05/95–06/06/95	66+50 to 64+00	8,730*
		10/15/07–10/16/07	2+06 to 7+37	8,120
107.9	Wilcox (Bar 107)	10/07/92–10/10/92	22+00 to 36+40	24,313
		09/21/97–09/25/97	44+83 to 30+60	28,263
		10/19/07–10/20/07	32+17 to 43+78	4,237
117.5	Holly Ferry	10/05/92–10/07/92	5+00 to 15+00	15,977
122.7	Walnut Bluff	09/25/92–10/05/92	1+00 to 14+50	38,529
		10/20/07–10/23/07	3+28 to 14+28	25,076
133.0	Millers Ferry Lock and Dam	08/15/90–08/25/90	21+10 to 24+60	86,710
	Lower Approach		33+90 to 55+23	
		08/17/92–08/23/92	22+00 to 25+00	1,242
		10/23/07–10/23/07	54+00 to 55+59	735

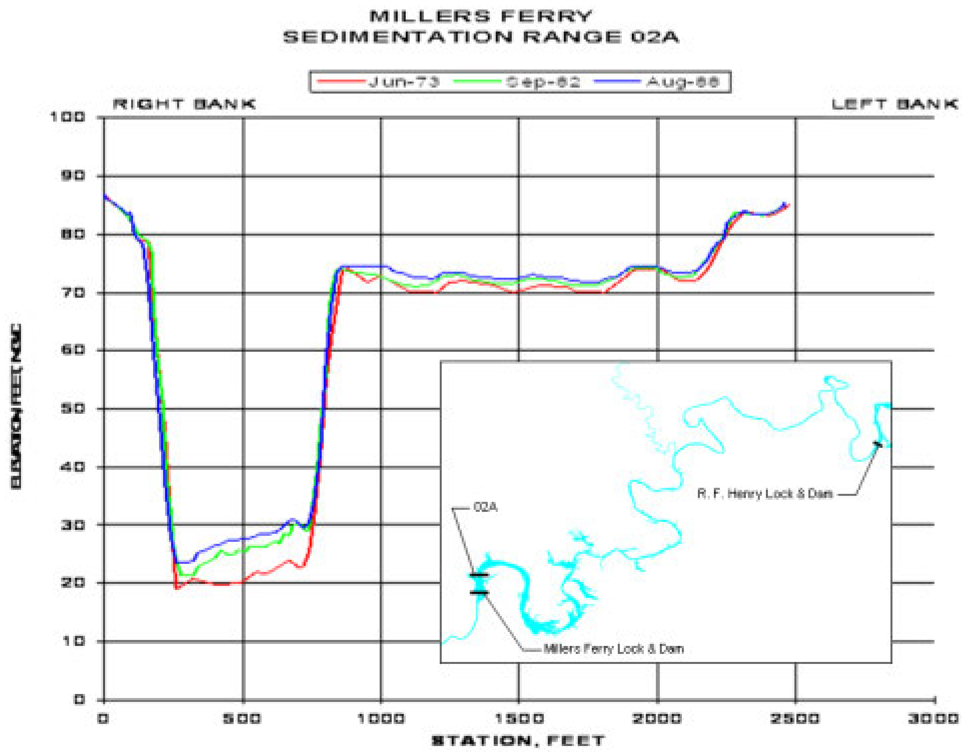

Figure 2.2-12 Cross section of Millers Ferry Lock and Dam Pool, William "Bill" Dannelly Lake, sedimentation range 02A.

For the 1973 to the 1982 period, shoaling and scour rate were the greatest, ranging from shoaling 1.6 ft/yr near Range 11, in the lower part of the lake to scouring 0.6 ft/yr at range 30 just below Robert F. Henry Lock and Dam. The 1982–1988 period shows that some shoaling occurred during that period over much of the lake with only minor scour in the upper lake reach. The overall trend from 1973 to 1988 indicates that, in general, scour has taken place immediately below Robert F. Henry Lock and Dam at range 30 downstream to about range 26. Sediment deposition has taken place from range 25 downstream to range 01, immediately above Millers Ferry Lock and Dam, at a rate of about 0.1 ft to 1.0 ft per year.

Geographic information system (GIS) data for the channel above Millers Ferry Lock and Dam were obtained in February 2009. The data can be used to develop a new area/capacity curve but would require additional hydrographic surveys to extend the limits to the top of banks. An update of the area/capacity curve would be helpful, but using the present curve for the present modeling effort is not unreasonable.

2.2.2.3 Robert F. Henry Lock and Dam and R.E. "Bob" Woodruff Lake

Storage volume of the lake is listed at 234,200 ac-ft at elevation 125 ft. Surveys of the R.E. "Bob" Woodruff Lake were made initially in 1974. The surveys were repeated in 1982 and 1988. They were re-surveyed again in 2009. Throughout the entire pool from 1974 to 1988, minor amounts of both shoaling and bank erosion occurred with the highest rates occurring between 1974 and 1982. The shoaling and bank erosion shown in Figure 2.2-13 is representative for all the sedimentation ranges in the pool.

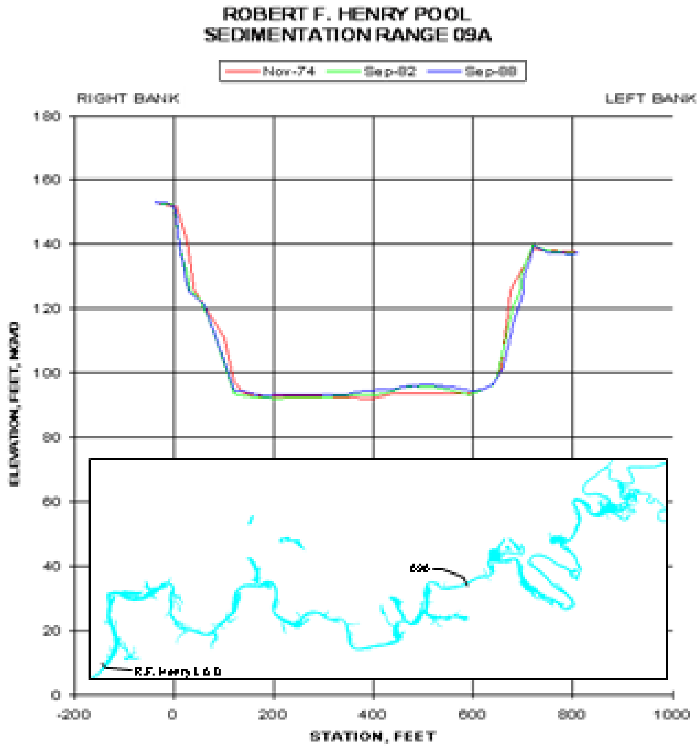

Figure 2.2-13 Cross section of Robert F. Henry Lock and Dam and R.E. "Bob" Woodruff Lake, sedimentation range 09A.

The sedimentation range surveys indicate that the overall change in storage is small, thus operation of the project would not be affected by the shoaling shown in the lake, and it is reasonable to assume that the existing area/capacity curve is adequate to use in modeling of the system and to include in the present WCM update.

2.2.2.4 Logan Martin Lake

Logan Martin Lake is in the Alabama counties of Calhoun, St. Clair, and Talladega. The lake has a surface area of 15,263 ac and 275 mi of shoreline at a normal pool elevation of 465 ft. Siltation studies by APC have been limited to evaluating the recreational impact of siltation at the mouths of tributaries. Studies indicate that shoaling over the years is reduced because of increased vegetation in the basin. Erosion studies indicate that sheet and rill erosion on cropland for 1982 was approximately 7.2 tons/ac/yr in Alabama. Sheet and rill erosion on cropland for 1997 was approximately 6.0 tons/ac/yr in Alabama. Cropland acreages were obtained from the National Agricultural Statistics Service (NASS) Web site for the years 1970 and 2001. Assuming no improvement in erosion control (worst case) from 1970 to 1982 and no improvement from 1997 to 2001, the percent change in erosion from 1970 to 2001 was derived (Table 2.2-2). The impact of the erosion on the Area/Capacity relationship has not been determined.

Table 2.2-2
Erosion 1970–1982 for counties in the ACT Basin

County	Year	Acres cultivated	% Change	Erosion rate	Tons soil eroded	% Change
Calhoun	1970	14,210		7.2	102,312	
	2001	5,518	–61.2%	6.0	33,108	–67.6%
Cherokee	1970	40,080		7.2	288,576	
	2001	32,518	–18.9%	6.0	195,108	–32.4%
Etowah	1970	20,200		7.2	145,440	
	2001	6,018	–70.2%	6.0	36,108	–75.2%
St. Clair	1970	4,810		7.2	34,632	
	2001	18	–99.6%	6.0	108	–99.7%
Talladega	1970	28,250		7.2	203,400	
	2001	18,318	–35.2%	6.0	109,908	–45.96%

2.2.2.5 H. Neely Henry Lake

H. Neely Henry Lake is in the Alabama counties of Calhoun, Cherokee, Etowah, and St. Clair. H. Neely Henry Lake has a surface area of 11,235 ac and 339 mi of shoreline at a normal pool elevation of 508 ft. Siltation studies by APC have been limited to evaluating the recreational impact of siltation at the mouths of tributaries. Studies indicate that shoaling over the years is reduced because of increased vegetation in the basin. Erosion studies indicate that sheet and rill erosion on cropland for 1982 was approximately 7.2 tons/ac/yr in Alabama. Sheet and rill erosion on cropland for 1997 was approximately 6.0 tons/ac/yr in Alabama. Cropland acreages were obtained from the NASS Web site for the years 1970 and 2001. Assuming no improvement in erosion control (worst case) from 1970 to 1982 and no improvement from 1997 to 2001, the changes shown in Table 2.2-2, for H. Neely Henry Lake are applicable.

2.2.2.6 Weiss Lake

Weiss Lake is in Cherokee County, Alabama (population 23,988, year 2000) and Floyd County, Georgia (population 90,565, year 2000). The surface area of the reservoir at a normal pool elevation of 564 ft is approximately 30,200 ac with approximately 447 mi of shoreline. Siltation studies by APC have been limited to evaluating the recreational impact of siltation at the mouths of tributaries. Studies indicate that shoaling over the years is reduced because of increased vegetation in the basin. Erosion studies indicate that sheet and rill erosion on cropland for 1982 was approximately 7.2 tons/ac/yr in Alabama. Sheet and rill erosion on cropland for 1997 was approximately 6.0 tons/ac/yr in Alabama. Cropland acreages were obtained from the NASS Web site for the years 1970 and 2001. Assuming no improvement in erosion control (worst case) from 1970 to 1982 and no improvement from 1997 to 2001, the changes shown in Table 2.2-2, for Weiss Lake are applicable.

2.2.2.7 Lake Allatoona

A cursory screening of the need for additional sedimentation range surveys to re-compute the area-capacity curve and of the shoaling tendencies of Lake Allatoona was made in the year 2000 (USACE, Mobile District 2000). That study was deemed adequate to determine the need for further re-survey of sediment ranges or reestablishing the area/capacity curve.

Analysis of the data revealed that sedimentation and scour had occurred in varying amounts throughout the lake. Overall, the analysis revealed consistently light or no sedimentation in the main body of the lake. Most of the high sedimentation occurred in the outermost reaches of the lake. The reaches are primarily high-inflow locations such as stormwater system outlets and at the mouths of tributary streams. As a result, increased sedimentation is most likely occurring on two levels: (1) sediment loads being carried into the lake with the tributary and outlet flows, and (2) increased flow velocities in those areas are actually eroding the channels and depositing the resulting sediment further downstream.

The level of increased sedimentation in the outermost reaches is not surprising because the area surrounding the lake has experienced dramatic development in recent years. Much of the development can be seen in Cobb County, especially along the I-75 corridor, and in Cherokee County between I-75 and I-575. The region has matured into a major part of suburban Atlanta, bringing with it extensive residential and commercial infrastructure.

The study indicates that the shoreline of Lake Allatoona seems to have experienced relatively little sedimentation or scour in the years since its construction. The shoreline appears to be consistent throughout each of the survey data set.

On the basis of the year 2000 study, it is reasonable to assume that the existing area/capacity curve is adequate for ResSim modeling and for continued use in the Lake Allatoona WCM.

2.2.2.8 Carters Lake

Storage volume of Carters Lake is listed at 242,200 ac-ft for inactive storage, 134,900 ac-ft for power storage, and 95,700 ac-ft for flood storage, for a total storage of 472,800 ac-ft at the top of the flood-control pool elevation of 1,099 ft. No post-construction surveys of the pool have been made since the pool was filled because the pool is 300–400 ft deep near the dam, and until recently, surveying equipment adequate to reach these depths was not available. Surveys were conducted in 2009. Modern equipment now exists to adequately survey at the depths required at Carters Lake. The surveys should be obtained and analyzed to decide if an update of the area/capacity curve would be warranted.

2.2.2.9 R.L. Harris Lake

R.L. Harris Lake is in the Alabama counties of Randolph and Clay. The lake has a surface area of 10,661 ac at a normal summer pool elevation of 793 ft. Construction was completed in 1983, and no sedimentation studies have been done on R.L. Harris Lake. However, because of the relatively recent completion date and other erosion/sedimentation data developed for other locations, it is reasonable to assume that the existing area/capacity relationship would be adequate for modeling purposes.

2.3 Aquatic organism passage at dams, particularly in the upstream direction.

Use of locks to aid in fish passage are currently being implemented and evaluated in cooperation with the Service, the Nature Conservancy, Auburn University and others. Other studies to define target species and investigate the feasibility of providing passage at select facilities are important, but beyond the scope of the current effort.

2.4 Temperature effects on species of concern from reservoirs and hydroelectric operations.

No studies were conducted for the DEIS for the WCM update. As new information becomes available adaptive management will be implemented. Water temperature changes that would be expected were described in Section 2.2. The effects of these potential changes on aquatic biota are further evaluated and presented in section 6.5 of the PDEIS.

2.5 Minimum flows available for Weiss bypass channel.

The USACE does not have control over the Weiss Bypass Channel. The minimum flows during the summer at this location should be discussed with FERC.

2.6 Conservation and recovery of natural flow variability, and reduction of effects of hydropower peaking flows on species of concern.

A return to "natural" (pre-dam) flow variability is not attainable or desirable given other Congressionally authorized purposes of hydropower, flood control, and recreation. The need for seasonal minimum flows is addressed at Carters via a minimum monthly flow release target from the re-regulation pool as part of the Proposed Action. At Lake Allatoona, where there is no re-regulation pool, implementation of a non-hydropower peaking operation for a natural flow regime would require a shutdown of hydropower production at the facility for a specified period of time. This would necessarily occur since there is no possible gradation of water releases between the "off" (0 cfs) and "on" (~3500 cfs) conditions per main hydropower unit. Such a shutdown is not considered practicable given that hydropower production is an important component of the regional power grid.

2.7 Maintenance of floodplain connectivity to flood pulses.

Studies are not currently available to address this question because there is no Lidar in non-reservoir sections of the Basin. USACE can provide stage and flow data but does not know what flows may be required.

Dedicated studies evaluating the effects of management actions on floodplain connectivity are not currently available. However, section 6.5.1 of the PDEIS will review the implications of the proposed management actions for the WCM update. USACE can provide stage and discharge data, but a comprehensive geomorphological assessment is necessary to determine the extent of flood pulses necessary to establish connectivity.

2.8 Potential for reintroductions, enhancements of listed species populations in the basin.

Reintroduction of species and enhancement of habitat for Federally listed species is beyond the scope of the current Water Control Manual update. Surveys for species and habitat for the proposed action have been coordinated with the Service and have been recently completed.

In 2010, the Corps sponsored a survey of mussel species in selected reaches of the Coosa River drainage in Georgia (Dinkins and Hughes 2011), representing the most comprehensive study of T&E mussels in the basin since Williams and Hughes (1998). The Corps has worked closely with the FWS and APC

during the development of the updated WCM to ensure both stakeholders concerns are addressed. We will continue this high level of communication and collaboration as opportunities for adaptive management and further study arise.

Dinkins, G and M. H. Hughes. 2011. Freshwater mussels (Unionidae) and aquatic snails of selected reaches of the Coosa River drainage, Georgia. Dinkins Biological Consulting, Powell, TN. January 2011.

Williams, J. D., and M. H. Hughes. 1998. Freshwater mussels (Unionidae) of selected reaches of the main channel rivers in the Coosa drainage of Georgia. U.S. Geological Survey, Florida, Caribbean Science Center, Gainesville, Florida. October 1998.

2.9 Restoration and maintenance of healthy water quality parameters for all life stages of aquatic species under a variety of flow conditions.

Species specific habitat and water quality requirements are lacking for many aquatic organisms inhabiting the ACT basin. Even fewer data are available to describe ontogenic shifts with respect to these environmental parameters. As such, dedicated studies of key species, including T&E or recreationally important species, should be undertaken to address this data need; however, the level of effort needed to accomplish this is beyond the intent of the current work.

As illustrated in Figure 2.2-15 and described in section 2.2, a large percentage of mainstem reaches in the ACT Basin meet current water quality standards. Section 6.5.3 of the DEIS will review the proposed management alternatives and the implications of water quality changes on aquatic biota. As previously stated, the Corps will continue to work closely with stakeholders in adaptive management and seek opportunities for further study.

2.10 Development of adaptive management protocols that include goals, objectives, research, and monitoring to allow greater understanding of riverine ecosystem response to complex variables.

Although we are not opposed to adaptive management to achieve specific objectives, when possible, the development of research and monitoring efforts goes beyond the stated scope of the current water control manual update, and therefore cannot be addressed in the DEIS.

Draft Fish and Wildlife Coordination Act Report

On

Water Control Manual Updates for the Alabama – Coosa – Tallapoosa River Basin in Alabama and Georgia

Prepared by:
Alabama Ecological Services Field Office
Daphne, Alabama

And

Georgia Ecological Services Field Office
Athens, Georgia

And

Southeast Regional Office
Atlanta, Georgia

U.S. Fish and Wildlife Service
Southeast Region
Daphne, Alabama
December 2012

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

IN REPLY REFER TO:

DEC 2 1 2012

Colonel Steven J. Roemhildt
U.S. Army Corps of Engineers, Mobile District
P.O. Box 2288
Mobile, AL 36628-0001

Dear Colonel Roemhildt:

We are providing your agency with a Draft Fish and Wildlife Coordination Act Report (DFWCAR) for the proposed Water Control Manual (WCM) updates for the Alabama-Coosa-Tallapoosa (ACT) River Basin in Georgia and Alabama in partial fulfillment of Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq.*). The purpose of the WCM updates is to identify operating criteria and guidelines for managing water storage and release of water from U.S. Army Corps of Engineers (Corps) reservoirs. We submit the following comments and recommendations under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq.*), the Migratory Bird Treaty Act (MBTA) (49 Stat. 755, as amended; 16 U.S.C. § 702 *et seq.*), and the FWCA. We anticipate providing comments on the draft Environmental Impact Statement (DEIS) that the Corps is preparing to support its decision regarding the WCM update, and it is our understanding that the Corps intends to include this DFWCAR as an appendix to the DEIS. Delivery of the final version of this report will depend upon the Corps' schedule. A separate consultation will occur regarding the potential impacts of the Corps' proposal on federally-listed species protected under the ESA.

The DFWCAR outlines the fish and wildlife concerns and planning objectives that were provided in our May 3, 2010, Planning Aid Letter (PAL) and August 13, 2010, PAL supplement to you, along with our understanding of the Corps' responses to our concerns and objectives. The DFWCAR describes the alternatives and evaluates the anticipated impacts of the selected plan. Because of the limited scope of the WCM update, the proposed alternative does not fully address many of the Service's conservation concerns in the basin. However, our report provides the Corps with fish and wildlife conservation measures and recommendations. We urge the Corps to consider additional alternatives for analysis that would address our concerns about water quality in project tailraces, alterations of flow regimes that adversely affect fish and wildlife, etc., and could lead to formulation of an environmentally preferable alternative in the Corps' decision-making process for the operations of the ACT reservoirs.

A version of the DFWCAR was distributed to Alabama Department of Conservation and Natural Resources, Alabama Office of Water Resources, Georgia Department of Natural Resources-Wildlife Resources Division, and National Ocean Atmospheric Administration.

If you have any questions, please contact Alabama Ecological Services staff biologist Jennifer Pritchett (251) 441-6633 or Deputy Field Supervisor Dan Everson (251) 441-5837, Georgia Ecological Services staff biologists Alice Lawrence or Will Duncan at (706) 613-9493, or Southeast Regional Office staff biologist Jerry Ziewitz at (850) 877-6513.

Sincerely,

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

EXECUTIVE SUMMARY

In November 2007, the Secretary of the Army directed the U.S. Army Corps of Engineers (Corps) to develop and update Water Control Manuals (WCMs) for the Alabama-Coosa-Tallapoosa (ACT) River Basin. The purpose of the WCM updates is to identify operating criteria and guidelines for managing water storage and release of water from Corps reservoirs. This DFWCAR outlines the U.S. Fish and Wildlife Service's (Service's) fish and wildlife concerns and planning objectives that were previously provided to the Corps in a Planning Aid Letter (PAL), along with our current understanding of the Corps' position on each PAL recommendation. The DFWCAR also describes the alternatives and evaluates the anticipated project impacts of the selected plan.

The Corps' Proposed Action Alternative would continue to operate federal projects in the ACT Basin in a balanced manner to achieve all authorized project purposes. Operations under the Proposed Action Alternative include a minimum flow of 240 cubic feet per second (cfs) at Lake Allatoona and a phased fall drawdown period from early September through December with four action zones that would mimic seasonal demands. Modifications to the hydropower schedule would allow greater operational flexibility to meet power demands while conserving storage, and generation would be reduced during annual drawdown in the fall (September-October). Storage in Lake Allatoona would be 6,371 acre feet (ac-ft) and 13,140 ac-ft for the Cobb County-Marietta Watershed Authority (CCMWA). Carters Lake would provide a minimum flow of 240 cfs and refined operations that would include two action zones to manage downstream releases. When Carters Lake is in Zone 1 Carters Reregulation Dam minimum flow releases would be equal to the seasonal minimum flow based on mean monthly flow upstream of Carters Lake and storage for water supply for the City of Chatsworth would be 818 ac-ft.

Fish spawning operations on Lake Allatoona would continue as outlined in District Regulation (DR) 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft Standing Operating Procedure (SOP) *Reservoir Regulation and Coordination for Fish Management Purposes* (Mobile District SOP 1130-2-9, draft, February 2005). Lake levels would be adequately maintained for successful fish spawning.

The Proposed Action Alternative would implement a revised Alabama Drought Response Operations Proposal (ADROP) including zones 1, 2, and 3 of drought operation triggers with recommendations by the Service. The plan is composed of three parts: reduced hydropower generation as pool levels decline in the headwaters at Lake Allatoona and Carters Lake in Georgia, operations at Alabama Power Company (APC) projects on the Coosa and Tallapoosa Rivers based on Drought Intensity Levels (DILs) driven by defined drought triggers, and flow from downstream operations at Corps projects below Montgomery would reduce due to the 7Q10 levels from upstream APC projects.

Seasonal navigation releases (Alabama River 9.0-ft or 7.5-ft channel depth) and maintenance dredging would be provided. If sufficient flows cannot support a navigation channel of 7.5-ft, navigation would be suspended and flows at Montgomery would be reduced to 4,640 cfs or lower if one or more of the drought operation triggers would be exceeded. Navigation operations

would be driven by DILs: when equal to zero navigation will commence, but if the DIL is greater than zero navigation will be suspended.

At this time, the Service does not fully support the Corps' Proposed Action Alternative as currently described nor the Corps' No Action Alternative. Because of the limited scope of the WCM update, the proposed alternative cannot fully address many of the Service's conservation concerns in the basin. Our position is due to the lack of improvement to water quality, lack of support for reintroduction and enhancements for listed species, minimal mimicking of components of the natural flow regime, no reduction of effects of hydropower peaking flows, and no recognition that fish passage at ACT dams is within the scope of the current effort. On the other hand, the Service fully supports the ADROP. The Service also supports the suspension of navigation while drought conditions are met, and the ongoing efforts of the Corps in organism passage through locks and dams, but encourages additional studies at upstream facilities.

In this DFWCAR the Service has provided the Corps with conservation measures to improve the management of their dams and reservoirs in the ACT Basin. The Service has suggested methods to improve water quality, attain a more natural flow regime, increase connection to floodplain environments, and ways to reintroduce and provide enhancements for species federally-listed under the Endangered Species Act (ESA). The intent of these evaluations and analyses is to inform the development of alternatives and to address the impacts of the Proposed Action Alternative.

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INTRODUCTION

Purpose, Scope & Authority

In November 2007, the Secretary of the Army directed the Corps to develop updated WCMs for the ACT River Basin. The following is taken from the Corps' response to the Service's PAL (Corps 2011):

"The Corps proposes to prepare an updated master Water Control Manual (WCM or Master Manual) for the Alabama, Coosa, and Tallapoosa Rivers (ACT) Basin. The component parts of the master WCM would be nine project-level WCMs, presented as appendices. Only two of the four Alabama Power Company (APC) projects in the basin with Corps WCMs will be included in this WCM update. Additional studies would be required for Logan Martin Lake and Weiss Lake to address flood damage reduction prior to updating the manuals at those facilities. The Corps and APC will develop and execute separate Memoranda of Understanding that address only navigation and drought operations for Logan Martin and Weiss Lakes. Operations at those projects will be incorporated in the Master Manual Update.

WCMs contain drought plans and action zones to assist the Corps in knowing when to reduce or increase reservoir releases and conserve storage in the Corps reservoirs. The individual manuals typically outline the regulation schedules for each project, including operation criteria, guidelines, and guide curves, and specifications for storage and releases from the reservoirs. The WCMs also outline the coordination protocol and data collection, management and dissemination associated with routine and specific water management activities (such as flood-control operations or drought contingency operations). Operational flexibility and discretion are necessary to balance the water management needs for the numerous (and often competing) authorized project purposes at each individual project. In addition, there is a need to balance basin-wide water resource needs. Project operations also must be able to adapt to seasonal and yearly variations in flow and climatic conditions."

The Service's involvement in this project is authorized by the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.) (FWCA). The FWCA establishes fish and wildlife conservation as a co-equal purpose or objective of federally-funded or permitted water resource development proposals or projects. This DFWCAR constitutes the report of the Secretary of the Interior as required by Section 2(b) of the FWCA.

FWCA Agency Coordination

A copy of the draft report has been sent to the Alabama Department of Conservation and Natural Resources (ADCNR), Alabama Office of Water Resources (OWR), Georgia Department of Natural Resources, and the National Oceanic Atmospheric Administration (NOAA. We have received comments from OWR and are awaiting comments from the other parties.

Prior Studies and Reports

- Corps' Federal Register Notice of Intent, November 9, 2007, Intent To Prepare Draft Environmental Impact Statement for Revised Water Control Manuals for the Alabama-Coosa-Tallapoosa River Basin. Vol. 72, No. 217 (Appendix I);
- Service's October 20, 2008, Scoping Letter to the Corps (Appendix II);
- Service's May 3, 2010, PAL to the Corps (Appendix III);
- Service's August 13, 2010, Supplement to PAL to the Corps (Appendix IV);
- Corps' June 6, 2011, response to the Service's PAL (Appendix V); and
- Corps' November 22, 2011, response to the Service's questions regarding the Corps' June 6, 2011 document (Appendix VI).

FISH AND WILDLIFE CONCERNS AND PLANNING OBJECTIVES

The PAL (Service 2010) regarding the ACT WCM Updates stated the primary concerns and planning objectives for species and ecosystem integrity in the ACT. Influences such as human development, including the construction and operation of dams, channelization, dredging, and water quality degradation (Service 2000, Atkins et al. 2004, Service 2006) remain threats to the ACT. Planning objectives to improve the quality of the ACT focus on instream flow, water quality, habitat protection, and fish passage. Enhancements in these areas should be a priority in future Corps operations. Monitoring and adaptive management are strongly recommended in order to improve the ACT ecosystem, as the Service believes that the WCM updates are an opportunity to address several outstanding issues and water management concerns within the ACT basin.

PROJECT AREA

Totaling 22,719 square miles (mi^2), the ACT Basin falls within the Blue Ridge, Ridge & Valley, Piedmont, and Coastal Plain physiographic provinces, originating in Georgia and ending in Alabama. In northwest Georgia the basin's headwater rivers - Conasauga, Coosawattee, Oostanaula, Etowah, Coosa and Tallapoosa Rivers - flow in a southwest direction toward the Alabama state line. In Georgia, Corps dams in the ACT include Carters and Carters Reregulation Dams and Reservoirs (3,220 acres) on the Coosawattee River and Allatoona Dam and Reservoir (19,200 acres) on the Etowah River. The Alabama River begins at the confluence of the Coosa and Tallapoosa Rivers and ends in the delta region of south Alabama, connecting the river to the Gulf of Mexico. Corps dams in the lower ACT include a run-of-river and hydroelectric dam at R. F. Henry Lock and Dam, a hydropower dam at Millers Ferry Lock and Dam and William 'Bill' Dannelly Reservoir (17,200 acres), and run-of-river Claiborne Lock and Dam and Claiborne Reservoir (5,930 acres) on the Alabama River.

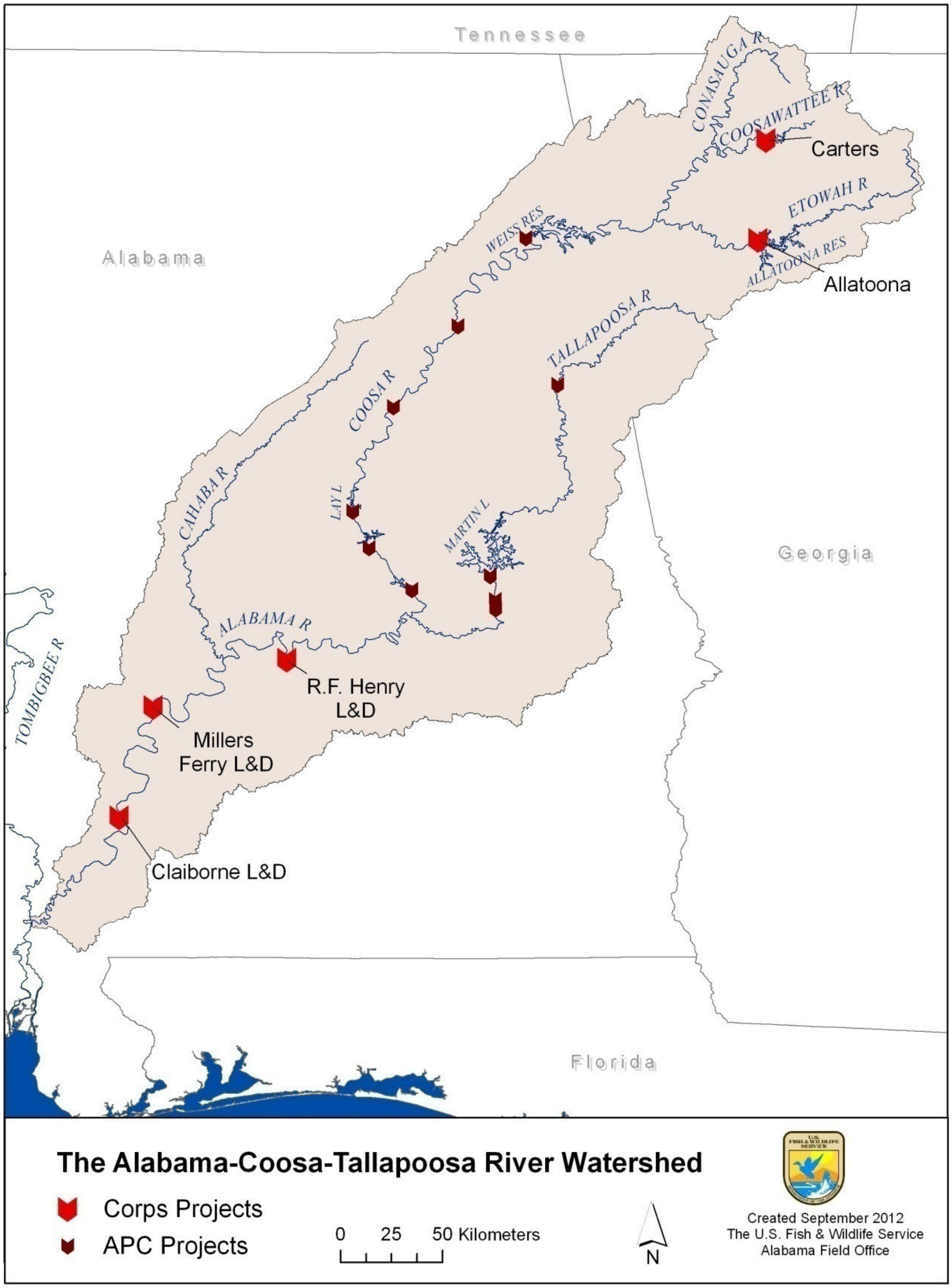

Figure 1. Map of ACT Basin.

DESCRIPTION OF CORPS' SELECTED PLAN

No Action Alternative

According to the Corps' response to the Service's PAL (Corps 2011), reservoirs in the ACT basin are authorized and operated to provide flood storage protection, hydropower, navigation, recreation, water supply, water quality, and fish/wildlife habitat. The Corps' goal is to use the currently defined guide curves to maintain a balanced use of conservation storage among the ACT reservoirs. Under the No Action Alternative, operations would continue as written in the Corps' 1951 Master Manual and project-specific WCM's, including incremental changes. While specifics can be found in the Corps' response to the Service's PAL (Corps 2011), general details include:

- H. Neely Henry Lake would operate under the guide curve under the current Federal Energy Regulatory Commission (FERC) license. The updated license is expected to be issued late 2012.
- A minimum flow of 240 cfs would be required at Carters Lake and Lake Allatoona.
- A target flow of 6,600 cfs from Claiborne Lake depending on inflow from the Alabama River, the Cahaba River, and tributaries.
- A combined 4,640 cfs release at Montgomery, Alabama for navigation purposes depending on releases from Jordan-Bouldin-Thurlow (JBT).
- Storage in Lake Allatoona would be 6,371 ac-ft and 13,140 ac-ft for the Cobb County-Marietta Watershed Authority (CCMWA).
- Storage in Carters Lake would be 818 ac-ft for water supply for the City of Chatsworth.
- Fish spawning operations on Lake Allatoona as outlined in District Regulation (DR) 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft Standard Operating Procedure (SOP) *Reservoir Regulation and Coordination for Fish Management Purposes* (Corps 2005) would continue.

Proposed Action Alternative Description

The Proposed Action Alternative is described in detail in the Corps' response to the Service's PAL (Corps 2011). While specifics can be found in the Corps' response, general details include:

- Implementation of a revised Alabama Drought Response Operations Proposal (ADROP) including zones 1, 2, and 3 of drought operation triggers with recommendations by the Service.
- Seasonal navigation releases (Alabama River 9.0-ft or 7.5-ft channel depth) and maintenance dredging would be provided. If sufficient flows cannot support a navigation channel of 7.5-ft, navigation would be suspended and flows at Montgomery would be reduced to 4,640 cfs or lower if one or more of the drought operations triggers would be exceeded. APC projects on the Coosa and Tallapoosa Rivers would continue to operate under their FERC license. The FERC relicensing is anticipated to be final at the end of the 2012 calendar year.
- H. Neely Henry Lake on the Coosa River (APC Project) would continue to work under the revised guide curve under a FERC license variance (with Corps concurrence).

- Lake Allatoona would provide a minimum flow of 240 cfs. A revised guide curve for Lake Allatoona would implement a phased fall drawdown period from early September through December and four action zones would mimic seasonal demands. Modifications to the hydropower schedule would allow greater operational flexibility to meet power demands while conserving storage; power generation would be reduced during annual drawdown in the fall (September-October).
- Carters Lake would provide a minimum flow of 240 cfs. Refined operations at Carters Lake would include two action zones to manage downstream releases. When Carters Lake is in Zone 1 Carters Reregulation Dam minimum flow releases would be equal to the seasonal minimum flow based on mean monthly flow upstream of Carters Lake.
- Storage in Lake Allatoona would be 6,371 ac-ft and 13,140 ac-ft for the Cobb County-Marietta Watershed Authority (CCMWA).
- Storage in Carters Lake would be 818 ac-ft.
- Fish spawning operations on Lake Allatoona as outlined in District Regulation (DR) 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft Standing Operating Procedure (SOP) *Reservoir Regulation and Coordination for Fish Management Purposes* (Mobile District SOP 1130-2-9, draft, February 2005).

Drought Management Plan

The Corps, the Service, and APC are collaborating to develop a statewide drought plan. The Corps' Proposed Action Alternative would address the revised ADROP with Service enhancements. Drought operations will be driven by state line flows, system storage, and basin inflow triggers. Drought operations include headwater operations at Carters Lake and Lake Allatoona, Coosa and Tallapoosa APC projects, and operations downstream of Montgomery. The plan for the ACT consists of the four operational zones based on DIL as follows: DIL 0 – Normal operations, DIL 1 – Low basin inflows or low composite or low state line flow, DIL 2 – DIL 1 criteria + Low basin inflows or low composite or low state line flow, and DIL 3 – Low basin inflows + low composite + low state line flow. "The low basin inflow trigger is the sum of the total filling volume plus 7Q10 flow. Low composite (conservation storage) is the sum of the amounts of storage available at the current elevation for each reservoir down to the drought contingency curve at each APC major project. A low state line flow trigger occurs when the Mayo's Bar USGS gage measures a flow below the monthly historical 7Q10 flow." (Corps 2011). Such changes include reduced generation hours per day according to the drought level zone and minimum target flows reduced to 240 cfs for headwater operations at Lake Allatoona and Carters Lake.

Reservoir Operations

Under the Proposed Action Alternative specific water storage levels are identified for water supply. In Lake Allatoona 6,371 ac-ft is provided for the City of Cartersville, Georgia, and 13,140 ac-ft is provided for the Cobb County-Marietta Water Authority (CCMWA). For the City of Chatsworth, Georgia, 818 ac-ft is provided from Carters Lake. Operations at Lake Allatoona would be modified to use the four action zones which mimic the seasonal demands for hydropower. At Lake Allatoona a modified hydropower schedule would allow greater operational flexibility to meet power demands while conserving storage, and generation would be reduced during annual drawdown in the fall (September-October). At Carters Lake refined operations would include two action zones to manage downstream releases.

FISH AND WILDLIFE RESOURCES WITHOUT THE PROJECT

Fish and wildlife resources without the project would continue to be influenced by the operations according to the Master Manual of 1951 and project-specific WCM's, including incremental changes. Operations without the project are described by the Corps as the No Action Alternative (Corps 2011). Results of current operations on the ACT include:

- Higher base flow than in a natural system due to navigational channel maintenance.
- Loss of lotic habitats and associated fluvial species assemblages.
- Alteration of the natural variation in the flow regime including low flows, high flows, large floods, and rise and fall rates.
- Risk of decreased freshwater inflow to south Alabama delta and Mobile Bay.
- Reduced floodplain and tributary connectivity due to low number of large floods.
- Poor water quality such as low dissolved oxygen, altered temperature values, and increased harmful wastewater concentrations.
- Hampered organism passage and access to spawning areas, refuge habitat, and the Gulf of Mexico.
- Fragmentation of aquatic populations.

Without the proposed project the ACT basin is an unnatural system due to years of human influence. The Corps and APC ultimately control the water levels in the reservoirs, reservoir holding times and releases, operations of the lock systems, maintenance of a navigable channel, and other operational activities associated with the dams and reservoirs. Water consumption, flood control, recreation, hydropower and navigation are among the operations that influence how water is balanced in the ACT.

CORPS' ANALYSIS OF PROJECT IMPACTS AND EVALUATION METHODOLOGY

1. Flow Dynamics

<u>1.1 Conservation and Recovery of Natural Flow Variability</u>

The Corps states that returning to a "natural" flow regime is not in their interest due to their other Congressionally authorized purposes of flood control, hydropower, and recreation. As stated by the Corps, the Proposed Action Alternative would include minimum monthly flow releases at Carters. They state that implementation of a seasonal non-hydropower peaking operation at Lake Allatoona would require a shutdown of hydropower production at the facility for a specified period of time; this would occur since there is no possible gradation of water releases from the main hydropower units between 0 cfs and 3,500 cfs. The other reservoirs in the ACT Basin were not addressed.

The planning activities and construction for new reservoirs in the upper ACT were not addressed in the PAL response. The following reservoirs are in various planning and construction stages and their impacts to the watershed should be considered:

1) Hickory Log Creek Reservoir
2) Russell Creek Reservoir
3) Richland Creek Reservoir
4) Shoal Creek Reservoir
5) Calhoun Creek Reservoir

Per the Service's request, the Corps provided ecosystem flow analyses using Indices of Hydrologic Alteration (IHA) and Service-recommended Microsoft Excel spreadsheets in their November 22, 2011, correspondence to the Service (Appendix VI). They provided a comparison of the No Action Alternative to the Proposed Action Alternative at three locations: Pine Chapel, Georgia (Coosawattee River below Carters Lake) and two locations near Rome, Georgia (Etowah River below Lake Allatoona and the Oostanaula River). Ecosystem flow guidelines have not been developed to compare with the No Action Alternative and the Proposed Action Alternative; however the similarity between the No Action Alternative and the Proposed Action Alternative is evident from the provided data. The greatest differences between the two alternatives are seen in the Etowah River below Lake Allatoona based upon the IHA. The plots for the Proposed Action Alternative and the No Action Alternative were similar for both Pine Chapel and Oostanaula River at Rome, Georgia. The Proposed Action Alternative results in the highest peak occurring during December in the Etowah River below Lake Allatoona, whereas the highest peak occurs late March for the No Action Alternative.

1.2 Protection and Enhancement of Remaining Free-flowing River Habitats

The Corps states that identifying and mapping free-flowing river habitats is needed but it is out of the scope of the WCM updates. The Corps provided information and analysis of sediment transport and buildup, shoaling, and erosion at reservoirs throughout the basin based on data collected up to 2010.

2. Water Quality

2.1 Dissolved Oxygen

Using the HEC-ResSim and HEC-5Q models, dissolved oxygen (DO) levels were modeled for the No Action, Proposed Action, and two other alternatives. Conditions were simulated for years 2001-2008 to demonstrate water quality conditions during different inflow amounts; 2003 representing a wet year, 2007 representing a dry year, and 2002 representing a normal year. Percent occurrence of DO less than a daily average of 5.0 mg/L below Carters, Allatoona, Weiss, Jordan, and Martin Dams, as well as near Cartersville, Georgia, were modeled for the alternatives. Longitudinal occurrence profiles by river mile (RM) were presented to predict the change in DO among the alternatives. The Corps' analysis included DO longitudinal profiles for:

- Etowah River for dry, wet, and normal years, May to October over the 2001-2008 period,

- Carters Lake downstream to Weiss Lake, May to October in a representative dry year,
- Coosa River to Montgomery, May to October in a representative dry year,
- Tallapoosa River to Montgomery, May to October in a representative dry year, and
- Alabama River, for a representative wet year and dry year.

The largest differences between the No Action and the Proposed Action Alternative based upon the 50% occurrence were as follows:

- Alabama River during a dry year, due to the drought operation plan: near RM 320, DO decreases by 1.0 mg/L for the Proposed Action Alternative compared to the No Action Alternative.
- Coosa River to Montgomery, May to October during a dry year, due to the drought operation plan: compared to the No Action Alternative, increases of 0.5 mg/L occur RM 350 to 400 while decreases in DO of 0.5 mg/L to 0.8 mg/L occur within RM 500 to 575.
- Tallapoosa River to Montgomery during a dry year, due to the drought operation plan: near RM 420 DO increases by 0.5 mg/L more than the No Action Alternative for the Proposed Action Alternative.
- Carters Lake downstream to Weiss Lake, May to October in a dry year, due to the drought operation plan: near RM 717 DO decreases by 0.8 mg/L for the Proposed Action Alternative compared to the No Action Alternative.

2.2 Water Temperature

Using the HEC-ResSim and HEC-5Q models, water temperatures were modeled for the No Action, Proposed Action, and two other alternatives. Conditions were simulated for years 2001-2008 to demonstrate water quality conditions during different inflow amounts; 2003 representing a wet year, 2007 representing a dry year, and 2002 representing a normal year. Longitudinal occurrence profiles by RM were presented to predict the change in median water temperature among the alternatives. The Corps' analysis included longitudinal profiles of the Proposed Action Alternative, No Action Alternative, and two other alternatives for a representative dry year (all year, 2007) for the:

- Alabama River,
- Coosa River to Montgomery, and
- Coosawattee (Carters Lake) to Weiss River;

growing season for a representative dry year (May-October, 2007) for the:

- Coosawattee (Carters Lake) to Weiss River and
- Etowah River to Weiss River;

and the composite of all years (2001-2008) for the:

- Alabama River and

- Tallapoosa River to Montgomery.

No actual water temperature values were provided. The largest differences between the No Action and the Proposed Action Alternative based upon the 50% occurrence were as follows:

- Alabama River during a dry year, due to the drought operation plan: near RM 345 median water temperature increases by 1.2° C more than the No Action Alternative for the Proposed Action Alternative.
- Coosa River below Jordan Dam, during a dry year, due to the drought operation plan: near RM 355 median water temperature increases by 1.0° C more than the No Action Alternative for the Proposed Action Alternative.
- Coosawattee River, during a dry year: at Carters Lake (RM 720) median water temperature decreases by as much as 0.8° C below the lake for the Proposed Action Alternative in comparison to the No Action Alternative.
- Etowah River, May-October during a dry year: below Lake Allatoona, median water temperature decreases by as much as 1.3° C for the Proposed Action Alternative in comparison to the No Action Alternative.

2.3 Wastewater

Using the HEC-ResSim and HEC-5Q models, percent wastewater inflow was modeled for the No Action, Proposed Action, and two other alternatives. Conditions were simulated for a representative dry year, 2007, to demonstrate water quality conditions during low flow. Longitudinal occurrence profiles by RM were presented to predict the change in percent of wastewater in flow among the alternatives. Profiles were presented for the Alabama River, Coosa River to Montgomery, Coosawattee River to Weiss River, Etowah River to Weiss River, and Tallapoosa River to Montgomery. There were not large differences between the No Action and the Proposed Action Alternative. Based upon the 50% occurrence, observations for both the No Action and Proposed Action Alternative were as follows:

- The highest percentage of wastewater is found in a ten-mile stretch between Rome, Georgia and Weiss Lake on the Coosa River.
- The average percentage of wastewater was highest (near 6%) for the Alabama, Coosa, and Coosawattee Rivers.

2.4 Sediment Load

The Corps states that large reservoirs, such as Lake Allatoona and R.L. Harris Lake, act as sediment traps and starve the downstream channel of fine-grained sediments. They state that run-of-river dams, such as Claiborne Reservoir, generally allow all sizes of suspended particles to be transported downstream of the dams. Tailwater degradation curves were provided for Claiborne Lake, R.F. Henry Lock and Dam, Logan Martin Lake, H. Neely Henry Dam, Weiss Lake, R.L. Harris Lake, Carters Lake (historic and low-flow conditions), and Lake Allatoona. As stated by the Corps, tailwater degradation, or lowering of the river bed elevation immediately downstream of a dam, is occurring or has occurred below Lake Allatoona during construction, R.F. Henry Lock and Dam, and below Claiborne Lake.

The Corps provided an evaluation of pool conditions to identify if shoaling is a significant issue. Claiborne Lake, Millers Ferry Lock and Dam and William "Bill" Dannelly Lake, R.F. Henry Lock and Dam and R. E. "Bob" Woodruff Lake, Logan Martin Lake, H. Neely Henry Lake, Weiss Lake, Lake Allatoona, Carters Lake, and R.L. Harris Lake evaluations were provided. Data shows that several reservoirs, such as Logan Martin Lake, H. Neely Henry Lake, and Weiss Lake, have become more stable over time partially due to increased density of vegetation. Lake Allatoona has an increased amount of sediment due to development in the area. The Corps states that erosion has occurred on cropland and has contributed to sediment into the ACT Basin.

3. Floodplain Connectivity

Low flow and high flow analyses were conducted by the Corps' at three locations to compare the Proposed Action and No Action Alternative: Pine Chapel, Georgia, Etowah River at Rome, Georgia, and Oostanaula River at Rome, Georgia. Those results were transmitted in the Corps' November 22, 2011, response to the Service's questions regarding the Corps' June 6, 2011 document (Appendix VI). The high flow analyses are pertinent to floodplain connectivity. Ecosystem flow guidelines were not included in the Corps' document to compare the alternatives to pre-dam conditions. However, a comparison between the alternatives indicates they are largely similar, with the greatest differences in the Etowah River as a result of operational changes at Lake Allatoona.

4. Fish Passage

Ongoing studies are being supported by the Corps to determine the efficacy of using lockages for fish passage. In collaboration with ADCNR, The Nature Conservancy (TNC), Auburn University, and the Service, the Corps has supported "dummy" lockages at Claiborne and Millers Ferry lock and dams. Lockages were performed at these facilities in 2010 and 2011 February through May. The Corps is a partner of the Alabama River Fish Working Group whose goal is to study the various ways to allow migratory fishes to move upstream to historic spawning areas. The group is made up of partners from the Geologic Survey of Alabama (GSA), ADCNR, TNC, Auburn University, the Service, and the Corps. The Corps states that other studies are beyond the scope of the WCM update.

5. Reintroductions and Enhancements for Listed Species

The Corps states that reintroductions and enhancement of habitats for federally-listed species are beyond the scope of the project. The Corps has provided funding support for several listed species surveys within in the ACT Basin. These surveys were conducted in anticipation of eventually preparing a Biological Assessment (BA) for Section 7 ESA consultation. For example, Jim Godwin of the Alabama Natural Heritage Program (ALNHP) performed a study to determine burrow occupancy of the Red Hills salamander at Haines Island Park and surveyed for populations west of the Alabama River (2011). Carol Johnston and Heath Haley of Auburn University surveyed small-bodied fishes in the Alabama River and associated tributaries (2011). Allan Shotz of the ALNHP performed a survey of listed and sensitive plant and select animal species on Corps landholdings along the Alabama River (2011). ADCNR performed two studies, one by Michael Buntin and Jeff Garner to delineate the mussel bed at Alabama RM 207 and to determine the abundance of heavy pigtoe (*Pleurobema taitianum*) at the location, and a second survey conducted by Buntin, Garner, and Todd Fobian to better understand the distribution of Tulotoma snail (*Tulotoma magnifica*) in the Alabama River (2011). The Corps provided updated mollusk surveys that were recently conducted in the Coosa drainage of Georgia.

6. Restoration and Maintenance of Healthy Water Quality Parameters

The Corps states that the level of effort needed to accomplish this is beyond the intent of the current project. The Corps will continue to work closely with stakeholders in adaptive management and seek opportunities for future study.

7. Development of Adaptive Management Protocols

The Corps states that the development of research and monitoring efforts goes beyond the scope of the project.

8. Reservoir Fisheries

Per the Service's request, the Corps provided a reservoir fisheries analysis in their November 22, 2011, correspondence to the Service (Appendix VI). They stated that the proposed changes would most notably affect lake levels in the upper portion of the basin, particularly Lake Allatoona, so the reservoir fisheries detailed analysis was provided for Lake Allatoona only. The impacts of the No Action and Proposed Action Alternative on reservoir fisheries were based on the premises that reservoir water level fluctuations can impact reproductive success of game fishes. The analysis used a performance measure previously developed by the Service that characterizes the effect of the alternatives to habitat suitability for recreationally important species. The performance measure scores indicate that the No Action Alternative would be similar to the Proposed Action Alternative, without notable differences between the two.

EVALUATION OF THE PROPOSED ACTION ALTERNATIVE

1. Flow Dynamics

<u>1.1 Conservation and Recovery of Natural Flow Variability</u>

A natural flow regime similar to historic flows (e.g., base, seasonal, and minimum/maximum flow levels, frequency/duration of low/high pulse flows, flow rise/fall rates and frequency of flow reversals) is essential to the integrity of the basin's riverine fauna and habitats. Riverine biota are adapted to the variation in flow and are dependent upon these changes to carry out their life strategies. Peaking hydropower releases of water at high velocities can adversely impact the development of riverine flora and fauna and decrease biodiversity. Although flows in the ACT Basin have been altered, some components of a natural flow regime could be mimicked.

The Corps is proposing nearly no changes that would mimic components of the natural flow regime. An exception is the zones given in the Proposed Action Alternative for Carters Lake, which may have beneficial impacts to the flow regime in the downstream Coosawattee River. It is important to maintain flow in the ACT during all hydrologic conditions. When a drought is identified a minimum flow must remain to ensure biota are able to survive. Proposed minimum flow releases that equal a monthly 7Q10 inflow upstream of Carters Lake would create requirements simulating a more natural flow regime when Carters Lake is in Zone 1, an improvement to the current annual 7Q10 minimum flow of 240 cfs. The 7Q10 low flow statistic is calculated using the smallest values of mean discharge over 7-consecutive days during a set time period, such as monthly or annually, with a 10-year recurrence interval. The release of a monthly 7Q10 flow is not proposed for the other dams in the ACT Basin. This concept would aid in creating a more natural flow environment at those facilities in which a static annual 7Q10 flow has been applied in the past.

A recent study conducted by the United States Geological Survey (USGS) above and below both Carters Lake and Lake Allatoona assessed fish populations at shoal habitats (Freeman et al. 2011, unpublished). In the Coosawattee River, species richness results were similar for the sites upstream and downstream of Carters Lake. In the Etowah River, species richness of the downstream sites was estimated to be reduced by nearly two-thirds compared to the upstream sites. Fewer individuals were sampled at the lower river sites compared to the upstream sites in both the Etowah and Coosawattee Rivers. Freeman et al. (unpublished) concluded that the effects of altered sediment transport and reduced inputs of carbon and other nutrients are realized below both Carters Lake and Lake Allatoona due to the physical presence of the dams. Results of dam operations including hydropeaking, low flow periods, and low dissolved oxygen have likely reduced the number of shoal-dwelling fish species. The low number of small-bodied fishes downstream of Allatoona Dam compared to Carters Dam may be evidence of stronger impact to the Etowah River from the hydropeaking regime. The reregulation dam at Carters Lake dampens the hydropeaking influence on the Coosawattee River and likely contributes to the healthier fish community.

The Service recognizes that the proposed reservoirs could have an impact on conservation and recovery of natural flow variability. Changes to storage, interbasin transfers, withdrawals, and hydropower should be addressed in the future.

In Alabama, FERC has issued a preliminary permit to Hydro Green Energy LLC (FERC Project Docket No. 13519-000) for studying the addition of hydropower at Claiborne Lock and Dam. Our concerns with future impacts at this site include degradation of fish and wildlife habitat, water quality, and passage of migratory fishes. The Service will coordinate with the permittee and FERC to formulate appropriate measures to protect, mitigate, and enhance fish and wildlife resources affected by this potential development through FERCs licensing process. We also encourage the Corps to include the Service in future conversations regarding hydropower infrastructure at Claiborne Lock and Dam, if the proposal moves forward.

At all the projects in the ACT Basin we recommend the Corps restore parameters of a natural flow regime by reducing hydropeaking releases, allowing large floods to reach floodplains, and mimicking the natural hydrograph as much as possible by allowing for seasonal fluctuations in river discharge.

1.2 Protection and Enhancement of Remaining Free-flowing River Habitats

Riverine biota are adapted to flowing water conditions. Flow parameters, such as velocity, timing, and frequency, signal organisms to complete their life history strategies (Poff and Ward 1990, Allan 1995, Richter et al. 1996). Restoration of a natural flow regime will improve water quality and physical habitat. For example, ensuring adequate flow is released from Claiborne Dam is important to maintain proper freshwater inflows to the Tensaw delta and Mobile Bay. Other examples such as inundation of Claiborne Dam, opening locks for fish passage, and reduction of large peaking events for hydropower can aid in restoration of free-flowing habitats. We recommend taking steps towards restoring a more natural flow regime throughout the ACT Basin.

2. Water Quality

Alabama and Georgia's 303(d) lists include waterbodies that occur in the ACT Basin. These waterbodies are in need of attention and consideration in the WCM updates and future operations of the Corps. Water quality issues include nutrient loads, metal contaminants, pathogens, organic enrichment, and siltation. We recommend measures to improve the quality of streams and river segments throughout the ACT Basin, with special consideration for 303(d) listed streams and reservoirs. Our recommendations are provided in sections 2.1-2.4.

2.1 Dissolved Oxygen

The Alabama State standard for DO is 5.0 mg/L. Georgia's State standard for DO is a daily average of 5.0 mg/L and an instantaneous value of 4.0 mg/L for waters supporting warmwater species of fish. The Proposed Action Alternative's largest decreases in DO from the No Action Alternative are predicted to be the Coosa River near RM 575 (-0.8 mg/L), below Carters Lake near RM 717 (-0.8 mg/L), and the Alabama River near RM 320 (-1.0 mg/L). Therefore, although the Proposed Action Alternative predicts DO improvements at some locations, the Proposed Action Alternative is less favorable in terms of DO than the No Action Alternative. DO levels were modeled to be lowest in a dry year due to drought operations and lower pool elevations.

The Alabama Department of Environmental Management (ADEM) completed water quality surveys in 2008 and 2009 on the Alabama River. Continuous data were collected from the river bottom at four locations during summer months: Alabama River Pulp Company, Selma, Prattville, and Weyerhaeuser. In 2008, DO values fell below the State standard of 5.0 mg/L at Selma, Weyerhaeuser, and Prattville. In 2009, DO levels remained above the State standard except at Selma. The Selma and Weyerhaeuser Alabama River locations are of specific concern due to the number of low DO data logs and the number of sensitive species near these locations. Poor water quality during 2008 was likely due to little flow during drought conditions, creating a lentic environment. Sampling at several elevations in the water column is important; the data sonde for this study was located near the river bottom. This location provided different values when compared to data collected near the water surface. Bottom data is an important indicator in addition to surface data, because benthic biota experience bottom conditions. In future studies we encourage data to be collected from the river bottom as well as the water surface to more accurately understand water quality conditions.

Although there was no noticeable change among the alternatives for the percent occurrence of DO levels at the modeled outflows in the ACT Basin, the analyses that were provided demonstrate the ongoing unacceptable levels of low DO caused by some of these Corps facilities. The highest percentage of low DO occurrence was at Allatoona Dam outflow. The outflow was modeled to fall below the State standard 40% of the time (2000-2008) and to fall as low as 2 mg/L during these years. Low DO levels below Allatoona Dam are a concern and need to be addressed. Data collected by the Service in the summer of 2009 on the Etowah River below Allatoona Dam indicated DO levels lower than 1.0 mg/L (USFWS 2012).

Action should be taken to maintain State water quality standards during all conditions. During low flow events DO levels should not fall below the State standard and suitable flow should be maintained throughout the river system to increase water quality. Maintaining suitable flows in the ACT Basin is dependent upon cooperation between the Corps and APC.

Due to the recurring problem of low DO below dams, methods have been developed to improve oxygen levels at other locations. For example, Tennessee Valley Authority (TVA) has installed dam-specific devices to improve DO downstream of dams. Examples include aerating turbines, surface-water pumps, low-pressure air blowers, aerating weirs, and oxygen injection systems (http://www.tva.gov/environment/water/rri_oxy.htm). These types of systems should be examined as ways to improve water quality below Corps dams in the ACT Basin. We recommend that the Corps seek additional authorization and funding (e.g., 1135 funds or aquatic ecosystem restoration funds) to remedy the water quality problems at the ACT projects.

We recommend the Corps take action to improve DO throughout the basin with special consideration below dams and to explore devices that can increase DO levels.

2.2 Water Temperature

Temperature is an important quality to riverine flora and fauna and temperatures outside of seasonal norms can stress biota. Most warm-water fishes have an approximate upper limit of 30° C meaning that temperatures above this will stress the animal and lower survival rates while cold-water fishes generally cannot survive temperatures above approximately 25° C for very long (Allan 1995). According to Alabama State water quality standards, water temperature shall not exceed 32.2° C in streams, lakes, and reservoirs throughout the state. In the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers, temperature shall not exceed 30° C. According to Georgia State water quality standards, water temperature shall not exceed 32.2° C. At no time is the temperature of the receiving water to be increased more than 2.8° C above intake temperature in freshwater. In primary trout streams or smallmouth bass streams (as designated by GDNR-WRD), there shall be no elevation of natural stream temperatures. In streams designated as secondary trout waters, there shall be no elevation exceeding 1.1° C of natural stream temperatures.

The largest differences between the Proposed Action Alternative and the No Action Alternative would occur during drought operations. In Georgia, water temperatures under the Proposed Action Alternative decrease below Corps reservoirs by as much as 0.8-1.3° C (Coosawattee and Etowah Rivers, respectively). In Alabama, water temperatures increase by as much as 1.0-1.2° C (Coosa and Alabama Rivers, respectively).

Existing water temperatures in multiple locations in the ACT Basin are already artificially depressed or elevated. In Alabama, temperature was recorded by ADEM during 2008-2009 summer months at four locations: Alabama River Pulp Company, Selma, Prattville, and Weyerhaeuser. We recommend water temperatures below Corps' facilities in Alabama be maintained at least below the State standard and below 30° C when possible.

In Georgia, existing water temperatures below Lake Allatoona are artificially depressed as a result of current operations. A recent study on the Etowah River investigated water temperature impacts from Allatoona Dam (USFWS 2010). Water temperature was modeled from Allatoona Dam to 31 miles downstream in June 2009 to compare water temperatures among an unimpounded flow, a minimum flow-hypolimnetic release, and a hydropower generation-hypolimnetic release of 3,600 cfs. Water released from Allatoona Dam was 8.3° C colder than the temperature predicted from the unimpounded scenario. Using the unimpounded temperature gradient as the ideal scenario, temperature for the minimum flow release was not restored until 27.7 miles downstream. Under the hydropower generation release scenario the temperature never recovered to unimpounded modeled temperatures in the 31-mile study area. The study predicted water temperature could vary between 0-8° C daily. The artificial depression and fluctuations in water temperatures are not beneficial to native aquatic populations below Allatoona Dam. However, a population of striped bass (*Morone saxatilis*) does utilize the cool water below Lake Allatoona as a thermal refuge, specifically in summer months.

2.3 Wastewater

The No Action Alternative and the Proposed Action Alternative are similar; therefore, the Preferred Action Alternative is not less or more favorable than the No Action Alternative. As presented by the Corps, percent potential wastewater for all alternatives did not exceed approximately 10% of total flow during low flow conditions. Cooperation between the Corps and other facilities along the ACT is needed to maintain wastewater levels that do not damage aquatic resources.

2.4 Sediment Load

The number of dams in a watershed influences the quantity and size of sediment that is transported by rivers. Sediment falls out and becomes trapped in reservoirs leaving downstream river reaches starved of fine grained substrate. Because of the lack of sediment the channel downstream of a dam may respond to sediment starvation by down cutting, bank erosion, and channel widening. Channel stability and amount of shoaling of reservoirs in the ACT was also addressed. The Corps concluded that shoaling has occurred but in some areas vegetation has allowed for more sediment stability. The Service recognizes that tailwater degradation and shoaling are due to original construction of the dams, but measures to reduce sediment and shoaling are recommended and include bank stabilization above dams, avoidance of structural disturbance to rivers, and minimization of disturbance to river banks. Fine sediments fill interstitial spaces of larger substrate particles such gravel, cobble, and boulders and can eliminate these structures as possible habitat. Buntin and Garner (2011) found no Tulotoma snails where the boulders were embedded and the interstitial spaces were choked, although some sediment accumulation correlated with presence of the snails at other locations. We recommend monitoring embeddedness and erosion rates downstream of dams to determine impact on available habitat and implement stabilization measures to reduce further erosion.

3. Floodplain Connectivity

The Corps provided high flow analyses for the No Action Alternative and the Proposed Action Alternative at several locations in Georgia. The alternatives are similar, with the exception of the Etowah River below Lake Allatoona. The Corps did not provide flow guidelines to compare these alternatives to a pre-dam condition; therefore we are unable to draw a conclusion as to which alternative is more similar to pre-dam conditions in the Etowah River.

Ecological integrity of riverine systems is intimately connected to the quality and quantity of streamside floodplain forests and wetlands. The level of connectivity affects the vegetation ecology of adjacent wetlands and floodplain forests, as well as the fish and wildlife resources dependent upon them. Significant river-dependent habitats include the diverse floodplain forests, tributaries, wetlands and bottomlands. Forest and grassland communities within the floodplain zone which require disturbances such as high water and bank sloughing, are often distinctly different than communities outside that impact zone. These unique environments are driven by the moisture availability, fluvial processes and the daily interaction between aquatic and terrestrial communities.

The Corps owns 23 landholdings along the Alabama River. The Alabama Natural Heritage Program (ALNHP) performed surveys for imperiled wildlife in these areas in 2010 and 2011 (Schotz 2011). Upland and mesic hardwood forest, bluff, prairie and wetland habitats were identified in the landholdings. Results from these studies show that the Corps landholdings support or have the potential to support species of concern.

Protecting and restoring aquatic habitats associated with the floodplain are essential to ACT Basin fish and wildlife; such habitats include shorelines, riparian zones, and associated wetland systems. These systems serve as spawning habitat and refugia, allowing rivers to reach these environments and rejuvenate the ecosystems. The National Weather Service with the National Oceanic Atmospheric Association and U.S. Geological Survey provide the Advanced Hydrologic Prediction Service and flood categories for gages ranging from action stage to major flood stage (http://www.srh.noaa.gov/serfc/). At most gages flood impact descriptions of the various flood stages are provided. These data can provide the gage height needed for the rivers to reach the floodplain. Large floods that reach the floodplain and tributaries are important in order to provide foraging material, spawning habitat and refugia for aquatic species. Allowing river levels to reach the floodplain is welcomed, and should be considered where negative impacts to adjacent landowners will not occur.

Site	Location	Action Stage (ft)	Flood Stage (ft)
Etowah River near Cartersville	34.143° N, 84.839° W	16	18
Coosawattee River near Redbud	34.564° N, 84.833° W	22	25
Alabama River at R.F. Henry L&D	32.322° N, 86.784° W	122	122
Alabama River near Millers Ferry	32.100° N, 87.398° W	61	66
Alabama River near Claiborne	31.613° N, 87.551° W	35	42

Table 1. Action stage (bankfull height) and flood stage (first stage of flooding) corresponding (at or near) Corps dams.

4. Fish Passage

It is widely acknowledged that dams impede the movements of fish and other aquatic biota. Movement throughout a river system is important to prevent depletion of local resources and to maintain genetic variation. Migratory species, such as Alabama sturgeon (*Scaphirhynchus suttkusi*), require long stretches of free flowing river to carry out their life history strategies. Mussel species depend on fish hosts that are not immune to their glochidia and this strategy can be halted without proper upstream and downstream movement.

Inundation and open flood gates at Claiborne and Millers Ferry, respectively, increase fish passage on the Alabama River (Mettee et al. 2005). A study completed by Mettee et al. (2005) found that attraction flows and “dummy” lockages benefit fish movement at Millers Ferry and Claiborne Lock and Dams. Data suggest that fishes may remain in lock chambers for long periods of time, but attraction flows encourage movement out of the locks.

Auburn University, with the aid of the Corps, the Service, TNC, ADCNR, and GSA conducted a study on “dummy” lockages and fish passage at Millers Ferry and Claiborne and Lock and Dams to evaluate the effectiveness of specialized lock operations for fish passage, February 1st through May 31st (Simcox et al. 2011). Fishes were tagged in 2010 and 2011 and tracked using numbered internal anchor tags and internal sonic tags. Results show that specialized lock operations can help fish movement upstream, especially during spring months (spawning period) when movement into the lock chambers was most frequent. During periods of low flow when no inundation occurred at Claiborne Dam, “dummy” lockages offered a method of fish passage (Table 3). Passage occurred by means of lockages for navigation operations and lockages specifically for fish passage (Table 3). A report produced by ADCNR (Rider 2010) compiled data from this study collected during March through April 2010. The results show that fish move through the locks and can swim upstream over dams if the dam is inundated, or overtopped.

	Days operated	Days inundated	Days with boat traffic	Fish passage lockages	Days for potential passage
Claiborne					
2010	33	34	10	122	67
2011	32	13	9	125	45
Millers Ferry					
2010	89	-	27	356	89
2011	80	-	14	162	80

Table 2. Summary statistics for Claiborne and Millers Ferry Lock and Dams from February 1st to May 31st (Simcox et al. 2011). Days for potential passage refers to the number of days that fish had the opportunity to move upstream of the dam, either through lock operations or dam inundation.

		Fish Passage				**Operation**	
	Total passage events	**Upstream over**	**Upstream lock**	**Downstream over**	**Downstream lock**	**Navigational**	**Fish passage**
Claiborne							
2010	17	1	3	13	0	0	3
2011	38	15	1	22	0	0	1
Millers Ferry							
2010	2	0	2	0	0	1	0
2011	3	0	3	0	0	0	3

Table 3. Summary of fish passage through lock events specific for passage and lock events for navigation operations at Claiborne and Millers Ferry Lock and Dams. Values represent number of tagged fish. At Claiborne Lock and Dam, two other fish passed using an undetermined method (Simcox et al. 2011).

Studies determining the effectiveness of attraction flows and opening of lock gates to allow fish passage should continue. We request a cost benefit analysis be performed comparing the operation and maintenance of the current navigational channel and system of locks and dams on the Alabama River versus the costs and economic benefits associated with maintaining the same system for maximum environmental benefits. A summary of the number of commercial barges and other craft that have and are currently utilizing the navigational system should be made available as part of the DEIS.

On October 9, 2012, changes to future lock operations at Corps dams were announced (Release no. 12-031) (Corps 2012). Hours of operation have been determined based upon historic usage patterns; locks will be operated four days a week and all commercial traffic will be by appointment only. The announcement states that lockages will be made for seasonal fish passage. Usage will be reviewed annually and adjustments will be made as needed.

We recommend the Corps continue support for fish passage research, install attraction flows, and frequently open locks during the spring fish migration period.

5. Reintroductions and Enhancements for Listed Species

Reintroductions and enhancements for listed species are key management actions to improve rare aquatic populations and habitat in the ACT Basin. Efforts have begun with partners in Alabama to reintroduce rare species into these river systems. Collaboration between the Service and Alabama Aquatic Biodiversity Center (AABC) of ADCNR has resulted in reintroduction of numerous species that are showing success. “A Plan for the Population Restoration and Conservation of Freshwater Mollusks of the Mobile River Basin” outlines propagation, reintroduction, and augmentation goals of our state, Federal, and non-government partners (MRBMRC 2010).

One example of the efforts of the Mobile River Basin Mollusk Recovery Committee (MRBMRC) is a proposed reintroduction of the federally endangered interrupted rocksnail (*Leptoxis foremani*) into the Weiss Bypass of the Coosa River near Centre, Alabama (Johnson 2010). Test populations will be introduced to determine if the habitat is suitable. Efforts such as these provide the opportunity to recover imperiled wildlife in the ACT Basin; we encourage the Corps to work with us to achieve the goals outlined by the MRBMRC. Collaboration between the Corps and APC will improve the chances of providing adequate habitat in the Weiss Bypass. Other mollusk studies include ADCNR’s heavy pigtoe survey at Alabama RM 207 and Tulotoma snail surveys in the Alabama River (RM 63.7 – 294.9).

The survey for heavy pigtoe (Alabama RM 207) resulted in a low number of individuals (n=2, estimated 0.013 per m^2) and no evidence of recruitment in one of the last known locations of this species (Garner and Buntin 2011). The mussel bed does appear to be healthy however, supporting 13 mussel species (approximately 12.8 per m^2). Propagation efforts for the heavy pigtoe have been undertaken by the AABC. Surveys for Tulotoma snail and available habitat were performed in the Alabama River (Alabama RM 63.7 – 294.9) using Side Scan Sonar and SCUBA ground truthing late summer and autumn of 2010 (Garner et al. 2010). Tulotoma snail was present at 5 of the 85 sampled sites. The snail was found to have a scattered distribution in the Alabama River and was associated with boulder habitat that lacked heavy siltation. We recommend protection of known locations of sensitive and listed species and efforts to increase fish passage to complete the life cycle of mussels.

An additional mollusk survey was conducted at four regulated rivers in the upper ACT Basin, the Coosa, Oostanaula, Etowah, and Coosawattee (Dinkins and Hughes 2011). Presence/absence data of mussel and snail species collected at 60 sites were compared to collections made in 1997. The study found that species richness has declined since 1997; there were three fewer species in the Coosawattee and Oostanaula rivers and four fewer species in the Coosa River. The Etowah

River continues to have a low number of species (two) and did not change from 1997 survey results. We recommend efforts to improve the health of these rivers and support for ongoing studies.

The Corps owns property within the floodplain of the Alabama River. Maintaining connection to the floodplain and preservation of these habitats is important to the fish and wildlife in the ACT Basin. The ALNHP conducted two separate surveys on these Corps landholdings. Red Hills salamander burrow occupancy rates were studied on Haines Island and four Corps properties along the western bank of the Alabama River within the Red Hills were surveyed for salamanders. On Haines Island a total of 503 potential burrows were identified and 61 salamander detections were recorded within 32 burrows. Other properties surveyed were the northern-most property in Clarke County at the Clarke-Monroe-Wilcox county line; immediately across the river from Haines Island Park at Davis Ferry, Monroe County; Silver Leaf Creek Park, Clarke County; and at Claiborne Lock and Dam, Monroe County. No Red Hills salamanders were documented at these locations due to lack of proper habitat (Godwin 2011). The second survey conducted by ALNHP was an inventory of federally-listed and sensitive plant and select animal species on Corps properties along the Alabama River (Schotz 2011). The survey documented 19 occurrences of 15 rare plant species, as recognized by ALNHP as species of conservation concern, one being the federally listed Price's potato bean (*Apio priceana*) which is found on open, rocky, wooded slopes and floodplain edges. The survey included 3 G-1 ranked plant species and 3 G-2 ranked plant species. The locations which support species of concern are Jones Bluff Recreational Area, Elm Bluff Recreational Area, Holy Ground Battlefield Park, and Haines Island. No rare animal species were collected. We recommend preservation of all Corps landholdings, with special attention to the locations where species of concern can be found.

Johnston and Haley (2011) sampled the fish assemblage in the Alabama River at gravel/sand bar habitat and in various tributaries below Claiborne Lock and Dam. The study identified 55 fish species, one being the Crystal darter (*Crystallaria asprella*) which is protected by the Alabama Wildlife and Freshwater Fisheries Division of the ADCNR. Results show that gravel/sand bars and tributaries are important habitats for fish. The data collected were compared to historic sampling performed by R. D. Suttkus and GSA; there was little similarity between historic and current samples, suggesting shifts in the fish assemblage. The study showed a loss of habitat for Alabama River fishes due to the absence of many historic gravel/sand bar sampling sites.

The ACT Basin is home to many imperiled fish and wildlife. In the upcoming years the Service has the responsibility of determining the status of many additional species that may be listed under the ESA. Opportunities are available to work towards preventing species from becoming federally-listed and we encourage the Corps to explore these options.

We recommend the Corps support the Service and their partners to determine the status of petitioned species. This can be done by providing funds, conducting surveys and research, monitoring population sizes of imperiled species, habitat restoration and using results based management. These actions could improve the quality of the ACT Basin and allow for species to recover before reaching threatened or endangered status.

6. Restoration and Maintenance of Healthy Water Quality Parameters

Data provided by the Corps demonstrates that water quality parameters generally fall within State standards but at several locations water quality is degraded, specifically at Lake Allatoona (approximately 40% occurrence of DO levels below 5.0 mg/L). Improvements to water quality at this location should be made a priority. Wastewater outflow and releases of water above 30° C should be monitored. We recommend studies dedicated to determining water quality requirements for species and the impacts to species from changes in operations, as well as improvements made to water quality at Lake Allatoona.

7. Development of Adaptive Management Protocols

Adaptive Management Protocols enable a flexible, reactive strategy to improving the ACT Basin. Studies have been performed to learn more about the basin but data gaps still exist. With the ongoing efforts to fill those gaps, the additional information will allow us to make better educated decisions in the future. We do not agree that development of Adaptive Management Protocols is outside the scope of this project and we encourage the Corps to explore this further. Due to the high biodiversity within the ACT Basin, we are unable to model or predict how the Corps' operational changes will impact species on a basin-wide scale. Adaptive Management Protocols will allow us to monitor and learn how the ecosystem responds to water management and have the ability to alter operations to improve the ACT Basin if necessary. Studies, in collaboration with our partners, to begin the protocols include water availability, a forecast of water needs for humans and the environment, and how those needs can be met are recommended by the Service.

8. Reservoir Fisheries

Reservoir fisheries may be impacted through changes in water levels, changes in reservoir flushing rates, and associated changes in water quality parameters. The spawning period of reservoir fisheries is crucial for strong year classes, generally occurring March – May while the crucial period for rearing is June – November; stable elevation in the reservoirs is needed during these times. Other concerns include the sediment load in the tributaries associated with the reservoirs. Maintaining connectivity to tributaries is important for the life history strategies of reservoir species. Performance measure scores were calculated for the No Action Alternative and the Proposed Action Alternative in Lake Allatoona. There were no notable differences between the two. The Corps states that the median performance measure values indicate a lack of suitable fisheries habitat. Recommendations from the Service include studies to determine impacts to reservoir fishes from unstable water levels and drawdowns due to drought during spawning and rearing periods and enhancements to habitat in Lake Allatoona.

FISH AND WILDLIFE CONSERVATION MEASURES AND RECOMMENDATIONS

The following bullets provide a consolidated list of the recommendations that we justified in the preceding "Evaluation of the Proposed Action Alternative" section:

- Include the Service in future conversations regarding hydropower infrastructure at Claiborne Lock and Dam, if the proposal moves forward. (1.1. Conservation and Recovery of Natural Flow Variability)
- Continued cooperation between the Corps and APC to ensure proper releases from the upstream dams and delivery of water to the Weiss Bypass channel is needed. (Service 2010)
- Develop an adaptive management plan and monitoring program to allow greater understanding of riverine ecosystem response to complex variables and add additional data to models as more data are collected. (7. Development of Adaptive Management Protocols)
- Improve and maintain water quality parameters suitable for fish and wildlife for all life stages under a variety of flow conditions. (1.1. Conservation and Recovery of Natural Flow Variability)
- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrates (e.g., mussel and snail populations). (7. Development of Adaptive Management Protocols)
- Improve connectivity to the floodplain. (3. Floodplain Connectivity)
- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the large number of aquatic species. (4. Fish Passage)
- Explore and implement opportunities (e.g., with the AABC) to augment/reintroduce mollusks and fishes into appropriate habitats. (5. Reintroductions and Enhancements for Listed Species)
- Develop Geographic Information Systems (GIS) databases that identify, characterize (e.g., bathymetry, current velocity, substrate, and Side Scan Sonar), and map stable riverine habitats. (Service 2010)
- Maximize Corps collaboration with stakeholders. (7. Development of Adaptive Management Protocols)
- Implement mitigation measures for the loss of aquatic resources as a result of the creation of the Carters Lake Project. Terrestrial and stream impacts should be calculated and mitigation measures should be implemented. (Service 2010)

SUMMARY AND THE SERVICE'S POSITION

Neither the Corps' Proposed Action nor the No Action Alternative, because of the limited scope of the proposed updates, will address all of the Service's conservation concerns in the ACT basin. These concerns include lack of improvement to water quality, lack of support for reintroduction and enhancements for listed species, minimal mimicking of components of the natural flow regime, no reduction of effects of hydropower peaking flows, and no recognition that fish passage at ACT dams is within the scope of the current effort.

The Service fully supports the ADROP. During drought conditions water operations will be driven by drought triggers shaped by low basin inflow, state line flow at Mayo's Bar, and low composite conservation storage in APC projects. The Service also supports the suspension of navigation while drought conditions are met. The Service supports the ongoing efforts of the

Corps in fish passage through locks and dams, but encourages additional studies at upstream facilities.

The Service emphasizes the importance of data collection and implementation into long-term datasets in order to better evaluate the condition of the ACT Basin over time. Developing research and monitoring efforts is important due to the lack of information in the ACT Basin. Research of water quality parameters throughout the year and at varying drought conditions, flow variables which are important to aquatic species, erosion rates downstream of dams, species status surveys, connectivity of mainstem rivers to tributaries and floodplains, fish passage, and impacts of reservoir levels on game species is needed to properly manage the ACT Basin. Collaboration and partnership support is crucial for obtaining the needed information. Monitoring conditions in the ACT Basin will identify basin responses to operations and will allow us to make the proper changes for watershed improvement. To protect trust resources we must be adaptive in our strategy to address past, present, and future threats to the ACT Basin.

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APPENDICIES

- Corps' Federal Register Notice of Intent, November 9, 2007, Intent To Prepare Draft Environmental Impact Statement for Revised Water Control Manuals for the Alabama-Coosa-Tallapoosa River Basin. Vol. 72, No. 217 (Appendix I);
- Service's October 20, 2008, Scoping Letter to the Corps (Appendix II);
- Service's May 3, 2010, PAL to the Corps (Appendix III);
- Service's August 13, 2010, Supplement to PAL to the Corps (Appendix IV);
- Corps' June 6, 2011, response to the Service's PAL (Appendix V); and
- Corps' November 22, 2011, response to the Service's questions regarding the Corps' June 6, 2011 document (Appendix VI).

Appendix I: Corps' Federal Register Notice of Intent, November 9, 2007, Intent To Prepare Draft Environmental Impact Statement for Revised Water Control Manuals for the Alabama-Coosa-Tallapoosa River Basin. Vol. 72, No. 217.

TABLE 1. SUMMARY OF HMS EXEMPTED PERMITS ISSUED IN 2006 AND 2007. AHMS@ REFERS TO MULTIPLE SPECIES BEING COLLECTED UNDER A GIVEN PERMIT TYPE.—Continued

		2006					2007		
		Number of Permits Issued	Number of Authorized Fish	Number of Authorized Larvae	Number of Fish Taken	Number of Larvae Taken	Number of Permits Issued	Number of Authorized Fish	Number of Authorized Larvae
	Billfish	3	179	0	57	0	2	73	1,000
SRP									
	HMS	4	485	1,200	2	0	1	18	0
	Shark	2	400	0	284	0	2	670	0
	Billfish	1	0	500	0	0	0	0	0
	Tuna	0	0	0	0	0	1	12	0
Display									
	HMS	1	89	0	2	0	2	90	0
	Shark	7	505	0	89	0	6	266	0
Total		39	3,973	1,700	850	0	31	2,503	1,000
LOA*									
	Shark	5	2,853	0	1,021	0	7	3,120	0

*LOAs are issued for bonafide scientific research activities involved non-ATCA managed species (i.e., sharks). Collections made under an LOAs are not authorized; rather this estimated harvest for research is acknowledged by NMFS. Permitees are encouraged to report all fishing activities in a timely manner.

Final decisions on the issuance of any EFPs, SRPs, Display, and Chartering Permits will depend on the submission of all required information about the proposed activities, NMFS' review of public comments received on this notice, an applicant's reporting history on past permits issued, past law enforcement violations, consistency with relevant NEPA documents, and any consultations with appropriate Regional Fishery Management Councils, states, or Federal agencies. NMFS does not anticipate any significant environmental impacts from the issuance of these EFPs as assessed in the 1999 FMP.

Authority: 16 U.S.C. 971 *et seq.* and 16 U.S.C. 1801 *et seq.*

Dated: November 1, 2007.

Emily H. Menashes,

Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. E7–22071 Filed 11–8–07; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF DEFENSE

Department of the Army; Corps of Engineers

Intent To Prepare Draft Environmental Impact Statement for Revised Water Control Manuals for the Alabama-Coosa-Tallapoosa River Basin

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DoD.

ACTION: Notice of intent.

SUMMARY: The U.S. Army Corps of Engineers (Corps), Mobile District, intends to prepare an update of the water control manuals for the Alabama-Coosa-Tallapoosa (ACT) River Basin. Concurrent with that revision, a Draft Environmental Impact Statement (EIS) will be prepared, as required by the National Environmental Policy Act (NEPA). The Draft EIS will address updated operating criteria and guidelines for managing the water storage and release actions of agency water managers and associated environmental impacts.

FOR FURTHER INFORMATION CONTACT: Questions about the manual update or NEPA process can be answered by: Mr. Chuck Sumner, Environment and Resources Branch, Planning Division, U.S. Army Engineer District-Mobile, Post Office Box 2288, Mobile, AL 36628–0001; Telephone (251)694–3857; or delivered by electronic facsimile at (251) 694–3815; or E-mail: lewis.c.sumner@usace.army.mil. You may also request to be included on the mailing list for public distribution of notices, meeting announcements and documents.

SUPPLEMENTARY INFORMATION:

Background. Water control manuals are guidance documents that assist federal water managers in the operation of individual and multiple interdependent federal reservoirs on the same river system. They provide technical, historical, hydrological, geographic, demographic, policy and other information that guide the proper management of reservoirs during times of high water, low water, and normal conditions. The manuals also contain drought plans and zones to assist federal water managers in knowing when to reduce or increase reservoir releases, and how to ensure the safety of dams during extreme conditions. The authority and guidance for the Corps to prepare and update these manuals may be found in Section 7 of the 1944 Flood Control Act, the Federal Power Act, Section 9 of Public Law 436–83, and the following Corps of Engineer Regulations: ER 1110–2–240, ER 1110–2–241, ER 1110–2–1941 and ER 1110–2–8156.

The ACT Basin provides water resources for multiple purposes from northwestern GA down through central AL and to the Gulf Coast at the mouth of Mobile Bay, extending a distance of approximately 320 miles and encompassing an area of approximately 22,800 square miles. The master operating manual for the ACT River Basin and the individual reservoir manuals were last updated at various dates as far back as the early 1950's. Sixteen major dams and reservoirs (five Federal and eleven non-Federal) are located in the basin. In Georgia, these include Allatoona Dam and Lake, and Carters Dam and Lake, both owned and operated by the Corps. In Alabama they include Weiss Dam and Lake, H. Neely Henry Dam and Lake, Logan Martin Dam and Lake, Lay Dam and Lake, Mitchell Dam and Lake, Walter Bouldin Dam and Lake, Jordan Dam and Lake, Harris Dam and Lake, Martin Dam and Lake, Yates Dam and Lake, and Thurlow

Dam and Lake, all owned and operated by Alabama Power Company (APC). Also in Alabama, are three dams and reservoirs owned and operated by the Corps including Jones Bluff Dam/ Woodruff Lake, Millers Ferry Dam/ William "Bill" Dannelly Lake and Claiborne Dam and Lake. The authorized project purposes at the Corps lakes include water supply, flood control, hydropower, navigation, fish and wildlife conservation, and recreation.

The new manuals will eventually replace the current manuals and will address the basin-wide management of those water resources. Due to the flood control operational responsibilities of the Corps, some or all of the manuals for some of the APC reservoirs will be updated.

Public participation throughout the water control plan revision process is essential. The Corps invites full public participation at all stages to promote open communication and better decision making. All persons, stakeholders, and organizations that have an interest in water-related resources in the ACT basin, including minority, low-income, disadvantaged and Native American groups, are urged to participate in this NEPA environmental analysis process. Assistance will be provided upon request to anyone having difficulty understanding how to participate. Dates and locations for public scoping meetings will be announced by future publication in the **Federal Register** and in the local news media. Tentative dates for publication of the draft water control manuals and EIS and other opportunities for public involvement will also be announced at that time. Public comments are welcomed anytime throughout the NEPA process.

Cooperating Agencies. The lead responsibility for this action rests with the Corps. The Corps intends to coordinate and/or consult with an interagency team of Federal and State agencies during scoping and preparation of the draft EIS. A decision will be made during the scoping process whether other agencies will serve in an official role as cooperating agencies.

Scoping. The Alabama-Coosa-Tallapoosa Rivers (ACT)/Apalachicola-Chattahoochee-Flint Rivers (ACF) Comprehensive Study from 1990 to 1997 and ACF Compact negotiations from 1997 to 2004 involved the States (Alabama, Florida and Georgia), stakeholders and the public in identifying areas of concern; collecting and developing water resource, environmental, and socioeconomic data; and developing tools to assist in decisions affecting water resources within the two basins. Development of the updated water control manuals and scoping for this EIS will continue to build upon the knowledge and information developed during the Comprehensive Study and subsequent Compact negotiations. Scoping meetings with agencies and stakeholder groups will be scheduled to identify any significant issues and data gaps, focus on the alternatives to be evaluated, and to identify any appropriate updated tools to assist in evaluation of alternatives and analysis of impacts.

Byron G. Jorns,
Colonel, Corps of Engineers, District Commander.

[FR Doc. E7–22043 Filed 11–8–07; 8:45 am]

BILLING CODE 3710–CR–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare an Environmental Impact Statement for Access Between the Laurelwood Housing Area and an Adjacent State Primary or Secondary Road at Naval Weapons Station Earle, Colts Neck, NJ and To Announce a Public Scoping Meeting

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, and the regulations implemented by the Council on Environmental Quality (40 CFR Parts 1500–1508), the Department of the Navy (Navy) announces its intent to prepare an Environmental Impact Statement (EIS) to evaluate the potential environmental consequences of providing access between the Laurelwood housing area at Naval Weapons Station (NWS) Earle and an adjacent state primary or secondary road. The requirement for this access in 2010 is a stipulation within the lease agreement between the Navy and the developer of Laurelwood. This developer may construct necessary road improvements to obtain access and rent any housing units to the general public through the year 2040.

Dates and Addresses: Public scoping will be conducted in the form of an open-house style meeting to be held in Monmouth County, New Jersey to receive written comments on environmental concerns that should be addressed in the EIS. The public scoping meeting will be held on November 27, 2007, from 4 p.m. and 8 p.m., at Brookdale Community College, 765 Newman Springs Road, Lincroft, New Jersey.

FOR FURTHER INFORMATION CONTACT: Mr. Patrick Fisher, Naval Weapons Station Earle, Public Affairs Officer, 201 Highway 34 South, Building C–2, Colts Neck, New Jersey 07722; telephone: 732–866–2171; e-mail: *patrick.l.fisher@navy.mil.*

SUPPLEMENTARY INFORMATION: The proposed action is to provide unimpeded access in the year 2010 to the developer of the Laurelwood housing area across a portion of mainside NWS Earle connecting the Laurelwood housing area with a state primary or secondary road. The requirement for this access in 2010 is part of an existing lease agreement between the Navy and the developer of Laurelwood.

In 1988 the Navy contracted with a developer to construct, own, and operate 300 military family housing units at NWS Earle, now known as the Laurelwood housing area. A 52-year lease agreement for the underlying land was executed between the Navy and the developer which included an in-lease and out-lease period. During the in-lease period, which runs from 1988 until 2010, the Navy guarantees rent payments to the developer for the occupancy of all 300 Laurelwood units. Only military and their dependents are allowed to occupy these housing units during the in-lease period. During the out-lease period of 2010 until 2040 the developer may rent the units to the general public. However, the lease requires that the Navy provide "reasonable access" between the Laurelwood housing area and an adjacent State, primary, or secondary road. The lease agreement defines reasonable access as being on a paved road, constructed, operated, and maintained by the developer at its own cost. The Navy may satisfy this obligation by either (a) providing unimpeded access along existing roads of the installation or (b) providing an easement for alternate access adequate to allow the developer to construct a road from an adjacent primary or secondary road to Laurelwood that will provide unimpeded access. Road construction would be subject to Federal, State and local laws and regulations. While the developer must pay for construction of a new road and necessary improvements, the Navy is required to finance the construction of any road enhancements necessary to meet their security or operational requirements (*e.g.*, security fencing, gates). In addition, the Navy is required

Appendix II: Service's October 20, 2008, Scoping Letter to the Corps.

Colonel Byron G. Jorns
District Engineer
Att: Chuck Sumner
U.S. Army Corps of Engineers
Mobile District
P.O. Box 2288
Mobile, AL 36628-001

Dear Col. Jorns:
Thank you for the opportunity to participate in the scoping process regarding the review and updating of the Water Control Manual (WCM) for the Alabama-Coosa-Tallapoosa (ACT) River Basin, as announced in the November 9, 2007 Federal Register. We are providing the following comments in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.) and the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Outlined below are a number of issues we have identified that should be addressed in the update to the WCM.

Threatened and Endangered Species - There are at least 12 extant federally listed species found in mainstem river reaches of the ACT that have the potential to be affected by reservoir operations. These include:

Alabama sturgeon	*Scaphirhyncus suttkusi*	Endangered
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Threatened
Goldline darter	*Percina aurolineata*	Threatened
Tulotoma snail	*Tulotoma magnifica*	Endangered
Inflated heelsplitter	*Potamilus inflatus*	Threatened
Heavy pigtoe	*Pleurobema taitianum*	Endangered
Southern clubshell	*Pleurobema decisum*	Endangered
Triangular kidneyshell	*Ptychobranchus greenii*	Endangered
Fine-lined pocketbook	*Hamiota altilis*	Threatened
Interrupted rocksnail	*Leptoxis foremani*	Candidate
Rough hornsnail	*Pleurocera foremani*	Candidate
Wood stork	*Mycteria americana*	Endangered

You should also consider the federally listed species found in tributary streams and nearby terrestrial habitats of the ACT basin that have the potential to be impacted by reservoir operations. These include:

Painted rocksnail	*Leptoxis taeniata*	Threatened
Cylindrical lioplax	*Lioplax cyclostomaformis*	Endangered
Lacy elimia	*Elimia crenetella*	Threatened

Blue shiner	*Cyprinella caerulea*	Threatened
Georgia rockcress	*Arabis georgiana*	Candidate
Price's potato-bean	*Apios priceana*	Threatened
AL canebrake pitcher-plant	*Sarracenia rubra alabamensis*	Endangered
Kral's water-plantain	*Sagittaria secundifolia*	Threatened
Harperella	*Ptilimnium nodosum*	Endangered
Georgia aster	*Symphyotrichum georgianum*	Candidate
Tennessee yellow-eyed grass	*Xyris tennesseensis*	Endangered
Mohr's Barbara's buttons	*Marshallia mohrii*	Threatened
Alabama leather-flower	*Clematis socialis*	Endangered
Green pitcher-plant	*Sarracenia oreophila*	Endangered

Note that Georgia rockcress, Georgia aster, and Price's potato-bean have been found on or near river bluffs overlooking mainstem ACT rivers and reservoirs.

Critical habitat for 10 species of mussels has also been designated in 14 units, or stream segments, located throughout the ACT basin. These mussels include:

Southern acornshell	*Epioblasma othcaloogensis*	Endangered
Ovate clubshell	*Pleurobema perovatum*	Endangered
Southern clubshell	*Pleurobema decisum*	Endangered
Upland combshell	*Epioblasma metastriata*	Endangered
Triangular kidneyshell	*Ptychobranchus greenii*	Endangered
Alabama moccasinshell	*Medionidus acutissimus*	Threatened
Coosa moccasinshell	*Medionidus parvulus*	Endangered
Southern pigtoe	*Pleurobema georgianum*	Endangered
Fine-lined pocketbook	*Hamiota altilis*	Threatened
Orange-nacre mucket	*Hamiota perovalis*	Threatened

Critical habitat has been proposed for the Alabama sturgeon (*Scaphirhyncus suttkusi*). Because many of these species are isolated and fragmented from reservoir development and water quality conditions, we encourage the Corps to participate with Federal and State agencies to develop a comprehensive monitoring plan to identify any remaining unknown or historically known populations in the basin.

The U.S. Fish and Wildlife Service, working with State, Federal, non-government and private business partners, also has identified potential re-introduction sites for recovery of listed aquatic species within the ACT basin; we would like to enlist the Corps as a partner in this large-scale recovery effort (see O'Neil et. al 2008). As work on the WCM update proceeds, please contact Dan Everson of the Alabama Field Office for the most up-to-date list of federally listed species, critical habitat, and their locations in the ACT basin, as well as potential sites for re-introduction of listed species. In addition to aquatic recovery efforts, we would like the Corps to consider terrestrial habitats under their ownership as potential locations for outplanting of federally listed plants should the need and opportunity arise.

Species of Greatest Conservation Need - In an effort to keep more species from becoming imperiled to the point of requiring federal listing under the Endangered Species Act (ESA), the Alabama Department of Conservation and Natural Resources has identified Species of Greatest Conservation Need (GCN) in the state; several of these are found within the ACT basin. The spotted rocksnail (*Leptoxis picta*), at least 2 species of mussels (painted clubshell, *Pleurobema chattanoogaense;* southern purple lilliput, *Toxolasma corvunculus*) and one species of fish (Alabama shad, *Alosa alabamae*) are found in mainstem ACT rivers. GCN bird species considered to be of high conservation concern that utilize wetlands and floodplain forests in interior Alabama include the least bittern (*Ixobrychus exilis*), American black duck (*Anus rubripes*), swallow-tailed kite (*Elanoides forficatus*), yellow rail (*coturnicops novaboracensis*), American woodcock (*Scolopax minor*) and the Swainson's warbler (*Limnothlypis swainsonii*). The update to the Corps' WCM should address the potential of Corps reservoir operations to impact species that may be on the brink of requiring federal protection under the ESA.

Fish and Aquatic Organism Passage - Dams on the Alabama River have blocked historic migrations of more than a dozen species of fish for several decades, and have contributed to the decline of the critically imperiled Alabama sturgeon. High flows that overtop the dams and opening of dam locks at Claiborne and Miller's Ferry have been identified as methods to facilitate aquatic organism passage on the Alabama River. We recommend that the Corps continue to facilitate research on fish passage at Corps dams on the ACT, including research on timing and duration of attraction flows, monitoring and tracking of species through the lock and dam structures, and "dummy" locking, with the goal of implementing Corps reservoir operations that allow riverine species to travel their historic migration pathways.

Water Quality - The effect of reservoir operations on water quality should be addressed in the WCM update, including existing and potential effects to dissolved oxygen, temperature, pH, conductivity, nutrient and organic material dynamics, and various industrial and municipal discharges. A monitoring program addressing water quality in reservoirs and tailwaters should be designed and implemented to detect, report and mitigate water quality issues that may impact benthic and pelagic species.

Flow Dynamics - A number of natural flow regime components (e.g., base, seasonal, and minimum/maximum flow levels, frequency/duration of low/high pulse flows, flow rise/fall rates and frequency of flow reversals) are important, even critical, to the long-term maintenance and protection of the basin's riverine fauna and habitats. These natural flow characteristics can provide a template for management strategies at water control facilities, as well as for future water management changes that may result from a basin-wide allocation formula. We recommend that the conservation and/or recovery of as many of these natural flow conditions as possible be fully considered in the development and implementation of the new water control manual for the ACT basin. In Alabama, the effects to downstream aquatic biota and riverine ecology from diurnal hydropower peaking flows from the RF Henry and Miller's Ferry dams, which are often described as run-of-the-river dams, should be examined.

Riparian and Wetland Habitats - The ecological integrity of riverine systems is intimately connected to the quality and quantity of streamside floodplain forests and wetlands. The review and updating of the WCM should address effects to the vegetation ecology of adjacent wetlands and floodplain forests, as well as the wildlife resources dependent upon them including migratory birds. The federally endangered wood stork (*Mycteria americana*) relies on the shallow wetland areas adjacent to the Alabama River during the summer and fall each year for foraging.

Technical Working Group for Water Modelers - To facilitate information sharing and involvement with the WCM update process, we recommend that a technical working group of water modelers from interested stakeholders familiar with the HEC-ResSim Reservoir Simulation be formed and meet on a regular basis during and after the completion of the WCMs.

Integrated Drought Plan - The Water Control Manual update should integrate a basin-wide drought plan that addresses water allocation issues among stakeholders in Georgia and Alabama, as well as the operation of dams operated by Alabama Power Company on the Coosa and Tallapoosa Rivers. A drought plan should adequately identify water quality and quantity needs at various times of the year.

Please address questions and comments on the Water Control Manual update process to Dan Everson (251-441-5837) of my staff.

Sincerely,

William Pearson
Field Supervisor
Alabama Ecological Services Field Office

cc: Sandy Tucker, USFWS Ecological Services, Athens, GA
Stan Cook, AL Dept. of Conservation and Natural Resources, Montgomery, AL
Jeff Weller, USFWS R4 Regional Office, Atlanta, GA

References

O'Neil, Patrick E., S.W. McGregor, E. A. Wynn, and J.R. Powell, 2008. Critical habitat Units for threatened and endangered mussels in the Mobile River Basin. Geological Survey of Alabama Special Map 247.

Appendix III: Service's May 3, 2010, PAL to the Corps.

Colonel Byron Jorns
US Army Corps of Engineers, Mobile District
P.O. Box 2288
Mobile, AL 36628-0001

Subject: Planning Aid Letter regarding the Alabama-Coosa-Tallapoosa Water Control Manual Updates

Dear Colonel Jorns:

We are providing your agency with a Planning Aid Letter (PAL) for the proposed Water Control Manual (WCM) Updates for the Alabama-Coosa-Tallapoosa (ACT) Basin in Georgia and Alabama. The purpose of the updates is to identify operating criteria and guidelines for managing water storage and release of water from U.S. Army Corps of Engineers (Corps) reservoirs. The resulting documents will guide water management operations. In the National Environmental Policy Act (NEPA) review, the Corps will address current operations, proposed changes in water management operations at the reservoir projects within the limits of the existing authorities, as well as potential impacts throughout the basin that would result from implementation of the updated manual.

The purpose of the PAL is to identify resource values and issues, identify federally protected species issues, and propose preliminary changes, mitigation, or enhancement opportunities to facilitate your decision-making as it relates to equal consideration of fish and wildlife resources. We submit the following comments and recommendations under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq*.), the Migratory Bird Treaty Act (MBTA)(49 Stat. 755, as amended; 16 U.S.C. § 702 *et seq*.), and the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq*.). These comments are based on previous studies and government documents as well as new datasets and information provided by State and Federal agencies. Continued efforts will be made to provide additional expertise and information in the form of another PAL and/or the draft FWCA reports. A separate consultation will occur regarding the potential impacts of the Corp's proposal on federally-listed threatened and endangered fish and wildlife species protected under the ESA. We stress that in the following letter, our recommendations are preliminary. Monitoring of many important ecological parameters in the ACT following dam construction has been limited. Unfortunately, even 40 years after construction we lack critical data on the dissolved oxygen levels above and below Corps reservoirs, as well as effects of hydropower peaking flows on fish assemblages. New information often changes our understanding of ecological response to complex natural and human-influenced variables. Rather than attempt, in one document, to prescribe definitive management guidelines for possibly decades of dam operations, we would like to begin working with the Corps to build an adaptive management framework for operations that explicitly outlines goals and objectives of operations, continually monitors and analyzes ecosystem response, and adjusts operations accordingly based on what we have learned. Adaptive management of river systems helps to link the resistance and resilience of species and ecosystems to a natural range of flow variation. Management should occur over a geographic area large enough that most species' habitat requirements will be met somewhere, though not necessarily at the same location every year (Sparks 1998). Necessarily we will recommend research and monitoring as a primary component of dam operations.

1.0 PRIOR STUDIES OR REPORTS

A complete review of the many reports, analyses, lawsuits, and volumes of data associated with water management in the ACT is beyond the scope of this report, but we will reference several documents in this PAL that are important to management of fish and wildlife resources.

The US Fish and Wildlife Service (Service) previously made available a list of federally protected species and other species of concern in 2008 as part of the initial scoping for this project. Since then, critical habitat has been designated for the Alabama sturgeon in the Alabama and Cahaba Rivers (USFWS 2009). The rough hornsnail and interrupted rocksnail have been proposed for listing, and there is a proposal to designate critical habitat for them below Jordan Dam. Revisions to this list will continue to be provided as necessary as the draft and final FWCA reports are developed.

A Service recovery plan for federally listed aquatic species in the Mobile River Basin was completed in 2000, and had input from many partners in the basin including the Corps. The recovery plan outlines many of the issues that must be addressed to protect species that are listed under the ESA(USFWS 2000). Because the system of dams operated by the Corps has a significant influence on habitat availability and suitability in the ACT, an update to the WCMs for these dams has the potential to provide significant benefits for these species, as well as many other species not protected under the ESA.

2.0 GENERAL DESCRIPTION OF FISH AND WILDLIFE RESOURCE CONDITIONS

Aquatic resources within the ACT basin are heavily impacted by human development, including the construction and operation of dams, channelization, and dredging and water quality degradation (USFWS 2000, 2006; Atkins et al. 2004). Cumulatively, these activities are physically degrading habitats, decreasing or eliminating natural variability of water flows, and fragmenting populations of many aquatic organisms.

Dams constructed for hydropower generation, navigation, flood control, water supply, and recreation have impounded about 600 river miles of aquatic habitat in the ACT Basin (USFWS 2000), including more than 230 miles impounded by Corps dams (USACE 1998). Impoundments and flow regulation have induced changes in aquatic habitats by altering sediment deposition, flow patterns, rates of geomorphic channel adjustment, and water quality conditions throughout the river system. Dams also function as barriers to aquatic species movement. Consequently, many native species are extinct or extirpated from significant portions of the ACT Basin as a direct or indirect result of dam construction. (Bogan et al. 1995; USFWS 2000).

Channelization has occurred within every major river system within the ACT (USACE 1990, USFWS 2000). Activities for straightening, deepening, and/or enlarging stream and river channels were particularly concentrated in the Alabama River portion of the drainage (USACE 1990). The effects of channelization on aquatic habitats include loss of habitat diversity, substrate stability, and riparian canopy; accelerated bed and bank erosion; and altered depth (Brooks 1994). While channel dredging diminished in recent years, continued geomorphic response to channelization is manifested through channel erosion, channel filling, and headcutting (USFWS 2000).

Dredging to support vessel navigation in the Alabama River initially involved removal of shallow shoals and other historic aquatic habitats for species that are now imperiled (USFWS 2000). This removal destroyed benthic organisms and their habitats, eliminated habitat and prey for fishes and turtles, initiated and perpetuated upstream instability and erosion, and increased downstream turbidity (USFWS 2000). Initial habitat losses were severe, whereas current maintenance dredging and spoil disposal of seasonally accumulated sediments is thought to have less of an impact, only because many sensitive species have already been eliminated, and surviving species are distributed according to current patterns of deposition and erosion (Hartfield and Garner 1998).

The following sections will discuss several of the important issues that should be addressed in evaluating operational parameters in the Corps' updating of the WCMs for dams of the ACT Basin. This will be followed by a reach-by-reach discussion of fish and wildlife-related issues

2.1 Instream Flow

With the updates to the WCM, the Corps has an opportunity and obligation to help restore and/or maintain instream flows that provide habitat for all life stages of aquatic species (adult feeding, spawning, egg and larval survival, and nursery and rearing habitat). Instream flows are also necessary to enable migration of anadromous, catadromous, potadromous, and riverine fish over and around barriers (including necessary attraction flows for fishways), and to provide water quality to sustain biota and high quality habitats.

We recognize the operational constraints to achieving environmental flow objectives imposed by the many competing uses for water in Alabama and Georgia. However, opportunities still exist for providing flows for bypassed natural river channels downstream of hydropower projects, adjusting flows in highly regulated river sections downstream of hydropower dams, providing non-peaking flow windows during critical spawning periods, and providing adequate flows for water quality maintenance in water segments that have experienced species die-offs.

A number of natural flow regime components (e.g., base, seasonal, and minimum/maximum flow levels, frequency/duration/timing of low/high pulse flows, flow rise/fall rates and frequency of flow reversals) are important, even critical, to the long-term maintenance and protection of the basin's riverine fauna and habitats. These natural flow characteristics can provide a template for management strategies below Corps dams, as well as for future water management changes that may result from a basin-wide allocation formula. The frequency and magnitude of channel forming flows (generally high flows with a 1 to 2-year return interval) are important for maintaining natural rates of geomorphic change and habitat maintenance (Dunne and Leopold 1978). We recommend that conservation and/or recovery of as many of these natural flow regime components be fully considered in the development and implementation of the new WCM for the ACT basin.

Flow regulation has negatively affected biota and habitat throughout the basin. The effects to downstream aquatic biota and riverine ecology from daily hydropower peaking flows from the RF Henry and Miller's Ferry dams, which are often described as run-of-the-river dams, should be examined. The diversion of flows from a portion of the Coosa River near Weiss Reservoir caused desiccation of habitats and extirpation of multiple species. Hydropower peaking flows are also experienced by the aquatic organisms in the Etowah River below Allatoona Dam in Georgia. By design the Carters Reregulation Dam largely eliminates peak flow pulses from the Carters Reservoir Project, but the two dams comprising the project still eliminate much of the natural flow variability of the Coosawattee River, particularly the high flow component.

Thorough explanations of the physical, chemical, and ecological benefits from base flows, pulses, stable flow windows for spawning, and intra- and interannual flow variation are outside the scope of this letter; however we refer the reader to Junk et al 1989, Poff et al. 1997, Richter et al. 1998, Freeman et al. 2001, Postel and Richter 2003, and Mathews and Richter 2007 for fuller descriptions. The importance of baseflows, pulses, and flood flows are described within these resources.

In the middle portion of the ACT Basin, instream flow recommendations for re-licensing of hydropower dams owned by Alabama Power Company (APC) have largely followed the framework developed by the joint U.S. Environmental Protection Agency (EPA)/Service *Instream Flow Guidelines for the ACT* (Alabama-Coosa-Tallapoosa) *and ACF* (Apalachicola-Chattahoochee-Flint) *Basins Interstate Water Allocation Formula* (USFWS/EPA 1999). These flow regime guidelines are based on the principle that ecosystems evolved as a response to the natural flow regime, and that restoration of some natural flow regime components can restore structural and functional ecosystem elements that were lost or reduced as a consequence of flow regulation. Since the development of the 1999 flow guidelines, new flow analysis tools have been developed that facilitate more comprehensive descriptions of flow regimes and flow recommendations. One such tool is the Environmental Flow Components (EFCs) in Indicators of Hydrologic Alteration (IHA, Mathews and Richter 2007).

EFCs were used by the Service to develop flow guidelines for the ACF PAL for the WCM update, and for this PAL, we advocate the Corps follow a similar approach.

We recommend that water management in the ACT Basin, to the extent possible, be coordinated from headwaters to delta using methods and tools available in the resources cited in this section. This will require continued significant coordination with APC as well as State water resource agencies.

2.2 Water Quality

Water quality below several Corps dams, including Millers Ferry and Allatoona, does not meet State water quality standards. With the update to the WCM, the Corps has an opportunity and obligation to help maintain, restore, and/or enhance adequate water quality for the support of all life stages of aquatic species in the ACT Basin. Monitoring by the Alabama Department of Environmental Management (ADEM) in the summers of both 2008 and 2009 in several sections of the Alabama River indicated that dissolved oxygen levels occasionally dropped below 4.0 mg/L for several hours in the main channel, and on a few occasions dropped below 3.0 mg/L (ADEM preliminary datasonde data, 2008-2009). Data collected by the Service in the summer of 2009 on the Etowah River below Allatoona Reservoir indicated DO levels lower than 1.0 mg/L. (Figure 4). Low DO is a pervasive summer problem that needs to be addressed.

Water quality in all reaches needs to be adequate for successful reproduction and recruitment, as well as sustained growth of adults and juveniles (Watters 2000). DO and water temperature problems associated with inadequate instream flows, hypolimnetic discharges, stratification, and/or other causative reservoir discharge problems (e.g., the transport of pesticides, nutrients, biological/chemical oxygen demand-BOD/COD, and metals) should be identified and corrected at Corps dam facilities. Monitoring of water quality parameters to determine if ecological needs are met should be standard practice in dam operations, and ecological response to water quality changes should also be monitored.

2.3 Habitat Protection

The Corps has an opportunity and responsibility to protect and restore important riverine and associated aquatic habitats, and avoid additional losses of mainstem riverine habitat resulting from dam operations. These habitats include river bottoms, especially those supporting important structural and/or substrate features, shorelines, riparian zones, impacts from changing land uses, and associated wetland systems that serve as fish habitat and/or provide water quality and/or riverine morphological support functions.

Significant river-dependent habitats include the rich floodplain forests of the Alabama River, as well as the world-class wetlands and bottomland habitats of the Mobile-Tensaw Delta and Mobile Bay. Forest and grassland communities within the zone of annual, decadal and multi-decadal fluvial processes, including such disturbances as flooding and bank sloughing, are often distinctly different than communities outside that impact zone. Naturally, general moisture availability and the daily interaction between aquatic and terrestrial communities accounts for some of this unique riparian-zone character. However it’s equally apparent that the regular fluvial processes of deposition and erosion and a fluctuating water table, influenced greatly by Corps dams, play a significant role in mediating species success and dominance within those communities. Forest communities of the Alabama River bluffs also have acted as refugia and “species highways” for eons of climate change (Bill Finch, The Nature Conservancy, per. comm. 2010), suggesting that Corps infrastructure and land use related to water management in the ACT Basin can directly impact terrestrial forest community composition and persistence as well.

As a result of habitat fragmentation and population isolation, many of the aquatic species of federal and state concern will require population management and manipulation to maintain genetic flow between isolated populations, to reintroduce species to restored habitats, and, in some cases, prevent extinction. Priority sub-basins important for refugia and maintaining genetic flow are listed in the following document, as are the reaches designated as Critical Habitat as defined by the Service (USFWS 2004). We will also include reaches that have been identified as potential reintroduction/augmentation sites (Hartfield et al. 2010). To reestablish species in currently unoccupied habitats, it will likely be necessary to reintroduce animals through an active culture and propagation program. The Alabama Department of Conservation and Natural Resources (ADCNR), Division of Wildlife and Freshwater Fisheries, has established a state-of-the-art facility, the Alabama Aquatic Biodiversity Center (AABC), located at the former Claude Harris Federal Fish Hatchery in Marion, Alabama, dedicated exclusively to the culturing and propagation of non-game aquatic species. The Corps can help greatly in this undertaking by partnering with the AABC and utilizing their authority and resources to help protect and restore important aquatic habitats and flow regimes for species of concern in the ACT Basin.

Mitigation for loss of significant aquatic habitat, including inundation of over 40 miles of once free-flowing streams, has yet to be developed for the Carters Dam project in Georgia, completed in 1975. Mitigation for terrestrial and stream impacts for this project are long overdue, and should be addressed in the Draft Environmental Impact Statement (DEIS).

2.4 Aquatic Organism Passage

Fish passage facilities and structures are lacking on all Corps dams in the ACT, which has long been a concern of the Service. Downstream passage in particular can be facilitated by appropriate timing and volume of water releases over spillways and through locking chambers. The Corps has an opportunity to help restore and maintain connectivity of aquatic habitats in the ACT by developing and implementing safe and effective means for upstream and downstream passage.

Ongoing studies determining the effectiveness of using attraction flows and opening of lock gates to allow fish passage should continue, and may result in significant benefits for some species of fish. However, genetic isolation of aquatic organisms, further loss of native biotic diversity, and a trend toward environmental degradation is likely to continue as the landscape of the ACT Basin becomes more developed. We would like to see a cost benefit analysis comparing the operation and maintenance of the current navigational channel and system of locks and dams on the Alabama River versus the costs and economic benefits associated with maintaining the same system for maximum environmental benefits. We suggest that the DEIS at minimum should consider the alternative of operating locks to maximize connectivity of river reaches for aquatic organisms. A summary of the number of commercial barges and other craft that have and are currently utilizing the navigational system should be made available as part of the DEIS.

3.0 REACH DESCRIPTIONS

This section describes target resources present and historically present, objectives, and information needs for river reaches of the ACT in Alabama and Georgia.

3.1 Mobile Bay Delta to Claiborne Lock and Dam (L&D)

3.1.1 River Reach General Description

The lower 81-mile reach of the Alabama River from Claiborne L&D to its mouth flows entirely within the East Gulf Coastal Plain before joining the lower Tombigbee River to form the Mobile River and the biologically rich Mobile-Tensaw Delta. This reach drains an area of low-relief topography consisting of broad, rounded ridges and V-shaped valleys of sand and clay and is highly influenced by releases from upstream impoundments.

3.1.2 Species

Fishes: Alabama shad, Alabama and Gulf sturgeons, American eel, Southeastern blue sucker, highfin carpsucker, paddlefish, quillback, skipjack herring, river redhorse, smallmouth buffalo, striped bass, southern walleye, and ironcolor shiner are species of Federal/State interest that likely continue to inhabit this reach of the Alabama River (Mettee and Shepherd 2001; Mettee et al. 1996; Boschung and Mayden, 2004). However, populations of many of these species have been significantly impacted by Claiborne L&D that is blocking or hindering access to upstream spawning and feeding areas, particularly those species requiring long migrations to complete portions of their life cycle (e.g., Gulf and Alabama sturgeon, American eel, and the Alabama shad). Frecklebelly madtom, bluenose shiner, ironcolor shiner, freckled darter and alligator gar are either absent or very rare in this reach. Other freshwater species of sportfishing interest include the black basses, crappie, catfish, and sunfishes (USFWS 2006).

Mollusks: Historically, this reach supported the Alabama moccasinshell, fine-lined pocketbook, orange-nacre mucket, ovate clubshell, southern acornshell, southern combshell, southern pigtoe, stirrupshell, rayed creekshell, heavy pigtoe, Alabama pearlshell, black sandshell, tulotoma snail, cylindrical lioplax, painted rocksnail, and upland combshell. Recent dive records from numerous locations in this reach indicate that the inflated heelsplitter, heavy pigtoe, spotted rocksnail and tulotoma snail are the only target species surviving in this reach (USFWS Alabama Field Office data). Important commercial mussel beds also occur within this reach (Hartfield and Garner 1998).

Reptiles: The Alabama red-bellied turtle, alligator snapping turtle, and Mississippi diamondback terrapin are restricted to the lower reaches of the Alabama River in Baldwin County and the Mobile Bay/Delta, Patterns of natural flow variability created the ecologically-rich habitats where these species have survived for millennia.

Plants: Georgia rockcress occurs on the steep upper banks of this reach of the Alabama River, and may rely on flooding to help reduce competition from other vegetation (USFWS Alabama Field Office data). High flow events that scour river bluffs are likely beneficial to this plant.

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.1.3 Objectives

Restore federally protected resident and migratory aquatic species to historic abundances in suitable remaining riverine habitats.

3.1.3.1 Instream flow

The flow regime in this reach is affected by peaking hydropower generation/flood control operations to some extent by the 15 upstream dams in the Alabama, Coosa and Tallapoosa Rivers, but a greater impact comes from the one or more pulse flows per day from hydropower peaking flows from Corps-operated turbines at Millers Ferry and R.F. Henry L&Ds (Braun 2004; see Figure 1). Operational guidelines for maintaining flows in this reach have largely focused on ensuring navigation capabilities for a very small number of commercial barges. This is facilitated in part by a 1972 agreement, commonly referred to as the "Forty-six Forty rule" describing an agreement between the Corps and Alabama Power Company (APC) to release a 7-day average of 4640 cfs from APC projects to maintain a 9-foot water elevation in the navigation channel of the Alabama River. However, downstream there are other significant commercial and ecological considerations: the frequency, timing and volume of freshwater released from upstream Corps dams have a profound impact on the ecology of the Mobile Bay and Mobile-Tensaw Delta, and are important factors for commercial and recreational fisheries in the Bay, including those for shrimp, blue crab and oyster (Braun 2004). The pattern of natural freshwater inflow into the Mobile Bay/Delta is characterized by being highly variable at multiple time scales. One of the flow parameters most affected by upstream water management is the loss of extreme low flow events. Braun (2004) estimated that flows lower than 2700 cfs would naturally occur below Claiborne Dam on average about every ten years, but now are likely to occur only every 60 years. Freshwater inflow significantly affects many important ecological processes including the shaping of bottom and bank habitat, inundation and exposure of habitat to air, salinity and water temperature gradients, circulation and distribution of nutrients and massive quantities of organic matter, and residence time of water within embayments (Braun 2004). Therefore, changes in the magnitude, timing and duration of flood and low-flow events, mediated in part by Corps dams, are a major factor in ecological maintenance and succession in the Bay and Delta. Maintaining a pattern of natural freshwater inflow into the Mobile Bay/Delta is therefore highly desirable from an economic as well as an ecological perspective.

3.1.3.2 Water quality

The Alabama River from the Mobile-Tensaw Delta to Claiborne L&D upstream has an ADEM stream use classification of fish and wildlife (ADEM 2000).

Dissolved oxygen

The water use classification for this reach has a 5.0 milligrams per liter (mg/L) DO standard except under extreme conditions due to natural causes, when it may range between 4.0 mg/L and 5.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

Recent water quality data indicate that DO concentrations have fallen below the state DO standard (5 mg/L) in the tailwaters of Claiborne L&D during the summer months, occasionally for days at time, but more commonly for several hours each day (USFWS Alabama Field Office file data, 2000-2002; ADEM preliminary data 2008-2009).

3.1.4 Habitat protection

Navigational dredging is a concern in this reach of the Alabama River. Dredging removes shoal habitats in river channels and changes natural patterns of erosion and deposition potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner, 1998). Land use practices along the mainstem of the Alabama River, as well as its tributaries, can degrade aquatic habitats critical to southern walleye and other fish species (USFWS 2006), and should be considered in Corps dam and reservoir operations.

In addition to dredging, impacts from nonpoint source pollution are significant. Pollutant and nutrient concentrations are important ecological considerations during periods of low flow, when aquatic species may already be stressed from lower DO and reduced habitat availability. Pollutant concentrations required under National Pollution Discharge Elimination System (NPDES) permits are often cited by industry on the Alabama River as a reason to maintain unnaturally high flow during periods of natural drought, despite the importance of low flows in shaping Delta ecology. Research is needed to determine which species are most impacted under low-flow/high pollutant concentration conditions, and the flow patterns that are most beneficial under varying pollutant loads. Within the reach, this includes pollution from agricultural (nutrients, sediment, bacteria, and pesticides), aquaculture (nutrients and bacteria), forestry (sediment, nutrients, and thermal changes), roads (sediment), urban/residential development (sediment, nutrients, bacteria, and pesticides), and mining (sediment) activities (AL Clean Water Partnership (CWP) 2005).

Priority sub-basins: Important tributaries that help maintain genetic flow and act as refugia in this reach include the Little River, Pine Log Creek, and Reedy/Little Reedy/Sandy Hill Creeks (Alabama Comprehensive Wildlife Conservation Strategy (CWCS) 2005). Flow parameters need to ensure connectivity with these streams.

Designated Critical Habitat: Critical habitat for the Alabama sturgeon was designated in 2009 in this reach (USFWS 2009). The only Alabama sturgeon captured in the past decade was caught in the tailwaters of Claiborne L&D in 2008, reinforcing the fact that the dam is a barrier to an extremely rare (but formerly abundant) species, and that the ecological integrity of the lower Alabama River is essential for keeping this species from becoming extinct.

3.1.5 Aquatic Organism Passage

Since 1969, the Claiborne L&D has impeded upstream passage of most, if not all, diadromous and migratory freshwater fish species under all but the highest spring flows (USACE 2000). Other than the occasional boat lockage or travel over the spillway, Claiborne L&D does not provide any means of upstream or downstream fish passage. Research conducted by the GSA indicates that a flow of 80,000 cfs is required to inundate the spillway structure (USFWS 2006). This occasionally occurs between February and April (USGS 2004). Contingent upon the timing of these flows, some stronger swimming fishes, like the blue sucker, appear to be capable of swimming upstream over the spillway. However, most fishes cannot swim upstream to historical spawning areas.

Use of the lock holds some promise for providing upstream fish passage. Recent Corps/Service studies indicate that slight modification in locking procedures can greatly increase the number of fish species passed. A 30-foot headwall in the lock might, however, limit the passage of some species. On-site consultation with Ben Rizzo, the Service's Senior Fishway Engineer, revealed that addition of a fish lift or vertical slot fishway would greatly enhance passage to a wider variety of species. Mr. Rizzo stated that these types of fishways can pass sturgeon. Providing fish passage at this facility would address Recovery Objective 2.4 of the Gulf Sturgeon Recovery/Management Plan and Objective 8.5.9.1 of the Gulf Striped Bass Fishery Management Plan. Mettee et al. (2005) suggests that more than 35 fish species could benefit from passage improvements at Claiborne and Millers Ferry L&Ds. The fisheries program at Auburn University, in cooperation with the Corps, is beginning research on the efficacy of alternative locking procedures, including the use of pumps for attraction flows. We encourage the Corps to continue to facilitate this research.

Research by GSA also indicates that a variety of aquatic species freely pass downstream over the fixed-crest spillway of Claiborne L&D (Mettee et al. 2005), though the losses associated with this are unknown. Sturgeon species are not likely to utilize spillways for downstream travel, and are effectively trapped between dams under most current conditions.

3.1.6 River Reach Research Needs

- Implement and develop monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- In cooperation with the Service and AABC, explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include the Alabama sturgeon and any species that has been identified as a primary host for a targeted mussel

(USFWS 2005a).

- Develop a Geographic Information System (GIS) database that identifies, characterizes (e.g., bathymetry, current velocity, and substrate), and maps stable riverine habitats.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.2 Alabama River from Claiborne L&D to Millers Ferry L&D

3.2.1 River Reach General Description

This 60-mile reach of the Alabama River is contained entirely within the East Gulf Coastal Plain Province and encompasses Claiborne Reservoir, a 5,930-acre impoundment on its southern end (USACE 2001). Claiborne Reservoir is essentially a run-of-river impoundment that provides a 9-foot navigation channel up to Millers Ferry L&D. Unique habitats have developed in this reach as streamflow cuts down through the alluvial sediments to expose the limestone underlayment (Mettee et al. 1996). This results in streambeds with upland characteristics within the Coastal Plain (Mettee et al. 1996). The upper part of this reach experiences hydropower-influenced flows from the Millers Ferry hydropower facility.

3.2.2 Species

Fishes: Alabama shad, Alabama sturgeon, American eel, Southeastern blue sucker, highfin carpsucker, paddlefish, quillback, skipjack herring, river redhorse, smallmouth buffalo, striped bass, southern walleye, and ironcolor shiner are species of Federal/State interest that likely inhabit this reach of the Alabama River (Mettee et al. 1996; Boschung and Mayden 2004). Populations of many of these species have been significantly impacted by Claiborne L&D by being blocked or hindered from access to upstream spawning areas, particularly for those species that require long migrations to complete a part of their life cycle (e.g. Gulf and Alabama sturgeon, American eel, and the Alabama shad). Frecklebelly madtom, Gulf sturgeon, bluenose shiner, ironcolor shiner, freckled darter and alligator gar are either absent or very rare in this reach. Freshwater species of sportfishing interest that inhabit this reach include the striped bass, black basses, crappie, catfish, and sunfishes (USFWS 2006).

Mollusks: Historically, the Alabama moccasinshell, fine-lined pocketbook, orange-nacre mucket, ovate clubshell, southern acornshell, southern combshell, southern pigtoe, upland combshell, stirrupshell, rayed creekshell, heavy pigtoe, black sandshell, tulotoma snail, painted rocksnail, and cylindrical lioplax occurred in this reach. It is likely that the inflated heelsplitter, heavy pigtoe, and spotted rocksnail are still extant. Dive sampling in 2009 shows the tulotoma snail to still be extant (USFWS Alabama Field Office data). Valuable commercial mussel beds also occur within this reach (Hartfield and Garner 1998).

Plants: Georgia rockcress occurs on the steep upper banks of this reach of the Alabama River, and may rely on flooding to help reduce competition from other vegetation (USFWS Alabama

Field Office data). High flow events that scour river bluffs are likely beneficial to this plant. Botanists have long noted that the bluffs found along and above Claiborne L&D are botanically very species-rich, with fluvial geomorphic processes influencing short and long-term vegetation dynamics (Bill Finch, The Nature Conservancy, pers. comm. 2010)

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.2.3 Objectives

The Corps has an opportunity to protect reservoir fisheries and water quality, as well as restore federally protected, resident and migratory aquatic species to historic abundances in remaining habitats.

3.2.3.1 Instream flow

The flow regime in this reach is affected by peaking hydropower generation at Millers Ferry L&D as well as peaking hydropower generation and flood control operations at 14 other upstream dams in the Alabama, Coosa and Tallapoosa Rivers. Currently, there are no minimum flows required downstream of Miller's Ferry L&D, although there is an agreement with APC to provide enough water to maintain a navigation channel for a very small number of commercial barges.

3.2.3.2 Water quality

The Alabama River from Claiborne L&D upstream to the Frisco Railroad crossing has ADEM's stream use classifications of swimming, and fish and wildlife (ADEM 2000). From the Frisco Railroad crossing upstream to river mile 131 the reach is classified as fish and wildlife (ADEM 2000). From river mile 131 upstream to Millers Ferry L&D the river is classified as public water supply (ADEM 2000). A portion of the main channel in this reach is included on the state's 303(d) listed waters due to organic enrichment/low dissolved oxygen and nutrients as a result of dam construction, industrial discharges, flow regulation/modification, non-irrigated crop production, and pasture grazing (ADEM 2002). ADEM (2004) lists Claiborne Lake as eutrophic.

Dissolved oxygen

Alabama water use classifications for this reach have a 5.0 mg/L DO standard, except under extreme conditions due to natural causes, DO may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should never be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

ADEM sampling from June-September 1983 revealed that the DO standard was met on all occasions in the Millers Ferry L&D tailrace, although August data closely approached the standard's limits (ADEM 1984). Comparisons of pre- and post-impoundment DO data indicate an 18% decline in average DO concentration (6.6 mg/L pre-impoundment to 5.4 mg/L post-impoundment) for August (ADEM 1984). Downstream effects of flow interruption and lower DO concentrations caused one major discharger to resort to a higher treatment, hold-and-release system for effluent discharge (ADEM 1984).

More recent water quality data indicate that DO concentrations fell below the state instantaneous DO standard (4 mg/L) in the tailwaters of Millers Ferry L&D during the summer months (FWS, Alabama Field Office file data, 2000-2002; ADEM preliminary data 2008-09).

3.2.4 Habitat protection

Navigational dredging is a concern in this reach of the Alabama River. Dredging removes shoal habitats and changes natural patterns of erosion and deposition, potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner 1998). Land use practices along the mainstem of the Alabama River, as well as its tributaries, can degrade aquatic habitats critical to southern walleye and other fish species.

In addition to dredging, nonpoint source pollution is a significant concern to be considered in Corps water management operations. Pollutant and nutrient concentrations are important ecological considerations during periods of low flow, when aquatic species may already be stressed from lower DO and reduced habitat availability. Pollutant concentrations required under NPDES permits are often cited by industry on the Alabama River as a reason to maintain unnaturally high flow during periods of natural drought, despite the importance of low flows in shaping Delta and river ecology. Research is needed to determine which species are most impacted under low-flow/high pollutant concentration conditions, and the flow patterns that are most beneficial under varying pollutant loads. Within the reach, this includes pollution from agriculture (nutrients, sediment, bacteria, and pesticides), aquaculture (nutrients and bacteria), forestry (sediment, nutrients, and thermal changes), roads (sediment and petroleum), urban/residential development (sediment, nutrients, bacteria, and pesticides), and mining (sediment and heavy metals) (AL CWP 2005).

Priority sub-basins: An important tributary that helps maintain genetic flow and acts as a refugia in this reach includes Limestone Creek (CWCS 2005). Flow parameters need to ensure connectivity with this stream.

Designated Critical Habitat: Critical habitat has been designated in this reach for the Alabama sturgeon, an extremely rare fish once found in abundance (USFWS 2009). The update to the WCM should consider research and monitoring to determine flow patterns that could help keep the species from becoming extinct.

Potential Reintroduction/Augmentation Site and Suitable Species: The Alabama River has been identified as a potential reintroduction/augmentation site for the inflated heelsplitter, orange-nacre mucket, heavy pigtoe, southern clubshell, and stirrupshell (Hartfield et al. 2010).

3.2.5 Aquatic organism passage

Other than the occasional boat lockage and traversing of the spillway, and some limited experiments with attraction flows and lock openings, Millers Ferry L&D does not currently allow any means of fish passage. However, modification of lock operation may hold some potential for providing upstream passage to migratory species. As shown at Claiborne L&D, Millers Ferry also has the potential to pass large numbers of riverine fishes, some of which are listed under the ESA. Under extremely limited sampled conditions, Mettee et al. (2005) collected 10 species in the Millers Ferry lock chamber in May 2004 by providing an attraction flow. Installation of an additional fishway device (e.g., a vertical slot fishway or fish lift) may also be required to help pass a wider variety of species, take advantage of attraction flows elsewhere below the lock and dam, and provide passage to another portion of the channel. Attraction flows stemming from hydropower generation could be problematic for fish passage since these occur downstream of the lock and dam and could draw migratory species away from the intended path of passage. Some type of mechanism to direct fish away from this area may also be warranted. Providing fish passage at this facility would address Recovery Objective 2.4 of the Gulf Sturgeon Recovery/Management Plan and Objective 8.5.9.1 of the Gulf Striped Bass Fishery Management Plan. Mettee et al. (2005) suggests that more than 35 fish species could benefit from passage improvement at Claiborne and Millers Ferry L&Ds, not to mention opening-up access to the Cahaba River.

Downstream passage over the spillway at Millers Ferry L&D is possible for some migratory fish; however, turbine entrainment could have a severe negative impact on downstream migration. Screening of draft tube intakes and/or other devices that direct fish away from the turbines would be necessary to protect downstream migrants. A Corps plan to install debris diverters for the draft tubes has the potential of providing not only turbine protection, but also providing protection to downstream migrants. Modification of this device to protect migratory species should be seriously considered.

3.2.6 River Reach Research Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- Explore and implement opportunities to augment/reintroduce mollusks and fishes into appropriate habitats.

- Evaluate the effects of channelization and reservoir flowage on adjacent side-channel, shallow water, oxbow lake-type habitats. These areas provide important nursery areas for many fish species, and are an important foraging resource for listed species such as the wood stork. Flood events and flow patterns prior to dam construction maintained the sediment dynamics necessary for relatively stable, shallow water side-channel floodplain features, but reservoir flows and channelization may have now changed floodplain sediment dynamics to the point where many of these shallow water side channels can only be maintained through repeated dredging of their inlets (Stan Cook, ADCNR, pers. comm. 2010).

- Develop Geographic Information System (GIS) databases that identify, characterize (e.g., bathymetry, current velocity, and substrate), and map stable riverine habitats.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.3 Alabama River from Millers Ferry L&D to R.F. Henry L&D

3.3.1 River Reach General Description

The section of the Alabama River between Millers Ferry and R.F. Henry L&D is 103 miles long and is contained entirely within the East Gulf Coastal Plain Province. The reach encompasses Dannelly Reservoir, a 17,200-acre impoundment formed by Millers Ferry L & D. Dannelly Reservoir is essentially a run-of-river impoundment that provides a 9-foot navigation channel up to R.F. Henry L & D. Although managed as a run-of-the-river impoundment, Millers Ferry L & D has a hydroelectric generating capacity of 75 MW (ADEM 1984), and hydropower peaking flows are experienced by aquatic species downstream of both Millers Ferry and R. F. Henry dams.

3.3.2 Species

Fishes: Alabama shad, Alabama sturgeon, American eel, Southeastern blue sucker, highfin carpsucker, paddlefish, quillback, skipjack herring, river redhorse, smallmouth buffalo, striped bass, and southern walleye are species of Federal/State interest that likely inhabit this reach of the Alabama River (Mettee et al. 1996; Boschung and Mayden 2004). Populations of many of these species have been significantly impacted downstream by Claiborne L&D by blocked or impaired access to upstream spawning areas, particularly for those species that require long migrations to complete a part of their life cycle (e.g. Gulf and Alabama sturgeon, American eel, and the Alabama shad). Frecklebelly madtom, Alabama sturgeon, bluenose shiner, ironcolor shiner, freckled darter and alligator gar are either absent or very rare in this reach. Freshwater species of sportfishing interest that inhabit this reach include the black basses, crappie, catfish, and sunfishes (USFWS 2006).

Mollusks: Historically, the Alabama moccasinshell, painted rocksnail, fine-lined pocketbook, orange-nacre mucket, ovate clubshell, rayed creekshell, southern combshell, stirrupshell, black sandshell, and cylindrical lioplax occurred in this reach. It is likely that the inflated heelsplitter and spotted rocksnail still occur here, and recent dive sampling indicates that the heavy pigtoe, southern clubshell, and tulotoma snail are still extant in this reach (USFWS Alabama Field Office data; Pierson 1991; ADCNR unpublished data 2009). This reach contains several locations of concentrated densities of commercial mussel species (Hartfield and Garner 1998).

Plants: Georgia rockcress and Price's potato-bean occur on and near the banks of this reach of the Alabama River (USFWS Alabama Field Office data). Georgia rockcress likely benefits from flood-induced scour that reduces competition from other plants.

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.3.3 Objectives

The Corps can help to protect reservoir fisheries and water quality as well as restore federally protected, resident and migratory aquatic species to historic abundances in remaining habitats.

3.3.3.1 Instream flow

The instream flow regime in this reach is affected by hydropower generation at R.F. Henry L&D as well as peaking hydropower generation/flood control operations at 13 other dams upstream in the Coosa and Tallapoosa Rivers. Currently, there are no required minimum flows downstream of R.F. Henry L&D, although there is an agreement with APC to release at least 4640 cfs from their upstream projects to provide a 9-foot navigation channel in the river.

3.3.3.2 Water quality

The Alabama River from Millers Ferry L&D upstream to Blackwell Bend has ADEM's stream use classification of swimming and fish and wildlife (ADEM 2000). From Blackwell Bend upstream to Henry L&D, the reach is classified as fish and wildlife (ADEM 2000). ADEM (2004) lists Dannelly Reservoir as eutrophic.

Dissolved oxygen

Water use classifications for this reach have a 5.0 mg/L DO standard, except under extreme conditions due to natural causes, it may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

ADEM sampling from June-September 1983 revealed that the DO standard was met on all occasions in the Henry L&D tailrace. However, comparisons of pre- and post-impoundment DO data indicate a 35% decline in average DO concentration (7.1 mg/L pre-impoundment to 4.6 mg/L post-impoundment) for August (ADEM 1984). While greater waste load demands were experienced in recent years, ADEM (1984) conceded that water quality effects from impoundment and power generation were evident.

DO concentrations occasionally fall below the state DO standard (4 mg/L) in the tailwaters of Henry L&D (USFWS Alabama Field Office data, 2000-2002; ADEM preliminary data 2008-09).

Forebay profiles taken at the Millers Ferry L&D from June-September 1983 showed a moderate tendency toward DO stratification in June and July (ADEM 1984). Stratification was of such a moderate nature that DO concentrations stayed above 4.0 mg/L all the way to the bottom of the forebay (about 55 feet); the rest of the sampling period concentrations were similar throughout the water column (ADEM 1984). As at other projects where forebay and tailrace DO concentrations were above the standard, the shorter reservoir retention period probably accounts for the more favorable water quality (ADEM 1984).

3.3.4 Habitat protection

Dredging has removed shoal habitats and changed natural patterns of erosion and deposition, potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner 1998). Land use practices along tributary streams can also degrade aquatic habitats critical to southern walleye and other fish species (USFWS 2006).

In addition to dredging, impacts from nonpoint source pollution are significant and need to be taken into account during dam and reservoir operations. Pollutant and nutrient concentrations are important ecological considerations during periods of low flow, when aquatic species may already be stressed from lower DO and reduced habitat availability. Pollutant concentrations required under NPDES permits are often cited by industry on the Alabama River as a reason to maintain unnaturally high flow during periods of natural drought, despite the importance of low flows in shaping Delta and river ecology. Research is needed to determine which species are most impacted under low-flow/high pollutant concentration conditions, and the flow patterns that are most beneficial under varying pollutant loads. Within the reach, this includes pollution from agricultural (nutrients, sediment, bacteria, and pesticides), aquaculture (nutrients and bacteria), forestry (sediment, nutrients, and thermal changes), roads (sediment), urban/residential development (sediment, nutrients, bacteria, and pesticides), and mining (sediment) activities (ALCWP 2005).

Priority sub-basins: Important tributaries that help maintain genetic flow and act as refugia in this reach include Bogue Chitto Creek, Big Swamp Creek, Cahaba River, Chilatchee Creek, Dry Cedar Creek, Little Mulberry Creek, and Mulberry Creek (ACWCS 2005; Bogan and Pierson 1993b). Flow parameters need to ensure connectivity with these streams.

Designated Critical Habitat: The Alabama River from the confluence of the Cahaba River (Alabama RM 198.1) upstream to the confluence with Big Swamp Creek (RM 183.5) is designated critical habitat for the southern clubshell and orange-nacre mucket. Bogue Chitto Creek from its confluence with the Alabama River (RM 169.8) upstream to U.S. Highway 80 is also designated critical habitat for the southern clubshell, Alabama moccasinshell, and orange-nacre mucket (USFWS 2004). Critical habitat for the Alabama sturgeon has been designated in the Alabama River to below R.F. Henry L&D, and in the Cahaba River to Centreville (USFWS 2009). The WCM update should focus on developing and implementing a flow regime that protects and enhances habitat for these species.

Potential Reintroduction/Augmentation Site and Suitable Species: The Alabama River has been identified as a potential reintroduction/augmentation site for the inflated heelsplitter, orange-nacre mucket, heavy pigtoe, southern clubshell, and stirrupshell (Hartfield et al. 2010).

3.3.5 Aquatic organism passage

Millers Ferry L&D is an impediment to upstream fish passage by migratory species, such as Alabama sturgeon, Gulf sturgeon, Alabama shad, paddlefish, smallmouth buffalo, southern walleye, and blue sucker. Downstream passage over the Henry L&D spillway is possible for some fish species; however, turbine entrainment could have a severe negative impact on downstream migration. Screening of draft tube intakes and/or other devices that direct fish away from the turbines is necessary to protect downstream migrants.

Modification of lock operations holds potential for providing upstream passage to migratory species. As has been shown at Claiborne L&D, relatively minor modifications in locking procedures can greatly increase upstream passage for some species. However, installation of a fishway device (e.g., a vertical slot fishway or fish lift) would help pass a greater abundance and wider variety of species through this facility. Downstream attraction flows stemming from hydropower generation could be problematic for fish passage, so some type of mechanism to divert migratory fish away from this area may also be warranted. Providing fish passage at this facility would address Recovery Objective 2.4 of the Gulf Sturgeon Recovery/Management Plan and Objective 8.5.9.1 of the Gulf Striped Bass Fishery Management Plan.

3.3.6 River Reach Research Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- In cooperation with the Alabama Aquatic Biodiversity Center, explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include the Alabama sturgeon and any other species that has been identified as a primary host species for a targeted mussel (USFWS 2005b).

- Develop a Geographic Information System (GIS) database that identifies, characterizes (e.g., bathymetry, current velocity, and substrate), and maps stable riverine habitats.

- Examine the effects of channelization and reservoir flowage on silting in of the inlets of adjacent side-channel, shallow water habitats. These areas provide important nursery areas for many fish species, and are an important foraging resource for listed species such as the wood stork. Flood events and flow patterns prior to dam construction maintained the sediment dynamics necessary for a relatively stable side-channel floodplain feature, but reservoir flows and channelization may have now changed floodplain sediment dynamics to the point where many of these shallow water side channels can only be maintained through repeated dredging of their inlets (Stan Cook, ADCNR pers. comm. 2010).

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.4 Alabama River from R.F. Henry L&D to Jordan/Bouldin Dams (Coosa River)

3.4.1 River Reach General Description

This reach contains the transition between the portion of the ACT Basin managed by the Corps and the section controlled primarily by dams operated by Alabama Power Company (APC) on the Coosa and Tallapoosa Rivers. The lower dam on this reach, R.F. Henry Dam, is operated by the Corps, while Jordan and Bouldin Dams are operated by APC. Ecological issues described below for this reach will need to be addressed by both the Corps and APC.

This 80-mile reach of the Alabama River is contained entirely within the East Gulf Coastal Plain Province and includes Woodruff Reservoir, a 12,510-acre impoundment formed by R.F. Henry L&D. Woodruff Reservoir is essentially a run-of-the-river impoundment that provides a 9-foot navigation channel up to Montgomery. Although managed as a run-of-river impoundment, R. F. Henry L & D does have a hydroelectric generating capacity of 68 MW (ADEM 1984). Aquatic species downstream of R.F. Henry are affected by hydropeaking flows not only from the R.F. Henry turbines, but also from the dams upstream on the Coosa and Tallapoosa Rivers. Another feature of this reach is the 5-mile long tailrace canal from Bouldin Dam that bypasses the main channel and enters the Coosa River 12 miles downstream of Jordan Dam. The tailrace downstream of Jordan Dam receives a continuous minimum flow ranging from 2,000 cfs during the summer-fall-winter months, to 4,000 cfs during the spring months. Due to this minimum flow, the Jordan tailrace has developed into a spotted bass fishery, and also offers one of the best restoration opportunities for mollusks and fishes in the entire Mobile River Basin. This unique area is located over a geologic formation known as the Fall Line, which is the transition zone between high gradient upland streams and low gradient coastal plain streams. The stretch of the Coosa upstream of the Fall Line was historically characterized by a series of shoals collectively called the Coosa Falls; however, the rivermen of the late 1800s often used more colorful terms for these areas like, the Narrows, Devil's Race, Butting Ram Shoals, Hell's Gap, and the Devil's Staircase -- most of which are now inundated by Jordan, Mitchell, and Lay reservoirs (Jackson

1995). These names were due in part to the rapid change in elevation the Coosa experienced over its last sixty miles before crossing the Fall Line and joining the Tallapoosa River near the town of Wetumpka. The last exposed remnant of this geologic formation is the stretch between Jordan Dam and Wetumpka known as Moccasin Shoals.

3.4.2 Species

Fish: Historically, the Alabama shad, Alabama sturgeon, American eel, and Gulf sturgeon occurred in this reach (Mettee et al. 1996; Boschung and Mayden 2004); however, populations of these species have been severely impacted by Claiborne, Millers Ferry, and R.F. Henry Dams which block or hinder fish access to upstream spawning areas. The southeastern blue sucker, highfin carpsucker, paddlefish, quillback, river redhorse, southern walleye, smallmouth buffalo, and striped bass are species of federal/state interest that continue to inhabit the mainstem and/or tributaries of this reach (Mettee et al. 1996; Boschung and Mayden 2004). Other freshwater species of state interest include black basses (e.g., the Jordan tailrace is recognized as a world class spotted bass fishery), crappie, catfish, freshwater drum and sunfishes (USFWS 2006).

Mollusks: Historically, the Alabama moccasinshell, fine-lined pocketbook, triangular kidneyshell, Coosa moccasinshell, southern pigtoe, orange-nacre mucket, ovate clubshell, southern purple lilliput, southern clubshell, southern combshell, stirrupshell, delicate spike, Alabama spike, black sandshell, Coosa creekshell, cylindrical lioplax, interrupted rocksnail, lacy elimia, painted rocksnail, teardrop elimia, cobble pebblesnail, flat pebblesnail, and spotted rocksnail occurred in this reach, many of which have been extirpated or are presumed extinct (Johnson 2002). Recent collections indicate that the fine-lined pocketbook may exist in this reach, along with the largest population of the tulotoma snail, which occurs in a reach approximately 3.5 miles downstream of Jordan Dam (Bogan and Pierson 1993a; Johnson 2002). A 1995 study reported a stable and healthy population of over 109 million tulotoma snails inhabiting this reach (Christman et al. 1995). Christman et al. (1995) also documented an increase in shoreline habitat use by the snail that was attributed to increased habitat availability resulting from the implementation of continuous minimum flow releases at Jordan Dam. The interrupted rocksnail (previously extirpated in Alabama) was reintroduced into the reach in 2003 after not being collected for nearly 50 years. This reach also supports one of the two known populations of the rough hornsnail (Mirarchi et al. 2004).

Plants: Georgia rockcress and Price's potato-bean occur on and near the banks of this reach of the Alabama River (USFWS Alabama Field Office data). Georgia rockcress likely benefits from flood-induced scour that reduces competition from other plants.

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.4.3 Objectives

The Corps has an opportunity in this reach to protect and enhance water quality, and reduce the effects of hydropower-induced flow pulses from upstream dams. The Corps can also help restore federally protected, resident and migratory aquatic species to historic abundances in remaining habitats. The area downstream of Jordan Dam to Wetumpka has been identified as an important reach for the augmentation/reintroduction of several target species (Hartfield et al. 2010; Johnson 2002).

3.4.3.1 Instream flow

The instream flow regime in this reach is affected by impoundment at R.F. Henry L&D, hydropower generation at Jordan and Bouldin Dams, as well as by peaking hydropower/flood control operations at 11 other upstream dams in the Coosa and Tallapoosa River basins in Alabama and Georgia. From 1928, the first year of operation for Jordan Dam, until 1992, no allowances were made for minimum flows in its tailwaters. Flow was exclusively determined by hydroelectric demand, reservoir spillage, and prevailing weather patterns. In fact, beginning in 1967 with the completion of the Bouldin Dam, discharge through this dam's 5.5-mile tailrace cut-off bypassed approximately 12 miles of river below Jordan Dam for extended periods. This situation basically continued until 1992 when APC, as a condition of Federal Energy Regulatory Commission (FERC) relicensing, was required to provide a minimum instream flow to the bypassed mainstem of 2,000 cfs in the summer-fall-winter months and 4,000 cfs during the spring months (APC/KA 2000a). Further operational modifications were subsequently made to allow for short periods of increased flow (up to 10,000 cfs) to enhance kayaking, whitewater rafting, and fishing (APC/KA 2000a). At present, adjustments to the minimum flow are made using a ramping schedule that decrease flow at the rate of about 67 cfs or 133 cfs/day (APC/KA 2000a) to avoid stranding aquatic species. Minimum releases were chosen as a management approach to reduce the adverse effects of intermittent and/or peaking discharges from Jordan and Bouldin Dams. These minimum flows have had a significant positive effect on water quality and the aquatic community downstream of Jordan Dam.

3.4.3.2 Water quality

The Alabama River from Henry L&D upstream to Pintlala Creek and Catoma Creek has ADEM's stream use classification of fish and wildlife and partially supports its designated use (ADEM 2004). Causes for impairment are listed as organic enrichment, and DO. The entire Bouldin Tailrace Canal and the Coosa River from its mouth to Jordan Dam his classified for fish and wildlife (ADEM 2000).

<u>Dissolved oxygen</u>

Water use classifications for this reach have a 5.0 mg/L DO standard, except under extreme conditions due to natural causes, it may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

ADEM sampling from May-September 1983 revealed that the DO standard was not met on two occasions in the Jordan Dam tailrace during July and August (ADEM, 1984). On these occasions DO levels were extremely low (1.1 mg/L and 1.6 mg/L, respectively). However since a continuous minimum flow was implemented in 1994 and continuous monitoring began in 1995, this standard is rarely violated (APC 2005). Recent water quality data collected by APC between 1995 and 2003 (APC 2005) indicates that the Jordan Dam tailrace is typically in compliance with the required state standard for DO (Figure 2).

Forebay profiles taken at the R.F. Henry Lock and Dam from June-September 1983 showed that a very slight DO stratification occurs in July and August, but subsides by September (ADEM 1984). Stratification was so slight in nature that DO concentrations stayed above 3.5 mg/L to the bottom of the forebay (about 55 feet); the rest of the sampling period concentrations were similar throughout the water column (ADEM 1984). As at other projects where forebay and tailrace DO concentrations were above the standard, the shorter reservoir retention period probably accounts for the more favorable water quality (ADEM 1984).

Erosion and sedimentation

Water releases through the Bouldin Dam into the Bouldin Tailrace Canal are causing excessive erosion and measures should be taken to implement a comprehensive bank stabilization strategy in this area (ADCNR 2000).

3.4.4 Habitat protection

Dredging has removed shoal habitats and changed natural patterns of erosion and deposition, potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner 1998). Land use practices along tributary streams can degrade aquatic habitats critical to southern walleye and other fish species.

Priority sub-basins: Catoma Creek and Pintlala Creek are important tributaries for genetic flow and refugia in this reach (ACWCS 2005). Flow parameters should maintain connectivity with these streams.

Designated Critical Habitat: The Coosa River from Alabama State Highway 111 upstream to Jordan Dam is designated critical habitat for the southern clubshell, ovate clubshell, southern acornshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, Coosa moccasinshell, southern pigtoe, and fine-lined pocketbook (USFWS 2004). Critical habitat for the interrupted rocksnail and rough hornsnail has also been proposed for this area.

Potential Reintroduction/Augmentation Site and Suitable Species: The mainstem of the Coosa River from Wetumpka upstream to Jordan Dam have been identified as a potential reintroduction/augmentation site for the Alabama moccasinshell, fine-lined pocketbook, ovate clubshell, southern acornshell, southern clubshell, southern pigtoe, triangular kidneyshell, upland combshell, Coosa moccasinshell, Alabama spike, delicate spike, tulotoma snail, cylindrical lioplax, flat pebblesnail, painted rocksnail, interrupted rocksnail, and lacy elimia (Hartfield et al. 2010).

3.4.5 Aquatic organism passage

Modification of lock operations holds potential for providing upstream passage to migratory species. As has been shown at Claiborne Lock and Dam, relatively minor modifications in locking procedures can greatly increase upstream passage for some species. However, installation of a fishway device (e.g., a vertical slot fishway or fish lift) would help pass a greater abundance and wider variety of species through this facility.

3.4.6 River Reach Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- In cooperation with the Alabama Aquatic Biodiversity Center, explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include the Alabama sturgeon and any other species that has been identified as a primary host species for a targeted mussel (USFWS 2005b).

- Determine if fish host restoration is needed to sustain mussel restoration efforts (Johnson 2002). Fish surveys conducted in the Jordan tailrace by APC in 1997 indicated that the site apparently lacks large populations of many common darters and minnows that are known mussel hosts.

- Develop a Geographic Information System (GIS) database that identifies, characterizes (e.g., bathymetry, current velocity, and substrate), and maps stable riverine habitats.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.5 Coosa River from Weiss Dam to Mouth of Etowah River

3.5.1 River Reach General Description

The Coosa River, from its origin at the confluence of the Oostanaula and Etowah Rivers in Georgia, flows in a westerly direction 60 miles to Weiss Dam, which is operated by APC (GAEPD 1998). Resource management issues in this reach are shared by the Corps and APC. This reach of the Coosa River is contained within the Valley and Ridge and Cumberland Plateau

Provinces and includes Weiss Reservoir, a 30,200-acre impoundment on its southern end (APC/KA 2000b). Weiss Reservoir has 447 miles of shoreline and a maximum depth of 62 feet (APC 1995b). Weiss Dam is operated for peaking hydroelectric production with a generating capacity of 88 MW (ADEM 1984). Additionally, this reach contains the remnants of the Mayo's Bar Lock and Dam, a former Corps project constructed in the early 1900's about 8 miles downstream of Rome, Georgia.

3.5.2 Species

Fish: Alabama shad, American eel, Gulf sturgeon, Alabama sturgeon, lake sturgeon, freckled madtom, trispot darter, and the saddleback darter are thought to have occurred in the Coosa River and/or its tributaries, but have apparently been extirpated. The Southeastern blue sucker and river redhorse occur elsewhere in the Coosa River drainage but have been apparently extirpated from this reach (Freeman et al. 2005; Burkhead et al. 1997). The blue shiner, flame chub, lined chub, Coosa chub, burrhead shiner, river redhorse, stippled studfish, holiday darter, coldwater darter, goldstripe darter, rock darter, freckled darter, river darter, southern walleye, smallmouth buffalo and striped bass (self-sustained population) are species of Federal/State interest that continue to occur within the Coosa River and/or its tributaries (Mettee et al. 1996; Boschung and Mayden 2004; Pierson 1998; Burkhead et al. 1997; Freeman et al. 2006). The lake sturgeon is a species that has been recently reintroduced in the Coosa River in Georgia. Other freshwater species of sportfishing interest that inhabit riverine and lacustrine habitats in this reach include black basses, crappie, catfish, freshwater drum and sunfishes (USFWS 2006).

Mollusks: Historically, approximately 36 freshwater mussel species were known from the Coosa River and its tributaries (Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Coosa River and its tributaries included the Alabama spike, delicate spike, Alabama moccasinshell, cylindrical lioplax, fine-lined pocketbook, flat pebblesnail, heavy pigtoe, inflated heelsplitter, orange-nacre mucket, , southern acornshell, southern clubshell, southern pigtoe, Georgia pigtoe, triangular kidneyshell, southern purple lilliput, Alabama creekmussel, Coosa creekshell, and upland combshell (Burkhead et al. 1997; Williams and Hughes 1997; USFWS 2000). Recent records indicate that the Coosa moccasinshell is a species of Federal/State interest that continues to occur in tributaries of this reach (USFWS 2000). The southern clubshell and fine-lined pocketbook are still found in the Weiss Bypass channel, the old river channel prior to dam construction. Surveys of the mainstem Coosa River conducted in the late 1990's located live specimens of the flat floater, washboard, paper pondshell, and threehorn wartyback. Shell material of other species was identified for Coosa fiveridge, elephantear, fragile papershell, Alabama orb, Coosa orb, ridged mapleleaf, pistolgrip, butterfly, and the southern clubshell (Williams and Hughes 1997).

Plants: Harperella and Kral's water plantain are riverine plants that occur within the active channel of major tributaries of this reach. If surveys report these in the Coosa mainstem,flow dynamics could have a major influence on their ability to persist (USFWS 2000).

3.5.3 Objectives

The Corps has an opportunity to help protect reservoir fisheries, as well as restore resident and migratory aquatic species to historic abundances in remaining suitable riverine habitats.

3.5.3.1 Instream flow

Completion of Weiss Dam in 1961 resulted in bypassing flows around a 22-mile section of the mainstem Coosa River (hereafter referred to as “bypass channel”). The bypass channel is an important restoration location for mussels and other aquatic organisms formerly found in abundance in the Coosa River (Herod et al. 2001). Management of upper ACT Basin Corps projects in a manner that meets upstream ecosystem objectives and provides sufficient flows in the Weiss Bypass channel is of critical importance. The bypass channel is also adversely affected by the operation of Weiss Dam which, during peak generation, reverses flow in at least the lower 14 miles of the bypass channel. A continuous minimum flow should be determined and implemented to restore the riverine character of the bypass channel which could be facilitated by installing and using an appropriately-sized turbine or by releasing water through the project’s spillway or trash gates (ADCNR 2000). We have recommended that APC, as part of the hydropower license on Weiss Dam, in general provide 10% of Coosa River flow coming into Weiss reservoir for the Weiss Bypass channel. However, this recommendation is only adequate if the Corps releases an adequate amount of water from Allatoona and Carters dams to meet downstream ecological needs.

3.5.3.2 Water quality

The Coosa River from the Weiss Dam powerhouse upstream to Spring Creek has ADEM’s stream use classification of public water supply, swimming, and fish and wildlife classifications (ADEM 2000). From Spring Creek to the state line, swimming and fish and wildlife are the applicable classifications (ADEM 2000). The Coosa mainstem between Weiss Dam and the Georgia-Alabama state line is included on the state’s 303(d) listed waters as partially supporting state water use classifications due to priority organics, nutrient enrichment and pH from flow regulation/modification and upstream sources (ADEM 2002).

The Coosa River at the Alabama-Georgia state line is classified by the Georgia Environmental Protection Division (GAEPD) for recreation and fishing (GAEPD 2001). From the state line upstream to the confluence of the Etowah and Oostanuala Rivers the classification is fishing (GAEPD 2001). Portions of the Coosa mainstem and Big Cedar Creek are on the Georgia 303(d) listed waters as not supporting its water use classification. This is a result of violations of water quality standards for metals and fecal coliform bacteria (GAEPD 1998).

<u>Dissolved oxygen</u>

Water use classifications for the Alabama portion of this reach require a 5.0 mg/L DO standard at all times; except under extreme conditions due to natural causes, it may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

Forebay profiles taken during August and September 1983 showed that Weiss Reservoir experienced temperature stratification, but only slight stratification with respect to DO concentration (ADEM 1984). As a consequence of this slight stratification in 1983, ADEM reported DO concentrations above 2.0 mg/L to a depth of 40 feet (ADEM 1984). The shallow depth of the reservoir and the frequency of generation observed suggests minimal retention times and thus a mixed instead of a stratified reservoir (ADEM 1984). Forebay sampling conducted by APC during June to October of 1990-1999 indicated that Weiss Reservoir may become more stratified than suggested by previous sampling (APC/KA 2000b). APC/KA (2000b) reported a stratification tendency at depths of 15 to 20 feet during mid summer that at times extended for 60 to 90 days. During a number of these stratification periods, DO concentrations were <2.0 mg/L at a depth of 15 feet (APC/KA 2000b).

3.5.4 Habitat protection

Along Weiss Reservoir, considerable natural shoreline habitat has been converted to vertical bulkheads which eliminate shallow shoreline habitat so important to juveniles of many game fish species (ADCNR 2000). The permitting process for shore stabilization should be modified to require other less destructive types of shoreline structures.

Priority sub-basins: Little River is an important tributary for genetic flow and refugia for this reach (ACWCS 2005).

Designated Critical Habitat: There are no areas designated as critical habitat on the existing mainstem of the Coosa in this reach or in any sub-basins, although it should be noted that a portion of the Weiss Bypass Channel is designated critical habitat for the southern acornshell, ovate clubshell, southern clubshell, upland combshell, triangular kidneyshell, Coosa moccasinshell, southern pigtoe and fine-lined pocketbook (USFWS 2004). Maintenance of natural flows through the Weiss Bypass channel will benefit these species

3.5.5 Aquatic organism passage

Species that once migrated through this area have for the most part been extirpated or have had access to the reach blocked by the continuous chain of reservoirs further downstream in the Coosa River. Local interest in raising the level of the Mayo Bar Lock and Dam (MBL&D) by two feet could however negatively impact striped bass upstream spawning movements from Weiss Reservoir and survival of their eggs and larvae in the Oostanaula River (USFWS 2006). However, if data become available that indicate Weiss Dam adversely affects resident/migratory species because of blockage of movements or entrainment, then fish passage/screening strategies should be developed and implemented.

3.5.6 River Reach Research Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include those that have been identified as a primary host species for a targeted mussel.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.6 Etowah River from Coosa River to Allatoona Reservoir

3.6.1 River Reach General Description

This approximately 48 mile stretch of the Etowah River flows generally westward from Allatoona Reservoir toward its confluence in western Georgia with the Oostanaula River, where together they form the Coosa River. The Etowah River below Allatoona Dam is contained within the Ridge and Valley Physiographic Province. Allatoona Reservoir is a 19,200-acre impoundment built for flood control, navigation, hydroelectric power and recreation, with a hydroelectric generating capacity of 80 MW (USACE 1998).

3.6.2 Species

Fish: American eel, lake sturgeon, blue shiner, lined chub, emerald shiner, southeastern blue sucker, river redhorse, freckled madtom, chain pickerel, coldwater darter, trispot darter, coal darter, and river darter are thought to have occurred in the Etowah River and/or its tributaries, but have apparently been extirpated The lake sturgeon is a species that has been recently reintroduced in the upper Coosa River Basin in Georgia. The Coosa chub, burrhead shiner, Etowah darter, Cherokee darter, rock darter, , amber darter, and freckled darter are species of Federal/State interest thought to still occur in the Etowah River and its tributaries (Freeman et al. 2006; Freeman 1998; USACE 2000; Burkhead et al. 1997). Surveys have been initiated in 2010 to evaluate persistence and spatial distribution of fishes in the mainstem Etowah River below Allatoona Dam.

Mollusks: Historically, approximately 40-50 freshwater mussel species were known from the Etowah River and its tributaries (Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Etowah River and its tributaries included the rayed creekshell, Alabama spike, delicate spike, Alabama moccasinshell, cylindrical lioplax, fine-lined pocketbook, flat pebblesnail, southern acornshell, southern clubshell, southern pigtoe, Georgia pigtoe, triangular kidneyshell, Alabama creekmussel, Coosa creekshell, and upland combshell (USFWS 2000, USACE 2000, Burkhead et al. 1997, Williams and Hughes 1997). Surveys have been initiated in 2010 to determine which species are still extant in the Etowah River below Allatoona Dam. Surveys of the mainstem Etowah River below Allatoona Dam conducted in the late 1990's located live specimens of the fragile papershell and pistolgrip. Shell material of the elephantear was also identified (Williams and Hughes 1997).

3.6.3 Objectives

The Corps has an opportunity in this reach to protect and enhance water quality, instream flow, and reduce the effects of hydropower-induced flow pulses from upstream dams. The Corps also has an opportunity and responsibility to protect reservoir fisheries, as well as restore resident and some migratory aquatic species to historic abundances in remaining suitable riverine habitats.

State and federal agency representatives, private landowners, business owners, and conservation groups held a public stakeholder meeting at Red Top Mountain State Park, Georgia on August 8, 2009. The intent of this meeting was to openly discuss and develop a vision for upper ACT Basin water management, with the explicit intent to inform our collective efforts to update the WCM. Radio announcements, newspaper announcements, and fliers were distributed to advertise the meeting and harness public interest and participation. The Corps was invited to attend this meeting but no Corps representative was sent. Stakeholders at the meeting 1) agreed that water management in the upper ACT could be improved to benefit the multiple water uses and 2) developed a list of fundamental and means objectives for water management below upper ACT Corps projects (Figure 3). The Corps needs to engage this diverse group of stakeholders because this effort is broad in scope, encompasses multiple stakeholders, acknowledges multiple demands on water resources, and is intended to improve the WCM and flow management.   It was generally agreed that an adaptive management approach to flow management would be beneficial.

3.6.3.1 Instream flow

The instream flow regime in this reach is affected by hydropower/flood control operations at Allatoona Dam. The hydropower facility generates power between 2 and 6 hours during normal operations each weekday. Power is generated on weekends as necessary, but generally only the minimum flow of 250 cfs (320 cfs with leakage) is released. Flow instability from hydropower fluctuations between 320 cfs and 7,500 cfs likely affects recruitment and reproduction of many fish species (*sensu* Freeman 2001), including those acting as host species for freshwater mussels (Layzer and Crigger 2001; Watters 2000). Providing longer periods of stable flow during critical spawning and rearing seasons should increase opportunities for recruitment and reproduction of freshwater organisms (*sensu* Freeman 2001). The minimum flow requirement at Allatoona Dam (250 cfs) was developed based on the 7Q10 flow calculation. Use of the 7Q10 was intended to facilitate estimation of the allowable pollutant concentrations, but was later adopted as a minimum flow requirement below dams. Thus, the 7Q10 minimum flow requirement does not address ramping rates, frequency, duration, timing, or magnitude of flows that are important flow components that affect the persistence of aquatic organisms. A more comprehensive flow management strategy is warranted. As we have shown in our PAL for the ACF, seasonal flow variation (e.g., magnitude, timing, duration, and frequency of low and high flows) need to be integrated into project operations so that the authorized project purpose of Fish and Wildlife is met.

3.6.3.2 Water quality

The Etowah River from the Oostanaula confluence to the Allatoona Dam is classified by the GAEPD for recreation and fishing (GAEPD 2001). Water temperature is an important ecological cue for reproduction, migration and other life history aspects of aquatic organisms. However, water temperatures below Allatoona Reservoir are lower than would naturally occur due to hypolimnetic release from Allatoona Dam. Temperatures do not return to expected natural values until more than 25 miles downstream of the dam, which may explain why the Etowah darter does not occur in this reach (Duncan et al. 2010). Daily temperature fluctuations occur naturally, but are also affected by hydropeaking. Although the cooler temperatures found in the Etowah River support a recreational fishery for striped bass (Matt Thomas, GA DNR, pers. comm. 2010), temperature fluctuations that are induced by dam operations are likely to negatively affect both striped bass and non-game species.

Temperature and dissolved oxygen

Dissolved oxygen diffusers were installed and used in Lake Allatoona from 1968 to 1986. Since cessation of DO diffuser use, multiple studies showed that dissolved oxygen frequently falls below 2.0 mg/L (USACE 2000) below Allatoona Dam. DO measurements made by Georgia EPD in 2001 show that summer and fall months have the lowest DO concentrations and that DO concentrations are higher downstream near Cartersville, Georgia (Figure 4; EPA STORET data accessed in 2009). 100% of all DO measurements in August and September of 2009 below Allatoona Dam were below 4.0 mg/L, and were sometimes < 1.0 mg/L (Figure 5; USFWS unpublished data collected in 2009). These data unequivocally show that operation of Allatoona Dam violates Georgia state water quality standards and that dam operation does not meet the authorized purposes of Fish and Wildlife Management and Water Quality.

3.6.4 Habitat protection

This reach of river could benefit significantly from a flow regime that would allow shallow water habitats to persist long enough for important life stages of target species to develop.

Designated Critical Habitat: There are no areas designated as critical habitat on the Etowah River.

3.6.5 Aquatic Organism passage

Species that once migrated through this area have for the most part been extirpated or have had access to the reach blocked by the continuous chain of reservoirs further downstream in the Coosa River. Loss of connectivity between headwaters and lower reaches remains a serious concern for the ecological integrity of the system.

3.6.6 River Reach Research Needs

- Develop and implement and/or participate in monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Implement and/or assist in surveys to determine distribution and abundance of rare and federally protected aquatic species in the watershed.

- Determine and implement non-peaking flow windows during portions of the year critical to aquatic organisms.

- Explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include those that have been identified as a primary host species for a targeted mussel.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.7 Oostanaula-Coosawattee Rivers below Carters Reservoir

3.7.1 River Reach General Description

Below Carters and Carters Reregulation Dams, the Coosawattee meets with the Conasauga and forms the Oostanaula River, which in turn becomes the Coosa at its confluence with the Etowah in Rome, Georgia. The Coosawattee River system flows westward. The river and tributaries drain the Southern Blue Ridge, Southern Ridge and Valley, and Piedmont physiographic provinces. Carters Dam on the Coosawattee River creates Carters Reservoir, a 3220-acre impoundment built for flood control, navigation, hydroelectric power and recreation (USACE 1998). Flows from Carters Dam are partly reregulated by Carters Rereg Dam, located immediately downstream.

3.7.2 Species

Fish: American eel, lake sturgeon, blue shiner, lined chub, bluehead chub, river chub, quillback, highfin carpsucker, southeastern blue sucker, freckled madtom, chain pickerel, coldwater darter, amber darter, coal darter, Coosa bridled darter, freckled darter, and river darter are thought to have occurred in the Oostanaula and Coosawattee Rivers and/or their tributaries, but have apparently been extirpated in at least portions of these river basins (Freeman et al. 2005; Freeman 1998; Burkhead et al. 1997). The lake sturgeon is a species that has been recently reintroduced into the upper Coosa River Basin in Georgia. The lined chub, Coosa chub, burrhead shiner, river redhorse, rock darter, trispot darter, goldline darter, freckled darter, river darter, southern walleye, smallmouth buffalo and striped bass are of Federal/State interest that occur within this reach and/or its tributaries (Mettee et al. 1996; Boschung and Mayden 2004; Pierson 1998; Freeman et al. 2005).

Mollusks: Historically, approximately 43 freshwater mussel species were known from the Oostanaula River and its tributaries and approximately 20 freshwater mussel species were known from the Coosawattee River and its tributaries (Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Oostanaula River and its tributaries included the rayed creekshell, Alabama spike, delicate spike, southern acornshell, southern clubshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, southern pigtoe, Georgia pigtoe, fine-lined pocketbook, cylindrical lioplax, flat pebblesnail, inflated heelsplitter, and Coosa creekshell (USFWS 2000; Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Coosawattee River and its tributaries included the Alabama spike, southern clubshell, Georgia pigtoe, and triangular kidneyshell (Williams and Hughes 1997). Surveys of the mainstem Oostanaula River conducted in the late 1990's located live specimens of the Coosa fiveridge, elephantear, southern pocketbook, fragile papershell, washboard, threehorn wartyback, triangular kidneyshell, Alabama orb, Coosa orb, ridged mapleleaf, pistolgrip, and paper pondshell. Shell material of the Alabama spike, southern combshell, Alabama heelsplitter, and southern clubshell was also identified (Williams and Hughes 1997). Surveys of the mainstem Coosawattee River below Carters Dam and a short reach above Carters Reservoir conducted in the late 1990's located live specimens of Alabama spike, fragile papershell, Pleurobema sp., purple heelsplitter, triangular kidneyshell, giant floater, Alabama orb, Coosa orb, ridged mapleleaf, pistolgrip, and paper pondshell. Shell material of other species was located for the elephantear and southern pocketbook (Williams and Hughes 1997). The Service also located live individuals and shell material of the threehorn wartyback in the mainstem Coosawattee below Carters Dam in 2007 (Alice Lawrence, USFWS, pers. comm. 2010).

3.7.3 Objectives

The Corps has an opportunity in this reach to protect and enhance water quality, instream flow, and reduce the effects of ramping from upstream dams. The Corps can also help to protect reservoir fisheries, as well as restore resident and migratory aquatic species to historic abundances in remaining suitable riverine habitats.

State and federal agency representatives, private landowners, business owners, and conservation groups held a public stakeholder meeting at Red Top Mountain State Park, Georgia on August 8, 2009. The intent of this meeting was to openly discuss and develop a vision for upper ACT Basin water management, with the explicit intent to inform our collective efforts to update the WCM. Radio announcements, newspaper announcements, and fliers were distributed to advertise the meeting and harness public interest and participation. The Corps was invited to attend this meeting but no Corps representative was sent. Stakeholders at the meeting 1) agreed that water management in the upper ACT could be improved to benefit the multiple water uses and 2) developed a list of fundamental and means objectives for water management below upper ACT Corps projects (Figure 3). The Corps needs to engage this diverse group of stakeholders because this effort is broad in scope, encompasses multiple stakeholders, acknowledges multiple demands on water resources, and is intended to improve the WCM and flow management. It was generally agreed that an adaptive management approach to flow management would be beneficial, but to facilitate the Corps modeling efforts, we recommend the approach for flow modeling used in the ACF PAL utilizing the methods of Mathews and Richter (2007).

3.7.3.1 Instream flow

The Carters Lake project is a hydroelectric pump-storage peaking facility, with hydropower generation occurring several hours each weekday. When electrical demand is low, water is pumped back into Carters Lake, which avoids the downstream problems associated with a hydropeaking flow regime. The minimum flow requirement at Carters Reregulation Dam (240 cfs) was developed based on the 7Q10 flow calculation. Use of the 7Q10 was intended to facilitate estimation of the allowable pollutant concentrations, but was later adopted as a minimum flow requirement below dams. Thus, the 7Q10 minimum flow requirement does not address ramping rates, frequency, duration, timing, or magnitude of flows that are important flow components that affect the persistence of aquatic organisms. A more comprehensive flow management strategy is warranted given the biodiversity and number of imperiled species below Carters Dam and Carters Rereg Dam. Seasonal flow variation (e.g., magnitude, timing, duration, and frequency of low and high flows) needs to be integrated into project operations so that the authorized project purpose of Fish and Wildlife is met.

3.7.3.2 Water quality

The Oostanaula River carries the GAEPD's water use classification of recreation and fishing (GAEPD 2001)

Temperature and dissolved oxygen

Tailrace temperatures and dissolved oxygen levels have not been collected and analyzed regularly below Carters Rereg Dam. Although data collected in August and September 2009 below Carters Rereg Dam show that DO levels meet state water quality standards (Figure 6), we recommend continuous monitoring as part of standard operating procedures for the project, particularly during the summer and fall.

3.7.4 Habitat protection

Despite the completion of the Carters Lake project in 1975, to date no mitigation for loss of significant aquatic resources has been developed. Mitigation for wildlife (including wetland and terrestrial ecosystems) has been debated but not resolved. Approximately 4,200 terrestrial acres were inundated, 40.9 miles of streams were impounded, 0.4 miles of stream were filled, and wetland loss is unknown. Terrestrial and stream impacts should be included in the DEIS and mitigation measures should be implemented.

Priority sub-basins: The Conasauga River and Holly Creek are important tributaries for genetic flow and refugia. Flow management needs to ensure adequate connectivity with these streams.

Designated Critical Habitat: Critical habitat has been designated for the southern acornshell, ovate clubshell, southern clubshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, Coosa moccasinshell, southern pigtoe, and fine-lined pocketbook in the following river reaches: (USFWS 2004)

1. Oostanaula River mainstem from confluence with the Etowah River upstream to the confluence of the Conasauga and Coosawattee Rivers.
2. Coosawattee River from its confluence with the Conasauga River upstream to GA Hwy. 136.
3. Conasauga River mainstem from its confluence with the Coosawattee River upstream to Murray County Rd 2.
4. Holly Creek mainstem from its confluence with the Conasauga River upstream to the confluence of Rock Creek.

3.7.5 Aquatic organism passage

Species that once migrated through this area have for the most part been extirpated or have had access to the reach blocked by the continuous chain of reservoirs further downstream in the Coosa River. Loss of connectivity between headwaters and lower reaches remains a serious concern for the ecological integrity of the system.

3.7.6 River Reach Information Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Implement surveys to determine distribution and abundance of rare, and federally protected aquatic species in the watershed.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

- Explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include those that have been identified as a primary host species for a targeted mussel.

4.0 SUMMARY

The Corps, in the DEIS for the WCM update, at minimum should address the following issues:

1. **Low DO below reservoirs, and meeting of State water quality standards**: we recommend that DO and temperature be monitored above and below Corps dams throughout the water column during summer low-flow periods to identify problem areas and develop courses of action. We will evaluate using:
    a. Total number of days with dissolved oxygen below a daily average of 5.0 mg/L;
    b. Total number of instantaneous “measurements” less than 4.0 mg/L;

c. Monthly exceedance figures and box plots with outliers for dissolved oxygen (mg/L);
d. Monthly exceedance figures and box plots with outliers for water temperature; and
e. Average stream percent wastewater.

2. **Protection and enhancement of remaining free-flowing river habitats**: we recommend identification and mapping using a GIS, with characterization of substrates, analysis of patterns of sediment deposition and scour, and development of species inventories. We will evaluate using the percent of free-flowing stream channel identified as high quality habitat and available for aquatic species reintroductions by the AABC, as well as the percent of free-flowing stream channels impacted by dredging, sedimentation, and poor water quality conditions that do not meet State standards.

3. **Aquatic organism passage at dams, particularly in the upstream direction**: we recommend continuing to facilitate research on timing, duration and efficacy of using alternative locking procedures and attraction flows to re-establish ecological connectivity of the river system. We also recommend continued research on fish passage facilities and structures, and methods to screen aquatic organisms from effects of turbines. We will evaluate success by the number of priority species and individuals shown to successfully pass through Corps L&Ds.

4. **Temperature effects on species of concern from reservoirs and hydroelectric operations**: as with DO, we recommend monitoring to determine problem areas, and development of possible alternative storage and release protocols to minimize ecological degradation. We will evaluate using the percent of free-flowing stream channel impacted by reservoir-induced changes in water temperature.

5. **Minimum flows available for Weiss bypass channel**: with APC, develop minimal flows and patterns of natural flows released from upstream Corps dams to ensure viability of federally listed mollusk populations in the Weiss Bypass channel. We will evaluate by determining frequency, timing, and duration of inadequate water levels to support mussels and other aquatic species, and the frequency, timing and duration of backflow events from peaking flows from the Weiss Reservoir.

6. **Conservation and recovery of natural flow variability, and reduction of effects of hydropower peaking flows on species of concern**: we recommend that as many environmental flow components as possible be developed and implemented below Corps dams using the methods of Mathews and Richter (2007). We recommend research that identifies critical flow periods where peaking flows should be avoided to ensure viability of important spawning and rearing life stages. We will evaluate by comparing unaltered flow pattern estimates with USGS gage data and proposed flows in the DEIS. The potential change in frequency of low-flow events below Claiborne Dam is also of interest.

7. **Maintenance of floodplain connectivity to flood pulses**: we recommend developing patterns of natural flow that approximate pre-dam inundation frequency, timing and duration in free-flowing sections of the ACT Basin. We will evaluate by comparing estimated pre-dam flow parameters with USGS gage data to estimate changes in return intervals of bankfull and higher flood events, and changes in seasonal timing and duration of flood events. Similar to the ACF PAL, we are also interested in the frequency (% of days) of growing season (April-October) floodplain connectivity (acres) to the main channel; and frequency (% of years) of growing season (April-October) floodplain connectivity (acres) to the main channel.

8. **Potential for reintroductions, enhancements of listed species populations in the basin**: we recommend that the Corps develop a cooperative relationship with the AABC to develop adaptive management protocols and coordinate reintroductions and enhancement of habitat for federally listed species. We will evaluate using the percent of river reaches that are classified by the AABC as high quality habitat suitable for aquatic reintroductions by the AABC, and that meet State water quality guidelines.

9. **Restoration and maintenance of healthy water quality parameters for all life stages of aquatic species under a variety of flow conditions**: we recommend that the Corps develop monitoring programs that identify existing and potential water quality problems related to Corps dam and hydropower operations, and use their water management authority to limit and mitigate water quality issues that develop in Corps reservoirs and tailwaters. We will evaluate using the percent of the ACT mainstem river length that meets State water quality criteria during low-flow periods.

10. **Development of adaptive management protocols that include goals, objectives, research and monitoring to allow greater understanding of riverine ecosystem response to complex variables**: we recommend the Corp consider an approach explicitly designed to develop new information that can inform ongoing dam and reservoir operations. We will evaluate by comparing pre-and post WCM update operational guidelines and practices.

There are numerous other issues of importance including potential effects of climate change, and potential future water use scenarios in the ACT Basin. However, the above issues clearly need to be addressed in order to halt ongoing environmental damage to fish and wildlife resources.

To conclude, the Service feels strongly that the Corps should begin building an adaptive management framework for operations that explicitly outlines goals and objectives of operations, continually monitors and analyzes ecosystem response, and adjusts operations accordingly based on what we have learned. We strongly recommend research and monitoring be primary components of dam operations.

Because of Corps dam operations, many river segments do not meet State water quality standards. Corps dams do not provide adequate habitat for fish and wildlife. So that Corps projects meet their authorized purposes of water quality and fish and wildlife, we strongly recommend that the Corps work with the Service to comprehensively evaluate and modify the WCM.

The updating of the WCM should not commit the Corps to additional long-term continual degradation of this river system, recognized worldwide for its incredible biotic wealth. Instead, the Corps now has an opportunity and an obligation to use their authority and resources to protect and enhance the ecological integrity of the ACT Basin. If you have any questions about this PAL, in Alabama please contact Dan Everson at (251) 441-5837 or in Georgia, contact Will Duncan or Alice Lawrence at (706) 613-9493.

Sincerely,

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

cc: J. Ziewitz, USFWS, Tallahassee, FL
W. Duncan, USFWS, Athens, GA
A. Lawrence, USFWS, Athens, GA
S. Tucker, USFWS, Athens, GA
B. Zettle, Corps, Mobile, AL
M. Eubanks, Corps, Mobile, AL
C. Sumner, Corps, Mobile, AL
M. Thomas, GDNR-WRD, Social Circle, GA
C. Martin, GDNR-WRD, Social Circle, GA
S. Cook, ADCNR-DWFF, Montgomery, AL
B. Atkins, ADECA-OWR, Montgomery, AL

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Figure 1. USGS gage data at Claiborne L&D during a low flow period showing daily pattern of high and low flows related to hydropower discharges from Millers Ferry and other dams upstream.

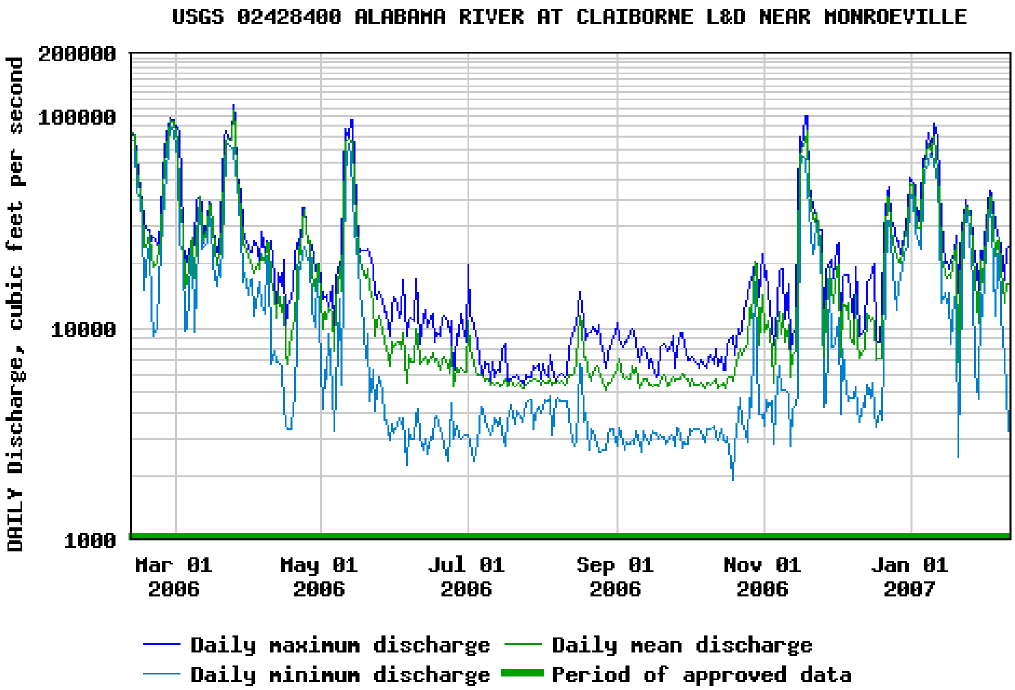


Figure 2. Continuous dissolved oxygen (DO) data collected in the Jordan Dam Tailrace, 1995-2000. Data extracted from APC's 401 Water Quality Application to ADEM, December 2005 (APC, 2005).

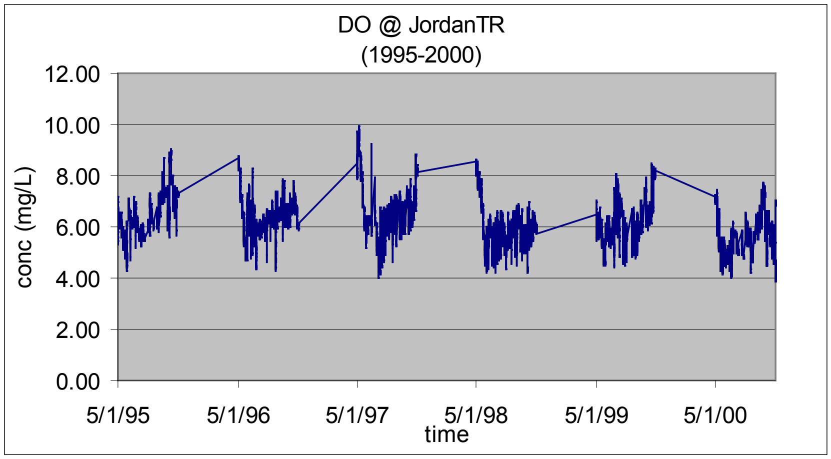


Figure 3. Fundamental (F) and Means (M) objectives developed by consensus at the stakeholders meeting on August 8, 2009 at Red Top Mountain State Park, Georgia.

F. Maximize potential for imperiled species
F. Maximize native aquatic biodiversity
F. Preservation of cool-water sport fishery (stripers, sturgeon)
M. No significant increase in summer water temperatures (late June – early Oct) above current conditions
F. Adequate flows for assimilation of waste and for municipal and industrial purposes
F. Optimizing economic value of the lakes
M. Maintaining lake levels for home owners (Allatoona only) and recreation (boat ramps), water supply
F. Maintaining reservoir and downstream water quality
M. Maintain appropriate supply and transport of bed sediment for instream habitat purposes
M. Mimic natural rates of bank erosion
M. Maintaining lake levels for reservoir and downstream water quality
M. Maintain adequate flows (e.g. magnitude, variability, timing, non-peaking window) for aquatic fauna downstream
M. Dissolved oxygen and temperature levels suitable for aquatic biota
F. Flood control
F. Hydropower generation
M. Meeting projected energy needs
F. Navigation in the lower Mobile Basin
F. Downstream recreational activities (paddling, fishing)
F. Preservation of cultural resources
F. Preservation of agricultural uses
F. Minimize impacts on fundamental objectives downstream

Figure 4. Dissolved oxygen concentrations in the Etowah River at one location upstream from Allatoona Reservoir (SR 53 near Dawsonville), and three locations below Allatoona Dam. Data obtained from EPA's STORET database. Primary data source is GA EPD.

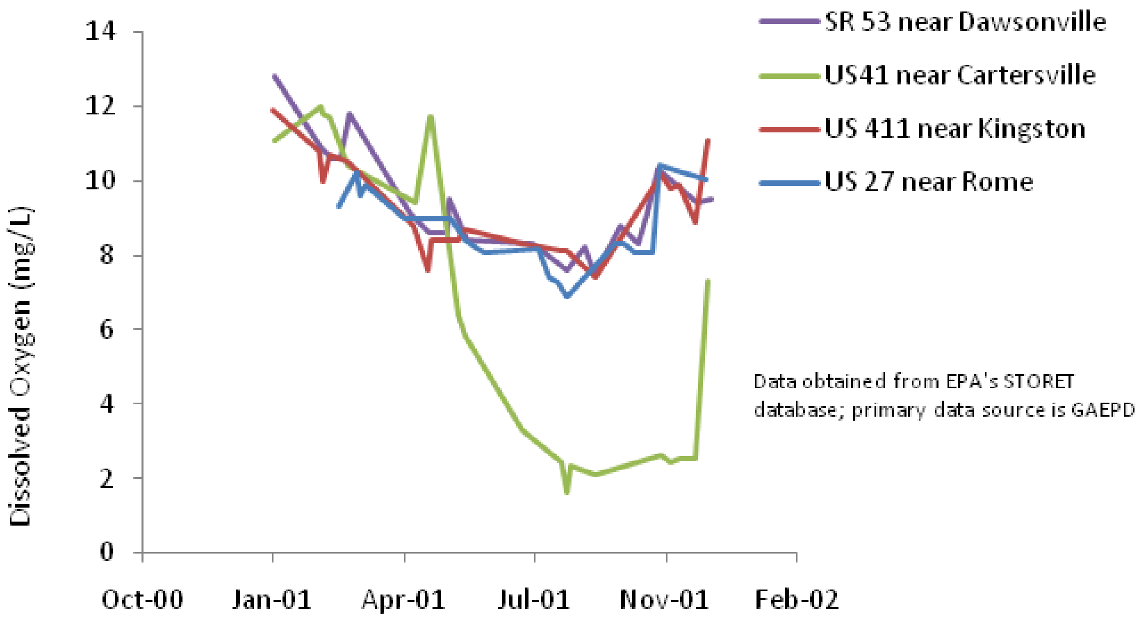


Figure 5. Temperature and dissolved oxygen data collected by the USFWS in the Etowah River approximately 400 meters below Allatoona Dam in August and September 2009.

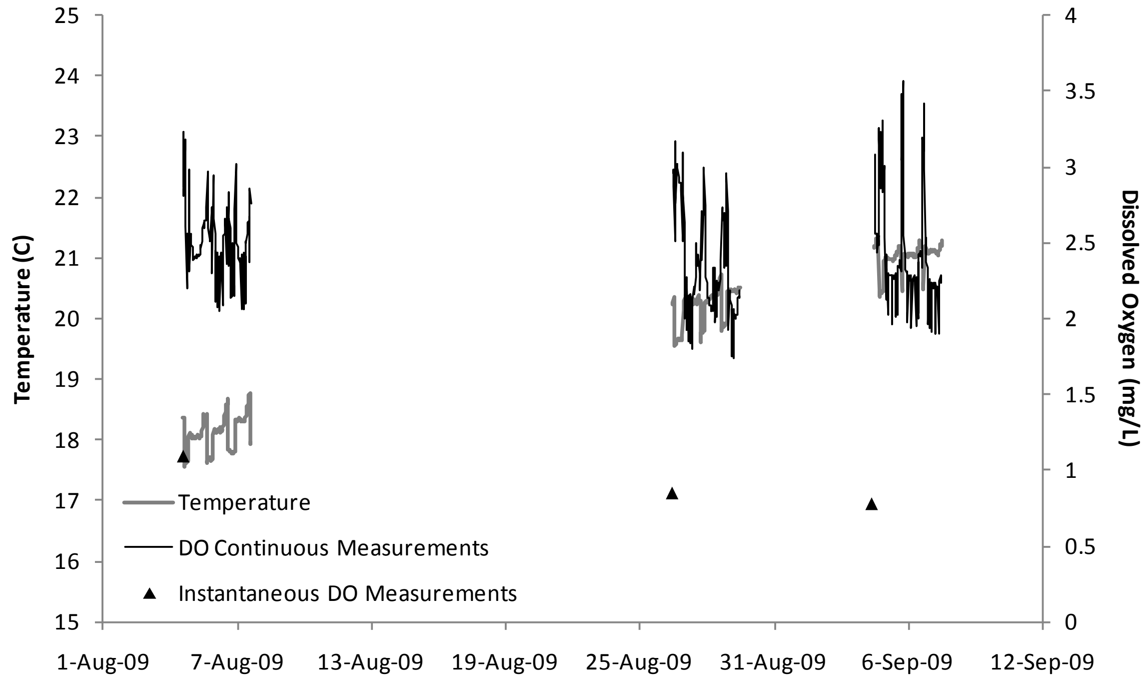
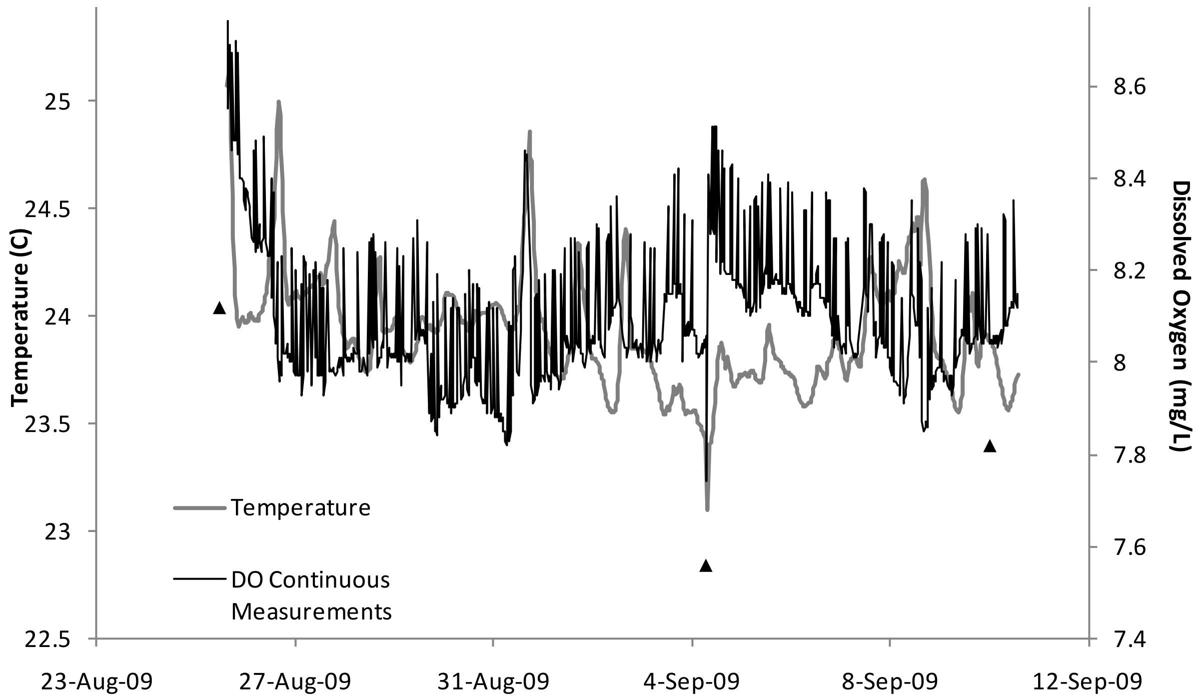


Figure 6. Temperature and dissolved oxygen data collected by the USFWS in the Coosawattee River approximately 400 meters downstream from Carter's Rereg Dam in August and September 2009.



Appendix IV: Service's August 13, 2010, Supplement to PAL to the Corps.

August 13, 2010

To: Brian Zettle, US Army Corps of Engineers, Mobile District
From: Dan Everson, US Fish and Wildlife Service, Alabama Ecological Services Field Office

RE: Supplement to Planning Aid Letter, ACT WCM update.

This responds to the U.S. Army Corps of Engineers' (Corps) request for further details regarding how the US Fish and Wildlife Service (Service) will evaluate alternatives in the Corps' draft Environmental Impact Statement (DEIS) for the proposed updating of the Water Control Manuals for Corps-operated dams in the Alabama-Coosa-Tallapoosa (ACT) Basin. It is intended to supplement the Planning Aid letter provided by the Service dated May 3, 2010.

1. ResSim Model Output Analyses

It is our understanding that ResSim will be used for the Corps' flow analyses. The flow statistics used by the Service in the past to analyze the resulting datasets were derived by using the Indicators of Hydrologic Alteration (IHA) and the Range of Variability Approach (RVA). Because flow is a master variable in fluvial systems, and because the ecology of fish and wildlife is closely linked to the flow regimes in which they evolved, the current evaluation should continue to rely on tools such as IHA, RVA, and Environmental Flow Components (EFCs) (Mathews and Richter 2007). Specific flow statistics and species-specific flow-ecology relationships (as available) that are important to natural resource sustainability should also be considered.

2. HEC-5Q Water Quality Model Output Analyses

It is our understanding that HEC-5Q will be used for the Corps' water quality analyses. We understand that this model predicts water quality parameters in six hour time intervals in river and reservoirs. Similar to the analyses contained in the Corps' 1998 draft EIS (Corps 1998), the analyzed data should be composed of summer values (May through October), separated by drought, dry, average, and wet year types for each alternative. The following information should be developed for each alternative to evaluate the effects on water quality and aquatic resources in the modeled tailrace and riverine locations:

- Total number of days with dissolved oxygen below a daily average of 5 mg/L, including separate measurements for benthic and surface sampling locations;
- Total number of instantaneous "measurements" less than 4 mg/L in benthic and surface sampling locations;
- Monthly exceedance figures and box plots with outliers for dissolved oxygen (mg/L);
- Monthly exceedance figures and box plots with outliers for water temperature; and
- Average stream percent wastewater.

For each alternative, the following information should be developed to evaluate the effects on water quality and aquatic resources for the modeled ACT reservoir locations:

- Average values of summer Chlorophyll a (*u*g/L);
- Average summer retention time (days); and
- Average summer phosphorus loading (pounds/acre/month).

3. <u>Floodplain Connectivity Analyses</u>

Assessing the extent of floodplain inundation will be a critical component of the alternatives analysis assessment. The magnitude, duration, timing, frequency, and rate of change of ACT floodplain inundation should be evaluated using the relationships quantified by Light et al. 1998 and Light et al. 2006.

The 2-year recurrence interval discharge to approximate the incipient point of flooding should be used to evaluate the frequency, duration, and timing of floodplain inundation. Because channel alteration (e.g., channel incision) can increase the recurrence interval at which flooding occurs and because we have little information on channel alteration, other data sources should be investigated to aid in the floodplain inundation assessment.

4. <u>Reservoir Fisheries Analyses</u>

Sport fisheries are important recreational and economic resources in all of the Federal ACT reservoirs. Based on interviews of fisheries managers and researchers in the basin, Ryder et al. (1995) identified the species considered critical in an evaluation of operating alternatives and the relative acceptability of reservoir levels for these species. A Delphi technique was used to obtain expert opinion for select reservoirs on reservoir fish guilds, important seasonal periods for those species, and acceptability ratings for various reservoir levels in the ACF and ACT (Ryder et al.

1995). The Service cooperated with the Corps for the 1998 draft EIS for ACT water allocation to develop a reservoir fisheries performance measure using the findings of Ryder et al. (1996). This information was used to create a reservoir fisheries performance measure by looking at the critical spawning and rearing periods, reservoir elevations during these times, and assigning a greater weight to stable or rising elevations during those time periods. The performance measures were then compared for the various alternatives.

The reservoir fisheries performance measure should be updated with additional information, literature, and/or relevant datasets that have been developed in the past ten years, and used to evaluate the relative impacts of the Corps' alternatives on reservoir sport fisheries.

5. Riverine Fisheries Analyses

Sport fisheries are also important recreational and economic resources in the riverine portions of the ACT project. Reproduction of many fishes is intricately tied to the floodplain, and alteration of flow regimes can affect reproductive success, year-class strength, growth, condition, and other life-history attributes. Data identified to date will be provided by the FFWCC and the USGS and used to evaluate the relative impacts of the Corps' alternatives on riverine sport fisheries. Specific measures to be evaluated include year-class strength versus acres of inundated floodplain spawning habitat, changes in catch rates of sportfishes in various water years, and changes in relative weight (condition) of sportfishes in various water years.

6. Federally-Protected Species Analyses

It is our understanding that the Corps will be conducting certain analyses to evaluate the effects of the various alternatives on federally-protected species. These analyses will be contained in the Corps' Biological Assessment (BA) accompanying the draft EIS. The Service will include these analyses in our FWCA evaluation, assuming they are available for us to do so.

Alabama Sturgeon

It is important that Alabama sturgeon be able to migrate upstream to spawning areas in the spring, and the eggs be allowed to develop as river currents carry them back downstream. It has been estimated that eggs must be carried downstream approximately 130 miles to develop properly, indicating that some flow past dams is necessary for the species to survive in the ACT basin. Therefore, the following parameters will be used to evaluate Corps alternatives for impacts to the Alabama sturgeon.

- Maintenance of downstream flows (% of days) past R.F. Henry, Millers Ferry and Claiborne Lock and Dams from February 1 to June 30, either over spillways or through locks;
- Efficacy and availability of upstream fish passage facilities and protocols as influenced by each alternative from February 1 to June 30th. (Research on attraction flows and use of locks for aquatic organism passage is ongoing; an analysis of the effect of alternatives on the range of lock operations potentially useful for fish passage would be helpful.)

Freshwater mussels and snails

In the ACT basin water quality criteria, particularly dissolved oxygen, as well as inundation of river bottom habitat are strong predictors of mussel and snail survival and success for all life stages. We will evaluate Corps alternatives for impacts to mussels and snails using the following criteria:

- Total number of days with dissolved oxygen below a daily average of 5 mg/L for benthic sampling locations;
- Total number of instantaneous “measurements” less than 4 mg/L in benthic locations;
- For the Alabama River, total number of days per year with daily mean discharge below 6600 cfs will be used to estimate the potential effect of alternatives on the percent of channel wetted perimeter available for mussels and snails. For the portion of the ACT in Georgia, we are still collecting survey information on the location of extant mussel and snail populations. Where mussels are found, we would be interested in developing estimates of areal percent of the active stream channel remaining in the wetted perimeter for various low flow scenarios.

Floodplain connectivity

- Frequency (% of days) of growing season (April-October) floodplain connectivity (acres) to the main channel using Light et al. (1998);
- Frequency (% of years) of growing season (April-October) floodplain connectivity (acres) to the main channel using Light et al. (1998).
- Corps’ June 6, 2011, response to the Service’s PAL (Appendix V); and

- Corps' November 22, 2011, response to the Service's questions regarding the Corps' June 6, 2011 document (Appendix VI).

Appendix V: Corps' June 6, 2011, response to the Service's PAL.

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, AL 36628-0001

REPLY TO
ATTENTION OF

June 6, 2011

Inland Environment Team
Planning and Environmental Division

Mr. William Pearson
Field Supervisor
U.S. Fish and Wildlife Service
1208-B Main Street
Daphne, Alabama 36526

Dear Mr. Pearson:

The enclosed document is in response to your May 3, 2010, Planning Aid Letter (PAL) and e-mailed supplement dated August 13, 2010 for the proposed Water Control Manual (WCM) Updates for the Alabama-Coosa-Tallapoosa River Basin in Georgia and Alabama. In the PAL, you identified the types of data and analyses the U.S. Fish and Wildlife Service (FWS) would need to evaluate the WCM alternatives pursuant to the Fish and Wildlife Coordination Act (FWCA - 48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq.*). This letter transmits the results of those analyses and/or our response. In addition, we are describing the proposed action and alternatives that are currently proposed to be carried forward for final evaluation in our Environmental Impact Statement (EIS).

Thank you for your assistance thus far in our effort to update these manuals. Based on our review of your letter and this response, we request that you provide us with your Draft FWCA Report at your earliest convenience. We are ready to assist with additional information or analyses. Should you have any questions, comments, or recommendations, please contact Mr. Chuck Sumner, (251) 694-3857, or email: lewis.c.sumner@sam.usace.army.mil.

Sincerely,

T. D. Robison for

Curtis M. Flakes
Chief, Planning and Environmental
Division

Enclosure

ACT Water Control Manual Update

Response to USFWS Planning Aid Letter dated May 3, 2010

U.S. Army Corps of Engineers, Mobile District

June 3, 2011

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1 Description of the Proposed Action and Alternatives

The Corps proposes to prepare an updated master Water Control Manual (WCM or Master Manual) for the Alabama, Coosa, and Tallapoosa Rivers (ACT) Basin. The component parts of the master WCM would be nine project-level WCMs, presented as appendices. Only two of the four Alabama Power Company (APC) projects in the basin with Corps WCMs will be included in this WCM update. Additional studies would be required for Logan Martin Lake and Weiss Lake to address flood damage reduction prior to updating the manuals at those facilities. The Corps and APC will develop and execute separate Memoranda of Understanding that address only navigation and drought operations for Logan Martin and Weiss Lakes. Operations at those projects will be incorporated in the Master Manual Update.

WCMs contain drought plans and action zones to assist the Corps in knowing when to reduce or increase reservoir releases and conserve storage in the Corps reservoirs. The individual manuals typically outline the regulation schedules for each project, including operating criteria, guidelines, and guide curves, and specifications for storage and releases from the reservoirs. The WCMs also outline the coordination protocol and data collection, management, and dissemination associated with routine and specific water management activities (such as flood-control operations or drought contingency operations). Operational flexibility and discretion are necessary to balance the water management needs for the numerous (and often competing) authorized project purposes at each individual project. In addition, there is a need to balance basin-wide water resource needs. Project operations also must be able to adapt to seasonal and yearly variations in flow and climatic conditions.

The following sections present the No Action Alternative and the Proposed Action Alternative.

1.1 No Action Alternative

The Council on Environmental Quality (CEQ) regulations require analysis of the *No Action Alternative* 40 CFR.1502.14. Inclusion of the No Action Alternative in this Environmental Impact Statement (EIS) complies with CEQ regulations and serves as a benchmark against which federal actions can be evaluated. On the basis of the nature of the proposed action, the No Action Alternative represents no change from the current management direction or level of management intensity. This alternative would represent continuation of the current water control operations at each of the federal projects in the ACT Basin. The Corps' operations have changed incrementally since completion of the 1951 ACT Master Manual. Except in very general terms, it is not possible to describe a single set of reservoir operations that apply to the entire period since completion of the 1951 ACT Master Manual.

Current operations under the No Action Alternative include the following.

- Operations consistent with the Master Manual of 1951 and project-specific WCMs. For the Corps, those manuals and their dates are Lake Allatoona (1993), Carters Lake and Carters Reregulation Dam (1975), Robert F. Henry Lock and Dam (1999), Millers Ferry Lock and Dam (1990), and Claiborne Lake (1993). For APC projects, the applicable manuals and their dates are Weiss Lake (1965), H. Neely Henry Lake, (1979), Logan Martin Lake (1968), and R.L. Harris Lake (2003).
- The Corps recognizes that APC operates 11 dams (10 reservoirs) under six FERC licenses, each one having specific operational requirements: (1) the Coosa River Project (FERC Project No. 2146), which includes the Weiss Lake, H. Neely Henry Lake, Logan Martin Lake, Lay Lake, and Bouldin Dam developments; (2) the Mitchell Lake Project (FERC Project No. 82); (3) the Jordan Dam and Lake Project (FERC Project No. 618); (4) Lake Martin Project (FERC Project No. 349)

(5) Yates Lake-Thurlow Lake (FERC Project No. 2407); and (6) R.L. Harris Lake Project, referred to as Crooked Creek Hydroelectric Project (FERC Project No. 2628). The FERC license for the Coosa River Project was issued in 1957. The FERC license for the Mitchell Lake Project was issued in 1975, and the FERC license for the Jordan Dam and Lake Project was issued in 1980. The licenses for those three projects expired on August 31, 2007. On July 28, 2005, APC applied for one new operating license that would combine all those projects as Project No. 2146. The FERC licenses could be amended in light of APC's request to modify winter pool levels at the Weiss Lake and Logan Martin Lake projects; however, the No Action Alternative does not include such modifications.

- The H. Neely Henry Lake, which operates under a revised guide curve (per a temporary variance initially granted by FERC in 2001 and effective pending relicensing of Project No. 2146), would return to operation under its original guide curve under the current FERC license.
- Specified flow requirements apply to several projects. Lake Allatoona and Carters Lake must provide for a minimum flow of 240 cubic feet per second (cfs). The Corps has a flow target of 6,600 cfs from Claiborne Lake where the actual ability to meet the target depends on releases provided by APC and intervening flows from the Cahaba River and other tributaries. In accordance with a 1972 Letter Agreement between the Corps and APC, APC ensures a combined 4,640-cfs release calculated at Montgomery, Alabama, on the basis of APC releases from JBT, for navigation during normal conditions.
- The Corps provides 6,371 acre-feet (ac-ft) of storage in Lake Allatoona for water supply for the City of Cartersville, Georgia and 13,140 ac-ft for the CCMWA. Total storage allocated to water supply is 19,511 ac-ft.
- The Corps provides 818 ac-ft in Carters Lake for water supply for Chatsworth, Georgia.
- The Corps would continue to manage fish spawning operations at Lake Allatoona, as outlined in District Regulation (DR) 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft Standing Operating Procedure (SOP) *Reservoir Regulation and Coordination for Fish Management Purposes* (Mobile District SOP 1130-2-9, draft, February 2005). During the largemouth bass spawning period, from March 15 to May 15, the Corps seeks to maintain generally stable or rising reservoir levels at Lake Allatoona. Generally stable or rising levels are defined as not lowering the reservoir levels by more than 6 inches, with the base elevation generally adjusted upward as levels rise from increased inflows or refilling of the reservoir.

The following subsections describe key operational elements that apply to evaluating the No Action Alternative.

1.1.1 General System Operations

The Corps operates its reservoirs in the ACT Basin to provide for the authorized purposes of flood damage reduction, navigation, hydropower, recreation, water supply, water quality, and fish/wildlife. The Corps considers each of those authorized project purposes when making operational decisions, and those decisions affect how water is stored and released from the projects. In general, to provide the authorized project purposes, flow must be stored during wetter times of each year and released from storage during drier periods of each year. Traditionally, that means that water is stored in the lakes during the spring and released for authorized project purposes in the summer and fall months. In contrast, some authorized project purposes such as lakeside recreation, water supply, and lake fish spawning are achieved by retaining water in the lakes, either throughout the year or during specified periods of each year. The flood damage reduction purposes at certain reservoirs requires drawing down reservoirs in the fall through winter months to store possible flood waters and refilling pools in the spring months to be used for multiple project purposes throughout the remainder of the year.

Certain APC projects (Weiss Lake, H. Neely Henry Lake, Logan Martin Lake, and R.L. Harris Lake) are also required to operate for flood damage reduction and navigation. MOUs for each of those APC projects concerning the operation of non-Corps projects have been adopted by the APC and the Corps. WCMs developed for the APC projects are used to guide operations for flood damage reduction and navigation. The MOUs clarify the operational responsibilities of the APC and Corps. Copies of the project MOUs are included in the current WCMs.

The conflicting water demands require that the system be operated in a balanced manner to meet all authorized purposes, while continuously monitoring the total system water availability to ensure that minimum project purposes can be achieved during critical drought periods. The balanced water management strategy for the Corps reservoirs in the ACT Basin does not prioritize any project purpose but seeks to balance all project authorized purposes. The intent is to maintain a balanced use of conservation storage among all the reservoirs in the system, rather than to maintain the pools at or above certain predetermined elevations.

The last major evaluations of the environmental consequences of the individual Corps reservoirs in the ACT Basin were included in project operations EISs completed in the 1970s. Since then, incremental changes in project operations have occurred because of changes in hydropower contracts and operating schedules, changes in navigation flow requirements, and other changes related to water quality, environment, or other uses of the system. Historical records maintained by the Corps illustrate the observed impacts of changes in operations or seasonal variations over time on pool levels and flow releases from Corps reservoirs. Comparing historic operations conditions with existing operations conditions provides a complete picture of the impacts related to changes in water demand and water resources management in the basin as well as a perspective on existing flows to plan for future changes.

1.1.2 Guide Curves and Action Zones

Guide curves define the target amount of water to be held in a reservoir at specified times of the year. Under the No Action Alternative, guide curves would remain as currently defined. Action zones are used to manage the lakes at the highest level possible for recreation and other purposes, meet minimum hydropower needs at each project, and determine the amount of storage available for downstream purposes such as flood damage reduction, hydropower, navigation, water supply, water quality, and recreation. In accordance with Engineer Regulation (ER) 1110-2- 241 *Use of Storage Allocated for Flood Control and Navigation at Non-Corps Projects,* the Corps is responsible for the review and approval of the flood damage reduction plans and Reservoir Regulation Manuals for the APC storage projects Weiss, H. Neely Henry, and Logan Martin Lakes on the Coosa River and R.L. Harris Lake on the Tallapoosa River. The purpose of the reservoir manuals is to define a plan of operation at the reservoirs during the occurrence or threatened occurrence of damaging flood conditions at downstream stations, when such conditions can be alleviated or partially alleviated by the operation of the dam and power plant in the interest of flood damage reduction. In addition, in the 1960s the Corps and APC developed MOUs to clarify the responsibilities of the two entities with regard to operation of the projects for flood damage reduction and other purposes and to provide for the orderly exchange of hydrologic data.

Guide curves have been defined for two of the Corps projects (Carters Lake and Lake Allatoona; and the four APC projects (Weiss, H. Neely Henry, Logan Martin, and R.L. Harris Lakes); no guide curves exist for Claiborne Lake, William “Bill” Dannelly Lake (Millers Ferry Lock and Dam), or R.E. “Bob” Woodruff Lake (Robert F. Henry Lock and Dam). Additionally, action zones have been defined at Lake Allatoona. The zones are used to manage the lake at the highest level possible while balancing the needs of all the authorized purposes. Action Zone 1 is the highest in each lake and defines a reservoir condition where all authorized project purposes should be met. The lake level at the top of Zone 1 is the normal

pool level or top of conservation pool (or the guide curve). As lake levels decline, Zone 2 defines increasingly critical system water shortages, and prescribes reductions in reservoir releases as pool levels drop as a result of drier than normal or drought conditions. The action zones also provide guidance on meeting minimum hydropower needs at each project as well as determining 1 the minimum releases for downstream purposes such as water supply and water quality. Under the No Action Alternative, the current guide curve and action zones (at Lake Allatoona) would continue to serve as the basis for Corps management of the reservoir. Figures 1.1-1 through 1.1-6 show the annual guide curves and action zones for pertinent Corps and APC projects. Each of the figures for the APC projects (Figures 1.1-3 through 1.1-6) depict a *drought curve*. Those drought curves have been established by APC for their drought operations under their Alabama Power Company Drought Operations Plan (APCDOP). Although used by APC for general planning, their drought curves have not been adopted by the Corps as part of the No Action alternative.

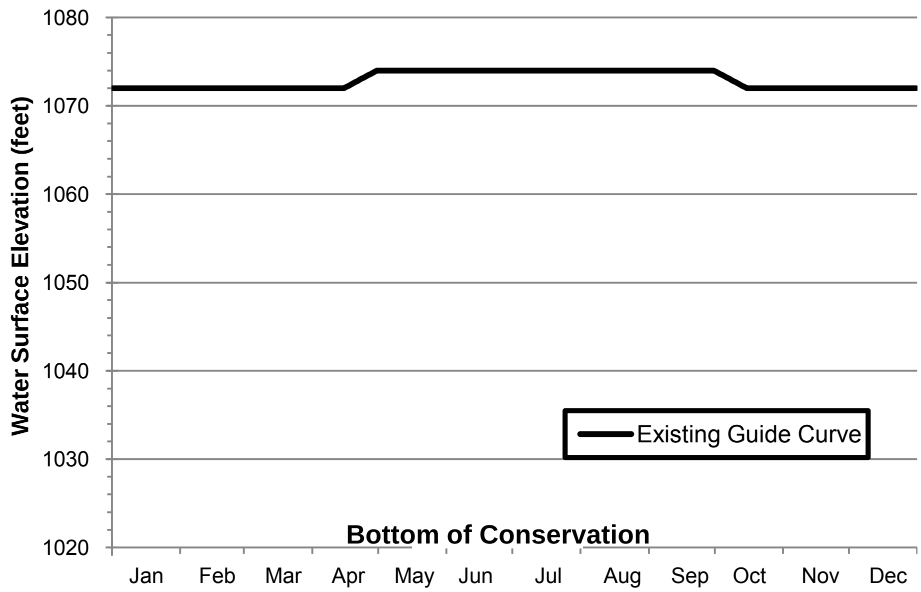


Figure 1.1-1. Carters Lake guide curve.

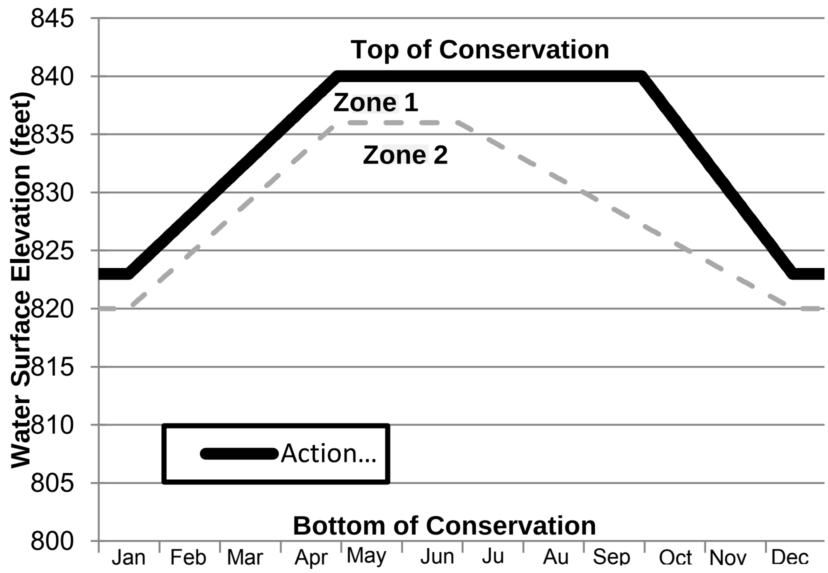


Figure 1.1-2 Lake Allatoona guide curves and action zones.

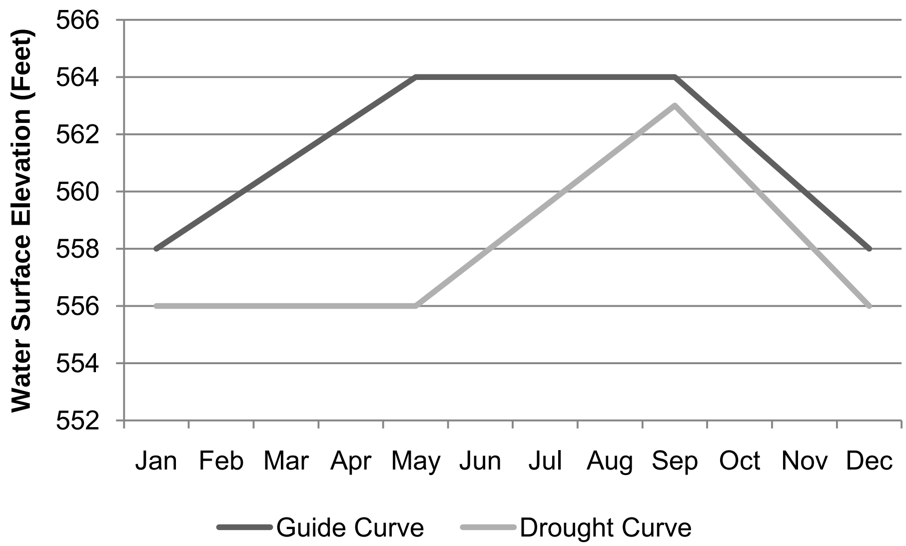


Figure 1.1-3 Weiss Lake guide curves.

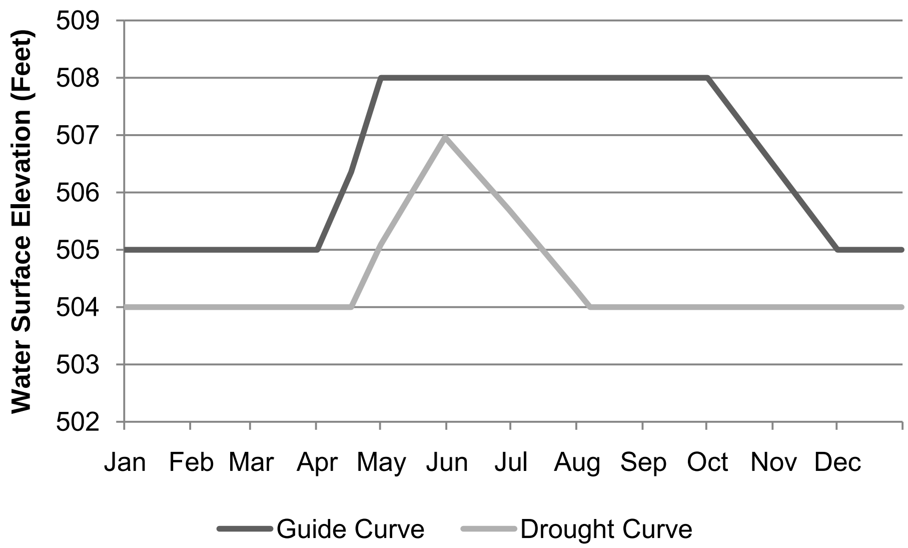


Figure 1.1-4 H. Neely Henry Lake guide curves.

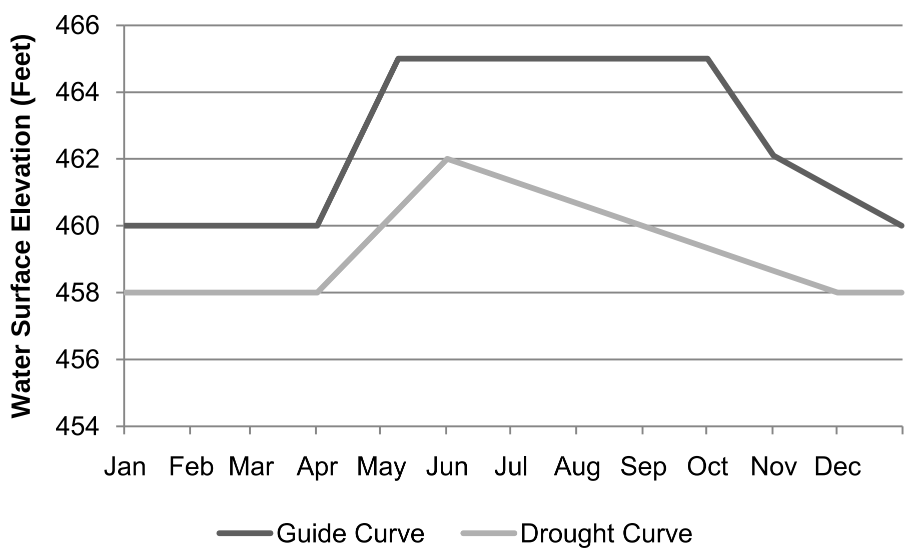


Figure 1.1-5 Logan Martin Lake guide curves.

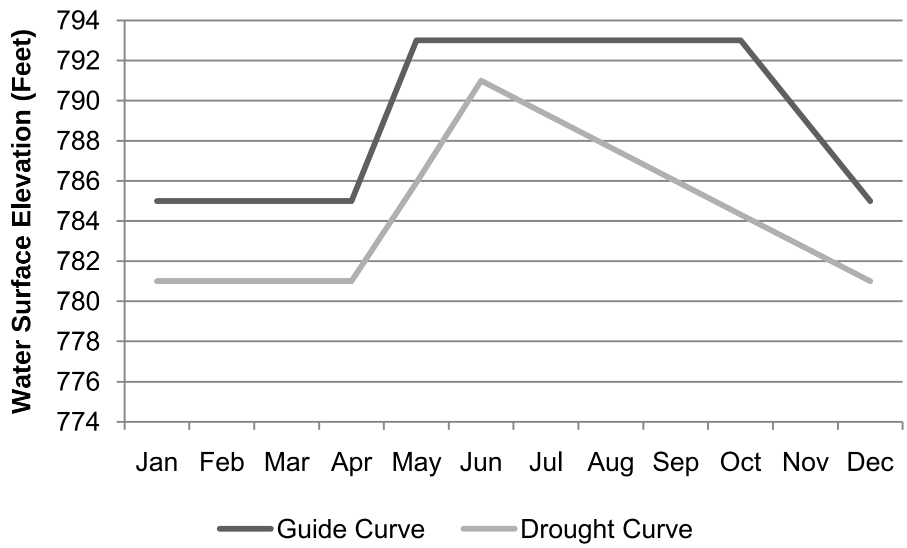


Figure 1.1-6 R.L. Harris Lake guide curves.

1.2 Proposed Action Alternative

Under the Proposed Action Alternative, the Corps would continue to operate federal projects in the ACT Basin in a balanced manner to achieve all authorized project purposes. Operations under the Proposed Action Alternative include the following.

- Implement a revised APCDOP with enhancements recommended by the USFWS. The revised APCDOP with USFWS enhancement is depicted in Table 1.2-1.
- Provide for seasonal navigation releases, coupled with seasonal maintenance dredging, to support commercial navigation in the Alabama River for a 9.0-ft or 7.5-ft channel depth as long as sufficient basin inflow above the APC projects is available. When sufficient flows cannot be provided to continue to support a minimum 7.5-ft navigation channel, navigation would be suspended and flows at Montgomery would be reduced to 4,640 cfs (7Q10) or lower if one or more of the drought operations triggers (low basin inflows, low composite conservation storage, or low state line flows) would be exceeded. APC projects on the Coosa and Tallapoosa Rivers would continue to operate under their current FERC licenses with specific operational requirements. FERC relicensing actions are underway for the Coosa River projects, and APC has requested to modify winter pool levels at the Weiss Lake and Logan Martin Lake projects. The Proposed Action Alternative does not include those proposed modifications by APC.
- The APC project, H. Neely Henry Lake (Coosa River), which operates with a revised guide curve under a FERC license variance (with Corps concurrence) would continue to operate under its revised guide curve (Figure 1.2-1).
- Specified flow requirements at Lake Allatoona would continue to provide for a 240-cfs minimum flow.
- The existing guide curve at Lake Allatoona would be revised to implement a phased fall drawdown period from early September through December (Figure 1.2-2). Refined operations at Lake Allatoona would include use of four action zones shaped to mimic the seasonal demands for hydropower (Figure 1.2.2). Modifications to the hydropower schedule would be put in place to provide greater operational flexibility to meet power demands while conserving storage. Specifically, under the Proposed Action Alternative, hydropower generation would be reduced during annual drawdown in the fall (September through October).
- The current minimum flow requirement would remain at 240 cfs from Carters Reregulation Dam. Refined operations at Carters Lake would include the use of two action zones to manage downstream releases. The top of the new Zone 2 begins at elevation 1,066 ft in January, increasing to 1,070.5 ft in May, dropping to 1,070 ft by October, and returning to elevation 1,066 ft through December (Figure 1.2-3). When Carters Lake is in Zone 1, minimum flow releases at Carters Reregulation Dam would be equal to the seasonal minimum flow. Those minimum flow releases are based on the mean monthly flow upstream of Carters Lake. If Carters Lake elevation drops into Zone 2, minimum flow releases from the Carters Reregulation Dam would be 240 cfs.
- The Corps provides 6,371 ac-ft of storage in Lake Allatoona for water supply for the City of Cartersville, Georgia and 13,140 ac-ft for the CCMWA. Total storage allocated to water supply is 19,511 ac-ft.
- The Corps provides 818 ac-ft in Carters Lake for water supply for the City of Chatsworth, Georgia.
- The Corps would continue to manage fish spawning operations at Lake Allatoona, as outlined in DR 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft SOP *Reservoir Regulation and Coordination for Fish Management Purposes* (Mobile District SOP 1130-2-9, draft, February 2005). During the largemouth bass spawning period, from March 15 to May 15, the Corps seeks to maintain generally stable or rising reservoir levels at Lake Allatoona. Generally stable or rising levels are defined as not lowering the

reservoir levels by more than 6 inches, with the base elevation generally adjusted upward as levels rise from increased inflows or refilling of the reservoir.

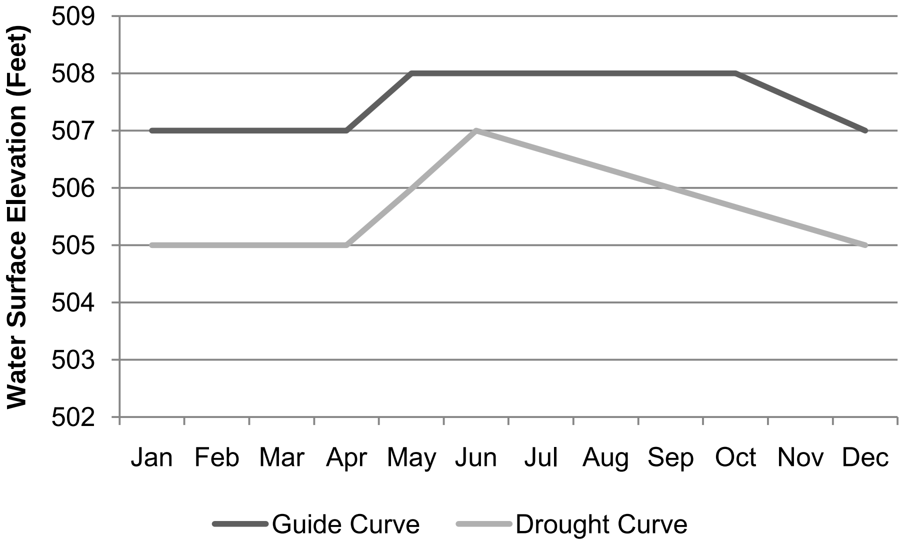


Figure 1.2-1 H. Neely Henry Lake revised guide curve.

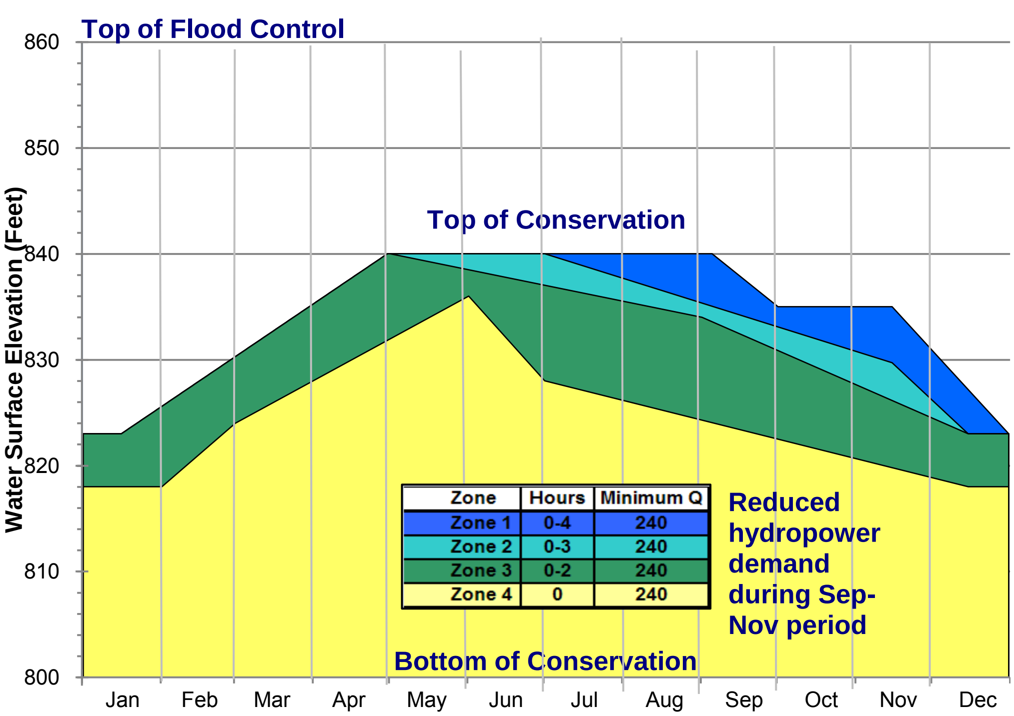


Figure 1.2-2 Operations under the Proposed Action Alternative at Lake Allatoona.

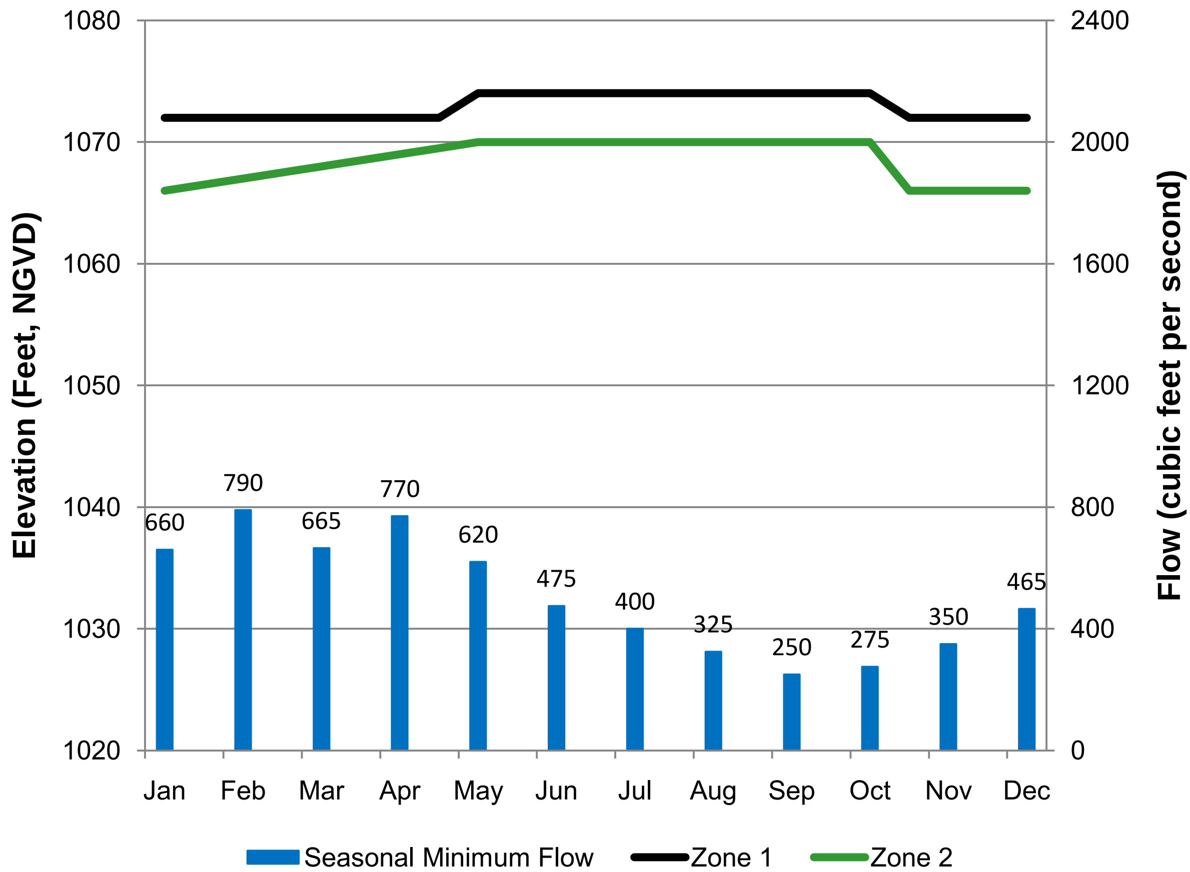


Figure 1-2.3 Carters Lake modified action zones.

1.2.1 Drought Management Plan

Both Alabama and Georgia have general statewide drought plans. Management measures to establish a drought management plan for the ACT basin were considered to meet the objectives to develop a drought management plan as required by Corps regulations and to incorporate changes made at APC projects into operations of the ACT Basin in the updated WCM. APC manages about 78 percent of the water stored in the ACT Basin.

During the drought of 2006–2008, the Corps did not have a drought plan applicable across the entire ACT Basin. The Corps generally responded to drought conditions by reducing hydropower generation at Lake Allatoona and Carters Lake as the reservoir pools dropped throughout the summer and fall. During previous droughts, the Corps coordinated frequently with APC, the states, and affected stakeholders—and the drought of 2006–2008 was no exception. During the drought, the Corps conducted biweekly water management conference calls with stakeholders from across the basin to gather information to better inform water management decision making. The Corps also supported, to a limited extent, an APC request to reduce the 4,640-cfs flow target at Montgomery by 20 percent (to 3,900 cfs).

In response to the 2006–2008 drought, APC worked closely with Alabama to develop the APC draft *Alabama Drought Operations Plan* (APCDOP) that specified operations at APC projects on the Coosa and Tallapoosa Rivers. That plan included the use composite system storage, state line flows, and basin inflow as triggers to drive drought response actions. Similarly, in response to the 2006–2008 drought, the Corps recognized that a basin-wide drought plan must incorporate variable hydropower generation requirements from its headwater projects in Georgia (Lake Allatoona and Carters Lake), a reduction in the level of navigation service provided on the Alabama River as storage across the basin declines, and that environmental flow requirements must still be met to the maximum extent practicable.

Building on the APCDOP and APC experience applying it to project operations, the Corps sought, in cooperation with APC, to develop a basin-wide drought plan composed of three components—headwater operations at Lake Allatoona and Carters Lake in Georgia; operations at APC projects on the Coosa and Tallapoosa Rivers; and downstream operations at Corps projects below Montgomery. The concept is graphically depicted in Figure 1.2-4 below.

1.2.1.1 Headwater Operations for Drought at Lake Allatoona and Carters Lake

Drought operations at Carters Lake and Lake Allatoona would consist of progressively reduced hydropower generation as pool levels decline. For instance, when Lake Allatoona is operating in normal conditions (Zone 1 operations), hydropower generation might be 0 to 4 hours per day. However, as the pool drops to lower action zones during drought conditions, generation could be reduced to 0 to 2 hours per day. As Carters Lake pool level might drop into a newly created Zone 2, minimum target flows would be reduced from seasonal varying values to 240 cfs.

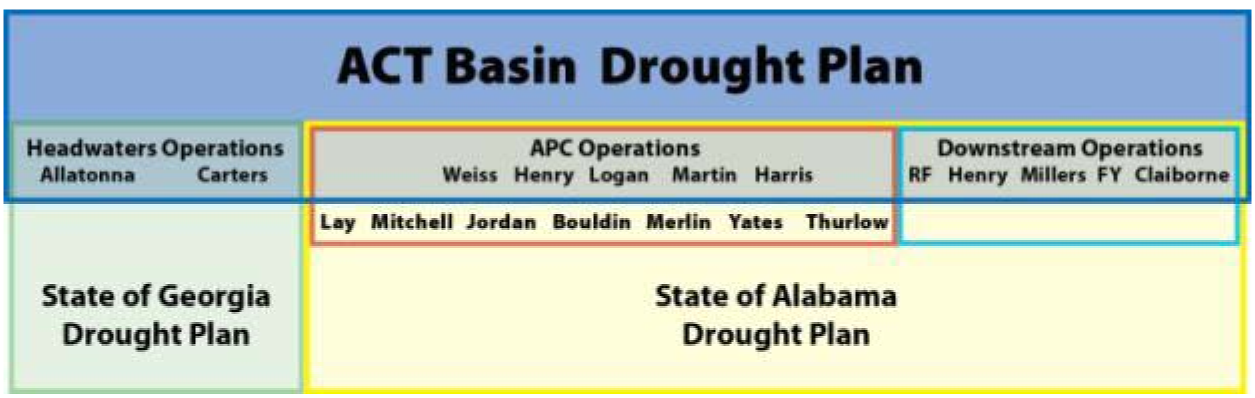


Figure 1.2-4 Schematic of the ACT Basin drought plan.

1.2.1.2 Operations at APC Projects on the Coosa, Tallapoosa, and Alabama Rivers

Under current operations, APC provides a minimum flow at Montgomery, Alabama, of 4,640 cfs (7-day average) based on the combined flows from the Tallapoosa and Coosa Rivers. The minimum flow target of 4,640 cfs was originally derived from the7Q10 flow at Claiborne Lake of 6,600 cfs. Those flows were established with the understanding that if APC provided 4,640 cfs, the Corps and intervening basin inflow would be able to provide the remaining water to meet 6,600 cfs at Claiborne Lake. As dry conditions continued in 2007, water managers understood that, if the basin inflows from rainfall were insufficient, the minimum flow target would not likely be achievable. With that understanding, the Corps considered updating drought operations in coordination with APC.

The APCDOP, described in the following paragraphs, served as the initial template for developing proposed drought operations for the ACT Basin. APCDOP operational guidelines for the Coosa, Tallapoosa, and Alabama Rivers have been defined in a matrix, on the basis of a Drought Intensity Level (DIL). The DIL is a drought indicator, ranging from zero to three. The DIL is determined on the basis of three basin drought criteria (or triggers). A DIL=0 indicates normal operations, while a DIL from 1 to 3 indicates some level of drought conditions. The DIL increases as more of the drought indicator thresholds (or triggers) are exceeded. The APCDOP matrix defines monthly minimum flow requirements for the Coosa, Tallapoosa, and Alabama Rivers as function of DIL and time of year. Such flow requirements are modeled as daily averages.

The combined occurrences of the drought triggers determine the DIL. Three intensity levels for drought operations are applicable to APC projects.

- DIL0—(normal operation) no triggers exceeded
- DIL1—(moderate drought) 1 of 3 triggers exceeded
- DIL2—(severe drought) 2 of 3 triggers exceeded
- DIL3—(exceptional drought) all 3 triggers exceeded

The indicators used in the APCDOP to determine drought intensity include the following:

1. Low basin inflow
2. Low composite conservation storage
3. Low state line flow

Each of those indicators is described in detail in Sections 1.2.2.3 through 1.2.2.5, below.

The DIL would be computed on the 1st and 15th of each month. Once a drought operation is triggered, the DIL can only recover from drought condition at a rate of one level per period. For example, as the system begins to recover from an exceptional drought with DIL=3, the DIL must be stepped incrementally back to zero to resume normal operations. In that case, even if the system triggers return to normal quickly, it will still take at least a month before normal operations can resume—conditions can improve only to DIL=2 for the next 15 days, then DIL=1 for the next 15 days, before finally returning to DIL=0.

For DIL=0, the matrix (Table 1.2-1) shows a Coosa River flow between 2,000 cfs and 4,000 cfs with peaking periods up to 8,000 cfs occurring. The required flow on the Tallapoosa River is a constant 1,200 cfs throughout the year. The navigation flows on the Alabama River are applied to the APC projects. The required navigation depth on the Alabama River is subject to the basin inflow.

For DIL=1, the Coosa River flow varies from 2,000 cfs to 4,000 cfs. On the Tallapoosa River, part of the year, the required flow is the greater of one-half of the inflow into Yates Lake and twice the Heflin USGS gage. For the remainder of the year, the required flow is one-half of Yates Lake inflow. The required flows on the Alabama River are reduced from the amounts when DIL=0.

For DIL=2, the Coosa River flow varies from 1,800 cfs to 2,500 cfs. On the Tallapoosa River, the minimum is 350 cfs for part of the year and one-half of Yates Lake inflow for the remainder of the year. The requirement on the Alabama River is between 3,700 cfs and 4,200 cfs.

For DIL=3, the flows on the Coosa River range from 1,600 cfs to 2,000 cfs. A constant flow of 350 cfs on the Tallapoosa River is required. It is assumed an additional 50 cfs will occur between Thurlow Lake and

the City of Montgomery water supply intake. Required flows on the Alabama River range from 2,000 cfs to 4,200 cfs.

In addition to the APCDOP, the DIL affects the navigation operations. When the DIL is equal to zero, APC projects are operated to meet navigation flow target or the 7Q10 flow as defined in the navigation measure section. Once DIL is greater than zero, drought operations will occur, and navigation operations are suspended.

Table 1.2-1
APCDOP with USFWS enhancements

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Drought Level Response[a]	DIL 0 - Normal Operations											
	DIL 1: Low Basin Inflows or Low Composite or Low State Line Flow											
	DIL 2: DIL 1 criteria + (Low Basin Inflows or Low Composite or Low State Line Flow)											
	DIL 3: Low Basin Inflows + Low Composite + Low State Line Flow											
Coosa River Flow[b]	Normal Operation: 2,000 cfs			4,000 (8,000)		4,000 – 2,000	Normal Operation: 2,000 cfs					
	Jordan 2,000 +/-cfs			4,000 +/- cfs		6/15 Linear Ramp down	Jordan 2,000 +/-cfs			Jordan 2,000 +/-cfs		
	Jordan 1,800 +/-cfs			2,500 +/- cfs		6/15 Linear Ramp down	Jordan 2,000 +/-cfs			Jordan 1,800 +/-cfs		
	Jordan 1,600 +/-cfs			Jordan 1,800 +/-cfs			Jordan 2,000 +/-cfs			Jordan 1,800 +/-cfs		Jordan 1,600 +/-cfs
Tallapoosa River Flow[c]	Normal Operations: 1200 cfs											
	Greater of: 1/2 Yates Inflow or 2 x Heflin Gage(Thurlow Lake releases > 350 cfs)				1/2 Yates Inflow					1/2 Yates Inflow		
	Thurlow Lake 350 cfs				1/2 Yates Inflow					Thurlow Lake 350 cfs		
	Maintain 400 cfs at Montgomery WTP (Thurlow Lake release 350 cfs)						Thurlow Lake 350 cfs			Maintain 400 cfs at Montgomery WTP (Thurlow Lake release 350 cfs)		
Alabama River Flow[d]	Normal Operation: Navigation flow (4,640 cfs)											
	4,200 cfs (10% 7Q10 Cut) - Montgomery				Full Navigation - Montgomery (4,640 cfs)					Reduce: Full – 4,200 cfs		
	3,900 cfs (20% 7Q10 Cut) - Montgomery				4,200 cfs (10% 7Q10 Cut) – Montgomery					Reduce: 4,200 cfs-> 3,900 cfs Montgomery		
	2,000 cfs Montgomery				3,900 cfs Montgomery		4,200 cfs (10% 7Q10 Cut) - Montgomery			Reduce: 4,200 cfs -> 2,000 cfs Montgomery (ramp thru October)		
Guide Curve Elevation	Normal Operations: Elevations follow Guide Curves as prescribed in License (Measured in Feet)											
	Corps Variances: As Needed; FERC Variance for Lake Martin											
	Corps Variances: As Needed; FERC Variance for Lake Martin											
	Corps Variances: As Needed; FERC Variance for Lake Martin											

a. Note these are based flows that will be exceeded when possible.
b .Jordan flows are based on a continuous +/- 5% of target flow.
c. Thurlow Lake flows are based on continuous +/- 5% of target flow: flows are reset on noon each Tuesday based on the prior day's daily average at

Heflin or Yates. d. Alabama River flows are 7-Day Average Flow.

1.2.1.3 Low Basin Inflow Trigger

The total basin inflow needed for navigation is the sum of the total filling volume plus 7Q10 flow (4,640 cfs). Table 1.2-2 lists the monthly low basin inflow criteria. All numbers are in cfs-days. The basin inflow value is computed daily and checked on the 1st and 15th of the month. If computed basin inflow is less than the value required, the low basin inflow indicator is triggered.

The basin inflow is total flow above the APC projects excluding Lake Allatoona and Carters Lake. It is the sum of local flows, minus lake evaporation and diversions. Figure 1.2-5 illustrates the local inflows to the Coosa and Tallapoosa basin. The basin inflow computation differs from the navigation basin inflow, because it does not include releases from Lake Allatoona and Carters Lake. The intent is to capture the hydrologic condition across APC projects in the Coosa and Tallapoosa basins.

Table 1.2-2
Low basin inflow guide (in cfs-days)

Month	Coosa Filling Volume	Tallapoosa Filling Volume	Total Filling Volume	7Q10 flow	Required Basin Inflow
Jan	629	0	629	4,640	5,269
Feb	647	1,968	2,615	4,640	7,255
Mar	603	2,900	3,503	4,640	8,143
Apr	1,683	2,585	4,268	4,640	8,908
May	242	0	242	4,640	4,882
Jun			0	4,640	4,640
Jul			0	4,640	4,640
Aug			0	4,640	4,640
Sep	–602	–1,304	–1,906	4,640	2,734
Oct	–1,331	–2,073	–3,404	4,640	1,236
Nov	–888	–2,659	–3,547	4,640	1,093
Dec	–810	–1,053	–1,863	4,640	2,777

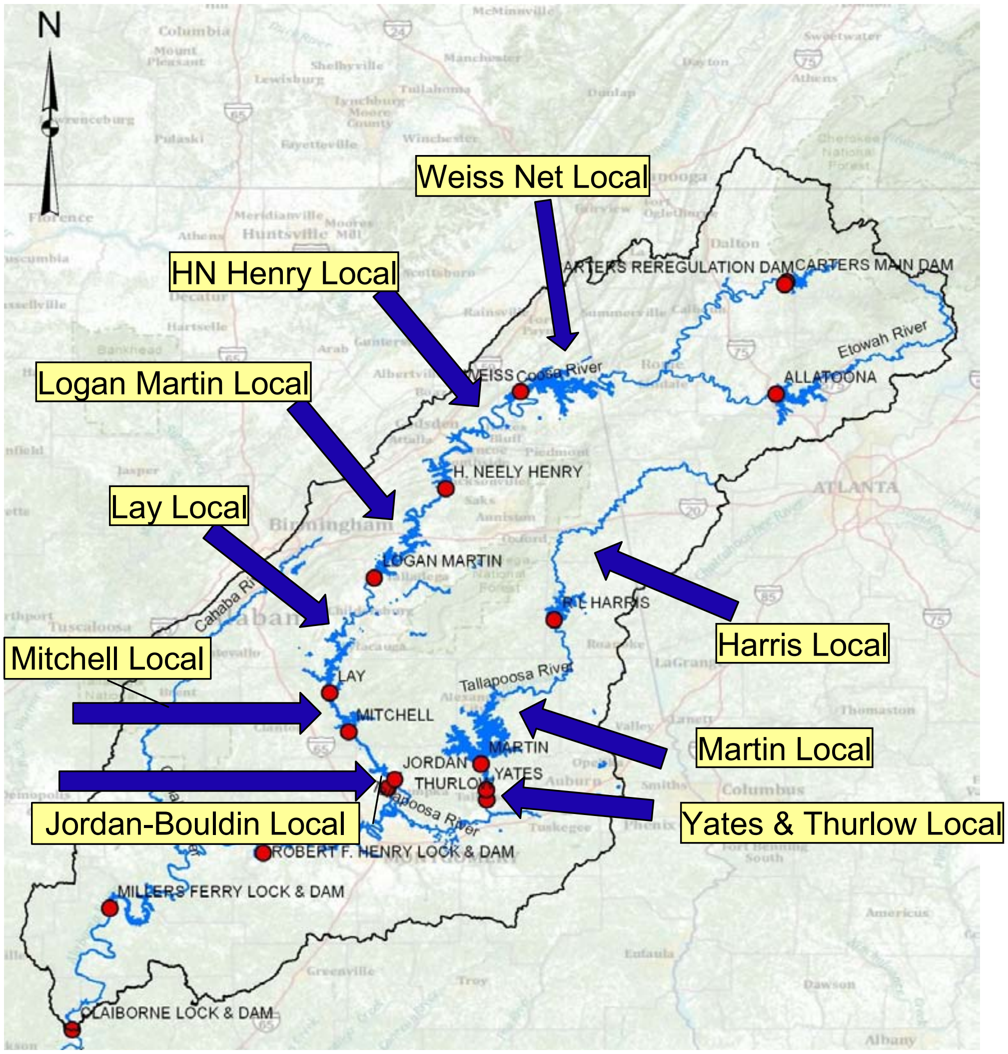


Figure 1.2-5 ACT Basin inflows.

1.2.1.4 State Line Flow Trigger

A low state line flow trigger occurs when the Mayo's Bar USGS gage measures a flow below the monthly historical 7Q10 flow. The 7Q10 flow is defined as the lowest flow over a 7-day period that would occur once in 10 years. Table 1.2-3 lists the Mayo's Bar 7Q10 value for each month. The lowest 7-day average flow over the past 14 days is computed and checked at the 1st and 15th of the month. If the lowest 7-day average value is less than the Mayo's Bar 7Q10 value, the low state line flow indicator is triggered. If the result is greater than or equal to the trigger value from Table 4.2-5, the flow is considered normal, and the state line flow indicator is not triggered. The term *state line flow* is used in developing the drought management plan because of the proximity of the Mayo's Bar gage to the Alabama-Georgia state line and because it relates to flow data upstream of the Alabama-based APC reservoirs. State line flow is used only as a source of observed data for one of the three triggers and does not imply that *targets* exist at that geographic location. The APCDOP does not include or imply any Corps operation that would result in water management decisions at Carters Lake or Lake Allatoona.

Table 1.2-3
State line flow trigger

Month	Mayo's Bar (7Q10 in cfs)
Jan	2,544
Feb	2,982
Mar	3,258
Apr	2,911
May	2,497
Jun	2,153
Jul	1,693
Aug	1,601
Sep	1,406
Oct	1,325
Nov	1,608
Dec	2,043

Note: Based on USGS Coosa River at Rome Gage (Mayo's Bar, USGS 02397000) observed flow from 1949 to 2006

1.2.1.5 Low Composite Conservation Storage in APC projects

Low composite conservation storage occurs when the APC projects' composite conservation storage is less than or equal to the storage available within the drought contingency curves for the APC reservoirs. Composite conservation storage is the sum of the amounts of storage available at the current elevation for each reservoir down to the drought contingency curve at each APC major storage project. The reservoirs considered for the trigger are R.L. Harris Lake, H. Neely Henry Lake, Logan Martin Lake, Lake Martin, and Weiss Lake projects. Figure 1.2-6 plots the APC composite zones. Figure 1.2-7 plots the APC low composite conservation storage trigger.

If the actual active composite conservation storage is less than or equal to the active composite drought one storage, the low composite conservation storage indicator is triggered. That computation is performed on 1st and 15th of each month, and is compared to the low state line flow trigger and basin inflow trigger.

1.2.1.6 Operations for Corps Projects Downstream of Montgomery

Drought operations of the Corps' Alabama River projects (R.E. "Bob" Woodruff Lake [Robert F. Henry Lock and Dam], and William "Bill" Dannelly Lake [Millers Ferry Lock and Dam]) will respond to drought operation of the APC projects. When combined releases from the APC projects are reduced to the 7Q10 flow of 4,640 cfs, the Corps' Alabama River projects will operate to maintain a minimum flow of 6,600 cfs below Claiborne Lake. When the APCDOP requires flows less than 4,640 cfs, the minimum flow at Claiborne Lake is equal to the inflow into Millers Ferry Lock and Dam. There is inadequate storage in the Alabama River projects to sustain 6,600 cfs, when combined releases from the APC projects are less than 4,640 cfs.

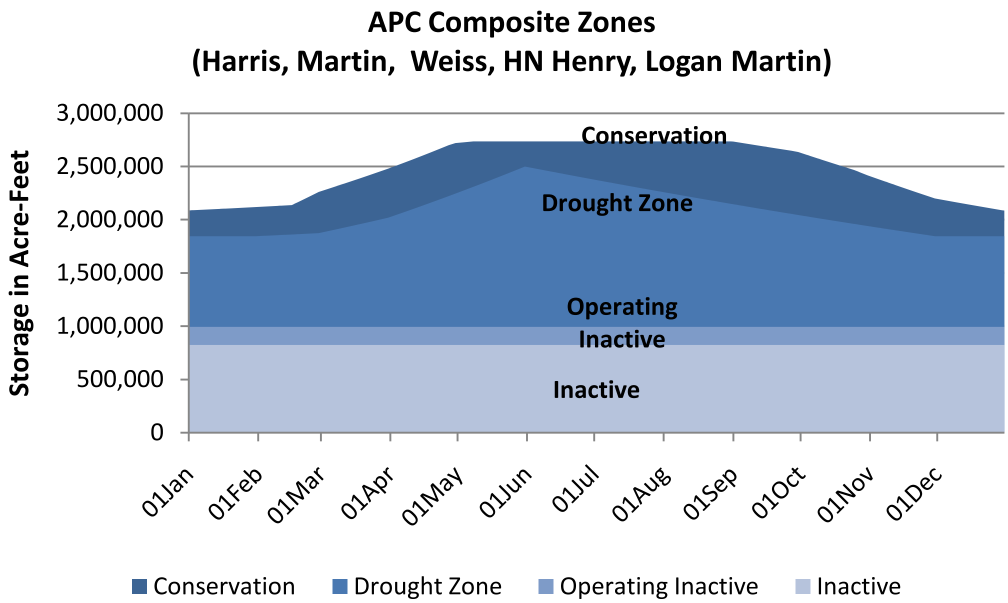


Figure 1.2-6 APC composite zones.

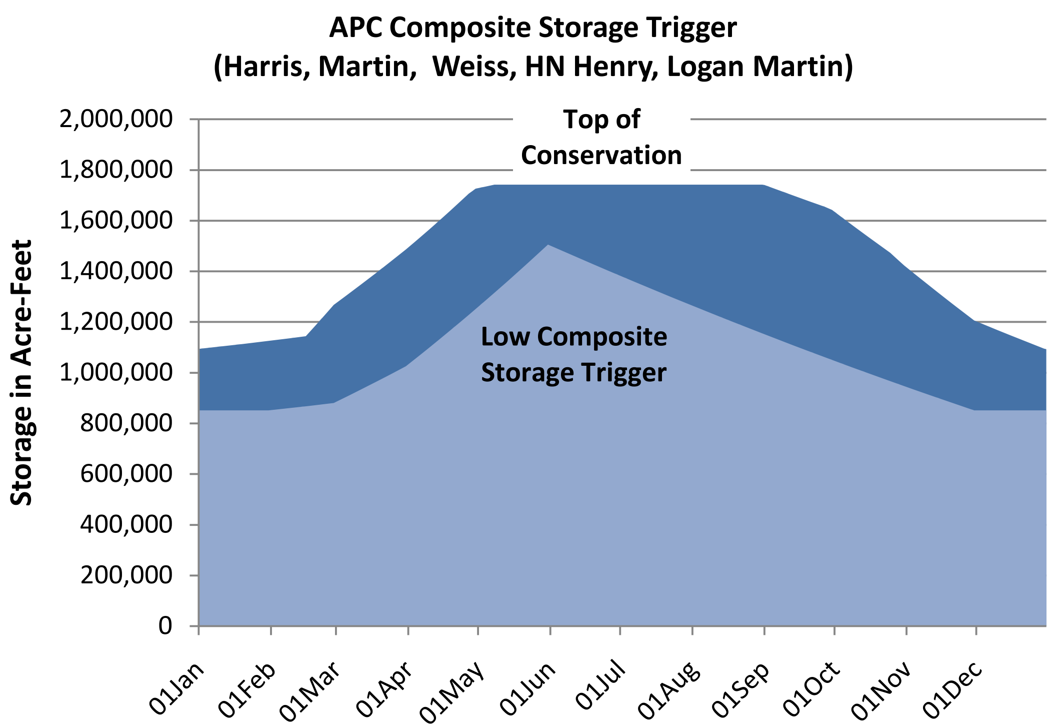


Figure 1.2-7 APC low composite conservation storage drought trigger.

2 RESPONSE TO PLANNING AID LETTER (PAL)

2.1 Low DO below reservoirs and meeting of State water quality standards.

In accordance with ER 1110-2-8154, *Water Quality and Environmental Management for Corps Civil Works Projects*, the Corps has an objective to ensure that water quality, as affected by a Corps project and its operation, is suitable for project purposes, existing water uses, and public safety and is in compliance with applicable federal and state water quality standards. The States currently monitor data throughout the summer low-flow period in reservoirs to ensure water quality standards are met.

Water quality was taken into account when updating water control plans and manuals. The information contained in the following sections demonstrates the effects of the No Action Alternative and Preferred Alternative on water quality.

HEC-ResSim model is being used to simulate flow operations in the ACT Basin. HEC-ResSim is a state-of-the-art tool for simulating flow operations in managed systems. It was developed by the Corps' Hydrologic Engineering Center (HEC) to help engineers and planners perform water resources studies in predicting the behavior of reservoirs and to help reservoir operators plan releases in real-time during day-to-day and emergency operations. Version 3.0 of the HEC-ResSim model was released in April 2007. The Corps HEC also developed HEC-5Q to provide an analytic tool for evaluating the water quality response. This model is linked with the HEC-ResSim model through an input of flows by reach. For this EIS, the enhanced HEC-5Q developed for the Columbia River Basin was generalized and improved to evaluate the effects of ACT project operations on basin water quality. The HEC-5Q model was linked with the HEC-ResSim model through an input of flows by reach to examine the effects on water quality in the mainstems of the ACT Basin. The HEC-5Q results presented in this section are for the modeled period (2001–2008).

The purpose of simulating conditions over this period (2001 – 2008) was not to capture historical changes in water quality; rather, the intent was to capture the range of potential hydrologic conditions that influence water quality. The modeled period includes wet, dry, and normal rainfall conditions, which allows a display of the water quality response to varying hydrologic conditions. The wet, dry, and normal rainfall years presented are 2003, 2007, and 2002, respectively. Those years were selected to represent the range of hydrologic conditions that can occur understanding that conditions can vary greatly over the entire basin.

The sections to follow present the change (or *delta*) in various modeled parameters between the No Action Alternative, Plan D, Plan F, and the Proposed Action Alternative. These four alternatives have been evaluated in detail; however, for the purpose of this response, only the Proposed Action Alternative will be described. The longitudinal occurrence profiles by rivermile (RM) illustrate how water quality varies along the reach, and how water quality might be affected by dams, other structures, or discharges from point and nonpoint sources. Presenting data in such a way illustrates the amount of time a concentration is higher or lower than a given value. In those plots, the 5th, 50th (or median), and 95th percent occurrences are illustrated. Those percentiles illustrate the range of concentrations that would be likely to occur. Such profiles illustrate the percentage of time a concentration of pollutant occurs as a *Percent Occurrence* at stations in mainstem sections of the ACT Basin.

The median values reflect the points at which 50 percent of the calculated values are higher and 50 percent are lower. The 95th percent occurrence and 5th percent occurrence bracket the range of high and low calculated values that rarely occur. For example, a DO plot showing a 5 percent occurrence level at 5 mg/L means that 5 percent of the observations were lower than that concentration. An occurrence

level of 95 percent at 12 mg/L shows that 95 percent of modeled concentrations fell below 12 mg/L. Conversely, that would indicate that 5 percent of the model values were higher than 12 mg/L. Presenting modeled results that way should help readers understand the response of the system without allowing the data from extreme events to skew the results. Note that the percent occurrence is the opposite of the percent exceedence.

It is also important to understand that critical conditions for water quality parameters vary under different flow and water temperature conditions. For example, water temperatures increase in warm weather months and in low stream flow conditions. In wet weather conditions, nutrient concentrations may increase. For this reason water quality conditions are defined for representative wet, dry, and normal weather conditions. State and federal agencies also define warm weather months, or the *growing season*, in different ways for regulatory purposes. The figures to follow illustrate annual conditions as well as growing seasons defined by May through October and April through November.

2.1.1 Total number of days with dissolved oxygen (DO) below a daily average of 5.0 mg/L

The total number of days with a daily average DO less than 5.0 mg/L was not calculated. However, the occurrence of DO was plotted and compared between alternatives at various locations in the basin. In general, the proposed operational changes would be expected to have a negligible effect on DO for much of the ACT Basin. In the figures presented below, the results generally overlay each other, and the differences between alternatives are indistinguishable. As described in the PAL, the lowest DO concentrations occur in dam tailraces. Despite low concentrations of dissolved oxygen in dam tailraces, the Proposed Action Alternative generally is equal to the No Action Alternative as illustrated in Figures 2.2-1 through 2.2-5.

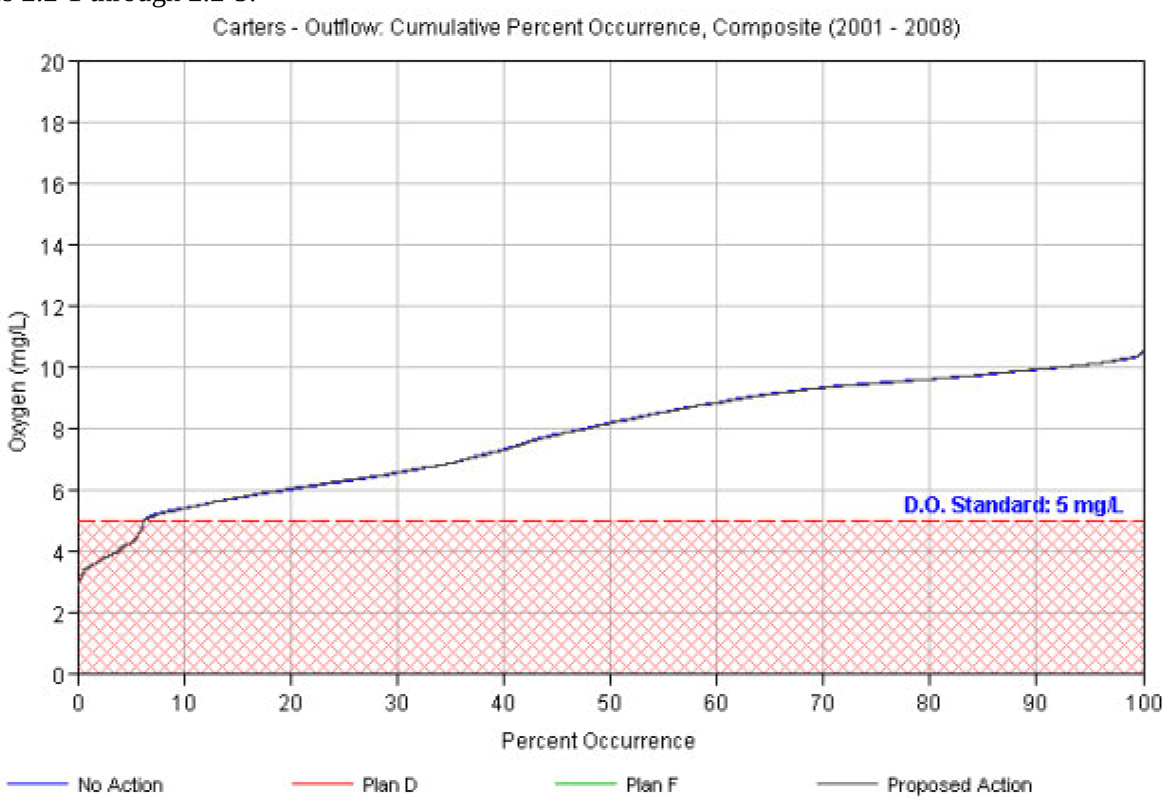


Figure 2.1-1 Carters Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

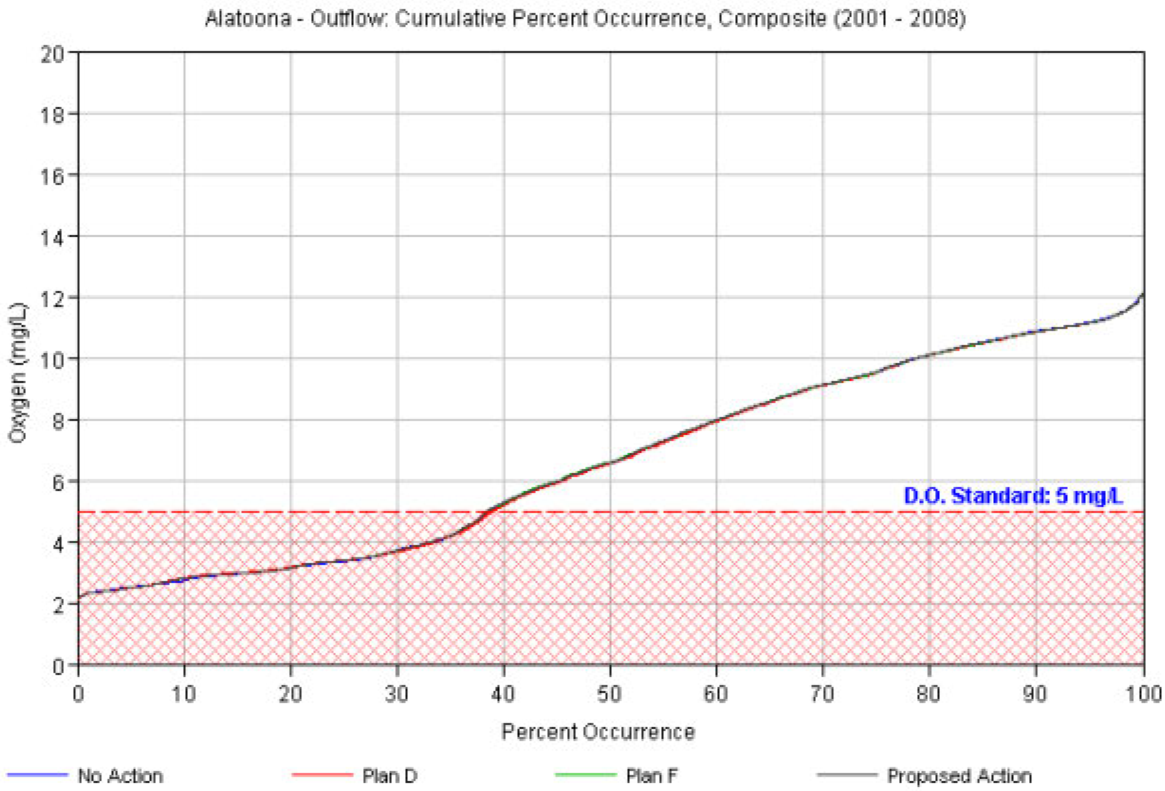


Figure 2.1-2 Allatoona Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

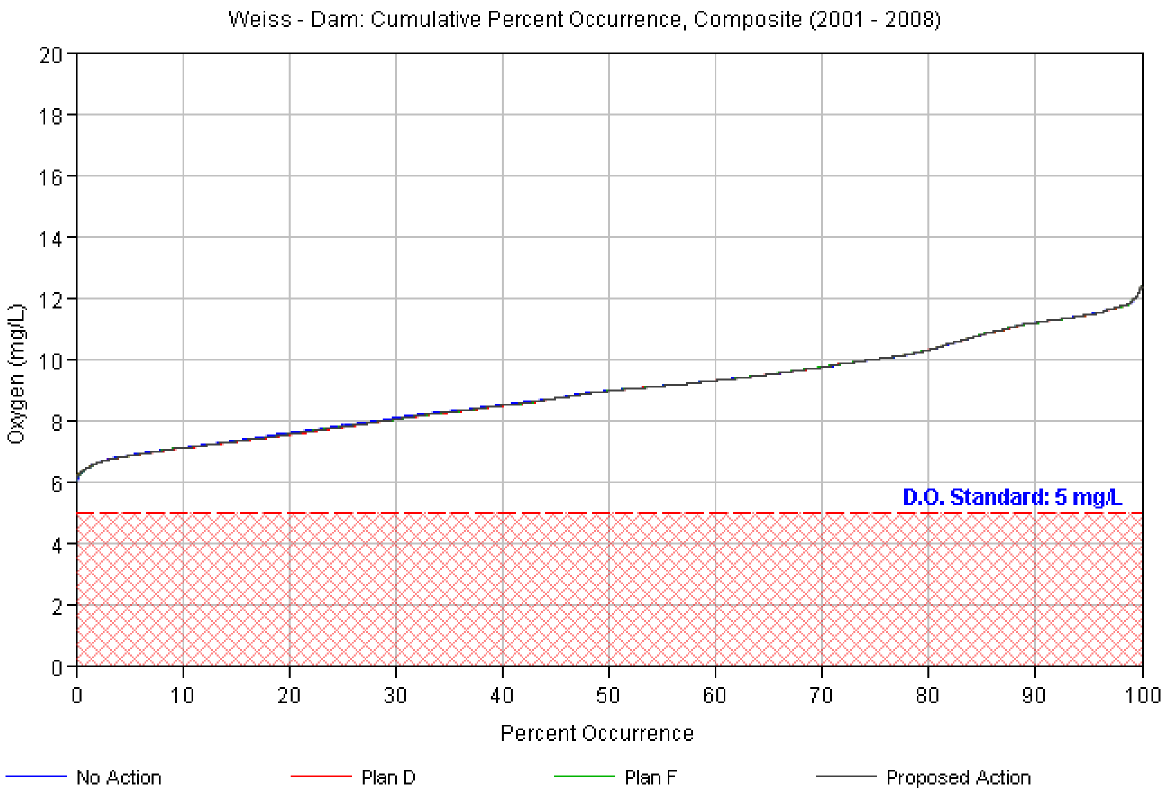


Figure 2.1-3 Weiss Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

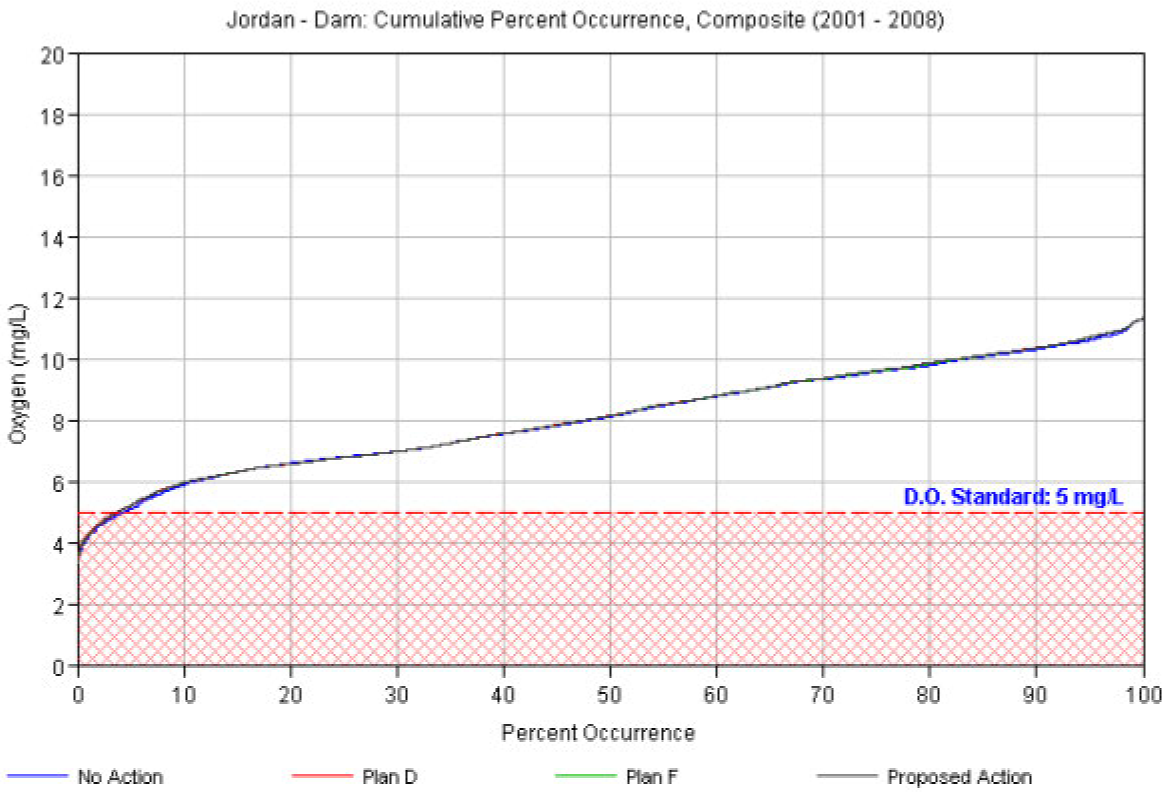


Figure 2.1-4 Jordan Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

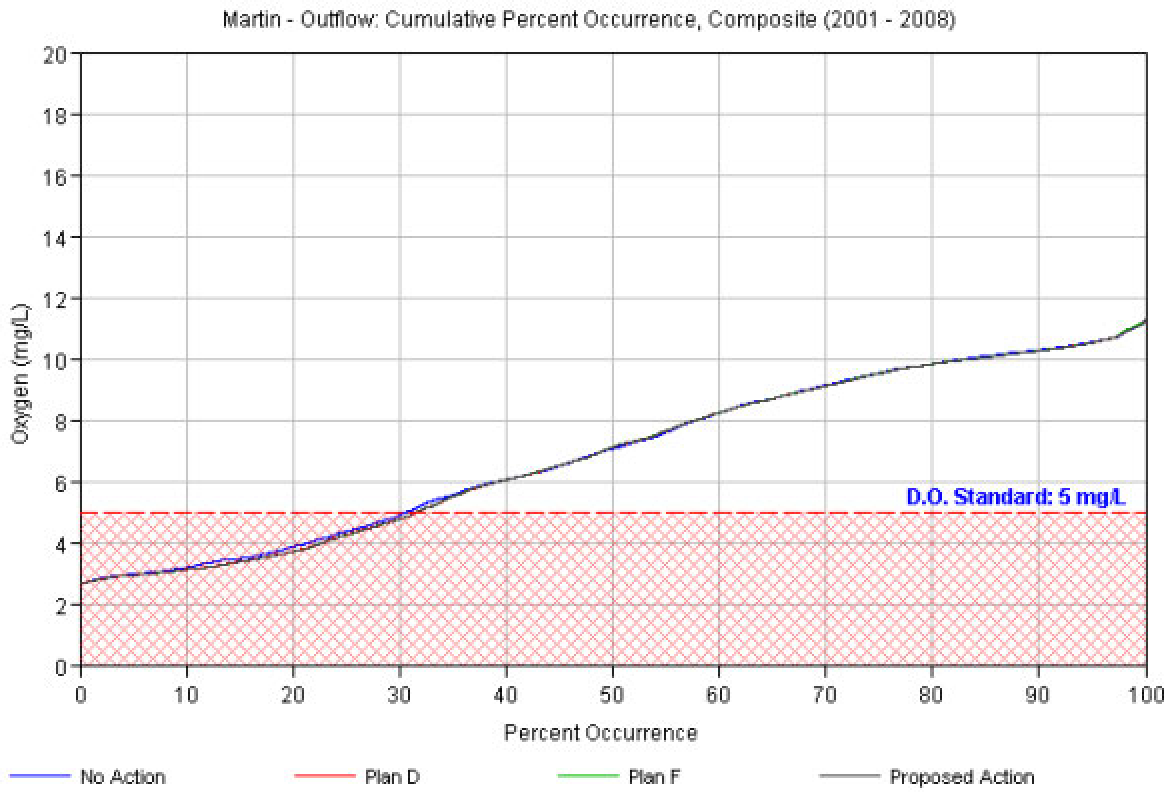


Figure 2.1-5 Martin Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

The previous figures illustrate the lowest DO concentrations in dam tailraces throughout the basin. Low DO also occurs at Cartersville, Georgia (Figure 2.1-6). However, again a comparison of the No Action Alternative to various alternatives illustrates little change.

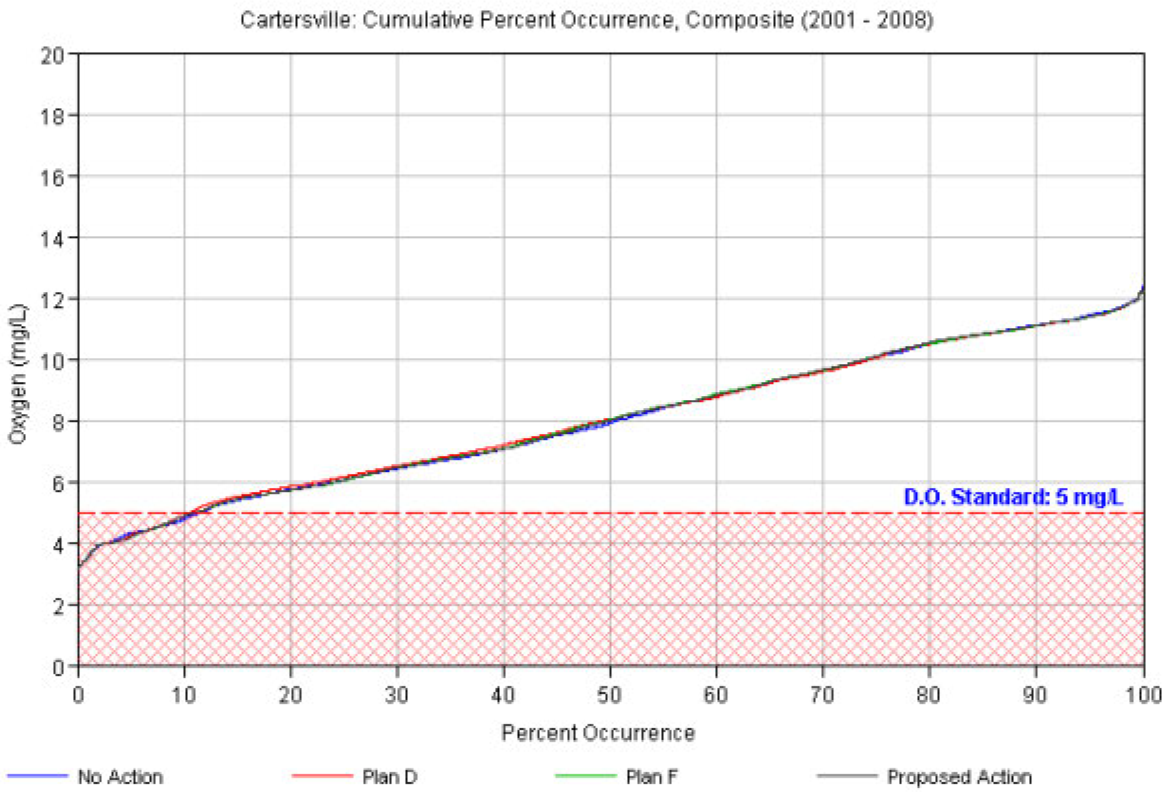


Figure 2.1-6 Cartersville, Georgia outflow dissolved oxygen for the modeled period (2000 – 2008).

The difference between the alternatives evaluated is the greatest downstream of Carters Lake (Figure 2.1-7) and at the confluence of the Coosa and Tallapoosa Rivers (between RM 300 and 350 on the Alabama River, Figure 2.1-8). Differences are the greatest during periods of dry weather conditions when drought operations are likely to be implemented. However, modeled differences from the No Action alternative are generally less than 0.5 mg/l.

Changes in releases from Carters Lake under the drought plan decrease DO downstream of the dam. DO recovers to concentrations near the No Action Alternative before Pine Chapel, 20 mi downstream (Figure 2.1-7).

In the Coosa River, changes in DO are also the greatest in a dry-weather year (Figure 2.1-9). In dry-weather periods, it would be expected that the Corps would operate for drought management. In much of the Coosa River, median DO concentrations during dry-weather periods would be expected near conditions similar to the No Action Alternative. However, DO downstream of Weiss Dam and Neely Henry Dam would be expected to be reduced during the growing season in dry-weather years. Downstream of Weiss Lake, median DO would be expected to decrease by nearly 1.0 mg/L. As illustrated in Figure 2.1-3, median DO over the modeled period is well above water quality standards at 8 mg/L. Median DO decreases by nearly 0.5 mg/L immediately downstream of Neely Henry Dam. Immediately

downstream of other reservoirs (Jordan Dam and Lake, Mitchell Dam, and Logan Martin Dam), the median DO concentrations would be expected to increase by as much as 0.5 mg/L by the Plan D, Plan F, and the Proposed Action Alternative.

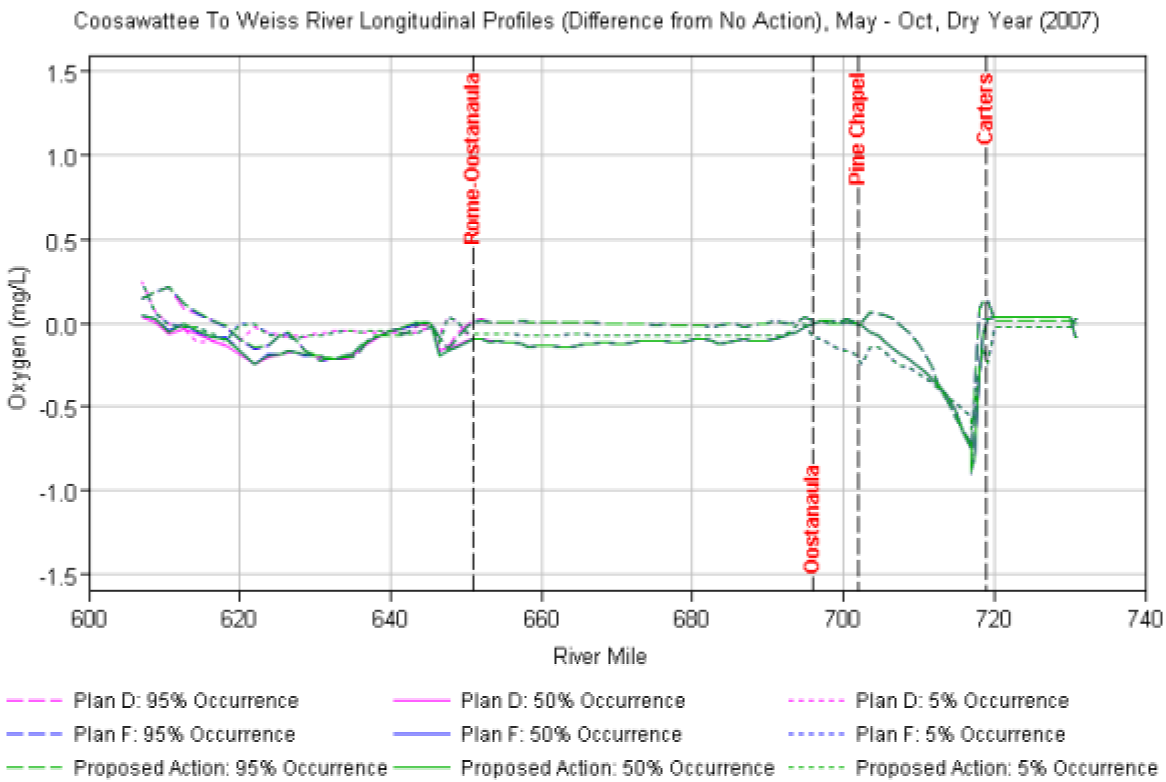


Figure 2.1-7 Oxygen longitudinal profile for May to October in a representative dry-weather year (2007) from Carters Lake downstream to Weiss Lake.

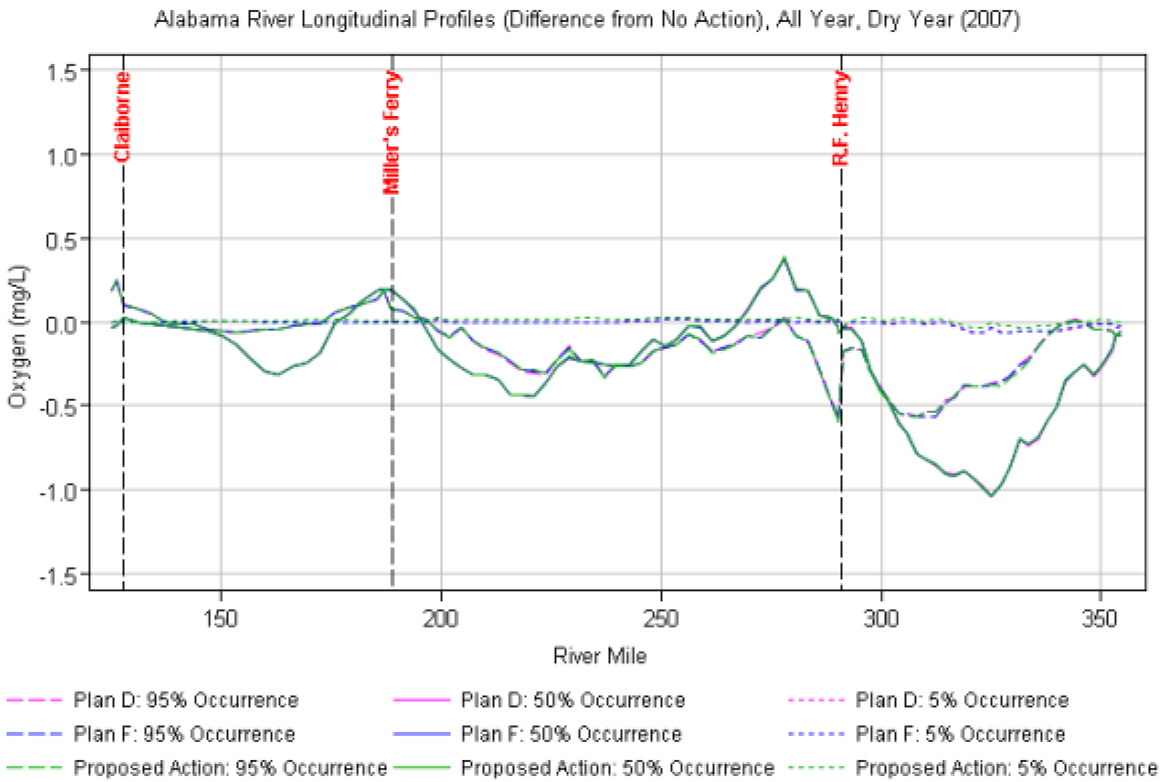


Figure 2.1-8 Alabama River oxygen longitudinal profile for a representative dry-weather year (2007).

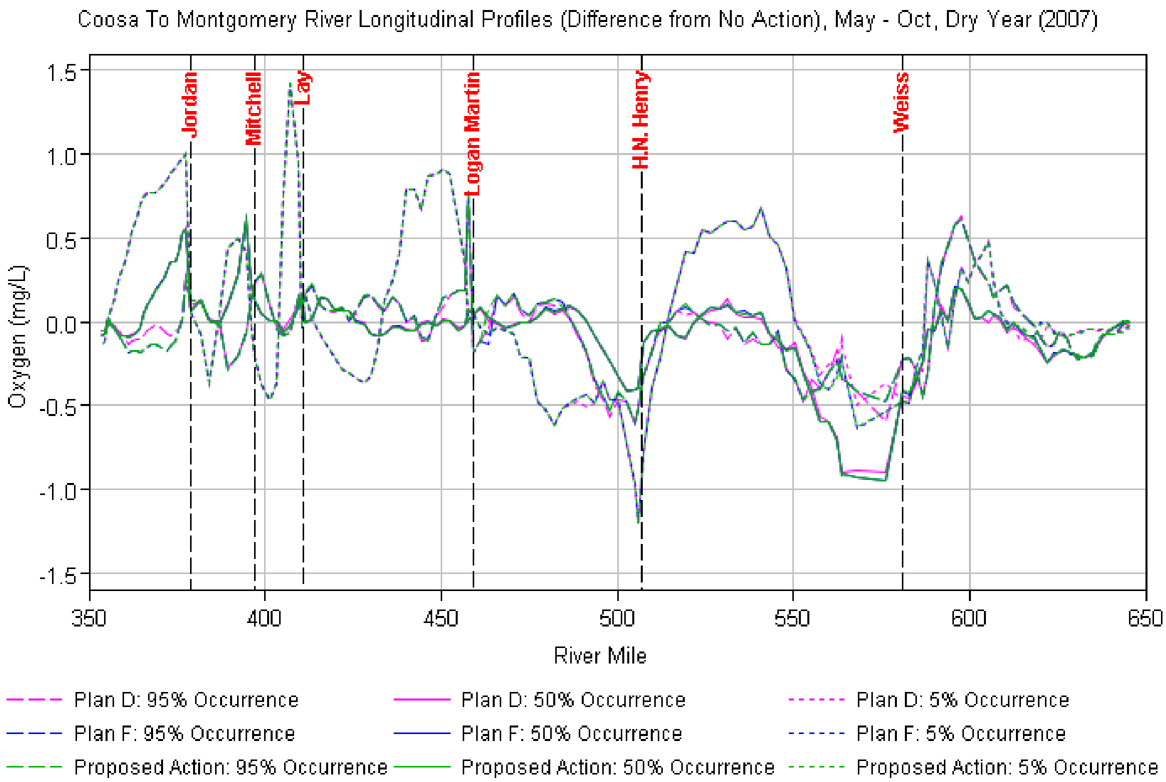


Figure 2.1-9 Coosa River oxygen longitudinal profile for May to October in a representative dry-weather year (2007).

In reservoirs with deep forebays, oxygen is often higher at the water surface and lower with depth through the water column. Reservoirs that release from deep water often release low oxygen water downstream. That is generally more pronounced in dry-weather years when inflows to reservoirs are low and retention times in reservoirs increase. That is illustrated by comparing Figures 2.1-7 and 2.1-10. The plots illustrate the Alabama River in a representative dry- and wet-weather year, respectively. The reason for the differences among alternatives is that each one uses different dam operations for drought management through a series of triggers. Those drought triggers change the way water is released during periods of drought in the ACT Basin.

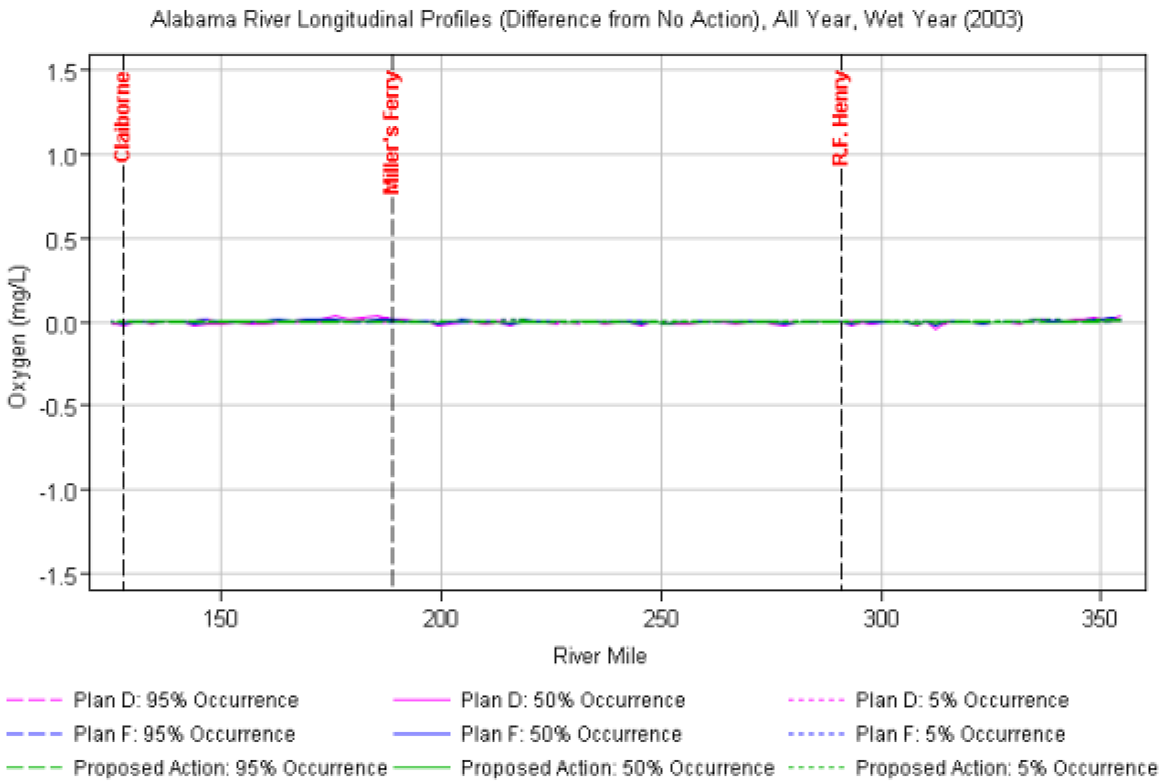


Figure 2.1-10 Alabama River oxygen longitudinal profile for a representative wet-weather year (2003).

Median DO downstream of Lake Allatoona in the Etowah River have little change for the No Action Alternative over the modeled period (Figure 2.1-11).

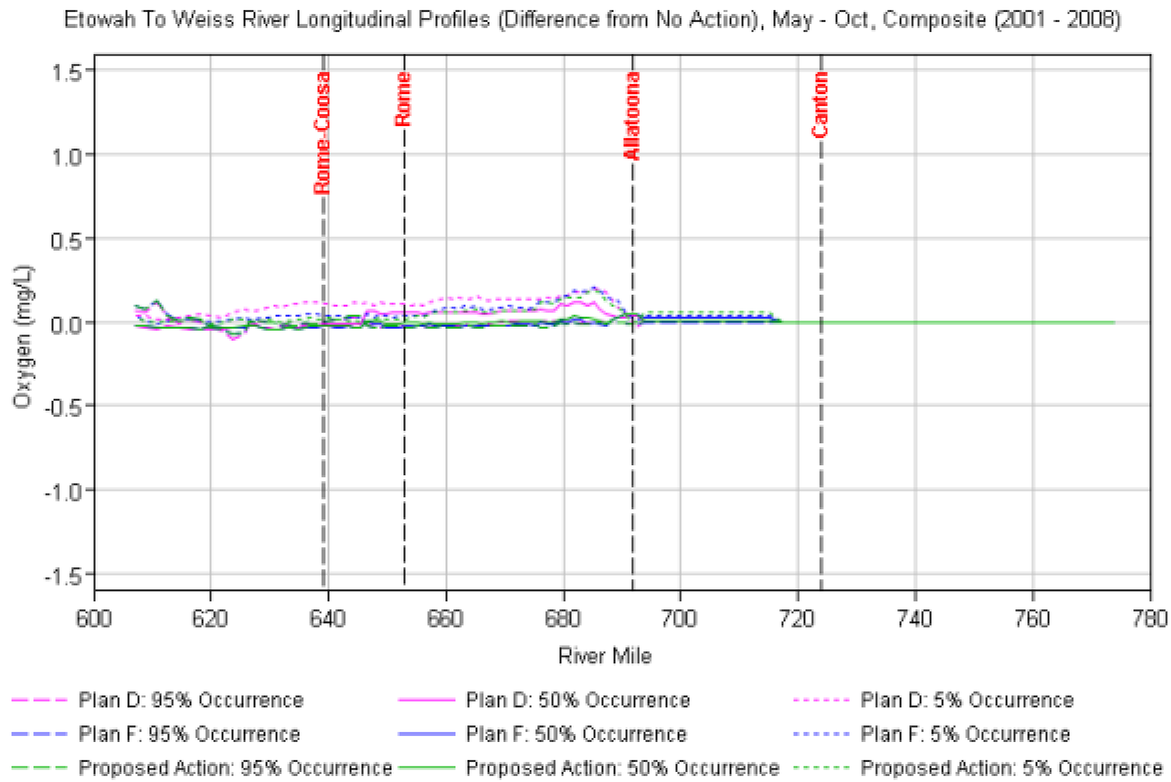


Figure 2.1-11 Etowah River oxygen longitudinal profile for May to October over the modeled period (2001 - 2008).

DO in the Tallapoosa River fluctuates immediately downstream of dams from May through October in a representative dry-weather year (Figure 2.1-12). Those fluctuations would be expected to occur at conditions near water quality standards; 4 mg/L downstream of dams.

In summary, our modeled evaluation of the impacts of the proposed action indicate that any declines in DO compared to the current operation of the Corps reservoirs would be isolated and usually less than 0.5 mg/l. Those declines would be most pronounced during extreme drought (5th percentile occurrence) and in some cases declines up to 1.0 mg/l could be seen. For the most part, the preceding graphs indicate that the proposed action would cause insignificant changes from the No Action alternative. In some cases the model indicates increases in DO up to about 1.0 mg/l. For Lake Allatoona releases, which the PAL identified as a specific concern, there would be little difference from current operations even in the extreme drought condition.

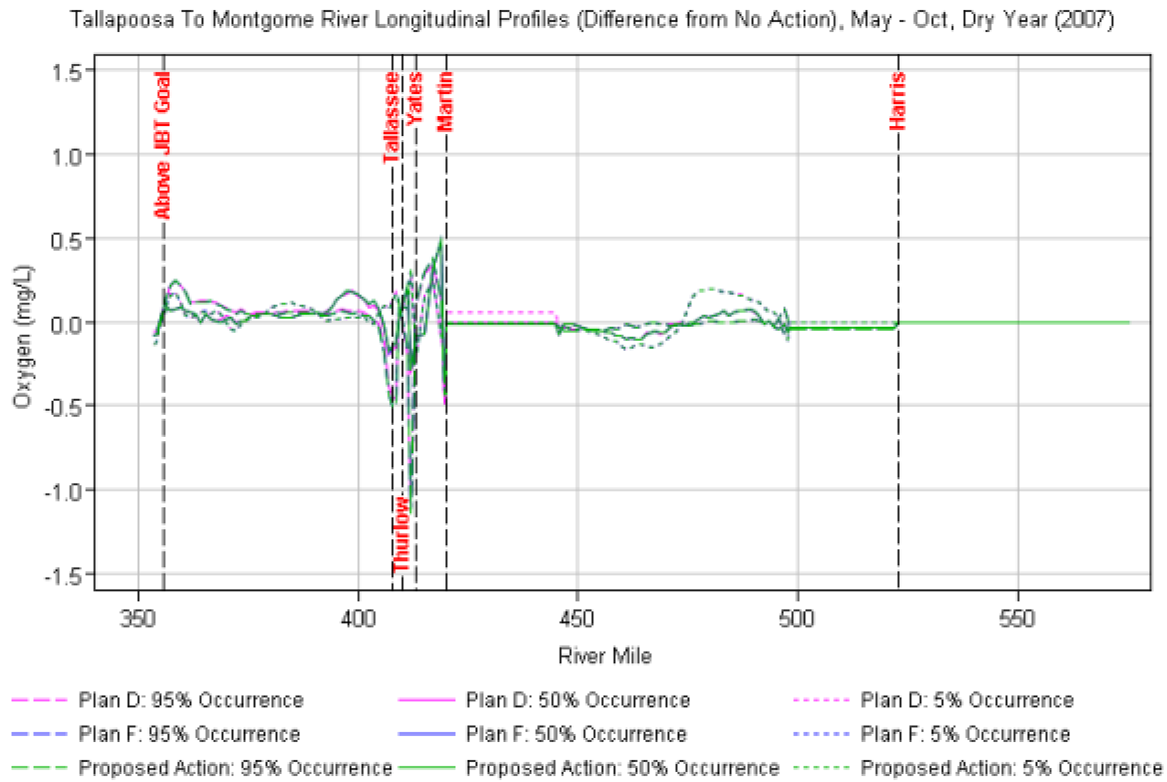


Figure 2.1-12 Tallapoosa River oxygen longitudinal profile for May to October in a representative dry-weather year (2007).

2.1.2 Total number of instantaneous "measurements" less than 4.0 mg/L

HEC5Q doesn't have the ability to simulate instantaneous DO. The river profile simulations suggest that DO values less than 4 mg/L are only expected at several tailrace locations (as illustrated in Figures 2.1-1 through 2.1-5).

2.1.3 Monthly exceedence figures and box plots with outliers for water temperature

Monthly exceedence figures for water temperature were not generated. The operational changes in the Proposed Action Alternative would be expected to affect water temperature along reaches of the ACT Basin where changes in DO were predicted. The largest fluctuations in water temperature were predicted at the confluence of the Coosa and Tallapoosa Rivers into the Alabama River. Along this reach the Proposed Action Alternative would be expected to increase median water temperatures by more than 1.8 °F (1°C) in a representative dry year (Figure 2.1-13).

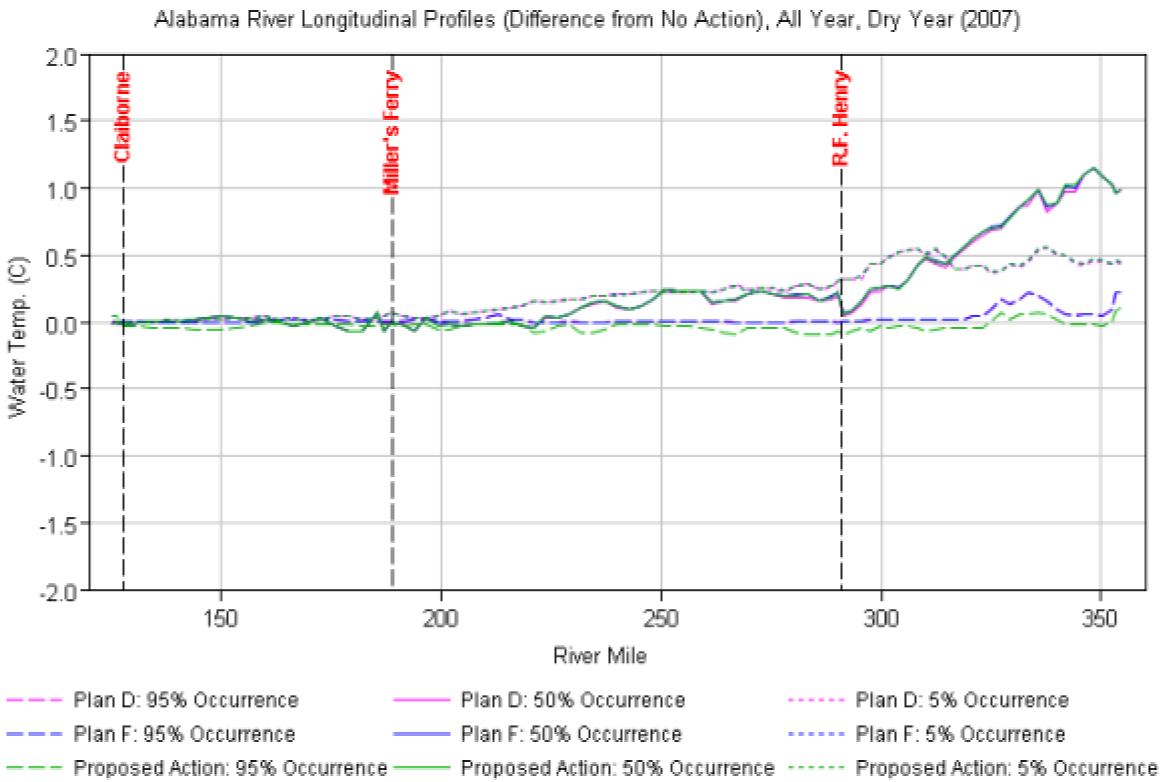


Figure 2.1-13 Alabama River longitudinal profile of water temperature in a representative dry-weather year (2007).

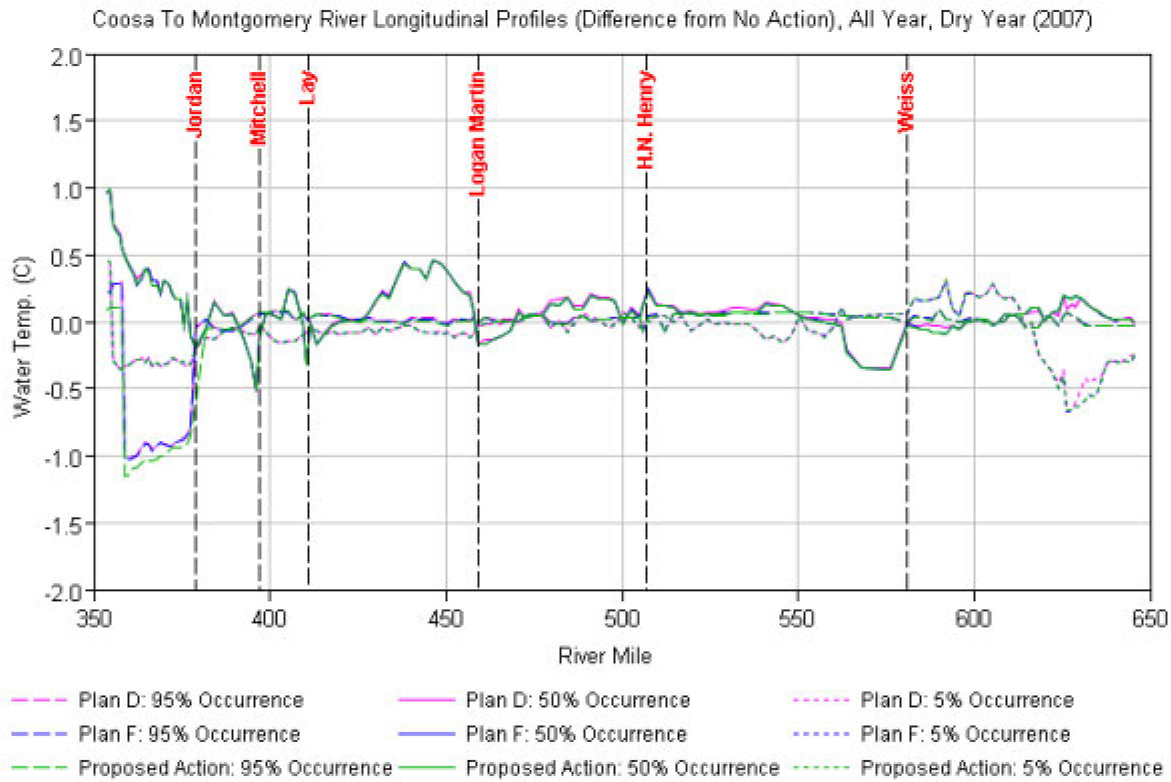


Figure 2.1-14 Coosa River water temperature longitudinal profile for a representative dry-weather year (2007).

The changes in modeled water temperature from the No Action Alternative have the greatest variation during periods when drought operations are likely to occur. However, the range of water temperatures predicted by the model as a change between various alternatives and the No Action Alternative would not be expected to be as great under observed conditions (Figure 2.1-14). APC operates Jordan Dam and Lake to ensure minimum flows (2,000 cfs) for protected species. The Corps HEC-ResSim modeled flows were less than what would actually be released during periods of drought. Therefore, as previously stated, water temperatures would not be expected to decrease as much as 1.8 °F (1 °C).

Little change in water temperature would be expected on the Alabama River over longer periods and when drought conditions have not triggered as seen in Figure 2.1-15. The Alabama River does not have reservoirs with storage but, instead, is dominated by reservoirs with run-of-river operations. Generally storage reservoirs have greater fluctuations in downstream water temperature.

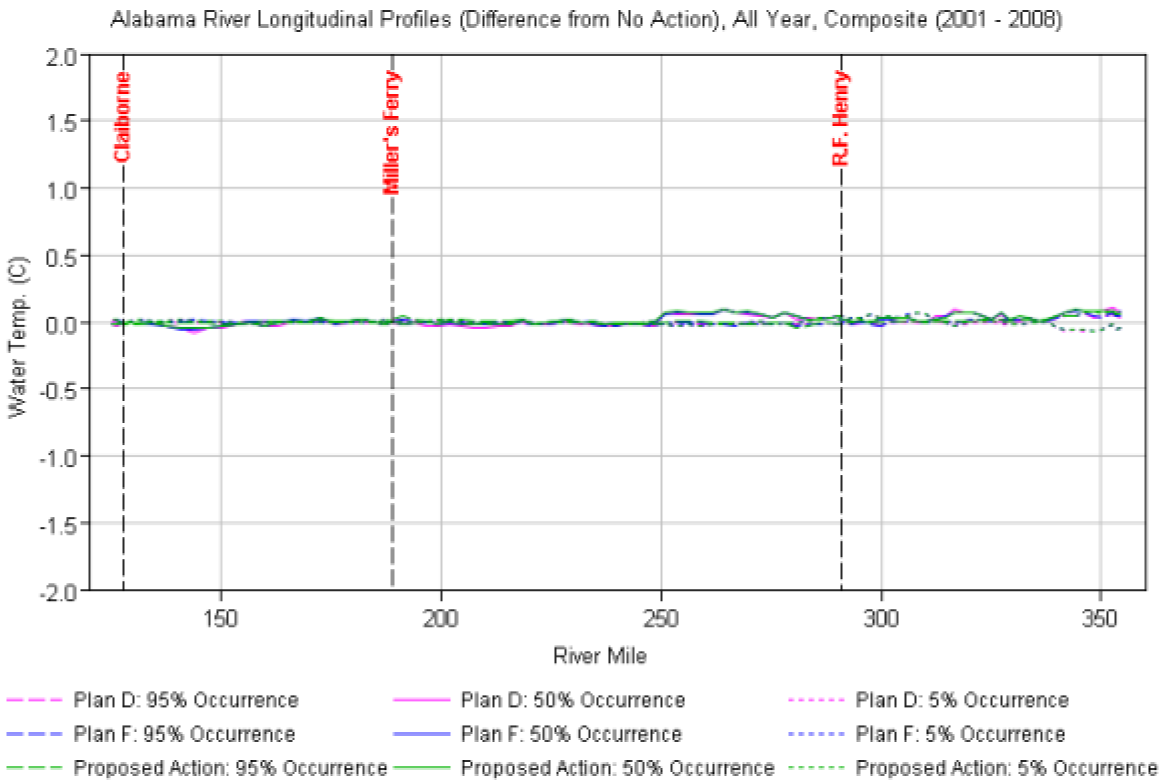


Figure 2.1-15 Alabama River water temperature longitudinal profile for the modeled period (2001–2008).

Water temperature fluctuations downstream of storage reservoirs would be expected directly downstream of Carters Lake. Water temperatures downstream of Carters Lake would be expected to decrease by around 0.7 °F (0.4 °C) and 1.5 °F (0.7 °C) as seen in Figures 2.1-16 and 2.1-17 respectively.

Median water temperatures downstream of the confluence of the Coosawattee and Oostanaula Rivers would be expected to increase by as much as 0.7 °F (0.4 °C) in dry-weather conditions (Figure 2.1-17). The health of aquatic species along the reach is a concern for stakeholders. Looking more closely at periods critical to aquatic species, when water temperatures are greatest, little to no change was modeled on the Oostanaula River (Figure 2.1-16). A decrease in water temperature downstream of Carters Lake during the growing season would likely benefit species. Changes in water temperature in the Coosawattee River would be expected to have negligible effects.

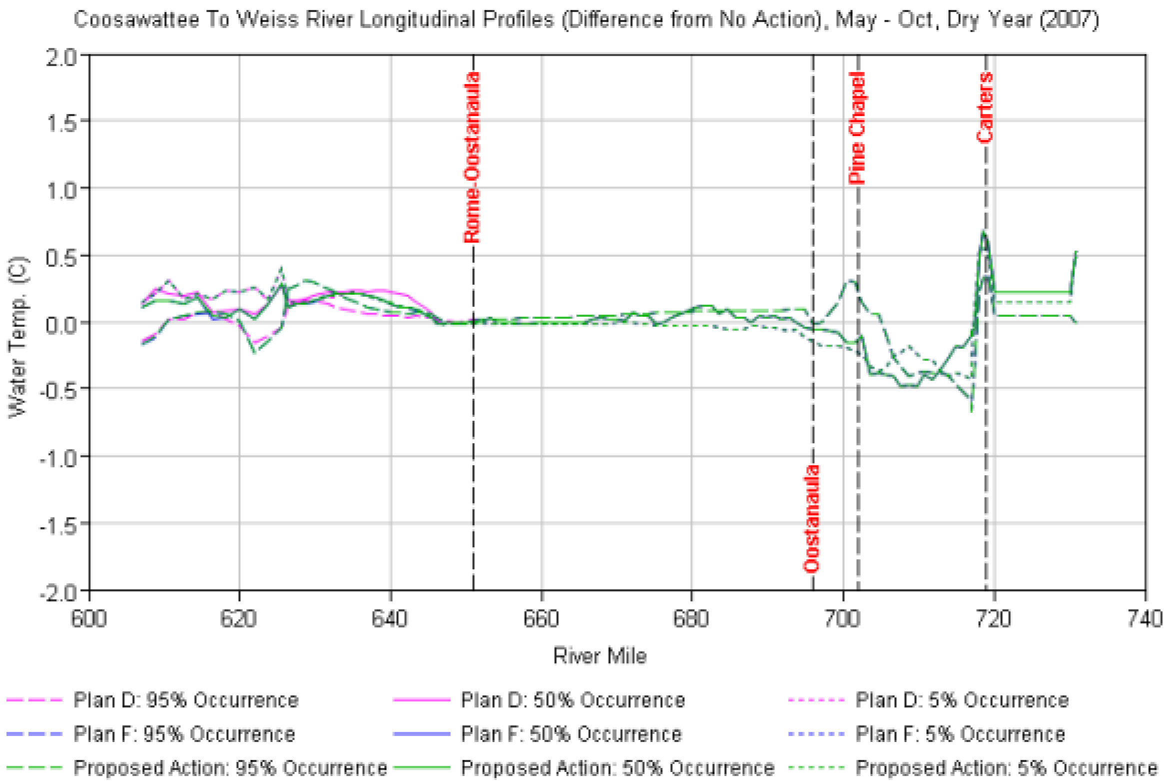


Figure 2.1-16 Water temperature longitudinal profile for a representative dry-weather year during the growing season from May through October (2007) from Carters Lake downstream to Weiss Lake.

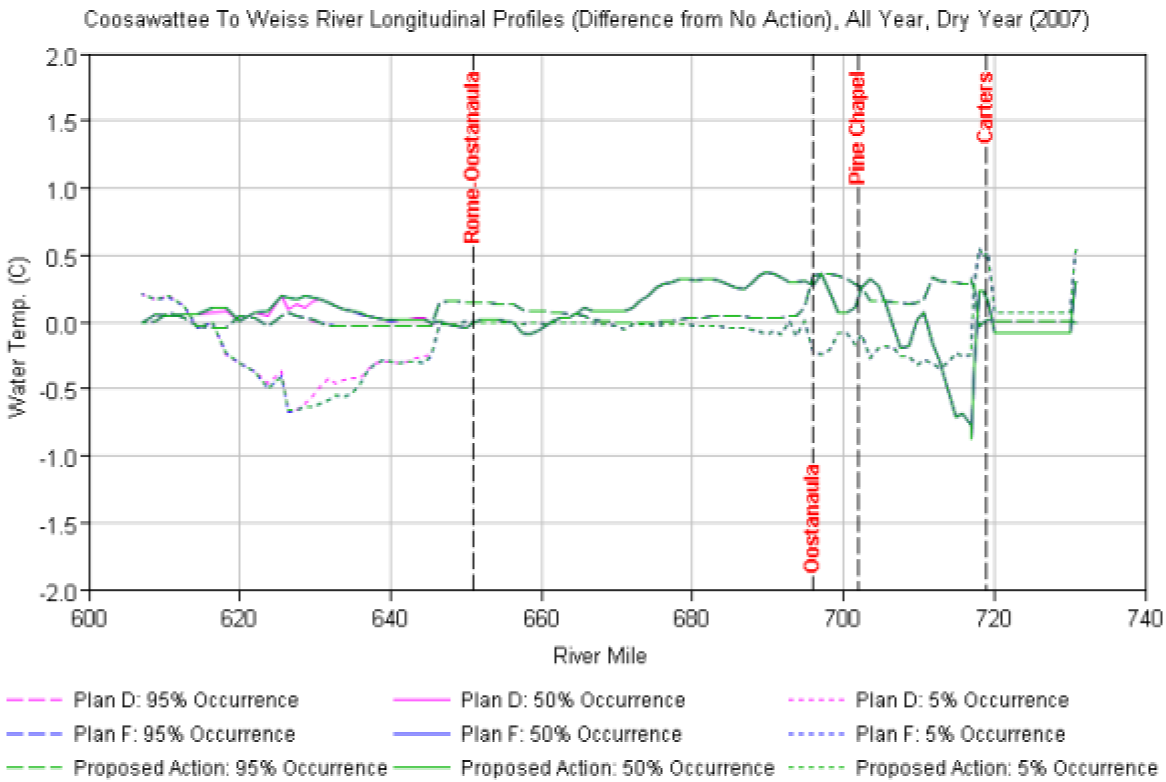


Figure 2.1-17 Water temperature longitudinal profile for a representative dry-weather year (2007) from Carters Lake downstream to Weiss Lake.

Similar to conditions downstream of Carters Lake, median water temperatures downstream of Lake Allatoona would be expected to decrease in dry years (Figure 2.1-18). A decrease in water temperature downstream of Lake Allatoona during the growing season in dry weather conditions would likely benefit aquatic species.

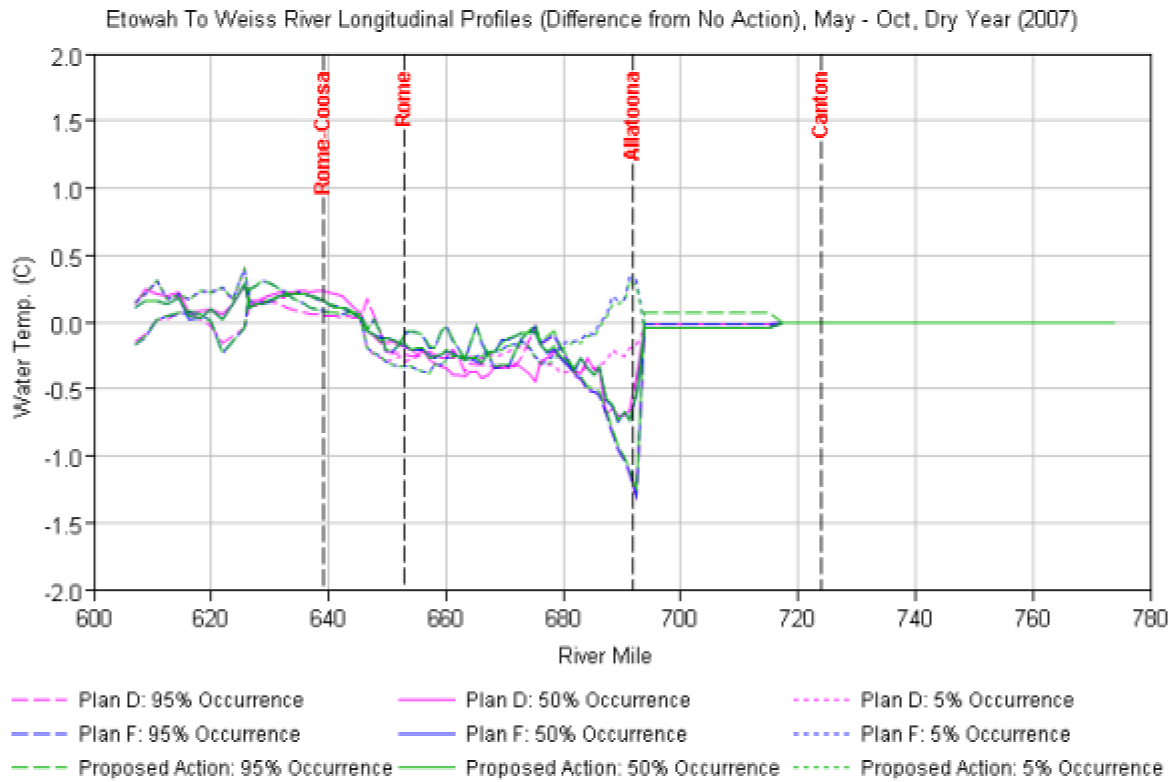


Figure 2.1-18 Etowah River water temperature longitudinal profile May through October for a representative dry-weather year (2007).

In the Tallapoosa River, over the modeled period, little change in water temperature would be expected (Figure 2.1-19). In reaches downstream of Lake Martin, water temperatures would be expected to decrease.

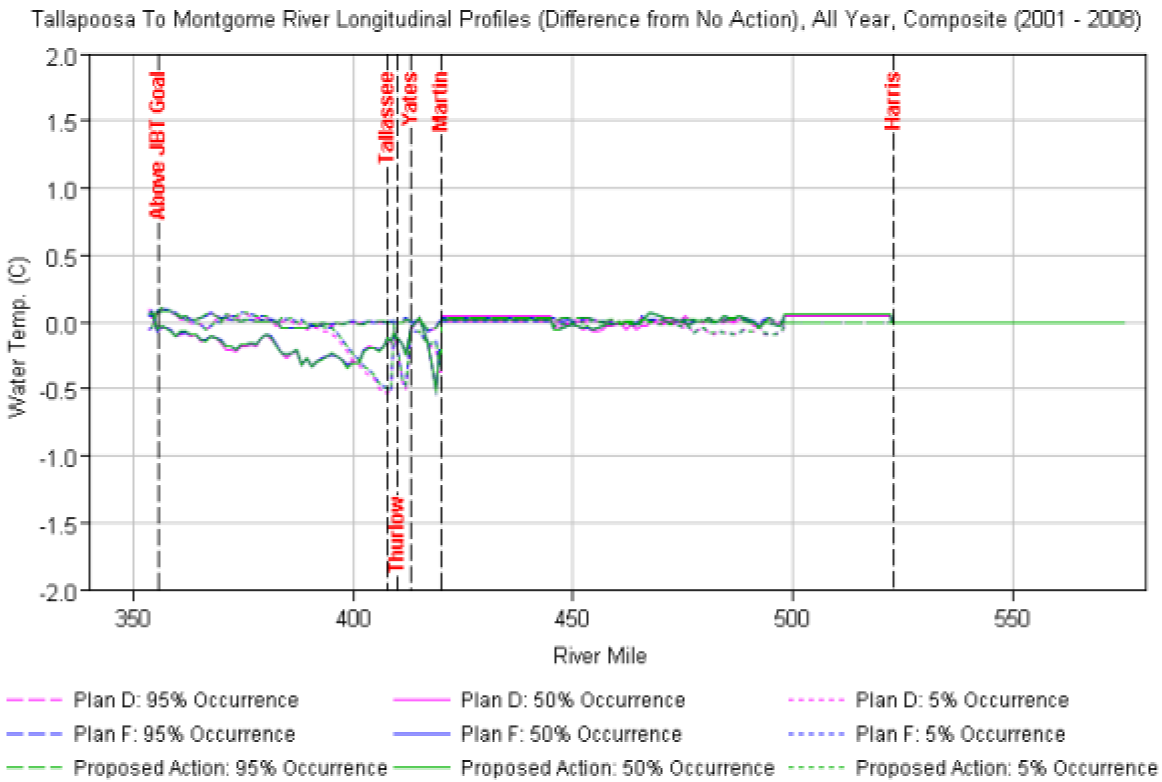


Figure 2.1-19 Tallapoosa River water temperature longitudinal profile for the modeled period (2001-2008).

2.1.4 Average stream percent wastewater

Figures 2.1-20 through 2.1-24 illustrate the percent of wastewater instream at various points in the ACT Basin for a period of low stream flow. From these plots it is clear that wastewater makes up less than 10 percent of the total flow in most cases. A ten mile reach downstream of Rome, Georgia and upstream of Weiss Lake may have a greater percentage of wastewater as illustrated in Figure 2.1-22.

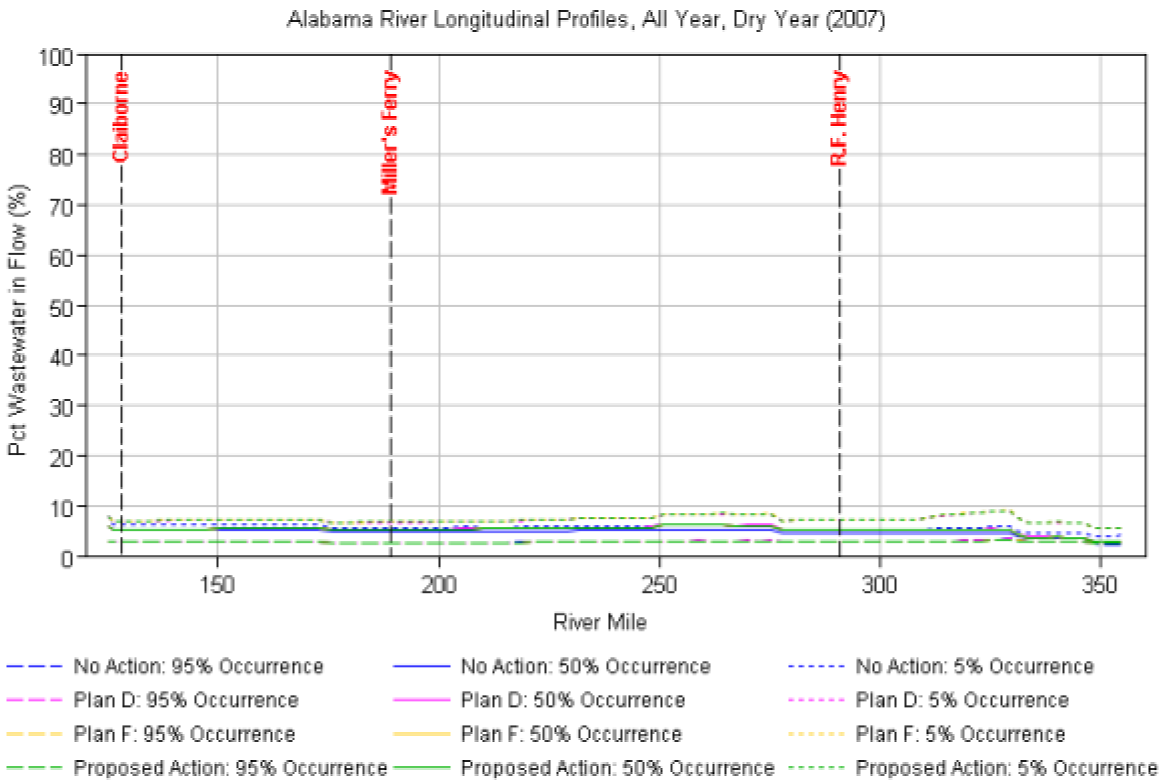


Figure 2.1-20 Alabama River longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

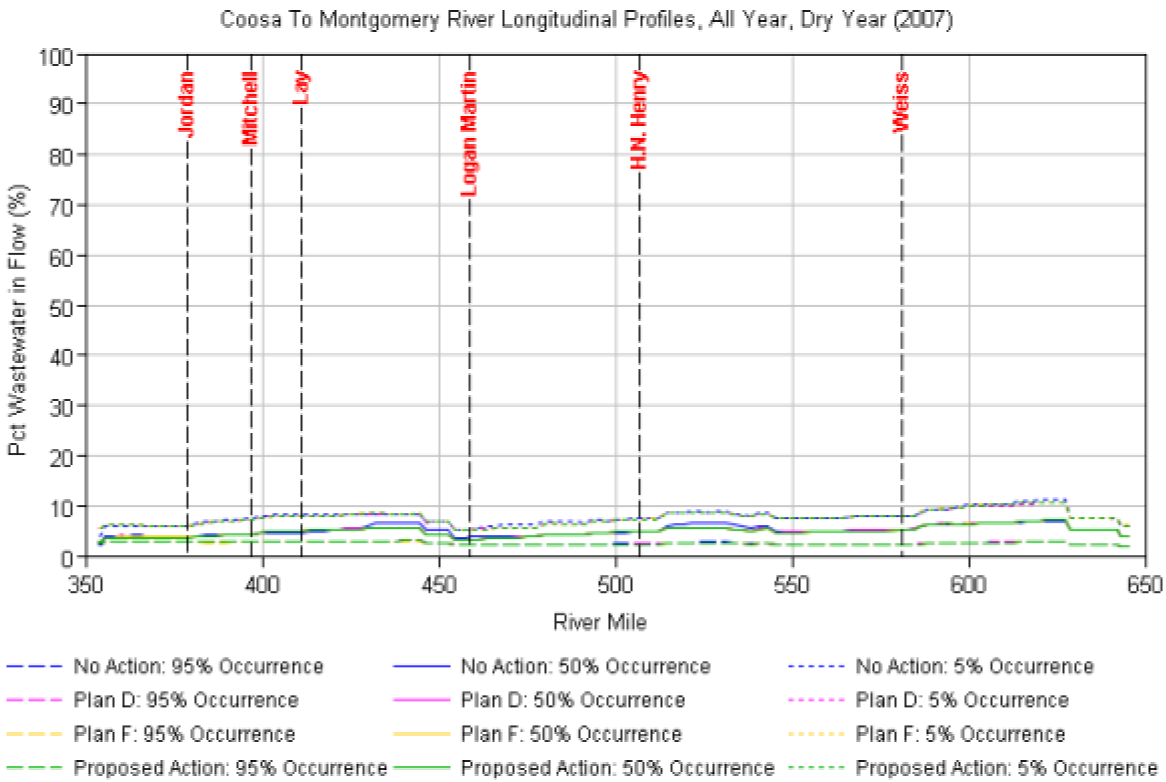


Figure 2.1-21 Coosa River longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

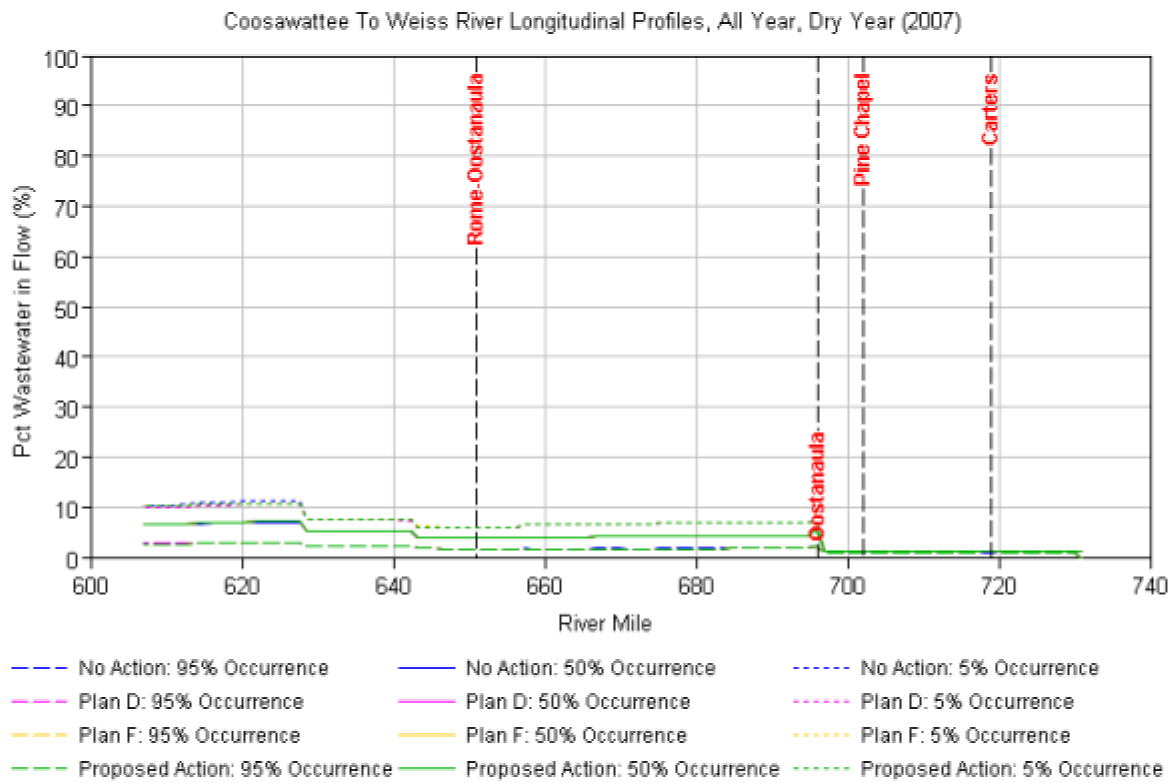


Figure 2.1-22 Coosa, Coosawattee, and Oostanaula rivers longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

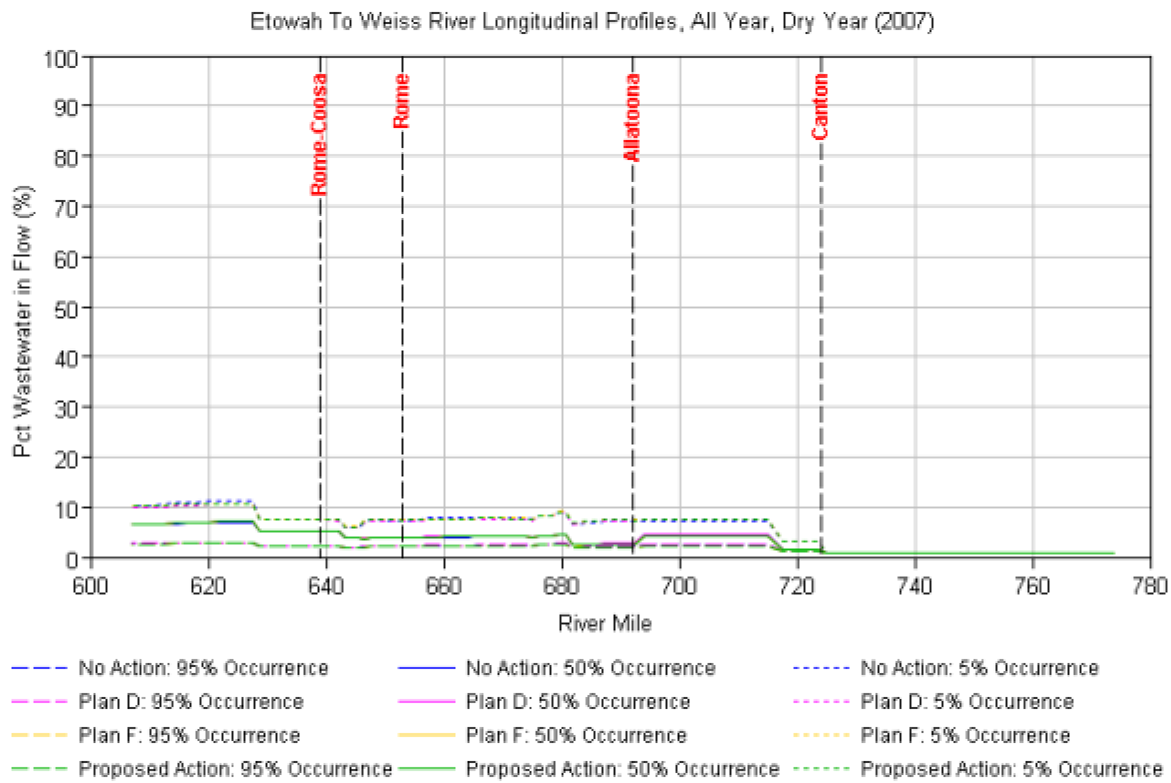


Figure 2.1-23 Etowah and Coosa rivers longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

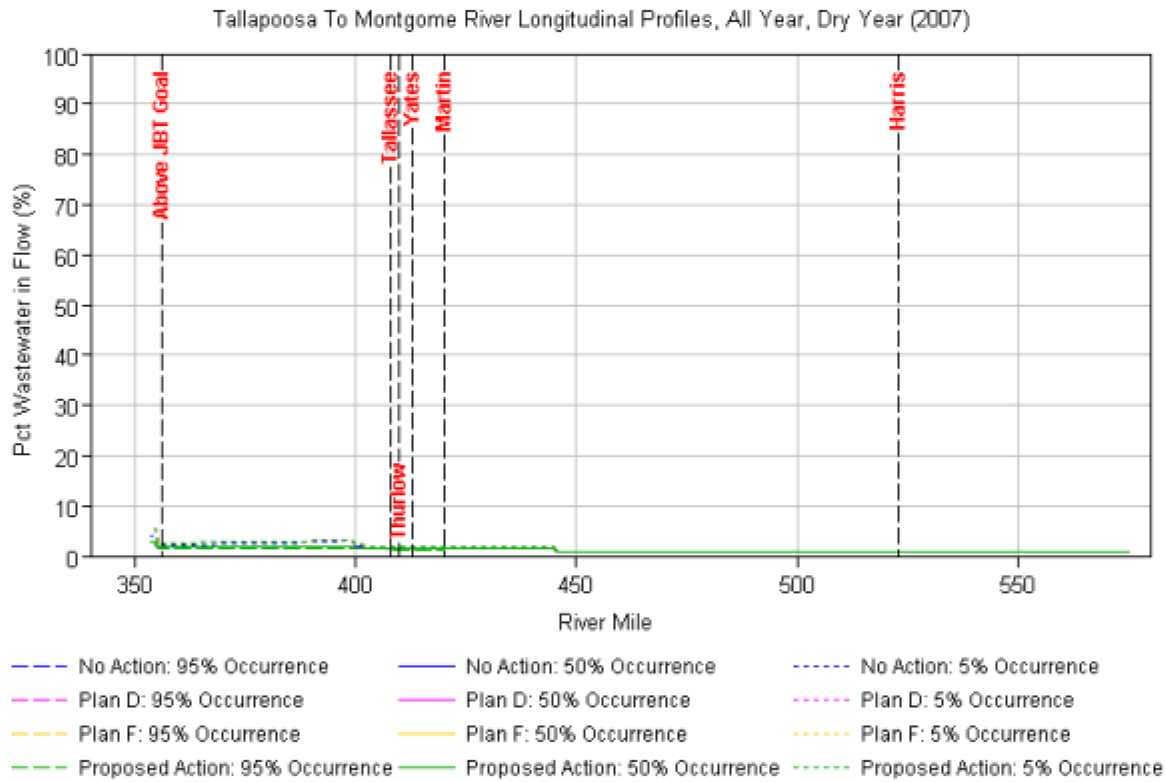


Figure 2.1-24 Tallapoosa River longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

2.2 Protection and enhancement of remaining free-flowing river habitats.

Identification and mapping of remaining free-flowing river habitats is generally beyond the scope of the current water control manual update. While the need is recognized, it is not a part of or affected by the Corps' effort to refine its operations to meet current conditions. The discussion that follows provides information that the Corps does have relevant to sediment transport, sedimentation, erosion and substrate characterization within our reservoirs.

The update of the ACT water control manual and plans focused on the operations of Corps reservoirs; therefore, it is most appropriate to focus on sediment transported by rivers rather than inputs from overland sources. However, comments are included where information was found that links land use change with an apparent effect on sediment loads. In general, the quantity and size of sediment transported by rivers is related to the size and frequency of dams in the river system. Impoundments behind dams serve as sediment traps where coarse bed material particles, typically sand and larger, settle in the lake headwaters where entering flows are slowed. Fine particles, typically silts and clays, can remain in suspension and pass through the lake downstream. Large impoundments typically trap most of

the sediment load retaining all the sand and coarser particles plus much of the silt- and clay-sized particles. Smaller, run-of-the-river impoundments tend to pass all sizes of suspended particles during low to moderate flows and coarser bed material particles during high flows. The impact of the impoundments on river form is that the upstream channels can aggrade sediment and undergo an increase in bed elevation, thus reducing the channel gradient. Below a dam the river typically becomes starved for sediment. The channel downstream of a dam might or might not respond to the reduction in sediment load. The channel response depends on how resistant to erosion the channel bed and banks are and how quickly sediment is replenished from downstream tributaries and upland erosion sources. A typical response for channels, with bed and banks composed of easily eroded sands, silts, or soft clays, is for the bed to degrade to a reduced elevation; the channel might also widen through bank erosion.

The four largest impoundments in the system—Lake Martin, Lake Allatoona, Carters Lake, and R.L. Harris Lake—act as sediment traps, retaining most of the sand and larger bed material. Lake Martin accounts for 31 percent of the storage volume in the basin. Lake Allatoona is next largest, with 13 percent, followed by Carters Lake and R.L. Harris Lake, each with 8 percent. Shoaling in Lake Martin is not considered to be a problem because of the huge volume of storage available. A summary of the 2000 Lake Allatoona sedimentation study is included in Section 2.2.2.7.

2.2.1 Tailwater Degradation

Tailwater degradation is the lowering of the river bed elevation immediately downstream of a dam. Three factors drive the occurrence and rate of tailwater degradation: a ready supply of sediment from upstream, erodibility of the bed material, and sufficient flow energy to transport the bed material. After a dam's construction, a large portion of the sediment (as much as 90 percent for large reservoirs) often becomes trapped in the lake above the dam. Flow below the dam, having lost its sediment load to the lake, now has excess capacity to transport sediment. If the bed and bank materials below the dam are composed primarily of erodible sands, silts, and clays, tailwater degradation occurs until either the gradient of the river is sufficiently reduced to dissipate the flow energy, or the bed erodes to a more durable material such as bedrock. A cursory investigation of the tailwater degradation below the ACT projects was made using available data.

2.2.1.1 Claiborne Lake

On the ACT system, the most downstream dam is Claiborne. The tailwater reach extends approximately 72.5 mi downstream to the mouth of the Tombigbee River. Construction on the project began in May 1965 and was completed in September 1976. The slope of the river below the dam is approximately 0.06 ft/mi. The pool has little storage, and it is considered a run-of-the-river project.

Flow and gage measurements have been made below the dam since 1980. They were collected and analyzed to evaluate the degradation below the dam. The tailwater is tidally influenced, and there is a noticeable hysteresis effect in the tailwater rating curve. However, some trends are noticeable. The data were used, along with the rating curves applicable during the time of the measurements, to relate the observed gage heights and flows to a theoretical flow of 10,000 cfs (Figure 2.2-1).

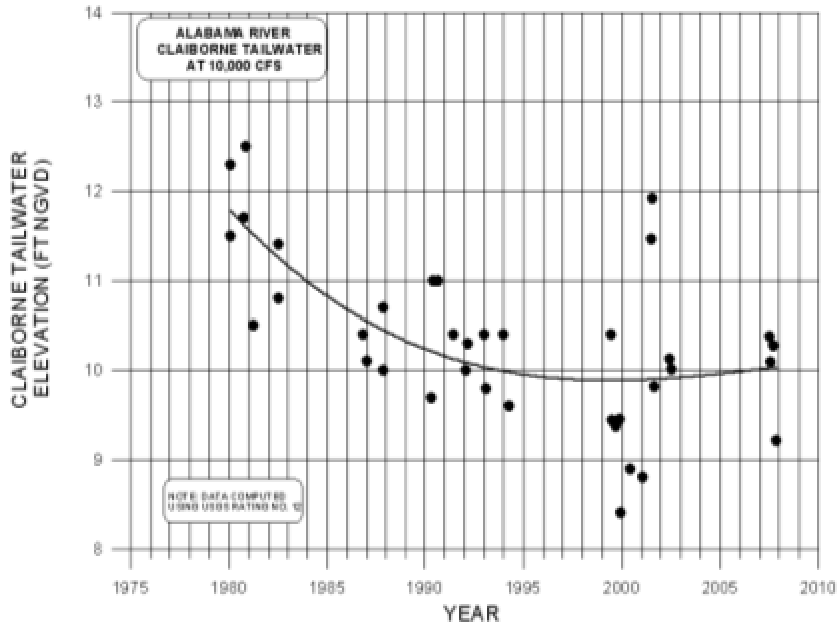


Figure 2.2-1 Claiborne Lake tailwater degradation.

A data gap exists between 1995 and 1999. In addition, the measurements after 2002 were all taken during extremely low flow and, thus, are less reliable because they are farther from the 10,000-cfs target. However, the data show a definite trend toward degradation from 1980 to 2000, perhaps caused by deepening and widening of the channel below the dam. From 2000 to 2007, the channel seems to be more stabilized. USGS has discontinued the rating curve at the site because of the variance in the gage caused by lockages, tides, and power generation at Millers Ferry Lock and Dam upstream.

2.2.1.2 Millers Ferry Lock and Dam and William "Bill" Dannelly Lake

Rating curve data are not available for Millers Ferry Lock and Dam tailwater.

2.2.1.3 Robert F. Henry Lock and Dam and R.E. "Bob" Woodruff Lake

Tailwater rating curve data are not available for Robert F. Henry Lock and Dam; however, historical sedimentation range surveys for the upper end of the Millers Ferry Lock and Dam pool (William "Bill" Dannelly Lake) were assessed for changes in the channel form. At range 30A, both widening and degradation have taken place since 1973 (Figure 2.2-2). However, the data show a drop in both widening and degredation rates since 1982. A trend plot of the sedimentation rates along the entire William "Bill" Dannelly Lake shows, for ranges 28A and 30A, bed degredation of about 0.5 ft per year from 1973 to 1982, and about 0.2 ft per year from 1980 to 1988 (Figure 2.2-3). For the next several ranges downstream from 28A, the bed has been at nearly a constant elevation. Data below range 20A indicate that the bed has been aggrading by several inches per year; thus, the scour is limited to the reach immediately below Robert F. Henry Lock and Dam.

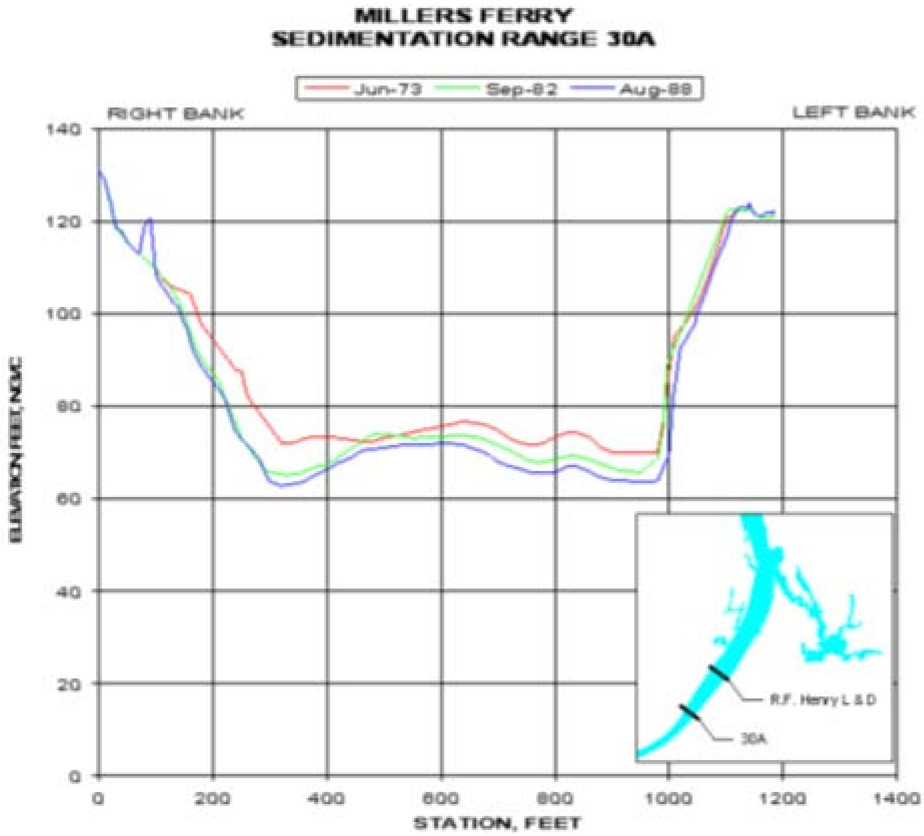


Figure 2.2-2 Tailwater degradation below Robert F. Henry Lock and Dam.

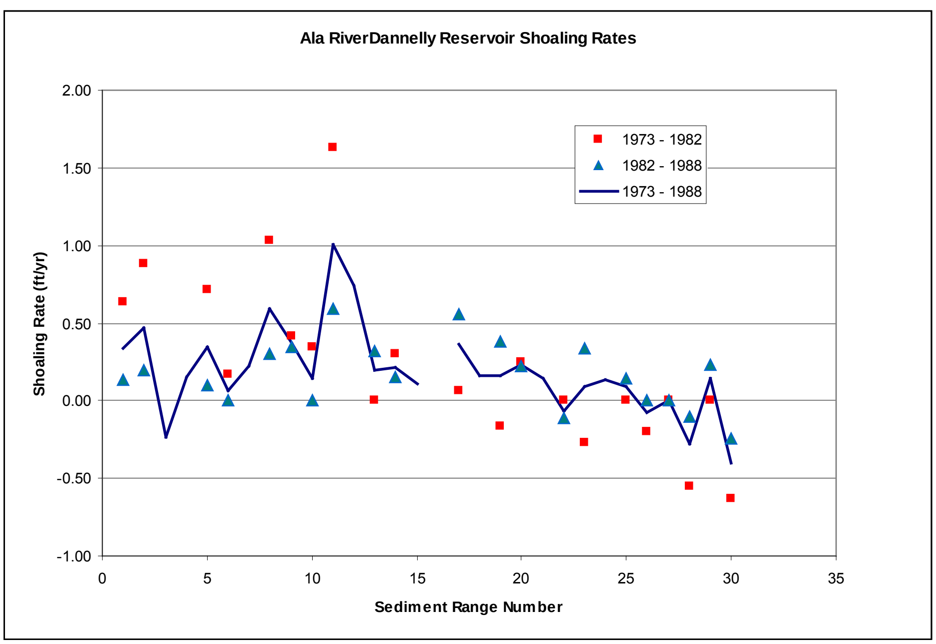


Figure 2.2-3 Shoaling rates for Millers Ferry Lock and Dam Pool, William "Bill" Dannelly Lake.

2.2.1.4 Logan Martin Lake

This APC dam was the second dam built as a part of an APC construction program that further developed the Coosa River in the late 1950s and the 1960s. Construction began in 1960, and operation began in 1964. No observable change has occurred in the tailwater rating curve developed for the project (Figure 2.2-4).

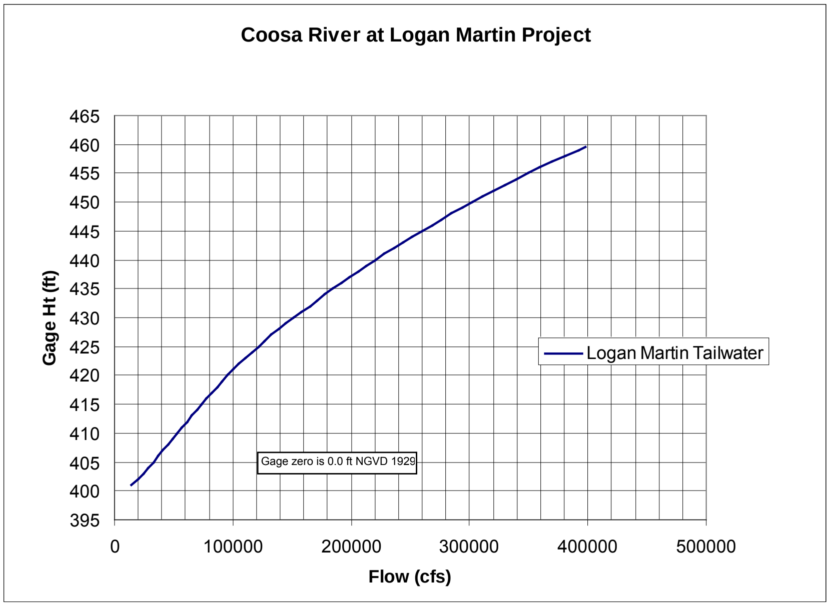


Figure 2.2-4 Logan Martin Lake tailwater rating curve.

2.2.1.5 H. Neely Henry Dam

This APC dam was part of an APC construction program that further developed the Coosa River in the late 1950s and the 1960s. Construction began in 1962, and operation began in 1966. No observable change has occurred in the tailwater rating curve developed for the project (Figure 2.2-5).

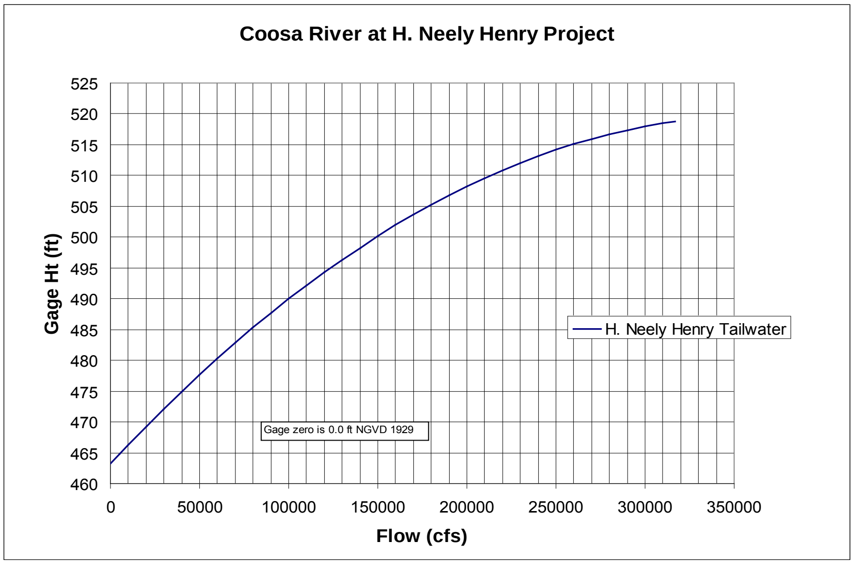


Figure 2.2-5 H. Neely Henry Dam tailwater rating curve.

2.2.1.6 Weiss Lake

This APC dam was part of an APC construction program that further developed the Coosa River in the late 1950s and the 1960s. Construction began in 1958, and operation began in 1961. There is a tailwater rating curve at both the power house and the spillway locations (Figure 2.2-6). No observable change has occurred in either of the tailwater rating curves developed for the project.

Figure 2.2-6 Weiss Lake tailwater rating curves.

2.2.1.7 R.L. Harris Lake

Construction began for this newest project on the Tallapoosa River in 1974, and operation began in 1983. No observable change has occurred in the tailwater rating curve developed for the project (Figure 2.2-7).

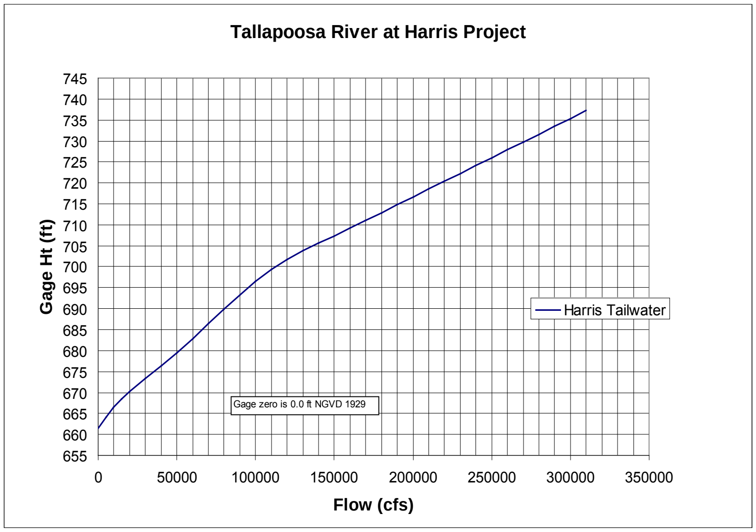


Figure 2.2-7 R.L. Harris Lake tailwater rating curve.

2.2.1.8 Carters Lake

Construction on Carters Lake was started in 1962 and completed in 1977. The USGS gage 0238500, (Coosawattee River at Carters) is at U.S. Hwy 411, just downstream of the Carters Reregulation Dam. Historic rating curve data extending from 1978 to 2008 at this gage were obtained from the USGS. The curves were plotted to determine the degree of movement in the curve over time (Figure 2.2-8).

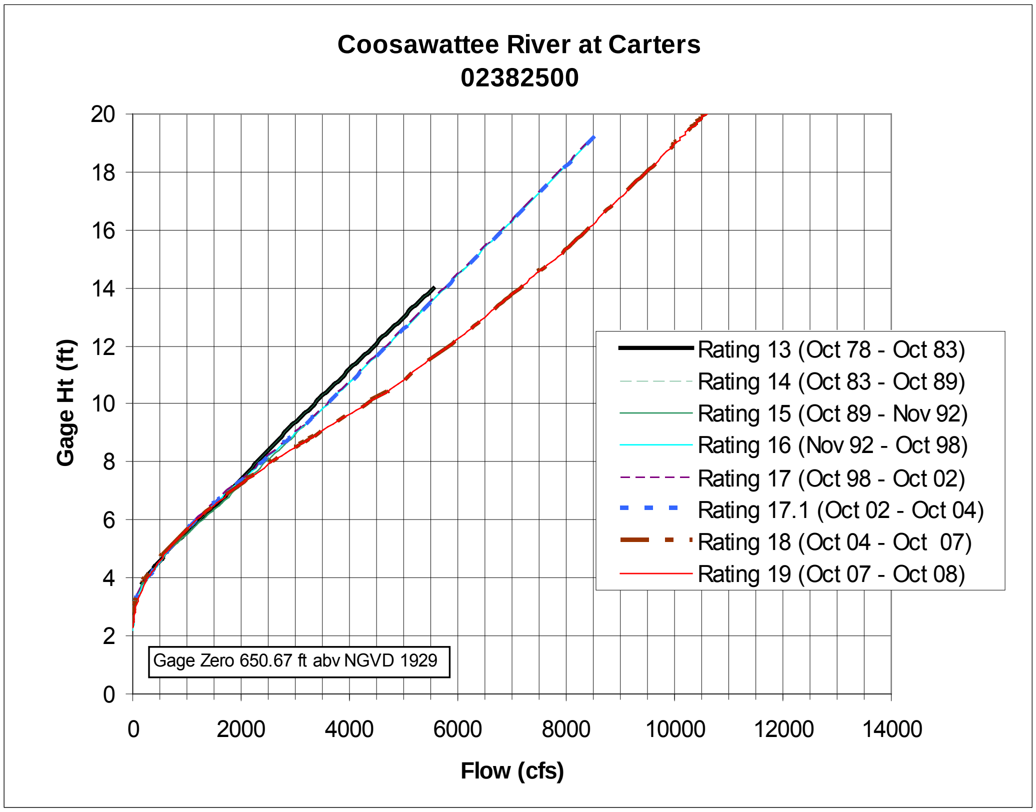


Figure 2.2-8 Carters Lake historic tailwater rating curves.

The curves show an obvious lowering of the tailwater of approximately 2–2.5 ft at flows above 3,000 cfs. However, the low flows do not appear to have been affected (Figure 2.2-9).

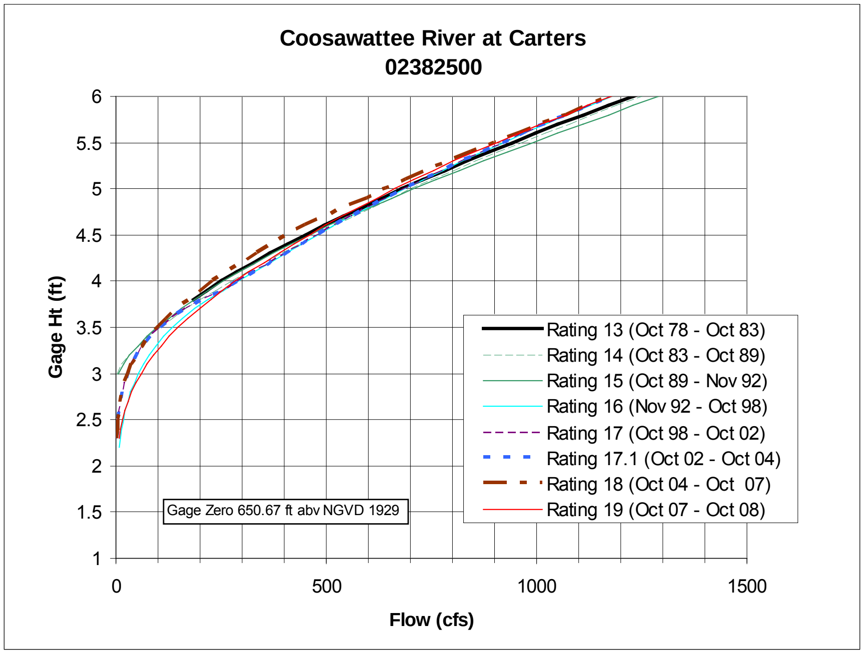


Figure 2.2-9 Carters Lake low-flow tailwater rating curves.

The lower part of the curve indicates that the channel has not degraded over time. The change in the upper part of the curve might have been because of the lack of high-flow data during the early years, and as more storms were observed, that part of the curve was well defined. Another possibility is that overbank clearing downstream might have occurred, or modifications to Hwy 411. The significant point is that the channel does not appear to have degraded. The presence of rock in the channel offers a reasonable and probable explanation for the lack of degradation.

2.2.1.9 Lake Allatoona

Construction on the dam was completed in 1950. The USGS gage 0239400, (Etowah River at Lake Allatoona, above Cartersville, Georgia) is 0.8 mi downstream from Lake Allatoona. Historic rating curve data extending from 1979 to 2008 at this gage were obtained from the USGS. The curves were plotted to determine the degree of movement in the curve over time (Figure 2.2-10). The curves show little difference over the period of record. The lower part of the curve shows no degradation over the 1979–2008 period, but degradation might have occurred during construction of the dam (Figure 2.2-11).

2.2.2 Impact of Existing Operations on River Channel Stability

A specific gage analysis was conducted at several USGS stream gaging stations in the basin to better understand the impact of dam operations on the stability of the rivers.

A cursory investigation of the condition of the pools was made to see if shoaling is a significant issue. Historic sediment ranges were evaluated where possible and other available data were used to estimate the appropriateness of using the existing area-capacity relationships in the modeling efforts.

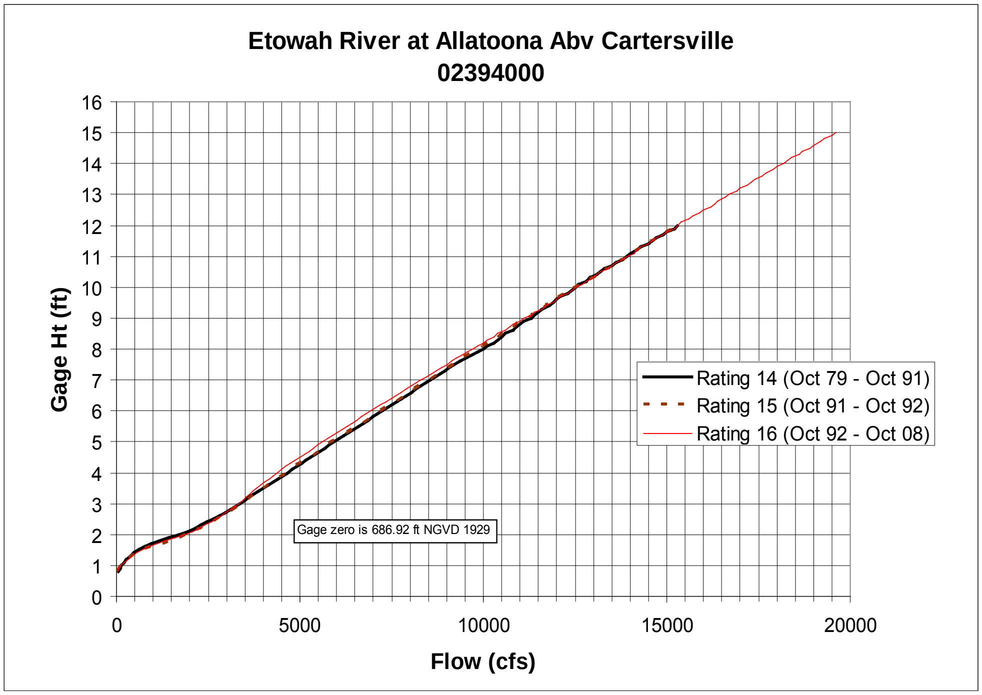


Figure 2.2-10 Lake Allatoona tailwater rating curve.

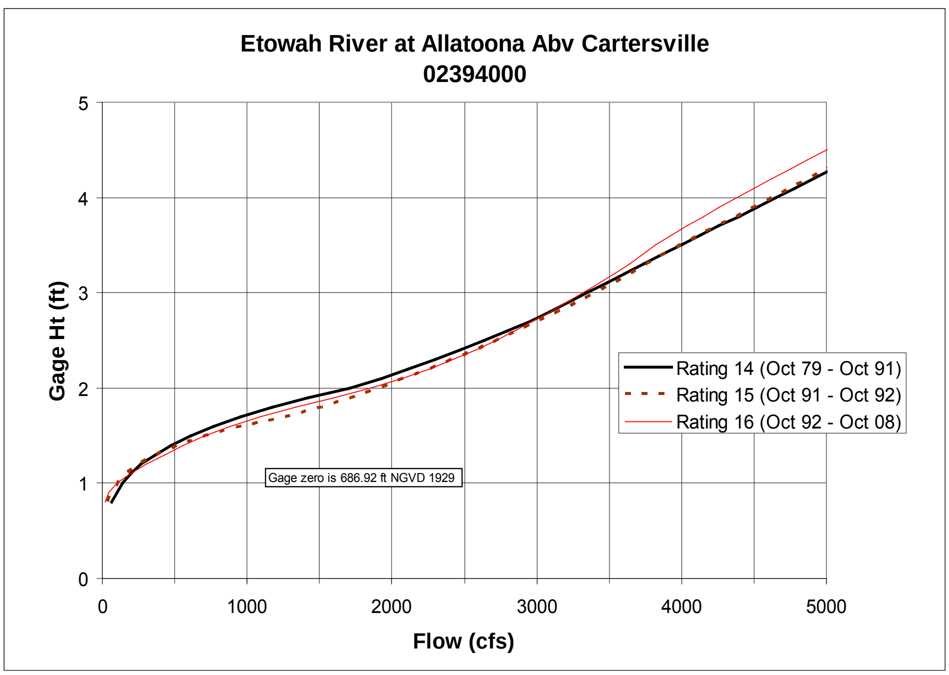


Figure 2.2-11 Lake Allatoona tailwater rating curve.

2.2.2.1 Claiborne Lake

Storage volume of the lake is listed at 96,360 ac-ft at elevation 35 ft. Sediment range surveys of the Claiborne Lake were made initially in 1982 and updated again in 2009. However, the pool has a relatively small amount of storage, and it is a run-of-the-river project. Operation of the project is not affected by the

storage lost to shoaling in the lake, and it is reasonable to assume that the existing area/capacity curve is adequate to use in modeling the system and to include in the present WCM update.

A table of the shoaling locations and total dredging amounts since 1981 is shown below (Table 2.2-1). The data show that the location of the greatest dredging/shoaling is at the Millers Ferry Lock and Dam lower approach at RM 133, although the frequency of dredging is greatest at the Claiborne Lake upper approach, with consecutive periods between dredging events of 2, 6, 5, and 12 years since 1985.

2.2.2.2 Millers Ferry Lock and Dam and William "Bill" Dannelly Lake

Storage volume of the lake is listed at 346,250 ac-ft at elevation 80.8 ft. Surveys of the 30 sediment ranges in William "Bill" Dannelly Lake were made initially in 1973, 1982, and again in 1988 (Figure 2.2-12). The surveys were repeated in 2009.

The sections show some shoaling in the lower part of the reservoir between 1973 and 1982, at a reduced rate between 1982 and 1988. All 30 ranges were compared using approximate methods on the basis of the channel elevation change for the two periods. Data were not available for all the sections in the 1982 survey, but rates were computed for all the available data (Figure 2.2-12).

Table 2.2-1
Claiborne Lake dredging 1981–2007

Mile	Bar name	Period	Dredged	Cubic yards
72.5	Claiborne Lock	05/28/85–05/31/85	34+45 to 41+95	8,706
	Upper Approach	05/24/87–05/26/87	NA	12,044
		07/22/93–07/23/93	0+00 to 4+50	9,451*
		06/05/95–06/06/95	66+50 to 64+00	8,730*
		10/15/07–10/16/07	2+06 to 7+37	8,120
107.9	Wilcox (Bar 107)	10/07/92–10/10/92	22+00 to 36+40	24,313
		09/21/97–09/25/97	44+83 to 30+60	28,263
		10/19/07–10/20/07	32+17 to 43+78	4,237
117.5	Holly Ferry	10/05/92–10/07/92	5+00 to 15+00	15,977
122.7	Walnut Bluff	09/25/92–10/05/92	1+00 to 14+50	38,529
		10/20/07–10/23/07	3+28 to 14+28	25,076
133.0	Millers Ferry Lock and Dam	08/15/90–08/25/90	21+10 to 24+60	86,710
	Lower Approach		33+90 to 55+23	
		08/17/92–08/23/92	22+00 to 25+00	1,242
		10/23/07–10/23/07	54+00 to 55+59	735

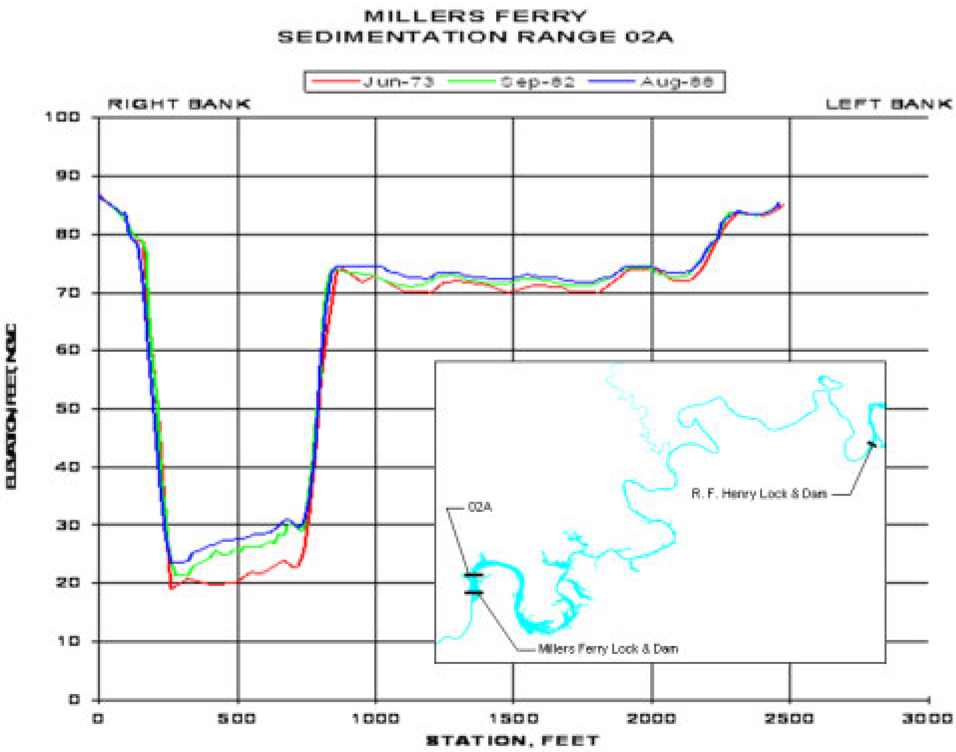


Figure 2.2-12 Cross section of Millers Ferry Lock and Dam Pool, William “Bill” Dannelly Lake, sedimentation range 02A.

For the 1973 to the 1982 period, shoaling and scour rate were the greatest, ranging from shoaling 1.6 ft/yr near Range 11, in the lower part of the lake to scouring 0.6 ft/yr at range 30 just below Robert F. Henry Lock and Dam. The 1982–1988 period shows that some shoaling occurred during that period over much of the lake with only minor scour in the upper lake reach. The overall trend from 1973 to 1988 indicates that, in general, scour has taken place immediately below Robert F. Henry Lock and Dam at range 30 downstream to about range 26. Sediment deposition has taken place from range 25 downstream to range 01, immediately above Millers Ferry Lock and Dam, at a rate of about 0.1 ft to 1.0 ft per year.

Geographic information system (GIS) data for the channel above Millers Ferry Lock and Dam were obtained in February 2009. The data can be used to develop a new area/capacity curve but would require additional hydrographic surveys to extend the limits to the top of banks. An update of the area/capacity curve would be helpful, but using the present curve for the present modeling effort is not unreasonable.

2.2.2.3 Robert F. Henry Lock and Dam and R.E. “Bob” Woodruff Lake

Storage volume of the lake is listed at 234,200 ac-ft at elevation 125 ft. Surveys of the R.E. “Bob” Woodruff Lake were made initially in 1974. The surveys were repeated in 1982 and 1988. They were re-surveyed again in 2009. Throughout the entire pool from 1974 to 1988, minor amounts of both shoaling and bank erosion occurred with the highest rates occurring between 1974 and 1982. The shoaling and bank erosion shown in Figure 2.2-13 is representative for all the sedimentation ranges in the pool.

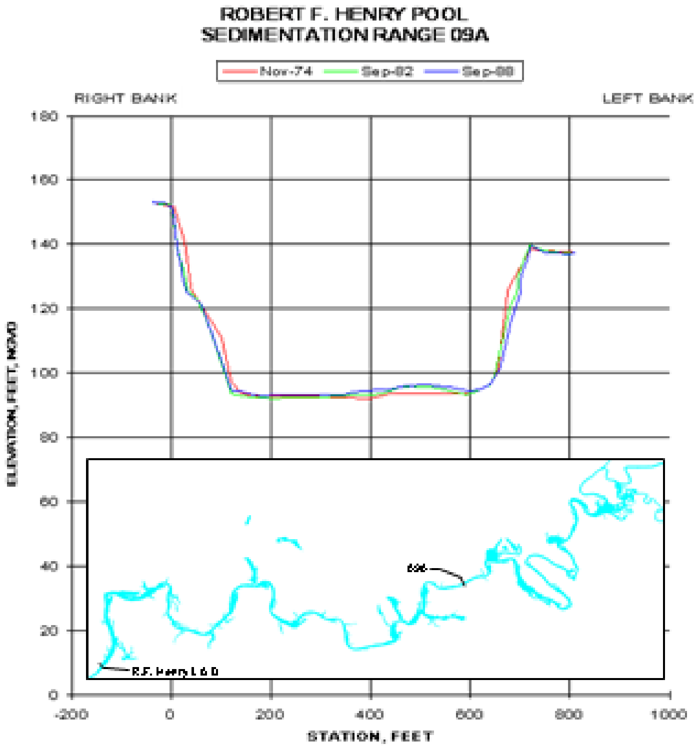


Figure 2.2-13 Cross section of Robert F. Henry Lock and Dam and R.E. "Bob" Woodruff Lake, sedimentation range 09A.

The sedimentation range surveys indicate that the overall change in storage is small, thus operation of the project would not be affected by the shoaling shown in the lake, and it is reasonable to assume that the existing area/capacity curve is adequate to use in modeling of the system and to include in the present WCM update.

2.2.2.4 Logan Martin Lake

Logan Martin Lake is in the Alabama counties of Calhoun, St. Clair, and Talladega. The lake has a surface area of 15,263 ac and 275 mi of shoreline at a normal pool elevation of 465 ft. Siltation studies by APC have been limited to evaluating the recreational impact of siltation at the mouths of tributaries. Studies indicate that shoaling over the years is reduced because of increased vegetation in the basin. Erosion studies indicate that sheet and rill erosion on cropland for 1982 was approximately 7.2 tons/ac/yr in Alabama. Sheet and rill erosion on cropland for 1997 was approximately 6.0 tons/ac/yr in Alabama. Cropland acreages were obtained from the National Agricultural Statistics Service (NASS) Web site for the years 1970 and 2001. Assuming no improvement in erosion control (worst case) from 1970 to 1982 and no improvement from 1997 to 2001, the percent change in erosion from 1970 to 2001 was derived (Table 2.2-2). The impact of the erosion on the Area/Capacity relationship has not been determined.

Table 2.2-2
Erosion 1970–1982 for counties in the ACT Basin

County	Year	Acres cultivated	% Change	Erosion rate	Tons soil eroded	% Change
Calhoun	1970	14,210		7.2	102,312	
	2001	5,518	–61.2%	6.0	33,108	–67.6%
Cherokee	1970	40,080		7.2	288,576	
	2001	32,518	–18.9%	6.0	195,108	–32.4%
Etowah	1970	20,200		7.2	145,440	
	2001	6,018	–70.2%	6.0	36,108	–75.2%
St. Clair	1970	4,810		7.2	34,632	
	2001	18	–99.6%	6.0	108	–99.7%
Talladega	1970	28,250		7.2	203,400	
	2001	18,318	–35.2%	6.0	109,908	–45.96%

2.2.2.5 H. Neely Henry Lake

H. Neely Henry Lake is in the Alabama counties of Calhoun, Cherokee, Etowah, and St. Clair. H. Neely Henry Lake has a surface area of 11,235 ac and 339 mi of shoreline at a normal pool elevation of 508 ft. Siltation studies by APC have been limited to evaluating the recreational impact of siltation at the mouths of tributaries. Studies indicate that shoaling over the years is reduced because of increased vegetation in the basin. Erosion studies indicate that sheet and rill erosion on cropland for 1982 was approximately 7.2 tons/ac/yr in Alabama. Sheet and rill erosion on cropland for 1997 was approximately 6.0 tons/ac/yr in Alabama. Cropland acreages were obtained from the NASS Web site for the years 1970 and 2001. Assuming no improvement in erosion control (worst case) from 1970 to 1982 and no improvement from 1997 to 2001, the changes shown in Table 2.2-2, for H. Neely Henry Lake are applicable.

2.2.2.6 Weiss Lake

Weiss Lake is in Cherokee County, Alabama (population 23,988, year 2000) and Floyd County, Georgia (population 90,565, year 2000). The surface area of the reservoir at a normal pool elevation of 564 ft is approximately 30,200 ac with approximately 447 mi of shoreline. Siltation studies by APC have been limited to evaluating the recreational impact of siltation at the mouths of tributaries. Studies indicate that shoaling over the years is reduced because of increased vegetation in the basin. Erosion studies indicate that sheet and rill erosion on cropland for 1982 was approximately 7.2 tons/ac/yr in Alabama. Sheet and rill erosion on cropland for 1997 was approximately 6.0 tons/ac/yr in Alabama. Cropland acreages were obtained from the NASS Web site for the years 1970 and 2001. Assuming no improvement in erosion control (worst case) from 1970 to 1982 and no improvement from 1997 to 2001, the changes shown in Table 2.2-2, for Weiss Lake are applicable.

2.2.2.7 Lake Allatoona

A cursory screening of the need for additional sedimentation range surveys to re-compute the area-capacity curve and of the shoaling tendencies of Lake Allatoona was made in the year 2000 (USACE, Mobile District 2000). That study was deemed adequate to determine the need for further re-survey of sediment ranges or reestablishing the area/capacity curve.

Analysis of the data revealed that sedimentation and scour had occurred in varying amounts throughout the lake. Overall, the analysis revealed consistently light or no sedimentation in the main body of the lake. Most of the high sedimentation occurred in the outermost reaches of the lake. The reaches are primarily high-inflow locations such as stormwater system outlets and at the mouths of tributary streams. As a result, increased sedimentation is most likely occurring on two levels: (1) sediment loads being carried into the lake with the tributary and outlet flows, and (2) increased flow velocities in those areas are actually eroding the channels and depositing the resulting sediment further downstream.

The level of increased sedimentation in the outermost reaches is not surprising because the area surrounding the lake has experienced dramatic development in recent years. Much of the development can be seen in Cobb County, especially along the I-75 corridor, and in Cherokee County between I-75 and I-575. The region has matured into a major part of suburban Atlanta, bringing with it extensive residential and commercial infrastructure.

The study indicates that the shoreline of Lake Allatoona seems to have experienced relatively little sedimentation or scour in the years since its construction. The shoreline appears to be consistent throughout each of the survey data set.

On the basis of the year 2000 study, it is reasonable to assume that the existing area/capacity curve is adequate for ResSim modeling and for continued use in the Lake Allatoona WCM.

2.2.2.8 Carters Lake

Storage volume of Carters Lake is listed at 242,200 ac-ft for inactive storage, 134,900 ac-ft for power storage, and 95,700 ac-ft for flood storage, for a total storage of 472,800 ac-ft at the top of the flood-control pool elevation of 1,099 ft. No post-construction surveys of the pool have been made since the pool was filled because the pool is 300–400 ft deep near the dam, and until recently, surveying equipment adequate to reach these depths was not available. Surveys were conducted in 2009. Modern equipment now exists to adequately survey at the depths required at Carters Lake. The surveys should be obtained and analyzed to decide if an update of the area/capacity curve would be warranted.

2.2.2.9 R.L. Harris Lake

R.L. Harris Lake is in the Alabama counties of Randolph and Clay. The lake has a surface area of 10,661 ac at a normal summer pool elevation of 793 ft. Construction was completed in 1983, and no sedimentation studies have been done on R.L. Harris Lake. However, because of the relatively recent completion date and other erosion/sedimentation data developed for other locations, it is reasonable to assume that the existing area/capacity relationship would be adequate for modeling purposes.

2.3 Aquatic organism passage at dams, particularly in the upstream direction.

Use of locks to aid in fish passage are currently being implemented and evaluated in cooperation with the Service, the Nature Conservancy, Auburn University and others. Other studies to define target species and investigate the feasibility of providing passage at select facilities are important, but beyond the scope of the current effort.

2.4 Temperature effects on species of concern from reservoirs and hydroelectric operations.

No studies were conducted for the DEIS for the WCM update. As new information becomes available adaptive management will be implemented. Water temperature changes that would be expected were described in Section 2.2. The effects of these potential changes on aquatic biota are further evaluated and presented in section 6.5 of the PDEIS.

2.5 Minimum flows available for Weiss bypass channel.

The USACE does not have control over the Weiss Bypass Channel. The minimum flows during the summer at this location should be discussed with FERC.

2.6 Conservation and recovery of natural flow variability, and reduction of effects of hydropower peaking flows on species of concern.

A return to "natural" (pre-dam) flow variability is not attainable or desirable given other Congressionally authorized purposes of hydropower, flood control, and recreation. The need for seasonal minimum flows is addressed at Carters via a minimum monthly flow release target from the re-regulation pool as part of the Proposed Action. At Lake Allatoona, where there is no re-regulation pool, implementation of a non-hydropower peaking operation for a natural flow regime would require a shutdown of hydropower production at the facility for a specified period of time. This would necessarily occur since there is no possible gradation of water releases between the "off" (0 cfs) and "on" (~3500 cfs) conditions per main hydropower unit. Such a shutdown is not considered practicable given that hydropower production is an important component of the regional power grid.

2.7 Maintenance of floodplain connectivity to flood pulses.

Studies are not currently available to address this question because there is no Lidar in non-reservoir sections of the Basin. USACE can provide stage and flow data but does not know what flows may be required.

Dedicated studies evaluating the effects of management actions on floodplain connectivity are not currently available. However, section 6.5.1 of the PDEIS will review the implications of the proposed management actions for the WCM update. USACE can provide stage and discharge data, but a comprehensive geomorphological assessment is necessary to determine the extent of flood pulses necessary to establish connectivity.

2.8 Potential for reintroductions, enhancements of listed species populations in the basin.

Reintroduction of species and enhancement of habitat for Federally listed species is beyond the scope of the current Water Control Manual update. Surveys for species and habitat for the proposed action have been coordinated with the Service and have been recently completed.

In 2010, the Corps sponsored a survey of mussel species in selected reaches of the Coosa River drainage in Georgia (Dinkins and Hughes 2011), representing the most comprehensive study of T&E mussels in the basin since Williams and Hughes (1998). The Corps has worked closely with the FWS and APC

during the development of the updated WCM to ensure both stakeholders concerns are addressed. We will continue this high level of communication and collaboration as opportunities for adaptive management and further study arise.

Dinkins, G and M. H. Hughes. 2011. Freshwater mussels (Unionidae) and aquatic snails of selected reaches of the Coosa River drainage, Georgia. Dinkins Biological Consulting, Powell, TN. January 2011.

Williams, J. D., and M. H. Hughes. 1998. Freshwater mussels (Unionidae) of selected reaches of the main channel rivers in the Coosa drainage of Georgia. U.S. Geological Survey, Florida, Caribbean Science Center, Gainesville, Florida. October 1998.

2.9 Restoration and maintenance of healthy water quality parameters for all life stages of aquatic species under a variety of flow conditions.

Species specific habitat and water quality requirements are lacking for many aquatic organisms inhabiting the ACT basin. Even fewer data are available to describe ontogenic shifts with respect to these environmental parameters. As such, dedicated studies of key species, including T&E or recreationally important species, should be undertaken to address this data need; however, the level of effort needed to accomplish this is beyond the intent of the current work.

As illustrated in Figure 2.2-15 and described in section 2.2, a large percentage of mainstem reaches in the ACT Basin meet current water quality standards. Section 6.5.3 of the DEIS will review the proposed management alternatives and the implications of water quality changes on aquatic biota. As previously stated, the Corps will continue to work closely with stakeholders in adaptive management and seek opportunities for further study.

2.10 Development of adaptive management protocols that include goals, objectives, research, and monitoring to allow greater understanding of riverine ecosystem response to complex variables.

Although we are not opposed to adaptive management to achieve specific objectives, when possible, the development of research and monitoring efforts goes beyond the stated scope of the current water control manual update, and therefore cannot be addressed in the DEIS.

Appendix VI: Corps' November 22, 2011, response to the Service's questions regarding the Corps' June 6, 2011 document.

Questions for the Corps regarding their June 6, 2011, Response to USFWS ACT PAL

1. Page 10: When would be the dates of the seasonal navigation releases? Please tell us if this will be a guaranteed minimum flow or if it will be only "as requested" by navigation interests. What will be the time span for these navigational releases, e.g., days or months?

   RESPONSE: There would not be seasonal navigation releases in the sense that navigation would be supported only during a specified range of dates. Instead, the Corps and APC would make releases on the Alabama River at any time that sufficient water were available to support navigation. The amount of water required to support navigation has been calculated for both a 9-foot channel and for a 7.5-foot channel for each month during the year. That volume of water varies because of an assumption that annual maintenance dredging will occur on the river. As the channel fills with sediment after dredging, through the year and up to the next dredging event, increasing volumes of water are required to provide a 7.5- or 9-foot channel. Once the dredging event occurs, the required volume declines.

   Because navigation requires large volumes of water to maintain the specified channel depths, adequate water would only occur during normal hydrologic conditions and drought conditions would require the suspension of those releases. Therefore the concept of a guaranteed minimum flow during normal hydrologic conditions would not apply since the required navigation flows would be much greater than typical environmental minimum.

   The required flows for each month are determined from the following tables. JBT goal is the combined Jordan-Bouldin-Thurlow flow and is essentially the same as the flow at Montgomery. As an example, from Table 1-1, in January a flow rate of 9,950 cfs would be required to support a 7.5-foot channel below Claiborne dam and to support that flow an APC release at JBT of 7,960 cfs would be required. Tables 1-2 and 1-3 show the basin inflows that would be required to meet those targets. Because the APC reservoirs historically have had storage available for release or requirements for refilling (shown as negative numbers) the basin inflows may be lesser or greater than the navigation target.

Table 1-1 Monthly Navigation Flow Target in CFS

Month	9.0-ft target below Claiborne Lake (cfs)	9.0-ft JBT goal (cfs)	7.5-ft target below Claiborne Lake (cfs)	7.5-ft JBT goal (cfs)
Jan	11,600	9,280	9,950	7,960
Feb	11,600	9,280	9,950	7,960
Mar	11,600	9,280	9,950	7,960
Apr	11,600	9,280	9,950	7,960
May	11,075	8,880	9,740	7,792
Jun	10,550	8,480	9,530	7,624
Jul	10,025	8,080	9,320	7,456
Aug	9,500	7,680	9,110	7,288
Sep	9,500	7,280	8,900	7,120
Oct	9,500	7,280	8,900	7,120
Nov	11,600	9,280	9,950	7,960
Dec	11,600	9,280	9,950	7,960

Table 1-2 Basin Inflow Above APC Projects Required To Meet A 9.0-Ft Navigation Channel (cfs)

Month	APC navigation target	Monthly historic storage usage	Required basin inflow
Jan	9,280	–994	10,274
Feb	9,280	–1,894	11,174
Mar	9,280	–3,028	12,308
Apr	9,280	–3,786	13,066
May	8,880	–499	9,379
Jun	8,480	412	8,068
Jul	8,080	749	7,331
Aug	7,680	1,441	6,239
Sep	7,280	1,025	6,255
Oct	7,280	2,118	5,162
Nov	9,280	2,263	7,017
Dec	9,280	-994	10,274

Table 1-3 Basin Inflow Above APC Projects Required To Meet A 7.5-Ft Navigation Channel (cfs)

Month	APC navigation target	Monthly historic storage usage	Required basin inflow
Jan	7,960	–994	8,954
Feb	7,960	–1,894	9,854
Mar	7,960	–3,028	10,988
Apr	7,960	–3,786	11,746
May	7,792	–499	8,291
Jun	7,624	412	7,212
Jul	7,456	749	6,707
Aug	7,288	1,441	5,847
Sep	7,120	1,025	6,095
Oct	7,120	2,118	5,002
Nov	7,960	2,263	5,697
Dec	7,960	-994	8,954

2. Page 29: Why would there be such oxygen differences from the no action alternative just below Carters in Figure 2.1-7? Figure 2.1-7 is during a dry year, so wouldn't they most likely be releasing a Zone 2 240 cfs flow under the proposed action alternative? That would seem to be the same type of release as under the no action alternative for a dry year.

RESPONSE: The oxygen differences from the no action alternative stem from the modeled values occurring in the Carters Reregulation Pool. As seen in the following two figures (2-1 and 2-2), the Reregulation Pool water surface elevation can be distinctly lower during dry years compared to normal and wet years, leading to lowered modeled DO values.

The other figures that follow (Figures 2-3, 2-4, 2-5 and 2-6) show the DO levels and pool water surface elevations for wet and normal years respectively. During normal years, little change would be expected except under rare occurrences (5% occurrence).

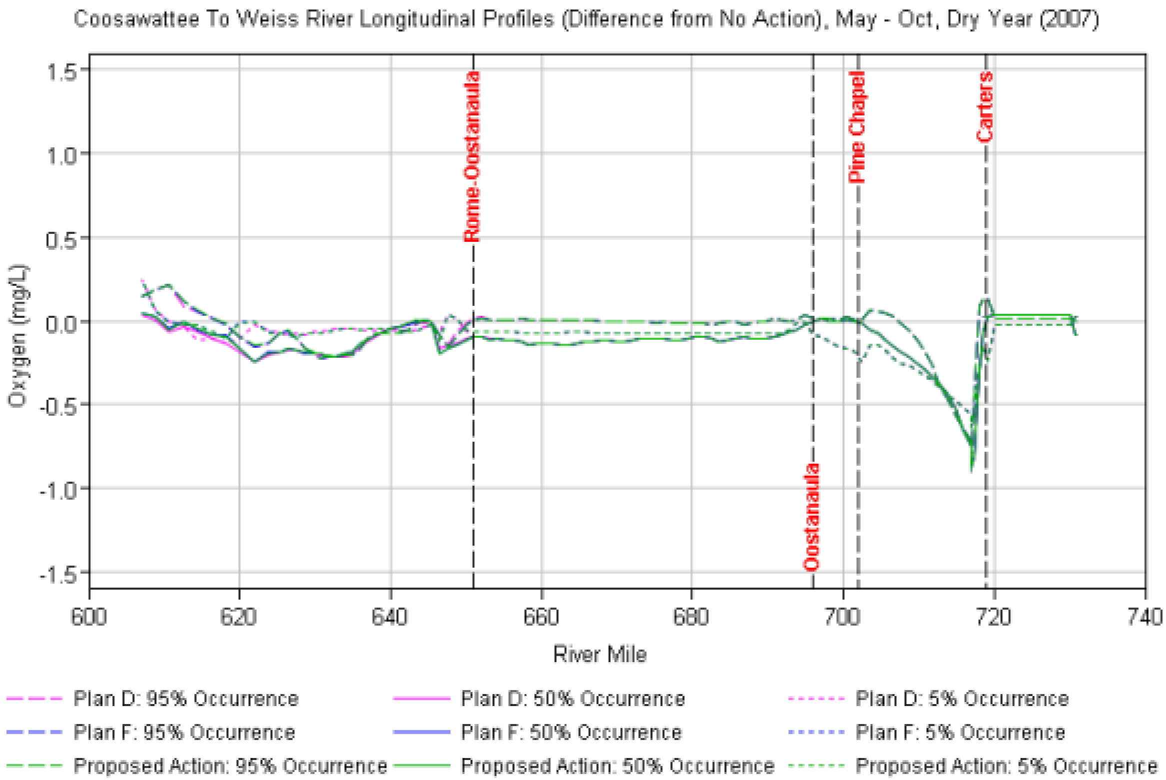


Figure 2-1. Oxygen longitudinal profile for May to October in a representative dry-weather year (2007) from Carters Lake downstream to Weiss Lake.

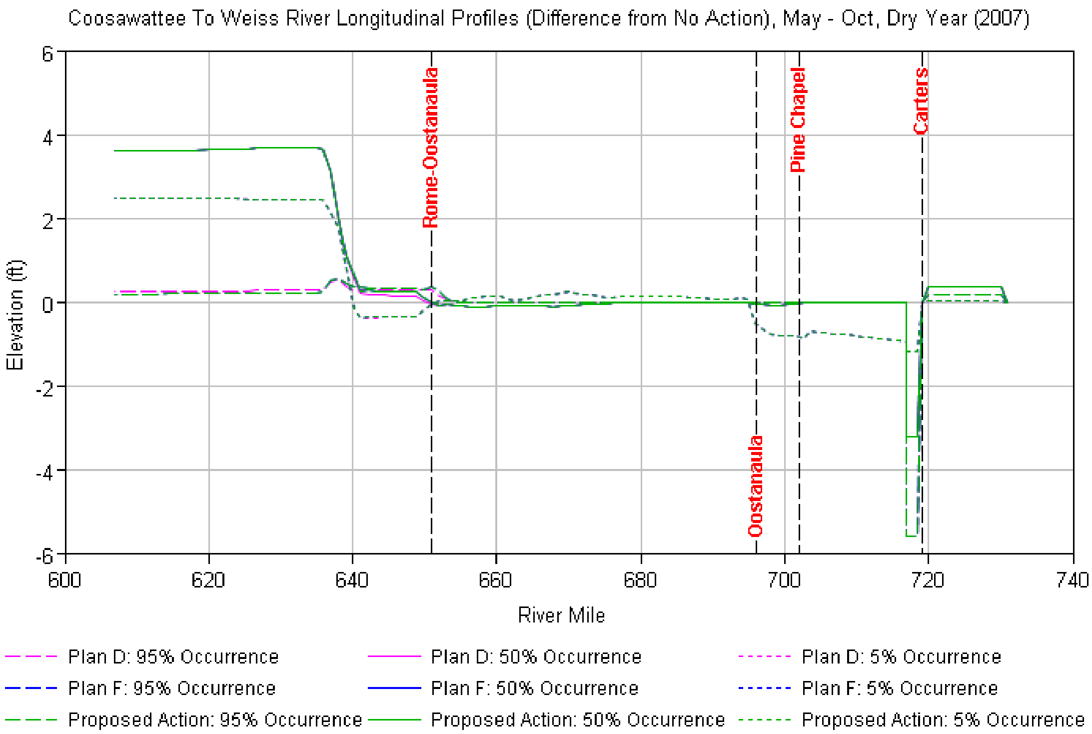


Figure 2-2. Water surface elevation longitudinal profile for May to October in a representative dry-weather year (2007) from Carters Lake downstream to Weiss Lake.

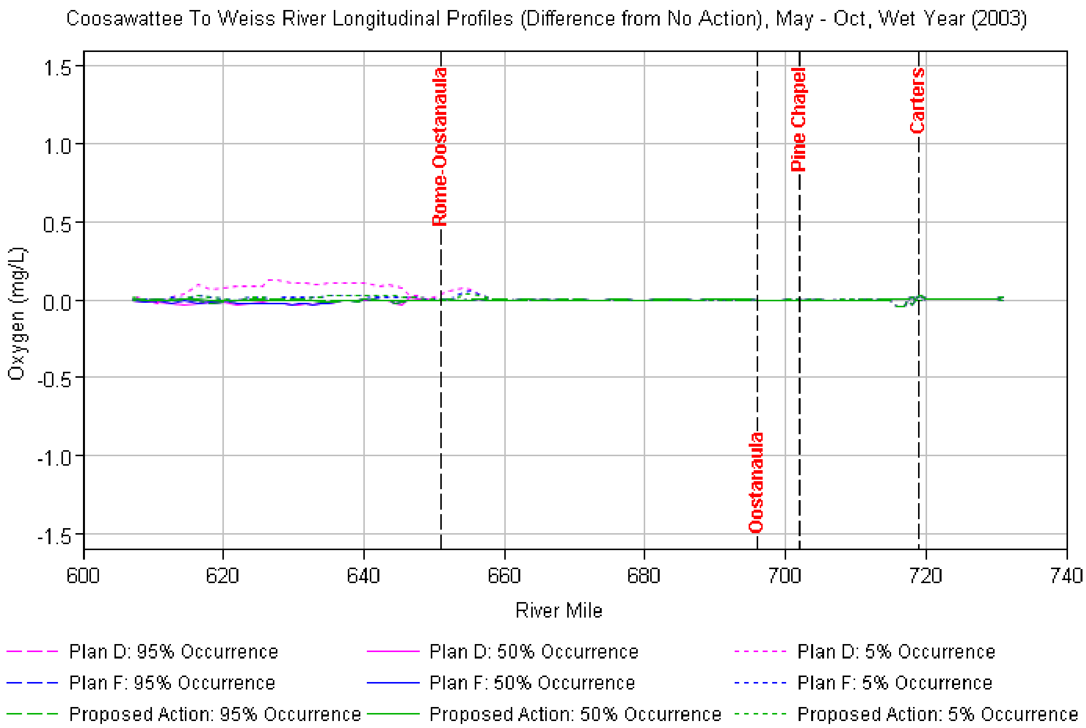


Figure 2-3. Oxygen longitudinal profile for May to October in a representative wet-weather year (2003) from Carters Lake downstream to Weiss Lake.

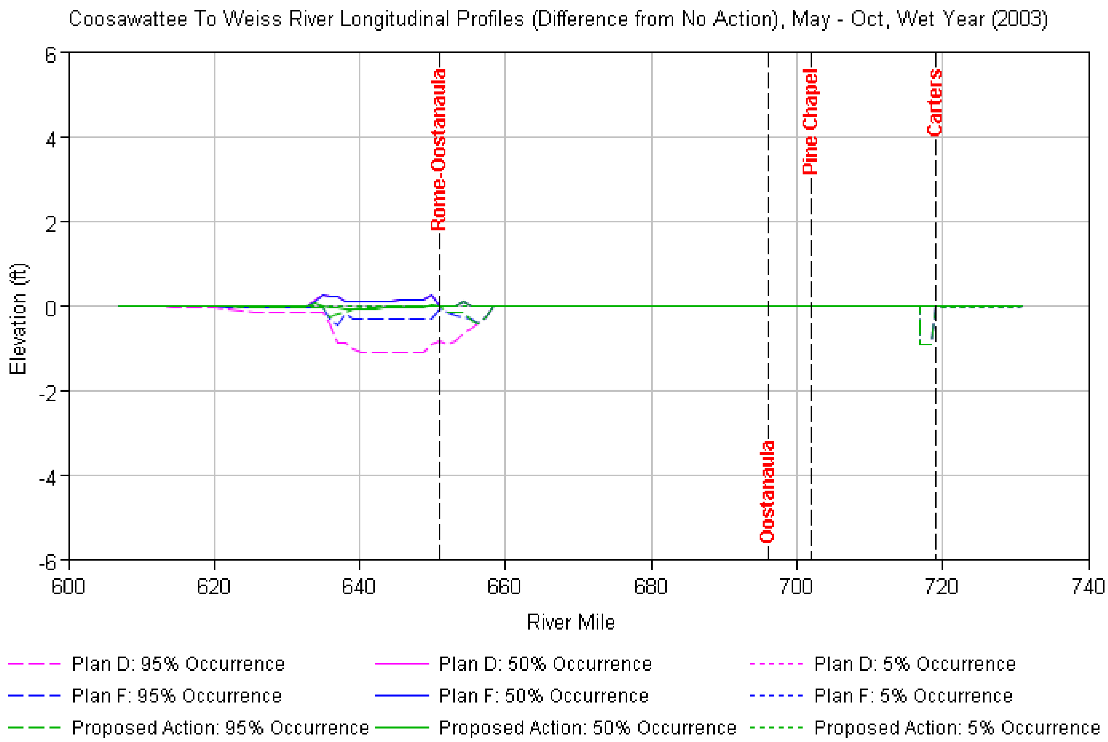


Figure 2-4. Water surface elevation longitudinal profile for May to October in a representative wet-weather year (2003) from Carters Lake downstream to Weiss Lake.

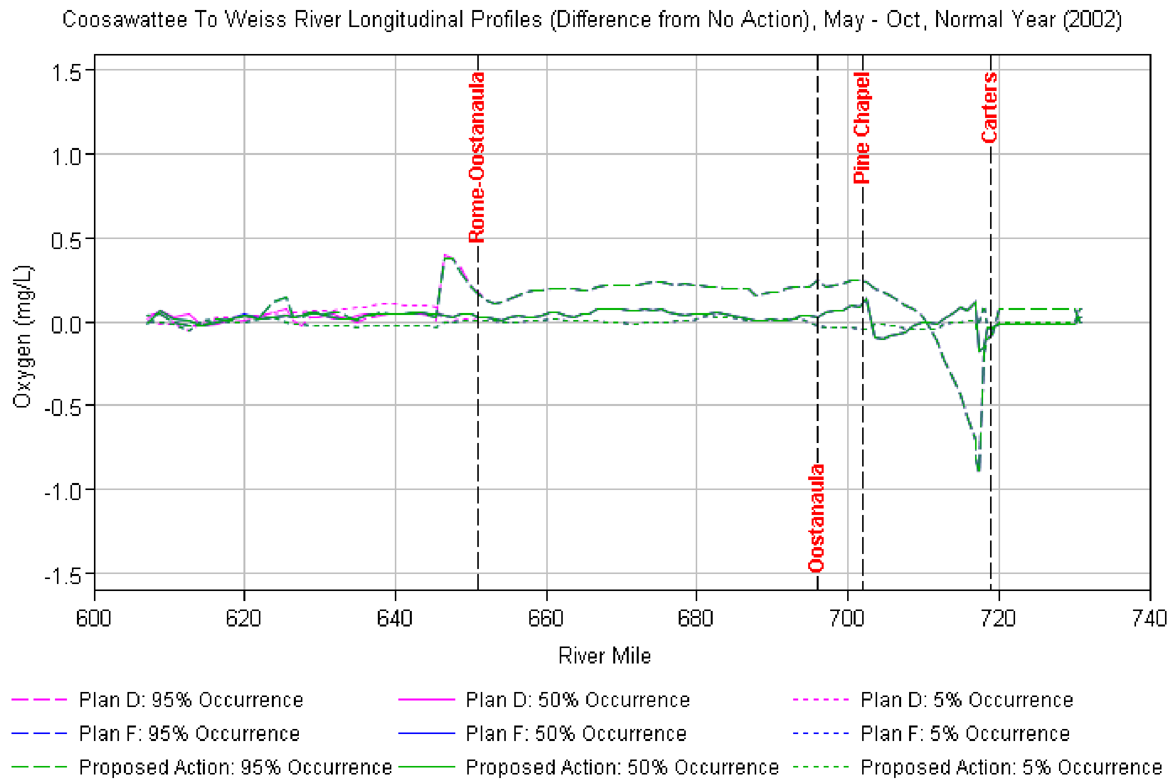


Figure 2-5. Oxygen longitudinal profile for May to October in a representative normal-weather year (2002) from Carters Lake downstream to Weiss Lake.

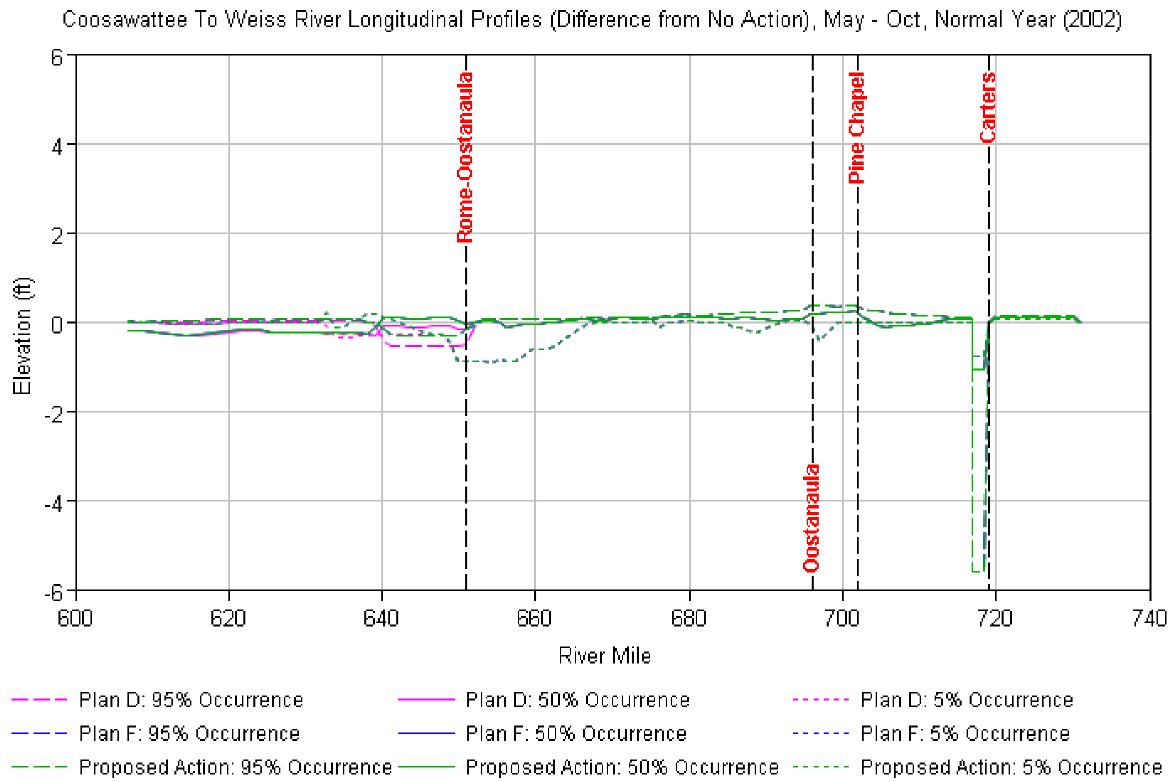


Figure 2-6. Water surface elevation longitudinal profile for May to October in a representative normal-weather year (2002) from Carters Lake downstream to Weiss Lake.

3. Page 29: We need to see a similar plot for the same stretch of river as in Figure 2.1-7, but for when Carters is operating under Zone 1 in the proposed action alternative (probably wet and normal years). I'm assuming Figure 2.1-7 represents Carters operating under Zone 2 in the proposed action alterative.

   RESPONSE: Plots provided in response to Question 2.

4. Page 29: We need to see similar plots as in Figure 2.1-7, but for the Etowah to Weiss stretch of river for dry and wet years.

   RESPONSE: During dry-weather conditions, similar to 2007, oxygen in the Etowah River could be reduced because of changes in stream flow and the ability to assimilate nutrients when compared to the No Action Alternative. In the Etowah River during dry-weather conditions around RM 680, where the greatest deviations from No Action Alternative would be expected, changes in DO are shown in the modeled results but are still expected to meet State water quality standards. In extreme dry-weather *conditions concentrations would be expected to increase by nearly 0.4 mg/L (Figure 4-1); that would be expected to benefit aquatic life during critical periods. Figures 4-2 and 4-3 present normal and wet years respectively.*

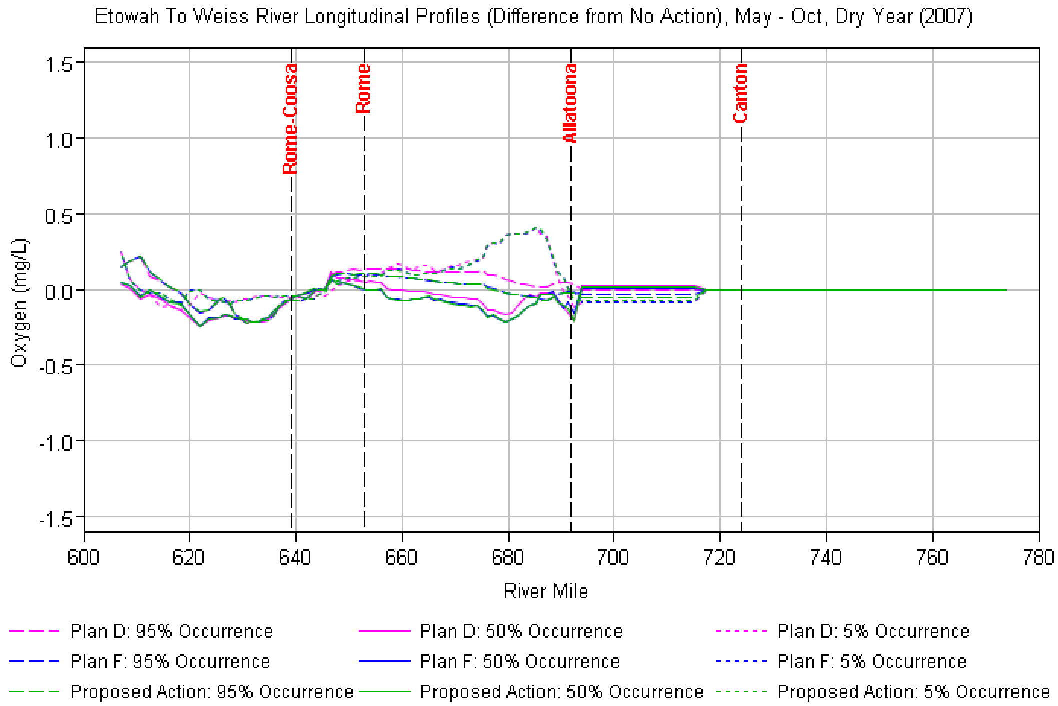


Figure 4-1. Etowah River oxygen longitudinal profile for May to October in a representative dry-weather year (2007).

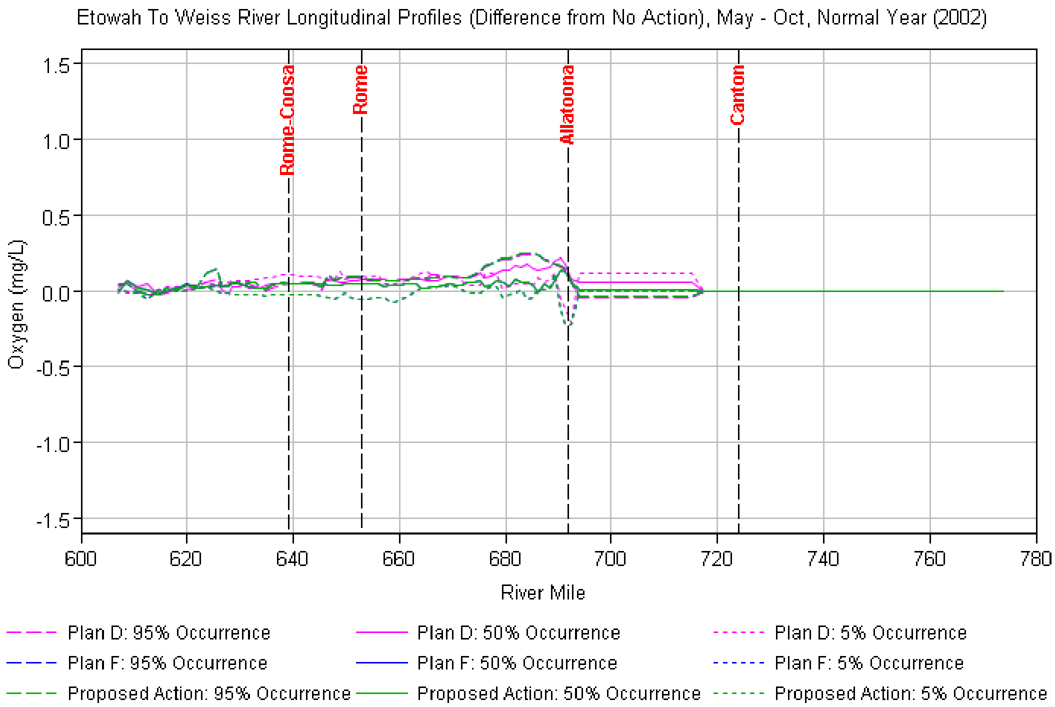


Figure 4-2. Etowah River oxygen longitudinal profile for May to October in a representative normal-weather year (2002).

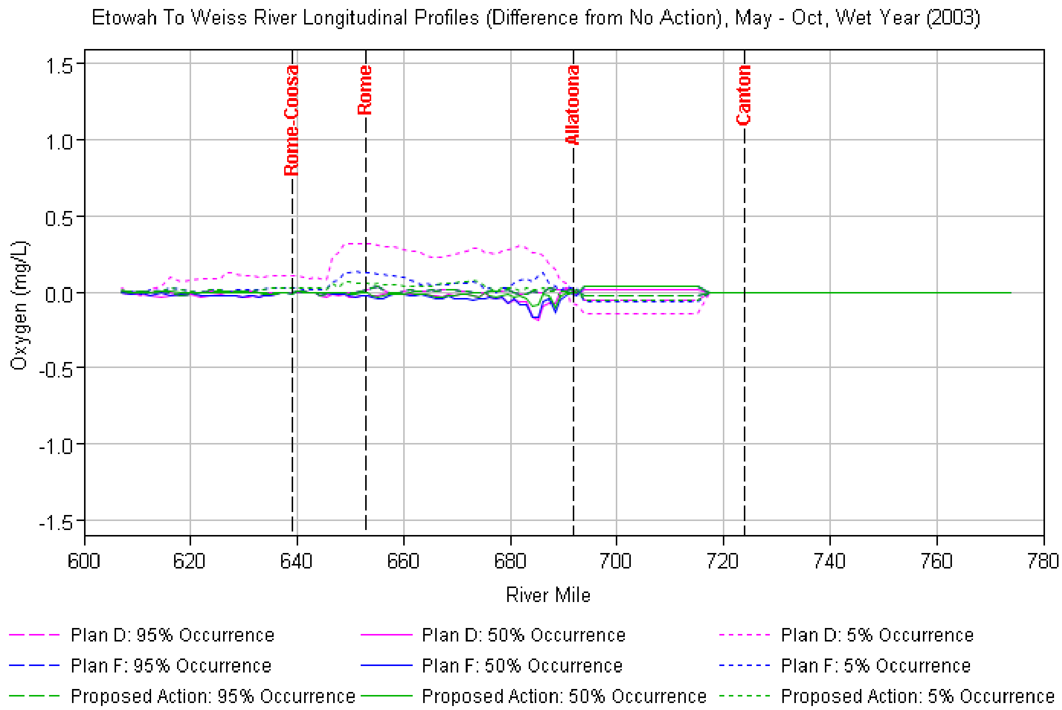


Figure 4-3. Etowah River oxygen longitudinal profile for May to October in a representative wet-weather year (2003).

5. How was the RES-SIM model developed and how well do it's (ie. the baseline) conditions represent actual operations? Has this type of assessment been completed, specifically for parameters that are biologically relevant? Could the model output be updated through 2010?

   RESPONSE: The ResSim model development was a collaborative effort involving the Hydrologic Engineering Center (HEC-developers of ResSim), Alabama Power Company (APC-owner of 11 dams) and Corps of Engineers (owner of remaining 6 dams). In 2006 Mobile District began working with HEC to create ResSim watershed models based on established HEC-5 models simulating 1977, 1995, and 2008 physical and operational conditions. The three HEC-5 models hold significance as the tools "of record" used for analyses concerning the previous Environmental Impact Statement and the 1990's Comprehensive Study. After ensuring that the corresponding ResSim models could effectively reproduce the HEC-5 results, Mobile District, APC and HEC created another ResSim model that captured the most significant operations as of 2008. This model was presented to stakeholders in October 2008 and generally accepted as a promising improvement to ACT reservoir system modeling. Refinements to the model and inclusion of ResSim software enhancement occurred for the next two years. The final model was presented to the Stakeholders at the May 2011 modeling overview session. The Baseline Condition represents continuation of the current water control operations at each of the federal projects in the ACT Basin. The Corps' operations have changed incrementally since completion of the 1951 ACT Master Manual. Each operational rule within the model was evaluated based on meeting the intended purpose. Some example operational rules include minimum flow requirements, hydropower demand, fish spawning support, flood control and water supply. The model is not expected to exactly match actual operations. Real-time operation includes continuous adjustment to basin wide conditions that incorporate the flexibility within the water control manuals. However, when comparing the model and current operation, *the timing of reservoir changes and response to hydrologic conditions are the same. Several comparisons that include reservoir levels and releases, stream flows and generation were evaluated to ensure the rules captured the intent.*

The current modeling cannot be updated to include 2010 until the unimpaired flow data set is update. Efforts to update the unimpaired flow will not begin until Spring 2012.

6. As is being done in the ACF, are you using 2007 demand data and a 10 to 15-year WCM planning window for the WCM update process? If so, what is your reasoning for assuming that future water supply demands would remain constant with 2007 demand data?

   RESPONSE: For the Corps projects and other parts of the basin, water demand for modeling is based on the highest demand year under existing storage contracts. In the ACT that year was 2006 (2007 for ACF). Although basin water use will generally be greater with future population growth, there is no assumption in our modeling providing for potential reallocations or new contracts that could be implemented or the source of future water supply. Projecting future water storage contracts or withdrawals from Corps reservoirs would be speculative without detailed analysis of many variables including population projections, conservation efforts, groundwater and regional reservoir development, etc. and was beyond the scope of the current effort.

7. For the water quality analyses, is it appropriate to have all dry years represented by 2007 and normal years by 2003?

   RESPONSE: HEC5-Q simulations were limited to 2000-2008 time period. Separate years were selected to represent wet, dry and normal hydrologic conditions. It is appropriate to select a year within the simulation to analyze typical impacts for hydrologic conditions such as dry, normal or wet. Given that the modeled output are presented to understand system-wide changes the representative years where held constant. See the response to Question 8.

8. The terms dry, wet and normal years are used without clear explanation regarding what constitutes these designations. This needs to be made very clear. How were they defined, and does the term “rainfall conditions” actually mean a discharge-related variable?

   RESPONSE: For the purposes of the water quality analysis the dry, wet, and normal years were based on seasonal flows. Table 8-1 presents the total flow and volume at three locations in the basin for the water quality modeled period. The range of flows during that time was representative of similar time periods for which records exist and representative of the hydrologic historical data generally. Therefore, the individual years were grouped as dry, wet or normal based on their ranking within the modeled period.

Table 8-1. Baseline ResSim flows from April – November

	Apr-Nov flow cfs-day	Acre-feet

Key: Dry **Normal** **Wet**

Coosa State Line

2007	51179	101,513
2008	73894	146,567
2000	101387	201,098
2006	130694	259,228
2001	173033	343,206
2002	197664	392,062
2004	321745	638,172
2005	372080	738,010
2003	488511	968,947

Tallapoosa JBT goal

2008	250808	497,471
2000	375230	744,257
2006	557077	1,104,946
2007	576868	1,144,201
2002	608689	1,207,316
2001	707346	1,403,000

2004	880075	1,745,602
2005	1661516	3,295,570
2003	1955839	3,879,350

Alabama River Pulp

2007	1438549	2,853,320
2000	2006368	3,979,573
2008	2237304	4,437,628
2006	2871352	5,695,243
2002	3764203	7,466,187
2001	3786927	7,511,261
2004	5382016	10,675,073
2005	8844107	17,542,031
2003	10075127	19,983,724

9. How do water demands, current and future, change with Georgia reservoirs: Hickory Log Creek, Russel Creek, Richland Creek, Shoal Creek, and Calhoun Creek? These do not appear to be included in the PAL response analysis.

   RESPONSE: The projects listed are proposed, except for Hickory Log Creek which is now completed. The water control plan analysis only considers current water demands. Attempts to make such analyses would require speculation regarding the eventual size, construction, withdrawals and other variables as described in answer to question 6 above.

10. Why are there no guide curves for Claiborne Lake, W. Dannelly Lake, and R E Woodruff Lake (R F Henry Lock and Dam)? In the preferred alternative will all guide curves stay the same as the No Action alternative except H Neely Henry and Lake Allatoona?

    RESPONSE: Guide curves are not established at the three Alabama River Lakes because of the lack of available storage and lack of flood control operations. These projects are considered run-of-river, i.e. water is generally passed as it is released from the upstream APC projects with only very limited ability to store and release that water at a future time.

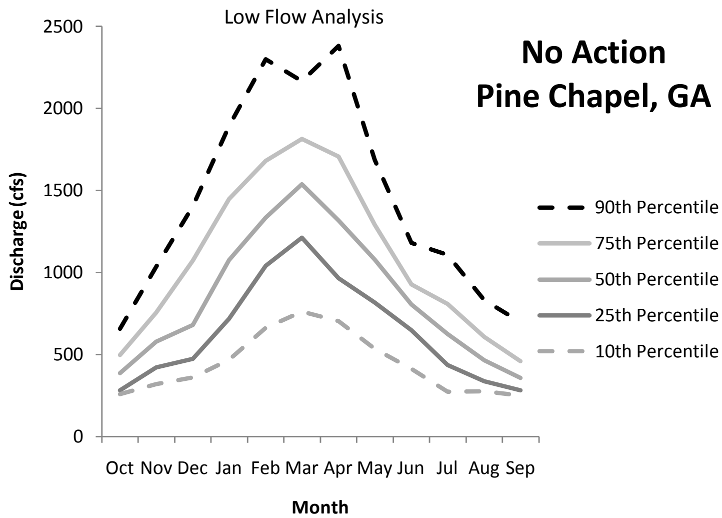
11. Why is the Weiss Bypass minimum flow issue out of the scope of the project? It requires COE water to flow into APC jurisdiction.

RESPONSE: The regulation of Weiss Bypass minimum flows is under the direct jurisdiction of the FERC license and controlled by releases by APC. Although water from the upstream Corps projects enters Weiss Lake there are also inflows from tributaries downstream of the projects. As such there is no direct dependence upon specific flow at the Corps projects for the flow APC provides to the bypass.

12. Similar to 'note for talking with Will': Why is there no IHA analysis?

    RESPONSE: In response to this request, IHA was evaluated as described below.

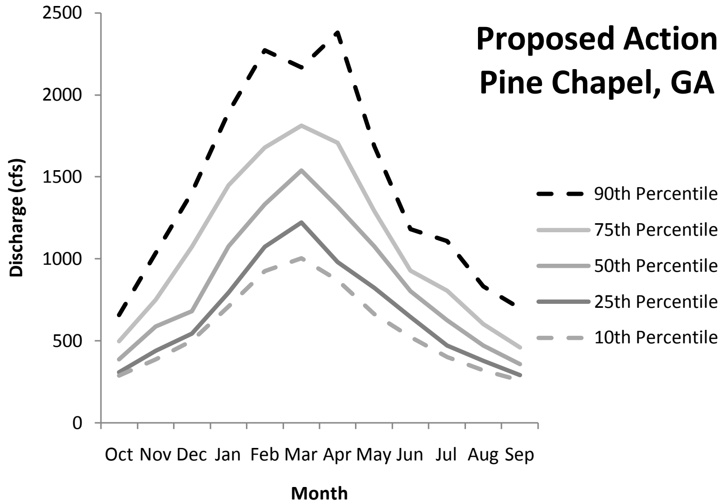
    - *IHA was run at three locations.*
        1) *Pine Chapel, GA*
        2) *Etowah at Rome, GA*
        3) *Oostanaula at Rome, GA*
    - *High and low analyses based on FWS spreadsheets were run at the same locations*
    - *Analyses based on previous feedback from FWS on ACF using spreadsheets provided by FWS. Spreadsheet analyses are available upon request, but not provided at this time due to large size (>200 megabyte total).*
    - *Analysis represents RES SIM modeled output from 10/1/1939 through 9/30/2008*
    - *Results are summarized in the following three figures.*



Pine Chapel, GA

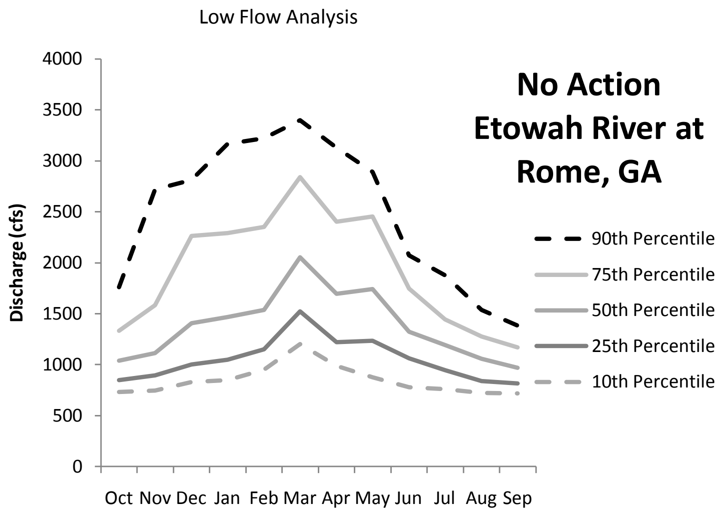
High Flow Analysis

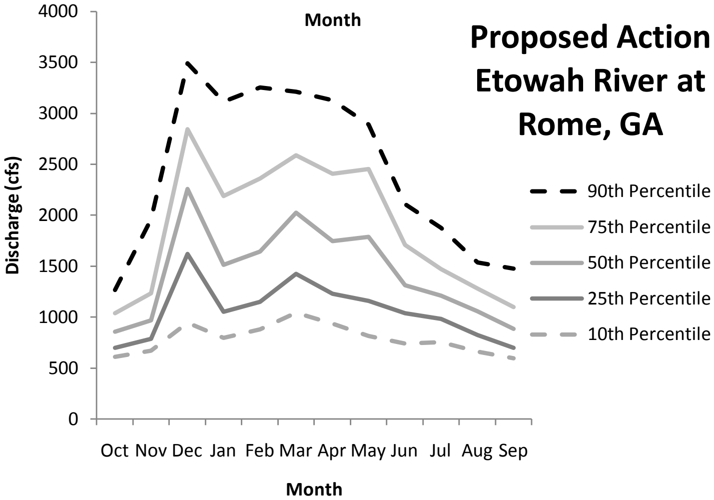
Pine Chapel, Georgia No Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	1751.54	7671.26	10317.16
Magnitude	2039 -4138	7920 -9346	10733-11341
Frequency	4-8	0-1	≥ 10 year RI
Duration	3-12	22-38.5	26-98.5
Rise Rate	169-545	414-1075	525-1154
Fall Rate	169-415	213-592	175-712
Timing	Annually	Nov - Apr	Dec - Mar



Pine Chapel, Georgia Proposed Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	1742.29	7671.26	10317.16
Magnitude	1972-4072	7921-9346	10733-11342
Frequency	4-8	0-1	≥ 10 year RI
Duration	3-12	22-38.5	26-98.5
Rise Rate	153-499	414-1060	525-1154
Fall Rate	152-394	213-592	175-712
Timing	Annually	Nov - Apr	Dec - Mar
Date Range	10/1/1939	to	9/30/2008
User inputs data in orange cells.			

Etowah River at Rome, GA





High Flow Analysis

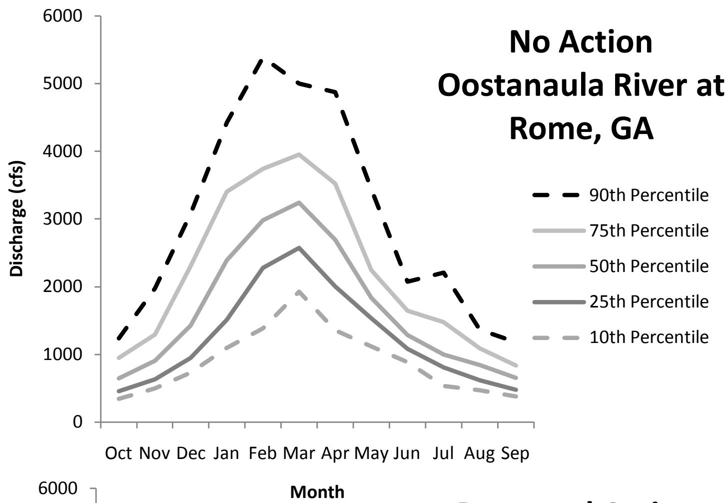
Etowah River at Rome, Georgia No Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	2862	11289	13287
Magnitude	3038-4591	8366-9461	10970-12213
Frequency	4-8	0-1	≥ 10 year RI
Duration	3-8	10-23.25	20.25-40.75
Rise Rate	186-524	714-1332	440-1287
Fall Rate	199-495	463-1324	346-823
Timing	Annually	Jan - May (more than 2 per month)	Oct - Apr (more than 2 per month)

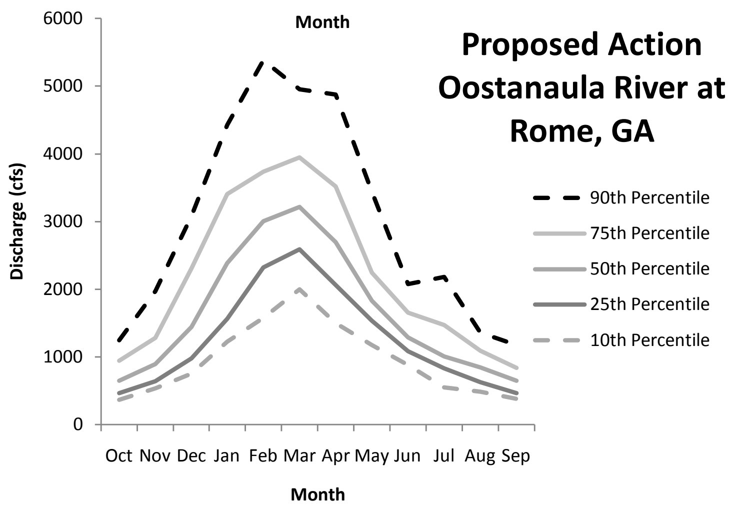
Etowah River at Rome, Georgia Proposed Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	2923.60	11324.96	13287.49
Magnitude	3381-6949	11526-12273	13503-14683
Frequency	4-8	0-1	≥ 10 year RI
Duration	4-12	18.25-51.75	44.5-70.5
Rise Rate	271-829	416-1561	404-974
Fall Rate	235-657	332-839	259-391
Timing	Annually	Nov - Apr (more than 2 per month)	Feb - Mar (more than 2 per month)
Date Range	10/1/1939	to	9/30/2008

User inputs data in orange cells.

Oostanaula River at Rome, GA

Low Flow Analysis





High Flow Analysis

Oostanaula River at Rome, Georgia No Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	4101	23042	33456
Magnitude	5022-11898	24240-28782	35821-40018
Frequency	4-8	0-1	> 10 year RI
Duration	4-13.5	24.5-54.5	30.25-41.5
Rise Rate	471-1235	912-2624	1428-3731
Fall Rate	441-1151	864-1906	1170-2233
Timing	Annually	Dec - Apr (more than 2 per month)	Jan (more than 2 per month)

Oostanaula River at Rome, Georgia Proposed Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	4090	23042	33456
Magnitude	4999-11815	24240-28782	35821-40016
Frequency	4-8	0-1	> 10 year RI
Duration	4-13	24.5-54.5	30.25-41.5
Rise Rate	468-1214	912-2624	1429-3730
Fall Rate	440-1145	864-2052	1170-2233
Timing	Annually	Dec - Apr (more than 2 per month)	Dec - Mar (more than 2 per month)
Date Range	10/1/1939	to	9/30/2008
User inputs data in orange cells.			

Questions for the Corps regarding their June 6, 2011, Response to USFWS ACT PAL - Continued

1. If available, please provide us with the agreement between SEPA and the Corps for hydropower generation in the ACT for Fish and Wildlife Service's records.

   RESPONSE: The Memorandum of Understanding with amendments is being provided separately.

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2. It would be valuable to us to have an analysis showing the hydrologic differences between the no action and the proposed action alternative in terms of the timing, duration, and magnitude of high and low flows. Can this be provided?

   RESPONSE: Refer to IHA analysis in response to Question 12 above.

3. Do you have data or information that shows the efficacy of the fish spawning operations in Lake Allatoona?

   RESPONSE: No data is available. In the past this data has been requested from Georgia DNR but has not been received. However, other studies indicate that high water levels inundating shoreline vegetation during spawning periods frequently have been associated with enhanced reproductive success and strong year class development for largemouth bass, spotted bass, bluegill, crappie, and other littoral species. Conversely, low or declining water levels can adversely affect reproductive success by reducing the area of available littoral spawning and rearing habitats. Therefore, we conclude that fish spawning operations have had a beneficial impact on recreational fisheries.

4. We note that hydrologic data from 2008 to 2010 have not been incorporated into modeling efforts we have reviewed. Would incorporation of these data likely change any results or interpretation?

   RESPONSE: Expanding the flow record to include 2009 and 2010 calendar years, would not impact the results. The most critical recorded periods are within the 70 year period, 1939-2008.

5. Could an approach to improve water quality below Corp projects be provided? This information does not appear to be included in the response to the PAL.

Response: In general, DO and temperature are the parameters most impacted by the Corps projects, as discussed in the PAL and in the response. Those impacts are due to factors inherently associated with large reservoirs in general and with the projects specifically, such as lake stratification, depth of release water, minimum flows and hydropower generation. We believe that the proposed operational update would have few if any negative impacts to water quality and some potential benefits. As discussed in section 1.2 of the response, a revised seasonal minimum flow is proposed at the Carters re-reg dam that would provide water quality benefits. Beyond that, for reasons discussed in sections 2.1, 2.4, and 2.6, we have not identified other operational methods that would achieve water quality improvement compared to the current operation without having other negative consequences. The Corps remains open to further discussion regarding specific recommendations for improving water quality at any of its projects.

6. On page 61, you state that "The effects of these potential changes on aquatic biota are further evaluated and presented in section 6.5 of the PDEIS." An evaluation of the effects of the proposed action are directly pertinent to our review and drafting of the FWCAR. The document supplied to us includes 62 pages through section 2.10. Can you provide us with Section 6.5 of the PDEIS and other related material?

RESPONSE: The requested section of the Draft EIS is being reorganized and edited and is currently unavailable. However, the following discussion contains our current analysis and contains the same information as that which is being used in the EIS preparation.

Fish and Aquatic Resources

Rivers

This summarizes the effects of alternative water management plans on biological resources in riverine portions of the ACT Basin. Results are based on HEC-ResSim model simulations of project operations under the alternative plans over a 70-year period of record (1939–2008). Descriptions of the likely effects of the current operation and the proposed action on riverine biota are presented for the following locations in the basin: (1) Coosawattee River downstream of Carters Reregulation Dam; (2) Etowah River downstream of Allatoona Lake; (3) Coosa River at Rome, Georgia; (4) Alabama River at Montgomery, Alabama; and (5) Alabama River downstream of Claiborne Lock and Dam.

Coosawattee River downstream of Carters Reregulation Dam

The following subsections describe the effects of the current operation and proposed action on stream flow and water quality conditions as they relate to biological resources in the Coosawattee River downstream of Carters Reregulation Dam. The No Action Alternative provides a requirement for a continuous minimum flow of 240 cfs downstream of Carters Reregulation Dam. The alternative plans include seasonally variable minimum flow targets consistent with recommendations made by the USFWS. Any fish and aquatic resources inhabiting this reach would be expected to experience no adverse effects.

Current Operation

USFWS has recommended seasonal minimum flow targets ranging from 240 cfs to 865 cfs (Table 6.1-1). The current operation would be expected to meet the recommended monthly targets from 76 percent of the time during October to as much as 90 percent of the time during June.

Water quality conditions are expected to improve under the current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. As such, there would be no adverse effects on fish and aquatic resources.

Table 6.1-1.
Coosawattee River downstream of Carters Reregulation Dam, seasonally variable minimum flow targets, percent of time targets would be met or exceeded

Month	Monthly minimum flow target (cfs)	Percent of time flow target would be equaled or exceeded	
		Current operation	Proposed operation
January	660	81%	98%
February	790	85%	98%
March	865	87%	98%
April	770	86%	97%
May	620	88%	96%
June	475	90%	94%
July	400	85%	95%
August	325	82%	95%
September	250	80%	97%
October	275	76%	98%
November	350	89%	98%
December	465	81%	97%

Proposed Action

HEC-ResSim model results indicate that adding the seasonally variable minimum flow targets would not yield significant changes in the mean daily flows over the period of record. However, notable improvements would be expected during low-flow events. Minimum flows of 240 cfs would occur only about 4 percent of the time, compared to 9 percent for the current operation. The proposed plan would be expected to meet the USFWS-recommended monthly minimum flows targets at least 94 percent of the time during all months of the year and as high as 98 percent during several months (Table 6.1-1). For example, flows in March and December would exceed the seasonal minimum targets during 98 percent and 97 percent of the days, respectively. Similarly, changes in water quality, with respect to temperature and DO values, would be expected to be negligible.

Thus, compared to the current operation, the effects of operational features on flow and water quality conditions under the proposed action would be negligible and not expected to adversely affect fish and aquatic resources in the Coosawattee River downstream of Carters Reregulation Dam.

Etowah River downstream of Allatoona Lake

The following subsections describe the effects of the current operation and proposed operation on stream flow and water quality conditions as they relate to biological resources in the Etowah River downstream of Allatoona Lake. Flow conditions are directly influenced by water management activities at Allatoona Lake. Under both alternatives, the Allatoona Lake project must meet the requirement to provide a continuous minimum release of 240 cfs. There would be no adverse effects on fish and aquatic resources inhabiting the Etowah River downstream of Allatoona Lake. In the figures that follow the current operation is labeled as ‘no action’ and the proposed action is labeled as ‘plan G’.

Current Operation

HEC-ResSim modeling over the 70-year period of hydrologic record (1939–2008) indicates a range of mean daily flows between 1,600 and 2,500 cfs from January through May, declining 1,000 to 1,300 cfs from June through September, and increasing to 1,300 to 2,300 cfs from October through December (Figure 6.1-1). An evaluation of a flow duration curve suggests that violation of the 240 cfs minimum flow requirement would occur less than one percent of the time. The Etowah River flow duration curves in September and December, periods in which key operational changes to Allatoona Lake are proposed, indicate that flows would be at the minimum level of 290 cfs about 28 percent of the time in September (Figure 6.1-2) and 15 percent of the time in December (Figure 6.1-3).

Water quality conditions are expected to improve under the current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. Overall, there would be no adverse effects on fish and aquatic resources.

Figure 6.1-1. Etowah River downstream of Allatoona Dam, average daily discharge (cfs) over the modeled period of record (1939–2008).

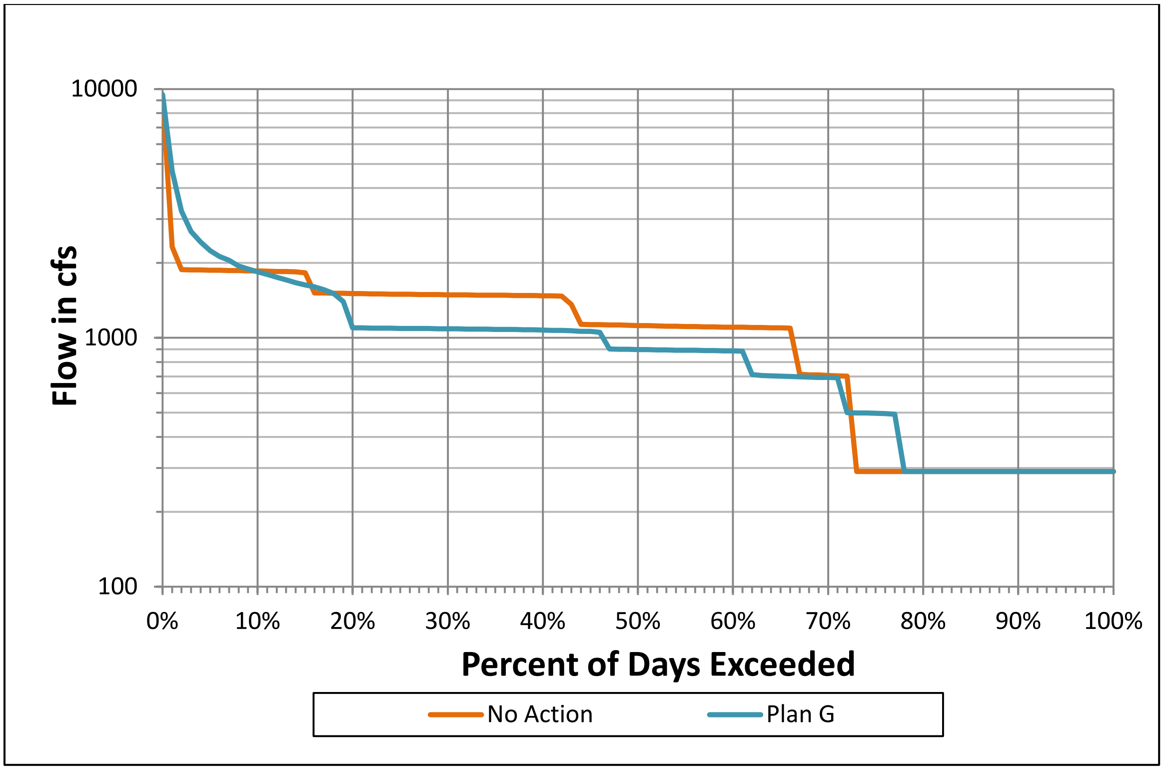

Figure 6.1-2. Etowah River downstream of Allatoona Dam, daily discharge (cfs)—percent of days exceeded for September over the modeled period of record (1939–2008).

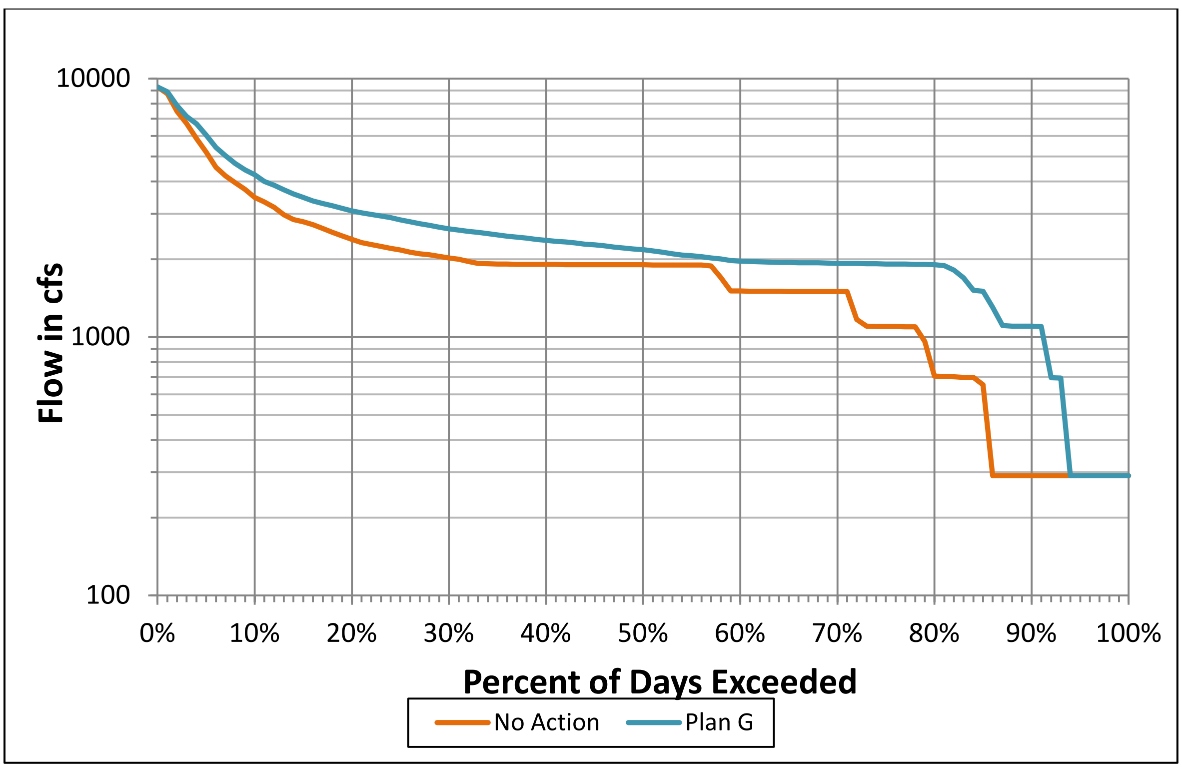

Figure 6.1-3. Etowah River downstream of Allatoona Dam, daily discharge (cfs)—percent of days exceeded for December over the modeled period of record (1939–2008).

Proposed Action

The proposed revision of the number (from two to four) and shape of the action zones under would be expected to temper full peaking hydropower releases during dry conditions to conserve storage. The phased guide curve and reduction of hydropower generation during the fall drawdown period would shift the timing of releases over an extended drawdown period between September and December. That would result in higher water levels in Allatoona Lake in October through December compared to the current operation. However, the overall effect on total releases over the duration of the drawdown period would be negligible. The expected increase in flows during December under the proposed action compared to the current operation should offset lower releases earlier in the phased drawdown period.

Implementing the phased guide curve at Allatoona Lake and reduction of hydropower generation during fall drawdown would be expected to have little effect on downstream water temperature and DO concentrations.

With respect to the current operation, the effects of operational features on flow and water quality conditions under the proposed plan would not be expected to affect fish and aquatic resources on the Etowah River downstream of Allatoona Lake.

Coosa River at Rome, Georgia

The following subsections describe the effects of the current operation and proposed plan on stream flow and water quality conditions as they relate to fish and aquatic resources in the Coosa River at Rome, Georgia. Flow conditions at that location are affected by water management activities at Carters Lake and Allatoona Lake. The proposed operational changes could change the quantity or timing of the downstream flow regime. Fish and aquatic resources inhabiting the Coosa River at Rome would experience only minimal adverse effects.

Current operation

Average daily flows under the current operation in the Coosa River peak at about 12,800 cfs by the end of March and decrease through late spring and summer to a minimum of approximately 2,700 cfs in September (Figure 6.1-4). The flow-duration curves for September and December were selected to help determine the effects of alternative water management measures for Carters Lake and Allatoona Lake (Figures 6.1-5 and 6.1-6). September values coincide with the low-flow period for the Coosa River at Rome and the beginning of fall drawdown at Allatoona Lake. The median flow value modeled over the period of record is 2,445 cfs. December presents higher flows, coinciding with the end of the drawdown period at Allatoona Lake. The median flow during that period is 4,769 cfs.

Water quality conditions are expected to improve under current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. Overall, there would be no adverse effects on fish and aquatic resources.

Figure 6.1-4. Coosa River at Rome (Georgia), average daily discharge (cfs) over the modeled period of record (1939–2008).

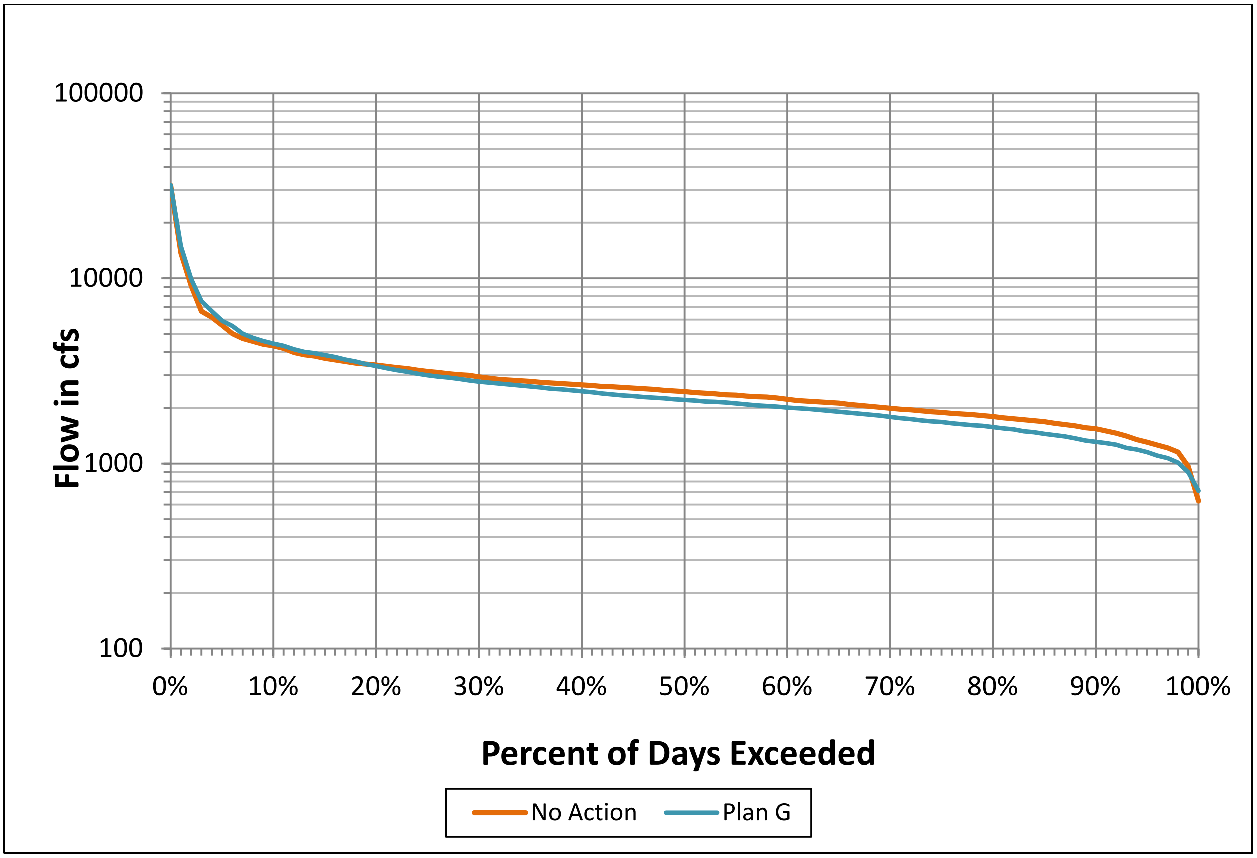

Figure 6.1-5. Coosa River at Rome, Georgia, daily discharge (cfs)—percent of days exceeded for September over the modeled period of record (1939–2008).

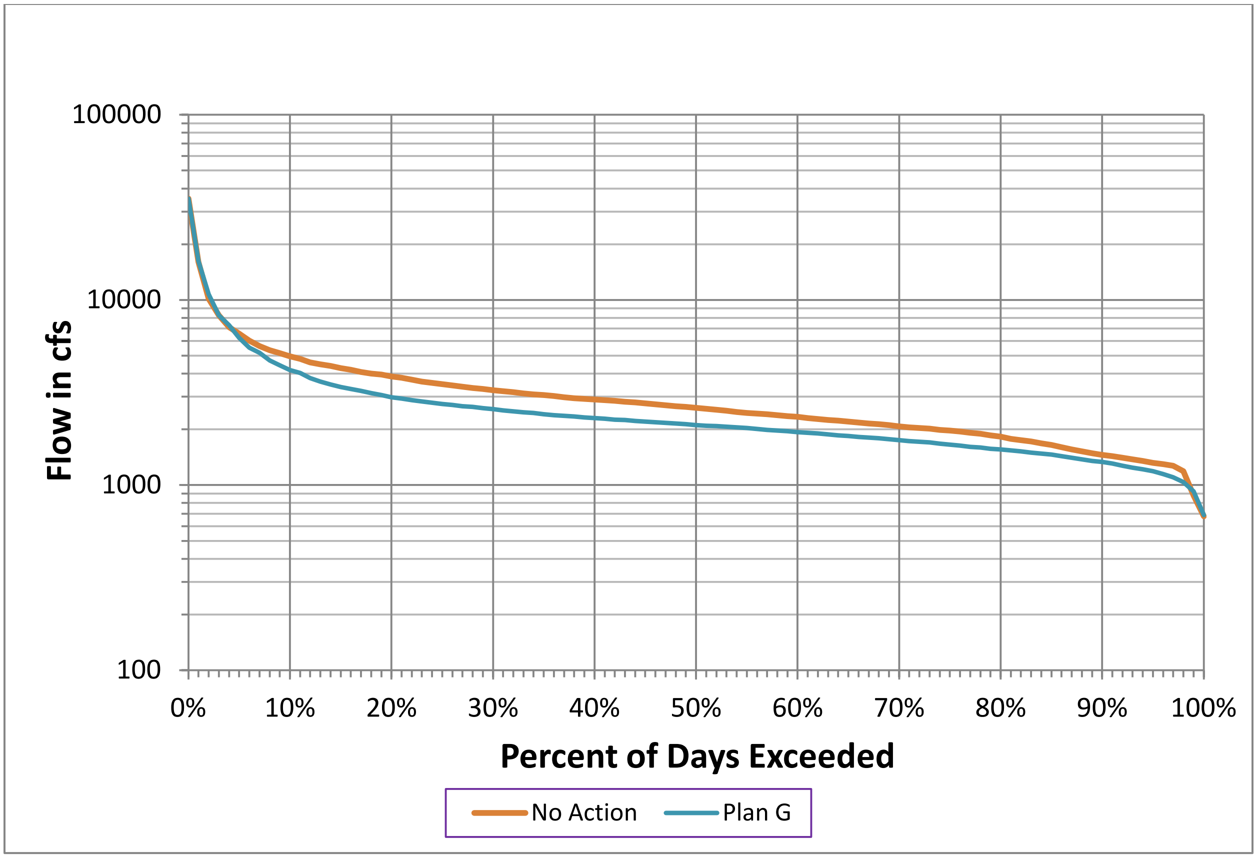

Figure 6.1-6. Coosa River at Rome, Georgia, daily discharge (cfs)—percent of days exceeded for October over the modeled period of record (1939–2008).

Proposed Action Alternative

Over the modeled period of record, the percent of days that proposed action and the current operation would likely exceed 7Q10 values is in the range of 86 percent or higher (Table 6.1-2). From January through July, values between the plans would be about the same. During August to November, the proposed action would reduce the number of days the Coosa River flows at Rome would exceed 7Q10 values from 2 to 4 percent below the current operation. In December, the proposed action would likely increase the number days the 7Q10 values would be exceeded by 4 percent over the current operation. Thus, the operational changes of the proposed operation, particularly the reduction in hydropower generation at Allatoona Lake during fall drawdown, would be expected to shift releases from September through December. However, the model suggests those changes would not significantly affect flow characteristics in the Coosa River at Rome compared to the current operation.

Compared to the current operation, the effects of operational features on flow and water quality conditions under the proposed plan would not be expected to affect fish or aquatic resources on the Coosa River at Rome.

Table 6.1-2.
Coosa River at Rome, Georgia—Percent of days (by month) over the modeled period of record (1939–2008) that flows would likely exceed 7Q10 value

Month	7Q10 flow value	Percent of days flow would exceed 7Q10 value

		Current operation	Proposed Action
January	2,544	92%	93%
February	2,982	93%	94%
March	3,258	97%	96%
April	2,911	93%	93%
May	2,497	92%	92%
June	2,153	92%	91%
July	1,693	93%	93%
August	1,601	91%	89%
September	1,406	93%	86%
October	1,325	94%	90%
November	1,608	92%	90%
December	2,043	93%	97%

Alabama River at Montgomery, Alabama

The following subsections describe the effects of the current operation and proposed action on stream flow and water quality conditions as they relate to fish and aquatic resources in the Alabama River at Montgomery, Alabama. Flow conditions at that location are mainly controlled by water management activities at APC projects upstream on the Coosa and Tallapoosa Rivers and are minimally affected by projects in the upper portion of the basin (e.g., Carters Lake and Allatoona Lake). A flow target (weekly average of 4,640 cfs) has been established at the location to meet navigation and waste assimilation objectives for the Alabama River downstream of Montgomery. It is also an important component of drought management and response. Fish and aquatic resources inhabiting the Alabama River at Montgomery would experience no adverse effects.

Current operation

Average daily flows over the 70-year modeled period of record indicate peak flows slightly above 46,000 cfs by the end of March, followed by a rapid decline to 15,000 cfs by the end of May, and a minimum level of about 8,600 cfs in early September (Figure 6.1-7). In the fall, average flows gradually increase to about 30,000 cfs by the end of December. The percent exceedance of flow levels ranges from approximately 900 cfs to 220,000 cfs (Figure 6.1-8). Under the current operation, the 4,640 cfs minimum flow target would be met 99 percent of the time.

Water quality conditions are expected to improve under the current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. Therefore, there would be no adverse effects on fish and aquatic resources.

Figure 6.1-7. Alabama River at Montgomery, average daily discharge (cfs) over the modeled period of record (1939–2008).

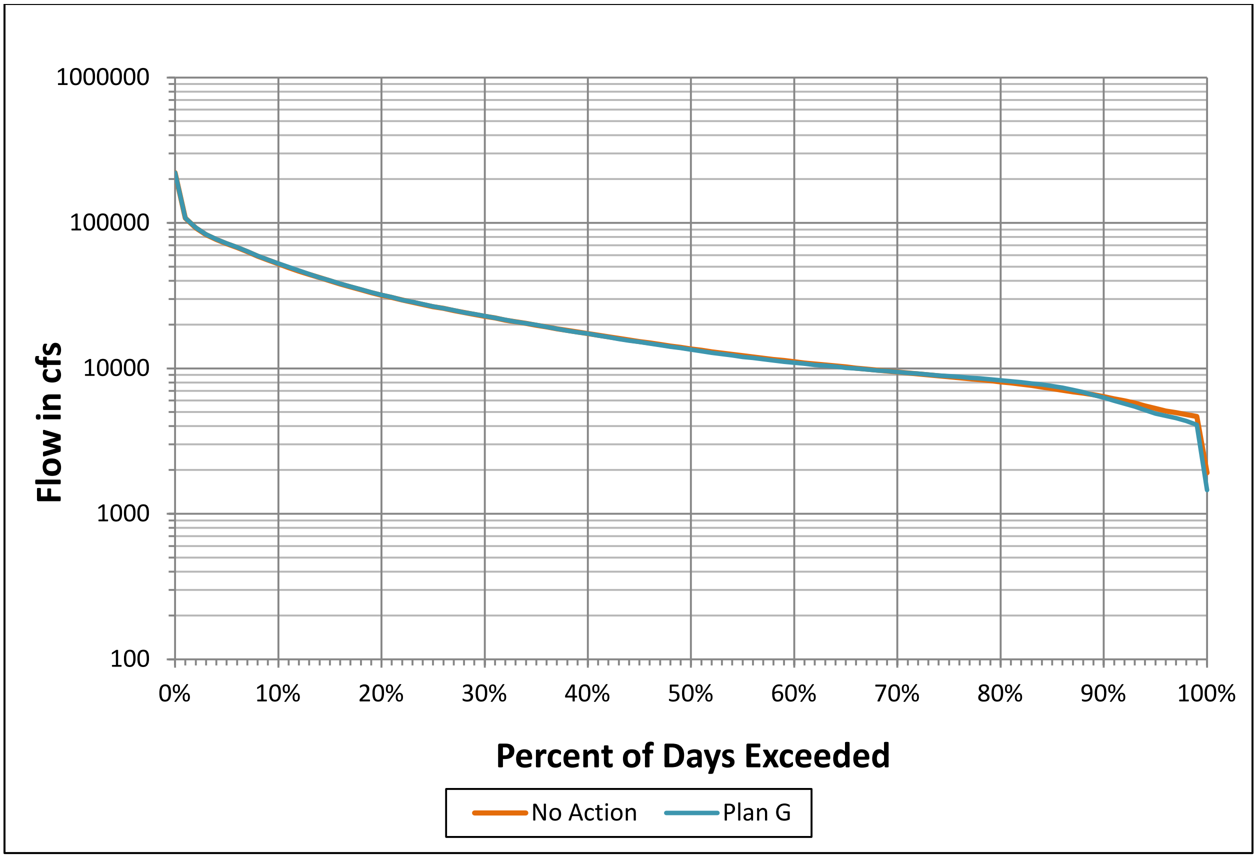

Figure 6.1-8. Alabama River at Montgomery, daily discharge (cfs)—percent of days exceeded over the modeled period of record (1939–2008).

Proposed Action Alternative

The effects of operational features on flow and water quality conditions under the proposed plan would result in adjustments designed to meet navigational needs when sufficient flows are available and would provide progressively more stringent drought management plans under dry conditions. Those objectives would be at least partially met by the proposed action with little change on overall flow characteristics of the Alabama River at Montgomery. Under the alternative, the minimum flow target would be expected to be met 96 percent of the time.

Because the reservoirs above the Alabama River at Montgomery have limited storage and function more as run-of-river operations, water quality parameters would not be expected to change.

With respect to the current operation, the effects of operational features on flow and water quality conditions under proposed action would not be expected to affect fish and aquatic resources on the Alabama River at Montgomery.

Alabama River downstream of Claiborne Lock and Dam and Lake

The following subsections describe the effects of the current operation and proposed plan on stream flow and water quality conditions as they relate to biological resources in the Alabama River downstream of Claiborne Lock and Dam and Lake. A minimum flow target of 6,600 cfs, is designated at that location. That flow collaterally supports navigational uses, but the minimum flow alone is not sufficient to maintain a viable navigation channel in the lower Alabama River downstream of Claiborne Lock and Dam, with or without maintenance dredging in that reach. Fish and aquatic resources inhabiting the Alabama River at Claiborne Lock and Dam and Lake, as well as downstream of the lock and dam, would experience no adverse effects.

Current operation

Average daily flows in the Alabama River downstream of Claiborne Lock and Dam and Lake over the 70-year modeled period of record are presented in Figure 6.1-9. Peak flows occur at just below 68,000 cfs at the end of March and rapidly decline, falling to a minimum of about 10,600 cfs in early September. The ability of Robert F. Henry Lock and Dam and Millers Ferry Lock and Dam to reregulate flows is limited and, thus, do not exert an effect on flows downstream of Claiborne Lock and Dam and Lake. The percent exceedance of flows levels ranges from approximately 800 cfs to 269,000 cfs (Figure 6.1-10). Under the current operation, the 6,600 cfs minimum flow target would be met 98 percent of the time over the period of record.

Water quality conditions are expected to improve under the current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. Overall, no adverse effects would be expected on fish and aquatic resources.

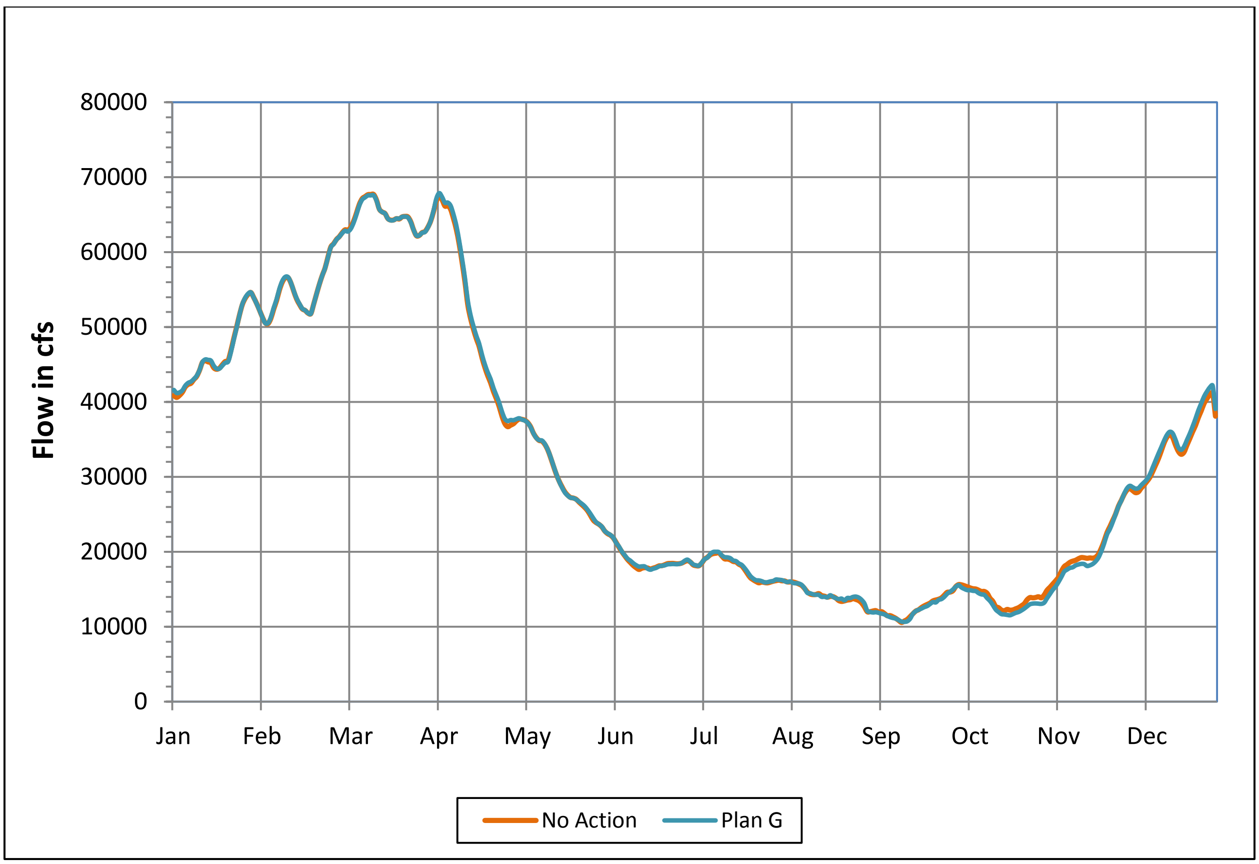

Figure 6.1-9. Claiborne Lock and Dam, average daily discharge (cfs) over the modeled period of record (1939–2008).

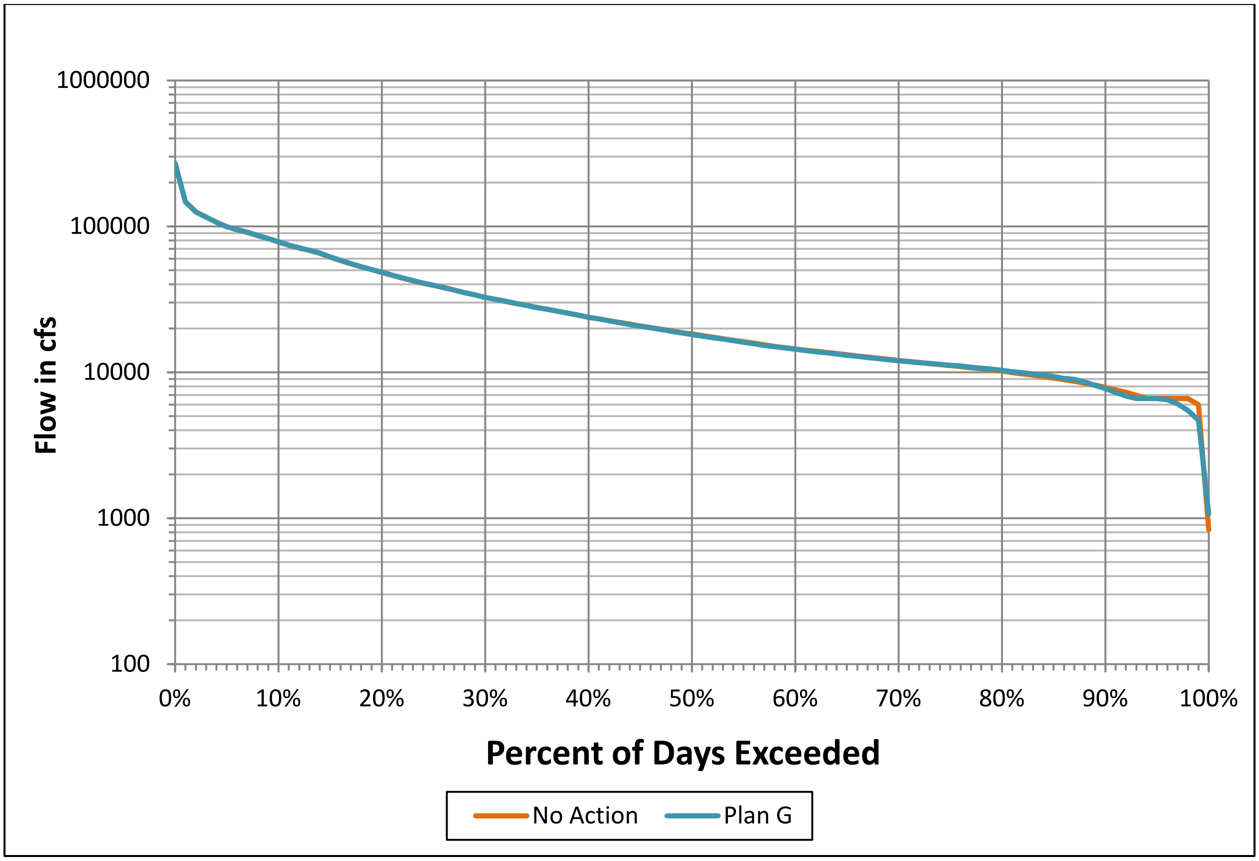

Figure 6.1-10. Downstream of Claiborne Lock and Dam, daily discharge (cfs)—percent of days exceeded over the modeled period of record (1939–2008).

Proposed Action

With respect to the current operation, the effects of operational features on flow and water quality conditions under the proposed action would result in adjustments designed to meet navigational needs when sufficient flows are available and would provide progressively more stringent drought management plans under dry conditions. Objectives would be at least partially met by with little change to overall flow characteristics downstream of Claiborne Lock and Dam and Lake. Under the proposed operation, the minimum flow target would be expected to be met 95 percent of the time.

Water temperatures under low-flow conditions would be expected to increase by approximately 1.8 °F (1.0 °C) upstream of Robert F. Henry Lock and Dam (Figure 6.1-11 in response to flows decreasing by 2,500 cfs. However, temperatures would stabilize downstream and show little change downstream of Claiborne Lock and Dam and Lake. Median DO concentrations would be expected to show an inverse response, decreasing approximately 1.0 mg/L upstream of Robert F. Henry Lock and Dam and with little difference from No Action Alternative values downstream of Claiborne Lock and Dam and Lake.
With respect to the current operation, the effects of operational features on flow and water quality conditions under the proposed action would not be expected to affect fish and aquatic resources on the Alabama River at Claiborne Lock and Dam and Lake and on the lower Alabama River downstream of the lock and dam.

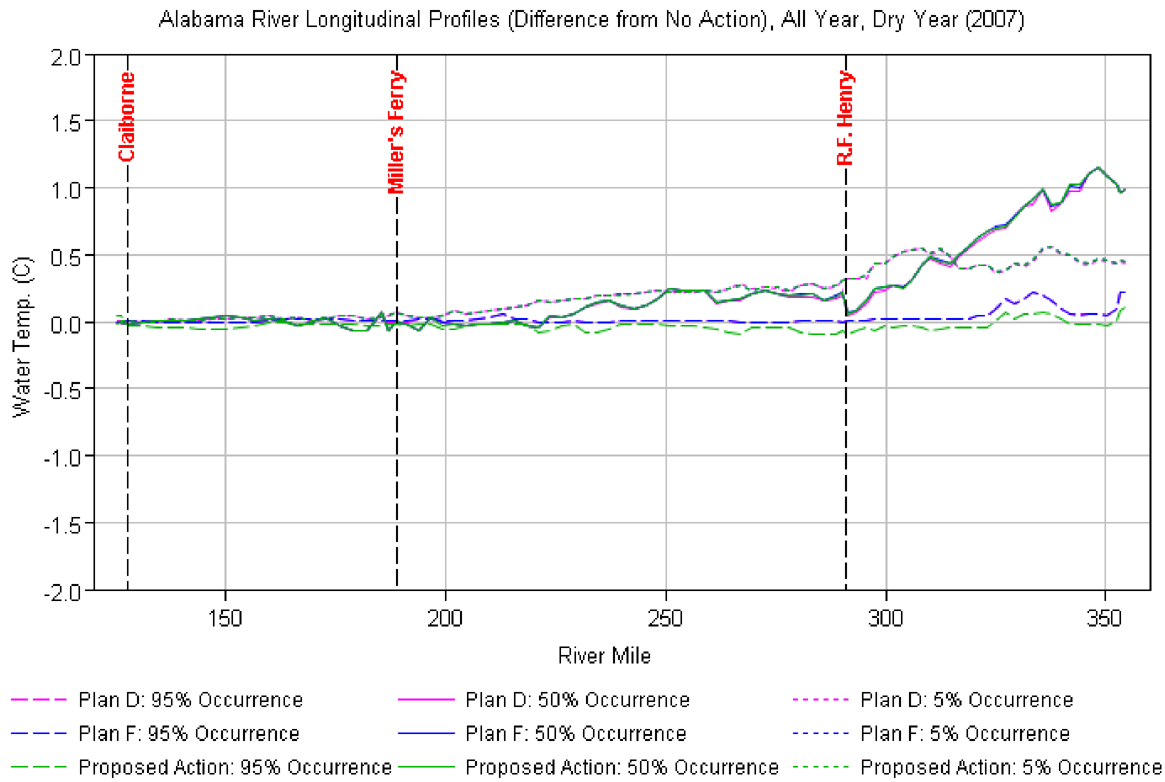

Figure 6.1-11. Alabama River water temperature longitudinal profile for a representative dry-weather year (2007).

Reservoirs

This section describes the general effects on reservoir fisheries and other aquatic resources associated with operational changes to reservoir management in the ACT Basin. The proposed changes would most notably affect lake levels in the upper portion of the basin, particularly at Allatoona Lake. Thus, a detailed assessment of modeled surface water elevation data at Allatoona Lake was conducted. The assessment uses a performance measure developed by USFWS and is based on work products of the Comprehensive Study (USACE, Mobile District 1998a) to characterize the potential effect of the alternative flow scenarios on habitat suitability of select recreationally important species. The lack of any substantive change in habitat in response to the operational alternatives at Allatoona Lake confirms the exclusion of further analyses of downstream reservoirs, where modeled water quantity and water quality data suggest that changes would be minimal.

Operational flow changes affect habitat for reservoir fisheries and other aquatic resources mainly through changes in water levels, changes in reservoir flushing rates (retention times), and associated changes in water quality parameters, such as primary productivity, nutrient loading, DO concentrations, and vertical stratification. Seasonal water level fluctuations can substantially influence littoral (shallow-water) habitats, decreasing woody debris deposition, restricting access to backwaters and wetlands, and limiting seed banks and stable water levels necessary for native aquatic vegetation (Miranda 2008).Those limitations, in turn, significantly influence the reproductive success of resident fish populations. High water levels inundating shoreline vegetation during spawning periods frequently have been associated with enhanced reproductive success and strong year class development for largemouth bass, spotted bass, bluegill, crappie, and other littoral species (Ploskey and Reinert 1995; Ryder et al. 1995). Conversely, low or declining water levels can adversely affect reproductive success by reducing the area of available littoral spawning and rearing habitats.

In a study of 11 Alabama reservoirs, which included 6 reservoirs in the ACT Basin, Maceina and Stimpert (1998) found consistent relations between the production of strong crappie year classes and wet winters before crappie spawning. Wet winters resulted in shorter retention time (i.e., higher flushing rates) in reservoirs with stable water levels, and higher water levels in fluctuating reservoirs. High winter inflows might favor crappie production by increasing nutrient loading, which in turn stimulates primary and secondary production later in the growing season (Maceina and Stimpert 1998; Ploskey and Reinert 1995). In reservoirs with stable water levels and low retention, longer post-winter retention also was associated with greater crappie production, possibly related to reduced flushing of young-of-year fish in the discharge from the impoundment and more stable feeding conditions (Maceina and Stimpert 1998).

Fish passage is provided at Claiborne Lock and Dam and Millers Ferry Lock and Dam through the manipulation of lock schedules during February through May to benefit migratory fish. Monitoring the effectiveness of those operations and determining the species using the locks is part of an ongoing collaborative study between The Nature Conservancy, Auburn University, ADCNR, USFWS, and others. The continued operation of the locks for the purposes of providing passage is anticipated to remain unchanged and, thus, will not be affected under the No Action or Proposed Action Alternatives.

Allatoona Lake

Performance measures developed by USFWS during the Comprehensive Study were used in the evaluation of surface water elevations at Allatoona Lake. The performance measures assess reservoir fisheries habitat on the basis of the premise that greater departure of reservoir levels from optimum levels for critical guilds of fishes (e.g., littoral spawning, rearing) results in greater effects on their habitats. The performance measure uses modeled output of daily reservoir elevations over the 70-year period of record and *acceptability levels* of reservoir elevations (i.e., suitability criteria) for critical guilds as identified for each reservoir by regional fisheries experts in an iterative questionnaire survey developed by Ryder et al. (1995). The performance measure also incorporates day-to-day reservoir level stability over critical spawning and rearing periods as a weighting factor, with stable or rising levels having a positive effect and falling levels having a negative effect on fish habitat. Performance measure scores were computed for each year in the period of record at Allatoona Lake. Scores range between 0 for least acceptable and 1.0 for most acceptable reservoir level habitat conditions (USACE, Mobile District 1998a). A graphical example for Allatoona Lake is given in Figure 6.1-12.

Median performance measure values (50^{th} percentile) of all modeled alternatives in Allatoona Lake were low (0.23 to 0.25), indicating a lack of suitable fisheries habitat (Table 6.1-3). However, the range of values over the period of record shows little change among the operational alternatives. The subtle differences in performance measures can be attributed to operational changes of the fall drawdown and are most notable between the current operation and proposed action during the rearing and summer habitat critical periods. Acceptability levels track closely during the spawning period, showing a slight divergence in late May (Figure 6.1-13). Values remain below 0.5 until the latter half of April, reaching suitable levels for spawning of recreationally important species, such as largemouth bass, spotted bass, and crappie. Similar rearing habitat values are maintained for both alternatives at levels below 0.4 throughout the critical period of June 1 to November 1, with the proposed action exhibiting a greater decline and falling below the current operation in response to drawdown levels during late September and October (Figure 6.1-14). Acceptability level scores of summer habitat follow a similar trajectory, falling below 0.2 by early August (Figure 6.1-15).

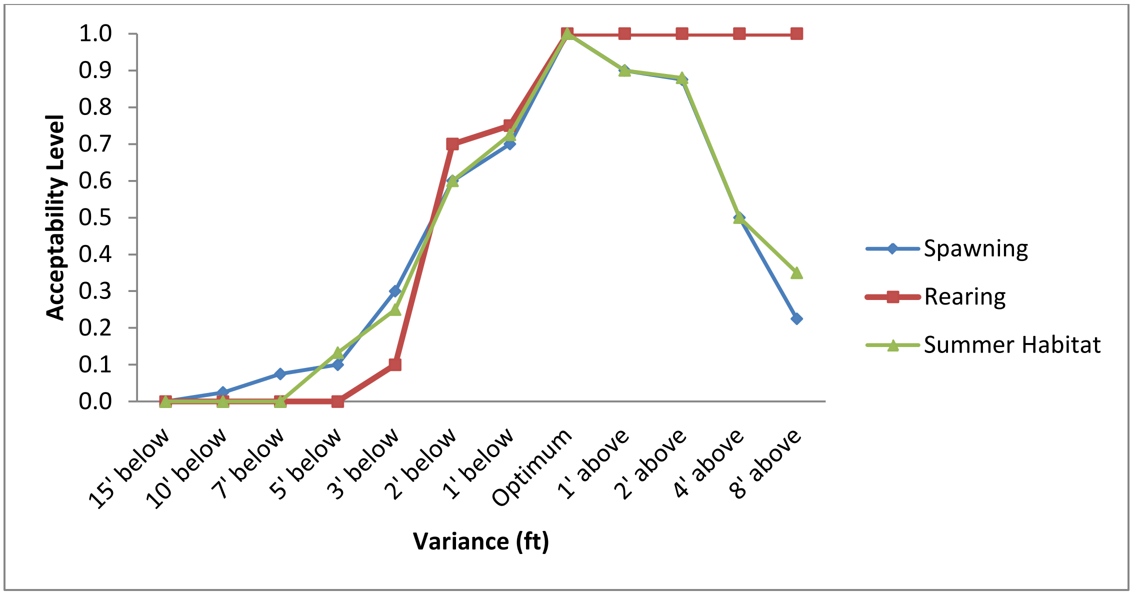

Figure 6.1-12. Example of acceptability scores for varying surface water elevations at Allatoona Lake.

Table 6.1-3.
Range of annual performance measure values of fisheries habitat at Allatoona Lake over the modeled period (1939–2008)

	Current Operation	Proposed Action Alternative
10th Percentile	0.09	0.09
25th Percentile	0.18	0.16
50th Percentile	0.25	0.24
75th Percentile	0.32	0.30
90th Percentile	0.38	0.37
Minimum	0.00	0.01
Maximum	0.54	0.51

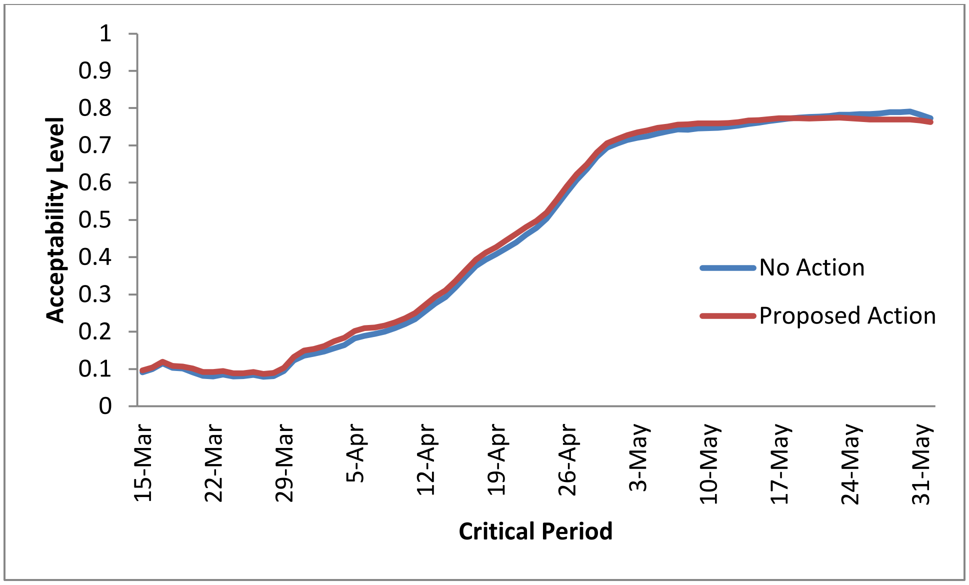

Figure 6.1-13. Daily spawning habitat acceptability level values of the current operation and the proposed action at Allatoona Lake over the modeled period (1939–2008).

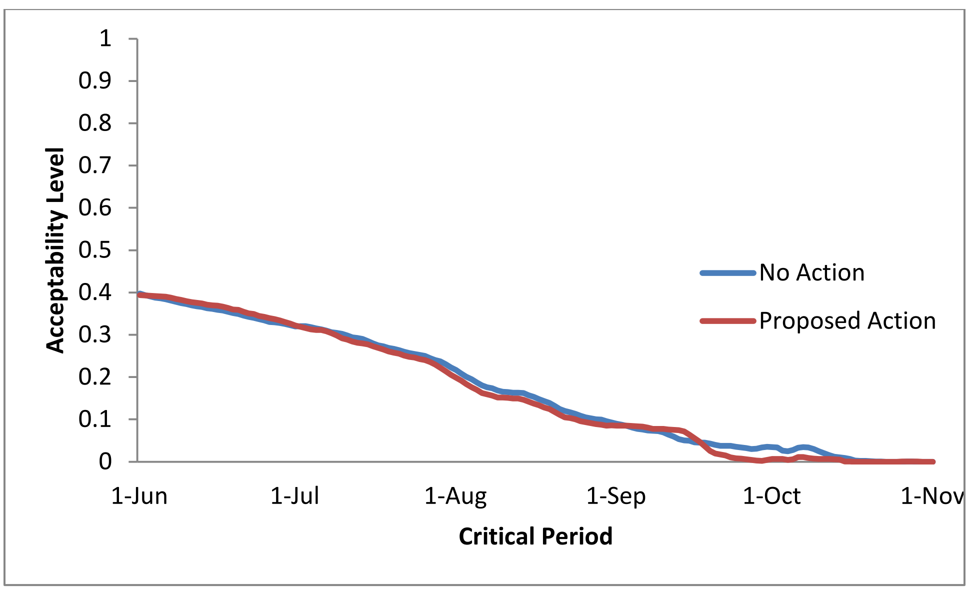

Figure 6.1-14. Daily rearing habitat acceptability level values of the current operation and the proposed action at Allatoona Lake over the modeled period (1939–2008).

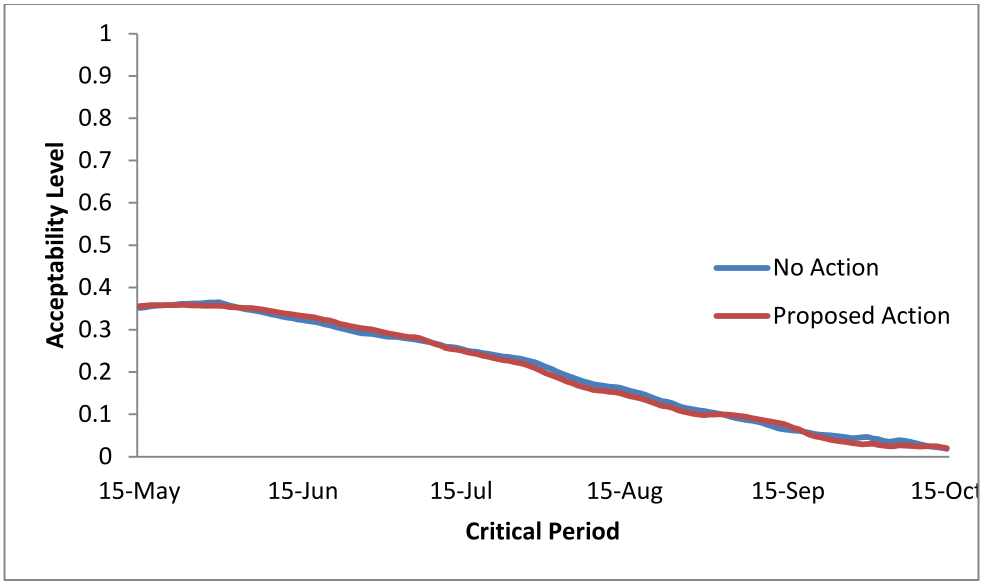

Figure 6.1-15. Daily summer habitat acceptability level values of the current operation and the proposed action at Allatoona Lake over the modeled period (1939–2008).

Current Operation

The current operation would maintain marginally higher performance measure values than the proposed action. The difference is attributable to proposed operational changes during the fall drawdown period and is most notable in rearing habitat acceptability level values in September and October. However, the differences would not result in any appreciable change in fish habitat among alternatives. Because operational changes would be most significant at Allatoona Lake, the lack of any notable change in fish habitat is applicable to other facilities in the ACT Basin, where the influence of the proposed modifications would be dampened. No adverse effects on fish or aquatic resources are expected.

Proposed Action

On the basis of modeled water surface elevations over the 70-year period of record, implementing the proposed plan would offer no significant change to fish habitat compared to the current operation. Operational changes would be most pronounced at Allatoona Lake. Thus, the lack of any notable change in fish habitat is applicable to other facilities in the ACT Basin, where the influence of the proposed modifications would be dampened. No adverse effects on fish or aquatic resources would be expected.

Estuaries

Estuaries exist at the junction between freshwater and salt water, and their function is integrally linked to freshwater inputs. Principal consequences of managing freshwater flow to estuaries are related to the magnitude and timing of flows (Mann and Lazier 1991). Freshwater flows are important in maintaining the delivery of material and energy critical to estuarine productivity and in providing habitat conditions conducive to maintaining the diversity and abundance of the estuarine community.

Oyster fisheries can be threatened by both drought and flood, and there is evidence of beneficial and detrimental effects of each (Livingston 1991; Wilber 1992; Livingston et al. 2000; Turner 2006; Wang et al. 2008; Buzan et al. 2009). Flow management can exacerbate those conditions, although it is also possible that it decreases flood magnitudes (through peak suppression and decreased drought severity through required releases) thereby mitigating some of the effects. However, flow management operations could result in more frequent and longer-duration periods of low flow if flows are retained upstream for required uses, forcing downstream management of a lower flow scenario than would be natural. Extended periods of low flow increase estuarine salinity. Some authors suggest that increased salinities threaten oyster fisheries (e.g., Livingston et al. 2000), whereas others indicate the opposite might be true (e.g., Turner 2006). More explicit hydrodynamic models of oyster population processes indicate more dramatic effects on oyster growth at lower salinities (higher flow) than under increased salinities, where growth rates are stable (Wang et al. 2008). Salinity and, therefore, freshwater discharge are important to oyster production. Many other factors, however, also affect oyster production. Little evidence suggests that the proposed operational changes, as opposed to drought or those other factors, would have a detrimental effect on oyster productivity in Mobile Bay.

Current Operation

As discussed earlier, flows modeled over the 70-year period of record in the Alabama River downstream of Claiborne Lock and Dam and Lake peak at just below 68,000 cfs at the end of March, declining to a minimum of approximately 10,600 cfs in early September. Under the current operation, the established 6,600 cfs minimum flow requirement would be met 98 percent of the time over the period of record.

Water quality conditions are expected to improve under the current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. There would be no adverse effects on fish or aquatic resources.

Proposed Action

Changes in flow characteristics and water quality as far downstream as the Mobile Bay estuary would be expected to be minimal or non-detectable for the proposed action. Both flow magnitude and timing would be expected to be similar for wet, dry, and normal years. Thus, with respect to the current operation, the flow management operations for flow and water quality conditions would not be expected to affect fish or aquatic resources in Mobile Bay under the proposed action.

Protected Species

Reservoir operations can influence two types of direct or indirect actions that could affect the habitats of federal- and state-protected species listed in Table 6.1-4.

- Alteration of flow regimes in reservoirs and downstream of dams
- Water quality degradation

The agencies implementing or regulating such actions would be responsible for determining the project-specific effects on protected species, because the effects would depend on where and how the actions occur. The following discussion guides assessment efforts when agencies are facing those choices.

Alteration of Flow Regimes in Reservoirs and Downstream of Dams

Little information is available on the linkages between flow regime characteristics and the life histories of protected species occurring in the basin. While this is beyond the scope of the current effort, it might be possible to quantify optimal flow regimes for some of or all the riverine-dependent species, or even minimum flow regimes that would ensure each species' survival and persistence in the basin. Such an effort would show that some species do best in wet years and others do best in dry years. However, overall biological diversity and ecosystem function benefit from inter-annual variations in species success (Tilman et al. 1994). Previous efforts at riverine ecosystem restoration have demonstrated that it is not possible to simultaneously optimize conditions for all species (Sparks 1992, 1995; Toth 1995). Therefore, the best strategy for protecting the ecology and biodiversity of the basin, including its protected species, is to maintain or restore to some extent the natural patterns of variability of flow regimes throughout the basin.

Water Quality Degradation

Riverine communities generally require clean water with sufficiently high dissolved oxygen concentration and appropriate temperatures. Although water quality has improved in the ACT Basin since the 1970s because of controls on point source pollutant discharges under the CWA, water quality problems related largely to nonpoint source sedimentation and other contaminants continue in many river reaches. Biological conditions in the ACT Basin are most severely degraded in the urbanized reaches of the basin (Frick et al. 1998). Water quality degradation is a frequently cited concern for the riverine-dependent species included in the *Comprehensive Study's Protected Species Report* (Ziewitz et al. 1997). It is quite likely that water quality is a limiting factor for several of the species, including many of the 16 federally listed mussels listed in Table 6.1-4. Any actions that could alter water quality must address effects on the protected species.

Table 6.1-4.
Federally protected species potentially affected by water allocation in the ACT Basin

State	Common name	Scientific name	Endemic	Federal	AL	GA	Sub basin	Habitat
	Mammals							
AL	Alabama beach mouse	*Peromyscus p. ammobates*		E	SP		MB	Scrub dunes of the coastal strand community
AL	Perdido Key beach mouse	*P. p. trissyllepsis*		E	SP		MB	Scrub dunes of the coastal strand community
AL	West Indian manatee	*Trichechus manatus*		E	SP	E	MB	Open estuarine
	Birds							
AL/GA	Wood stork	*Mycteria americana*		E	SP	E	UCO, LCO, T, AL	Forested wetland/shallow water
	Fish							
AL	Gulf sturgeon	*Acipenser oxyrinchus desotoi*		T	SP		AL	Riverine mainstem
AL	Pygmy sculpin	*Cottus paulus*	Y	T	SP		LCO	Riverine/tributary, coldwater spring (only)
AL/GA	Blue shiner	*Cyprinella caerulea*	Y	T	SP	E	LCO, UCO	Riverine/mainstream/large tributary/rocky
GA	Etowah darter	*Etheostoma etowahae*	Y	E		E	UCO	Riverine/mainstream/ tributary/riffle
GA	Cherokee darter	*E. scotti*	Y	T		T	UCO	Riverine/tributary small-medium streams
AL	Cahaba shiner	*Notropis cahabae*	Y	E	SP		AL	Riverine/mainstream/pool/ clear waters
GA	Amber darter	*Percina antesella*	Y	E		E	UCO	Riverine/mainstream/large tributary/riffle
AL/GA	Goldline darter	*P.aurolineata*	Y	T	SP	T	UCO, AL	Riverine/mainstream/riffles and runs
GA	Conasauga logperch	*P. jenkinsi*	Y	E		E	UCO	Riverine/mainstream/riffles and runs
AL	Alabama sturgeon	*Scaphirhynchus suttkusi*	Y	E	SP		AL	Riverine/mainstream/large tributary/sand and gravel substrates
	Insects							
AL	Mitchell's satyr butterfly	*Neonympha m. mitchellii*		E	SP			
	Mollusks							
AL/GA	Upland combshell	*Epioblasma metastriata*		E	SP	E	UCO, AL	Riverine, stable gravel or sandy gravel substrates
AL/GA	Southern acornshell	*E. othcaloogensis*	Y	E	SP	E	LCO, AL, UCO	Riverine/rock and gravel substrates
AL	Southern combshell	*E. penita*		E	SP		AL	Riverine, stable gravel or sandy gravel substrates
AL	Orangenacre mucket	*Lampsilis perovalis*		E	SP		AL	Riverine, stable gravel or sandy gravel substrates
AL/GA	Finelined pocketbook	*L. altilis*		T	SP	T	AL, LCO, UCO, T	Riverine, stable gravel or sandy gravel substrates
AL	Alabama pearlshell	*Margaritifera marrianae*		C			AL	Riverine/stable or sandy gravel substrate

Table 6.1-4. (continued)

State	Common name	Scientific name	Endemic	Federal	AL	GA	Sub basin	Habitat
	Mollusks (continued)							
AL/GA	Alabama moccasinshell	*Medionidus acutissimus*		T	SP	T	UCO	Riverine/rivers and large creeks
AL/GA	Coosa moccasinshell	*Medionidus parvulus*		E	SP	E	UCO	Riverine, stable gravel or sandy gravel substrates
GA	Painted clubshell	*Pleurobema chattanoogaense*		C		E	UCO	Riverine/medium size rivers/stable gravel or sandy gravel substrate
AL/GA	Southern clubshell	*P. decisum*		E	SP	E	AL, T	Riverine/medium size rivers/stable substrate
AL/GA	Southern pigtoe	*P. georgianum*	Y	E	SP	E	UCO, LCO	Riverine, stable gravel or sandy gravel substrates
GA	Georgia pigtoe	*P. hanleyanum*	Y	E*		E	UCO	Riverine/medium size rivers/stable gravel or sandy gravel substrate
AL/GA	Ovate clubshell	*P. perovatum*		T	SP	E	T	Riverine, stable gravel or sandy gravel substrates
AL	Heavy pigtoe	*P. taitianum*		E	SP		AL	Riverine/stable grave or sandy gravel substrates
	Inflated heelsplitter	*Potomilus inflatus*		T	SP		AL, LCO, UCO, T	Riverine/stable grave or sandy gravel substrates
AL/GA	Triangular kidneyshell	*Ptychobranchus greenii*		E	SP	E	UCO, AL, LCO	Riverine/high quality riffle-run
	Snails							
AL	Lacy elimia	*Elimia crenatella*	Y	T	SP		LCO	Riverine/mainstream/ tributary riffle
AL	Round rocksnail	*Leptoxis ampla*	Y	C	SP		AL	Riverine/mainstream/ tributary riffle
GA	Georgia rocksnail	*L. downei*		E*		E	UCO	Riverine/mainstream/ tributary riffle
GA	Interrupted rocksnail	*L. foremani*		E*		E	LCO, UCO	Riverine/mainstream/ tributary riffle
AL	Plicate rocksnail	*L. plicata*		T	SP			Riverine/mainstream/ tributary riffle
AL	Painted rocksnail	*L. taeniata*	Y	C	SP		LCO	Riverine/mainstream/ tributary riffle
AL	Flat pebblesnail	*Lepyrium showalteri*	Y	E	SP		AL	Riverine/mainstream/ tributary riffle
AL/GA	Cylindrical lioplax snail	*Lioplax cyclostomaformis*	Y	E	SP		AL	Riverine/mainstream/ tributary riffle
AL	Tulotoma snail	*Tulotoma magnifica*	Y	E	SP		AL, LCO	Riverine/mainstream/ tributary riffle
	Plants							
AL	Price's potato bean	*Apios priceana*		T			AL	Mesic soils in open areas along creeks
AL/GA	Georgia rockcress	*Arabis georgiana*		C		T	UCO	Dry, shallow soils on rocky bluffs & sandy loam soils on eroding river banks
AL/GA	Alabama leather flower	*Clematis socialis*		E		E	UCO	Mesic flats along intermittent creeks

Table 6.1-4. (continued)

State	Common name	Scientific name	Endemic	Federal	AL	GA	Sub basin	Habitat
	Plants (continued)							
AL	Whorled sunflower	*Helianthus verticillatus*		E			UCO	Relict praries, moist prarie-like openings along creeks
AL/GA	Mohr's Barbara's buttons	*Marshallia mohrii*		T		T	LCO, UCO	Palustrine/emergent/open water
AL/GA	White fringeless orchid	*Platanthera integrilabia*		C		T	T, UCO	Boggy areas at stream heads and seepage slopes
AL	Harperella	*Ptilimnium nodosum*		E			LCO, UCO	Palustrine/riverine
GA	Michaux's Sumac	*Rhus michauxii*		E		E	UCO	Sandy or rocky open woods on acidic soils
AL/GA	Kral's water-plantain	*Sagittaria secundifolia*		T			UCO	Riverine/tributary/riffle/run/pool
AL/GA	Green pitcher-plant	*Sarracenia oreophila*		E		E	LCO, T, UCO	Palustrine/forested, bogs, streambanks
AL	AL canebrake pitcher plant	*Sarracenia rubra alabamensis*	Y	E			LCO, T	Palustrine, sandhills, seeps, bogs, and swamps
AL/GA	Georgia aster	*Symphyotrichum georgianum*		C		T	UCO	Post oak-savanna communities and relict praries
AL/GA	TN yellow-eyed grass	*Xyris tennesseensis*		E		E	LCO, UCO	Palustrine; margins in and along spring runs and wet meadows
	Reptiles and Amphibians							
AL	Reticul. flatwoods salamander	*Ambystoma bishopi*		T	SP		AL	Open-canopied, flatwoods & savannas dominated by longleaf pine
AL/GA	Loggerhead sea turtle	*Caretta caretta*		T	SP	E	MB	Open estuarine
AL/GA	Green sea turtle	*Chelonia mydas*		T	SP	T	MB	Open estuarine
AL	Eastern indigo snake	*Drymarchon corais couperi*		T	SP	T	AL	Flatwoods, tropical hammocks, dry glades and moist bogs
AL	Kemp's ridley sea turtle	*Lepidochelys kempii*		E	SP	E	MB	Open estuarine
AL	Red hills salamander	*Phaeognathus hubrichti*		E	SP		AL	Steep sloped ravines and bluffs dominated by hardwoods
AL	Black pine snake	*Pituophis melanoleucus lodingi*		C	SP		AL	Xeric, fire-maintained longleaf pine forest
AL	Alabama red-belly turtle	*Pseudemys alabamensis*		E	SP		AL	Rivering/mainstream/palustrine/open estuarine/sub and intertidal

Notes:
E = listed as endangered; C = candidate species for listing; T = listed as threatened; SC = federal species of special concern; SP = species formally protected; R = rare, no legal status; Y = species is endemic to basin; s/a = protected because of similar appearance to the listed species; CO = Coosa; LCO = Lower Coosa; UCO = Upper Coosa; AL = Alabama; T = Tallapoosa; MB = Mobile Bay.

Coosawattee River downstream of Carters Reregulation Dam

The following subsections describe the effects of the current operation and proposed action on protected species in the Coosawattee River downstream of Carters Reregulation Dam. Modeled output of stream flow and water quality over the period of record were evaluated to with respect to the distribution of federally listed species and designated critical habitat units within the subbasin. As previously stated, dedicated studies to address the impacts of the proposed operational changes on protected species not are available and are beyond the scope of this effort.

This segment of the ACT Basin is inhabited by several federally listed species of freshwater mussels, fish and a single snail species (see Table 6.1-4). Critical habitat has been designated for mussels, including the southern acornshell, ovate clubshell, southern clubshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, Coosa moccasinshell, southern pigtoe and fine-lined pocketbook (Figure 6.1-16). The federally threatened goldline darter and federally endangered interrupted rocksnail also exist along this reach.

Current Operation

USFWS has recommended seasonal minimum flow targets ranging from 240 cfs to 865 cfs. Under the current operation, March and December targets (selected as examples to represent seasonality and months during which USFWS recommended minimum flows are higher than the current 240 cfs requirement) are already met approximately 87 and 81 percent of the time, respectively, under current operations. Water quality conditions are expected to improve for the current operation, as states adhere to defined regulations regarding wasteload allocation, management of NPDES facilities and non-point sources. Conditions under this alternative are consistent with current conditions and thus the current operation is not expected to affect protected species on the Coosawattee River downstream of Carters Reregulation Dam.

Proposed Action Alternative

HEC-ResSim model results indicate that the addition of the seasonally variable minimum flow targets would not yield significant changes in the mean daily flows over the period of record. However, notable improvements are realized during low flow events. Flows at the minimum levels of 240 cfs occur approximately 4 percent of the time under the proposed action, compared to 9 percent for the current operation. Changes in water quality, with respect to temperature and dissolved oxygen values, would be expected to be minor for the proposed action. Thus, with respect to the current operation, the effects of operational features on flow and water quality conditions presented under the proposed action would be expected to have no adverse effects on protected species of the Coosawattee River downstream of Carters Reregulation Dam.

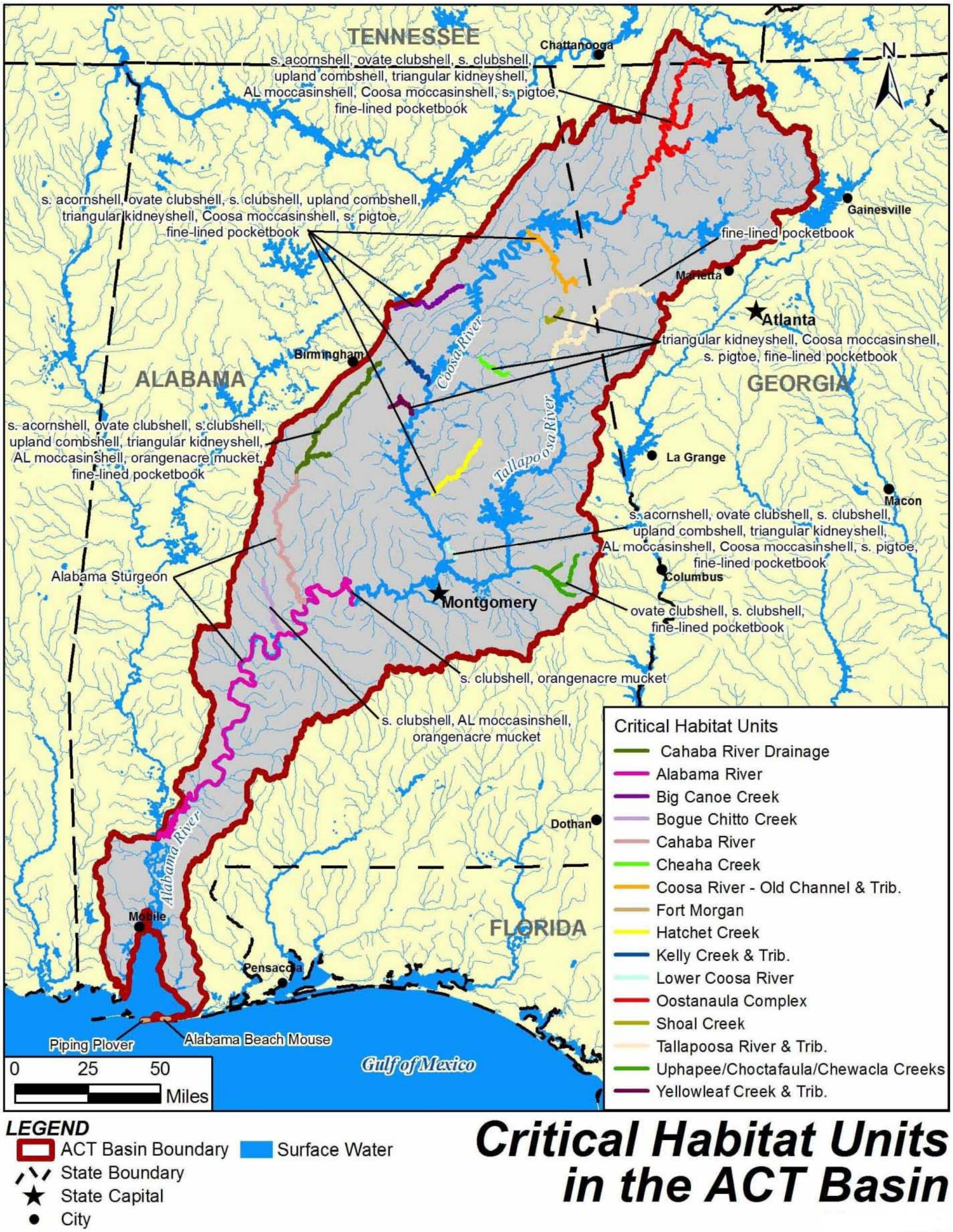

Figure 6.1-16. Critical Habitat Units in the ACT Basin.

Etowah River downstream of Allatoona Lake

The following subsections describe the effects of the current operation and proposed action on protected species in the Etowah River downstream of Allatoona Lake. Modeled output of stream flow and water quality over the period of record were evaluated to with respect to the distribution of federally listed species and designated critical habitat units within the subbasin. As previously stated, dedicated studies to address the impacts of the proposed operational changes on protected species are not available and are beyond the scope of this effort.

Federally listed species in the Etowah River downstream of Allatoona Lake includes eight freshwater mussel species, three fish species and two snail species. Critical habitat has not been established along this reach (Figure 6.1-16). With exception to two mussel species and one fish species, which are federally threatened, all are currently listed as endangered.

Current Operation

Flow conditions over the modeled period are expected to remain consistent with current conditions and water quality is expected to improve as States adhere to defined regulations regarding wasteload allocation, management of NPDES facilities and non-point sources. Thus, the current operation is not expected to affect protected species on the Etowah River downstream of Allatoona Lake.

Proposed Action

The proposed operation proposes a revision of the number and reshaping of the action zones to temper full peaking hydropower releases during dry conditions. It also implements a phased guide curve and reduction of hydropower generation during the fall drawdown period, shifting the timing of releases between September and December. However, the overall effect of these actions is negligible as increased flows during December should offset lower releases earlier in the phased drawdown period. Changes in water temperature and dissolved oxygen are minor.

Compared with the current operation, the effects of operational features on flow and water quality conditions presented under the proposed operation would not be expected to affect protected species on the Etowah River downstream of Allatoona Lake.

Coosa River at Rome, Georgia

The following subsections describe the effects of the current operation and proposed action on protected species in the Coosa River at Rome, Georgia. Modeled output of stream flow and water quality over the period of record were evaluated to with respect to the distribution of federally listed species and designated critical habitat units within the subbasin. As previously stated, dedicated studies to address the impacts of the proposed operational changes on protected species are not available and are beyond the scope of this effort.

Federally listed species in the Coosa River at Rome includes eleven freshwater mussel species, two fish species and two snail species. Critical habitat has not been established along this reach (Figure 6.1-16). All species are federally endangered, except two species of mussels which are federally threatened.

Current Operation

Flow conditions over the modeled period are expected to remain consistent with current conditions and water quality is expected to improve as states adhere to defined regulations regarding wasteload allocation, management of NPDES facilities and non-point sources. Thus, the current operation is not expected to affect protected species on the Coosa River at Rome.

Proposed Action

Operational changes under the proposed operation, particularly the reduction in hydropower generation at Allatoona Lake during fall drawdown, would be expected to shift the timing of releases from September through December. However, model runs suggest that these changes will not significantly affect flow characteristics in the Coosa River at Rome compared to the current operation and will have negligible effects on water quality. Thus, the proposed action is not expected to affect protected species on the Coosa River at Rome.

Alabama River at Montgomery, Alabama

The following subsections describe the effects of the current operation and proposed action on protected species in the Alabama River at Montgomery, Alabama. Modeled output of stream flow and water quality over the period of record were evaluated with respect to the distribution of federally listed species and designated critical habitat units within the subbasin. As previously stated, dedicated studies to address the impacts of the proposed operational changes on protected species are not available and are beyond the scope of this effort.

This segment of the ACT Basin is inhabited by several federally listed species, including three species of freshwater mussels (inflated heelsplitter, heavy pigtoe and southern clubshell), one fish species (Alabama sturgeon) and a single snail species (tulotoma snail). Critical habitat has been designated for the Alabama sturgeon (Figure 6.1-16). The impact of the proposed operational changes on the availability of sturgeon habitat cannot be determined because flow requirements for the species are poorly understood.

Current Operation

Over the modeled period of record, the current opertion meets the 4,640 cfs minimum flow target 99 percent of the time. Water quality conditions are expected to improve as states adhere to defined regulations regarding wasteload allocation, management of NPDES facilities and non-point sources. These features offer no substantial change to current conditions, thus the current operation is not expected to affect protected species on the Alabama River downstream of Montgomery.

Proposed Action

The proposed action would result in adjustments to meet navigational needs when sufficient flows are available, but also provides drought management plans under dry conditions which become progressively more stringent as condition worsen. However, because reservoirs above the Alabama River at Montgomery function more like run-of-river operations, water quality parameters would not be expected to change in response to the proposed action. The minimum flow target under the proposed plan is expected to be met 96 percent of the time and the influence on water temperature and dissolved oxygen is minor.

Compared to the current operation, the effects of operational features on flow and water quality conditions presented under the proposed action are not expected to affect protected species on the Alabama River downstream of Montgomery.

Alabama River downstream of Claiborne Lock and Dam and Lake

The following subsections describe the effects of the current operation and proposed action on protected species in the Alabama River downstream of Claiborne Lock and Dam and Lake. Modeled output of stream flow and water quality over the period of record (1939 – 2008) were evaluated to with respect to the distribution of federally listed species and designated critical habitat units within the subbasin. As previously stated, dedicated studies to address the impacts of the proposed operational changes on protected species are not available and are beyond the scope of this effort.

Federally listed species in the Alabama River downstream of Claiborne Lock and Dam and Lake include the inflated heelsplitter and heavy pigtoe (mussels), Alabama sturgeon (fish) and tulotoma snail. Critical habitat for Alabama sturgeon extends down to Mobile Bay (Figure 6.1-16). However, flow requirements for the species are poorly understood, thus inhibiting the ability to determine the effects of the proposed operational features on Alabama sturgeon habitat.

Current Operation

Over the modeled period of record, the current operation meets the 6,600 cfs minimum flow target 98 percent of the time. Water quality conditions are expected to improve as States adhere to defined regulations regarding wasteload allocation, management of NPDES facilities and non-point sources. These features offer no substantial change to current condition, thus the current operation is not expected to affect protected species on the Alabama River at Claiborne Lock and Dam and Lake and on the lower Alabama River downstream of the lock and dam.

Proposed Action

Implementation of the proposed operation will result in adjustments to meet navigational needs when sufficient flows are available, but also provides drought management plans under dry conditions which become progressively more stringent as conditions worsen. However, under this alternative, the minimum flow target is expected to be met 95 percent of the time and the influence on water temperature and dissolved oxygen is minor.

With respect to the current operation, the effects of operational features on flow and water quality conditions presented under the proposed operation would not be expected to affect protected species on the Alabama River at Claiborne Lock and Dam and Lake and on the lower Alabama River downstream of the lock and dam.

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

FEB 08 2013

REPLY TO
ATTENTION OF:

Inland Environment Team
Planning and Environmental Division

Mr. William Pearson
Field Supervisor
U.S. Fish and Wildlife Service
1208-B Main Street
Daphne, Alabama 36526

Dear Mr. Pearson:

The enclosed document is in response to your December 21, 2012, Draft Fish and Wildlife Coordination Report (DFWCAR) for the proposed Water Control Manual (WCM) updates for the Alabama-Coosa-Tallapoosa (ACT) River Basin. The DFWCAR identified many conservation measures that the Service recommends be implemented in the WCM update. Because our proposed action did not include those measures, you recommended that we consider additional alternatives that would include them. As we indicate in our response, our action is limited to updating our water management guidelines for managing the storage and release of water from Corps reservoirs in the ACT Basin and two reservoirs owned by the Alabama Power Company over which we have flood risk management responsibility. Therefore, most of the conservation measures you identified are outside the scope of the current project. Others, as we explain in the response, are potentially within scope, but cannot be practicably implemented or would severely impact authorized project purposes. We believe the proposed action represents an approach that balances all project purposes and would provide improvements for the aquatic environment, especially during drought conditions. We appreciate and agree with your statement that you fully support the proposed drought response plan.

We also agree that continued coordination is needed between our agencies. I and my staff stand ready to meet with you to discuss the DFWCAR and the recommended conservation measures, or other issues of concern at your convenience. Thank you for providing the DFWCAR and your assistance thus far in WCM update process. Should you have any questions, please contact Mr. Chuck Sumner at (251) 694-3857 or lewis.c.sumner@usace.army.mil.

Sincerely,

Steven J. Roemhildt

Steven J. Roemhildt, P.E.
Colonel, Corps of Engineers
Commanding

Enclosures

Response to U.S. Fish and Wildlife Service Draft Fish and Wildlife Coordination Act Report on Water Control Manual Updates for the Alabama-Coosa-Tallapoosa River Basin in Georgia and Alabama

Prepared by:

U.S. Army Corps of Engineers
MOBILE DISTRICT

February 2013

INTRODUCTION

On December 21, 2012, the U.S. Fish and Wildlife Service (Service), Georgia Ecological Services Office, Daphne, Alabama provided a copy of the *Draft Fish and Wildlife Coordination Act Report on Water Control Manual Updates for the Alabama-Coosa-Tallapoosa River Basin in Alabama and Georgia* (DFWCAR) to the U.S. Army Corps of Engineers (Corps), Mobile District. Following is a detailed response to the questions and comments outlined in the DFWCAR under the auspices of the Fish and Wildlife Coordination Act and the Endangered Species Act.

This response is generally organized in the format of the DFWCAR, answering concerns and comments in the order they were presented. The DFWCAR stated that the draft report had been coordinated with the Alabama Department of Conservation and Natural Resources, the Alabama Office of Water Resources (OWR), the Georgia Department of Natural Resources and the National Oceanic Atmospheric Administration. Of those agencies, only OWR provided comments; however the DFWCAR did not include those comments or provide any related discussion. Likewise, at this time we will provide no discussion of the OWR comments. All page number citations refer to the page number as indicated in the DFWCAR.

COVER LETTER

Pg. 2 – *The Service states "Because of the limited scope of the WCM update, the proposed alternative does not fully address many of the Service's conservation concerns in the basin".* The Corps agrees that many of those concerns are not addressed; however, those concerns are generally not issues that can be directly related to the current project scope. The current effort is expressly restricted to updating the Corps' Master Water Control Manual (WCM) and appendices for the ACT basin. Those manuals provide guidance to Corps staff on the day-to-day management of water resources at Corps projects within the basin and Alabama Power Company projects over which the Corps has flood management responsibilities. Therefore, the manuals do not address stakeholder concerns that are not impacted or related to proposed changes in water management decisions.

EXECUTIVE SUMMARY

Pg 4. – *The Service states "Carters Lake would provide a minimum flow of 240 cfs and refined operations that would include two action zones to manage downstream releases. When Carters Lake is in Zone 1 Carters Reregulation Dam minimum flow releases would be equal to the seasonal minimum flow based on mean monthly flow upstream of Carters Lake and storage for water supply for the City of Chatsworth would be 818 ac-ft."* While this description is essentially correct, we wish to add a clarification. As described in our Planning Aid Letter Response dated June 3, 2011, the minimum flow of 240 cfs would only apply when the pool level is in Zone 2. As noted in Figure 1-2.3, page 12 of that response, the seasonal minimum flows in Zone 1 would actually be significantly greater than 240 cfs. In fact, for eight months of each year the minimum flows would be equal to or greater than 400 cfs and during the January through May time period minimum flows would exceed 600 cfs, in Zone 1.

Pg 4. – *The Service states "If sufficient flows cannot support a navigation channel of 7.5 ft, navigation would be suspended and flows at Montgomery would be reduced to 4,640 cfs or* *lower if one or more of the drought operation triggers would be exceeded.*" This is a true statement; however, we would like to clarify that "sufficient flows" to support navigation would be determined by the ACT Basin Drought Plan. In that plan, flows for navigation (at least 4,640 cfs at Montgomery AL) would be provided as long as the Alabama Power Company Drought Operation Plan were in Drought Intensity Level 0 (Normal Operations), meaning that no drought triggers had been met. Also, we would like to emphasize that the Corps cannot "suspend" navigation. Vessel operators would continue to make determinations if there were sufficient water depth for navigation based on all available information, including flow and stage data.

Pg 5. – *The Service states "The Service does not fully support the Corps' Proposed Action Alternative as currently described nor the Corps' No Action Alternative. Because of the limited scope of the WCM update, the proposed alternative cannot fully address many of the Service's conservation concerns in the basin. Our position is due to the lack of improvement to water quality, lack of support for reintroduction and enhancements for listed species, minimal mimicking of components of the natural flow regime, no reduction of effects of hydropower peaking flows, and no recognition that fish passage at ACT dams is within the scope of the current effort"* The Corps believes that this comment demonstrates the Service's seeming misunderstanding of the scope of the Proposed Action Alternative (PAA); this misunderstanding creates most of our concerns with the DFWCAR. The action which the Corps is proposing is intended to describe a plan for operation of the Corps' reservoirs for water management at the reservoirs and water releases from those projects that balances all authorized project purposes, of which fish and wildlife resources is one. This action is limited to updating the existing WCM and appendices. For example, reintroduction of endangered species would require actions not related to the update of the WCM. These and other actions listed by the Service are either outside the scope of the project or not physically possible within the context of the WCM update as we will describe in response to individual comments within the body of the DFWCAR. The update of the WCM does not include installation or modification of any equipment or structures, studies or analyses or other indirectly related actions or initiatives not directly supporting the update. Some of the Service's recommendations would go well beyond the original intent of the project, adding components that would require additional funding and authorizations.

INTRODUCTION

FISH AND WILDLIFE CONCERNS AND PLANNING OBJECTIVES

Pg. 9 – *The Service states "The PAL (Service 2010) regarding the ACT WCM Updates stated the primary concerns and planning objectives for species and ecosystem integrity in the ACT.*" Also, "*Planning objectives to improve the quality of the ACT focus on instream flow, water quality, habitat protection, and fish passage. Enhancements in these areas should be a priority in future Corps operations.*" The Corps agrees with the general concept of making a priority in its planning objectives of instream flow, water quality, habitat protection, fish passage and other aspects of environmental stewardship. However, the Service's comment does not provide specific enhancements that could be incorporated into the WCM update. For example, as previously discussed in the responses to the PAL and in this document, a plan to provide a monthly minimum flow at Carters Lake has been proposed. Such a plan has not been proposed at Allatoona Lake because of a combination of physical limitations of the equipment and the requirement to meet hydropower production, an authorized project purpose. We would welcome and be willing to discuss with the Service specific recommendations, given current authorizations and funding.

DESCRIPTION OF THE CORPS' SELECTED PLAN

Pg. 12 – *The Service states "Carters Lake would provide a minimum flow of 240 cfs."* As noted above, this would occur only in Zone 2. In Zone 1 (non-drought conditions), there would actually be a seasonal monthly minimum flow of much greater than 240 for most months.

FISH AND WILDLIFE RESOURCES WITHOUT THE PROJECT

Pg. 13 – *The Service provides a bulleted list of impacts attributed to the current operation including higher base flows due to channel maintenance, loss of habitat and species assemblages, alteration of the natural flow regime, risk of decreased freshwater flows into the Alabama Delta and Mobile Bay, reduced floodplain connectivity, poor water quality such as low dissolved oxygen, altered temperatures, and wastewater concentrations, hampered organism passage, and fragmentation of aquatic populations.* The Corps does not disagree that the stated impacts have occurred, but we do disagree that they can be attributed solely to water management decisions, whether under the current operation or those being considered in the WCM update. For example, channel maintenance is a Corps-managed Federal activity that could, and sometimes does occur independently of water management activities, evidenced by those years when no channel maintenance has occurred on the ACT. Likewise, wastewater concentrations are not affected by water management decisions, and aquatic populations are not fragmented by water management decisions.

Instead, we believe that most of the impacts listed by the Service can be attributed to a combination of Corps (Federal) and non-Federal activities that are not part of this WCM update. These include the physical construction of dams and associated reservoirs on the rivers, urban development throughout the basin and its associated demands for water supply, placement of industries that discharge wastewater into the rivers and increased runoff from urban, agriculture and silvicultural sources.

We agree that at specific locations, primarily in relatively limited reaches below Corps dams, Corps water management decisions impact base flows and other aspects of the natural flow regime, floodplain connectivity, and water quality parameters such as dissolved oxygen and water temperature. We emphasize that Corps projects were designed and constructed, and continue to be operated in order to alter natural flows and decrease floodplain connectivity in order to achieve congressionally authorized project purposes of providing hydropower and reduce flooding, as well as fish and wildlife resources and others.

CORPS' ANALYSIS OF PROJECT IMPACTS AND EVALUATION METHODOLOGY

1. Flow Dynamics

1.1 Conservation and Recovery of Natural Flow Variability

Pg. 13 – *The Service discusses the Corps' proposed monthly minimum flows at Carters Lake and the Corps' previously stated position that a seasonal non-hydropower peaking operation at Allatoona Lake would be impractical. The Service states in the same paragraph "The other reservoirs in the ACT Basin were not addressed."* The only reservoirs in the basin that the Corps has capacity to alter downstream hydrology are at those two projects. The Corps emphasizes that other reservoirs in the basin are either run-of-river or owned and operated by Alabama Power Company (APC). For those operated by the Corps (R.F. Henry, Millers Ferry, and Claiborne projects) there is no significant storage capacity in those reservoirs and for the most part pass whatever water enters the reservoir. Therefore, releases depend almost entirely on inflows which in turn are determined by releases from upstream storage projects operated by APC or local inflows. As for the APC projects, they are owned and operated by that company and the Corps has no authority over their water management other than that for navigation and flood control purposes at specific projects.

Pg. 14 – *The Service states: "The planning activities and construction for new reservoirs in the ACT were not addressed in the PAL response. The following reservoirs are in various planning and construction stages and their impacts to the watershed should be considered: 1) Hickory Log Creek Reservoir, 2) Russell Creek Reservoir, 3) Richland Creek Reservoir, 4) Shoal Creek Reservoir, 5) Calhoun Creek Reservoir."* Project specific impacts of those non-Corps reservoirs will be appropriately evaluated through the Corps Regulatory permitting authority, which for Georgia is under the jurisdiction of Savannah District. Of those listed by the Service, only Hickory Log Creek Reservoir is beyond the planning stage (constructed). The future operation and withdrawals from those proposed reservoirs is not known. While the Corps is considering requests by the owners of Hickory Log Creek related to releases from it into the Etowah River and the Cobb County Marietta Water Authority's water storage contract, no final decision has been made and therefore the impacts cannot be predicted at this time. However, it is agreed that the potential for continued construction of water supply reservoirs in the basin should be addressed to the extent possible in the EIS as part of the cumulative impacts evaluation.

EVALUATION OF THE PROPOSED ACTION ALTERNATIVE

1. Flow Dynamics

1.1 Conservation and Recovery of Natural Flow Variability

Pg. 19 – *The Service states: "The Corps is proposing nearly no changes that would mimic components of the natural flow regime. An exception is the zones given in the Proposed Action Alternative for Carters Lake, which may have beneficial impacts to the flow regime in the downstream Coosawattee River. It is important to maintain flow in the ACT during all hydrologic conditions. When a drought is identified a minimum flow must remain to ensure biota are able to survive. Proposed minimum flow releases that equal a mean monthly 7Q10 inflow upstream of Carters Lake would create requirements simulating a more natural flow regime when Carters Lake is in Zone 1, an improvement to the current annual 7Q10 minimum flow of 240 cfs. The 7Q10 low flow statistic is calculated using the smallest values of mean discharge over 7consecutive days during a set time period, such as monthly or annually, with a 10-year recurrence interval. The release of a mean monthly 7Q10 flow is not proposed for the other dams in the ACT Basin. This concept would aid in creating a more natural flow environment at those facilities in which a static annual 7Q10 flow has been applied in the past."* The Service's statement is essentially correct. However, it must be pointed out that Carters Lake has a unique feature in the re-regulation pool which allows varying monthly releases for 7Q10 minimum flows. That feature is not present at the other facilities. Lake Allatoona is designed as a hydropower peaking facility and would require extended periods not producing any hydropower to provide anything approaching a natural flow regime. On the Alabama River, the three Corps projects (R.F. Henry, Millers Ferry and Claiborne) are all run-of-river and for the most part pass whatever water they receive from upstream. This fact makes these three projects entirely dependent on upstream hydrology and releases by APC projects over which the Corps has no control.

Pg. 19 – *The Service states the concern that potential private development of hydropower facilities at Claiborne Lock and Dam would have potential impact on fish and wildlife resources and they encourage the Corps to include them in future conversations if the proposal moves forward.* The Corps agrees with the request for inclusion in conversations; however the referenced private development at Claiborne is outside the scope of the WCM update project and is not a comment relevant to the WCM update. The Service should also refer to the Federal Energy Regulatory Commission (FERC) licensing process and comment opportunities.

Pg. 19-20 – *The Service states: "At all the projects in the ACT Basin we recommend the Corps restore parameters of a natural flow regime by reducing hydropeaking releases, allowing large floods to reach floodplains, and mimicking the natural hydrograph as much as possible by allowing for seasonal fluctuations in river discharge."* As previously stated, the comment would only be applicable to the Allatoona project and reducing hydropower releases would mean shutting down hydropower generation since the equipment does not allow for partial flow. Allowing large downstream flooding would likely involve greatly increased flood damages especially in the City of Rome GA. Both hydropower generation and flood control are important Congressionally-authorized project purposes. The Corps attempts to balance all authorized project purposes; however, making significant reductions in hydropower and flood control, as the Service recommends, would run contrary to the original authorizing legislation for Carters and/or Allatoona projects. The other Corps projects are located on the Alabama River and are run-of-river. Consequently, those projects mimic peaking releases from upstream APC projects and there is no capacity to redistribute the flows to match a natural hydrograph.

Pg. 20 – *The Service discusses the environmental benefits of free-flowing and natural flow conditions and states that restoration of a natural flow regime will improve water quality and physical habitat. Using Claiborne as an example it states: "For example, ensuring adequate flow is released from Claiborne Dam is important to maintain proper freshwater inflows to the Tensaw delta and Mobile Bay. Other examples such as inundation of Claiborne Dams, opening locks for organism passage, and reduction of large peaking events for hydropower can aid in restoration of free-flowing habitats. We recommend taking steps towards restoring a more natural flow regime throughout the ACT Basin."* In general, the comment on establishing natural flows has been previously addressed in this document. No specific recommendations were made that could be incorporated into the WCM. Because Claiborne and the other Alabama River projects are run-of-river, there is very little storage and releases are dependent on upstream inflow. Claiborne Dam has a fixed-crest spillway at elevation 33 feet above mean sea level (msl) and is not a hydropower facility. The gated spillway crest is at elevation 15 feet msl. Normally, water is maintained between 33 to 35 feet msl. At 35 feet and above, spillway gates are opened to lower the pool level. Therefore, the normal condition is water passing over the fixed-crest spillway continuously. The exception to that is during times of extreme low flows when there is not enough inflow to reach the fixed-crest spillway. In that case, an attempt is made to maintain the pool elevation at 32 feet msl and all inflows are passed using the spillway gates. Use of locks for fish and other organism passage are included in the WCM update language. Regarding hydropower peaking projects, reduction of hydropower peaking at projects having that capacity would be counter to a major authorized project purpose.

2. Water Quality

Pg. 20 – *The Service states: "Alabama and Georgia's 303(d) lists include waterbodies that occur in the ACT Basin. These waterbodies are in need of attention and consideration in the WCM updates and future operations of the Corps. Water quality issues include nutrient loads, metal contaminants, pathogens, organic enrichment, and siltation. We recommend measures to improve the quality of streams and river segments throughout the ACT Basin, with special consideration for 303(d) listed streams and reservoirs."* Under the Clean Water Act, the States or the Environmental Protection Agency are responsible for creating Total Maximum Daily Loads to address 303(d) listed reaches. While the Corps does consider water quality in its operations, this comment goes far beyond the scope of the WCM update and anything the Corps is capable of doing through water management actions.

2.1 Dissolved Oxygen

Pg. 20 – *The Service notes that the PAA would result in decreases in dissolved oxygen (DO) at several locations and increases at other locations compared to the No Action Alternative (NAA). Because of the modeled decreases, the Service states that the PAA is less favorable than the NAA. The Service goes on to state that the DO decreases were modeled to be lowest in dry years due to drought operations.* The Corps does not understand the rationale behind the statement. The Service states on page 29 in its Summary and Position that it fully supports the Alabama Drought Response Operations Plan (ADROP). In fact, the Service collaborated in providing final input into the plan. The Corps believes that the increases in DO at several locations balance the decreases at other locations and the overall benefits gained from the ADROP more than make up for the minor DO declines that were modeled. In addition, the modeled dry years are extreme and rare events that are not representative of basin-wide conditions during normal years.

Pg. 20, 21, 22 – *The Service discusses the need for DO and water temperature sampling at several industrial sites on the Alabama River and the need to maintain suitable flows for dissolved oxygen and temperature maintenance through cooperation between the Corps and APC.* The Alabama River industrial sites are not owned by the Corps. It is recognized that flow is an important factor in maintaining DO and temperature; however the Alabama River projects are run of river and entirely dependent on upstream flows provided by APC and others. The development of a basin-wide drought plan (ADROP) is precisely the type of cooperation being called for by the Service, but is not recognized in this comment.

Pg. 21 – *The Service states: "Although there was no noticeable change among the alternatives for the percent occurrence of DO levels at the modeled outflows in the ACT Basin, the analyses that were provided demonstrate the ongoing unacceptable levels of low DO caused by some of these Corps facilities."* Also: *"Due to the recurring problem of low DO below dams, methods have been developed to improve oxygen levels at other locations. For example, Tennessee Valley Authority (TVA) has installed dam-specific devices to improve DO downstream of dams.*

Examples include aerating turbines, surface-water pumps, low-pressure air blowers, aerating weirs, and oxygen injection systems. These types of systems should be examined as ways to improve water quality below Corps dams in the ACT Basin. We recommend the Corps take action to improve DO throughout the basin with special consideration below dams and to explore devices that can increase DO levels." The Service recognizes that there would be no change caused by PAA but focuses on known existing and ongoing low DO especially at Lake Allatoona. The Corps also recognizes the need for improved downstream DO. However, as part of a water management strategy that could be written into an operational manual, nothing has been identified that would improve DO. The methods and equipment listed by the Service cannot be implemented through water management decisions and are beyond the scope of the manual update.

2.2 Water Temperature

Pg. 22 – *The Service states that the largest differences between the PAA and the NAA would occur during drought operations with temperatures under the PAA decreasing below Carters Dam and Allatoona Dam by as much as 0.8-1.3 degrees C (Coosawattee and Etowah Rivers). It was noted that the artificial depression and fluctuations in temperatures are not beneficial to native aquatic populations below Allatoona Dam. However, it was also noted that a population of striped bass (Morone saxatilis) utilizes the cooler water as a thermal refuge. The Service stated that in Alabama water temperatures would rise by as much as 1.0-1.2 degrees C. It was recommended that water temperatures below Corps' facilities in Alabama be maintained at least below the State standard and below 30 degrees C when possible.* Water temperature decreases (compared to existing conditions) below Allatoona Dam of generally less than 1 degree Centigrade were modeled based on a dry year (2007, a severe drought) (See page 39-40 PAL response letter). While we understand potential problems experienced by warm water organisms, we believe the statement does not consider typically higher than normal air temperatures during a drought and potential benefits of lower water temperatures during low flows when lower DO levels also occur. Nor does it consider that organisms currently in those waters are adapted to cooler water temperatures and would be unlikely to be impacted by infrequent decreases of 1 degree. The statement does not consider previous statements made by the Service whereby it recommended increased minimum flows be provided. Because of the stratified condition of Lake Allatoona during the summer, increased minimum flows would more than likely come as result of hydropower generation, thereby producing even greater quantities of colder water than that of the PAA. In fact, during drought conditions with pool levels below the Allatoona spillway gates, the only method available to release water is through hydropower generation or sluice gates, both of which draw water from deeper, colder strata.

Pg. 22 – *The Service recommends cooperation between the Corps and others to maintain wastewater discharges that do not damage aquatic resources.* The Corps has no authority over wastewater discharges. The States have regulatory authority over those discharges through the National Pollutant Discharge Elimination System. The Corps currently coordinates closely with downstream dischargers during droughts to exchange information regarding releases and flows from Corps reservoirs. However, there is no procedure that could be written into the WCM that would ensure that discharges would not exceed specified limits.

Pg. 22-23 – *The Service comments on the sediment transport as influenced by the size and number of dams on the ACT system. They recommend that measures be taken to reduce sediment and shoaling and include bank stabilization above dams, avoidance of structural disturbance to rivers, and minimization of disturbance to river banks. They recommend monitoring embeddedness and erosion rates downstream of dams to determine impact on available habitat and implement stabilization measures to reduce further erosion.* The impacts due to tailwater degradation and shoaling are due to the original construction of Corps and APC projects and are not due to the PAA, as noted by the Service comment. Rates of tailwater degredation, shoaling and sedimentation are similar for both the NAA and the PAA. It is outside the scope of the WCM update to implement studies or monitoring.

3. Floodplain Connectivity

Pg. 23-24 – The Service provides a discussion of floodplain values and states: "The Corps provided high flow analyses for the NAA and the PAA at several locations in Georgia. The alternatives are similar, with the exception of the Etowah River below Lake Allatoona. The Corps did not provide flow guidelines to compare these alternatives to a pre-dam condition; therefore we are unable to draw a conclusion as to which alternative is more similar to pre-dam conditions in the Etowah River." The Corps provided a June 6, 2011response to the PAL letter and a November 22, 2011response to additional questions from the Service. In those responses, the Corps provided an analysis consistent with Service guidance. An analysis of Indicators of Hydrologic Alteration (IHA) was provided at three locations on the Etowah and Oostanaula Rivers providing high and low flow analyses. The Allatoona and Carters projects are authorized and operated specifically to reduce flooding below the upstream projects. It is acknowledged that these projects reduce flooding. Restoring floodplain connectivity downstream of Carters and Allatoona would likely mean flooding the City of Rome Georgia. Alabama River projects are run of river and do not reduce flooding.

4. Fish Passage

Pg. 24-26 – *The Service recommends that the Corps continue to support fish passage research and frequently open locks during the spring migration period. The Service also states "We request a cost benefit analysis be performed comparing the operation and maintenance of the current navigational channel and system of locks and dams on the Alabama River versus the costs and economic benefits associated with maintaining the same system for maximum environmental benefits.* The Corps plans to continue to work cooperatively with all agencies to use the locks to benefit fish passage. This plan is described as part of the current and proposed operations. An economic study of the costs and benefits of operating the navigation system for navigation versus environmental benefit is beyond the scope of the current WCM update.

5. Reintroductions and Enhancements for Listed Species

Pg. 26 – *The Service encourages the Corps to work with them to achieve the goals of the Alabama Aquatic Biodiversity Center's plan for reintroduction of listed and rare species into the ACT system as well as improving habitat for those species.* The Corps agrees with the goal of reintroducing species and enhancing habitat through collaboration; however, such work is not within the scope of the current WCM update.

Pg. 27 – *The Service recommends that the Corps protect locations of sensitive and listed species and make efforts to increase fish passage. The Service also recommends that efforts be made to improve the health of the rivers and provide support for ongoing studies.* The Corps currently plans to continue to work cooperatively to use locks to benefit fish passage as previous stated. Protection of species locations is outside the scope of the WCM update. The recommendation to improve the health of the rivers and provide support for studies is vague and does not relate directly to the update of the WCM.

Pg. 27 – *The Service recommends that the Corps protect all landholdings where species of concern occur.* This is not part of the WCM update process and outside of scope. However, Corps landholdings are generally protected by the fact of Federal ownership. Proposed activities on those properties require appropriate NEPA documentation and where appropriate, consultation with the Service regarding listed threatened and endangered species and their habitat. *The Service recommends a number of studies be undertaken. These include water quality monitoring, species surveys, habitat restoration and monitoring.* A number of studies to support the preparation of the WCM have been completed and the results provided to the Service. Those include hydrologic modeling, water quality modeling and threatened and endangered species surveys throughout the basin with Service oversight. Other studies mentioned and the need for long-term studies is understood; however such studies are outside the scope of the current project. The purpose of the WCM is to manage the water stored at Corps' reservoirs. There is no authorization or funding for many of the other "stewardship" type actions that have been requested.

6. Restoration and Maintenance of Healthy Water Quality Parameters

Pg. 28 – *The Service recommends that improvements to water quality at Lake Allatoona be made a priority and that studies be made to determine water quality requirements for species and the impacts to species from changes in operations.* This recommendation has been previously addressed in this document. Additional studies are beyond the scope of the current WCM update and would not be directly relevant to water management decisions, especially in light of there being little difference in water quality parameters between the NAA and the PAA.

7. Development of Adaptive Management Protocols

Pg. 28 – *The Service recommends that an Adaptive Management Protocol be developed with ongoing studies to fill data gaps that would allow better decision making in the future with regards to environmental and human needs. They recommend that studies be implemented to begin the protocols including water availability, forecasts of water needs for humans and the environment, and how those needs can be met.* The Corps agrees that adaptive management is a useful approach and in fact, is currently utilizing the concept to a large extent. The Corps uses inputs from a variety of sources in modeling hydrology and projected water availability (pool levels, flow rates). The Corps is cooperating with all stakeholders to the extent possible to assure that authorized project purposes are met. The update of the WCM will serve as a guide in this regard and the update is needed to address many of the needs outlined by the Service. For example, the existing WCM does not include the drought response plan that would be part of the PAA. That drought plan, which the Service states it fully supports, would allow a more flexible response to drought providing benefits to the environment, private industry, navigation and other stakeholder interests. Therefore, the Corps cannot agree that such studies and protocols be perfected prior to completion of the WCM. We continue to maintain that many such studies are outside the scope of the current effort. Instead, we will continue to collaborate with stakeholders to improve water management decisions to balance authorized purposes.

FISH AND WILDLIFE CONSERVATION MEASURES AND RECOMMENDATIONS

Pg. 29 – *The Service summarizes its position in a list of recommendations.* All of the listed recommendations have been addressed in the discussion above. *In addition, the list included a recommendation to develop Geographic Information Systems databases that identify and map riverine habitats.* As with other recommended studies, this is outside the scope of the WCM update.

The list included a recommendation for continued coordination between Corps and APC to ensure acceptable releases from upstream dams (Carters and Allatoona) for delivery to the Weiss Bypass channel. The Corps agrees that coordination is desirable. However, routing of water into the Weiss Bypass channel is under direct control by APC, not the Corps. In updating the WCM for Corps projects, there is no information available to the Corps or suggested by the Service as to how management decisions at Corps upstream projects could translate into directly improved water flow into the channel. Without such detailed information, it is not clear what changes, if any, are recommended to be made to the daily operation that could be described in the WCM.

The list also included a recommendation that the loss of aquatic resources as a result of the original construction of the Carters Lake Project be mitigated and that the impacts associated with project construction be included in the DEIS. Those impacts and recommended mitigation are not part of the current effort and outside the scope of the WCM update.

SUMMARY AND THE SERVICE'S POSITION

The Service states that "Neither the Corps' Proposed Action nor the No Action Alternative, because of the limited scope of the proposed updates will address all of the Services's conservation concerns in the ACT basin. These concerns include lack of improvement to water quality, lack of support for reintroduction and enhancements for listed species, minimal mimicking of components of the natural flow regime, no reduction of effects of hydropower peaking flows, and no recognition that fish passage at ACT dams is within the scope of the current effort. The statement justifying the position repeats the Services previous recommendations for analyses and actions that we believe are clearly outside the scope of the current effort as has been previously discussed. *The Service concludes by emphasizing the importance of data collection and implementation into long-term datasets in order to better evaluate the condition of the ACT basin over time. They also state the importance of developing research and monitoring efforts.* The need for long-term studies is understood; however they are outside the scope of the current project. The purpose of the WCM is to manage the water stored at Corps' reservoirs. There is no authorization or funding for many of the other stewardship type actions that have been recommended.

In summary, the Corps understands the recommendations made by the Service and contends that although they pertain to and would occur within the ACT basin, they are not part of the current effort to update the WCM. Achieving a natural hydrograph in its entirety is not the goal and is not feasible given the expansive flow alteration and consumptive demands in the ACT River Basin that have occurred since construction of the Federal and APC projects. To the extent that restoration of some of the natural flow regime components can be accomplished to the benefit of fish and wildlife resources in light of other project purposes, the Corps believes the PAA adequately strikes this balance. It is the responsibility of the Corps to best determine water management operations that meet all of the congressionally authorized project purposes. As described in the purpose and need section of the DEIS, the purpose and need for the federal action is to determine how the federal projects in the ACT Basin should be operated for their authorized purposes, in light of current conditions and applicable law, and to implement those operations through updated water control plans and manuals. The PAA is not intended to maximize benefits to fish and wildlife resources or any other authorized project purposes, but to equably manage the federal projects for the benefit of all authorized project purposes. Accordingly, the alternatives considered in the DEIS will not address any proposed changes to water management practices that exceed existing congressional authority. Although the Service does not support the PAA, we believe that there would be negligible impacts to fish and wildlife resources as a result of its implementation when compared to the current condition.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

APR 17 2014

IN REPLY REFER TO:

Colonel Jon J. Chytka
U.S. Army Corps of Engineers, Mobile District
P.O. Box 2288
Mobile, AL 36628-0001

Dear Colonel Chytka:

We are providing your agency with a Fish and Wildlife Coordination Act Report (FWCAR) for the proposed Water Control Manual (WCM) updates for the Alabama-Coosa-Tallapoosa (ACT) River Basin in Georgia and Alabama in partial fulfillment of Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq.*). The purpose of the WCM updates is to identify operating criteria and guidelines for managing water storage and release from U.S. Army Corps of Engineers (Corps) reservoirs. We submit the following comments and recommendations under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq.*), the Migratory Bird Treaty Act (MBTA) (49 Stat. 755, as amended; 16 U.S.C. § 702 *et seq.*), and the FWCA. We provided comments on the draft Environmental Impact Statement (DEIS) that the Corps has prepared to support its decision regarding the WCM update, and it is our understanding that the Corps intends to include this FWCAR as an appendix to the final EIS. A separate consultation occurred regarding the potential impacts of the Corps' proposal on federally listed species protected under the ESA.

The FWCAR outlines the fish and wildlife concerns and planning objectives that were provided in our May 3, 2010, Planning Aid Letter (PAL) and August 13, 2010, PAL supplement to you, along with our understanding of the Corps' responses to our concerns and objectives. The FWCAR describes the alternatives and evaluates the anticipated impacts of the selected plan. The Proposed Action Alternative (PAA) does not fully meet the U.S. Fish and Wildlife Service's (Service) conservation measures. Because of the limited scope of the WCM update, the PAA cannot fully address many of the Service's conservation concerns in the basin. However, our report provides the Corps with fish and wildlife conservation measures and recommendations. We urge the Corps to consider additional alternatives for analysis that would address our concerns about water quality in project tailraces, alterations of flow regimes that adversely affect fish and wildlife, and analysis that could lead to the formulation of an environmentally preferable alternative in the Corps' decision-making process for the operations of the ACT reservoirs.

A version of the DFWCAR was distributed to Alabama Department of Conservation and Natural Resources, Alabama Office of Water Resources, Georgia Department of Natural Resources-Wildlife Resources Division, and National Ocean Atmospheric Administration.

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If you have any questions, please contact me at (251) 441-5870, or Alabama Ecological Services staff biologist Jennifer Pritchett (251) 441-6633, or Georgia Ecological Services staff biologists Alice Lawrence or Will Duncan at (706) 613-9493.

Sincerely,

William J. Pearson

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

Fish and Wildlife Coordination Act Report

On

Water Control Manual Updates for the Alabama – Coosa – Tallapoosa River Basin in Alabama and Georgia

Prepared by:
Alabama Ecological Services Field Office
Daphne, Alabama

And

Georgia Ecological Services Field Office
Athens, Georgia

U.S. Fish and Wildlife Service
Southeast Region
Daphne, Alabama
April 2014

EXECUTIVE SUMMARY

In November 2007, the Secretary of the Army directed the U.S. Army Corps of Engineers (Corps) to develop and update Water Control Manuals (WCMs) for the Alabama-Coosa-Tallapoosa (ACT) River Basin. The purpose of the WCM updates is to identify operating criteria and guidelines for managing water storage and release from Corps reservoirs. This Fish and Wildlife Coordination Act Report (FWCAR) outlines the U.S. Fish and Wildlife Service's (Service) fish and wildlife concerns and planning objectives that were previously provided to the Corps in a Planning Aid Letter (PAL), along with our current understanding of the Corps' position on PAL recommendations. The FWCAR also describes the alternatives and evaluates the anticipated project impacts of the Proposed Action Alternative (PAA).

The Corps' PAA would continue to operate federal projects in the ACT Basin in a balanced manner to achieve all authorized project purposes. Operations under the PAA include a minimum flow of 240 cubic feet per second (cfs) below Allatoona Dam and a phased fall drawdown period from early September through December with four action zones that would mimic seasonal demands. Modifications to the hydropower schedule would allow greater operational flexibility to meet power demands while conserving storage, and generation would be reduced during annual drawdown in the fall (September-October). Storage in Allatoona Reservoir would be 6,371 acre feet (ac-ft) and 13,140 ac-ft for the Cobb County-Marietta Watershed Authority (CCMWA). Carters Dam would provide a minimum flow and refined operations that would include two action zones to manage downstream releases. When Carters Reservoir is in Zone 1 Carters Reregulation Dam minimum flow releases would be equal to the seasonal minimum flow based on mean monthly inflow upstream of Carters Dam and storage for water supply for the City of Chatsworth would be 818 ac-ft.

Fish spawning operations on Allatoona Reservoir would continue as outlined in District Regulation (DR) 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft Standing Operating Procedure (SOP) *Reservoir Regulation and Coordination for Fish Management Purposes* (Mobile District SOP 1130-2-9, draft, February 2005). Reservoir levels would be adequately maintained for successful fish spawning.

The PAA would implement a revised Alabama Drought Response Operations Proposal (ADROP) including three drought operation zones. The plan is composed of three parts: reduced hydropower generation as pool levels decline in the headwaters at Allatoona and Carters reservoirs in Georgia, operations at Alabama Power Company (APC) projects on the Coosa and Tallapoosa Rivers based on Drought Intensity Levels (DILs) driven by defined drought triggers, and flow from downstream operations at Corps projects below Montgomery would reduce due to the 7Q10 levels from upstream APC projects.

Seasonal navigation releases (Alabama River 9.0-ft or 7.5-ft channel depth) and maintenance dredging would be provided. If sufficient flows as determined by the ACT Basin Drought Plan cannot support a navigation channel of 7.5-ft, navigation could be impeded and flows at Montgomery would be reduced to 4,640 cfs or lower if one or more of the drought operation triggers are exceeded as determined by the ACT Basin Drought Plan. Flows for navigation would be supported when drought intensity level (DIL) is 0. When DILs are greater than zero, flows to support navigation will be suspended. Vessel operators will continue to make navigability determinations based on flow and stage data whether in drought or non-drought conditions.

At this time, the Service does not fully support the Corps' PAA as currently described or the Corps' No Action Alternative (NAA). Because of the limited scope of the WCM update, the proposed alternative cannot fully address many of the Service's conservation concerns in the basin. Our position is due to the lack of improvement to water quality, lack of support for reintroduction and enhancements for listed species, minimal mimicking of components of the natural flow regime, no reduction of effects of hydropower peaking flows, and no recognition that studies to define target species and investigate the feasibility of providing passage at facilitates other than Claiborne Lock and Dam and Millers Ferry Lock and Dam for fish passage is within the scope of the current effort. On the other hand, the Service fully supports the ADROP. The Service also supports the suspension of navigation while drought conditions are met, and the ongoing efforts of the Corps in fish passage through Claiborne and Millers Ferry Locks and Dams, but encourages additional studies at upstream facilities.

In this FWCAR the Service has provided the Corps with conservation measures to improve the management of their dams and reservoirs in the ACT Basin. The Service has suggested methods to improve water quality, attain a more natural flow regime, increase connection to floodplain environments, and ways to reintroduce and provide enhancements for species that are federally listed under the Endangered Species Act (ESA). The intent of these evaluations and analyses is to inform the development of alternatives and to address the impacts of the PAA.

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INTRODUCTION

Purpose, Scope & Authority

In November 2007, the Secretary of the Army directed the Corps to develop updated WCMs for the ACT River Basin. The following is taken from the Corps' response to the Service's PAL (Corps 2011):

"The Corps proposes to prepare an updated master Water Control Manual (WCM or Master Manual) for the Alabama, Coosa, and Tallapoosa Rivers (ACT) Basin. The component parts of the master WCM would be nine project-level WCMs, presented as appendices. Only two of the four APC projects in the basin with Corps WCMs will be included in this WCM update. Additional studies would be required for Logan Martin Lake and Weiss Lake to address flood damage reduction prior to updating the manuals at those facilities. The Corps and APC will develop and execute separate Memoranda of Understanding that address only navigation and drought operations for Logan Martin and Weiss Lakes. Operations at those projects will be incorporated in the Master Manual Update.

"WCMs contain drought plans and action zones to assist the Corps in knowing when to reduce or increase reservoir releases and conserve storage in the Corps reservoirs. The individual manuals typically outline the regulation schedules for each project, including operation criteria, guidelines, and guide curves, and specifications for storage and releases from the reservoirs. The WCMs also outline the coordination protocol and data collection, management and dissemination associated with routine and specific water management activities (such as flood-control operations or drought contingency operations). Operational flexibility and discretion are necessary to balance the water management needs for the numerous (and often competing) authorized project purposes at each individual project. In addition, there is a need to balance basin-wide water resource needs. Project operations also must be able to adapt to seasonal and yearly variations in flow and climatic conditions."

The Service's involvement in this project is authorized by the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.) (FWCA). The FWCA establishes fish and wildlife conservation as a co-equal purpose or objective of federally-funded or permitted water resource development proposals or projects. This FWCAR constitutes the report of the Secretary of the Interior as required by Section 2(b) of the FWCA.

FWCA Agency Coordination

A copy of the draft report has been sent to the Alabama Department of Conservation and Natural Resources (ADCNR), Alabama Office of Water Resources (OWR), Georgia Department of Natural Resources, and the National Oceanic Atmospheric Administration (NOAA). We only received comments from OWR.

Prior Studies and Reports

- Corps' Federal Register Notice of Intent, November 9, 2007, Intent To Prepare Draft Environmental Impact Statement for Revised Water Control Manuals for the Alabama-Coosa-Tallapoosa River Basin. Vol. 72, No. 217 (Appendix I);
- Service's October 20, 2008, Scoping Letter to the Corps (Appendix II);
- Service's May 3, 2010, PAL to the Corps (Appendix III);
- Service's August 13, 2010, Supplement to PAL to the Corps (Appendix IV);
- Corps' June 6, 2011, response to the Service's PAL (Appendix V); and
- Corps' November 22, 2011, response to the Service's questions regarding the Corps' June 6, 2011 document (Appendix VI).

FISH AND WILDLIFE CONCERNS AND PLANNING OBJECTIVES

The PAL (Service 2010) regarding the ACT WCM Updates stated the primary concerns and planning objectives for species and ecosystem integrity in the ACT. Influences such as human development, including the construction and operation of dams, channelization, dredging, and water quality degradation (Service 2000, Atkins et al. 2004, Service 2006) remain threats to the ACT. Planning objectives to improve the quality of the ACT focus on instream flow, water quality, habitat protection, and fish passage. Enhancements in these areas should be a priority in future Corps operations. Monitoring and adaptive management are strongly recommended in order to improve the ACT ecosystem, as the Service believes that the WCM updates are an opportunity to address several outstanding issues and water management concerns within the ACT basin.

PROJECT AREA

Totaling 22,719 square miles (mi^2), the ACT Basin falls within the Blue Ridge, Ridge & Valley, Piedmont, and Coastal Plain physiographic provinces, originating in Georgia and ending in Alabama. In northwest Georgia the basin's headwater rivers - Conasauga, Coosawattee, Oostanaula, Etowah, Coosa and Tallapoosa Rivers - flow in a southwest direction toward the Alabama state line. In Georgia, Corps dams in the ACT include Carters and Carters Reregulation Dams and Reservoirs (3,220 acres) on the Coosawattee River and Allatoona Dam and Reservoir (19,200 acres) on the Etowah River. The Alabama River begins at the confluence of the Coosa and Tallapoosa Rivers and ends in the delta region of south Alabama, connecting the river to the Gulf of Mexico. Corps dams in the lower ACT include a run-of-river and hydroelectric dam at R. F. Henry Lock and Dam, a hydropower dam at Millers Ferry Lock and Dam and William 'Bill' Dannelly Reservoir (17,200 acres), and run-of-river Claiborne Lock and Dam and Claiborne Reservoir (5,930 acres) on the Alabama River.

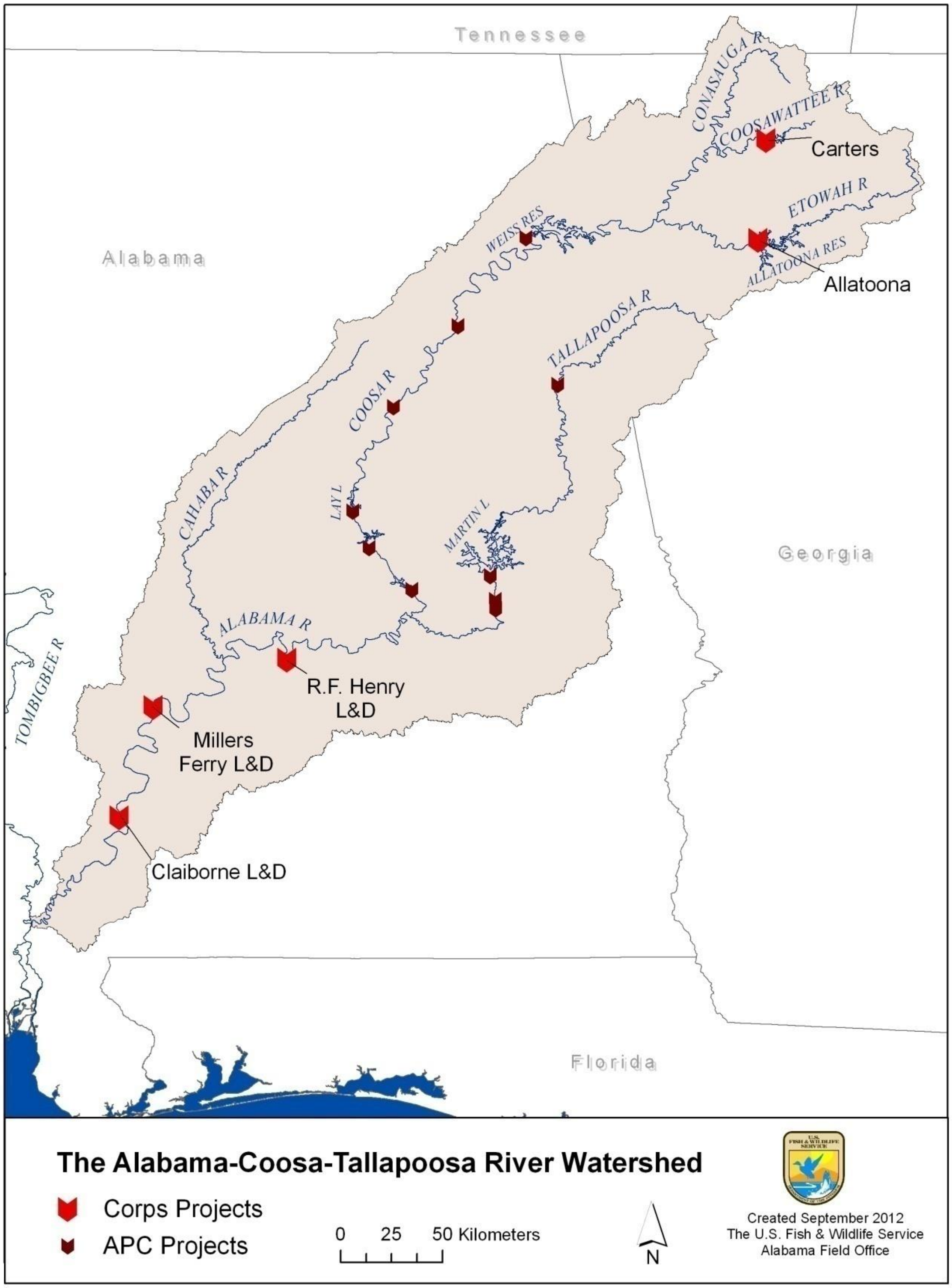

Figure 1. Map of ACT Basin.

DESCRIPTION OF CORPS' SELECTED PLAN

No Action Alternative

According to the Corps' response to the Service's PAL (Corps 2011), reservoirs in the ACT basin are authorized and operated to provide flood storage protection, hydropower, navigation, recreation, water supply, water quality, and fish/wildlife habitat. The Corps' goal is to use the currently defined guide curves to maintain a balanced use of conservation storage among the ACT reservoirs. Under the NAA, operations would continue as written in the Corps' 1951 Master Manual and project-specific WCM's, including incremental changes. While specifics can be found in the Corps' response to the Service's PAL (Corps 2011), general details include:

- H. Neely Henry Lake would operate under the guide curve under the current Federal Energy Regulatory Commission (FERC) license. The updated license is expected to be issued late 2012.
- A minimum flow of 240 cfs would be required at Carters and Allatoona dams.
- A target flow of 6,600 cfs from Claiborne Lake depending on inflow from the Alabama River, the Cahaba River, and tributaries.
- A combined 4,640 cfs release at Montgomery, Alabama for navigation purposes depending on releases from Jordan-Bouldin-Thurlow (JBT).
- Storage in above Allatoona Dam would be 6,371 ac-ft and 13,140 ac-ft for the Cobb County-Marietta Watershed Authority (CCMWA).
- Storage above Carters Dam would be 818 ac-ft for water supply for the City of Chatsworth.
- Fish spawning operations on Allatoona Reservoir as outlined in District Regulation (DR) 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft Standard Operating Procedure (SOP) *Reservoir Regulation and Coordination for Fish Management Purposes* (Corps 2005) would continue.

Proposed Action Alternative Description

The PAA is described in detail in the Corps' response to the Service's PAL (Corps 2011). While specifics can be found in the Corps' response, general details include:

- Implementation of a revised ADROP including changes to operations that are commensurate with four drought intensity levels. Seasonal navigation releases (Alabama River 9.0-ft or 7.5-ft channel depth) and maintenance dredging would be provided. If sufficient discharge cannot support a navigation channel of 7.5-ft, discharge to support navigation would be suspended and discharge at Montgomery would be reduced to 4,640 cfs or lower if one or more of the drought operations triggers are exceeded.
- APC projects on the Coosa and Tallapoosa Rivers would continue to operate under their FERC license. The FERC relicensing was finalized June 2013.
- H. Neely Henry Lake on the Coosa River (APC Project) would continue to work under the revised guide curve under a FERC license variance (with Corps concurrence).
- Allatoona Dam would provide a minimum flow of 240 cfs. A revised guide curve for Allatoona would implement a phased fall drawdown period from early September through December and four action zones would mimic seasonal demands. Modifications

to the hydropower schedule would allow greater operational flexibility to meet power demands while conserving storage; power generation would be reduced during annual drawdown in the fall (September-October).

- Carters Reservoir would provide a minimum flow according to zone definitions. Refined operations at Carters would include two action zones to manage downstream releases. When Carters Reservoir is in Zone 1 Carters Reregulation Dam minimum flow releases would be equal to the seasonal minimum flow based on mean monthly flow upstream of Carters Dam.
- Storage in Allatoona would be 6,371 ac-ft and 13,140 ac-ft for the Cobb County-Marietta Watershed Authority (CCMWA).
- Storage in Carters would be 818 ac-ft.
- Fish spawning operations on Allatoona as outlined in District Regulation (DR) 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft Standing Operating Procedure (SOP) *Reservoir Regulation and Coordination for Fish Management Purposes* (Mobile District SOP 1130-2-9, draft, February 2005).

Drought Management Plan

The Corps, the Service, and APC collaborated to develop a statewide drought plan. The Corps' PAA would address the revised ADROP with Service and Corps enhancements. Drought operations will be driven by state line flows, system storage, and basin inflow triggers. Drought operations include headwater operations at Carters and Allatoona dams, Coosa and Tallapoosa APC projects, and operations downstream of Montgomery. The plan for the ACT consists of the four operational zones based on DIL as follows: DIL 0 – Normal operations, DIL 1 – Low basin inflows or low composite or low state line flow, DIL 2 – DIL 1 criteria + Low basin inflows or low composite or low state line flow, and DIL 3 – Low basin inflows + low composite + low state line flow. "The low basin inflow trigger is the sum of the total filling volume plus 7Q10 flow. Low composite (conservation storage) is the sum of the amounts of storage available at the current elevation for each reservoir down to the drought contingency curve at each APC major project. A low state line flow trigger occurs when the Mayo's Bar USGS gage measures a flow below the monthly historical 7Q10 flow" (Corps 2011). Such changes include reduced generation hours per day according to the drought level zone and minimum target flows reduced to 240 cfs for headwater operations at Allatoona and Carters dams.

FISH AND WILDLIFE RESOURCES WITHOUT THE PROJECT

To facilitate an evaluation of project impacts associated with the proposed action, it is necessary to identify existing conditions without the proposed action. The basic principal of this description is that impacts associated with the proposed action are defined as the difference between the future without the project and future with the project.

Fish and wildlife resources without the project would continue to be influenced by the operations according to the Master Manual of 1951 and project-specific WCM's, including incremental changes. Operations without the project are described by the Corps as the NAA (Corps 2011). Results of current operations on the ACT include:

- Loss of lotic habitats and associated fluvial species assemblages.
- Alteration of the natural variation in the flow regime including low flows, high flows, large floods, and rise and fall rates.
- Altered timing and magnitude of freshwater inflow to south Alabama delta and Mobile Bay.
- Reduced floodplain and tributary connectivity due to low number of large floods.
- At some locations, poor water quality such as low dissolved oxygen, altered temperature regimes is attributed to presence and operation of dams. Wastewater concentrations is a function of both dam operations and municipal waste water delivery to rivers. .
- Hampered fish passage and access to spawning areas, refuge habitat, and the Gulf of Mexico.
- Fragmentation of aquatic populations and genetic effects caused by impoundment (Fluker et al. 2013) and possibly physicochemical alteration of tailwaters.

Without the proposed project the ACT basin is an unnatural system due to years of human influence. The Corps and APC ultimately control the water levels in the reservoirs, reservoir holding times and releases, operations of the lock systems, maintenance of a navigable channel, and other operational activities associated with the dams and reservoirs. Water consumption, flood control, recreation, hydropower and navigation are among the operations that influence how water is balanced in the ACT.

CORPS' ANALYSIS OF PROJECT IMPACTS AND EVALUATION METHODOLOGY

1. Flow Dynamics

1.1 Conservation and Recovery of Natural Flow Variability

The Corps states that returning to a "natural" flow regime is not in their interest due to their other Congressionally authorized purposes of flood control, hydropower, and recreation. As stated by the Corps, the PAA would include minimum monthly flow releases at Carters. The Corps states that implementation of a seasonal non-hydropower peaking operation at Allatoona Dam would require a shutdown of hydropower production at the facility for a specified period of time; this would occur since there is no possible gradation of water releases from the main hydropower units between 0 cfs and 3,500 cfs.

The planning activities and construction for new reservoirs in the upper ACT were not addressed in the PAL response. The Service concurs that water supply reservoirs in the basin should be addressed to the extent possible. We understand the uncertainty with the Hickory Log Creek Reservoir, but the reservoir is constructed and its potential impact should be considered. It also is our understanding that modeling information for both the Richland Creek Reservoir and the Russell Creek Reservoir is to be provided to the Mobile district at the request of the Savannah district. If this information is provided in a timely manner, it should be considered as well. The following reservoirs are in various planning and construction stages and their impacts to the watershed should be considered:

1) Hickory Log Creek Reservoir

2) Russell Creek Reservoir
3) Richland Creek Reservoir
4) Shoal Creek Reservoir
5) Calhoun Creek Reservoir

Per the Service's request, the Corps provided ecosystem flow analyses using Indices of Hydrologic Alteration (IHA) and Service-recommended Microsoft Excel spreadsheets in their November 22, 2011, correspondence to the Service (Appendix VI). They provided a comparison of the NAA to the PAA at three locations: Pine Chapel, Georgia (Coosawattee River below Carters Reregulation Dam) and two locations near Rome, Georgia (Etowah River below Allatoona Dam and the Oostanaula River). Ecosystem flow guidelines (developed from pre-dam observed data) have not been developed to compare with the NAA and the PAA; however the similarity between the NAA and the PAA is evident from the provided data. The greatest differences between the two alternatives are seen in the Etowah River below Allatoona Dam based upon the IHA. The plots for the PAA and the NAA were similar for both Pine Chapel and Oostanaula River at Rome, Georgia. The PAA results in the highest peak occurring during December in the Etowah River below Allatoona Dam, whereas the highest peak occurs late March for the NAA.

1.2 Protection and Enhancement of Remaining Free-flowing River Habitats

The Corps states that identifying and mapping free-flowing river habitats is needed but it is out of the scope of the WCM updates. The Corps provided information and analysis of sediment transport and buildup, shoaling, and erosion at reservoirs throughout the basin based on data collected up to 2010.

2. Water Quality

2.1 Dissolved Oxygen

Using the HEC-ResSim and HEC-5Q models, dissolved oxygen (DO) levels were modeled for the No Action, Proposed Action, and two other alternatives. Conditions were simulated for years 2001-2008 to demonstrate water quality conditions during different inflow amounts; 2003 representing a wet year, 2007 representing a dry year, and 2002 representing a normal year. Percent occurrence of DO less than a daily average of 5.0 mg/L below Carters, Allatoona, Weiss, Jordan, and Martin Dams, as well as near Cartersville, Georgia, were modeled for the alternatives. Longitudinal occurrence profiles by river mile (RM) were presented to predict the change in DO among the alternatives. The Corps' analysis included DO longitudinal profiles for:

- Etowah River for dry, wet, and normal years, May to October over the 2001-2008 period,
- Carters Reregulation Dam downstream to Weiss Lake, May to October in a representative dry year,
- Coosa River to Montgomery, May to October in a representative dry year,
- Tallapoosa River to Montgomery, May to October in a representative dry year, and
- Alabama River, for a representative wet year and dry year.

The largest differences between the No Action and the PAA based upon the 50% occurrence were as follows:

- Alabama River during a dry year, due to the drought operation plan: near RM 320, DO decreases by 1.0 mg/L for the PAA compared to the NAA.
- Coosa River to Montgomery, May to October during a dry year, due to the drought operation plan: compared to the NAA, increases of 0.5 mg/L occur RM 350 to 400 while decreases in DO of 0.5 mg/L to 0.8 mg/L occur within RM 500 to 575.
- Tallapoosa River to Montgomery during a dry year, due to the drought operation plan: near RM 420 DO increases by 0.5 mg/L more than the NAA for the PAA.
- Carters Reregulation Dam downstream to Weiss Lake, May to October in a dry year, due to the drought operation plan: near RM 717 DO decreases by 0.8 mg/L for the PAA compared to the NAA.

2.2 Water Temperature

Using the HEC-ResSim and HEC-5Q models, water temperatures were modeled for the No Action, Proposed Action, and two other alternatives. Conditions were simulated for years 2001-2008 to demonstrate water quality conditions during different inflow amounts; 2003 representing a wet year, 2007 representing a dry year, and 2002 representing a normal year. Longitudinal occurrence profiles by RM were presented to predict the change in median water temperature among the alternatives. The Corps' analysis included longitudinal profiles of the PAA, NAA, and two other alternatives for a representative dry year (all year, 2007) for the:

- Alabama River,
- Coosa River to Montgomery, and
- Coosawattee (Carters Reservoir) to Weiss River;

growing season for a representative dry year (May-October, 2007) for the:

- Coosawattee (Carters Reservoir) to Weiss River and
- Etowah River to Weiss River;

and the composite of all years (2001-2008) for the:

- Alabama River and
- Tallapoosa River to Montgomery.

No actual water temperature values were provided. The largest differences between the No Action and the PAA based upon the 50% occurrence were as follows:

- Alabama River during a dry year, due to the drought operation plan: near RM 345 median water temperature increases by 1.2° C more than the NAA for the PAA.

- Coosa River below Jordan Dam, during a dry year, due to the drought operation plan: near RM 355 median water temperature increases by 1.0° C more than the NAA for the PAA.
- Coosawattee River, during a dry year: at Carters Reservoir (RM 720) median water temperature decreases by as much as 0.8° C below the lake for the PAA in comparison to the NAA.
- Etowah River, May-October during a dry year: below Allatoona Dam, median water temperature decreases by as much as 1.3° C for the PAA in comparison to the NAA.

2.3 Wastewater

Using the HEC-ResSim and HEC-5Q models, percent wastewater inflow was modeled for the No Action, Proposed Action, and two other alternatives. Conditions were simulated for a representative dry year, 2007, to demonstrate water quality conditions during low flow. Longitudinal occurrence profiles by RM were presented to predict the change in percent of wastewater in flow among the alternatives. Profiles were presented for the Alabama River, Coosa River to Montgomery, Coosawattee River to Weiss River, Etowah River to Weiss River, and Tallapoosa River to Montgomery. There were not large differences between the No Action and the PAA. Based upon the 50% occurrence, observations for both the No Action and PAA were as follows:

- The highest percentage of wastewater is found in a ten-mile stretch between Rome, Georgia and Weiss Lake on the Coosa River.
- The average percentage of wastewater was highest (near 6%) for the Alabama, Coosa, and Coosawattee Rivers.

2.4 Sediment Load

The Corps states that large reservoirs, such as Allatoona Reservoir and R.L. Harris Lake, act as sediment traps and starve the downstream channel of fine-grained sediments. They state that run-of-river dams, such as Claiborne Reservoir, generally allow all sizes of suspended particles to be transported downstream of the dams. Tailwater degradation curves were provided for Claiborne Lake, R.F. Henry Lock and Dam, Logan Martin Lake, H. Neely Henry Dam, Weiss Lake, R.L. Harris Lake, Carters Reservoir (historic and low-flow conditions), and Allatoona Reservoir. As stated by the Corps, tailwater degradation, or lowering of the river bed elevation immediately downstream of a dam, is occurring or has occurred below Allatoona Dam during construction, R.F. Henry Lock and Dam, and below Claiborne Lake.

The Corps provided an evaluation of pool conditions to identify if shoaling is a significant issue. Claiborne Lake, Millers Ferry Lock and Dam and William "Bill" Dannelly Lake, R.F. Henry Lock and Dam and R. E. "Bob" Woodruff Lake, Logan Martin Lake, H. Neely Henry Lake, Weiss Lake, Allatoona Reservoir, Carters Reservoir, and R.L. Harris Lake evaluations were provided. Data shows that several reservoirs, such as Logan Martin Lake, H. Neely Henry Lake, and Weiss Lake, have become more stable over time partially due to increased density of vegetation. Allatoona Reservoir has an increased amount of sediment due to development in the area. The Corps states that erosion has occurred on cropland and has contributed to sediment into the ACT Basin.

3. Floodplain Connectivity and High Flows

Low flow and high flow analyses were conducted by the Corps' at three locations to compare the Proposed Action and NAA: Pine Chapel, Georgia, Etowah River at Rome, Georgia, and Oostanaula River at Rome, Georgia. Those results were transmitted in the Corps' November 22, 2011, response to the Service's questions regarding the Corps' June 6, 2011 document (Appendix VI). The high flow analyses are pertinent to floodplain connectivity. Ecosystem flow guidelines were not included in the Corps' document to compare the alternatives to pre-dam conditions. However, a comparison between the alternatives indicates they are largely similar, with the greatest differences in the Etowah River as a result of operational changes at Allatoona Dam.

4. Fish Passage

Ongoing studies are being supported by the Corps to determine the efficacy of using lockages for fish passage. In collaboration with ADCNR, The Nature Conservancy (TNC), Auburn University, and the Service, the Corps has supported "dummy" lockages at Claiborne and Millers Ferry lock and dams. Lockages were performed at these facilities in 2010 and 2011 February through May. The Corps is a partner of the Alabama River Fish Passage Working Group whose goal is to study the various ways to allow migratory fishes to move upstream to historic spawning areas. The group is made up of partners from the Geologic Survey of Alabama (GSA), ADCNR, TNC, Auburn University, the Service, and the Corps. The Corps states that other studies are beyond the scope of the WCM update.

5. Reintroductions and Enhancements for Listed Species

The Corps states that reintroductions and enhancement of habitats for federally listed species are beyond the scope of the project. The Corps has provided funding support for several listed species surveys within in the ACT Basin. These surveys were conducted in anticipation of eventually preparing a Biological Assessment (BA) for Section 7 ESA consultation. For example, Jim Godwin of the Alabama Natural Heritage Program (ALNHP) implemented a study to determine burrow occupancy of the Red Hills salamander at Haines Island Park and surveyed for populations west of the Alabama River (2011). Carol Johnston and Heath Haley of Auburn University surveyed small-bodied fishes in the Alabama River and associated tributaries (2011). Allan Shotz of the ALNHP performed a survey of listed and sensitive plant and select animal species on Corps landholdings along the Alabama River (2011). ADCNR performed two studies, one by Michael Buntin and Jeff Garner to delineate the mussel bed at Alabama RM 207 and to determine the abundance of heavy pigtoe (*Pleurobema taitianum*) at the location (Buntin and Garner 2011), and a second survey conducted by Buntin, Garner, and Todd Fobian to better understand the distribution of Tulotoma snail (*Tulotoma magnifica*) in the Alabama River (Garner et al. 2011). The Corps provided updated mollusk surveys that were recently conducted in the Coosa drainage of Georgia.

6. Restoration and Maintenance of Healthy Water Quality Parameters

The Corps states that the level of effort needed to accomplish this is beyond the intent of the current project. The Corps will continue to work closely with stakeholders in adaptive management and seek opportunities for future study.

7. Development of Adaptive Management Protocols

The Corps states that the development of research and monitoring efforts goes beyond the scope of the project.

8. Reservoir Fisheries

Per the Service's request, the Corps provided a reservoir fisheries analysis in their November 22, 2011, correspondence to the Service (Appendix VI). They stated that the proposed changes would most notably affect lake levels in the upper portion of the basin, particularly Allatoona Reservoir, so the reservoir fisheries detailed analysis was provided for Allatoona only. The impacts of the No Action and PAA on reservoir fisheries were based on the premises that reservoir water level fluctuations can impact reproductive success of game fishes. The analysis used a performance measure previously developed by the Service that characterizes the effect of the alternatives to habitat suitability for recreationally important species. The performance measure scores indicate that the NAA would be similar to the PAA, without notable differences between the two.

EVALUATION OF THE PROPOSED ACTION ALTERNATIVE

1. Flow Dynamics

<u>1.1 Conservation and Recovery of Natural Flow Variability</u>

A natural flow regime similar to historic flows (e.g., base, seasonal, and minimum/maximum flow levels, frequency/duration of low/high pulse flows, flow rise/fall rates and frequency of flow reversals) is essential to the integrity of the basin's riverine fauna and habitats. Riverine biota are adapted to the variation in flow and are dependent upon these changes to carry out their life strategies. Peaking hydropower releases of water at high velocities can adversely impact the development of riverine flora and fauna and decrease biodiversity. Although flows in the ACT Basin have been altered, some components of a natural flow regime could be mimicked.

The zones identified in the PAA for Carters Reservoir would provide seasonally varying low flows that are more similar to the natural flow regime in the lower Coosawattee River. The re-regulation pool below Carter's Dam is a unique feature among ACT Corps projects in that it facilitates a greater range of target flows. Proposed minimum flow releases that equal a mean monthly flow near Ellijay (USGS gage # 02380500) upstream of Carters Dam would simulate a seasonally variable flow regime when Carters reservoir is in Zone 1, an improvement to the current annual 7Q10 minimum flow of 240 cfs. The release of monthly low flows or seasonal low flow variation is not proposed for the other dams in the ACT Basin. Corps projects on the

Alabama River are run of river and have limited storage capacity. The design of Allatoona Dam has been cited by the Corps as a factor that limits their ability to provide alternative flows. However, opportunities may still exist for providing flows for bypassed natural river channels downstream of hydropower projects, adjusting flows in highly regulated river sections downstream of hydropower dams, providing non-peaking flow windows during critical spawning periods, and providing adequate flows for water quality maintenance in river segments that have experienced species die-offs.

A recent study conducted by the United States Geological Survey (USGS) above and below both Carters and Allatoona dams assessed fish populations at shoal habitats (Freeman et al. 2013). In the Coosawattee River, species richness results were similar for the sites upstream and downstream of Carters Dam. In the Etowah River, species richness of the downstream sites was estimated to be reduced by nearly two-thirds compared to the upstream sites. Fewer individuals were sampled at the lower river sites compared to the upstream sites in both the Etowah and Coosawattee rivers. Freeman et al. concluded that the effects of altered sediment transport and reduced inputs of carbon and other nutrients are realized in the Etowah and Coosawattee rivers due to the physical presence of the dams. Results of dam operations including hydropeaking, low flow periods, and low dissolved oxygen have likely reduced the number of shoal-dwelling fish species. The low number of small-bodied fishes downstream of Allatoona Dam compared to Carters Dam may be evidence of stronger impact to the Etowah River from the hydropeaking regime. The reregulation dam downstream from Carters Dam dampens the hydropeaking influence on the Coosawattee River and likely contributes to the healthier fish community.

The Service recognizes that the proposed reservoirs could have an impact on conservation and recovery of natural flow variability. Changes to storage, interbasin transfers, withdrawals, and hydropower should be addressed in the future.

In Alabama, FERC has issued a preliminary permit to Hydro Green Energy LLC (FERC Project Docket No. 13519-000) for studying the addition of hydropower at Claiborne Lock and Dam. Our concerns with future impacts at this site include degradation of fish and wildlife habitat, water quality, and passage of migratory fishes. The Service will coordinate with the permittee and FERC to formulate appropriate measures to protect, mitigate, and enhance fish and wildlife resources affected by this potential development through FERCs licensing process. We also encourage the Corps to include the Service in future conversations regarding hydropower infrastructure at Claiborne Lock and Dam, if the proposal moves forward.

At all the projects in the ACT Basin we recommend the Corps restore parameters of a natural flow regime by reducing hydropeaking releases, allowing large floods to reach floodplains, and mimicking the natural hydrograph as much as possible by allowing for seasonal fluctuations in river discharge.

1.2 Protection and Enhancement of Remaining Free-flowing River Habitats

Riverine biota are adapted to flowing water conditions. Flow parameters, such as velocity, timing, and frequency, signal organisms to complete their life history strategies (Poff and Ward 1990, Allan 1995, Richter et al. 1996). Restoration of a natural flow regime will improve water quality and physical habitat. For example, ensuring adequate flow is released from Claiborne Dam is important to maintain proper freshwater inflows to the Tensaw delta and Mobile Bay. Other examples such as inundation of Claiborne Dam, opening locks for fish passage, and reduction of large peaking events for hydropower can aid in restoration of free-flowing habitats. We recommend taking steps towards restoring a more natural flow regime throughout the ACT Basin.

2. Water Quality

Water quality in the ACT Basin is an important component of watershed health. Where possible water quality attributes including dissolved oxygen, water temperature, wastewater, and sediment load should be improved upon.

2.1 Dissolved Oxygen

The Alabama State standard for DO is 5.0 mg/L. Georgia's State standard for DO is a daily average of 5.0 mg/L and an instantaneous value of 4.0 mg/L for waters supporting warmwater species of fish. The PAA's largest decreases in DO from the NAA are predicted to be the Coosa River near RM 575 (-0.8 mg/L), below Carters Reservoir near RM 717 (-0.8 mg/L), and the Alabama River near RM 320 (-1.0 mg/L). Although the PAA predicts DO improvements at some locations, the PAA is modeled to have lower DO at other locations compared to the NAA. DO levels were modeled to be lowest in a dry year during drought conditions.

The Alabama Department of Environmental Management (ADEM) completed water quality surveys in 2008 and 2009 on the Alabama River. Continuous data were collected from the river bottom at four locations during summer months: Alabama River Pulp Company, Selma, Prattville, and Weyerhaeuser. In 2008, DO values fell below the State standard of 5.0 mg/L at Selma, Weyerhaeuser, and Prattville. In 2009, DO levels remained above the State standard except at Selma. The Selma and Weyerhaeuser Alabama River locations are of specific concern due to the number of low DO data logs and the number of sensitive species near these locations. Poor water quality during 2008 was likely due to little flow during drought conditions, creating a lentic environment. Sampling at several elevations in the water column is important; the data sonde for this study was located near the river bottom. This location provided different values when compared to data collected near the water surface. Bottom data is an important indicator in addition to surface data, because benthic biota experience bottom conditions. In future studies we encourage data to be collected from the river bottom as well as the water surface to more accurately understand water quality conditions.

Based on the models provided by the Corps, noticeable changes to dissolved oxygen between the NAA and PAA occurred at discrete locations, showing increased oxygen at some locations and decreased oxygen at other locations. These changes should not necessarily be viewed as balancing each other out. We recognize the difficulty in balancing multiple project purposes, but accepting worse conditions at one riverine location to improve conditions at another should be done cautiously. In this instance, the Service views comparisons between the NAA and PAA as an opportunity to identify locations where modeled dissolved oxygen decreases may be of concern, where additional monitoring and analyses are necessary to fully evaluate PAA effects, and where management alternatives may need to be sought. Congruent with this approach, the analyses that were provided demonstrate the ongoing unacceptable levels of low DO caused by some of these Corps facilities. The highest percentage of low DO occurrence was at Allatoona Dam outflow. The outflow was modeled to fall below the State standard 40% of the time (2000-2008) and to fall as low as 2 mg/L during these years. Low DO levels below Allatoona Dam are a concern and need to be addressed. Data collected by the Service in the summer of 2009 on the Etowah River below Allatoona Dam indicated DO levels lower than 1.0 mg/L (USFWS 2012).

Action should be taken to maintain State water quality standards during all conditions. During low flow events DO levels should not fall below the State standard and suitable flow should be maintained throughout the river system to increase water quality. Maintaining suitable flows in the ACT Basin is dependent upon cooperation between the Corps and APC.

Due to the recurring problem of low DO below dams, methods have been developed to improve oxygen levels at other locations. For example, Tennessee Valley Authority (TVA) has installed dam-specific devices to improve DO downstream of dams. Examples include aerating turbines, surface-water pumps, low-pressure air blowers, aerating weirs, and oxygen injection systems (http://www.tva.gov/environment/water/rri_oxy.htm). These types of systems should be examined as ways to improve water quality below Corps dams in the ACT Basin. We recommend that the Corps seek additional authorization and funding (e.g., 1135 funds or aquatic ecosystem restoration funds) to remedy the water quality problems at the ACT projects.

2.2 Water Temperature

Temperature is an important quality to riverine flora and fauna and temperatures outside of seasonal norms can stress biota. Most warm-water fishes have an approximate upper limit of 30° C meaning that temperatures above this will stress the animal and lower survival rates while cold-water fishes generally cannot survive temperatures above approximately 25° C for very long (Allan 1995). According to Alabama State water quality standards, water temperature shall not exceed 32.2° C in streams, lakes, and reservoirs throughout the state. In the Tennessee and Cahaba River Basins, and for that portion of the Tallapoosa River Basin from the tailrace of Thurlow Dam at Tallassee downstream to the junction of the Coosa and Tallapoosa Rivers, temperature shall not exceed 30° C. According to Georgia State water quality standards, water temperature shall not exceed 32.2° C. At no time is the temperature of the receiving water to be increased more than 2.8° C above intake temperature in freshwater. In primary trout streams or smallmouth bass streams (as designated by GDNR-WRD), there shall be no elevation of natural stream temperatures. In streams designated as secondary trout waters, there shall be no elevation exceeding 1.1° C of natural stream temperatures.

The largest differences between the PAA and the NAA would occur during drought operations. In Georgia, water temperatures under the PAA decrease below Corps reservoirs by as much as 0.8-1.3° C (Coosawattee and Etowah Rivers, respectively). In Alabama, water temperatures increase by as much as 1.0-1.2° C (Coosa and Alabama Rivers, respectively).

Existing water temperatures in multiple locations in the ACT Basin are already artificially depressed or elevated. In Alabama, temperature was recorded by ADEM during 2008-2009 summer months at four locations: Alabama River Pulp Company, Selma, Prattville, and

Weyerhaeuser. We recommend water temperatures below Corps' facilities in Alabama be maintained at least below the State standard and below 30° C when possible.

In Georgia, existing water temperatures below Allatoona Dam are artificially depressed as a result of current operations. A recent study on the Etowah River investigated water temperature impacts from Allatoona Dam (USFWS 2010). Water temperature was modeled from Allatoona Dam to 31 miles downstream in June 2009 to compare water temperatures among an unimpounded flow, a minimum flow-hypolimnetic release, and a hydropower generation-hypolimnetic release of 3,600 cfs. Water released from Allatoona Dam was 8.3° C colder than the temperature predicted from the unimpounded scenario. Using the unimpounded temperature gradient as the ideal scenario, temperature for the minimum flow release was not restored until 27.7 miles downstream. Under the hydropower generation release scenario the temperature never recovered to unimpounded modeled temperatures in the 31-mile study area. The study predicted water temperature could vary between 0-8° C daily. The artificial depression and fluctuations in water temperatures are not beneficial to native aquatic populations below Allatoona Dam. However, a population of striped bass (*Morone saxatilis*) does utilize the cool water below Allatoona Reservoir as a thermal refuge, specifically in summer months.

Given the magnitude of water temperature impacts below Allatoona Dam, it is unlikely that the additional suppression of river temperatures from the PAA, even during drought, will be beneficial to native fishes. There is no evidence that warm-water fish fauna below Allatoona Dam have "adapted" to colder conditions. To the contrary, surveys show an altered fish community. Specifically, at least eleven species (tricolor shiner, riffle minnow, Coosa chub, Etowah chub, speckled madtom, Coosa madtom, amber darter, Coosa darter, rock darter, bronze darter, freckled darter) expected to occur in the lower Etowah River mainstem on the basis of historic records and species distributions were not encountered (Freeman et al. 2013). Proposed explanations for the absence of these fishes include altered thermal characteristics and altered flow regimes.

We acknowledge that implementation of higher low flows (as might be expected from implementation of a seasonal flow regime) could exacerbate low temperature conditions in the Etowah River, especially if delivered through hydropower generation. For this reason, the Service proposed an alternative approach to flow management (Service 2010). Sluicing in June 2009 resulted in an approximate 10°C increase in river water temperatures. This demonstrates that sluicing can result in temperatures that are more appropriate for a warm water fish community. These sluicing opportunities do not necessarily need to occur in every month, nor must they occur in every year. Sluicing in conjunction with hydropower generation could result in the Corps meeting authorized purposes for both Hydropower production and Fish and Wildlife, and they should not be treated as options that are exclusive of one another.

<u>2.3 Wastewater</u>

The NAA and the PAA are similar; therefore, the PAA is not less or more favorable than the NAA. As presented by the Corps, percent potential wastewater for all alternatives did not exceed approximately 10% of total flow during low flow conditions. Cooperation between the Corps and other facilities along the ACT is needed to maintain wastewater levels that do not damage aquatic resources.

2.4 Sediment Load

The number of dams in a watershed influences the quantity and size of sediment that is transported by rivers. Sediment falls out and becomes trapped in reservoirs leaving downstream river reaches starved of fine grained sediment. Because of the lack of sediment the channel downstream of a dam may respond to sediment starvation by down cutting, bank erosion, and channel widening. Channel stability and amount of shoaling of reservoirs in the ACT was also addressed. The Corps concluded that shoaling has occurred but in some areas vegetation has allowed for more sediment stability. The Service recognizes that tailwater degradation and shoaling are due to original construction of the dams, but measures to reduce sedimentation and shoaling are recommended and include bank stabilization above dams, avoidance of structural disturbance to rivers, and minimization of disturbance to river banks. Fine sediments fill interstitial spaces of larger particles such gravel, cobble, and boulders, thereby eliminating important habitat. No Tulotoma snails were found where boulders were embedded and the interstitial spaces were choked, although some sediment accumulation correlated with presence of the snails at other locations (Garner et al. 2011). Suspended sediment load is likely to be the most responsive component of sediment transport to the proposed action, possibly through the increased sediment supply derived from channel banks during higher baseflows. Consequently, there may be minor effects to channel morphology, suspended sediment load, and bed sediment composition should channel banks erode at rates that exceed erosion rates under the NAA. We recommend monitoring embeddedness and erosion rates downstream of dams to determine impact on available habitat and implement stabilization measures to reduce further erosion.

3. Floodplain Connectivity and High Flows

The Corps provided high flow analyses for the NAA and the PAA at several locations in Georgia using the flow guidelines excel template. The strength of this approach is that the analysis compares two alternatives developed in a modeling environment, thereby facilitating direct comparisons between alternatives. The alternatives are similar based on the Corps’ comparison of high flows, with the exception of the Etowah River below Allatoona Dam. However, the Corps did not provide flow guidelines based on pre-dam observed flows. Such an analysis can yield insights into the low and high flow patterns (magnitude, duration, and timing) that would be expected under unregulated conditions. Based on NOAA’s estimate of bankfull discharge (28’) and USGS flow data (Etowah River at Rome, GA, gage #02395980), approximately 17,000 cfs is required to reach bankfull elevation in the lower Etowah River. The Corps analysis shows that bankfull flows neither occur under the NAA nor the PAA. However, moderate increases (2000-3000 cfs) in high flows occur in the Etowah River under the PAA, which is a step toward resembling a more natural flow regime. Our knowledge of regional flow patterns indicate that the timing is consistent with what would be expected under unregulated conditions. Furthermore, the observed post-dam period of record shows that near-bankfull flows occur in nearly half of all years, approximating the 2-year recurrence interval expected for bankfull discharge under unregulated conditions. These results demonstrate that some aspects of the natural flow regime are regularly achieved in the Etowah River. They also demonstrate that a greater range of flows can be considered in the models without flooding municipalities.

Ecological integrity of riverine systems is intimately connected to the quality and quantity of streamside floodplain forests and wetlands. The level of connectivity affects the vegetation ecology of adjacent wetlands and floodplain forests, as well as the fish and wildlife resources dependent upon them. Significant river-dependent habitats include the diverse floodplain forests, tributaries, wetlands and bottomlands. Forest and grassland communities within the floodplain zone which require disturbances such as high water and bank sloughing, are often distinctly different than communities outside that impact zone. These unique environments are driven by the moisture availability, fluvial processes and the daily interaction between aquatic and terrestrial communities.

The Corps owns 23 landholdings along the Alabama River. The Alabama Natural Heritage Program (ALNHP) performed surveys for imperiled wildlife in these areas in 2010 and 2011 (Schotz 2011). Upland and mesic hardwood forest, bluff, prairie and wetland habitats were identified in the landholdings. Results from these studies show that the Corps landholdings support or have the potential to support species of concern.

Protecting and restoring aquatic habitats associated with the floodplain are essential to ACT Basin fish and wildlife; such habitats include shorelines, riparian zones, and associated wetland systems. These systems serve as spawning habitat and refugia, allowing rivers to reach these environments and rejuvenate the ecosystems. Large floods that reach the floodplain and tributaries are important in order to provide foraging material, spawning habitat and refugia for aquatic species. Allowing river levels to reach the floodplain is welcomed, and should be considered where negative impacts to structures will not occur.

4. Fish Passage

It is widely acknowledged that dams impede the movements of fish and other aquatic biota. Movement throughout a river system is important to prevent depletion of local resources and to maintain genetic variation. Migratory species, such as Alabama sturgeon (*Scaphirhynchus suttkusi*), require long stretches of free flowing river to carry out their life history strategies. Mussel species depend on fish hosts that are not immune to their glochidia and this strategy can be halted without proper upstream and downstream movement.

Inundation and open flood gates at Claiborne and Millers Ferry, respectively, increase fish passage on the Alabama River (Mettee et al. 2005). A study completed by Mettee et al. (2005) found that attraction flows and “dummy” lockages benefit fish movement at Millers Ferry and Claiborne Lock and Dams. Data suggest that fishes may remain in lock chambers for long periods of time, but attraction flows encourage movement out of the locks.

Auburn University, with the aid of the Corps, the Service, TNC, ADCNR, and GSA conducted a study on “dummy” lockages and fish passage at Millers Ferry and Claiborne and Lock and Dams to evaluate the effectiveness of specialized lock operations for fish passage, February 1 through May 31 (Simcox 2012). Fishes were tagged in 2010 and 2011 and tracked using numbered internal anchor tags and internal sonic tags. Results show that specialized lock operations can help fish movement upstream, especially during spring months (spawning period) when movement into the lock chambers was most frequent. During periods of lower flow when no inundation occurred at Claiborne Dam, “dummy” lockages offered a method of fish passage (Table 2). Passage occurred by means of lockages for navigation operations and lockages specifically for fish passage. During the study, 51% of tagged fishes were successfully detected passing either upstream or downstream past at least one of the dams either through the lock chamber or over Claiborne Dam (Simcox 2012). The results show that fish move through the locks and can swim upstream over dams if the dam is inundated, or overtopped.

	Days operated	**Days inundated**	**Days with boat traffic**	**Fish passage lockages**	**Days for potential passage**
Claiborne					
2010	33	34	10	122	67
2011	32	13	9	125	45
Millers Ferry					
2010	89	-	27	356	89
2011	80	-	14	162	80

Table 2. Summary statistics for Claiborne and Millers Ferry Lock and Dams from February 1st to May 31st (Simcox 2012). Days operated refers to total number of days that the lock was operated for fish passage, days inundated refers to days that flow overtopped the dam, days with boat traffic refers to total number of days that the lock was used specifically for boat traffic, days for potential passage refers to the number of days that fish had the opportunity to move upstream of the dam, either through lock operations or dam inundation.

Studies that evaluate the effectiveness of attraction flows and opening of lock gates to allow fish passage should continue. We request a cost benefit analysis be performed comparing the operation and maintenance of the current navigational channel and system of locks and dams on the Alabama River versus the costs and economic benefits associated with maintaining the same system for maximum environmental benefits. A summary of the number of commercial barges and other craft that have and are currently utilizing the navigational system should be made available as part of the EIS.

On October 9, 2012, changes to future lock operations at Corps dams were announced (Release no. 12-031) (Corps 2012). Hours of operation have been determined based upon historic usage patterns; locks will be operated four days a week and all commercial traffic will be by appointment only. The announcement states that lockages will be made for seasonal fish passage. Usage will be reviewed annually and adjustments will be made as needed.

We recommend the Corps continue support for fish passage research, install attraction flows, and frequently open locks during the spring fish migration period.

5. Reintroductions and Enhancements for Listed Species

The federally listed amber darter (*Percina antesella*) occurs in the lower mainstem Coosawattee River below Carters Reregulation Dam (Freeman et al. 2013). In the Corps' February 18, 2014, BA, longitudinal analyses of downstream predicted changes to water quality as a result of the proposed action were included. In addition, the changes in discharge released at Carters Reregulation Dam were described; however, those changes in discharge were not translated into predicted depth and velocity differences downstream where the amber darter is known to occur. In the Coosawattee River below Carters Reregulation Dam, it is our understanding that the shallow riffles and shoals have been modified in the past, resulting in the fact that they may be lower in number and could have modified physical characteristics in relation to their prior natural state. Because of this, we need to understand the changes to the amount of available habitat for the amber darter as a result of the proposed action. To monitor responses of biota and habitat in the Coosawattee River to the PAA, conservation measures have been agreed upon by the Corps and the Service.

Reintroductions and enhancements for listed species are key management actions to improve rare aquatic populations and habitat in the ACT Basin. Efforts have begun with partners in Alabama to reintroduce rare species into these river systems. Collaboration between the Service and Alabama Aquatic Biodiversity Center (AABC) of ADCNR has resulted in reintroduction of numerous species that are showing success. “A Plan for the Population Restoration and Conservation of Freshwater Mollusks of the Mobile River Basin” outlines propagation, reintroduction, and augmentation goals of our state, Federal, and non-government partners (MRBMRC 2010).

One example of the efforts of the Mobile River Basin Mollusk Recovery Committee (MRBMRC) is a proposed reintroduction of the federally endangered interrupted rocksnail (*Leptoxis foremani*) into the Weiss Bypass of the Coosa River near Centre, Alabama (Johnson 2010). Test populations will be introduced to determine if the habitat is suitable. Efforts such as these provide the opportunity to recover imperiled wildlife in the ACT Basin; we encourage the Corps to work with us to achieve the goals outlined by the MRBMRC. Collaboration between the Corps and APC will improve the chances of providing adequate habitat in the Weiss Bypass. APC has agreed upon the release of a variable continuous minimum flow into the Weiss Bypass based upon the monthly percentage of the Coosa River flow at the US Geological Survey Mayo’s Bar gage, in combination with the 3 or 4-day average Coosa River flows to provide sufficient flows for species. Providing flow upstream of the Weiss Bypass will help APC meet their flow release targets. Other mollusk studies include ADCNR’s heavy pigtoe survey at Alabama RM 207 and Tulotoma snail surveys in the Alabama River (RM 63.7 – 294.9).

The survey for heavy pigtoe (Alabama RM 207) resulted in a low number of individuals (n=2, estimated 0.013 per m^2) and no evidence of recruitment in one of the last known locations of this species (Buntin and Garner 2011). The mussel bed does appear to be healthy however, supporting 13 mussel species (approximately 12.8 per m^2). Propagation efforts for the heavy pigtoe have been undertaken by the AABC. Surveys for Tulotoma snail and available habitat were performed in the Alabama River (Alabama RM 63.7 – 294.9) using Side Scan Sonar and SCUBA ground truthing late summer and autumn of 2010 (Garner et al. 2011). Tulotoma snail was present at 5 of the 85 sampled sites. The snail was found to have a scattered distribution in the Alabama River and was associated with boulder habitat that lacked heavy siltation. We recommend protection of known locations of sensitive and listed species and efforts to increase fish passage to complete the life cycle of mussels. Maintaining flow in the Alabama River and providing fish passage opportunities at dams will benefit these species.

An additional mollusk survey was conducted at four regulated rivers in the upper ACT Basin, the Coosa, Oostanaula, Etowah, and Coosawattee (Dinkins and Hughes 2011). Presence/absence data of mussel and snail species collected at 60 sites were compared to collections made in 1997. The study found that species richness has declined since 1997; there were three fewer species in the Coosawattee and Oostanaula rivers and four fewer species in the Coosa River. The Etowah River continues to have a low number of species (two) and did not change from 1997 survey results. It is uncertain how operation of Corps projects affects these populations. Therefore, we recommend that the Corps support studies that evaluate linkages between habitat and population dynamics so that proposed changes to water management can be evaluated.

The fish assemblage in the Alabama River was sampled at gravel/sand bar habitat and in various tributaries below Claiborne Lock and Dam (Johnston and Haley 2011). The study identified 55 fish species, one being the Crystal darter (*Crystallaria asprella*) which is protected by the Alabama Wildlife and Freshwater Fisheries Division of the ADCNR. Results show that gravel/sand bars and tributaries are important habitats for fish. The data collected were compared to historic sampling performed by R. D. Suttkus and GSA; there was little similarity between historic and current samples, suggesting shifts in the fish assemblage. The study showed a loss of habitat for Alabama River fishes due to the absence of many historic gravel/sand bar sampling sites. The loss of habitat could be due to alterations of sediment transport and natural flow. High magnitude floods carry and deposit sediment along bends in the river. Maintaining a more natural flow regime would benefit gravel/sand bar habitat.

The ACT Basin is home to many imperiled fish and wildlife. In the upcoming years the Service has the responsibility of determining the status of many additional species that may be listed under the ESA. Opportunities are available to work towards preventing species from becoming federally listed and we encourage the Corps to explore these options.

We recommend the Corps support the Service and their partners to determine the status of petitioned species. This can be done by providing funds, conducting surveys and research, monitoring population sizes of imperiled species, habitat restoration and using results based management. These actions could improve the quality of the ACT Basin and allow for species to recover before reaching threatened or endangered status.

6. Restoration and Maintenance of Healthy Water Quality Parameters

Data provided by the Corps demonstrates that water quality parameters generally fall within State standards but at several locations water quality is degraded, specifically downstream of Allatoona Dam (approximately 40% occurrence of DO levels below 5.0 mg/L). Improvements to water quality at this location should be made a priority. Wastewater outflow and releases of water above 30° C should be monitored. We recommend studies dedicated to determining water quality requirements for species and the impacts to species from changes in operations, as well as improvements made to water quality at Allatoona. Locations where modeled water quality parameters show degradation of conditions for native fauna as a result of PAA implementation should, at a minimum, be monitored to evaluate the accuracy of the Corps model and trigger alternative operations if impacts are observed.

7. Development of Adaptive Management Protocols

We recognize that the Corps practices a form of Adaptive Management though iterative alternative testing and evaluation in a modeling environment. These modeling exercises have provided invaluable insights into effects of reservoir system operations on water management. To a limited extent, the inclusion of a revised ADROP into the preferred alternative represents adaptive management. The drought plan was collaboratively developed and implemented. Its successful implementation led to its inclusion into the preferred alternative. However, adaptive management protocols (including those in a real-time setting) can facilitate a flexible strategy to improving ACT Basin water management for a variety of authorized project purposes. For example, significant natural resource related data gaps remain. With the ongoing efforts to fill those gaps, additional information can allow natural resource agencies and the Corps to consider and potentially integrate new information into operation of Corps projects. Therefore, we do not agree that development of adaptive management protocols is outside the scope of this project and we encourage the Corps to explore this further. Due to the high biodiversity within the ACT Basin and the lack of flow-ecology studies, we are unable to model or predict how the Corps' operational changes will impact species on a basin-wide scale, or in some instances, in those waters directly affected by Corps projects. Adaptive management protocols will allow the Corps and partners to monitor and learn how the ecosystem responds to a variety of water management alternatives, while retaining the ability to alter operations to modify water management if necessary. Studies that evaluate water availability, forecasts of water needs for humans and the environment, and how those needs can be met are recommended by the Service.

8. Reservoir Fisheries

Reservoir fisheries may be impacted through changes in water levels, changes in reservoir flushing rates, and associated changes in water quality parameters. The spawning period of reservoir fisheries is crucial for strong year classes, generally occurring March – May while the crucial period for rearing is June – November; stable elevation in the reservoirs is needed during these times. Other concerns include the sediment load in the tributaries associated with the reservoirs. Maintaining connectivity to tributaries is important for the life history strategies of reservoir species. Performance measure scores were calculated for the NAA and the PAA in Allatoona reservoir. There were no notable differences between the two. The Corps states that the median performance measure values indicate a lack of suitable fisheries habitat. Recommendations from the Service include studies to determine impacts to reservoir fishes from unstable water levels and drawdowns due to drought during spawning and rearing periods and enhancements to habitat in Allatoona reservoir.

FISH AND WILDLIFE CONSERVATION MEASURES AND RECOMMENDATIONS

The following bullets provide a consolidated list of the recommendations that we justified in the preceding "Evaluation of the Proposed Action Alternative" section:

- Include the Service in future conversations regarding hydropower infrastructure at Claiborne Lock and Dam, if the proposal moves forward. (1.1. Conservation and Recovery of Natural Flow Variability)
- Continued cooperation between the Corps and APC to ensure releases which help APC meet their flow targets from the upstream dams and delivery of water to the Weiss Bypass channel is needed. (Service 2010)
- Develop an adaptive management plan and monitoring program to allow greater understanding of riverine ecosystem response to complex variables and add additional data to models as more data are collected. (7. Development of Adaptive Management Protocols)
- Improve and maintain water quality parameters suitable for fish and wildlife for all life stages under a variety of flow conditions. (1.1. Conservation and Recovery of Natural Flow Variability)
- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrates (e.g., mussel and snail populations). (7. Development of Adaptive Management Protocols)
- Improve connectivity to the floodplain. (3. Floodplain Connectivity)
- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the large number of aquatic species. (4. Fish Passage)
- Explore and implement opportunities (e.g., with the AABC) to augment/reintroduce mollusks and fishes into appropriate habitats. (5. Reintroductions and Enhancements for Listed Species)
- Develop Geographic Information Systems (GIS) databases that identify, characterize (e.g., bathymetry, current velocity, substrate, and Side Scan Sonar), and map stable riverine habitats. (Service 2010)
- Maximize Corps collaboration with stakeholders. (7. Development of Adaptive Management Protocols)
- Implement mitigation measures for the loss of aquatic resources as a result of the creation of the Carters Reservoir Project. Terrestrial and stream impacts should be calculated and mitigation measures should be implemented. (Service 2010)

SUMMARY AND THE SERVICE'S POSITION

Neither the Corps' PAA nor the NAA, due to the limited scope of the proposed updates, will address all of the Service's conservation concerns regarding operation of Corps projects. These concerns include lack of improvement to water quality, lack of support for reintroduction and enhancements for listed species, minimal mimicking of components of the natural flow regime, no reduction of effects of hydropower peaking flows, and no recognition that studies to define target species and investigate the feasibility of providing passage at facilitates other than Claiborne Lock and Dam and Millers Ferry Lock and Dam for fish passage is within the scope of the current effort. The Service does however, support the ADROP.

APC began working with State and Federal agencies (including the Corps) to develop ADROP as a means of addressing operation needs of these agencies following the 2007 drought. The geographic scope of ADROP included the Coosa River from the Alabama/Georgia line downstream to Claiborne Lock and Dam. A portion of ADROP was consulted on and accepted by the Service, FERC, and APC in the 2013 issuance of APC's hydropower license for the Coosa River Projects. This portion included only those flows from the state line downstream to Jordan Dam. The remaining portion of ADROP has been discussed and is subject to approval by the Corps in its EIS for the WCM.

The ADROP represents coordinated water management among several natural resource agencies, including APC, and the Corps. However, it was not intended to be a thorough evaluation of water quality from a system-wide water management perspective. Therefore, it is uncertain whether the modeled water quality impacts noted in this report are a consequence of drought plan implementation or the other modifications that were modeled at the same time (e.g. periods of suspended navigation, phased drawdowns, seasonal minimum flows). We believe that integration of a drought plan which has had thorough vetting of water quantity and quality impacts is in our mutual interest, but at this time, we cannot fully support the PAA in part due to the water quality impacts.

The Service supports the suspension of flows during drought to meet the operational needs of users as long as it is protective of federally listed species. The Service supports the ongoing efforts of the Corps in fish passage through Claiborne and Millers Ferry Locks and Dams, but encourages additional studies at upstream facilities.

The Service emphasizes the importance of data collection and implementation into long-term datasets in order to better evaluate and develop flow management alternatives. Research and monitoring is important due to the lack of flow-ecology relationships in the ACT Basin. Research of water quality parameters throughout the year and at varying drought conditions, flow variables which are important to aquatic species, erosion rates downstream of dams, species status surveys, connectivity of mainstem rivers to tributaries and floodplains, fish passage, and impacts of reservoir levels on game species is needed to manage the ACT Basin. Collaboration and partnership support is crucial for obtaining the needed information. To fully protect trust resources the Service and our partners must be adaptive in our strategy to address past, present, and future threats to fish and wildlife in the ACT Basin.

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APPENDICIES

- Corps' Federal Register Notice of Intent, November 9, 2007, Intent To Prepare Draft Environmental Impact Statement for Revised Water Control Manuals for the Alabama-Coosa-Tallapoosa River Basin. Vol. 72, No. 217 (Appendix I);
- Service's October 20, 2008, Scoping Letter to the Corps (Appendix II);
- Service's May 3, 2010, PAL to the Corps (Appendix III);
- Service's August 13, 2010, Supplement to PAL to the Corps (Appendix IV);
- Corps' June 6, 2011, response to the Service's PAL (Appendix V); and
- Corps' November 22, 2011, response to the Service's questions regarding the Corps' June 6, 2011 document (Appendix VI).

Appendix I: Corps' Federal Register Notice of Intent, November 9, 2007, Intent To Prepare Draft Environmental Impact Statement for Revised Water Control Manuals for the Alabama-Coosa-Tallapoosa River Basin. Vol. 72, No. 217.

TABLE 1. SUMMARY OF HMS EXEMPTED PERMITS ISSUED IN 2006 AND 2007. AHMS@ REFERS TO MULTIPLE SPECIES BEING COLLECTED UNDER A GIVEN PERMIT TYPE.—Continued

	2006					2007		
	Number of Permits Issued	Number of Authorized Fish	Number of Authorized Larvae	Number of Fish Taken	Number of Larvae Taken	Number of Permits Issued	Number of Authorized Fish	Number of Authorized Larvae
Billfish	3	179	0	57	0	2	73	1,000
SRP								
HMS	4	485	1,200	2	0	1	18	0
Shark	2	400	0	284	0	2	670	0
Billfish	1	0	500	0	0	0	0	0
Tuna	0	0	0	0	0	1	12	0
Display								
HMS	1	89	0	2	0	2	90	0
Shark	7	505	0	89	0	6	266	0
Total	39	3,973	1,700	850	0	31	2,503	1,000
LOA*								
Shark	5	2,853	0	1,021	0	7	3,120	0

*LOAs are issued for bonafide scientific research activities involved non-ATCA managed species (i.e., sharks). Collections made under an LOAs are not authorized; rather this estimated harvest for research is acknowledged by NMFS. Permitees are encouraged to report all fishing activities in a timely manner.

Final decisions on the issuance of any EFPs, SRPs, Display, and Chartering Permits will depend on the submission of all required information about the proposed activities, NMFS' review of public comments received on this notice, an applicant's reporting history on past permits issued, past law enforcement violations, consistency with relevant NEPA documents, and any consultations with appropriate Regional Fishery Management Councils, states, or Federal agencies. NMFS does not anticipate any significant environmental impacts from the issuance of these EFPs as assessed in the 1999 FMP.

Authority: 16 U.S.C. 971 *et seq.* and 16 U.S.C. 1801 *et seq.*

Dated: November 1, 2007.

Emily H. Menashes,

Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. E7–22071 Filed 11–8–07; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF DEFENSE

Department of the Army; Corps of Engineers

Intent To Prepare Draft Environmental Impact Statement for Revised Water Control Manuals for the Alabama-Coosa-Tallapoosa River Basin

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DoD.

ACTION: Notice of intent.

SUMMARY: The U.S. Army Corps of Engineers (Corps), Mobile District, intends to prepare an update of the water control manuals for the Alabama-Coosa-Tallapoosa (ACT) River Basin. Concurrent with that revision, a Draft Environmental Impact Statement (EIS) will be prepared, as required by the National Environmental Policy Act (NEPA). The Draft EIS will address updated operating criteria and guidelines for managing the water storage and release actions of agency water managers and associated environmental impacts.

FOR FURTHER INFORMATION CONTACT: Questions about the manual update or NEPA process can be answered by: Mr. Chuck Sumner, Environment and Resources Branch, Planning Division, U.S. Army Engineer District-Mobile, Post Office Box 2288, Mobile, AL 36628–0001; Telephone (251)694–3857; or delivered by electronic facsimile at (251) 694–3815; or E-mail: lewis.c.sumner@usace.army.mil. You may also request to be included on the mailing list for public distribution of notices, meeting announcements and documents.

SUPPLEMENTARY INFORMATION:

Background. Water control manuals are guidance documents that assist federal water managers in the operation of individual and multiple interdependent federal reservoirs on the same river system. They provide technical, historical, hydrological, geographic, demographic, policy and other information that guide the proper management of reservoirs during times of high water, low water, and normal conditions. The manuals also contain drought plans and zones to assist federal water managers in knowing when to reduce or increase reservoir releases, and how to ensure the safety of dams during extreme conditions. The authority and guidance for the Corps to prepare and update these manuals may be found in Section 7 of the 1944 Flood Control Act, the Federal Power Act, Section 9 of Public Law 436–83, and the following Corps of Engineer Regulations: ER 1110–2–240, ER 1110–2–241, ER 1110–2–1941 and ER 1110–2–8156.

The ACT Basin provides water resources for multiple purposes from northwestern GA down through central AL and to the Gulf Coast at the mouth of Mobile Bay, extending a distance of approximately 320 miles and encompassing an area of approximately 22,800 square miles. The master operating manual for the ACT River Basin and the individual reservoir manuals were last updated at various dates as far back as the early 1950's. Sixteen major dams and reservoirs (five Federal and eleven non-Federal) are located in the basin. In Georgia, these include Allatoona Dam and Lake, and Carters Dam and Lake, both owned and operated by the Corps. In Alabama they include Weiss Dam and Lake, H. Neely Henry Dam and Lake, Logan Martin Dam and Lake, Lay Dam and Lake, Mitchell Dam and Lake, Walter Bouldin Dam and Lake, Jordan Dam and Lake, Harris Dam and Lake, Martin Dam and Lake, Yates Dam and Lake, and Thurlow

Dam and Lake, all owned and operated by Alabama Power Company (APC). Also in Alabama, are three dams and reservoirs owned and operated by the Corps including Jones Bluff Dam/ Woodruff Lake, Millers Ferry Dam/ William "Bill" Dannelly Lake and Claiborne Dam and Lake. The authorized project purposes at the Corps lakes include water supply, flood control, hydropower, navigation, fish and wildlife conservation, and recreation.

The new manuals will eventually replace the current manuals and will address the basin-wide management of those water resources. Due to the flood control operational responsibilities of the Corps, some or all of the manuals for some of the APC reservoirs will be updated.

Public participation throughout the water control plan revision process is essential. The Corps invites full public participation at all stages to promote open communication and better decision making. All persons, stakeholders, and organizations that have an interest in water-related resources in the ACT basin, including minority, low-income, disadvantaged and Native American groups, are urged to participate in this NEPA environmental analysis process. Assistance will be provided upon request to anyone having difficulty understanding how to participate. Dates and locations for public scoping meetings will be announced by future publication in the **Federal Register** and in the local news media. Tentative dates for publication of the draft water control manuals and EIS and other opportunities for public involvement will also be announced at that time. Public comments are welcomed anytime throughout the NEPA process.

Cooperating Agencies. The lead responsibility for this action rests with the Corps. The Corps intends to coordinate and/or consult with an interagency team of Federal and State agencies during scoping and preparation of the draft EIS. A decision will be made during the scoping process whether other agencies will serve in an official role as cooperating agencies.

Scoping. The Alabama-Coosa-Tallapoosa Rivers (ACT)/Apalachicola-Chattahoochee-Flint Rivers (ACF) Comprehensive Study from 1990 to 1997 and ACF Compact negotiations from 1997 to 2004 involved the States (Alabama, Florida and Georgia), stakeholders and the public in identifying areas of concern; collecting and developing water resource, environmental, and socioeconomic data; and developing tools to assist in decisions affecting water resources within the two basins. Development of the updated water control manuals and scoping for this EIS will continue to build upon the knowledge and information developed during the Comprehensive Study and subsequent Compact negotiations. Scoping meetings with agencies and stakeholder groups will be scheduled to identify any significant issues and data gaps, focus on the alternatives to be evaluated, and to identify any appropriate updated tools to assist in evaluation of alternatives and analysis of impacts.

Byron G. Jorns,

Colonel, Corps of Engineers, District Commander.

[FR Doc. E7–22043 Filed 11–8–07; 8:45 am]

BILLING CODE 3710–CR–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare an Environmental Impact Statement for Access Between the Laurelwood Housing Area and an Adjacent State Primary or Secondary Road at Naval Weapons Station Earle, Colts Neck, NJ and To Announce a Public Scoping Meeting

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, and the regulations implemented by the Council on Environmental Quality (40 CFR Parts 1500–1508), the Department of the Navy (Navy) announces its intent to prepare an Environmental Impact Statement (EIS) to evaluate the potential environmental consequences of providing access between the Laurelwood housing area at Naval Weapons Station (NWS) Earle and an adjacent state primary or secondary road. The requirement for this access in 2010 is a stipulation within the lease agreement between the Navy and the developer of Laurelwood. This developer may construct necessary road improvements to obtain access and rent any housing units to the general public through the year 2040.

Dates and Addresses: Public scoping will be conducted in the form of an open-house style meeting to be held in Monmouth County, New Jersey to receive written comments on environmental concerns that should be addressed in the EIS. The public scoping meeting will be held on November 27, 2007, from 4 p.m. and 8 p.m., at Brookdale Community College, 765 Newman Springs Road, Lincroft, New Jersey.

FOR FURTHER INFORMATION CONTACT: Mr. Patrick Fisher, Naval Weapons Station Earle, Public Affairs Officer, 201 Highway 34 South, Building C–2, Colts Neck, New Jersey 07722; telephone: 732–866–2171; e-mail: *patrick.l.fisher@navy.mil.*

SUPPLEMENTARY INFORMATION: The proposed action is to provide unimpeded access in the year 2010 to the developer of the Laurelwood housing area across a portion of mainside NWS Earle connecting the Laurelwood housing area with a state primary or secondary road. The requirement for this access in 2010 is part of an existing lease agreement between the Navy and the developer of Laurelwood.

In 1988 the Navy contracted with a developer to construct, own, and operate 300 military family housing units at NWS Earle, now known as the Laurelwood housing area. A 52-year lease agreement for the underlying land was executed between the Navy and the developer which included an in-lease and out-lease period. During the in-lease period, which runs from 1988 until 2010, the Navy guarantees rent payments to the developer for the occupancy of all 300 Laurelwood units. Only military and their dependents are allowed to occupy these housing units during the in-lease period. During the out-lease period of 2010 until 2040 the developer may rent the units to the general public. However, the lease requires that the Navy provide "reasonable access" between the Laurelwood housing area and an adjacent State, primary, or secondary road. The lease agreement defines reasonable access as being on a paved road, constructed, operated, and maintained by the developer at its own cost. The Navy may satisfy this obligation by either (a) providing unimpeded access along existing roads of the installation or (b) providing an easement for alternate access adequate to allow the developer to construct a road from an adjacent primary or secondary road to Laurelwood that will provide unimpeded access. Road construction would be subject to Federal, State and local laws and regulations. While the developer must pay for construction of a new road and necessary improvements, the Navy is required to finance the construction of any road enhancements necessary to meet their security or operational requirements (*e.g.*, security fencing, gates). In addition, the Navy is required

Appendix II: Service's October 20, 2008, Scoping Letter to the Corps.

Colonel Byron G. Jorns
District Engineer
Att: Chuck Sumner
U.S. Army Corps of Engineers
Mobile District
P.O. Box 2288
Mobile, AL 36628-001

Dear Col. Jorns:
Thank you for the opportunity to participate in the scoping process regarding the review and updating of the Water Control Manual (WCM) for the Alabama-Coosa-Tallapoosa (ACT) River Basin, as announced in the November 9, 2007 Federal Register. We are providing the following comments in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.) and the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Outlined below are a number of issues we have identified that should be addressed in the update to the WCM.

Threatened and Endangered Species - There are at least 12 extant federally listed species found in mainstem river reaches of the ACT that have the potential to be affected by reservoir operations. These include:

Alabama sturgeon	*Scaphirhyncus suttkusi*	Endangered
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Threatened
Goldline darter	*Percina aurolineata*	Threatened
Tulotoma snail	*Tulotoma magnifica*	Endangered
Inflated heelsplitter	*Potamilus inflatus*	Threatened
Heavy pigtoe	*Pleurobema taitianum*	Endangered
Southern clubshell	*Pleurobema decisum*	Endangered
Triangular kidneyshell	*Ptychobranchus greenii*	Endangered
Fine-lined pocketbook	*Hamiota altilis*	Threatened
Interrupted rocksnail	*Leptoxis foremani*	Candidate
Rough hornsnail	*Pleurocera foremani*	Candidate
Wood stork	*Mycteria americana*	Endangered

You should also consider the federally listed species found in tributary streams and nearby terrestrial habitats of the ACT basin that have the potential to be impacted by reservoir operations. These include:

Painted rocksnail	*Leptoxis taeniata*	Threatened
Cylindrical lioplax	*Lioplax cyclostomaformis*	Endangered
Lacy elimia	*Elimia crenetella*	Threatened

Blue shiner	*Cyprinella caerulea*	Threatened
Georgia rockcress	*Arabis georgiana*	Candidate
Price's potato-bean	*Apios priceana*	Threatened
AL canebrake pitcher-plant	*Sarracenia rubra alabamensis*	Endangered
Kral's water-plantain	*Sagittaria secundifolia*	Threatened
Harperella	*Ptilimnium nodosum*	Endangered
Georgia aster	*Symphyotrichum georgianum*	Candidate
Tennessee yellow-eyed grass	*Xyris tennesseensis*	Endangered
Mohr's Barbara's buttons	*Marshallia mohrii*	Threatened
Alabama leather-flower	*Clematis socialis*	Endangered
Green pitcher-plant	*Sarracenia oreophila*	Endangered

Note that Georgia rockcress, Georgia aster, and Price's potato-bean have been found on or near river bluffs overlooking mainstem ACT rivers and reservoirs.

Critical habitat for 10 species of mussels has also been designated in 14 units, or stream segments, located throughout the ACT basin. These mussels include:

Southern acornshell	*Epioblasma othcaloogensis*	Endangered
Ovate clubshell	*Pleurobema perovatum*	Endangered
Southern clubshell	*Pleurobema decisum*	Endangered
Upland combshell	*Epioblasma metastriata*	Endangered
Triangular kidneyshell	*Ptychobranchus greenii*	Endangered
Alabama moccasinshell	*Medionidus acutissimus*	Threatened
Coosa moccasinshell	*Medionidus parvulus*	Endangered
Southern pigtoe	*Pleurobema georgianum*	Endangered
Fine-lined pocketbook	*Hamiota altilis*	Threatened
Orange-nacre mucket	*Hamiota perovalis*	Threatened

Critical habitat has been proposed for the Alabama sturgeon (*Scaphirhyncus suttkusi*). Because many of these species are isolated and fragmented from reservoir development and water quality conditions, we encourage the Corps to participate with Federal and State agencies to develop a comprehensive monitoring plan to identify any remaining unknown or historically known populations in the basin.

The U.S. Fish and Wildlife Service, working with State, Federal, non-government and private business partners, also has identified potential re-introduction sites for recovery of listed aquatic species within the ACT basin; we would like to enlist the Corps as a partner in this large-scale recovery effort (see O'Neil et. al 2008). As work on the WCM update proceeds, please contact Dan Everson of the Alabama Field Office for the most up-to-date list of federally listed species, critical habitat, and their locations in the ACT basin, as well as potential sites for re-introduction of listed species. In addition to aquatic recovery efforts, we would like the Corps to consider terrestrial habitats under their ownership as potential locations for outplanting of federally listed plants should the need and opportunity arise.

Species of Greatest Conservation Need - In an effort to keep more species from becoming imperiled to the point of requiring federal listing under the Endangered Species Act (ESA), the Alabama Department of Conservation and Natural Resources has identified Species of Greatest Conservation Need (GCN) in the state; several of these are found within the ACT basin. The spotted rocksnail (*Leptoxis picta*), at least 2 species of mussels (painted clubshell, *Pleurobema chattanoogaense;* southern purple lilliput, *Toxolasma corvunculus*) and one species of fish (Alabama shad, *Alosa alabamae*) are found in mainstem ACT rivers. GCN bird species considered to be of high conservation concern that utilize wetlands and floodplain forests in interior Alabama include the least bittern (*Ixobrychus exilis*), American black duck (*Anus rubripes*), swallow-tailed kite (*Elanoides forficatus*), yellow rail (*coturnicops novaboracensis*), American woodcock (*Scolopax minor*) and the Swainson's warbler (*Limnothlypis swainsonii*). The update to the Corps' WCM should address the potential of Corps reservoir operations to impact species that may be on the brink of requiring federal protection under the ESA.

Fish and Aquatic Organism Passage - Dams on the Alabama River have blocked historic migrations of more than a dozen species of fish for several decades, and have contributed to the decline of the critically imperiled Alabama sturgeon. High flows that overtop the dams and opening of dam locks at Claiborne and Miller's Ferry have been identified as methods to facilitate aquatic organism passage on the Alabama River. We recommend that the Corps continue to facilitate research on fish passage at Corps dams on the ACT, including research on timing and duration of attraction flows, monitoring and tracking of species through the lock and dam structures, and "dummy" locking, with the goal of implementing Corps reservoir operations that allow riverine species to travel their historic migration pathways.

Water Quality - The effect of reservoir operations on water quality should be addressed in the WCM update, including existing and potential effects to dissolved oxygen, temperature, pH, conductivity, nutrient and organic material dynamics, and various industrial and municipal discharges. A monitoring program addressing water quality in reservoirs and tailwaters should be designed and implemented to detect, report and mitigate water quality issues that may impact benthic and pelagic species.

Flow Dynamics - A number of natural flow regime components (e.g., base, seasonal, and minimum/maximum flow levels, frequency/duration of low/high pulse flows, flow rise/fall rates and frequency of flow reversals) are important, even critical, to the long-term maintenance and protection of the basin's riverine fauna and habitats. These natural flow characteristics can provide a template for management strategies at water control facilities, as well as for future water management changes that may result from a basin-wide allocation formula. We recommend that the conservation and/or recovery of as many of these natural flow conditions as possible be fully considered in the development and implementation of the new water control manual for the ACT basin. In Alabama, the effects to downstream aquatic biota and riverine ecology from diurnal hydropower peaking flows from the RF Henry and Miller's Ferry dams, which are often described as run-of-the-river dams, should be examined.

Riparian and Wetland Habitats - The ecological integrity of riverine systems is intimately connected to the quality and quantity of streamside floodplain forests and wetlands. The review and updating of the WCM should address effects to the vegetation ecology of adjacent wetlands and floodplain forests, as well as the wildlife resources dependent upon them including migratory birds. The federally endangered wood stork (*Mycteria americana*) relies on the shallow wetland areas adjacent to the Alabama River during the summer and fall each year for foraging.

Technical Working Group for Water Modelers - To facilitate information sharing and involvement with the WCM update process, we recommend that a technical working group of water modelers from interested stakeholders familiar with the HEC-ResSim Reservoir Simulation be formed and meet on a regular basis during and after the completion of the WCMs.

Integrated Drought Plan - The Water Control Manual update should integrate a basin-wide drought plan that addresses water allocation issues among stakeholders in Georgia and Alabama, as well as the operation of dams operated by Alabama Power Company on the Coosa and Tallapoosa Rivers. A drought plan should adequately identify water quality and quantity needs at various times of the year.

Please address questions and comments on the Water Control Manual update process to Dan Everson (251-441-5837) of my staff.

Sincerely,

William Pearson
Field Supervisor
Alabama Ecological Services Field Office

cc: Sandy Tucker, USFWS Ecological Services, Athens, GA
Stan Cook, AL Dept. of Conservation and Natural Resources, Montgomery, AL
Jeff Weller, USFWS R4 Regional Office, Atlanta, GA

References

O'Neil, Patrick E., S.W. McGregor, E. A. Wynn, and J.R. Powell, 2008. Critical habitat Units for threatened and endangered mussels in the Mobile River Basin. Geological Survey of Alabama Special Map 247.

Appendix III: Service's May 3, 2010, PAL to the Corps.

Colonel Byron Jorns
US Army Corps of Engineers, Mobile District
P.O. Box 2288
Mobile, AL 36628-0001

Subject: Planning Aid Letter regarding the Alabama-Coosa-Tallapoosa Water Control Manual Updates

Dear Colonel Jorns:

We are providing your agency with a Planning Aid Letter (PAL) for the proposed Water Control Manual (WCM) Updates for the Alabama-Coosa-Tallapoosa (ACT) Basin in Georgia and Alabama. The purpose of the updates is to identify operating criteria and guidelines for managing water storage and release of water from U.S. Army Corps of Engineers (Corps) reservoirs. The resulting documents will guide water management operations. In the National Environmental Policy Act (NEPA) review, the Corps will address current operations, proposed changes in water management operations at the reservoir projects within the limits of the existing authorities, as well as potential impacts throughout the basin that would result from implementation of the updated manual.
The purpose of the PAL is to identify resource values and issues, identify federally protected species issues, and propose preliminary changes, mitigation, or enhancement opportunities to facilitate your decision-making as it relates to equal consideration of fish and wildlife resources. We submit the following comments and recommendations under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq*.), the Migratory Bird Treaty Act (MBTA)(49 Stat. 755, as amended; 16 U.S.C. § 702 *et seq*.), and the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq*.). These comments are based on previous studies and government documents as well as new datasets and information provided by State and Federal agencies. Continued efforts will be made to provide additional expertise and information in the form of another PAL and/or the draft FWCA reports. A separate consultation will occur regarding the potential impacts of the Corp's proposal on federally-listed threatened and endangered fish and wildlife species protected under the ESA. We stress that in the following letter, our recommendations are preliminary. Monitoring of many important ecological parameters in the ACT following dam construction has been limited. Unfortunately, even 40 years after construction we lack critical data on the dissolved oxygen levels above and below Corps reservoirs, as well as effects of hydropower peaking flows on fish assemblages. New information often changes our understanding of ecological response to complex natural and human-influenced variables. Rather than attempt, in one document, to prescribe definitive management guidelines for possibly decades of dam operations, we would like to begin working with the Corps to build an adaptive management framework for operations that explicitly outlines goals and objectives of operations, continually monitors and analyzes ecosystem response, and adjusts operations accordingly based on what we have learned. Adaptive management of river systems helps to link the resistance and resilience of species and ecosystems to a natural range of flow variation. Management should occur over a geographic area large enough that most species' habitat requirements will be met somewhere, though not

necessarily at the same location every year (Sparks 1998). Necessarily we will recommend research and monitoring as a primary component of dam operations.

1.0 PRIOR STUDIES OR REPORTS

A complete review of the many reports, analyses, lawsuits, and volumes of data associated with water management in the ACT is beyond the scope of this report, but we will reference several documents in this PAL that are important to management of fish and wildlife resources.

The US Fish and Wildlife Service (Service) previously made available a list of federally protected species and other species of concern in 2008 as part of the initial scoping for this project. Since then, critical habitat has been designated for the Alabama sturgeon in the Alabama and Cahaba Rivers (USFWS 2009). The rough hornsnail and interrupted rocksnail have been proposed for listing, and there is a proposal to designate critical habitat for them below Jordan Dam. Revisions to this list will continue to be provided as necessary as the draft and final FWCA reports are developed.

A Service recovery plan for federally listed aquatic species in the Mobile River Basin was completed in 2000, and had input from many partners in the basin including the Corps. The recovery plan outlines many of the issues that must be addressed to protect species that are listed under the ESA(USFWS 2000). Because the system of dams operated by the Corps has a significant influence on habitat availability and suitability in the ACT, an update to the WCMs for these dams has the potential to provide significant benefits for these species, as well as many other species not protected under the ESA.

2.0 GENERAL DESCRIPTION OF FISH AND WILDLIFE RESOURCE CONDITIONS

Aquatic resources within the ACT basin are heavily impacted by human development, including the construction and operation of dams, channelization, and dredging and water quality degradation (USFWS 2000, 2006; Atkins et al. 2004). Cumulatively, these activities are physically degrading habitats, decreasing or eliminating natural variability of water flows, and fragmenting populations of many aquatic organisms.

Dams constructed for hydropower generation, navigation, flood control, water supply, and recreation have impounded about 600 river miles of aquatic habitat in the ACT Basin (USFWS 2000), including more than 230 miles impounded by Corps dams (USACE 1998). Impoundments and flow regulation have induced changes in aquatic habitats by altering sediment deposition, flow patterns, rates of geomorphic channel adjustment, and water quality conditions throughout the river system. Dams also function as barriers to aquatic species movement. Consequently, many native species are extinct or extirpated from significant portions of the ACT Basin as a direct or indirect result of dam construction. (Bogan et al. 1995; USFWS 2000).

Channelization has occurred within every major river system within the ACT (USACE 1990, USFWS 2000). Activities for straightening, deepening, and/or enlarging stream and river channels were particularly concentrated in the Alabama River portion of the drainage (USACE 1990). The effects of channelization on aquatic habitats include loss of habitat diversity, substrate stability, and riparian canopy; accelerated bed and bank erosion; and altered depth (Brooks 1994). While channel dredging diminished in recent years, continued geomorphic response to channelization is manifested through channel erosion, channel filling, and headcutting (USFWS 2000).

Dredging to support vessel navigation in the Alabama River initially involved removal of shallow shoals and other historic aquatic habitats for species that are now imperiled (USFWS 2000). This removal destroyed benthic organisms and their habitats, eliminated habitat and prey for fishes and turtles, initiated and perpetuated upstream instability and erosion, and increased downstream turbidity (USFWS 2000). Initial habitat losses were severe, whereas current maintenance dredging and spoil disposal of seasonally accumulated sediments is thought to have less of an impact, only because many sensitive species have already been eliminated, and surviving species are distributed according to current patterns of deposition and erosion (Hartfield and Garner 1998).

The following sections will discuss several of the important issues that should be addressed in evaluating operational parameters in the Corps' updating of the WCMs for dams of the ACT Basin. This will be followed by a reach-by-reach discussion of fish and wildlife-related issues

2.1 Instream Flow

With the updates to the WCM, the Corps has an opportunity and obligation to help restore and/or maintain instream flows that provide habitat for all life stages of aquatic species (adult feeding, spawning, egg and larval survival, and nursery and rearing habitat). Instream flows are also necessary to enable migration of anadromous, catadromous, potadromous, and riverine fish over and around barriers (including necessary attraction flows for fishways), and to provide water quality to sustain biota and high quality habitats.

We recognize the operational constraints to achieving environmental flow objectives imposed by the many competing uses for water in Alabama and Georgia. However, opportunities still exist for providing flows for bypassed natural river channels downstream of hydropower projects, adjusting flows in highly regulated river sections downstream of hydropower dams, providing non-peaking flow windows during critical spawning periods, and providing adequate flows for water quality maintenance in water segments that have experienced species die-offs.

A number of natural flow regime components (e.g., base, seasonal, and minimum/maximum flow levels, frequency/duration/timing of low/high pulse flows, flow rise/fall rates and frequency of flow reversals) are important, even critical, to the long-term maintenance and protection of the basin's riverine fauna and habitats. These natural flow characteristics can provide a template for management strategies below Corps dams, as well as for future water management changes that may result from a basin-wide allocation formula. The frequency and magnitude of channel forming flows (generally high flows with a 1 to 2-year return interval) are important for maintaining natural rates of geomorphic change and habitat maintenance (Dunne and Leopold 1978). We recommend that conservation and/or recovery of as many of these natural flow regime components be fully considered in the development and implementation of the new WCM for the ACT basin.

Flow regulation has negatively affected biota and habitat throughout the basin. The effects to downstream aquatic biota and riverine ecology from daily hydropower peaking flows from the RF Henry and Miller's Ferry dams, which are often described as run-of-the-river dams, should be examined. The diversion of flows from a portion of the Coosa River near Weiss Reservoir caused desiccation of habitats and extirpation of multiple species. Hydropower peaking flows are also experienced by the aquatic organisms in the Etowah River below Allatoona Dam in Georgia. By design the Carters Reregulation Dam largely eliminates peak flow pulses from the Carters Reservoir Project, but the two dams comprising the project still eliminate much of the natural flow variability of the Coosawattee River, particularly the high flow component.

Thorough explanations of the physical, chemical, and ecological benefits from base flows, pulses, stable flow windows for spawning, and intra- and interannual flow variation are outside the scope of this letter; however we refer the reader to Junk et al 1989, Poff et al. 1997, Richter et al. 1998, Freeman et al. 2001, Postel and Richter 2003, and Mathews and Richter 2007 for fuller descriptions. The importance of baseflows, pulses, and flood flows are described within these resources.

In the middle portion of the ACT Basin, instream flow recommendations for re-licensing of hydropower dams owned by Alabama Power Company (APC) have largely followed the framework developed by the joint U.S. Environmental Protection Agency (EPA)/Service *Instream Flow Guidelines for the ACT* (Alabama-Coosa-Tallapoosa) *and ACF* (Apalachicola-Chattahoochee-Flint) *Basins Interstate Water Allocation Formula* (USFWS/EPA 1999). These flow regime guidelines are based on the principle that ecosystems evolved as a response to the natural flow regime, and that restoration of some natural flow regime components can restore structural and functional ecosystem elements that were lost or reduced as a consequence of flow regulation. Since the development of the 1999 flow guidelines, new flow analysis tools have been developed that facilitate more comprehensive descriptions of flow regimes and flow recommendations. One such tool is the Environmental Flow Components (EFCs) in Indicators of Hydrologic Alteration (IHA, Mathews and Richter 2007).

EFCs were used by the Service to develop flow guidelines for the ACF PAL for the WCM update, and for this PAL, we advocate the Corps follow a similar approach.

We recommend that water management in the ACT Basin, to the extent possible, be coordinated from headwaters to delta using methods and tools available in the resources cited in this section. This will require continued significant coordination with APC as well as State water resource agencies.

2.2 Water Quality

Water quality below several Corps dams, including Millers Ferry and Allatoona, does not meet State water quality standards. With the update to the WCM, the Corps has an opportunity and obligation to help maintain, restore, and/or enhance adequate water quality for the support of all life stages of aquatic species in the ACT Basin. Monitoring by the Alabama Department of Environmental Management (ADEM) in the summers of both 2008 and 2009 in several sections of the Alabama River indicated that dissolved oxygen levels occasionally dropped below 4.0 mg/L for several hours in the main channel, and on a few occasions dropped below 3.0 mg/L (ADEM preliminary datasonde data, 2008-2009). Data collected by the Service in the summer of 2009 on the Etowah River below Allatoona Reservoir indicated DO levels lower than 1.0 mg/L. (Figure 4). Low DO is a pervasive summer problem that needs to be addressed.

Water quality in all reaches needs to be adequate for successful reproduction and recruitment, as well as sustained growth of adults and juveniles (Watters 2000). DO and water temperature problems associated with inadequate instream flows, hypolimnetic discharges, stratification, and/or other causative reservoir discharge problems (e.g., the transport of pesticides, nutrients, biological/chemical oxygen demand-BOD/COD, and metals) should be identified and corrected at Corps dam facilities. Monitoring of water quality parameters to determine if ecological needs are met should be standard practice in dam operations, and ecological response to water quality changes should also be monitored.

2.3 Habitat Protection

The Corps has an opportunity and responsibility to protect and restore important riverine and associated aquatic habitats, and avoid additional losses of mainstem riverine habitat resulting from dam operations. These habitats include river bottoms, especially those supporting important structural and/or substrate features, shorelines, riparian zones, impacts from changing land uses, and associated wetland systems that serve as fish habitat and/or provide water quality and/or riverine morphological support functions.

Significant river-dependent habitats include the rich floodplain forests of the Alabama River, as well as the world-class wetlands and bottomland habitats of the Mobile-Tensaw Delta and Mobile Bay. Forest and grassland communities within the zone of annual, decadal and multi-decadal fluvial processes, including such disturbances as flooding and bank sloughing, are often distinctly different than communities outside that impact zone. Naturally, general moisture availability and the daily interaction between aquatic and terrestrial communities accounts for some of this unique riparian-zone character. However it's equally apparent that the regular fluvial processes of deposition and erosion and a fluctuating water table, influenced greatly by Corps dams, play a significant role in mediating species success and dominance within those communities. Forest communities of the Alabama River bluffs also have acted as refugia and "species highways" for eons of climate change (Bill Finch, The Nature Conservancy, per. comm. 2010), suggesting that Corps infrastructure and land use related to water management in the ACT Basin can directly impact terrestrial forest community composition and persistence as well.

As a result of habitat fragmentation and population isolation, many of the aquatic species of federal and state concern will require population management and manipulation to maintain genetic flow between isolated populations, to reintroduce species to restored habitats, and, in some cases, prevent extinction. Priority sub-basins important for refugia and maintaining genetic flow are listed in the following document, as are the reaches designated as Critical Habitat as defined by the Service (USFWS 2004). We will also include reaches that have been identified as potential reintroduction/augmentation sites (Hartfield et al. 2010). To reestablish species in currently unoccupied habitats, it will likely be necessary to reintroduce animals through an active culture and propagation program. The Alabama Department of Conservation and Natural Resources (ADCNR), Division of Wildlife and Freshwater Fisheries, has established a state-of-the-art facility, the Alabama Aquatic Biodiversity Center (AABC), located at the former Claude Harris Federal Fish Hatchery in Marion, Alabama, dedicated exclusively to the culturing and propagation of non-game aquatic species. The Corps can help greatly in this undertaking by partnering with the AABC and utilizing their authority and resources to help protect and restore important aquatic habitats and flow regimes for species of concern in the ACT Basin.

Mitigation for loss of significant aquatic habitat, including inundation of over 40 miles of once free-flowing streams, has yet to be developed for the Carters Dam project in Georgia, completed in 1975. Mitigation for terrestrial and stream impacts for this project are long overdue, and should be addressed in the Draft Environmental Impact Statement (DEIS).

2.4 Aquatic Organism Passage

Fish passage facilities and structures are lacking on all Corps dams in the ACT, which has long been a concern of the Service. Downstream passage in particular can be facilitated by appropriate timing and volume of water releases over spillways and through locking chambers. The Corps has an opportunity to help restore and maintain connectivity of aquatic habitats in the ACT by developing and implementing safe and effective means for upstream and downstream passage.

Ongoing studies determining the effectiveness of using attraction flows and opening of lock gates to allow fish passage should continue, and may result in significant benefits for some species of fish. However, genetic isolation of aquatic organisms, further loss of native biotic diversity, and a trend toward environmental degradation is likely to continue as the landscape of the ACT Basin becomes more developed. We would like to see a cost benefit analysis comparing the operation and maintenance of the current navigational channel and system of locks and dams on the Alabama River versus the costs and economic benefits associated with maintaining the same system for maximum environmental benefits. We suggest that the DEIS at minimum should consider the alternative of operating locks to maximize connectivity of river reaches for aquatic organisms. A summary of the number of commercial barges and other craft that have and are currently utilizing the navigational system should be made available as part of the DEIS.

3.0 REACH DESCRIPTIONS

This section describes target resources present and historically present, objectives, and information needs for river reaches of the ACT in Alabama and Georgia.

3.1 Mobile Bay Delta to Claiborne Lock and Dam (L&D)

3.1.1 River Reach General Description

The lower 81-mile reach of the Alabama River from Claiborne L&D to its mouth flows entirely within the East Gulf Coastal Plain before joining the lower Tombigbee River to form the Mobile River and the biologically rich Mobile-Tensaw Delta. This reach drains an area of low-relief topography consisting of broad, rounded ridges and V-shaped valleys of sand and clay and is highly influenced by releases from upstream impoundments.

3.1.2 Species

Fishes: Alabama shad, Alabama and Gulf sturgeons, American eel, Southeastern blue sucker, highfin carpsucker, paddlefish, quillback, skipjack herring, river redhorse, smallmouth buffalo, striped bass, southern walleye, and ironcolor shiner are species of Federal/State interest that likely continue to inhabit this reach of the Alabama River (Mettee and Shepherd 2001; Mettee et al. 1996; Boschung and Mayden, 2004). However, populations of many of these species have been significantly impacted by Claiborne L&D that is blocking or hindering access to upstream spawning and feeding areas, particularly those species requiring long migrations to complete portions of their life cycle (e.g., Gulf and Alabama sturgeon, American eel, and the Alabama shad). Frecklebelly madtom, bluenose shiner, ironcolor shiner, freckled darter and alligator gar are either absent or very rare in this reach. Other freshwater species of sportfishing interest include the black basses, crappie, catfish, and sunfishes (USFWS 2006).

Mollusks: Historically, this reach supported the Alabama moccasinshell, fine-lined pocketbook, orange-nacre mucket, ovate clubshell, southern acornshell, southern combshell, southern pigtoe, stirrupshell, rayed creekshell, heavy pigtoe, Alabama pearlshell, black sandshell, tulotoma snail, cylindrical lioplax, painted rocksnail, and upland combshell. Recent dive records from numerous locations in this reach indicate that the inflated heelsplitter, heavy pigtoe, spotted rocksnail and tulotoma snail are the only target species surviving in this reach (USFWS Alabama Field Office data). Important commercial mussel beds also occur within this reach (Hartfield and Garner 1998).

Reptiles: The Alabama red-bellied turtle, alligator snapping turtle, and Mississippi diamondback terrapin are restricted to the lower reaches of the Alabama River in Baldwin County and the Mobile Bay/Delta, Patterns of natural flow variability created the ecologically-rich habitats where these species have survived for millennia.

Plants: Georgia rockcress occurs on the steep upper banks of this reach of the Alabama River, and may rely on flooding to help reduce competition from other vegetation (USFWS Alabama Field Office data). High flow events that scour river bluffs are likely beneficial to this plant.

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.1.3 Objectives

Restore federally protected resident and migratory aquatic species to historic abundances in suitable remaining riverine habitats.

3.1.3.1 Instream flow

The flow regime in this reach is affected by peaking hydropower generation/flood control operations to some extent by the 15 upstream dams in the Alabama, Coosa and Tallapoosa Rivers, but a greater impact comes from the one or more pulse flows per day from hydropower peaking flows from Corps-operated turbines at Millers Ferry and R.F. Henry L&Ds (Braun 2004; see Figure 1). Operational guidelines for maintaining flows in this reach have largely focused on ensuring navigation capabilities for a very small number of commercial barges. This is facilitated in part by a 1972 agreement, commonly referred to as the “Forty-six Forty rule” describing an agreement between the Corps and Alabama Power Company (APC) to release a 7-day average of 4640 cfs from APC projects to maintain a 9-foot water elevation in the navigation channel of the Alabama River. However, downstream there are other significant commercial and ecological considerations: the frequency, timing and volume of freshwater released from upstream Corps dams have a profound impact on the ecology of the Mobile Bay and Mobile-Tensaw Delta, and are important factors for commercial and recreational fisheries in the Bay, including those for shrimp, blue crab and oyster (Braun 2004). The pattern of natural freshwater inflow into the Mobile Bay/Delta is characterized by being highly variable at multiple time scales. One of the flow parameters most affected by upstream water management is the loss of extreme low flow events. Braun (2004) estimated that flows lower than 2700 cfs would naturally occur below Claiborne Dam on average about every ten years, but now are likely to occur only every 60 years. Freshwater inflow significantly affects many important ecological processes including the shaping of bottom and bank habitat, inundation and exposure of habitat to air, salinity and water temperature gradients, circulation and distribution of nutrients and massive quantities of organic matter, and residence time of water within embayments (Braun 2004). Therefore, changes in the magnitude, timing and duration of flood and low-flow events, mediated in part by Corps dams, are a major factor in ecological maintenance and succession in the Bay and Delta. Maintaining a pattern of natural freshwater inflow into the Mobile Bay/Delta is therefore highly desirable from an economic as well as an ecological perspective.

3.1.3.2 Water quality

The Alabama River from the Mobile-Tensaw Delta to Claiborne L&D upstream has an ADEM stream use classification of fish and wildlife (ADEM 2000).

Dissolved oxygen

The water use classification for this reach has a 5.0 milligrams per liter (mg/L) DO standard except under extreme conditions due to natural causes, when it may range between 4.0 mg/L and 5.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

Recent water quality data indicate that DO concentrations have fallen below the state DO standard (5 mg/L) in the tailwaters of Claiborne L&D during the summer months, occasionally for days at time, but more commonly for several hours each day (USFWS Alabama Field Office file data, 2000-2002; ADEM preliminary data 2008-2009).

3.1.4 Habitat protection

Navigational dredging is a concern in this reach of the Alabama River. Dredging removes shoal habitats in river channels and changes natural patterns of erosion and deposition potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner, 1998). Land use practices along the mainstem of the Alabama River, as well as its tributaries, can degrade aquatic habitats critical to southern walleye and other fish species (USFWS 2006), and should be considered in Corps dam and reservoir operations.

In addition to dredging, impacts from nonpoint source pollution are significant. Pollutant and nutrient concentrations are important ecological considerations during periods of low flow, when aquatic species may already be stressed from lower DO and reduced habitat availability. Pollutant concentrations required under National Pollution Discharge Elimination System (NPDES) permits are often cited by industry on the Alabama River as a reason to maintain unnaturally high flow during periods of natural drought, despite the importance of low flows in shaping Delta ecology. Research is needed to determine which species are most impacted under low-flow/high pollutant concentration conditions, and the flow patterns that are most beneficial under varying pollutant loads. Within the reach, this includes pollution from agricultural (nutrients, sediment, bacteria, and pesticides), aquaculture (nutrients and bacteria), forestry (sediment, nutrients, and thermal changes), roads (sediment), urban/residential development (sediment, nutrients, bacteria, and pesticides), and mining (sediment) activities (AL Clean Water Partnership (CWP) 2005).

Priority sub-basins: Important tributaries that help maintain genetic flow and act as refugia in this reach include the Little River, Pine Log Creek, and Reedy/Little Reedy/Sandy Hill Creeks (Alabama Comprehensive Wildlife Conservation Strategy (CWCS) 2005). Flow parameters need to ensure connectivity with these streams.

Designated Critical Habitat: Critical habitat for the Alabama sturgeon was designated in 2009 in this reach (USFWS 2009). The only Alabama sturgeon captured in the past decade was caught in the tailwaters of Claiborne L&D in 2008, reinforcing the fact that the dam is a barrier to an extremely rare (but formerly abundant) species, and that the ecological integrity of the lower Alabama River is essential for keeping this species from becoming extinct.

3.1.5 Aquatic Organism Passage

Since 1969, the Claiborne L&D has impeded upstream passage of most, if not all, diadromous and migratory freshwater fish species under all but the highest spring flows (USACE 2000). Other than the occasional boat lockage or travel over the spillway, Claiborne L&D does not provide any means of upstream or downstream fish passage. Research conducted by the GSA indicates that a flow of 80,000 cfs is required to inundate the spillway structure (USFWS 2006). This occasionally occurs between February and April (USGS 2004). Contingent upon the timing of these flows, some stronger swimming fishes, like the blue sucker, appear to be capable of swimming upstream over the spillway. However, most fishes cannot swim upstream to historical spawning areas.

Use of the lock holds some promise for providing upstream fish passage. Recent Corps/Service studies indicate that slight modification in locking procedures can greatly increase the number of fish species passed. A 30-foot headwall in the lock might, however, limit the passage of some species. On-site consultation with Ben Rizzo, the Service's Senior Fishway Engineer, revealed that addition of a fish lift or vertical slot fishway would greatly enhance passage to a wider variety of species. Mr. Rizzo stated that these types of fishways can pass sturgeon. Providing fish passage at this facility would address Recovery Objective 2.4 of the Gulf Sturgeon Recovery/Management Plan and Objective 8.5.9.1 of the Gulf Striped Bass Fishery Management Plan. Mettee et al. (2005) suggests that more than 35 fish species could benefit from passage improvements at Claiborne and Millers Ferry L&Ds. The fisheries program at Auburn University, in cooperation with the Corps, is beginning research on the efficacy of alternative locking procedures, including the use of pumps for attraction flows. We encourage the Corps to continue to facilitate this research.

Research by GSA also indicates that a variety of aquatic species freely pass downstream over the fixed-crest spillway of Claiborne L&D (Mettee et al. 2005), though the losses associated with this are unknown. Sturgeon species are not likely to utilize spillways for downstream travel, and are effectively trapped between dams under most current conditions.

3.1.6 River Reach Research Needs

- Implement and develop monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- In cooperation with the Service and AABC, explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include the Alabama sturgeon and any species that has been identified as a primary host for a targeted mussel

(USFWS 2005a).

- Develop a Geographic Information System (GIS) database that identifies, characterizes (e.g., bathymetry, current velocity, and substrate), and maps stable riverine habitats.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.2 Alabama River from Claiborne L&D to Millers Ferry L&D

3.2.1 River Reach General Description

This 60-mile reach of the Alabama River is contained entirely within the East Gulf Coastal Plain Province and encompasses Claiborne Reservoir, a 5,930-acre impoundment on its southern end (USACE 2001). Claiborne Reservoir is essentially a run-of-river impoundment that provides a 9-foot navigation channel up to Millers Ferry L&D. Unique habitats have developed in this reach as streamflow cuts down through the alluvial sediments to expose the limestone underlayment (Mettee et al. 1996). This results in streambeds with upland characteristics within the Coastal Plain (Mettee et al. 1996). The upper part of this reach experiences hydropower-influenced flows from the Millers Ferry hydropower facility.

3.2.2 Species

Fishes: Alabama shad, Alabama sturgeon, American eel, Southeastern blue sucker, highfin carpsucker, paddlefish, quillback, skipjack herring, river redhorse, smallmouth buffalo, striped bass, southern walleye, and ironcolor shiner are species of Federal/State interest that likely inhabit this reach of the Alabama River (Mettee et al. 1996; Boschung and Mayden 2004). Populations of many of these species have been significantly impacted by Claiborne L&D by being blocked or hindered from access to upstream spawning areas, particularly for those species that require long migrations to complete a part of their life cycle (e.g. Gulf and Alabama sturgeon, American eel, and the Alabama shad). Frecklebelly madtom, Gulf sturgeon, bluenose shiner, ironcolor shiner, freckled darter and alligator gar are either absent or very rare in this reach. Freshwater species of sportfishing interest that inhabit this reach include the striped bass, black basses, crappie, catfish, and sunfishes (USFWS 2006).

Mollusks: Historically, the Alabama moccasinshell, fine-lined pocketbook, orange-nacre mucket, ovate clubshell, southern acornshell, southern combshell, southern pigtoe, upland combshell, stirrupshell, rayed creekshell, heavy pigtoe, black sandshell, tulotoma snail, painted rocksnail, and cylindrical lioplax occurred in this reach. It is likely that the inflated heelsplitter, heavy pigtoe, and spotted rocksnail are still extant. Dive sampling in 2009 shows the tulotoma snail to still be extant (USFWS Alabama Field Office data). Valuable commercial mussel beds also occur within this reach (Hartfield and Garner 1998).

Plants: Georgia rockcress occurs on the steep upper banks of this reach of the Alabama River, and may rely on flooding to help reduce competition from other vegetation (USFWS Alabama

Field Office data). High flow events that scour river bluffs are likely beneficial to this plant. Botanists have long noted that the bluffs found along and above Claiborne L&D are botanically very species-rich, with fluvial geomorphic processes influencing short and long-term vegetation dynamics (Bill Finch, The Nature Conservancy, pers. comm. 2010)

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.2.3 Objectives

The Corps has an opportunity to protect reservoir fisheries and water quality, as well as restore federally protected, resident and migratory aquatic species to historic abundances in remaining habitats.

3.2.3.1 Instream flow

The flow regime in this reach is affected by peaking hydropower generation at Millers Ferry L&D as well as peaking hydropower generation and flood control operations at 14 other upstream dams in the Alabama, Coosa and Tallapoosa Rivers. Currently, there are no minimum flows required downstream of Miller's Ferry L&D, although there is an agreement with APC to provide enough water to maintain a navigation channel for a very small number of commercial barges.

3.2.3.2 Water quality

The Alabama River from Claiborne L&D upstream to the Frisco Railroad crossing has ADEM's stream use classifications of swimming, and fish and wildlife (ADEM 2000). From the Frisco Railroad crossing upstream to river mile 131 the reach is classified as fish and wildlife (ADEM 2000). From river mile 131 upstream to Millers Ferry L&D the river is classified as public water supply (ADEM 2000). A portion of the main channel in this reach is included on the state's 303(d) listed waters due to organic enrichment/low dissolved oxygen and nutrients as a result of dam construction, industrial discharges, flow regulation/modification, non-irrigated crop production, and pasture grazing (ADEM 2002). ADEM (2004) lists Claiborne Lake as eutrophic.

Dissolved oxygen

Alabama water use classifications for this reach have a 5.0 mg/L DO standard, except under extreme conditions due to natural causes, DO may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should never be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

ADEM sampling from June-September 1983 revealed that the DO standard was met on all occasions in the Millers Ferry L&D tailrace, although August data closely approached the standard's limits (ADEM 1984). Comparisons of pre- and post-impoundment DO data indicate an 18% decline in average DO concentration (6.6 mg/L pre-impoundment to 5.4 mg/L post-impoundment) for August (ADEM 1984). Downstream effects of flow interruption and lower DO concentrations caused one major discharger to resort to a higher treatment, hold-and-release system for effluent discharge (ADEM 1984).

More recent water quality data indicate that DO concentrations fell below the state instantaneous DO standard (4 mg/L) in the tailwaters of Millers Ferry L&D during the summer months (FWS, Alabama Field Office file data, 2000-2002; ADEM preliminary data 2008-09).

3.2.4 Habitat protection

Navigational dredging is a concern in this reach of the Alabama River. Dredging removes shoal habitats and changes natural patterns of erosion and deposition, potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner 1998). Land use practices along the mainstem of the Alabama River, as well as its tributaries, can degrade aquatic habitats critical to southern walleye and other fish species.

In addition to dredging, nonpoint source pollution is a significant concern to be considered in Corps water management operations. Pollutant and nutrient concentrations are important ecological considerations during periods of low flow, when aquatic species may already be stressed from lower DO and reduced habitat availability. Pollutant concentrations required under NPDES permits are often cited by industry on the Alabama River as a reason to maintain unnaturally high flow during periods of natural drought, despite the importance of low flows in shaping Delta and river ecology. Research is needed to determine which species are most impacted under low-flow/high pollutant concentration conditions, and the flow patterns that are most beneficial under varying pollutant loads. Within the reach, this includes pollution from agriculture (nutrients, sediment, bacteria, and pesticides), aquaculture (nutrients and bacteria), forestry (sediment, nutrients, and thermal changes), roads (sediment and petroleum), urban/residential development (sediment, nutrients, bacteria, and pesticides), and mining (sediment and heavy metals) (AL CWP 2005).

<u>Priority sub-basins</u>: An important tributary that helps maintain genetic flow and acts as a refugia in this reach includes Limestone Creek (CWCS 2005). Flow parameters need to ensure connectivity with this stream.

<u>Designated Critical Habitat</u>: Critical habitat has been designated in this reach for the Alabama sturgeon, an extremely rare fish once found in abundance (USFWS 2009). The update to the WCM should consider research and monitoring to determine flow patterns that could help keep the species from becoming extinct.

<u>Potential Reintroduction/Augmentation Site and Suitable Species</u>: The Alabama River has been identified as a potential reintroduction/augmentation site for the inflated heelsplitter, orange-nacre mucket, heavy pigtoe, southern clubshell, and stirrupshell (Hartfield et al. 2010).

3.2.5 Aquatic organism passage

Other than the occasional boat lockage and traversing of the spillway, and some limited experiments with attraction flows and lock openings, Millers Ferry L&D does not currently allow any means of fish passage. However, modification of lock operation may hold some potential for providing upstream passage to migratory species. As shown at Claiborne L&D, Millers Ferry also has the potential to pass large numbers of riverine fishes, some of which are listed under the ESA. Under extremely limited sampled conditions, Mettee et al. (2005) collected 10 species in the Millers Ferry lock chamber in May 2004 by providing an attraction flow. Installation of an additional fishway device (e.g., a vertical slot fishway or fish lift) may also be required to help pass a wider variety of species, take advantage of attraction flows elsewhere below the lock and dam, and provide passage to another portion of the channel. Attraction flows stemming from hydropower generation could be problematic for fish passage since these occur downstream of the lock and dam and could draw migratory species away from the intended path of passage. Some type of mechanism to direct fish away from this area may also be warranted. Providing fish passage at this facility would address Recovery Objective 2.4 of the Gulf Sturgeon Recovery/Management Plan and Objective 8.5.9.1 of the Gulf Striped Bass Fishery Management Plan. Mettee et al. (2005) suggests that more than 35 fish species could benefit from passage improvement at Claiborne and Millers Ferry L&Ds, not to mention opening-up access to the Cahaba River.

Downstream passage over the spillway at Millers Ferry L&D is possible for some migratory fish; however, turbine entrainment could have a severe negative impact on downstream migration. Screening of draft tube intakes and/or other devices that direct fish away from the turbines would be necessary to protect downstream migrants. A Corps plan to install debris diverters for the draft tubes has the potential of providing not only turbine protection, but also providing protection to downstream migrants. Modification of this device to protect migratory species should be seriously considered.

3.2.6 River Reach Research Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- Explore and implement opportunities to augment/reintroduce mollusks and fishes into appropriate habitats.

- Evaluate the effects of channelization and reservoir flowage on adjacent side-channel, shallow water, oxbow lake-type habitats. These areas provide important nursery areas for many fish species, and are an important foraging resource for listed species such as the wood stork. Flood events and flow patterns prior to dam construction maintained the sediment dynamics necessary for relatively stable, shallow water side-channel floodplain features, but reservoir flows and channelization may have now changed floodplain sediment dynamics to the point where many of these shallow water side channels can only be maintained through repeated dredging of their inlets (Stan Cook, ADCNR, pers. comm. 2010).

- Develop Geographic Information System (GIS) databases that identify, characterize (e.g., bathymetry, current velocity, and substrate), and map stable riverine habitats.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.3 Alabama River from Millers Ferry L&D to R.F. Henry L&D

3.3.1 River Reach General Description

The section of the Alabama River between Millers Ferry and R.F. Henry L&D is 103 miles long and is contained entirely within the East Gulf Coastal Plain Province. The reach encompasses Dannelly Reservoir, a 17,200-acre impoundment formed by Millers Ferry L & D. Dannelly Reservoir is essentially a run-of-river impoundment that provides a 9-foot navigation channel up to R.F. Henry L & D. Although managed as a run-of-the-river impoundment, Millers Ferry L & D has a hydroelectric generating capacity of 75 MW (ADEM 1984), and hydropower peaking flows are experienced by aquatic species downstream of both Millers Ferry and R. F. Henry dams.

3.3.2 Species

Fishes: Alabama shad, Alabama sturgeon, American eel, Southeastern blue sucker, highfin carpsucker, paddlefish, quillback, skipjack herring, river redhorse, smallmouth buffalo, striped bass, and southern walleye are species of Federal/State interest that likely inhabit this reach of the Alabama River (Mettee et al. 1996; Boschung and Mayden 2004). Populations of many of these species have been significantly impacted downstream by Claiborne L&D by blocked or impaired access to upstream spawning areas, particularly for those species that require long migrations to complete a part of their life cycle (e.g. Gulf and Alabama sturgeon, American eel, and the Alabama shad). Frecklebelly madtom, Alabama sturgeon, bluenose shiner, ironcolor shiner, freckled darter and alligator gar are either absent or very rare in this reach. Freshwater species of sportfishing interest that inhabit this reach include the black basses, crappie, catfish, and sunfishes (USFWS 2006).

Mollusks: Historically, the Alabama moccasinshell, painted rocksnail, fine-lined pocketbook, orange-nacre mucket, ovate clubshell, rayed creekshell, southern combshell, stirrupshell, black sandshell, and cylindrical lioplax occurred in this reach. It is likely that the inflated heelsplitter and spotted rocksnail still occur here, and recent dive sampling indicates that the heavy pigtoe, southern clubshell, and tulotoma snail are still extant in this reach (USFWS Alabama Field Office data; Pierson 1991; ADCNR unpublished data 2009). This reach contains several locations of concentrated densities of commercial mussel species (Hartfield and Garner 1998).

Plants: Georgia rockcress and Price's potato-bean occur on and near the banks of this reach of the Alabama River (USFWS Alabama Field Office data). Georgia rockcress likely benefits from flood-induced scour that reduces competition from other plants.

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.3.3 Objectives

The Corps can help to protect reservoir fisheries and water quality as well as restore federally protected, resident and migratory aquatic species to historic abundances in remaining habitats.

3.3.3.1 Instream flow

The instream flow regime in this reach is affected by hydropower generation at R.F. Henry L&D as well as peaking hydropower generation/flood control operations at 13 other dams upstream in the Coosa and Tallapoosa Rivers. Currently, there are no required minimum flows downstream of R.F. Henry L&D, although there is an agreement with APC to release at least 4640 cfs from their upstream projects to provide a 9-foot navigation channel in the river.

3.3.3.2 Water quality

The Alabama River from Millers Ferry L&D upstream to Blackwell Bend has ADEM's stream use classification of swimming and fish and wildlife (ADEM 2000). From Blackwell Bend upstream to Henry L&D, the reach is classified as fish and wildlife (ADEM 2000). ADEM (2004) lists Dannelly Reservoir as eutrophic.

Dissolved oxygen

Water use classifications for this reach have a 5.0 mg/L DO standard, except under extreme conditions due to natural causes, it may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

ADEM sampling from June-September 1983 revealed that the DO standard was met on all occasions in the Henry L&D tailrace. However, comparisons of pre- and post-impoundment DO data indicate a 35% decline in average DO concentration (7.1 mg/L pre-impoundment to 4.6 mg/L post-impoundment) for August (ADEM 1984). While greater waste load demands were experienced in recent years, ADEM (1984) conceded that water quality effects from impoundment and power generation were evident.

DO concentrations occasionally fall below the state DO standard (4 mg/L) in the tailwaters of Henry L&D (USFWS Alabama Field Office data, 2000-2002; ADEM preliminary data 2008-09).

Forebay profiles taken at the Millers Ferry L&D from June-September 1983 showed a moderate tendency toward DO stratification in June and July (ADEM 1984). Stratification was of such a moderate nature that DO concentrations stayed above 4.0 mg/L all the way to the bottom of the forebay (about 55 feet); the rest of the sampling period concentrations were similar throughout the water column (ADEM 1984). As at other projects where forebay and tailrace DO concentrations were above the standard, the shorter reservoir retention period probably accounts for the more favorable water quality (ADEM 1984).

3.3.4 Habitat protection

Dredging has removed shoal habitats and changed natural patterns of erosion and deposition, potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner 1998). Land use practices along tributary streams can also degrade aquatic habitats critical to southern walleye and other fish species (USFWS 2006).

In addition to dredging, impacts from nonpoint source pollution are significant and need to be taken into account during dam and reservoir operations. Pollutant and nutrient concentrations are important ecological considerations during periods of low flow, when aquatic species may already be stressed from lower DO and reduced habitat availability. Pollutant concentrations required under NPDES permits are often cited by industry on the Alabama River as a reason to maintain unnaturally high flow during periods of natural drought, despite the importance of low flows in shaping Delta and river ecology. Research is needed to determine which species are most impacted under low-flow/high pollutant concentration conditions, and the flow patterns that are most beneficial under varying pollutant loads. Within the reach, this includes pollution from agricultural (nutrients, sediment, bacteria, and pesticides), aquaculture (nutrients and bacteria), forestry (sediment, nutrients, and thermal changes), roads (sediment), urban/residential development (sediment, nutrients, bacteria, and pesticides), and mining (sediment) activities (ALCWP 2005).

<u>Priority sub-basins</u>: Important tributaries that help maintain genetic flow and act as refugia in this reach include Bogue Chitto Creek, Big Swamp Creek, Cahaba River, Chilatchee Creek, Dry Cedar Creek, Little Mulberry Creek, and Mulberry Creek (ACWCS 2005; Bogan and Pierson 1993b). Flow parameters need to ensure connectivity with these streams.

<u>Designated Critical Habitat</u>: The Alabama River from the confluence of the Cahaba River (Alabama RM 198.1) upstream to the confluence with Big Swamp Creek (RM 183.5) is designated critical habitat for the southern clubshell and orange-nacre mucket. Bogue Chitto Creek from its confluence with the Alabama River (RM 169.8) upstream to U.S. Highway 80 is

also designated critical habitat for the southern clubshell, Alabama moccasinshell, and orange-nacre mucket (USFWS 2004). Critical habitat for the Alabama sturgeon has been designated in the Alabama River to below R.F. Henry L&D, and in the Cahaba River to Centreville (USFWS 2009). The WCM update should focus on developing and implementing a flow regime that protects and enhances habitat for these species.

Potential Reintroduction/Augmentation Site and Suitable Species: The Alabama River has been identified as a potential reintroduction/augmentation site for the inflated heelsplitter, orange-nacre mucket, heavy pigtoe, southern clubshell, and stirrupshell (Hartfield et al. 2010).

3.3.5 Aquatic organism passage

Millers Ferry L&D is an impediment to upstream fish passage by migratory species, such as Alabama sturgeon, Gulf sturgeon, Alabama shad, paddlefish, smallmouth buffalo, southern walleye, and blue sucker. Downstream passage over the Henry L&D spillway is possible for some fish species; however, turbine entrainment could have a severe negative impact on downstream migration. Screening of draft tube intakes and/or other devices that direct fish away from the turbines is necessary to protect downstream migrants.

Modification of lock operations holds potential for providing upstream passage to migratory species. As has been shown at Claiborne L&D, relatively minor modifications in locking procedures can greatly increase upstream passage for some species. However, installation of a fishway device (e.g., a vertical slot fishway or fish lift) would help pass a greater abundance and wider variety of species through this facility. Downstream attraction flows stemming from hydropower generation could be problematic for fish passage, so some type of mechanism to divert migratory fish away from this area may also be warranted. Providing fish passage at this facility would address Recovery Objective 2.4 of the Gulf Sturgeon Recovery/Management Plan and Objective 8.5.9.1 of the Gulf Striped Bass Fishery Management Plan.

3.3.6 River Reach Research Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- In cooperation with the Alabama Aquatic Biodiversity Center, explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include the Alabama sturgeon and any other species that has been identified as a primary host species for a targeted mussel (USFWS 2005b).

- Develop a Geographic Information System (GIS) database that identifies, characterizes (e.g., bathymetry, current velocity, and substrate), and maps stable riverine habitats.

- Examine the effects of channelization and reservoir flowage on silting in of the inlets of adjacent side-channel, shallow water habitats. These areas provide important nursery areas for many fish species, and are an important foraging resource for listed species such as the wood stork. Flood events and flow patterns prior to dam construction maintained the sediment dynamics necessary for a relatively stable side-channel floodplain feature, but reservoir flows and channelization may have now changed floodplain sediment dynamics to the point where many of these shallow water side channels can only be maintained through repeated dredging of their inlets (Stan Cook, ADCNR pers. comm. 2010).

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.4 Alabama River from R.F. Henry L&D to Jordan/Bouldin Dams (Coosa River)

3.4.1 River Reach General Description

This reach contains the transition between the portion of the ACT Basin managed by the Corps and the section controlled primarily by dams operated by Alabama Power Company (APC) on the Coosa and Tallapoosa Rivers. The lower dam on this reach, R.F. Henry Dam, is operated by the Corps, while Jordan and Bouldin Dams are operated by APC. Ecological issues described below for this reach will need to be addressed by both the Corps and APC.

This 80-mile reach of the Alabama River is contained entirely within the East Gulf Coastal Plain Province and includes Woodruff Reservoir, a 12,510-acre impoundment formed by R.F. Henry L&D. Woodruff Reservoir is essentially a run-of-the-river impoundment that provides a 9-foot navigation channel up to Montgomery. Although managed as a run-of-river impoundment, R. F. Henry L & D does have a hydroelectric generating capacity of 68 MW (ADEM 1984). Aquatic species downstream of R.F. Henry are affected by hydropeaking flows not only from the R.F. Henry turbines, but also from the dams upstream on the Coosa and Tallapoosa Rivers. Another feature of this reach is the 5-mile long tailrace canal from Bouldin Dam that bypasses the main channel and enters the Coosa River 12 miles downstream of Jordan Dam. The tailrace downstream of Jordan Dam receives a continuous minimum flow ranging from 2,000 cfs during the summer-fall-winter months, to 4,000 cfs during the spring months. Due to this minimum flow, the Jordan tailrace has developed into a spotted bass fishery, and also offers one of the best restoration opportunities for mollusks and fishes in the entire Mobile River Basin. This unique area is located over a geologic formation known as the Fall Line, which is the transition zone between high gradient upland streams and low gradient coastal plain streams. The stretch of the Coosa upstream of the Fall Line was historically characterized by a series of shoals collectively called the Coosa Falls; however, the rivermen of the late 1800s often used more colorful terms for these areas like, the Narrows, Devil's Race, Butting Ram Shoals, Hell's Gap, and the Devil's Staircase -- most of which are now inundated by Jordan, Mitchell, and Lay reservoirs (Jackson

1995). These names were due in part to the rapid change in elevation the Coosa experienced over its last sixty miles before crossing the Fall Line and joining the Tallapoosa River near the town of Wetumpka. The last exposed remnant of this geologic formation is the stretch between Jordan Dam and Wetumpka known as Moccasin Shoals.

3.4.2 Species

Fish: Historically, the Alabama shad, Alabama sturgeon, American eel, and Gulf sturgeon occurred in this reach (Mettee et al. 1996; Boschung and Mayden 2004); however, populations of these species have been severely impacted by Claiborne, Millers Ferry, and R.F. Henry Dams which block or hinder fish access to upstream spawning areas. The southeastern blue sucker, highfin carpsucker, paddlefish, quillback, river redhorse, southern walleye, smallmouth buffalo, and striped bass are species of federal/state interest that continue to inhabit the mainstem and/or tributaries of this reach (Mettee et al. 1996; Boschung and Mayden 2004). Other freshwater species of state interest include black basses (e.g., the Jordan tailrace is recognized as a world class spotted bass fishery), crappie, catfish, freshwater drum and sunfishes (USFWS 2006).

Mollusks: Historically, the Alabama moccasinshell, fine-lined pocketbook, triangular kidneyshell, Coosa moccasinshell, southern pigtoe, orange-nacre mucket, ovate clubshell, southern purple lilliput, southern clubshell, southern combshell, stirrupshell, delicate spike, Alabama spike, black sandshell, Coosa creekshell, cylindrical lioplax, interrupted rocksnail, lacy elimia, painted rocksnail, teardrop elimia, cobble pebblesnail, flat pebblesnail, and spotted rocksnail occurred in this reach, many of which have been extirpated or are presumed extinct (Johnson 2002). Recent collections indicate that the fine-lined pocketbook may exist in this reach, along with the largest population of the tulotoma snail, which occurs in a reach approximately 3.5 miles downstream of Jordan Dam (Bogan and Pierson 1993a; Johnson 2002). A 1995 study reported a stable and healthy population of over 109 million tulotoma snails inhabiting this reach (Christman et al. 1995). Christman et al. (1995) also documented an increase in shoreline habitat use by the snail that was attributed to increased habitat availability resulting from the implementation of continuous minimum flow releases at Jordan Dam. The interrupted rocksnail (previously extirpated in Alabama) was reintroduced into the reach in 2003 after not being collected for nearly 50 years. This reach also supports one of the two known populations of the rough hornsnail (Mirarchi et al. 2004).

Plants: Georgia rockcress and Price’s potato-bean occur on and near the banks of this reach of the Alabama River (USFWS Alabama Field Office data). Georgia rockcress likely benefits from flood-induced scour that reduces competition from other plants.

Birds: Bald eagles and wood storks forage in this reach (USFWS Alabama Field Office data). Floodplain inundation, controlled in part by upstream dams, is important in maintaining fish populations in shallow water habitats utilized by these birds.

3.4.3 Objectives

The Corps has an opportunity in this reach to protect and enhance water quality, and reduce the effects of hydropower-induced flow pulses from upstream dams. The Corps can also help restore federally protected, resident and migratory aquatic species to historic abundances in remaining habitats. The area downstream of Jordan Dam to Wetumpka has been identified as an important reach for the augmentation/reintroduction of several target species (Hartfield et al. 2010; Johnson 2002).

3.4.3.1 Instream flow

The instream flow regime in this reach is affected by impoundment at R.F. Henry L&D, hydropower generation at Jordan and Bouldin Dams, as well as by peaking hydropower/flood control operations at 11 other upstream dams in the Coosa and Tallapoosa River basins in Alabama and Georgia. From 1928, the first year of operation for Jordan Dam, until 1992, no allowances were made for minimum flows in its tailwaters. Flow was exclusively determined by hydroelectric demand, reservoir spillage, and prevailing weather patterns. In fact, beginning in 1967 with the completion of the Bouldin Dam, discharge through this dam's 5.5-mile tailrace cut-off bypassed approximately 12 miles of river below Jordan Dam for extended periods. This situation basically continued until 1992 when APC, as a condition of Federal Energy Regulatory Commission (FERC) relicensing, was required to provide a minimum instream flow to the bypassed mainstem of 2,000 cfs in the summer-fall-winter months and 4,000 cfs during the spring months (APC/KA 2000a). Further operational modifications were subsequently made to allow for short periods of increased flow (up to 10,000 cfs) to enhance kayaking, whitewater rafting, and fishing (APC/KA 2000a). At present, adjustments to the minimum flow are made using a ramping schedule that decrease flow at the rate of about 67 cfs or 133 cfs/day (APC/KA 2000a) to avoid stranding aquatic species. Minimum releases were chosen as a management approach to reduce the adverse effects of intermittent and/or peaking discharges from Jordan and Bouldin Dams. These minimum flows have had a significant positive effect on water quality and the aquatic community downstream of Jordan Dam.

3.4.3.2 Water quality

The Alabama River from Henry L&D upstream to Pintlala Creek and Catoma Creek has ADEM's stream use classification of fish and wildlife and partially supports its designated use (ADEM 2004). Causes for impairment are listed as organic enrichment, and DO. The entire Bouldin Tailrace Canal and the Coosa River from its mouth to Jordan Dam his classified for fish and wildlife (ADEM 2000).

<u>Dissolved oxygen</u>

Water use classifications for this reach have a 5.0 mg/L DO standard, except under extreme conditions due to natural causes, it may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

ADEM sampling from May-September 1983 revealed that the DO standard was not met on two occasions in the Jordan Dam tailrace during July and August (ADEM, 1984). On these occasions DO levels were extremely low (1.1 mg/L and 1.6 mg/L, respectively). However since a continuous minimum flow was implemented in 1994 and continuous monitoring began in 1995, this standard is rarely violated (APC 2005). Recent water quality data collected by APC between 1995 and 2003 (APC 2005) indicates that the Jordan Dam tailrace is typically in compliance with the required state standard for DO (Figure 2).

Forebay profiles taken at the R.F. Henry Lock and Dam from June-September 1983 showed that a very slight DO stratification occurs in July and August, but subsides by September (ADEM 1984). Stratification was so slight in nature that DO concentrations stayed above 3.5 mg/L to the bottom of the forebay (about 55 feet); the rest of the sampling period concentrations were similar throughout the water column (ADEM 1984). As at other projects where forebay and tailrace DO concentrations were above the standard, the shorter reservoir retention period probably accounts for the more favorable water quality (ADEM 1984).

Erosion and sedimentation

Water releases through the Bouldin Dam into the Bouldin Tailrace Canal are causing excessive erosion and measures should be taken to implement a comprehensive bank stabilization strategy in this area (ADCNR 2000).

3.4.4 Habitat protection

Dredging has removed shoal habitats and changed natural patterns of erosion and deposition, potentially accelerating bank erosion and causing the destruction of aquatic habitats (Hartfield 1993; Hartfield and Garner 1998). Land use practices along tributary streams can degrade aquatic habitats critical to southern walleye and other fish species.

Priority sub-basins: Catoma Creek and Pintlala Creek are important tributaries for genetic flow and refugia in this reach (ACWCS 2005). Flow parameters should maintain connectivity with these streams.

Designated Critical Habitat: The Coosa River from Alabama State Highway 111 upstream to Jordan Dam is designated critical habitat for the southern clubshell, ovate clubshell, southern acornshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, Coosa moccasinshell, southern pigtoe, and fine-lined pocketbook (USFWS 2004). Critical habitat for the interrupted rocksnail and rough hornsnail has also been proposed for this area.

Potential Reintroduction/Augmentation Site and Suitable Species: The mainstem of the Coosa River from Wetumpka upstream to Jordan Dam have been identified as a potential reintroduction/augmentation site for the Alabama moccasinshell, fine-lined pocketbook, ovate clubshell, southern acornshell, southern clubshell, southern pigtoe, triangular kidneyshell, upland combshell, Coosa moccasinshell, Alabama spike, delicate spike, tulotoma snail, cylindrical lioplax, flat pebblesnail, painted rocksnail, interrupted rocksnail, and lacy elimia (Hartfield et al. 2010).

3.4.5 Aquatic organism passage

Modification of lock operations holds potential for providing upstream passage to migratory species. As has been shown at Claiborne Lock and Dam, relatively minor modifications in locking procedures can greatly increase upstream passage for some species. However, installation of a fishway device (e.g., a vertical slot fishway or fish lift) would help pass a greater abundance and wider variety of species through this facility.

3.4.6 River Reach Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Using an adaptive management approach, evaluate alternative locking procedures to determine the most efficient means of passing the largest number of aquatic species.

- In cooperation with the Alabama Aquatic Biodiversity Center, explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include the Alabama sturgeon and any other species that has been identified as a primary host species for a targeted mussel (USFWS 2005b).

- Determine if fish host restoration is needed to sustain mussel restoration efforts (Johnson 2002). Fish surveys conducted in the Jordan tailrace by APC in 1997 indicated that the site apparently lacks large populations of many common darters and minnows that are known mussel hosts.

- Develop a Geographic Information System (GIS) database that identifies, characterizes (e.g., bathymetry, current velocity, and substrate), and maps stable riverine habitats.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.5 Coosa River from Weiss Dam to Mouth of Etowah River

3.5.1 River Reach General Description

The Coosa River, from its origin at the confluence of the Oostanaula and Etowah Rivers in Georgia, flows in a westerly direction 60 miles to Weiss Dam, which is operated by APC (GAEPD 1998). Resource management issues in this reach are shared by the Corps and APC. This reach of the Coosa River is contained within the Valley and Ridge and Cumberland Plateau

Provinces and includes Weiss Reservoir, a 30,200-acre impoundment on its southern end (APC/KA 2000b). Weiss Reservoir has 447 miles of shoreline and a maximum depth of 62 feet (APC 1995b). Weiss Dam is operated for peaking hydroelectric production with a generating capacity of 88 MW (ADEM 1984). Additionally, this reach contains the remnants of the Mayo's Bar Lock and Dam, a former Corps project constructed in the early 1900's about 8 miles downstream of Rome, Georgia.

3.5.2 Species

Fish: Alabama shad, American eel, Gulf sturgeon, Alabama sturgeon, lake sturgeon, freckled madtom, trispot darter, and the saddleback darter are thought to have occurred in the Coosa River and/or its tributaries, but have apparently been extirpated. The Southeastern blue sucker and river redhorse occur elsewhere in the Coosa River drainage but have been apparently extirpated from this reach (Freeman et al. 2005; Burkhead et al. 1997). The blue shiner, flame chub, lined chub, Coosa chub, burrhead shiner, river redhorse, stippled studfish, holiday darter, coldwater darter, goldstripe darter, rock darter, freckled darter, river darter, southern walleye, smallmouth buffalo and striped bass (self-sustained population) are species of Federal/State interest that continue to occur within the Coosa River and/or its tributaries (Mettee et al. 1996; Boschung and Mayden 2004; Pierson 1998; Burkhead et al. 1997; Freeman et al. 2006). The lake sturgeon is a species that has been recently reintroduced in the Coosa River in Georgia. Other freshwater species of sportfishing interest that inhabit riverine and lacustrine habitats in this reach include black basses, crappie, catfish, freshwater drum and sunfishes (USFWS 2006).

Mollusks: Historically, approximately 36 freshwater mussel species were known from the Coosa River and its tributaries (Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Coosa River and its tributaries included the Alabama spike, delicate spike, Alabama moccasinshell, cylindrical lioplax, fine-lined pocketbook, flat pebblesnail, heavy pigtoe, inflated heelsplitter, orange-nacre mucket, , southern acornshell, southern clubshell, southern pigtoe, Georgia pigtoe, triangular kidneyshell, southern purple lilliput, Alabama creekmussel, Coosa creekshell, and upland combshell (Burkhead et al. 1997; Williams and Hughes 1997; USFWS 2000). Recent records indicate that the Coosa moccasinshell is a species of Federal/State interest that continues to occur in tributaries of this reach (USFWS 2000). The southern clubshell and fine-lined pocketbook are still found in the Weiss Bypass channel, the old river channel prior to dam construction. Surveys of the mainstem Coosa River conducted in the late 1990's located live specimens of the flat floater, washboard, paper pondshell, and threehorn wartyback. Shell material of other species was identified for Coosa fiveridge, elephantear, fragile papershell, Alabama orb, Coosa orb, ridged mapleleaf, pistolgrip, butterfly, and the southern clubshell (Williams and Hughes 1997).

Plants: Harperella and Kral's water plantain are riverine plants that occur within the active channel of major tributaries of this reach. If surveys report these in the Coosa mainstem,flow dynamics could have a major influence on their ability to persist (USFWS 2000).

3.5.3 Objectives

The Corps has an opportunity to help protect reservoir fisheries, as well as restore resident and migratory aquatic species to historic abundances in remaining suitable riverine habitats.

3.5.3.1 Instream flow

Completion of Weiss Dam in 1961 resulted in bypassing flows around a 22-mile section of the mainstem Coosa River (hereafter referred to as “bypass channel”). The bypass channel is an important restoration location for mussels and other aquatic organisms formerly found in abundance in the Coosa River (Herod et al. 2001). Management of upper ACT Basin Corps projects in a manner that meets upstream ecosystem objectives and provides sufficient flows in the Weiss Bypass channel is of critical importance. The bypass channel is also adversely affected by the operation of Weiss Dam which, during peak generation, reverses flow in at least the lower 14 miles of the bypass channel. A continuous minimum flow should be determined and implemented to restore the riverine character of the bypass channel which could be facilitated by installing and using an appropriately-sized turbine or by releasing water through the project’s spillway or trash gates (ADCNR 2000). We have recommended that APC, as part of the hydropower license on Weiss Dam, in general provide 10% of Coosa River flow coming into Weiss reservoir for the Weiss Bypass channel. However, this recommendation is only adequate if the Corps releases an adequate amount of water from Allatoona and Carters dams to meet downstream ecological needs.

3.5.3.2 Water quality

The Coosa River from the Weiss Dam powerhouse upstream to Spring Creek has ADEM’s stream use classification of public water supply, swimming, and fish and wildlife classifications (ADEM 2000). From Spring Creek to the state line, swimming and fish and wildlife are the applicable classifications (ADEM 2000). The Coosa mainstem between Weiss Dam and the Georgia-Alabama state line is included on the state’s 303(d) listed waters as partially supporting state water use classifications due to priority organics, nutrient enrichment and pH from flow regulation/modification and upstream sources (ADEM 2002).

The Coosa River at the Alabama-Georgia state line is classified by the Georgia Environmental Protection Division (GAEPD) for recreation and fishing (GAEPD 2001). From the state line upstream to the confluence of the Etowah and Oostanuala Rivers the classification is fishing (GAEPD 2001). Portions of the Coosa mainstem and Big Cedar Creek are on the Georgia 303(d) listed waters as not supporting its water use classification. This is a result of violations of water quality standards for metals and fecal coliform bacteria (GAEPD 1998).

Dissolved oxygen

Water use classifications for the Alabama portion of this reach require a 5.0 mg/L DO standard at all times; except under extreme conditions due to natural causes, it may range between 5.0 mg/L and 4.0 mg/L, provided that the water quality is favorable in all other parameters (ADEM 2000). DO levels should not be less than 4.0 mg/L due to hydroelectric turbine discharges from existing hydroelectric generation impoundments (ADEM 2000).

Forebay profiles taken during August and September 1983 showed that Weiss Reservoir experienced temperature stratification, but only slight stratification with respect to DO concentration (ADEM 1984). As a consequence of this slight stratification in 1983, ADEM reported DO concentrations above 2.0 mg/L to a depth of 40 feet (ADEM 1984). The shallow depth of the reservoir and the frequency of generation observed suggests minimal retention times and thus a mixed instead of a stratified reservoir (ADEM 1984). Forebay sampling conducted by APC during June to October of 1990-1999 indicated that Weiss Reservoir may become more stratified than suggested by previous sampling (APC/KA 2000b). APC/KA (2000b) reported a stratification tendency at depths of 15 to 20 feet during mid summer that at times extended for 60 to 90 days. During a number of these stratification periods, DO concentrations were <2.0 mg/L at a depth of 15 feet (APC/KA 2000b).

3.5.4 Habitat protection

Along Weiss Reservoir, considerable natural shoreline habitat has been converted to vertical bulkheads which eliminate shallow shoreline habitat so important to juveniles of many game fish species (ADCNR 2000). The permitting process for shore stabilization should be modified to require other less destructive types of shoreline structures.

Priority sub-basins: Little River is an important tributary for genetic flow and refugia for this reach (ACWCS 2005).

Designated Critical Habitat: There are no areas designated as critical habitat on the existing mainstem of the Coosa in this reach or in any sub-basins, although it should be noted that a portion of the Weiss Bypass Channel is designated critical habitat for the southern acornshell, ovate clubshell, southern clubshell, upland combshell, triangular kidneyshell, Coosa moccasinshell, southern pigtoe and fine-lined pocketbook (USFWS 2004). Maintenance of natural flows through the Weiss Bypass channel will benefit these species

3.5.5 Aquatic organism passage

Species that once migrated through this area have for the most part been extirpated or have had access to the reach blocked by the continuous chain of reservoirs further downstream in the Coosa River. Local interest in raising the level of the Mayo Bar Lock and Dam (MBL&D) by two feet could however negatively impact striped bass upstream spawning movements from Weiss Reservoir and survival of their eggs and larvae in the Oostanaula River (USFWS 2006). However, if data become available that indicate Weiss Dam adversely affects resident/migratory species because of blockage of movements or entrainment, then fish passage/screening strategies should be developed and implemented.

3.5.6 River Reach Research Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include those that have been identified as a primary host species for a targeted mussel.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.6 Etowah River from Coosa River to Allatoona Reservoir

3.6.1 River Reach General Description

This approximately 48 mile stretch of the Etowah River flows generally westward from Allatoona Reservoir toward its confluence in western Georgia with the Oostanaula River, where together they form the Coosa River. The Etowah River below Allatoona Dam is contained within the Ridge and Valley Physiographic Province. Allatoona Reservoir is a 19,200-acre impoundment built for flood control, navigation, hydroelectric power and recreation, with a hydroelectric generating capacity of 80 MW (USACE 1998).

3.6.2 Species

<u>Fish:</u> American eel, lake sturgeon, blue shiner, lined chub, emerald shiner, southeastern blue sucker, river redhorse, freckled madtom, chain pickerel, coldwater darter, trispot darter, coal darter, and river darter are thought to have occurred in the Etowah River and/or its tributaries, but have apparently been extirpated The lake sturgeon is a species that has been recently reintroduced in the upper Coosa River Basin in Georgia. The Coosa chub, burrhead shiner, Etowah darter, Cherokee darter, rock darter, , amber darter, and freckled darter are species of Federal/State interest thought to still occur in the Etowah River and its tributaries (Freeman et al. 2006; Freeman 1998; USACE 2000; Burkhead et al. 1997). Surveys have been initiated in 2010 to evaluate persistence and spatial distribution of fishes in the mainstem Etowah River below Allatoona Dam.

<u>Mollusks</u>: Historically, approximately 40-50 freshwater mussel species were known from the Etowah River and its tributaries (Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Etowah River and its tributaries included the rayed creekshell, Alabama spike, delicate spike, Alabama moccasinshell, cylindrical lioplax, fine-lined pocketbook, flat pebblesnail, southern acornshell, southern clubshell, southern pigtoe, Georgia pigtoe, triangular kidneyshell, Alabama creekmussel, Coosa creekshell, and upland combshell (USFWS 2000, USACE 2000, Burkhead et al. 1997, Williams and Hughes 1997). Surveys have been initiated in 2010 to determine which species are still extant in the Etowah River below Allatoona Dam. Surveys of the mainstem Etowah River below Allatoona Dam conducted in the

late 1990's located live specimens of the fragile papershell and pistolgrip. Shell material of the elephantear was also identified (Williams and Hughes 1997).

3.6.3 Objectives

The Corps has an opportunity in this reach to protect and enhance water quality, instream flow, and reduce the effects of hydropower-induced flow pulses from upstream dams. The Corps also has an opportunity and responsibility to protect reservoir fisheries, as well as restore resident and some migratory aquatic species to historic abundances in remaining suitable riverine habitats.

State and federal agency representatives, private landowners, business owners, and conservation groups held a public stakeholder meeting at Red Top Mountain State Park, Georgia on August 8, 2009. The intent of this meeting was to openly discuss and develop a vision for upper ACT Basin water management, with the explicit intent to inform our collective efforts to update the WCM. Radio announcements, newspaper announcements, and fliers were distributed to advertise the meeting and harness public interest and participation. The Corps was invited to attend this meeting but no Corps representative was sent. Stakeholders at the meeting 1) agreed that water management in the upper ACT could be improved to benefit the multiple water uses and 2) developed a list of fundamental and means objectives for water management below upper ACT Corps projects (Figure 3). The Corps needs to engage this diverse group of stakeholders because this effort is broad in scope, encompasses multiple stakeholders, acknowledges multiple demands on water resources, and is intended to improve the WCM and flow management. It was generally agreed that an adaptive management approach to flow management would be beneficial.

3.6.3.1 Instream flow

The instream flow regime in this reach is affected by hydropower/flood control operations at Allatoona Dam. The hydropower facility generates power between 2 and 6 hours during normal operations each weekday. Power is generated on weekends as necessary, but generally only the minimum flow of 250 cfs (320 cfs with leakage) is released. Flow instability from hydropower fluctuations between 320 cfs and 7,500 cfs likely affects recruitment and reproduction of many fish species (*sensu* Freeman 2001), including those acting as host species for freshwater mussels (Layzer and Crigger 2001; Watters 2000). Providing longer periods of stable flow during critical spawning and rearing seasons should increase opportunities for recruitment and reproduction of freshwater organisms (*sensu* Freeman 2001). The minimum flow requirement at Allatoona Dam (250 cfs) was developed based on the 7Q10 flow calculation. Use of the 7Q10 was intended to facilitate estimation of the allowable pollutant concentrations, but was later adopted as a minimum flow requirement below dams. Thus, the 7Q10 minimum flow requirement does not address ramping rates, frequency, duration, timing, or magnitude of flows that are important flow components that affect the persistence of aquatic organisms. A more comprehensive flow management strategy is warranted. As we have shown in our PAL for the ACF, seasonal flow variation (e.g., magnitude, timing, duration, and frequency of low and high flows) need to be integrated into project operations so that the authorized project purpose of Fish and Wildlife is met.

3.6.3.2 Water quality

The Etowah River from the Oostanaula confluence to the Allatoona Dam is classified by the GAEPD for recreation and fishing (GAEPD 2001). Water temperature is an important ecological cue for reproduction, migration and other life history aspects of aquatic organisms. However, water temperatures below Allatoona Reservoir are lower than would naturally occur due to hypolimnetic release from Allatoona Dam. Temperatures do not return to expected natural values until more than 25 miles downstream of the dam, which may explain why the Etowah darter does not occur in this reach (Duncan et al. 2010). Daily temperature fluctuations occur naturally, but are also affected by hydropeaking. Although the cooler temperatures found in the Etowah River support a recreational fishery for striped bass (Matt Thomas, GA DNR, pers. comm. 2010), temperature fluctuations that are induced by dam operations are likely to negatively affect both striped bass and non-game species.

<u>Temperature and dissolved oxygen</u>

Dissolved oxygen diffusers were installed and used in Lake Allatoona from 1968 to 1986. Since cessation of DO diffuser use, multiple studies showed that dissolved oxygen frequently falls below 2.0 mg/L (USACE 2000) below Allatoona Dam. DO measurements made by Georgia EPD in 2001 show that summer and fall months have the lowest DO concentrations and that DO concentrations are higher downstream near Cartersville, Georgia (Figure 4; EPA STORET data accessed in 2009). 100% of all DO measurements in August and September of 2009 below Allatoona Dam were below 4.0 mg/L, and were sometimes < 1.0 mg/L (Figure 5; USFWS unpublished data collected in 2009). These data unequivocally show that operation of Allatoona Dam violates Georgia state water quality standards and that dam operation does not meet the authorized purposes of Fish and Wildlife Management and Water Quality.

3.6.4 Habitat protection

This reach of river could benefit significantly from a flow regime that would allow shallow water habitats to persist long enough for important life stages of target species to develop.

<u>Designated Critical Habitat</u>: There are no areas designated as critical habitat on the Etowah River.

3.6.5 Aquatic Organism passage

Species that once migrated through this area have for the most part been extirpated or have had access to the reach blocked by the continuous chain of reservoirs further downstream in the Coosa River. Loss of connectivity between headwaters and lower reaches remains a serious concern for the ecological integrity of the system.

3.6.6 River Reach Research Needs

- Develop and implement and/or participate in monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Implement and/or assist in surveys to determine distribution and abundance of rare and federally protected aquatic species in the watershed.

- Determine and implement non-peaking flow windows during portions of the year critical to aquatic organisms.

- Explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include those that have been identified as a primary host species for a targeted mussel.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

3.7 Oostanaula-Coosawattee Rivers below Carters Reservoir

3.7.1 River Reach General Description

Below Carters and Carters Reregulation Dams, the Coosawattee meets with the Conasauga and forms the Oostanaula River, which in turn becomes the Coosa at its confluence with the Etowah in Rome, Georgia. The Coosawattee River system flows westward. The river and tributaries drain the Southern Blue Ridge, Southern Ridge and Valley, and Piedmont physiographic provinces. Carters Dam on the Coosawattee River creates Carters Reservoir, a 3220-acre impoundment built for flood control, navigation, hydroelectric power and recreation (USACE 1998). Flows from Carters Dam are partly reregulated by Carters Rereg Dam, located immediately downstream.

3.7.2 Species

Fish: American eel, lake sturgeon, blue shiner, lined chub, bluehead chub, river chub, quillback, highfin carpsucker, southeastern blue sucker, freckled madtom, chain pickerel, coldwater darter, amber darter, coal darter, Coosa bridled darter, freckled darter, and river darter are thought to have occurred in the Oostanaula and Coosawattee Rivers and/or their tributaries, but have apparently been extirpated in at least portions of these river basins (Freeman et al. 2005; Freeman 1998; Burkhead et al. 1997). The lake sturgeon is a species that has been recently reintroduced into the upper Coosa River Basin in Georgia. The lined chub, Coosa chub, burrhead shiner, river redhorse, rock darter, trispot darter, goldline darter, freckled darter, river darter, southern walleye, smallmouth buffalo and striped bass are of Federal/State interest that occur within this reach and/or its tributaries (Mettee et al. 1996; Boschung and Mayden 2004; Pierson 1998; Freeman et al. 2005).

Mollusks: Historically, approximately 43 freshwater mussel species were known from the Oostanaula River and its tributaries and approximately 20 freshwater mussel species were known from the Coosawattee River and its tributaries (Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Oostanaula River and its tributaries included the rayed creekshell, Alabama spike, delicate spike, southern acornshell, southern clubshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, southern pigtoe, Georgia pigtoe, fine-lined pocketbook, cylindrical lioplax, flat pebblesnail, inflated heelsplitter, and Coosa creekshell (USFWS 2000; Williams and Hughes 1997). Some of the mollusk species historically inhabiting the Coosawattee River and its tributaries included the Alabama spike, southern clubshell, Georgia pigtoe, and triangular kidneyshell (Williams and Hughes 1997). Surveys of the mainstem Oostanaula River conducted in the late 1990's located live specimens of the Coosa fiveridge, elephantear, southern pocketbook, fragile papershell, washboard, threehorn wartyback, triangular kidneyshell, Alabama orb, Coosa orb, ridged mapleleaf, pistolgrip, and paper pondshell. Shell material of the Alabama spike, southern combshell, Alabama heelsplitter, and southern clubshell was also identified (Williams and Hughes 1997). Surveys of the mainstem Coosawattee River below Carters Dam and a short reach above Carters Reservoir conducted in the late 1990's located live specimens of Alabama spike, fragile papershell, Pleurobema sp., purple heelsplitter, triangular kidneyshell, giant floater, Alabama orb, Coosa orb, ridged mapleleaf, pistolgrip, and paper pondshell. Shell material of other species was located for the elephantear and southern pocketbook (Williams and Hughes 1997). The Service also located live individuals and shell material of the threehorn wartyback in the mainstem Coosawattee below Carters Dam in 2007 (Alice Lawrence, USFWS, pers. comm. 2010).

3.7.3 Objectives

The Corps has an opportunity in this reach to protect and enhance water quality, instream flow, and reduce the effects of ramping from upstream dams. The Corps can also help to protect reservoir fisheries, as well as restore resident and migratory aquatic species to historic abundances in remaining suitable riverine habitats.

State and federal agency representatives, private landowners, business owners, and conservation groups held a public stakeholder meeting at Red Top Mountain State Park, Georgia on August 8, 2009. The intent of this meeting was to openly discuss and develop a vision for upper ACT Basin water management, with the explicit intent to inform our collective efforts to update the WCM. Radio announcements, newspaper announcements, and fliers were distributed to advertise the meeting and harness public interest and participation. The Corps was invited to attend this meeting but no Corps representative was sent. Stakeholders at the meeting 1) agreed that water management in the upper ACT could be improved to benefit the multiple water uses and 2) developed a list of fundamental and means objectives for water management below upper ACT Corps projects (Figure 3). The Corps needs to engage this diverse group of stakeholders because this effort is broad in scope, encompasses multiple stakeholders, acknowledges multiple demands on water resources, and is intended to improve the WCM and flow management. It was generally agreed that an adaptive management approach to flow management would be beneficial, but to facilitate the Corps modeling efforts, we recommend the approach for flow modeling used in the ACF PAL utilizing the methods of Mathews and Richter (2007).

3.7.3.1 Instream flow

The Carters Lake project is a hydroelectric pump-storage peaking facility, with hydropower generation occurring several hours each weekday. When electrical demand is low, water is pumped back into Carters Lake, which avoids the downstream problems associated with a hydropeaking flow regime. The minimum flow requirement at Carters Reregulation Dam (240 cfs) was developed based on the 7Q10 flow calculation. Use of the 7Q10 was intended to facilitate estimation of the allowable pollutant concentrations, but was later adopted as a minimum flow requirement below dams. Thus, the 7Q10 minimum flow requirement does not address ramping rates, frequency, duration, timing, or magnitude of flows that are important flow components that affect the persistence of aquatic organisms. A more comprehensive flow management strategy is warranted given the biodiversity and number of imperiled species below Carters Dam and Carters Rereg Dam. Seasonal flow variation (e.g., magnitude, timing, duration, and frequency of low and high flows) needs to be integrated into project operations so that the authorized project purpose of Fish and Wildlife is met.

3.7.3.2 Water quality

The Oostanaula River carries the GAEPD's water use classification of recreation and fishing (GAEPD 2001)

Temperature and dissolved oxygen

Tailrace temperatures and dissolved oxygen levels have not been collected and analyzed regularly below Carters Rereg Dam. Although data collected in August and September 2009 below Carters Rereg Dam show that DO levels meet state water quality standards (Figure 6), we recommend continuous monitoring as part of standard operating procedures for the project, particularly during the summer and fall.

3.7.4 Habitat protection

Despite the completion of the Carters Lake project in 1975, to date no mitigation for loss of significant aquatic resources has been developed. Mitigation for wildlife (including wetland and terrestrial ecosystems) has been debated but not resolved. Approximately 4,200 terrestrial acres were inundated, 40.9 miles of streams were impounded, 0.4 miles of stream were filled, and wetland loss is unknown. Terrestrial and stream impacts should be included in the DEIS and mitigation measures should be implemented.

Priority sub-basins: The Conasauga River and Holly Creek are important tributaries for genetic flow and refugia. Flow management needs to ensure adequate connectivity with these streams.

Designated Critical Habitat: Critical habitat has been designated for the southern acornshell, ovate clubshell, southern clubshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, Coosa moccasinshell, southern pigtoe, and fine-lined pocketbook in the following river reaches: (USFWS 2004)

1. Oostanaula River mainstem from confluence with the Etowah River upstream to the confluence of the Conasauga and Coosawattee Rivers.
2. Coosawattee River from its confluence with the Conasauga River upstream to GA Hwy. 136.
3. Conasauga River mainstem from its confluence with the Coosawattee River upstream to Murray County Rd 2.
4. Holly Creek mainstem from its confluence with the Conasauga River upstream to the confluence of Rock Creek.

3.7.5 Aquatic organism passage

Species that once migrated through this area have for the most part been extirpated or have had access to the reach blocked by the continuous chain of reservoirs further downstream in the Coosa River. Loss of connectivity between headwaters and lower reaches remains a serious concern for the ecological integrity of the system.

3.7.6 River Reach Information Needs

- Develop and implement monitoring programs to determine the effects of upstream dams on federally protected species, migratory and resident fishes, and macroinvertebrate (e.g., mussel and snail) populations.

- Determine patterns of natural flow variability to utilize as a template for water management decisions using the methods of Mathews and Richter (2007).

- Implement surveys to determine distribution and abundance of rare, and federally protected aquatic species in the watershed.

- Implement water quality monitoring to identify problems associated with dam operations, and adjust operations as necessary.

- Explore opportunities to augment/reintroduce mollusks and fishes into appropriate habitats. Target fishes include those that have been identified as a primary host species for a targeted mussel.

4.0 SUMMARY

The Corps, in the DEIS for the WCM update, at minimum should address the following issues:

1. **Low DO below reservoirs, and meeting of State water quality standards**: we recommend that DO and temperature be monitored above and below Corps dams throughout the water column during summer low-flow periods to identify problem areas and develop courses of action. We will evaluate using:
    a. Total number of days with dissolved oxygen below a daily average of 5.0 mg/L;
    b. Total number of instantaneous “measurements” less than 4.0 mg/L;

c. Monthly exceedance figures and box plots with outliers for dissolved oxygen (mg/L);
d. Monthly exceedance figures and box plots with outliers for water temperature; and
e. Average stream percent wastewater.

2. **Protection and enhancement of remaining free-flowing river habitats**: we recommend identification and mapping using a GIS, with characterization of substrates, analysis of patterns of sediment deposition and scour, and development of species inventories. We will evaluate using the percent of free-flowing stream channel identified as high quality habitat and available for aquatic species reintroductions by the AABC, as well as the percent of free-flowing stream channels impacted by dredging, sedimentation, and poor water quality conditions that do not meet State standards.

3. **Aquatic organism passage at dams, particularly in the upstream direction**: we recommend continuing to facilitate research on timing, duration and efficacy of using alternative locking procedures and attraction flows to re-establish ecological connectivity of the river system. We also recommend continued research on fish passage facilities and structures, and methods to screen aquatic organisms from effects of turbines. We will evaluate success by the number of priority species and individuals shown to successfully pass through Corps L&Ds.

4. **Temperature effects on species of concern from reservoirs and hydroelectric operations**: as with DO, we recommend monitoring to determine problem areas, and development of possible alternative storage and release protocols to minimize ecological degradation. We will evaluate using the percent of free-flowing stream channel impacted by reservoir-induced changes in water temperature.

5. **Minimum flows available for Weiss bypass channel**: with APC, develop minimal flows and patterns of natural flows released from upstream Corps dams to ensure viability of federally listed mollusk populations in the Weiss Bypass channel. We will evaluate by determining frequency, timing, and duration of inadequate water levels to support mussels and other aquatic species, and the frequency, timing and duration of backflow events from peaking flows from the Weiss Reservoir.

6. **Conservation and recovery of natural flow variability, and reduction of effects of hydropower peaking flows on species of concern**: we recommend that as many environmental flow components as possible be developed and implemented below Corps dams using the methods of Mathews and Richter (2007). We recommend research that identifies critical flow periods where peaking flows should be avoided to ensure viability of important spawning and rearing life stages. We will evaluate by comparing unaltered flow pattern estimates with USGS gage data and proposed flows in the DEIS. The potential change in frequency of low-flow events below Claiborne Dam is also of interest.

7. **Maintenance of floodplain connectivity to flood pulses**: we recommend developing patterns of natural flow that approximate pre-dam inundation frequency, timing and duration in free-flowing sections of the ACT Basin. We will evaluate by comparing estimated pre-dam flow parameters with USGS gage data to estimate changes in return intervals of bankfull and higher flood events, and changes in seasonal timing and duration of flood events. Similar to the ACF PAL, we are also interested in the frequency (% of days) of growing season (April-October) floodplain connectivity (acres) to the main channel; and frequency (% of years) of growing season (April-October) floodplain connectivity (acres) to the main channel.

8. **Potential for reintroductions, enhancements of listed species populations in the basin**: we recommend that the Corps develop a cooperative relationship with the AABC to develop adaptive management protocols and coordinate reintroductions and enhancement of habitat for federally listed species. We will evaluate using the percent of river reaches that are classified by the AABC as high quality habitat suitable for aquatic reintroductions by the AABC, and that meet State water quality guidelines.

9. **Restoration and maintenance of healthy water quality parameters for all life stages of aquatic species under a variety of flow conditions**: we recommend that the Corps develop monitoring programs that identify existing and potential water quality problems related to Corps dam and hydropower operations, and use their water management authority to limit and mitigate water quality issues that develop in Corps reservoirs and tailwaters. We will evaluate using the percent of the ACT mainstem river length that meets State water quality criteria during low-flow periods.

10. **Development of adaptive management protocols that include goals, objectives, research and monitoring to allow greater understanding of riverine ecosystem response to complex variables**: we recommend the Corp consider an approach explicitly designed to develop new information that can inform ongoing dam and reservoir operations. We will evaluate by comparing pre-and post WCM update operational guidelines and practices.

There are numerous other issues of importance including potential effects of climate change, and potential future water use scenarios in the ACT Basin. However, the above issues clearly need to be addressed in order to halt ongoing environmental damage to fish and wildlife resources.

To conclude, the Service feels strongly that the Corps should begin building an adaptive management framework for operations that explicitly outlines goals and objectives of operations, continually monitors and analyzes ecosystem response, and adjusts operations accordingly based on what we have learned. We strongly recommend research and monitoring be primary components of dam operations.

Because of Corps dam operations, many river segments do not meet State water quality standards. Corps dams do not provide adequate habitat for fish and wildlife. So that Corps projects meet their authorized purposes of water quality and fish and wildlife, we strongly recommend that the Corps work with the Service to comprehensively evaluate and modify the WCM.

The updating of the WCM should not commit the Corps to additional long-term continual degradation of this river system, recognized worldwide for its incredible biotic wealth. Instead, the Corps now has an opportunity and an obligation to use their authority and resources to protect and enhance the ecological integrity of the ACT Basin. If you have any questions about this PAL, in Alabama please contact Dan Everson at (251) 441-5837 or in Georgia, contact Will Duncan or Alice Lawrence at (706) 613-9493.

Sincerely,

William J. Pearson
Field Supervisor
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Figure 1. USGS gage data at Claiborne L&D during a low flow period showing daily pattern of high and low flows related to hydropower discharges from Millers Ferry and other dams upstream.

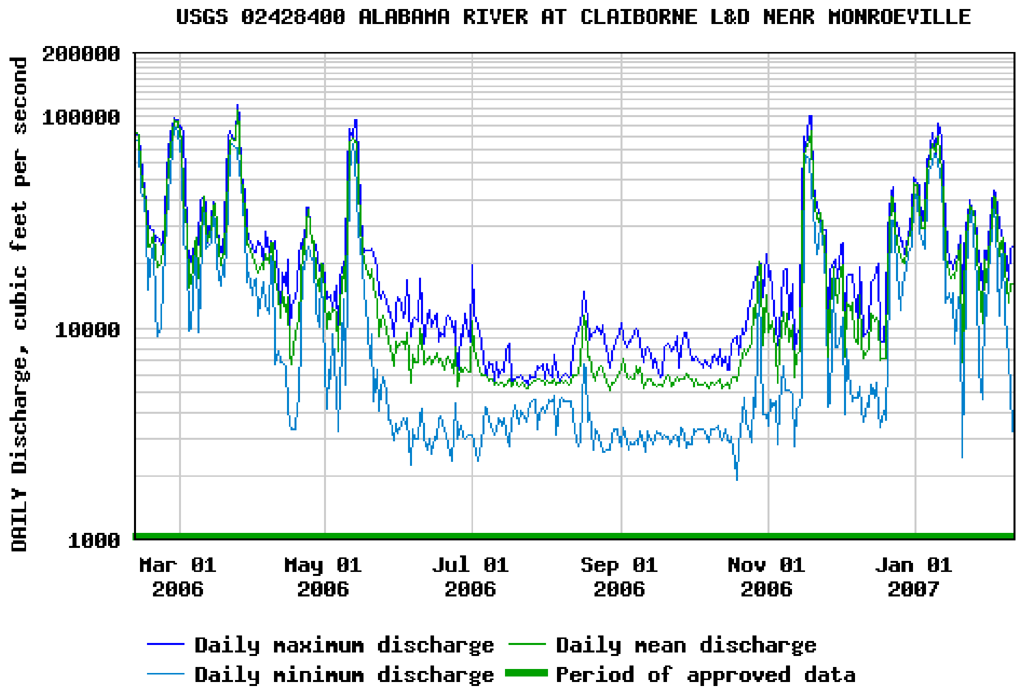


Figure 2. Continuous dissolved oxygen (DO) data collected in the Jordan Dam Tailrace, 1995-2000. Data extracted from APC's 401 Water Quality Application to ADEM, December 2005 (APC, 2005).

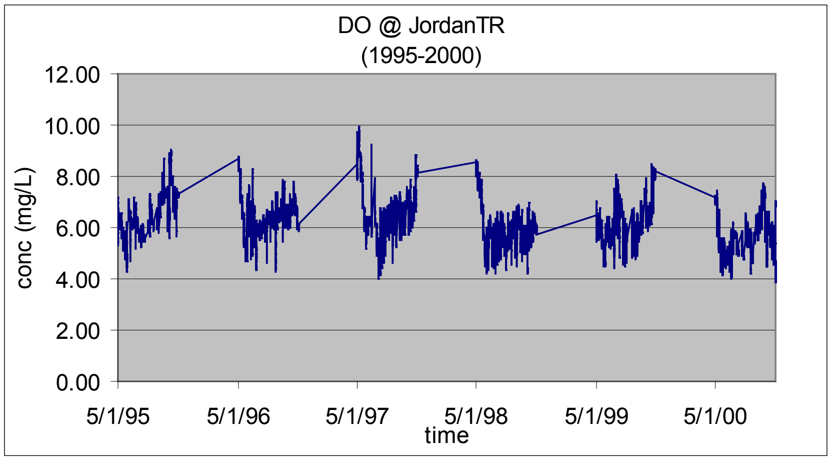


Figure 3. Fundamental (F) and Means (M) objectives developed by consensus at the stakeholders meeting on August 8, 2009 at Red Top Mountain State Park, Georgia.

F. Maximize potential for imperiled species
F. Maximize native aquatic biodiversity
F. Preservation of cool-water sport fishery (stripers, sturgeon)
M. No significant increase in summer water temperatures (late June – early Oct) above current conditions
F. Adequate flows for assimilation of waste and for municipal and industrial purposes
F. Optimizing economic value of the lakes
M. Maintaining lake levels for home owners (Allatoona only) and recreation (boat ramps), water supply
F. Maintaining reservoir and downstream water quality
M. Maintain appropriate supply and transport of bed sediment for instream habitat purposes
M. Mimic natural rates of bank erosion
M. Maintaining lake levels for reservoir and downstream water quality
M. Maintain adequate flows (e.g. magnitude, variability, timing, non-peaking window) for aquatic fauna downstream
M. Dissolved oxygen and temperature levels suitable for aquatic biota
F. Flood control
F. Hydropower generation
M. Meeting projected energy needs
F. Navigation in the lower Mobile Basin
F. Downstream recreational activities (paddling, fishing)
F. Preservation of cultural resources
F. Preservation of agricultural uses
F. Minimize impacts on fundamental objectives downstream

Figure 4. Dissolved oxygen concentrations in the Etowah River at one location upstream from Allatoona Reservoir (SR 53 near Dawsonville), and three locations below Allatoona Dam. Data obtained from EPA's STORET database. Primary data source is GA EPD.

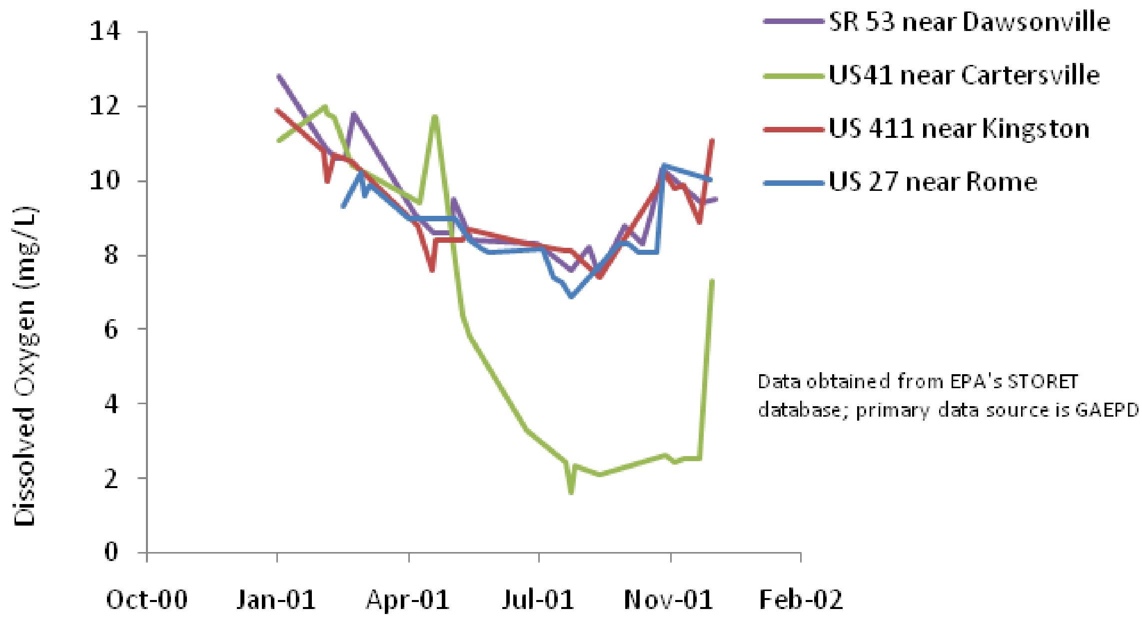


Figure 5. Temperature and dissolved oxygen data collected by the USFWS in the Etowah River approximately 400 meters below Allatoona Dam in August and September 2009.

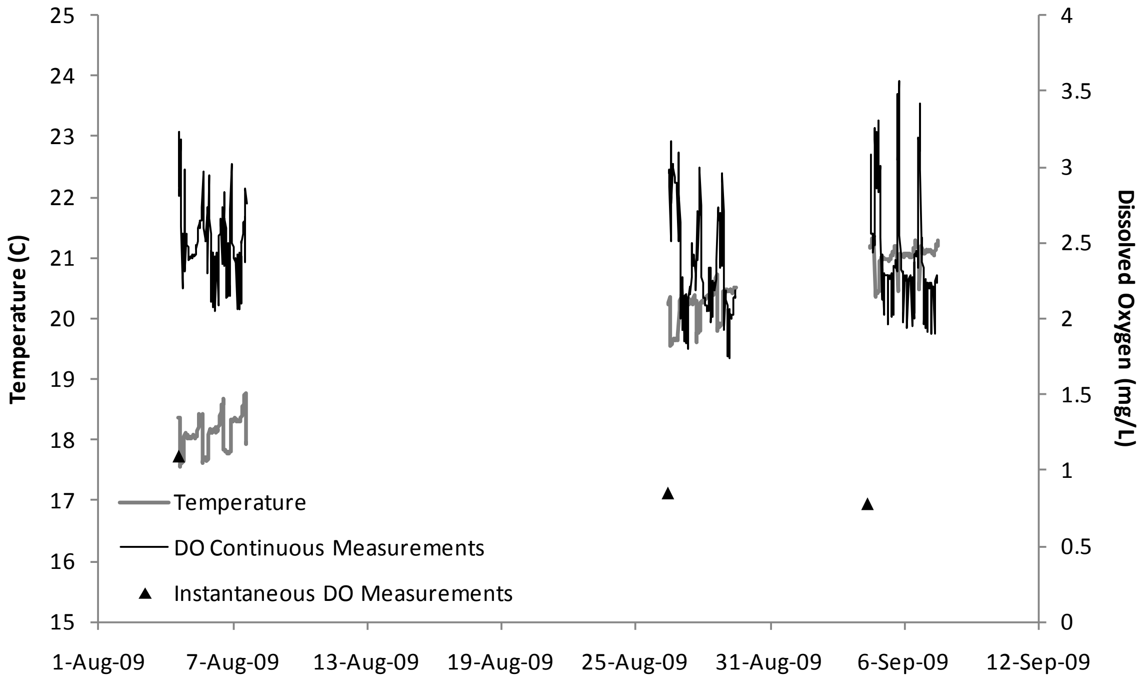
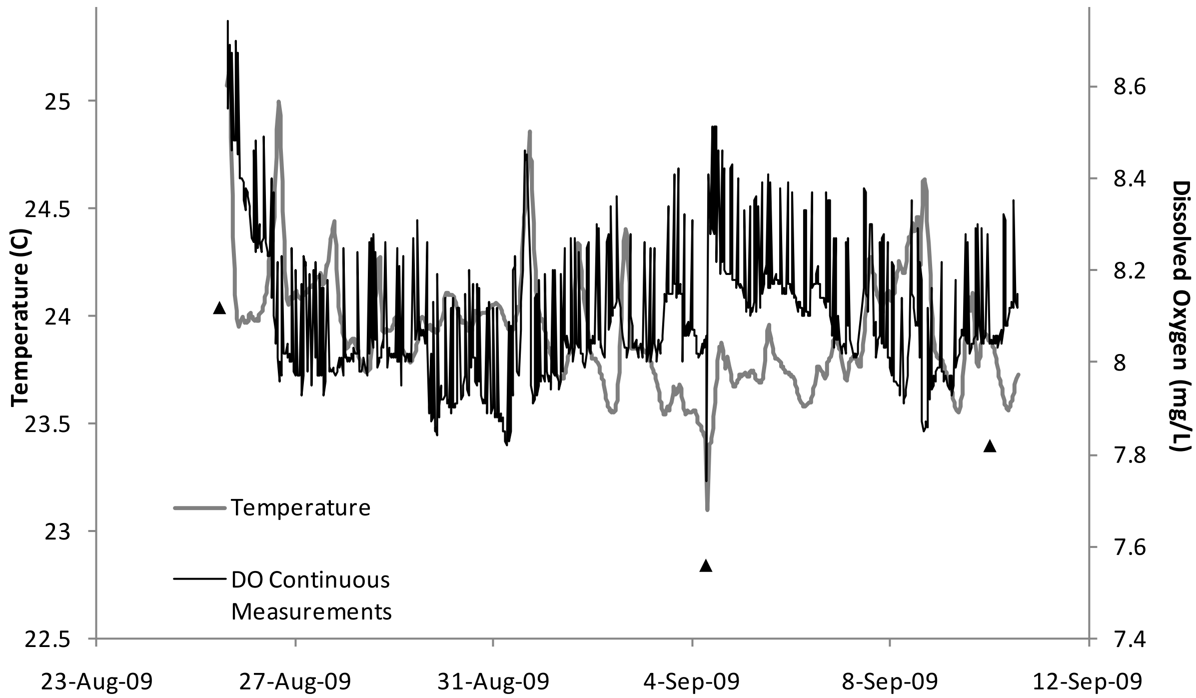


Figure 6. Temperature and dissolved oxygen data collected by the USFWS in the Coosawattee River approximately 400 meters downstream from Carter's Rereg Dam in August and September 2009.



Appendix IV: Service's August 13, 2010, Supplement to PAL to the Corps.

August 13, 2010

To: Brian Zettle, US Army Corps of Engineers, Mobile District
From: Dan Everson, US Fish and Wildlife Service, Alabama Ecological Services Field Office

RE: Supplement to Planning Aid Letter, ACT WCM update.

This responds to the U.S. Army Corps of Engineers' (Corps) request for further details regarding how the US Fish and Wildlife Service (Service) will evaluate alternatives in the Corps' draft Environmental Impact Statement (DEIS) for the proposed updating of the Water Control Manuals for Corps-operated dams in the Alabama-Coosa-Tallapoosa (ACT) Basin. It is intended to supplement the Planning Aid letter provided by the Service dated May 3, 2010.

1. ResSim Model Output Analyses

It is our understanding that ResSim will be used for the Corps' flow analyses. The flow statistics used by the Service in the past to analyze the resulting datasets were derived by using the Indicators of Hydrologic Alteration (IHA) and the Range of Variability Approach (RVA). Because flow is a master variable in fluvial systems, and because the ecology of fish and wildlife is closely linked to the flow regimes in which they evolved, the current evaluation should continue to rely on tools such as IHA, RVA, and Environmental Flow Components (EFCs) (Mathews and Richter 2007). Specific flow statistics and species-specific flow-ecology relationships (as available) that are important to natural resource sustainability should also be considered.

2. HEC-5Q Water Quality Model Output Analyses

It is our understanding that HEC-5Q will be used for the Corps' water quality analyses. We understand that this model predicts water quality parameters in six hour time intervals in river and reservoirs. Similar to the analyses contained in the Corps' 1998 draft EIS (Corps 1998), the analyzed data should be composed of summer values (May through October), separated by drought, dry, average, and wet year types for each alternative. The following information should be developed for each alternative to evaluate the effects on water quality and aquatic resources in the modeled tailrace and riverine locations:

- Total number of days with dissolved oxygen below a daily average of 5 mg/L, including separate measurements for benthic and surface sampling locations;
- Total number of instantaneous "measurements" less than 4 mg/L in benthic and surface sampling locations;
- Monthly exceedance figures and box plots with outliers for dissolved oxygen (mg/L);
- Monthly exceedance figures and box plots with outliers for water temperature; and
- Average stream percent wastewater.

For each alternative, the following information should be developed to evaluate the effects on water quality and aquatic resources for the modeled ACT reservoir locations:

- Average values of summer Chlorophyll a (*u*g/L);
- Average summer retention time (days); and
- Average summer phosphorus loading (pounds/acre/month).

3. Floodplain Connectivity Analyses

Assessing the extent of floodplain inundation will be a critical component of the alternatives analysis assessment. The magnitude, duration, timing, frequency, and rate of change of ACT floodplain inundation should be evaluated using the relationships quantified by Light et al. 1998 and Light et al. 2006.

The 2-year recurrence interval discharge to approximate the incipient point of flooding should be used to evaluate the frequency, duration, and timing of floodplain inundation. Because channel alteration (e.g., channel incision) can increase the recurrence interval at which flooding occurs and because we have little information on channel alteration, other data sources should be investigated to aid in the floodplain inundation assessment.

4. Reservoir Fisheries Analyses

Sport fisheries are important recreational and economic resources in all of the Federal ACT reservoirs. Based on interviews of fisheries managers and researchers in the basin, Ryder et al. (1995) identified the species considered critical in an evaluation of operating alternatives and the relative acceptability of reservoir levels for these species. A Delphi technique was used to obtain expert opinion for select reservoirs on reservoir fish guilds, important seasonal periods for those species, and acceptability ratings for various reservoir levels in the ACF and ACT (Ryder et al.

1995). The Service cooperated with the Corps for the 1998 draft EIS for ACT water allocation to develop a reservoir fisheries performance measure using the findings of Ryder et al. (1996). This information was used to create a reservoir fisheries performance measure by looking at the critical spawning and rearing periods, reservoir elevations during these times, and assigning a greater weight to stable or rising elevations during those time periods. The performance measures were then compared for the various alternatives.

The reservoir fisheries performance measure should be updated with additional information, literature, and/or relevant datasets that have been developed in the past ten years, and used to evaluate the relative impacts of the Corps' alternatives on reservoir sport fisheries.

5. Riverine Fisheries Analyses

Sport fisheries are also important recreational and economic resources in the riverine portions of the ACT project. Reproduction of many fishes is intricately tied to the floodplain, and alteration of flow regimes can affect reproductive success, year-class strength, growth, condition, and other life-history attributes. Data identified to date will be provided by the FFWCC and the USGS and used to evaluate the relative impacts of the Corps' alternatives on riverine sport fisheries. Specific measures to be evaluated include year-class strength versus acres of inundated floodplain spawning habitat, changes in catch rates of sportfishes in various water years, and changes in relative weight (condition) of sportfishes in various water years.

6. Federally-Protected Species Analyses

It is our understanding that the Corps will be conducting certain analyses to evaluate the effects of the various alternatives on federally-protected species. These analyses will be contained in the Corps' Biological Assessment (BA) accompanying the draft EIS. The Service will include these analyses in our FWCA evaluation, assuming they are available for us to do so.

Alabama Sturgeon

It is important that Alabama sturgeon be able to migrate upstream to spawning areas in the spring, and the eggs be allowed to develop as river currents carry them back downstream. It has been estimated that eggs must be carried downstream approximately 130 miles to develop properly, indicating that some flow past dams is necessary for the species to survive in the ACT basin. Therefore, the following parameters will be used to evaluate Corps alternatives for impacts to the Alabama sturgeon.

- Maintenance of downstream flows (% of days) past R.F. Henry, Millers Ferry and Claiborne Lock and Dams from February 1 to June 30, either over spillways or through locks;
- Efficacy and availability of upstream fish passage facilities and protocols as influenced by each alternative from February 1 to June 30th. (Research on attraction flows and use of locks for aquatic organism passage is ongoing; an analysis of the effect of alternatives on the range of lock operations potentially useful for fish passage would be helpful.)

Freshwater mussels and snails

In the ACT basin water quality criteria, particularly dissolved oxygen, as well as inundation of river bottom habitat are strong predictors of mussel and snail survival and success for all life stages. We will evaluate Corps alternatives for impacts to mussels and snails using the following criteria:

- Total number of days with dissolved oxygen below a daily average of 5 mg/L for benthic sampling locations;
- Total number of instantaneous "measurements" less than 4 mg/L in benthic locations;
- For the Alabama River, total number of days per year with daily mean discharge below 6600 cfs will be used to estimate the potential effect of alternatives on the percent of channel wetted perimeter available for mussels and snails. For the portion of the ACT in Georgia, we are still collecting survey information on the location of extant mussel and snail populations. Where mussels are found, we would be interested in developing estimates of areal percent of the active stream channel remaining in the wetted perimeter for various low flow scenarios.

Floodplain connectivity

- Frequency (% of days) of growing season (April-October) floodplain connectivity (acres) to the main channel using Light et al. (1998);
- Frequency (% of years) of growing season (April-October) floodplain connectivity (acres) to the main channel using Light et al. (1998).
- Corps' June 6, 2011, response to the Service's PAL (Appendix V); and

- Corps' November 22, 2011, response to the Service's questions regarding the Corps' June 6, 2011 document (Appendix VI).

Appendix V: Corps' June 6, 2011, response to the Service's PAL.

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, AL 36628-0001

REPLY TO
ATTENTION OF

June 6, 2011

Inland Environment Team
Planning and Environmental Division

Mr. William Pearson
Field Supervisor
U.S. Fish and Wildlife Service
1208-B Main Street
Daphne, Alabama 36526

Dear Mr. Pearson:

The enclosed document is in response to your May 3, 2010, Planning Aid Letter (PAL) and e-mailed supplement dated August 13, 2010 for the proposed Water Control Manual (WCM) Updates for the Alabama-Coosa-Tallapoosa River Basin in Georgia and Alabama. In the PAL, you identified the types of data and analyses the U.S. Fish and Wildlife Service (FWS) would need to evaluate the WCM alternatives pursuant to the Fish and Wildlife Coordination Act (FWCA - 48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq.*). This letter transmits the results of those analyses and/or our response. In addition, we are describing the proposed action and alternatives that are currently proposed to be carried forward for final evaluation in our Environmental Impact Statement (EIS).

Thank you for your assistance thus far in our effort to update these manuals. Based on our review of your letter and this response, we request that you provide us with your Draft FWCA Report at your earliest convenience. We are ready to assist with additional information or analyses. Should you have any questions, comments, or recommendations, please contact Mr. Chuck Sumner, (251) 694-3857, or email: lewis.c.sumner@sam.usace.army.mil.

Sincerely,

T. D. Robison for

Curtis M. Flakes
Chief, Planning and Environmental
Division

Enclosure

ACT Water Control Manual Update

Response to USFWS Planning Aid Letter dated May 3, 2010

U.S. Army Corps of Engineers, Mobile District

June 3, 2011

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1 Description of the Proposed Action and Alternatives

The Corps proposes to prepare an updated master Water Control Manual (WCM or Master Manual) for the Alabama, Coosa, and Tallapoosa Rivers (ACT) Basin. The component parts of the master WCM would be nine project-level WCMs, presented as appendices. Only two of the four Alabama Power Company (APC) projects in the basin with Corps WCMs will be included in this WCM update. Additional studies would be required for Logan Martin Lake and Weiss Lake to address flood damage reduction prior to updating the manuals at those facilities. The Corps and APC will develop and execute separate Memoranda of Understanding that address only navigation and drought operations for Logan Martin and Weiss Lakes. Operations at those projects will be incorporated in the Master Manual Update.

WCMs contain drought plans and action zones to assist the Corps in knowing when to reduce or increase reservoir releases and conserve storage in the Corps reservoirs. The individual manuals typically outline the regulation schedules for each project, including operating criteria, guidelines, and guide curves, and specifications for storage and releases from the reservoirs. The WCMs also outline the coordination protocol and data collection, management, and dissemination associated with routine and specific water management activities (such as flood-control operations or drought contingency operations). Operational flexibility and discretion are necessary to balance the water management needs for the numerous (and often competing) authorized project purposes at each individual project. In addition, there is a need to balance basin-wide water resource needs. Project operations also must be able to adapt to seasonal and yearly variations in flow and climatic conditions.

The following sections present the No Action Alternative and the Proposed Action Alternative.

1.1 No Action Alternative

The Council on Environmental Quality (CEQ) regulations require analysis of the *No Action Alternative* 40 CFR.1502.14. Inclusion of the No Action Alternative in this Environmental Impact Statement (EIS) complies with CEQ regulations and serves as a benchmark against which federal actions can be evaluated. On the basis of the nature of the proposed action, the No Action Alternative represents no change from the current management direction or level of management intensity. This alternative would represent continuation of the current water control operations at each of the federal projects in the ACT Basin. The Corps' operations have changed incrementally since completion of the 1951 ACT Master Manual. Except in very general terms, it is not possible to describe a single set of reservoir operations that apply to the entire period since completion of the 1951 ACT Master Manual.

Current operations under the No Action Alternative include the following.

- Operations consistent with the Master Manual of 1951 and project-specific WCMs. For the Corps, those manuals and their dates are Lake Allatoona (1993), Carters Lake and Carters Reregulation Dam (1975), Robert F. Henry Lock and Dam (1999), Millers Ferry Lock and Dam (1990), and Claiborne Lake (1993). For APC projects, the applicable manuals and their dates are Weiss Lake (1965), H. Neely Henry Lake, (1979), Logan Martin Lake (1968), and R.L. Harris Lake (2003).
- The Corps recognizes that APC operates 11 dams (10 reservoirs) under six FERC licenses, each one having specific operational requirements: (1) the Coosa River Project (FERC Project No. 2146), which includes the Weiss Lake, H. Neely Henry Lake, Logan Martin Lake, Lay Lake, and Bouldin Dam developments; (2) the Mitchell Lake Project (FERC Project No. 82); (3) the Jordan Dam and Lake Project (FERC Project No. 618); (4) Lake Martin Project (FERC Project No. 349)

(5) Yates Lake-Thurlow Lake (FERC Project No. 2407); and (6) R.L. Harris Lake Project, referred to as Crooked Creek Hydroelectric Project (FERC Project No. 2628). The FERC license for the Coosa River Project was issued in 1957. The FERC license for the Mitchell Lake Project was issued in 1975, and the FERC license for the Jordan Dam and Lake Project was issued in 1980. The licenses for those three projects expired on August 31, 2007. On July 28, 2005, APC applied for one new operating license that would combine all those projects as Project No. 2146. The FERC licenses could be amended in light of APC's request to modify winter pool levels at the Weiss Lake and Logan Martin Lake projects; however, the No Action Alternative does not include such modifications.

- The H. Neely Henry Lake, which operates under a revised guide curve (per a temporary variance initially granted by FERC in 2001 and effective pending relicensing of Project No. 2146), would return to operation under its original guide curve under the current FERC license.
- Specified flow requirements apply to several projects. Lake Allatoona and Carters Lake must provide for a minimum flow of 240 cubic feet per second (cfs). The Corps has a flow target of 6,600 cfs from Claiborne Lake where the actual ability to meet the target depends on releases provided by APC and intervening flows from the Cahaba River and other tributaries. In accordance with a 1972 Letter Agreement between the Corps and APC, APC ensures a combined 4,640-cfs release calculated at Montgomery, Alabama, on the basis of APC releases from JBT, for navigation during normal conditions.
- The Corps provides 6,371 acre-feet (ac-ft) of storage in Lake Allatoona for water supply for the City of Cartersville, Georgia and 13,140 ac-ft for the CCMWA. Total storage allocated to water supply is 19,511 ac-ft.
- The Corps provides 818 ac-ft in Carters Lake for water supply for Chatsworth, Georgia.
- The Corps would continue to manage fish spawning operations at Lake Allatoona, as outlined in District Regulation (DR) 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft Standing Operating Procedure (SOP) *Reservoir Regulation and Coordination for Fish Management Purposes* (Mobile District SOP 1130-2-9, draft, February 2005). During the largemouth bass spawning period, from March 15 to May 15, the Corps seeks to maintain generally stable or rising reservoir levels at Lake Allatoona. Generally stable or rising levels are defined as not lowering the reservoir levels by more than 6 inches, with the base elevation generally adjusted upward as levels rise from increased inflows or refilling of the reservoir.

The following subsections describe key operational elements that apply to evaluating the No Action Alternative.

1.1.1 General System Operations

The Corps operates its reservoirs in the ACT Basin to provide for the authorized purposes of flood damage reduction, navigation, hydropower, recreation, water supply, water quality, and fish/wildlife. The Corps considers each of those authorized project purposes when making operational decisions, and those decisions affect how water is stored and released from the projects. In general, to provide the authorized project purposes, flow must be stored during wetter times of each year and released from storage during drier periods of each year. Traditionally, that means that water is stored in the lakes during the spring and released for authorized project purposes in the summer and fall months. In contrast, some authorized project purposes such as lakeside recreation, water supply, and lake fish spawning are achieved by retaining water in the lakes, either throughout the year or during specified periods of each year. The flood damage reduction purposes at certain reservoirs requires drawing down reservoirs in the fall through winter months to store possible flood waters and refilling pools in the spring months to be used for multiple project purposes throughout the remainder of the year.

Certain APC projects (Weiss Lake, H. Neely Henry Lake, Logan Martin Lake, and R.L. Harris Lake) are also required to operate for flood damage reduction and navigation. MOUs for each of those APC projects concerning the operation of non-Corps projects have been adopted by the APC and the Corps. WCMs developed for the APC projects are used to guide operations for flood damage reduction and navigation. The MOUs clarify the operational responsibilities of the APC and Corps. Copies of the project MOUs are included in the current WCMs.

The conflicting water demands require that the system be operated in a balanced manner to meet all authorized purposes, while continuously monitoring the total system water availability to ensure that minimum project purposes can be achieved during critical drought periods. The balanced water management strategy for the Corps reservoirs in the ACT Basin does not prioritize any project purpose but seeks to balance all project authorized purposes. The intent is to maintain a balanced use of conservation storage among all the reservoirs in the system, rather than to maintain the pools at or above certain predetermined elevations.

The last major evaluations of the environmental consequences of the individual Corps reservoirs in the ACT Basin were included in project operations EISs completed in the 1970s. Since then, incremental changes in project operations have occurred because of changes in hydropower contracts and operating schedules, changes in navigation flow requirements, and other changes related to water quality, environment, or other uses of the system. Historical records maintained by the Corps illustrate the observed impacts of changes in operations or seasonal variations over time on pool levels and flow releases from Corps reservoirs. Comparing historic operations conditions with existing operations conditions provides a complete picture of the impacts related to changes in water demand and water resources management in the basin as well as a perspective on existing flows to plan for future changes.

1.1.2 Guide Curves and Action Zones

Guide curves define the target amount of water to be held in a reservoir at specified times of the year. Under the No Action Alternative, guide curves would remain as currently defined. Action zones are used to manage the lakes at the highest level possible for recreation and other purposes, meet minimum hydropower needs at each project, and determine the amount of storage available for downstream purposes such as flood damage reduction, hydropower, navigation, water supply, water quality, and recreation. In accordance with Engineer Regulation (ER) 1110-2- 241 *Use of Storage Allocated for Flood Control and Navigation at Non-Corps Projects,* the Corps is responsible for the review and approval of the flood damage reduction plans and Reservoir Regulation Manuals for the APC storage projects Weiss, H. Neely Henry, and Logan Martin Lakes on the Coosa River and R.L. Harris Lake on the Tallapoosa River. The purpose of the reservoir manuals is to define a plan of operation at the reservoirs during the occurrence or threatened occurrence of damaging flood conditions at downstream stations, when such conditions can be alleviated or partially alleviated by the operation of the dam and power plant in the interest of flood damage reduction. In addition, in the 1960s the Corps and APC developed MOUs to clarify the responsibilities of the two entities with regard to operation of the projects for flood damage reduction and other purposes and to provide for the orderly exchange of hydrologic data.

Guide curves have been defined for two of the Corps projects (Carters Lake and Lake Allatoona; and the four APC projects (Weiss, H. Neely Henry, Logan Martin, and R.L. Harris Lakes); no guide curves exist for Claiborne Lake, William “Bill” Dannelly Lake (Millers Ferry Lock and Dam), or R.E. “Bob” Woodruff Lake (Robert F. Henry Lock and Dam). Additionally, action zones have been defined at Lake Allatoona. The zones are used to manage the lake at the highest level possible while balancing the needs of all the authorized purposes. Action Zone 1 is the highest in each lake and defines a reservoir condition where all authorized project purposes should be met. The lake level at the top of Zone 1 is the normal

pool level or top of conservation pool (or the guide curve). As lake levels decline, Zone 2 defines increasingly critical system water shortages, and prescribes reductions in reservoir releases as pool levels drop as a result of drier than normal or drought conditions. The action zones also provide guidance on meeting minimum hydropower needs at each project as well as determining 1 the minimum releases for downstream purposes such as water supply and water quality. Under the No Action Alternative, the current guide curve and action zones (at Lake Allatoona) would continue to serve as the basis for Corps management of the reservoir. Figures 1.1-1 through 1.1-6 show the annual guide curves and action zones for pertinent Corps and APC projects. Each of the figures for the APC projects (Figures 1.1-3 through 1.1-6) depict a *drought curve*. Those drought curves have been established by APC for their drought operations under their Alabama Power Company Drought Operations Plan (APCDOP). Although used by APC for general planning, their drought curves have not been adopted by the Corps as part of the No Action alternative.

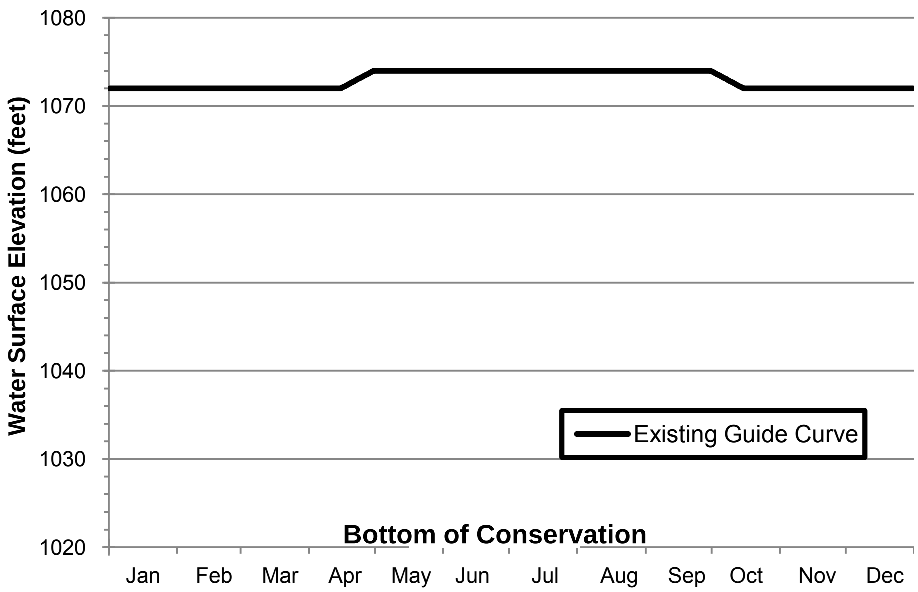


Figure 1.1-1. Carters Lake guide curve.

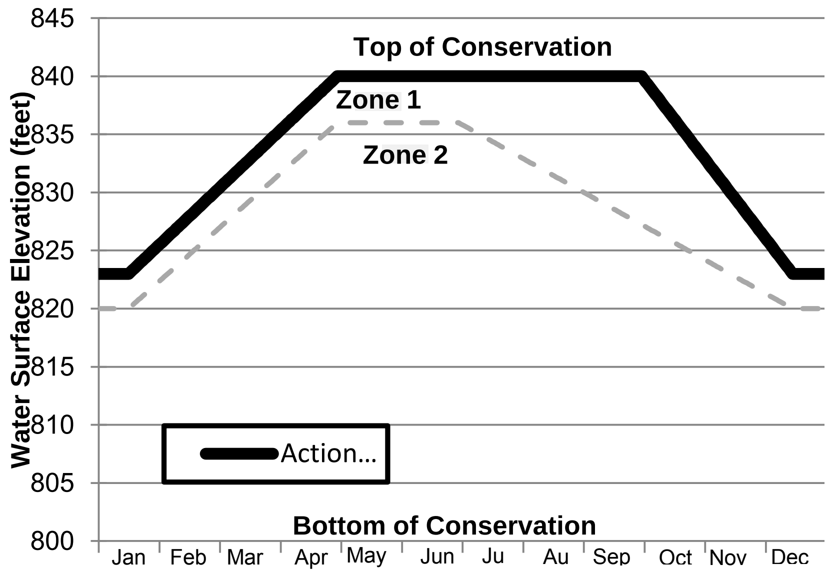


Figure 1.1-2 Lake Allatoona guide curves and action zones.

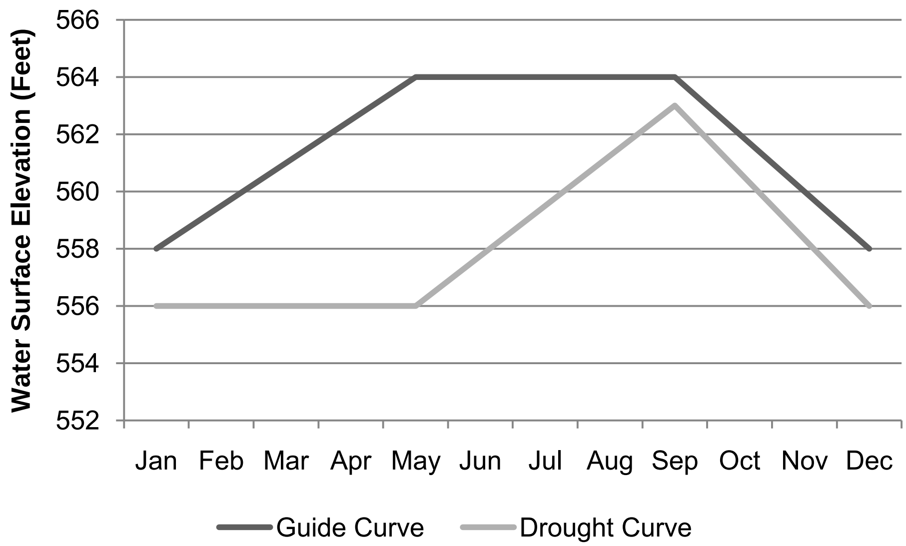


Figure 1.1-3 Weiss Lake guide curves.

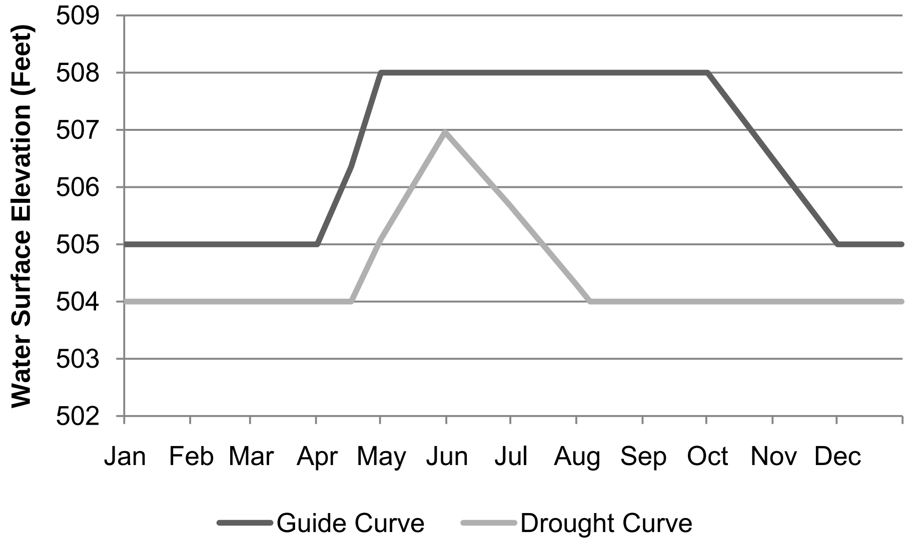


Figure 1.1-4 H. Neely Henry Lake guide curves.

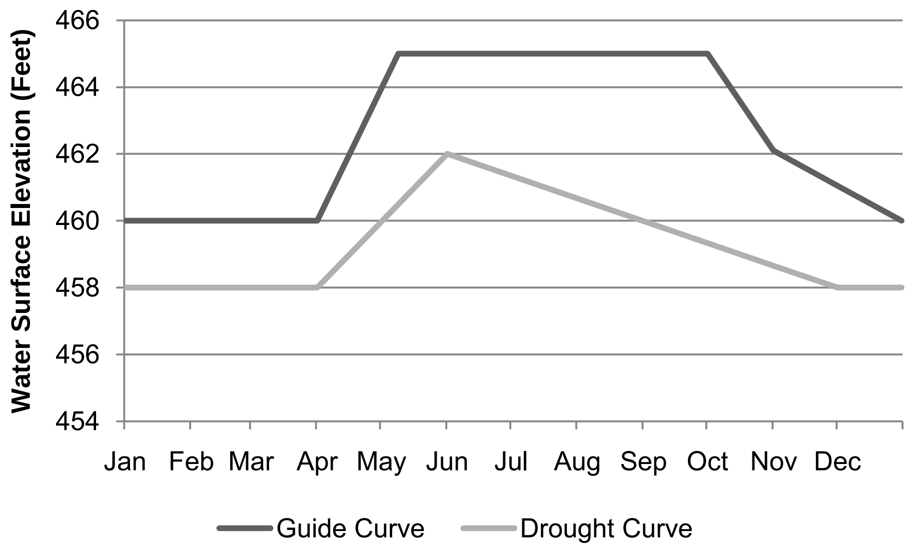


Figure 1.1-5 Logan Martin Lake guide curves.

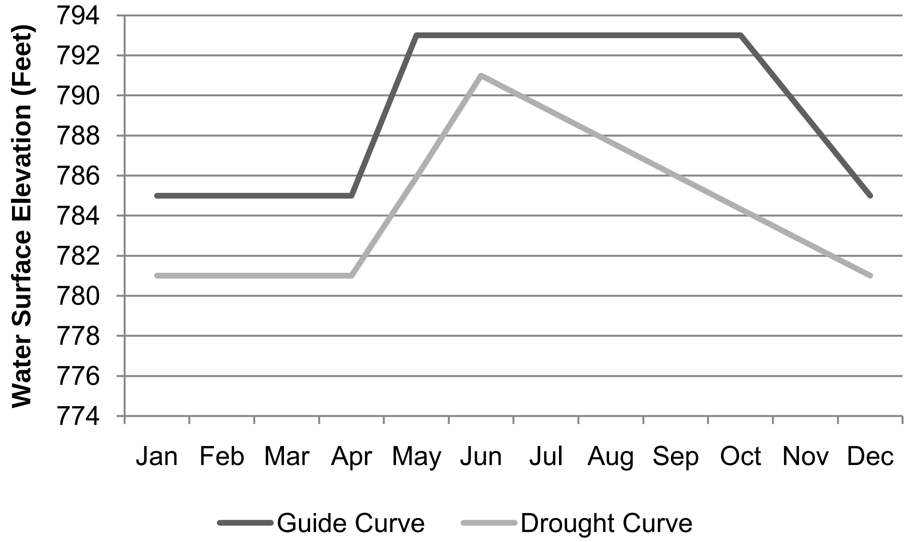


Figure 1.1-6 R.L. Harris Lake guide curves.

1.2 Proposed Action Alternative

Under the Proposed Action Alternative, the Corps would continue to operate federal projects in the ACT Basin in a balanced manner to achieve all authorized project purposes. Operations under the Proposed Action Alternative include the following.

- Implement a revised APCDOP with enhancements recommended by the USFWS. The revised APCDOP with USFWS enhancement is depicted in Table 1.2-1.
- Provide for seasonal navigation releases, coupled with seasonal maintenance dredging, to support commercial navigation in the Alabama River for a 9.0-ft or 7.5-ft channel depth as long as sufficient basin inflow above the APC projects is available. When sufficient flows cannot be provided to continue to support a minimum 7.5-ft navigation channel, navigation would be suspended and flows at Montgomery would be reduced to 4,640 cfs (7Q10) or lower if one or more of the drought operations triggers (low basin inflows, low composite conservation storage, or low state line flows) would be exceeded. APC projects on the Coosa and Tallapoosa Rivers would continue to operate under their current FERC licenses with specific operational requirements. FERC relicensing actions are underway for the Coosa River projects, and APC has requested to modify winter pool levels at the Weiss Lake and Logan Martin Lake projects. The Proposed Action Alternative does not include those proposed modifications by APC.
- The APC project, H. Neely Henry Lake (Coosa River), which operates with a revised guide curve under a FERC license variance (with Corps concurrence) would continue to operate under its revised guide curve (Figure 1.2-1).
- Specified flow requirements at Lake Allatoona would continue to provide for a 240-cfs minimum flow.
- The existing guide curve at Lake Allatoona would be revised to implement a phased fall drawdown period from early September through December (Figure 1.2-2). Refined operations at Lake Allatoona would include use of four action zones shaped to mimic the seasonal demands for hydropower (Figure 1.2.2). Modifications to the hydropower schedule would be put in place to provide greater operational flexibility to meet power demands while conserving storage. Specifically, under the Proposed Action Alternative, hydropower generation would be reduced during annual drawdown in the fall (September through October).
- The current minimum flow requirement would remain at 240 cfs from Carters Reregulation Dam. Refined operations at Carters Lake would include the use of two action zones to manage downstream releases. The top of the new Zone 2 begins at elevation 1,066 ft in January, increasing to 1,070.5 ft in May, dropping to 1,070 ft by October, and returning to elevation 1,066 ft through December (Figure 1.2-3). When Carters Lake is in Zone 1, minimum flow releases at Carters Reregulation Dam would be equal to the seasonal minimum flow. Those minimum flow releases are based on the mean monthly flow upstream of Carters Lake. If Carters Lake elevation drops into Zone 2, minimum flow releases from the Carters Reregulation Dam would be 240 cfs.
- The Corps provides 6,371 ac-ft of storage in Lake Allatoona for water supply for the City of Cartersville, Georgia and 13,140 ac-ft for the CCMWA. Total storage allocated to water supply is 19,511 ac-ft.
- The Corps provides 818 ac-ft in Carters Lake for water supply for the City of Chatsworth, Georgia.
- The Corps would continue to manage fish spawning operations at Lake Allatoona, as outlined in DR 1130-2-16, *Project Operations, Lake Regulation and Coordination for Fish Management Purposes* and draft SOP *Reservoir Regulation and Coordination for Fish Management Purposes* (Mobile District SOP 1130-2-9, draft, February 2005). During the largemouth bass spawning period, from March 15 to May 15, the Corps seeks to maintain generally stable or rising reservoir levels at Lake Allatoona. Generally stable or rising levels are defined as not lowering the

reservoir levels by more than 6 inches, with the base elevation generally adjusted upward as levels rise from increased inflows or refilling of the reservoir.

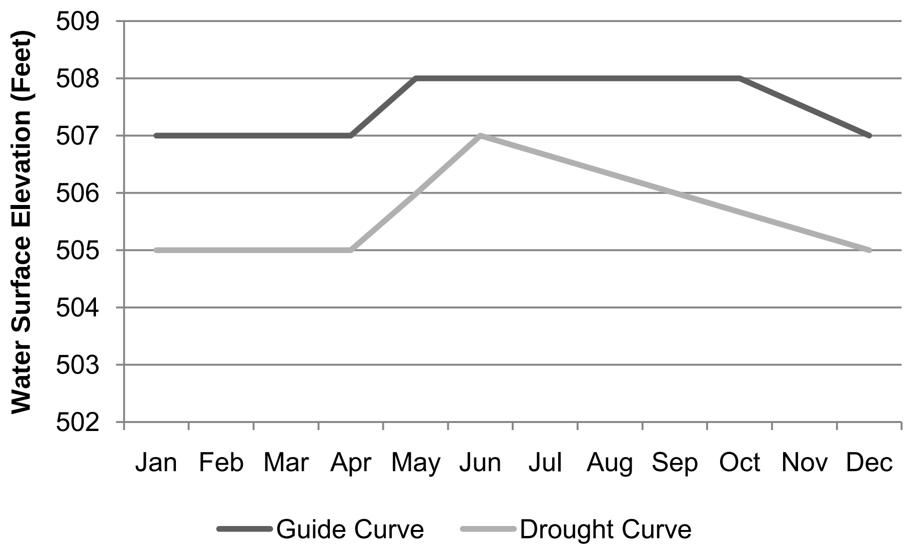


Figure 1.2-1 H. Neely Henry Lake revised guide curve.

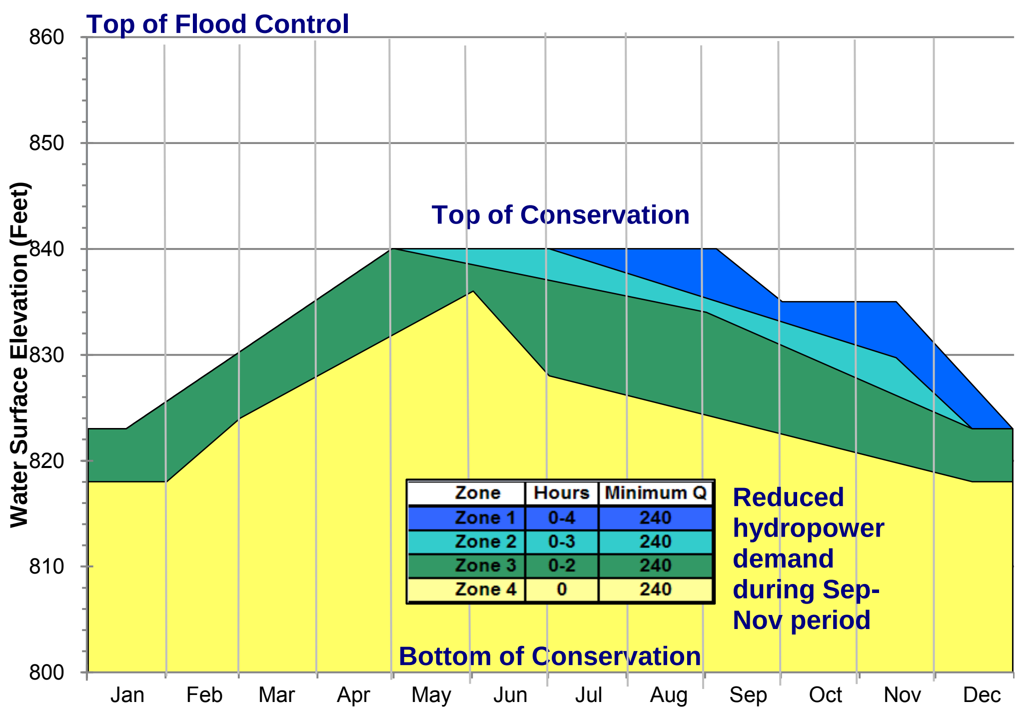


Figure 1.2-2 Operations under the Proposed Action Alternative at Lake Allatoona.

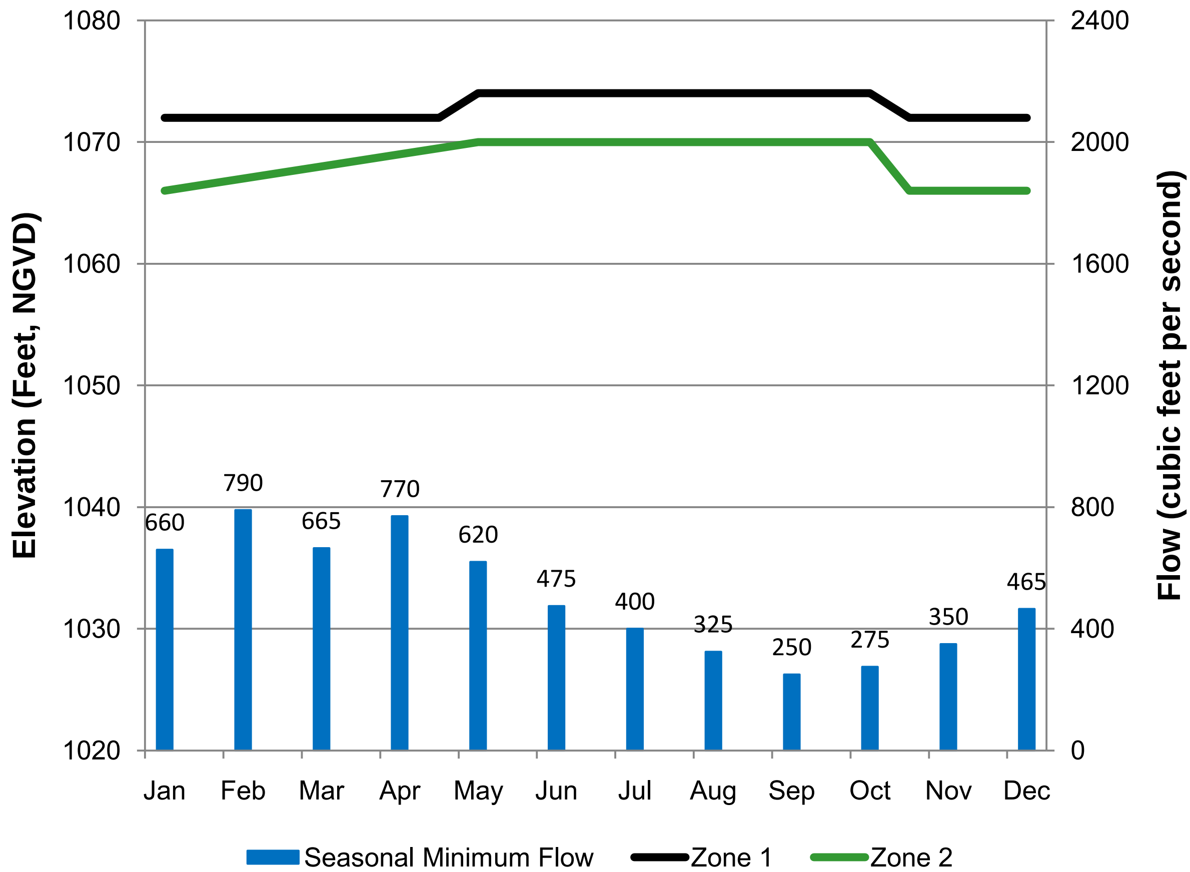


Figure 1-2.3 Carters Lake modified action zones.

1.2.1 Drought Management Plan

Both Alabama and Georgia have general statewide drought plans. Management measures to establish a drought management plan for the ACT basin were considered to meet the objectives to develop a drought management plan as required by Corps regulations and to incorporate changes made at APC projects into operations of the ACT Basin in the updated WCM. APC manages about 78 percent of the water stored in the ACT Basin.

During the drought of 2006–2008, the Corps did not have a drought plan applicable across the entire ACT Basin. The Corps generally responded to drought conditions by reducing hydropower generation at Lake Allatoona and Carters Lake as the reservoir pools dropped throughout the summer and fall. During previous droughts, the Corps coordinated frequently with APC, the states, and affected stakeholders—and the drought of 2006–2008 was no exception. During the drought, the Corps conducted biweekly water management conference calls with stakeholders from across the basin to gather information to better inform water management decision making. The Corps also supported, to a limited extent, an APC request to reduce the 4,640-cfs flow target at Montgomery by 20 percent (to 3,900 cfs).

In response to the 2006–2008 drought, APC worked closely with Alabama to develop the APC draft *Alabama Drought Operations Plan* (APCDOP) that specified operations at APC projects on the Coosa and Tallapoosa Rivers. That plan included the use composite system storage, state line flows, and basin inflow as triggers to drive drought response actions. Similarly, in response to the 2006–2008 drought, the Corps recognized that a basin-wide drought plan must incorporate variable hydropower generation requirements from its headwater projects in Georgia (Lake Allatoona and Carters Lake), a reduction in the level of navigation service provided on the Alabama River as storage across the basin declines, and that environmental flow requirements must still be met to the maximum extent practicable.

Building on the APCDOP and APC experience applying it to project operations, the Corps sought, in cooperation with APC, to develop a basin-wide drought plan composed of three components—headwater operations at Lake Allatoona and Carters Lake in Georgia; operations at APC projects on the Coosa and Tallapoosa Rivers; and downstream operations at Corps projects below Montgomery. The concept is graphically depicted in Figure 1.2-4 below.

1.2.1.1 Headwater Operations for Drought at Lake Allatoona and Carters Lake

Drought operations at Carters Lake and Lake Allatoona would consist of progressively reduced hydropower generation as pool levels decline. For instance, when Lake Allatoona is operating in normal conditions (Zone 1 operations), hydropower generation might be 0 to 4 hours per day. However, as the pool drops to lower action zones during drought conditions, generation could be reduced to 0 to 2 hours per day. As Carters Lake pool level might drop into a newly created Zone 2, minimum target flows would be reduced from seasonal varying values to 240 cfs.

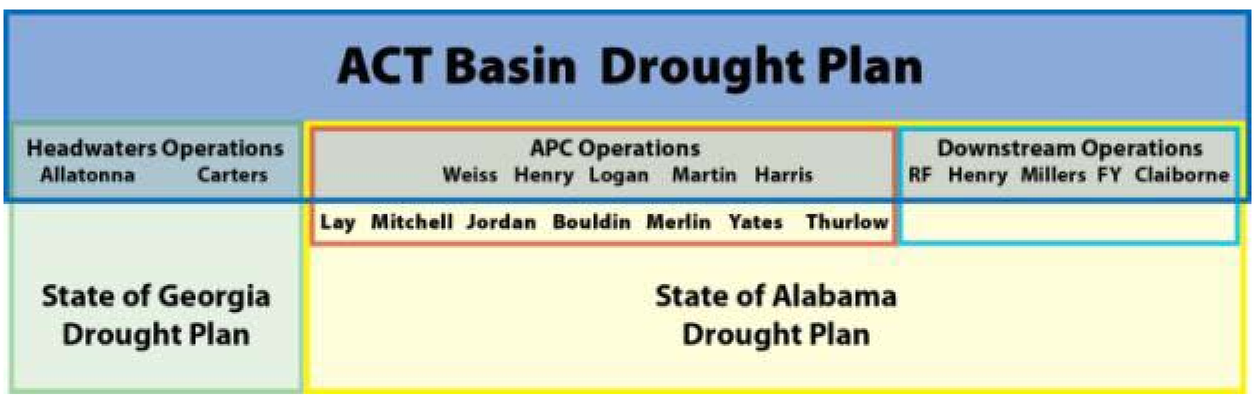


Figure 1.2-4 Schematic of the ACT Basin drought plan.

1.2.1.2 Operations at APC Projects on the Coosa, Tallapoosa, and Alabama Rivers

Under current operations, APC provides a minimum flow at Montgomery, Alabama, of 4,640 cfs (7-day average) based on the combined flows from the Tallapoosa and Coosa Rivers. The minimum flow target of 4,640 cfs was originally derived from the7Q10 flow at Claiborne Lake of 6,600 cfs. Those flows were established with the understanding that if APC provided 4,640 cfs, the Corps and intervening basin inflow would be able to provide the remaining water to meet 6,600 cfs at Claiborne Lake. As dry conditions continued in 2007, water managers understood that, if the basin inflows from rainfall were insufficient, the minimum flow target would not likely be achievable. With that understanding, the Corps considered updating drought operations in coordination with APC.

The APCDOP, described in the following paragraphs, served as the initial template for developing proposed drought operations for the ACT Basin. APCDOP operational guidelines for the Coosa, Tallapoosa, and Alabama Rivers have been defined in a matrix, on the basis of a Drought Intensity Level (DIL). The DIL is a drought indicator, ranging from zero to three. The DIL is determined on the basis of three basin drought criteria (or triggers). A DIL=0 indicates normal operations, while a DIL from 1 to 3 indicates some level of drought conditions. The DIL increases as more of the drought indicator thresholds (or triggers) are exceeded. The APCDOP matrix defines monthly minimum flow requirements for the Coosa, Tallapoosa, and Alabama Rivers as function of DIL and time of year. Such flow requirements are modeled as daily averages.

The combined occurrences of the drought triggers determine the DIL. Three intensity levels for drought operations are applicable to APC projects.

- DIL0—(normal operation) no triggers exceeded
- DIL1—(moderate drought) 1 of 3 triggers exceeded
- DIL2—(severe drought) 2 of 3 triggers exceeded
- DIL3—(exceptional drought) all 3 triggers exceeded

The indicators used in the APCDOP to determine drought intensity include the following:

1. Low basin inflow
2. Low composite conservation storage
3. Low state line flow

Each of those indicators is described in detail in Sections 1.2.2.3 through 1.2.2.5, below.

The DIL would be computed on the 1st and 15th of each month. Once a drought operation is triggered, the DIL can only recover from drought condition at a rate of one level per period. For example, as the system begins to recover from an exceptional drought with DIL=3, the DIL must be stepped incrementally back to zero to resume normal operations. In that case, even if the system triggers return to normal quickly, it will still take at least a month before normal operations can resume—conditions can improve only to DIL=2 for the next 15 days, then DIL=1 for the next 15 days, before finally returning to DIL=0.

For DIL=0, the matrix (Table 1.2-1) shows a Coosa River flow between 2,000 cfs and 4,000 cfs with peaking periods up to 8,000 cfs occurring. The required flow on the Tallapoosa River is a constant 1,200 cfs throughout the year. The navigation flows on the Alabama River are applied to the APC projects. The required navigation depth on the Alabama River is subject to the basin inflow.

For DIL=1, the Coosa River flow varies from 2,000 cfs to 4,000 cfs. On the Tallapoosa River, part of the year, the required flow is the greater of one-half of the inflow into Yates Lake and twice the Heflin USGS gage. For the remainder of the year, the required flow is one-half of Yates Lake inflow. The required flows on the Alabama River are reduced from the amounts when DIL=0.

For DIL=2, the Coosa River flow varies from 1,800 cfs to 2,500 cfs. On the Tallapoosa River, the minimum is 350 cfs for part of the year and one-half of Yates Lake inflow for the remainder of the year. The requirement on the Alabama River is between 3,700 cfs and 4,200 cfs.

For DIL=3, the flows on the Coosa River range from 1,600 cfs to 2,000 cfs. A constant flow of 350 cfs on the Tallapoosa River is required. It is assumed an additional 50 cfs will occur between Thurlow Lake and

the City of Montgomery water supply intake. Required flows on the Alabama River range from 2,000 cfs to 4,200 cfs.

In addition to the APCDOP, the DIL affects the navigation operations. When the DIL is equal to zero, APC projects are operated to meet navigation flow target or the 7Q10 flow as defined in the navigation measure section. Once DIL is greater than zero, drought operations will occur, and navigation operations are suspended.

Table 1.2-1
APCDOP with USFWS enhancements

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Drought Level Response[a]	DIL 0 - Normal Operations											
	DIL 1: Low Basin Inflows or Low Composite or Low State Line Flow											
	DIL 2: DIL 1 criteria + (Low Basin Inflows or Low Composite or Low State Line Flow)											
	DIL 3: Low Basin Inflows + Low Composite + Low State Line Flow											
Coosa River Flow[b]	Normal Operation: 2,000 cfs			4,000 (8,000)		4,000 – 2,000	Normal Operation: 2,000 cfs					
	Jordan 2,000 +/-cfs			4,000 +/- cfs		6/15 Linear Ramp down	Jordan 2,000 +/-cfs			Jordan 2,000 +/-cfs		
	Jordan 1,800 +/-cfs			2,500 +/- cfs		6/15 Linear Ramp down	Jordan 2,000 +/-cfs			Jordan 1,800 +/-cfs		
	Jordan 1,600 +/-cfs			Jordan 1,800 +/-cfs			Jordan 2,000 +/-cfs			Jordan 1,800 +/-cfs		Jordan 1,600 +/-cfs
Tallapoosa River Flow[c]	Normal Operations: 1200 cfs											
	Greater of: 1/2 Yates Inflow or 2 x Heflin Gage(Thurlow Lake releases > 350 cfs)				1/2 Yates Inflow					1/2 Yates Inflow		
	Thurlow Lake 350 cfs				1/2 Yates Inflow					Thurlow Lake 350 cfs		
	Maintain 400 cfs at Montgomery WTP (Thurlow Lake release 350 cfs)						Thurlow Lake 350 cfs			Maintain 400 cfs at Montgomery WTP (Thurlow Lake release 350 cfs)		
Alabama River Flow[d]	Normal Operation: Navigation flow (4,640 cfs)											
	4,200 cfs (10% 7Q10 Cut) - Montgomery				Full Navigation - Montgomery (4,640 cfs)					Reduce: Full – 4,200 cfs		
	3,900 cfs (20% 7Q10 Cut) - Montgomery				4,200 cfs (10% 7Q10 Cut) – Montgomery					Reduce: 4,200 cfs-> 3,900 cfs Montgomery		
	2,000 cfs Montgomery				3,900 cfs Montgomery		4,200 cfs (10% 7Q10 Cut) - Montgomery			Reduce: 4,200 cfs -> 2,000 cfs Montgomery (ramp thru October)		
Guide Curve Elevation	Normal Operations: Elevations follow Guide Curves as prescribed in License (Measured in Feet)											
	Corps Variances: As Needed; FERC Variance for Lake Martin											
	Corps Variances: As Needed; FERC Variance for Lake Martin											
	Corps Variances: As Needed; FERC Variance for Lake Martin											

a. Note these are based flows that will be exceeded when possible.
b .Jordan flows are based on a continuous +/- 5% of target flow.
c. Thurlow Lake flows are based on continuous +/- 5% of target flow: flows are reset on noon each Tuesday based on the prior day's daily average at

Heflin or Yates. d. Alabama River flows are 7-Day Average Flow.

1.2.1.3 Low Basin Inflow Trigger

The total basin inflow needed for navigation is the sum of the total filling volume plus 7Q10 flow (4,640 cfs). Table 1.2-2 lists the monthly low basin inflow criteria. All numbers are in cfs-days. The basin inflow value is computed daily and checked on the 1st and 15th of the month. If computed basin inflow is less than the value required, the low basin inflow indicator is triggered.

The basin inflow is total flow above the APC projects excluding Lake Allatoona and Carters Lake. It is the sum of local flows, minus lake evaporation and diversions. Figure 1.2-5 illustrates the local inflows to the Coosa and Tallapoosa basin. The basin inflow computation differs from the navigation basin inflow, because it does not include releases from Lake Allatoona and Carters Lake. The intent is to capture the hydrologic condition across APC projects in the Coosa and Tallapoosa basins.

Table 1.2-2
Low basin inflow guide (in cfs-days)

Month	Coosa Filling Volume	Tallapoosa Filling Volume	Total Filling Volume	7Q10 flow	Required Basin Inflow
Jan	629	0	629	4,640	5,269
Feb	647	1,968	2,615	4,640	7,255
Mar	603	2,900	3,503	4,640	8,143
Apr	1,683	2,585	4,268	4,640	8,908
May	242	0	242	4,640	4,882
Jun			0	4,640	4,640
Jul			0	4,640	4,640
Aug			0	4,640	4,640
Sep	–602	–1,304	–1,906	4,640	2,734
Oct	–1,331	–2,073	–3,404	4,640	1,236
Nov	–888	–2,659	–3,547	4,640	1,093
Dec	–810	–1,053	–1,863	4,640	2,777

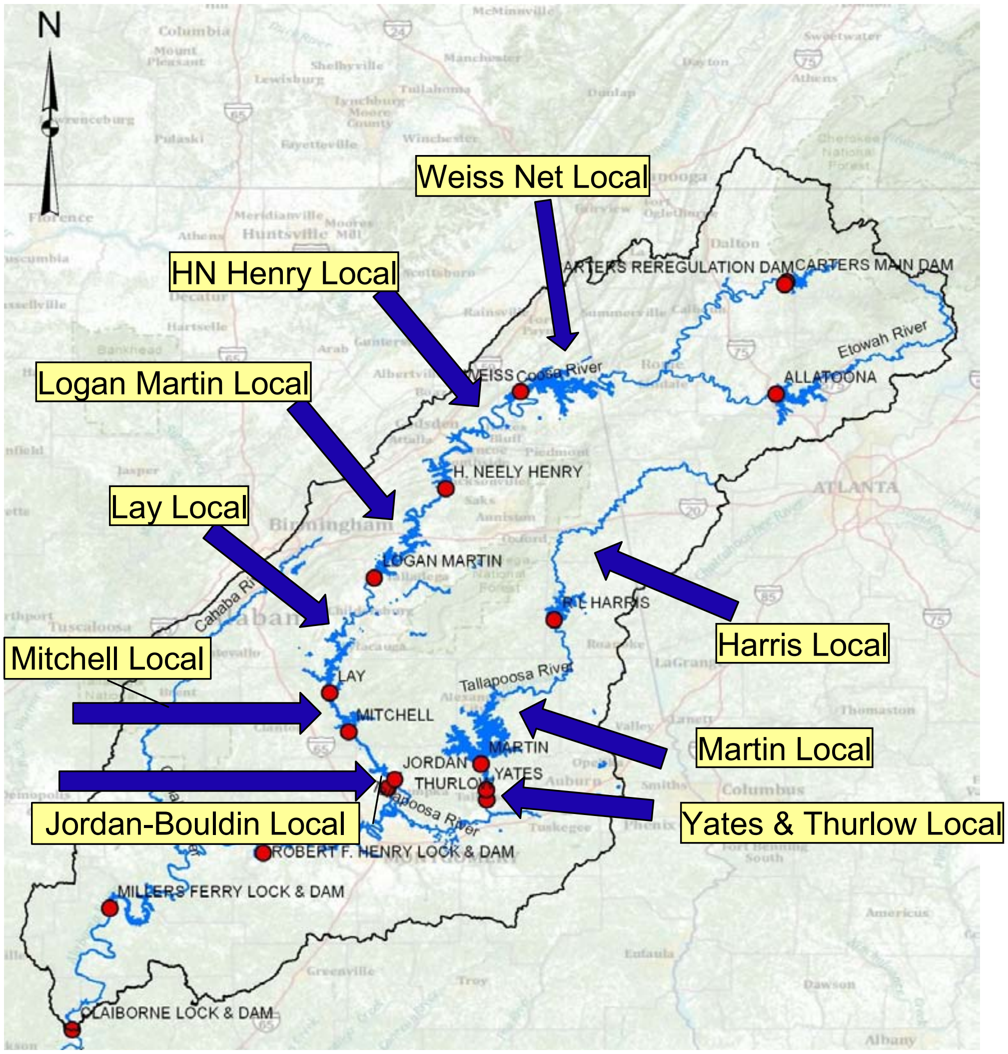


Figure 1.2-5 ACT Basin inflows.

1.2.1.4 State Line Flow Trigger

A low state line flow trigger occurs when the Mayo's Bar USGS gage measures a flow below the monthly historical 7Q10 flow. The 7Q10 flow is defined as the lowest flow over a 7-day period that would occur once in 10 years. Table 1.2-3 lists the Mayo's Bar 7Q10 value for each month. The lowest 7-day average flow over the past 14 days is computed and checked at the 1st and 15th of the month. If the lowest 7-day average value is less than the Mayo's Bar 7Q10 value, the low state line flow indicator is triggered. If the result is greater than or equal to the trigger value from Table 4.2-5, the flow is considered normal, and the state line flow indicator is not triggered. The term *state line flow* is used in developing the drought management plan because of the proximity of the Mayo's Bar gage to the Alabama-Georgia state line and because it relates to flow data upstream of the Alabama-based APC reservoirs. State line flow is used only as a source of observed data for one of the three triggers and does not imply that *targets* exist at that geographic location. The APCDOP does not include or imply any Corps operation that would result in water management decisions at Carters Lake or Lake Allatoona.

Table 1.2-3
State line flow trigger

Month	Mayo's Bar (7Q10 in cfs)
Jan	2,544
Feb	2,982
Mar	3,258
Apr	2,911
May	2,497
Jun	2,153
Jul	1,693
Aug	1,601
Sep	1,406
Oct	1,325
Nov	1,608
Dec	2,043

Note: Based on USGS Coosa River at Rome Gage (Mayo's Bar, USGS 02397000) observed flow from 1949 to 2006

1.2.1.5 Low Composite Conservation Storage in APC projects

Low composite conservation storage occurs when the APC projects' composite conservation storage is less than or equal to the storage available within the drought contingency curves for the APC reservoirs. Composite conservation storage is the sum of the amounts of storage available at the current elevation for each reservoir down to the drought contingency curve at each APC major storage project. The reservoirs considered for the trigger are R.L. Harris Lake, H. Neely Henry Lake, Logan Martin Lake, Lake Martin, and Weiss Lake projects. Figure 1.2-6 plots the APC composite zones. Figure 1.2-7 plots the APC low composite conservation storage trigger.

If the actual active composite conservation storage is less than or equal to the active composite drought one storage, the low composite conservation storage indicator is triggered. That computation is performed on 1st and 15th of each month, and is compared to the low state line flow trigger and basin inflow trigger.

1.2.1.6 Operations for Corps Projects Downstream of Montgomery

Drought operations of the Corps' Alabama River projects (R.E. "Bob" Woodruff Lake [Robert F. Henry Lock and Dam], and William "Bill" Dannelly Lake [Millers Ferry Lock and Dam]) will respond to drought operation of the APC projects. When combined releases from the APC projects are reduced to the 7Q10 flow of 4,640 cfs, the Corps' Alabama River projects will operate to maintain a minimum flow of 6,600 cfs below Claiborne Lake. When the APCDOP requires flows less than 4,640 cfs, the minimum flow at Claiborne Lake is equal to the inflow into Millers Ferry Lock and Dam. There is inadequate storage in the Alabama River projects to sustain 6,600 cfs, when combined releases from the APC projects are less than 4,640 cfs.

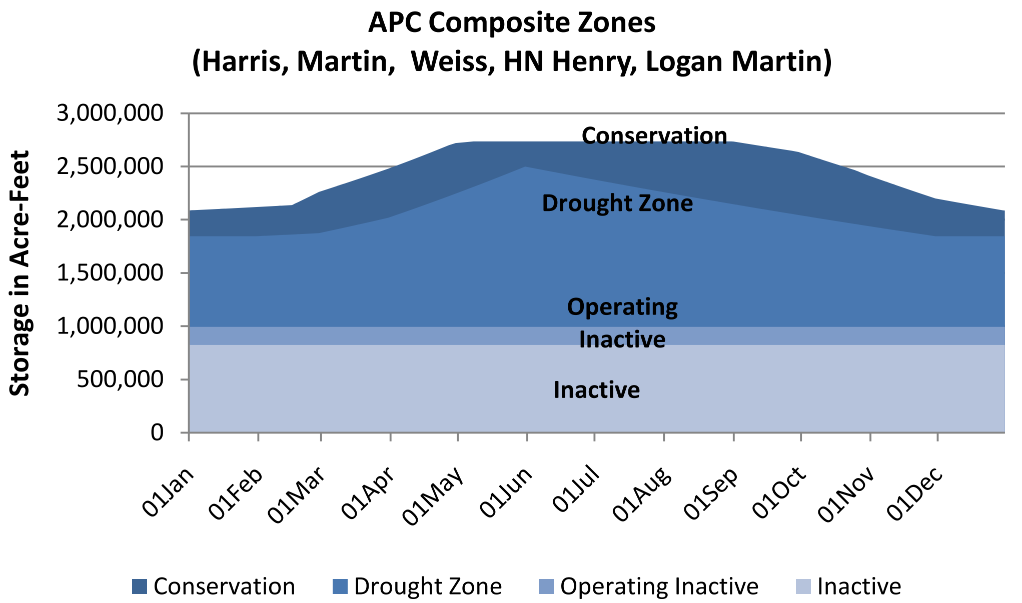


Figure 1.2-6 APC composite zones.

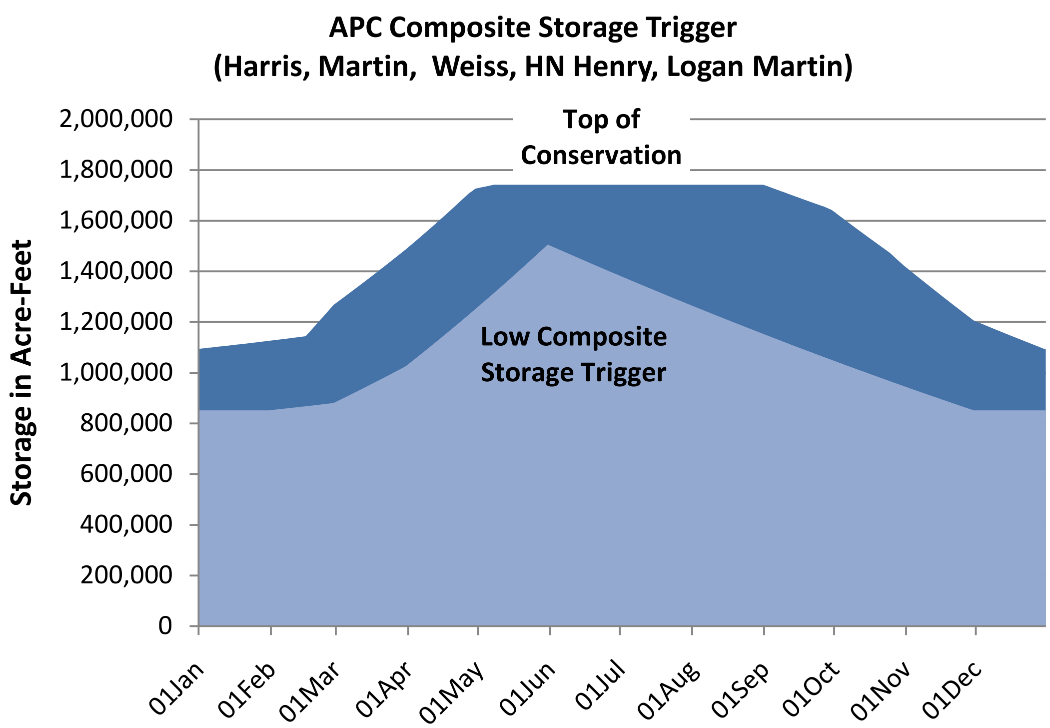


Figure 1.2-7 APC low composite conservation storage drought trigger.

2 RESPONSE TO PLANNING AID LETTER (PAL)

2.1 Low DO below reservoirs and meeting of State water quality standards.

In accordance with ER 1110-2-8154, *Water Quality and Environmental Management for Corps Civil Works Projects*, the Corps has an objective to ensure that water quality, as affected by a Corps project and its operation, is suitable for project purposes, existing water uses, and public safety and is in compliance with applicable federal and state water quality standards. The States currently monitor data throughout the summer low-flow period in reservoirs to ensure water quality standards are met.

Water quality was taken into account when updating water control plans and manuals. The information contained in the following sections demonstrates the effects of the No Action Alternative and Preferred Alternative on water quality.

HEC-ResSim model is being used to simulate flow operations in the ACT Basin. HEC-ResSim is a state-of-the-art tool for simulating flow operations in managed systems. It was developed by the Corps' Hydrologic Engineering Center (HEC) to help engineers and planners perform water resources studies in predicting the behavior of reservoirs and to help reservoir operators plan releases in real-time during day-to-day and emergency operations. Version 3.0 of the HEC-ResSim model was released in April 2007. The Corps HEC also developed HEC-5Q to provide an analytic tool for evaluating the water quality response. This model is linked with the HEC-ResSim model through an input of flows by reach. For this EIS, the enhanced HEC-5Q developed for the Columbia River Basin was generalized and improved to evaluate the effects of ACT project operations on basin water quality. The HEC-5Q model was linked with the HEC-ResSim model through an input of flows by reach to examine the effects on water quality in the mainstems of the ACT Basin. The HEC-5Q results presented in this section are for the modeled period (2001–2008).

The purpose of simulating conditions over this period (2001 – 2008) was not to capture historical changes in water quality; rather, the intent was to capture the range of potential hydrologic conditions that influence water quality. The modeled period includes wet, dry, and normal rainfall conditions, which allows a display of the water quality response to varying hydrologic conditions. The wet, dry, and normal rainfall years presented are 2003, 2007, and 2002, respectively. Those years were selected to represent the range of hydrologic conditions that can occur understanding that conditions can vary greatly over the entire basin.

The sections to follow present the change (or *delta*) in various modeled parameters between the No Action Alternative, Plan D, Plan F, and the Proposed Action Alternative. These four alternatives have been evaluated in detail; however, for the purpose of this response, only the Proposed Action Alternative will be described. The longitudinal occurrence profiles by rivermile (RM) illustrate how water quality varies along the reach, and how water quality might be affected by dams, other structures, or discharges from point and nonpoint sources. Presenting data in such a way illustrates the amount of time a concentration is higher or lower than a given value. In those plots, the 5th, 50th (or median), and 95th percent occurrences are illustrated. Those percentiles illustrate the range of concentrations that would be likely to occur. Such profiles illustrate the percentage of time a concentration of pollutant occurs as a *Percent Occurrence* at stations in mainstem sections of the ACT Basin.

The median values reflect the points at which 50 percent of the calculated values are higher and 50 percent are lower. The 95th percent occurrence and 5th percent occurrence bracket the range of high and low calculated values that rarely occur. For example, a DO plot showing a 5 percent occurrence level at 5 mg/L means that 5 percent of the observations were lower than that concentration. An occurrence

level of 95 percent at 12 mg/L shows that 95 percent of modeled concentrations fell below 12 mg/L. Conversely, that would indicate that 5 percent of the model values were higher than 12 mg/L. Presenting modeled results that way should help readers understand the response of the system without allowing the data from extreme events to skew the results. Note that the percent occurrence is the opposite of the percent exceedence.

It is also important to understand that critical conditions for water quality parameters vary under different flow and water temperature conditions. For example, water temperatures increase in warm weather months and in low stream flow conditions. In wet weather conditions, nutrient concentrations may increase. For this reason water quality conditions are defined for representative wet, dry, and normal weather conditions. State and federal agencies also define warm weather months, or the *growing season*, in different ways for regulatory purposes. The figures to follow illustrate annual conditions as well as growing seasons defined by May through October and April through November.

2.1.1 Total number of days with dissolved oxygen (DO) below a daily average of 5.0 mg/L

The total number of days with a daily average DO less than 5.0 mg/L was not calculated. However, the occurrence of DO was plotted and compared between alternatives at various locations in the basin. In general, the proposed operational changes would be expected to have a negligible effect on DO for much of the ACT Basin. In the figures presented below, the results generally overlay each other, and the differences between alternatives are indistinguishable. As described in the PAL, the lowest DO concentrations occur in dam tailraces. Despite low concentrations of dissolved oxygen in dam tailraces, the Proposed Action Alternative generally is equal to the No Action Alternative as illustrated in Figures 2.2-1 through 2.2-5.

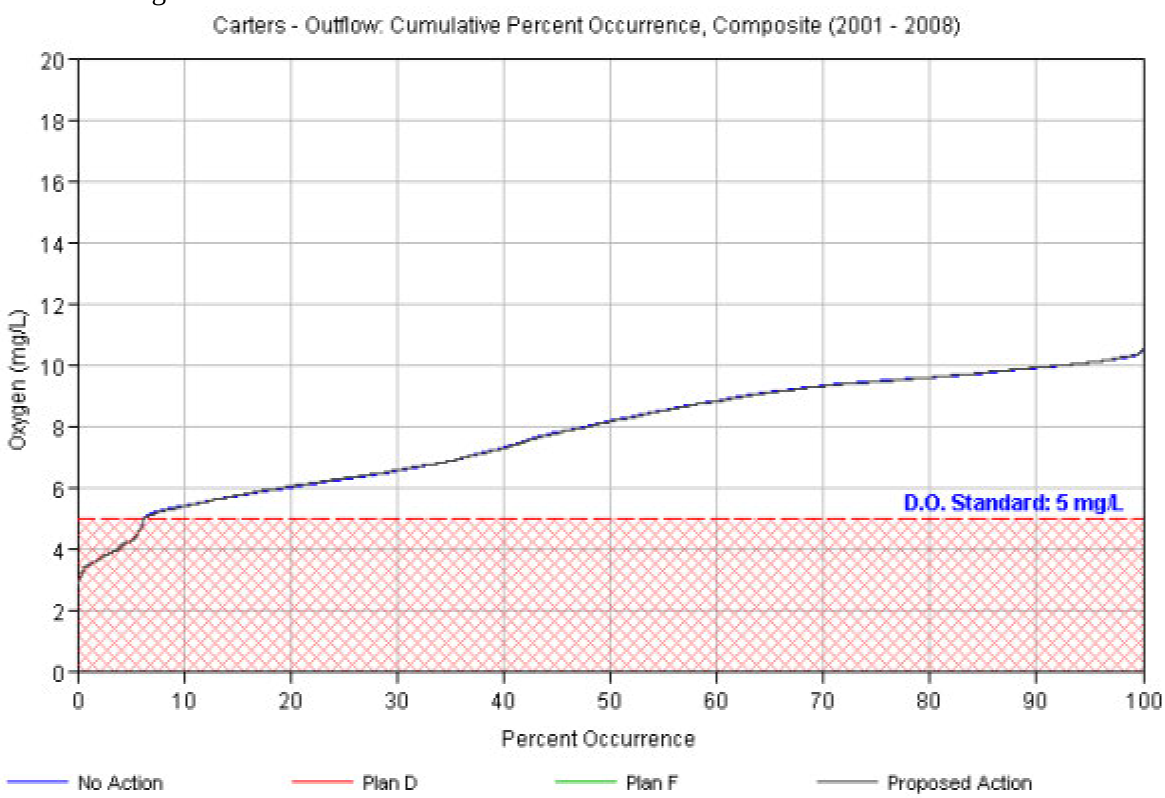


Figure 2.1-1 Carters Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

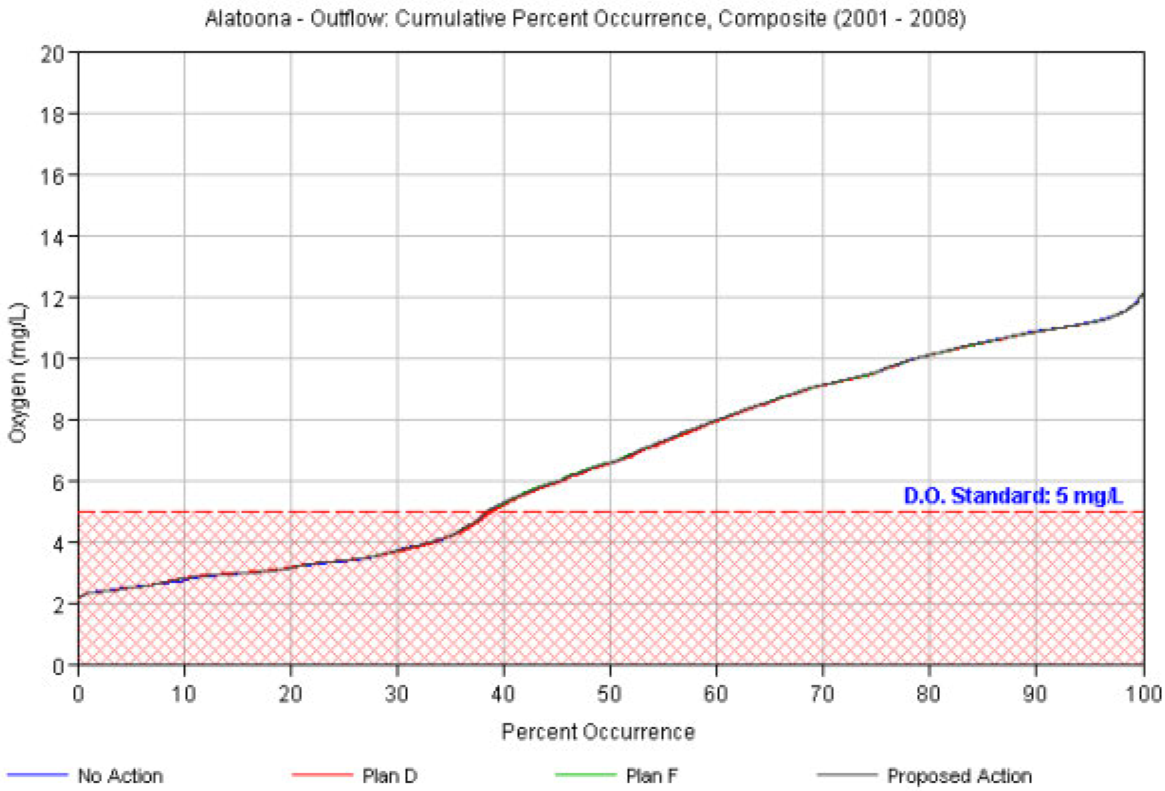


Figure 2.1-2 Allatoona Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

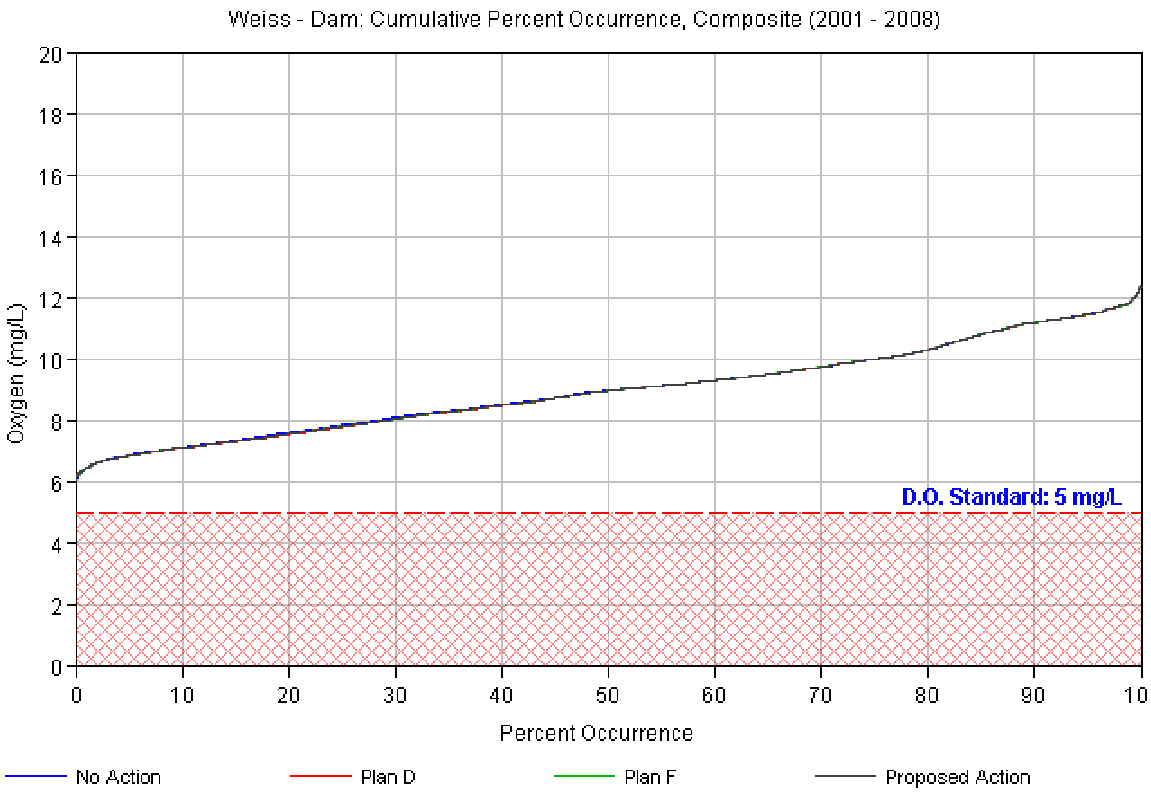


Figure 2.1-3 Weiss Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

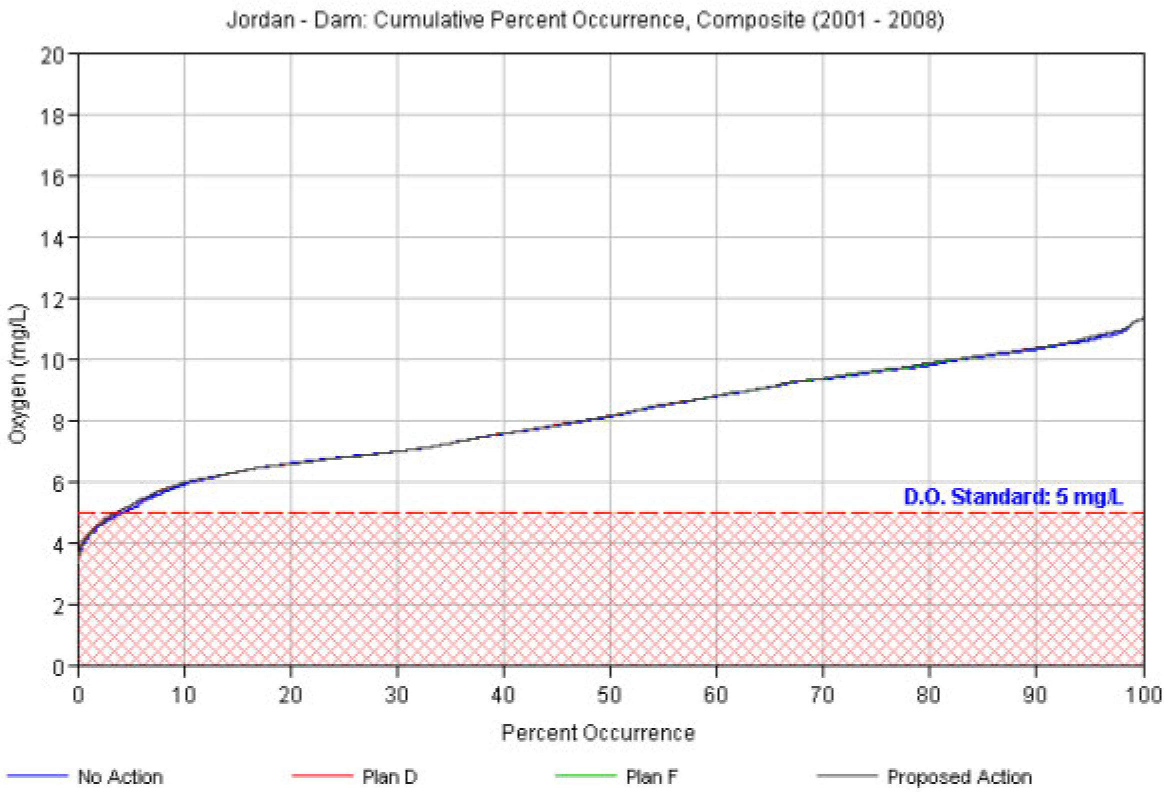


Figure 2.1-4 Jordan Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

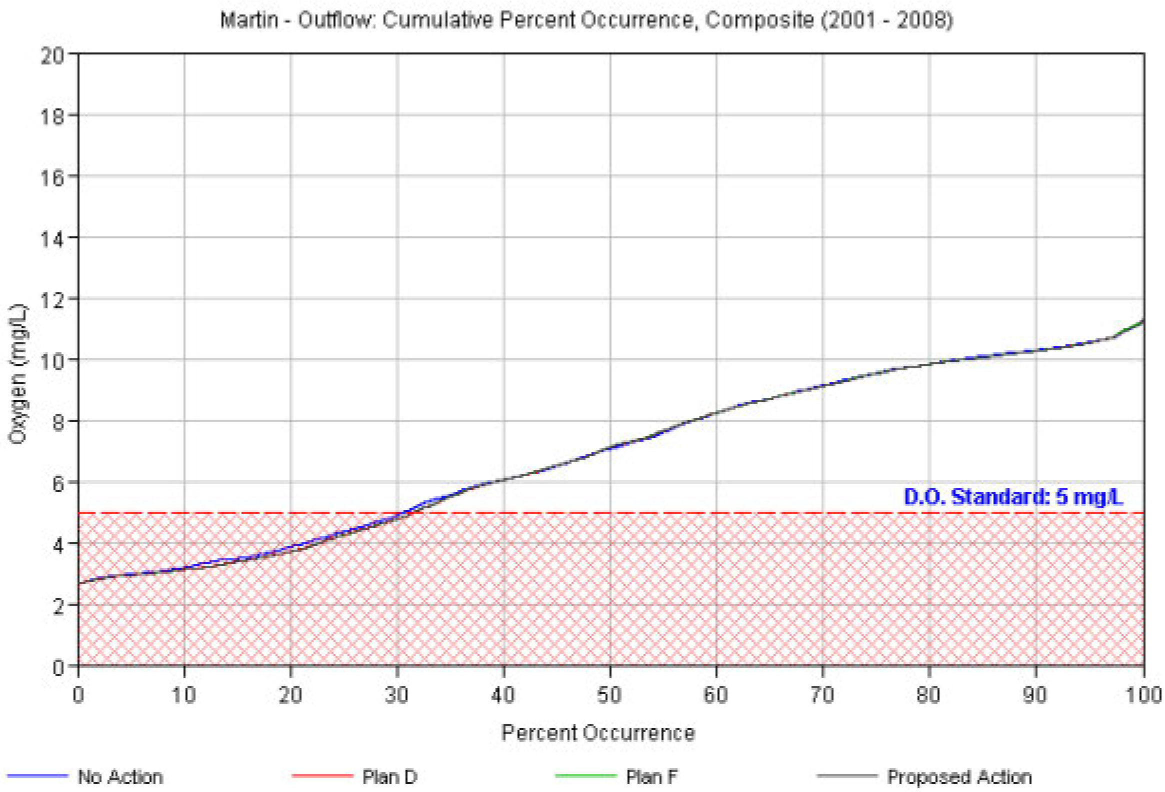


Figure 2.1-5 Martin Dam outflow dissolved oxygen for the modeled period (2000 – 2008).

The previous figures illustrate the lowest DO concentrations in dam tailraces throughout the basin. Low DO also occurs at Cartersville, Georgia (Figure 2.1-6). However, again a comparison of the No Action Alternative to various alternatives illustrates little change.

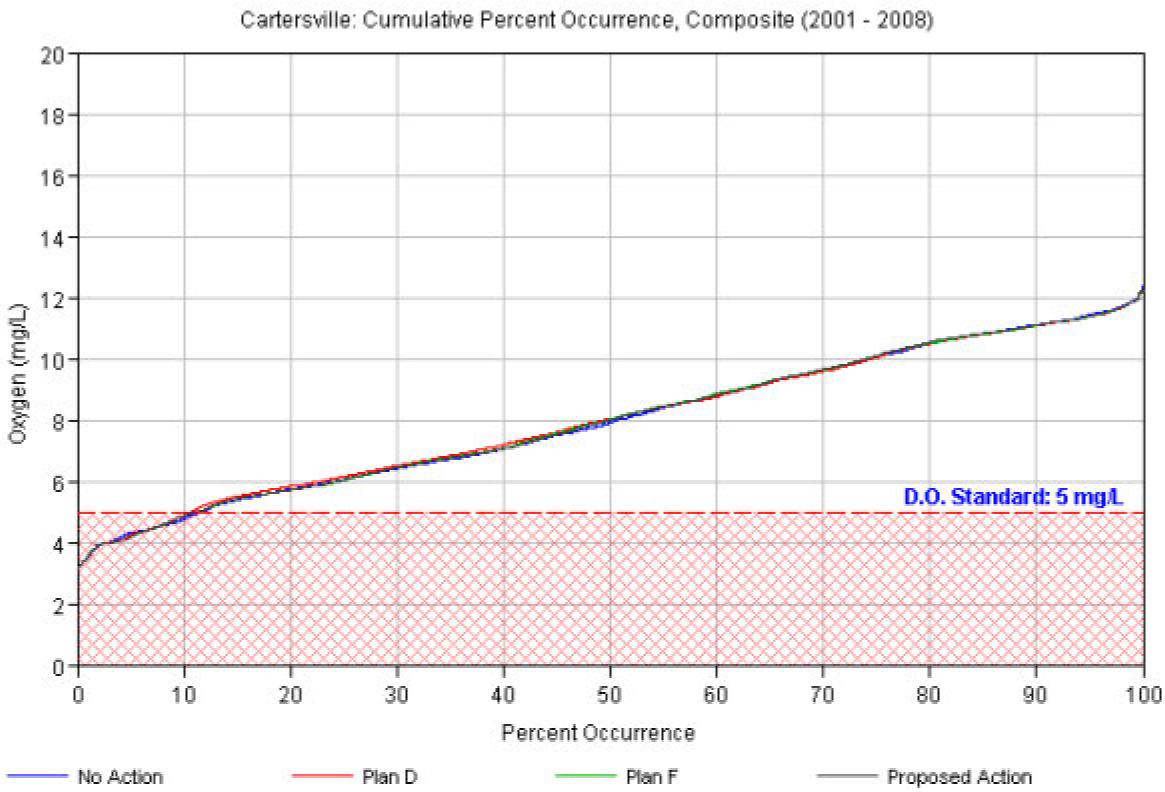


Figure 2.1-6 Cartersville, Georgia outflow dissolved oxygen for the modeled period (2000 – 2008).

The difference between the alternatives evaluated is the greatest downstream of Carters Lake (Figure 2.1-7) and at the confluence of the Coosa and Tallapoosa Rivers (between RM 300 and 350 on the Alabama River, Figure 2.1-8). Differences are the greatest during periods of dry weather conditions when drought operations are likely to be implemented. However, modeled differences from the No Action alternative are generally less than 0.5 mg/l.

Changes in releases from Carters Lake under the drought plan decrease DO downstream of the dam. DO recovers to concentrations near the No Action Alternative before Pine Chapel, 20 mi downstream (Figure 2.1-7).

In the Coosa River, changes in DO are also the greatest in a dry-weather year (Figure 2.1-9). In dry-weather periods, it would be expected that the Corps would operate for drought management. In much of the Coosa River, median DO concentrations during dry-weather periods would be expected near conditions similar to the No Action Alternative. However, DO downstream of Weiss Dam and Neely Henry Dam would be expected to be reduced during the growing season in dry-weather years. Downstream of Weiss Lake, median DO would be expected to decrease by nearly 1.0 mg/L. As illustrated in Figure 2.1-3, median DO over the modeled period is well above water quality standards at 8 mg/L. Median DO decreases by nearly 0.5 mg/L immediately downstream of Neely Henry Dam. Immediately

downstream of other reservoirs (Jordan Dam and Lake, Mitchell Dam, and Logan Martin Dam), the median DO concentrations would be expected to increase by as much as 0.5 mg/L by the Plan D, Plan F, and the Proposed Action Alternative.

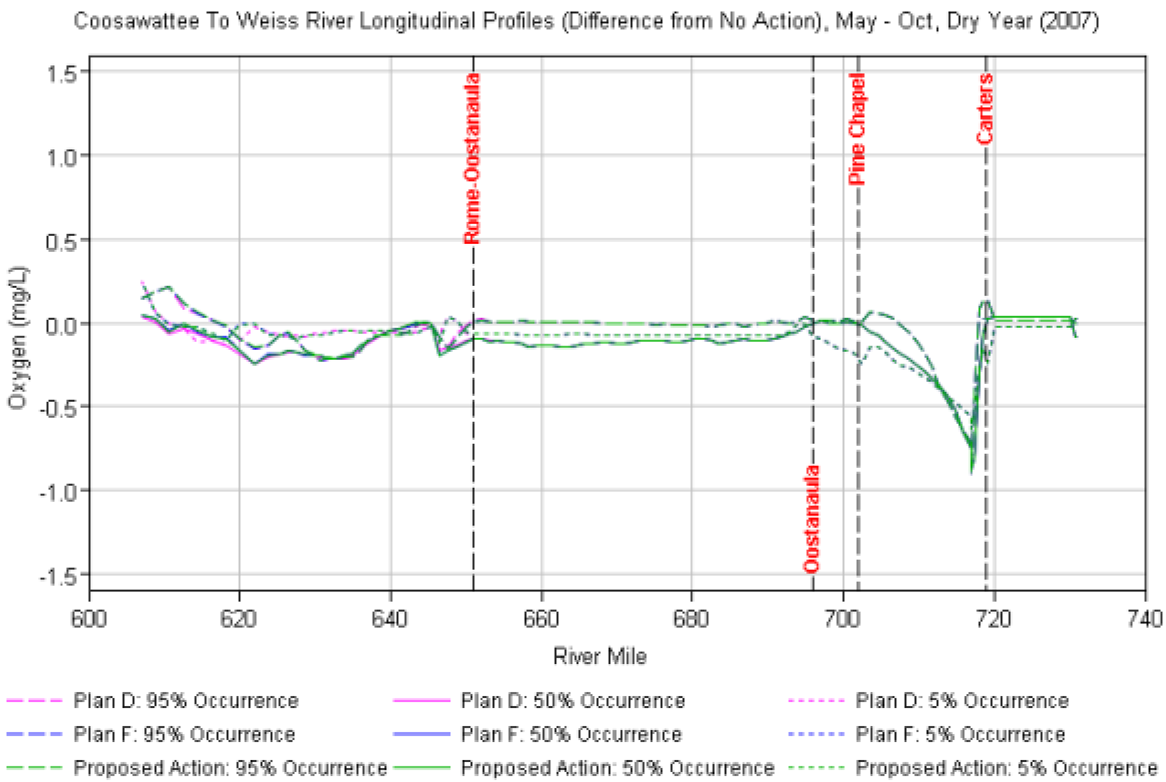


Figure 2.1-7 Oxygen longitudinal profile for May to October in a representative dry-weather year (2007) from Carters Lake downstream to Weiss Lake.

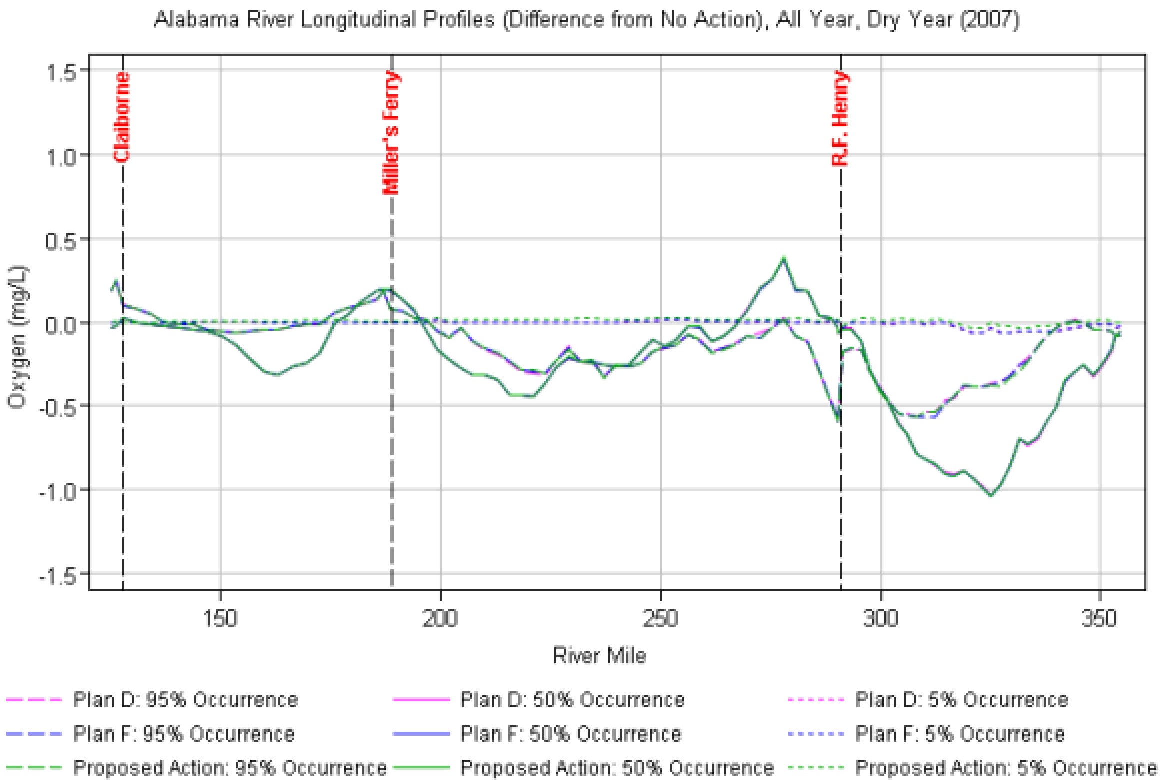


Figure 2.1-8 Alabama River oxygen longitudinal profile for a representative dry-weather year (2007).

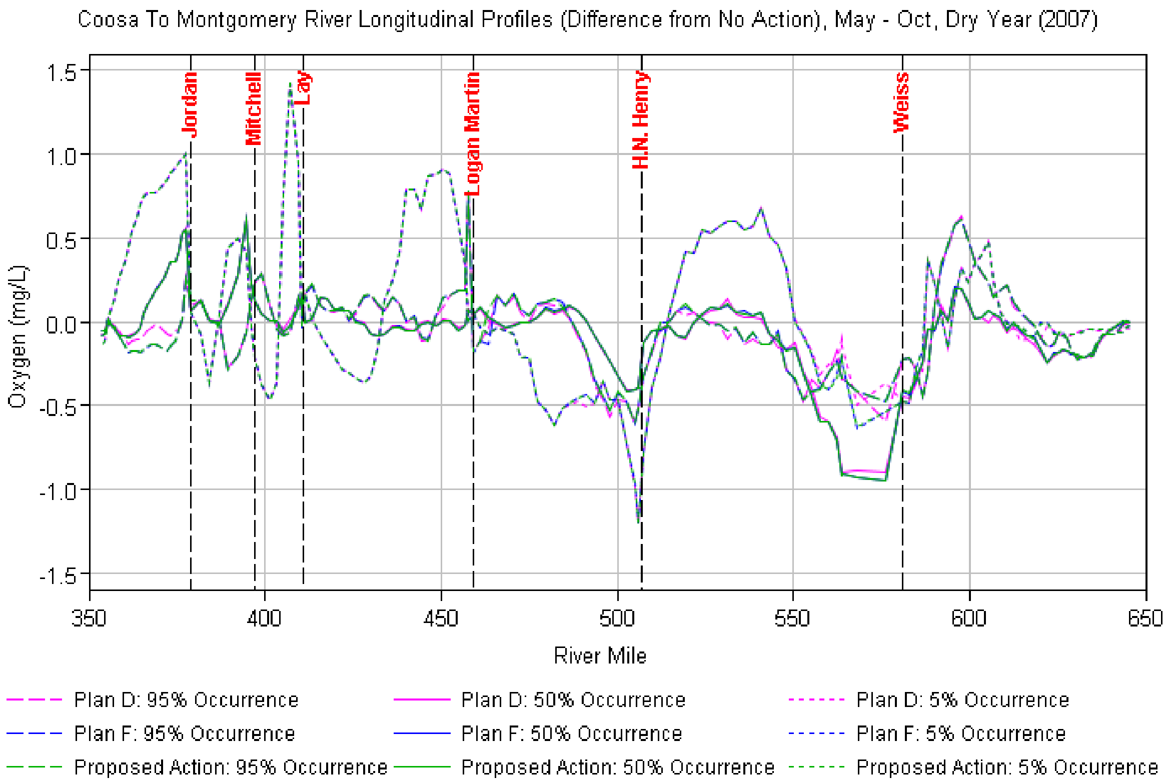


Figure 2.1-9 Coosa River oxygen longitudinal profile for May to October in a representative dry-weather year (2007).

In reservoirs with deep forebays, oxygen is often higher at the water surface and lower with depth through the water column. Reservoirs that release from deep water often release low oxygen water downstream. That is generally more pronounced in dry-weather years when inflows to reservoirs are low and retention times in reservoirs increase. That is illustrated by comparing Figures 2.1-7 and 2.1-10. The plots illustrate the Alabama River in a representative dry- and wet-weather year, respectively. The reason for the differences among alternatives is that each one uses different dam operations for drought management through a series of triggers. Those drought triggers change the way water is released during periods of drought in the ACT Basin.

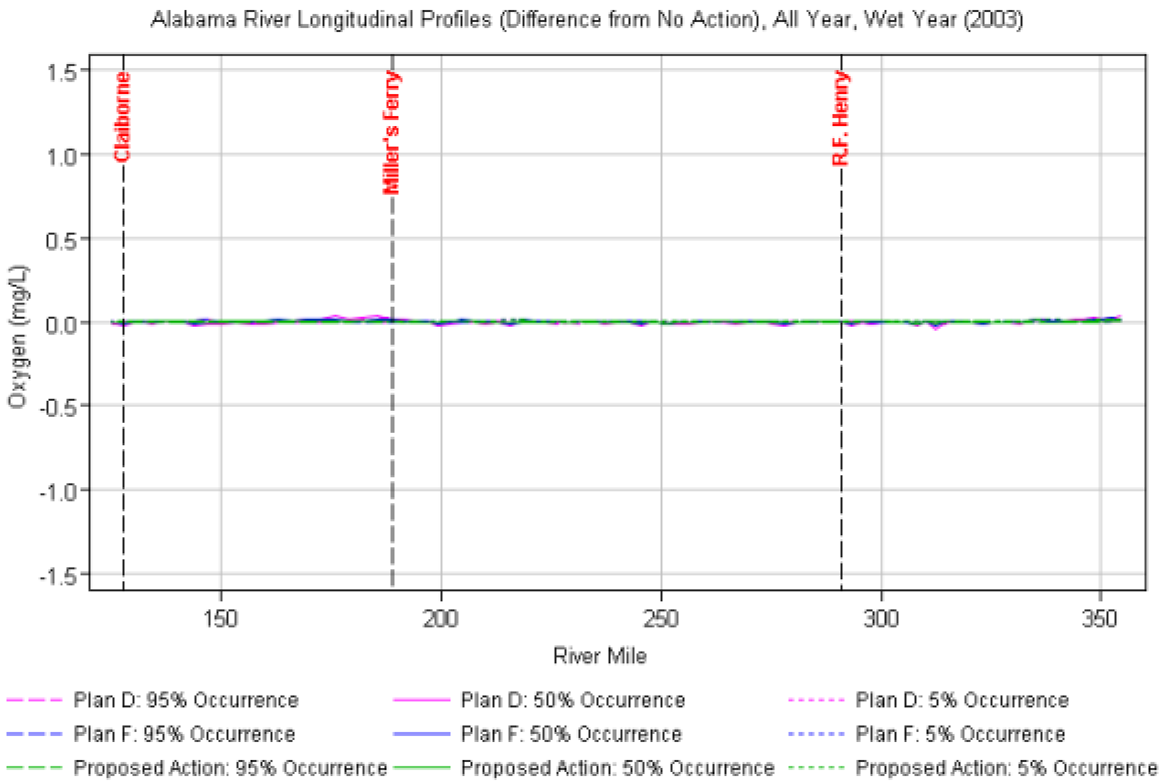


Figure 2.1-10 Alabama River oxygen longitudinal profile for a representative wet-weather year (2003).

Median DO downstream of Lake Allatoona in the Etowah River have little change for the No Action Alternative over the modeled period (Figure 2.1-11).

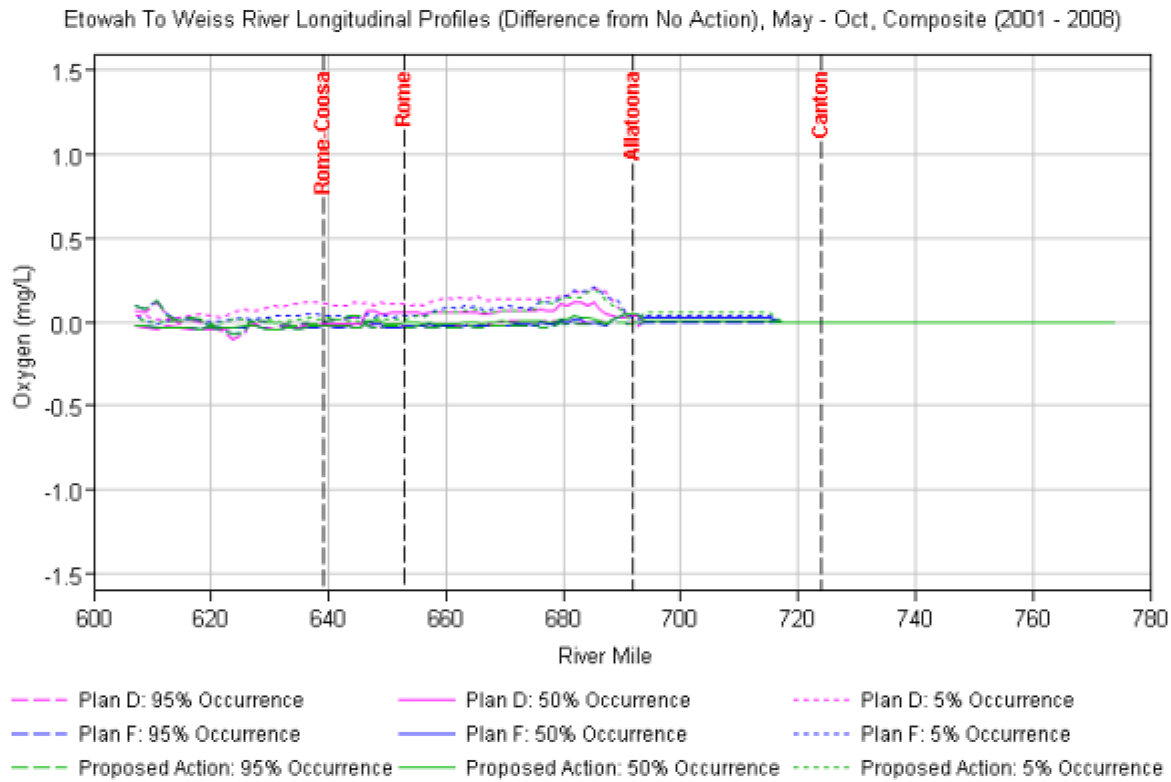


Figure 2.1-11 Etowah River oxygen longitudinal profile for May to October over the modeled period (2001 - 2008).

DO in the Tallapoosa River fluctuates immediately downstream of dams from May through October in a representative dry-weather year (Figure 2.1-12). Those fluctuations would be expected to occur at conditions near water quality standards; 4 mg/L downstream of dams.

In summary, our modeled evaluation of the impacts of the proposed action indicate that any declines in DO compared to the current operation of the Corps reservoirs would be isolated and usually less than 0.5 mg/l. Those declines would be most pronounced during extreme drought (5th percentile occurrence) and in some cases declines up to 1.0 mg/l could be seen. For the most part, the preceding graphs indicate that the proposed action would cause insignificant changes from the No Action alternative. In some cases the model indicates increases in DO up to about 1.0 mg/l. For Lake Allatoona releases, which the PAL identified as a specific concern, there would be little difference from current operations even in the extreme drought condition.

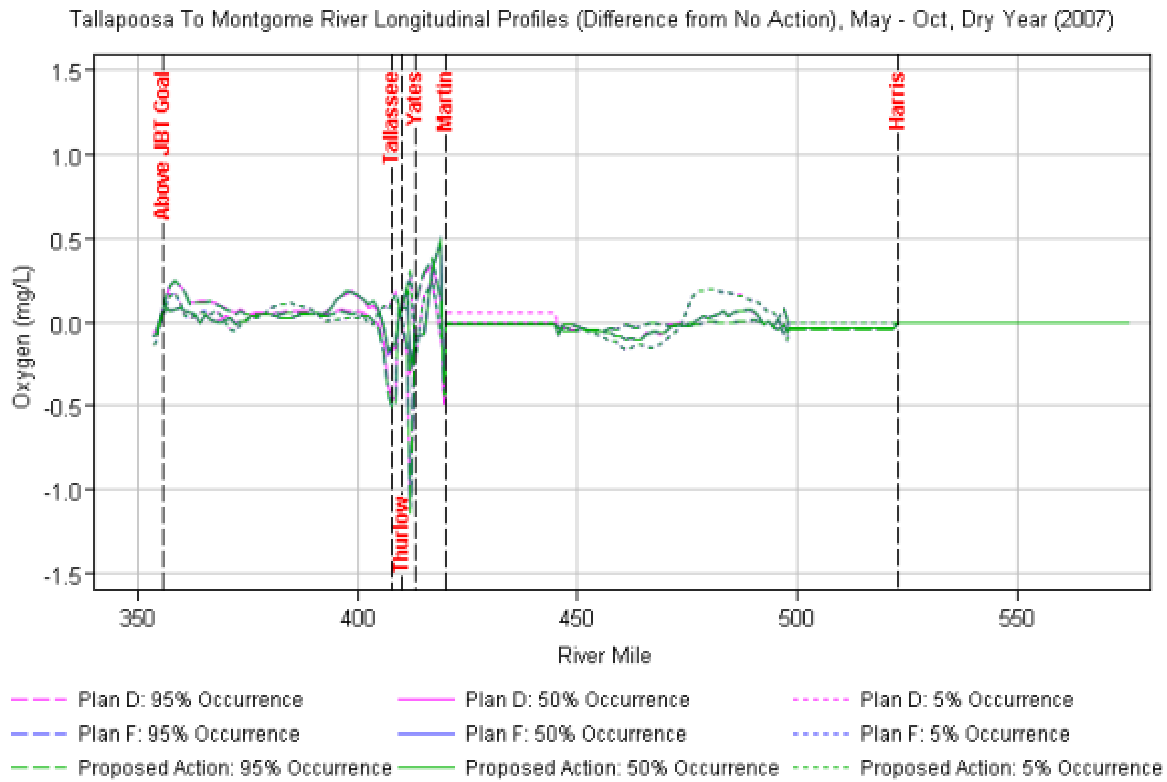


Figure 2.1-12 Tallapoosa River oxygen longitudinal profile for May to October in a representative dry-weather year (2007).

2.1.2 Total number of instantaneous "measurements" less than 4.0 mg/L

HEC5Q doesn't have the ability to simulate instantaneous DO. The river profile simulations suggest that DO values less than 4 mg/L are only expected at several tailrace locations (as illustrated in Figures 2.1-1 through 2.1-5).

2.1.3 Monthly exceedence figures and box plots with outliers for water temperature

Monthly exceedence figures for water temperature were not generated. The operational changes in the Proposed Action Alternative would be expected to affect water temperature along reaches of the ACT Basin where changes in DO were predicted. The largest fluctuations in water temperature were predicted at the confluence of the Coosa and Tallapoosa Rivers into the Alabama River. Along this reach the Proposed Action Alternative would be expected to increase median water temperatures by more than 1.8 °F (1°C) in a representative dry year (Figure 2.1-13).

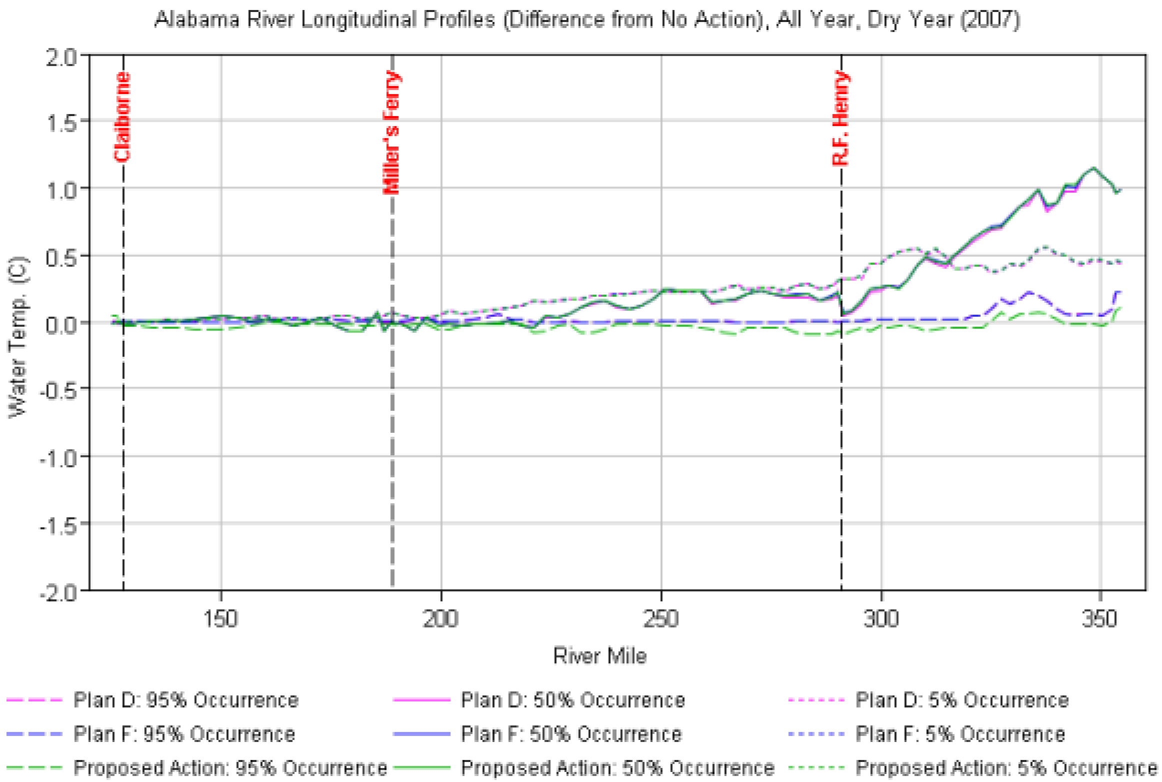


Figure 2.1-13 Alabama River longitudinal profile of water temperature in a representative dry-weather year (2007).

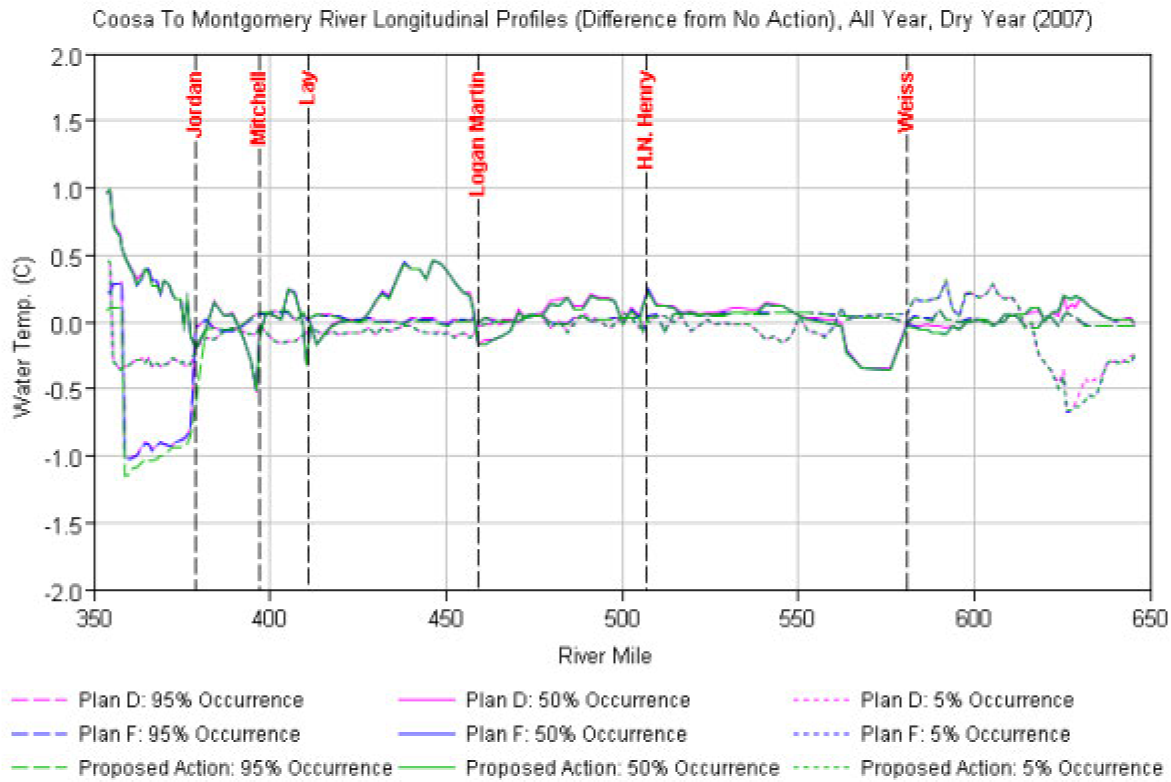


Figure 2.1-14 Coosa River water temperature longitudinal profile for a representative dry-weather year (2007).

The changes in modeled water temperature from the No Action Alternative have the greatest variation during periods when drought operations are likely to occur. However, the range of water temperatures predicted by the model as a change between various alternatives and the No Action Alternative would not be expected to be as great under observed conditions (Figure 2.1-14). APC operates Jordan Dam and Lake to ensure minimum flows (2,000 cfs) for protected species. The Corps HEC-ResSim modeled flows were less than what would actually be released during periods of drought. Therefore, as previously stated, water temperatures would not be expected to decrease as much as 1.8 °F (1 °C).

Little change in water temperature would be expected on the Alabama River over longer periods and when drought conditions have not triggered as seen in Figure 2.1-15. The Alabama River does not have reservoirs with storage but, instead, is dominated by reservoirs with run-of-river operations. Generally storage reservoirs have greater fluctuations in downstream water temperature.

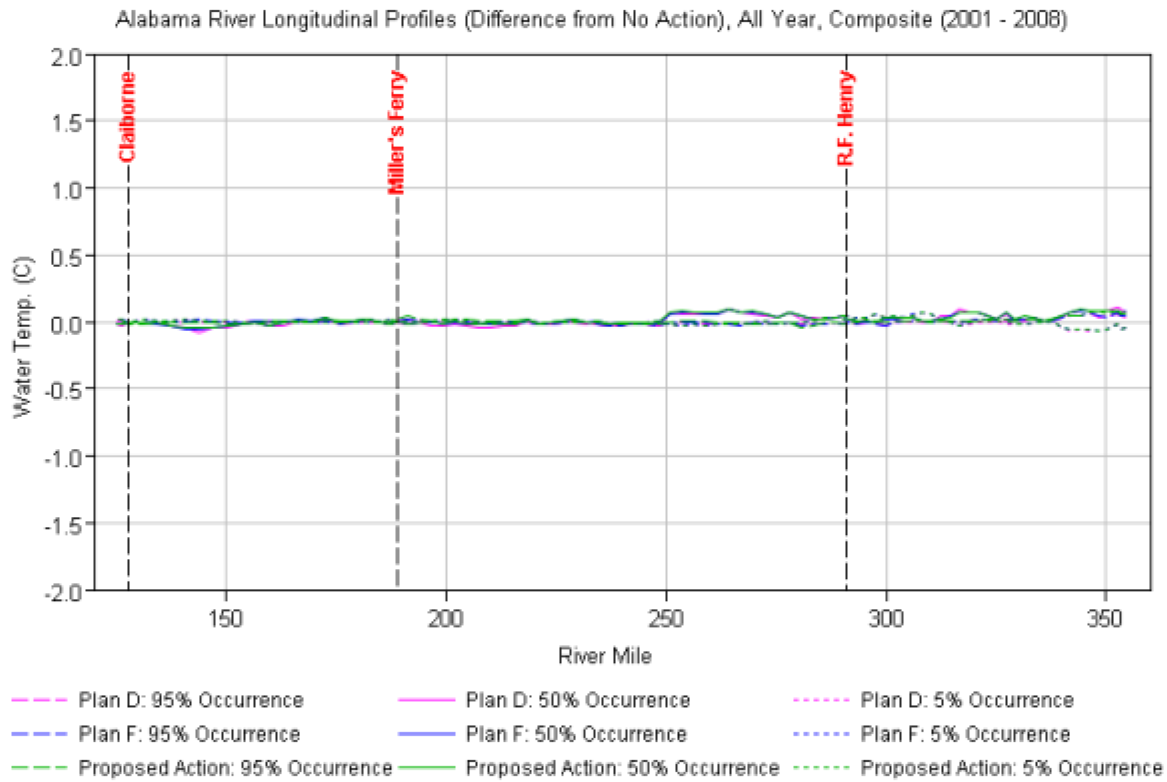


Figure 2.1-15 Alabama River water temperature longitudinal profile for the modeled period (2001–2008).

Water temperature fluctuations downstream of storage reservoirs would be expected directly downstream of Carters Lake. Water temperatures downstream of Carters Lake would be expected to decrease by around 0.7 °F (0.4 °C) and 1.5 °F (0.7 °C) as seen in Figures 2.1-16 and 2.1-17 respectively.

Median water temperatures downstream of the confluence of the Coosawattee and Oostanaula Rivers would be expected to increase by as much as 0.7 °F (0.4 °C) in dry-weather conditions (Figure 2.1-17). The health of aquatic species along the reach is a concern for stakeholders. Looking more closely at periods critical to aquatic species, when water temperatures are greatest, little to no change was modeled on the Oostanaula River (Figure 2.1-16). A decrease in water temperature downstream of Carters Lake during the growing season would likely benefit species. Changes in water temperature in the Coosawattee River would be expected to have negligible effects.

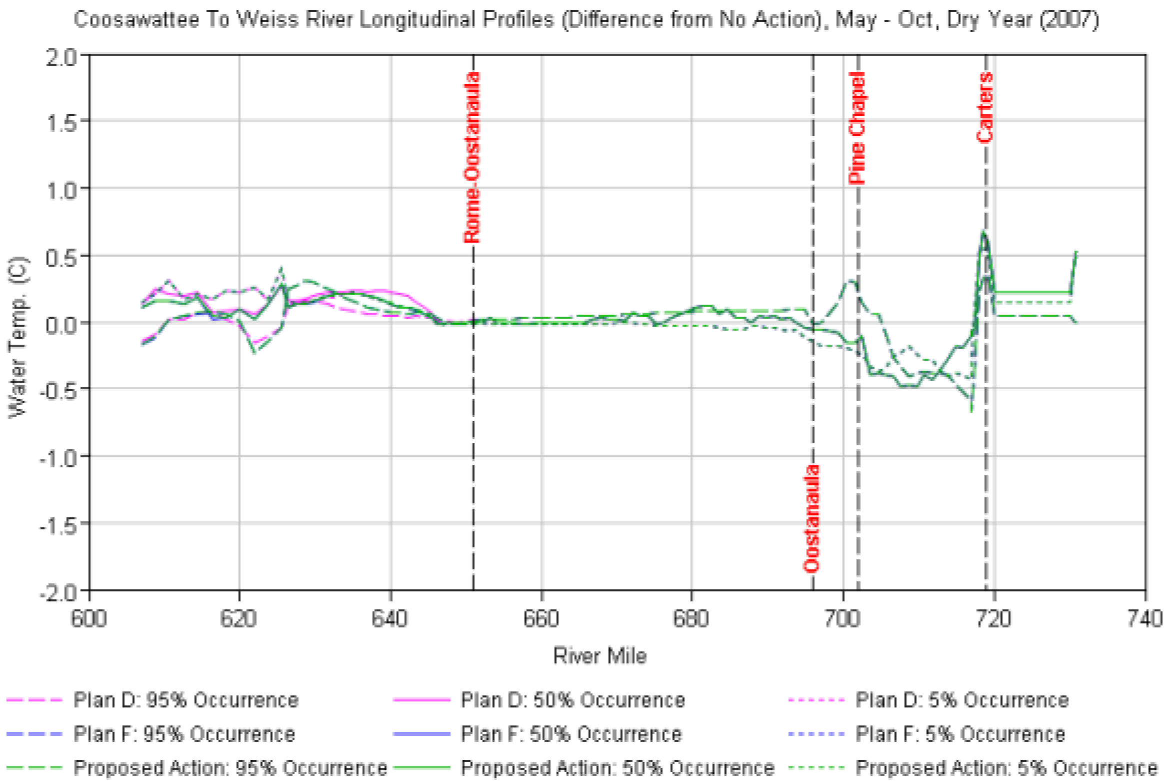


Figure 2.1-16 Water temperature longitudinal profile for a representative dry-weather year during the growing season from May through October (2007) from Carters Lake downstream to Weiss Lake.

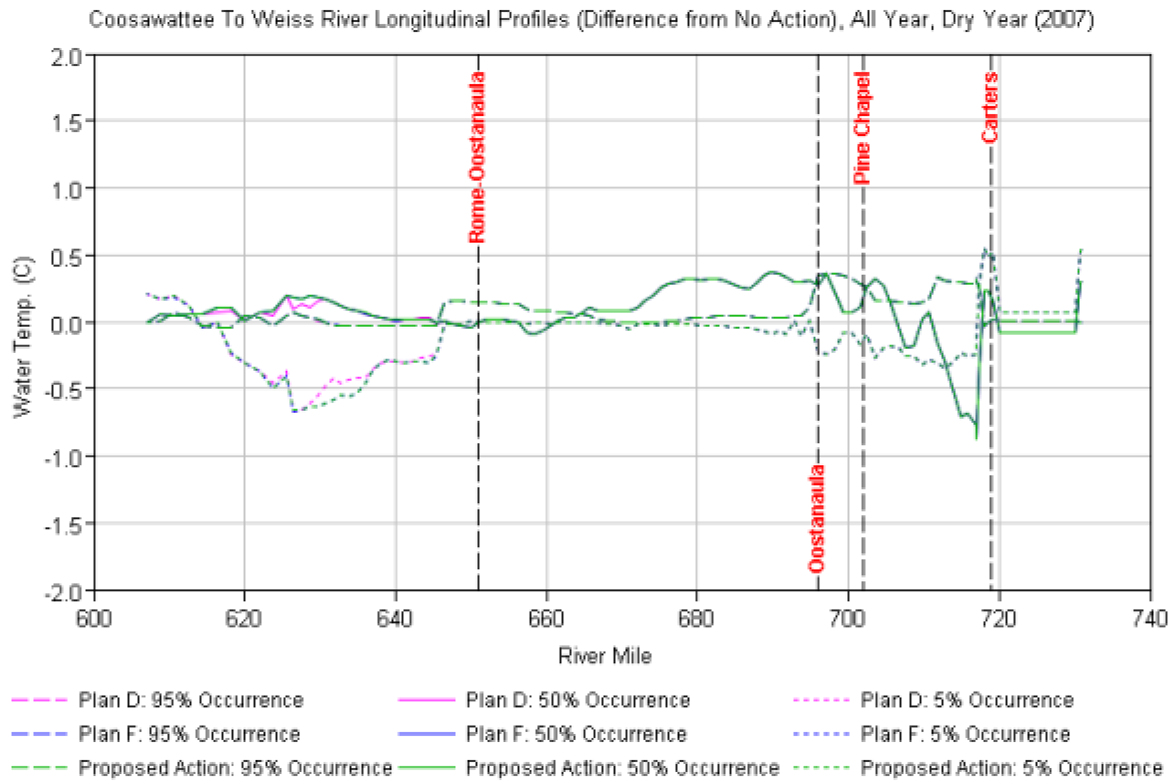


Figure 2.1-17 Water temperature longitudinal profile for a representative dry-weather year (2007) from Carters Lake downstream to Weiss Lake.

Similar to conditions downstream of Carters Lake, median water temperatures downstream of Lake Allatoona would be expected to decrease in dry years (Figure 2.1-18). A decrease in water temperature downstream of Lake Allatoona during the growing season in dry weather conditions would likely benefit aquatic species.

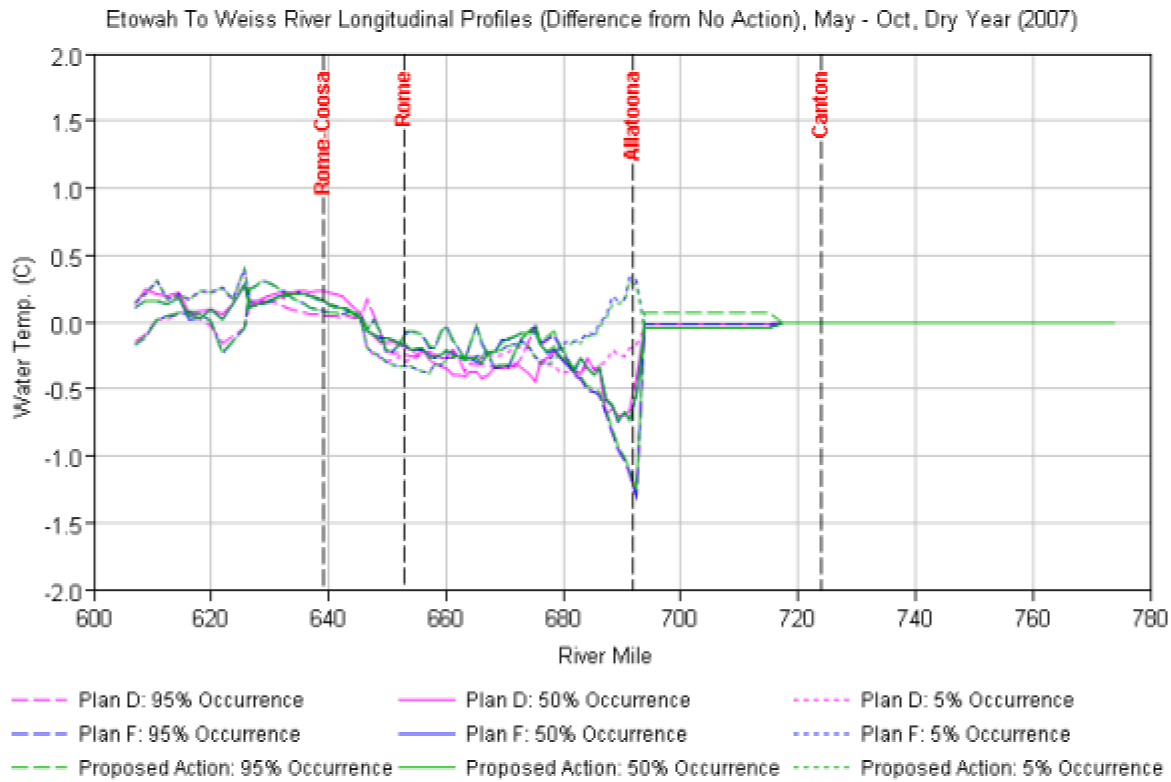


Figure 2.1-18 Etowah River water temperature longitudinal profile May through October for a representative dry-weather year (2007).

In the Tallapoosa River, over the modeled period, little change in water temperature would be expected (Figure 2.1-19). In reaches downstream of Lake Martin, water temperatures would be expected to decrease.

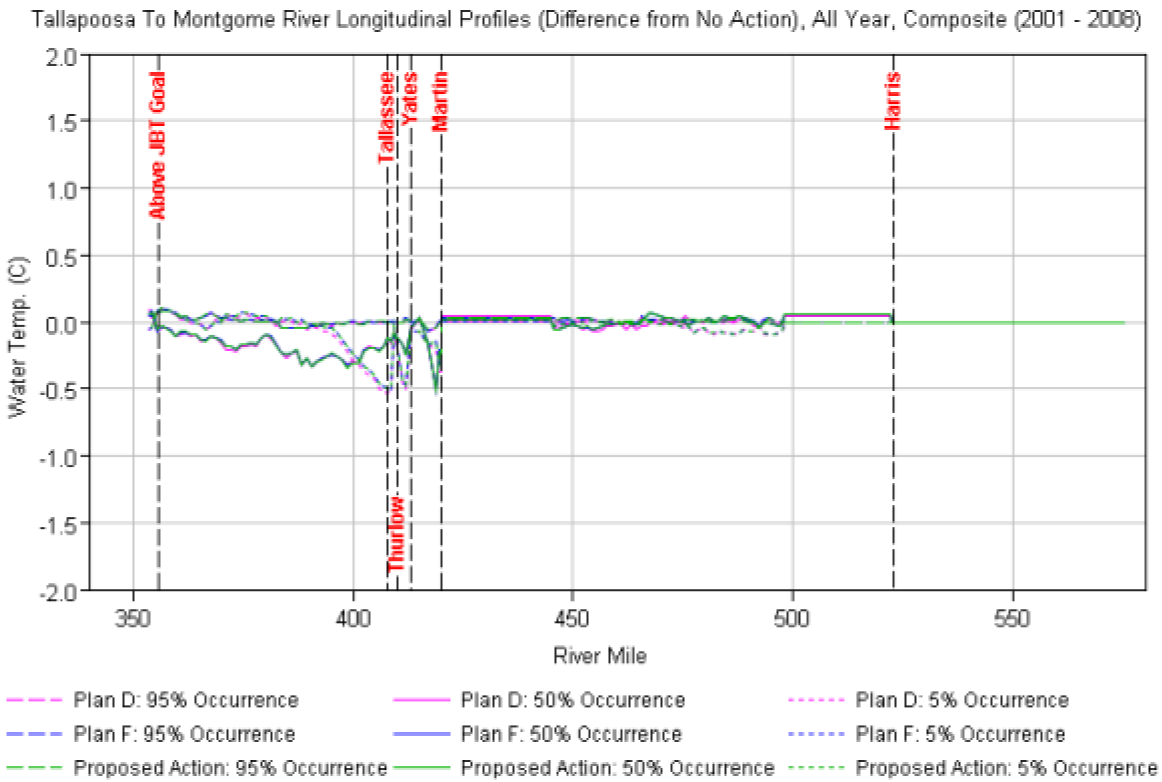


Figure 2.1-19 Tallapoosa River water temperature longitudinal profile for the modeled period (2001-2008).

2.1.4 Average stream percent wastewater

Figures 2.1-20 through 2.1-24 illustrate the percent of wastewater instream at various points in the ACT Basin for a period of low stream flow. From these plots it is clear that wastewater makes up less than 10 percent of the total flow in most cases. A ten mile reach downstream of Rome, Georgia and upstream of Weiss Lake may have a greater percentage of wastewater as illustrated in Figure 2.1-22.

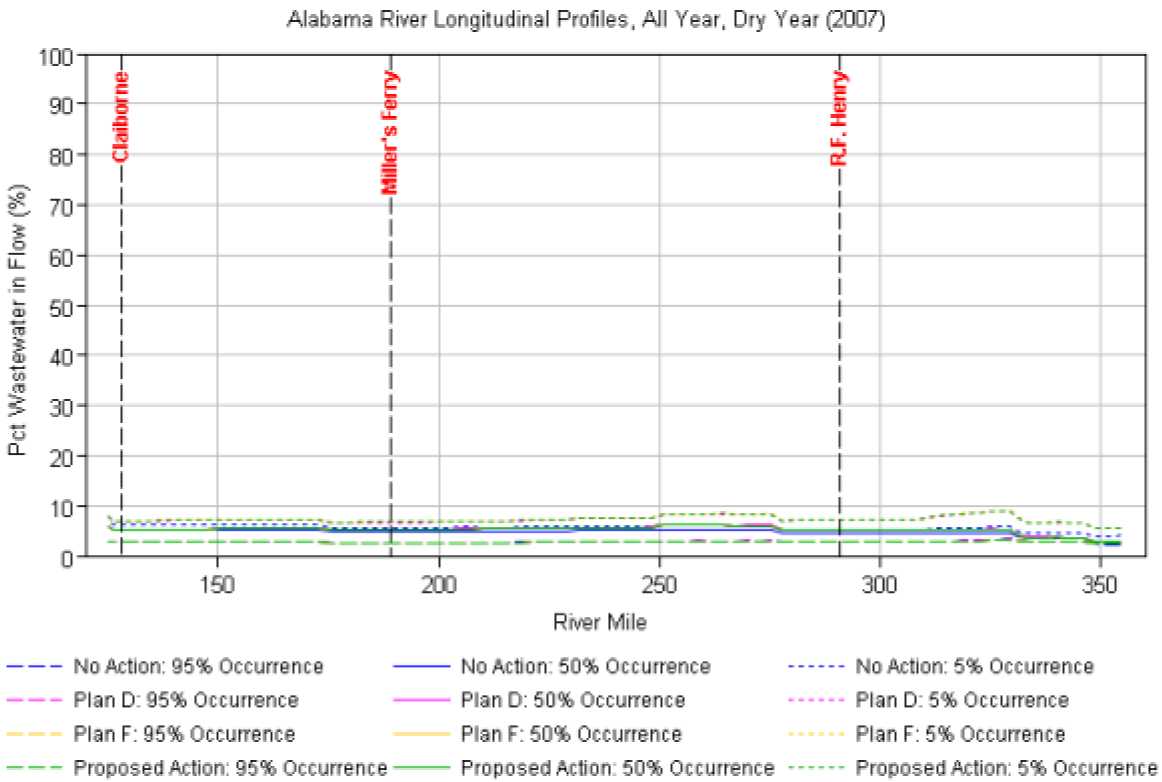


Figure 2.1-20 Alabama River longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

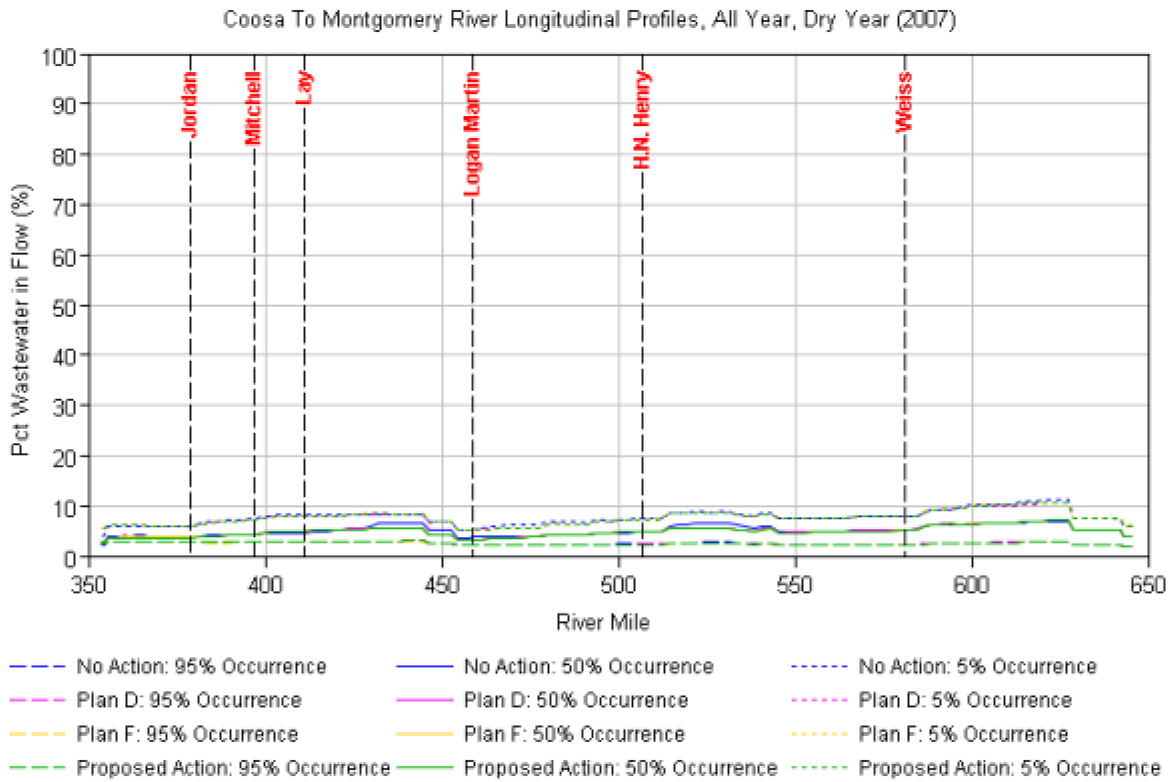


Figure 2.1-21 Coosa River longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

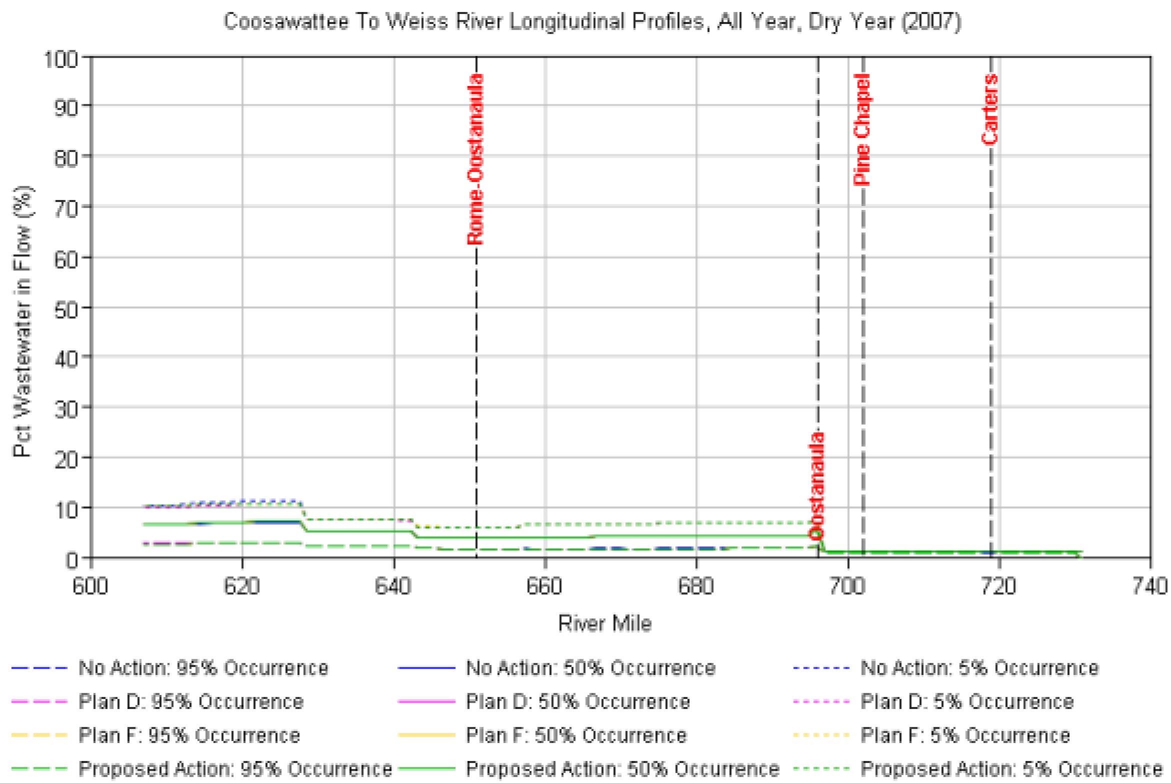


Figure 2.1-22 Coosa, Coosawattee, and Oostanaula rivers longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

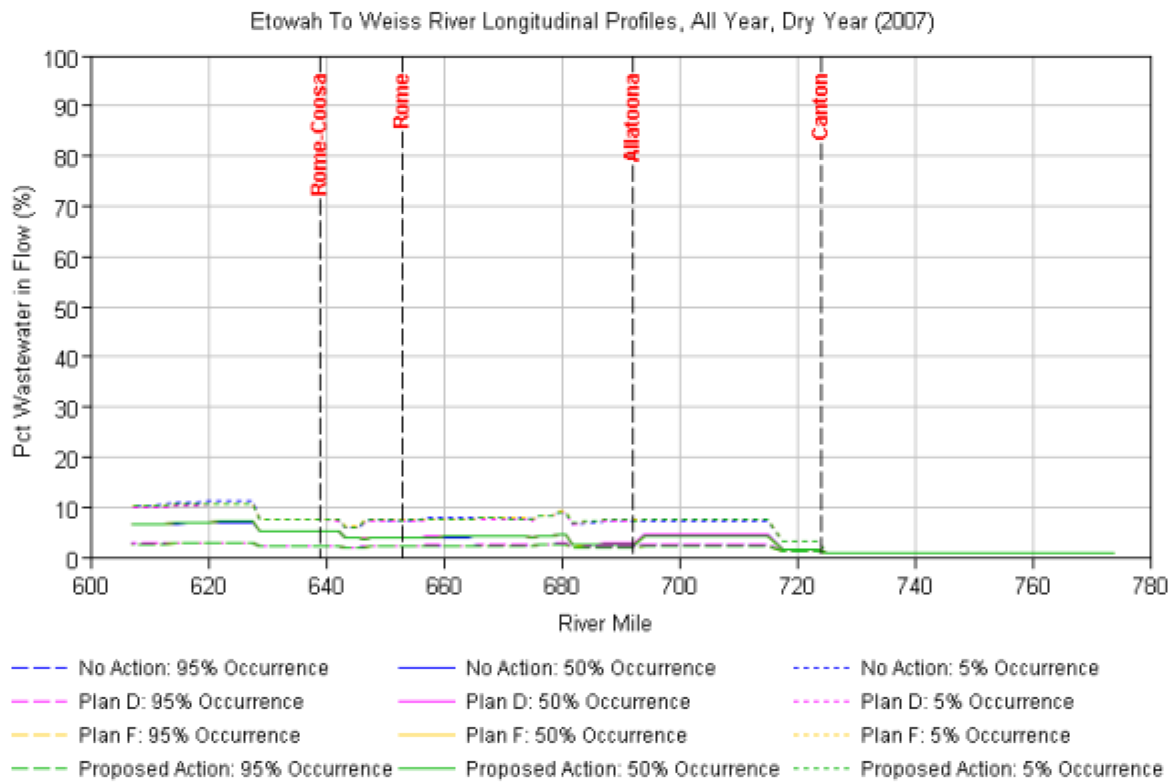


Figure 2.1-23 Etowah and Coosa rivers longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

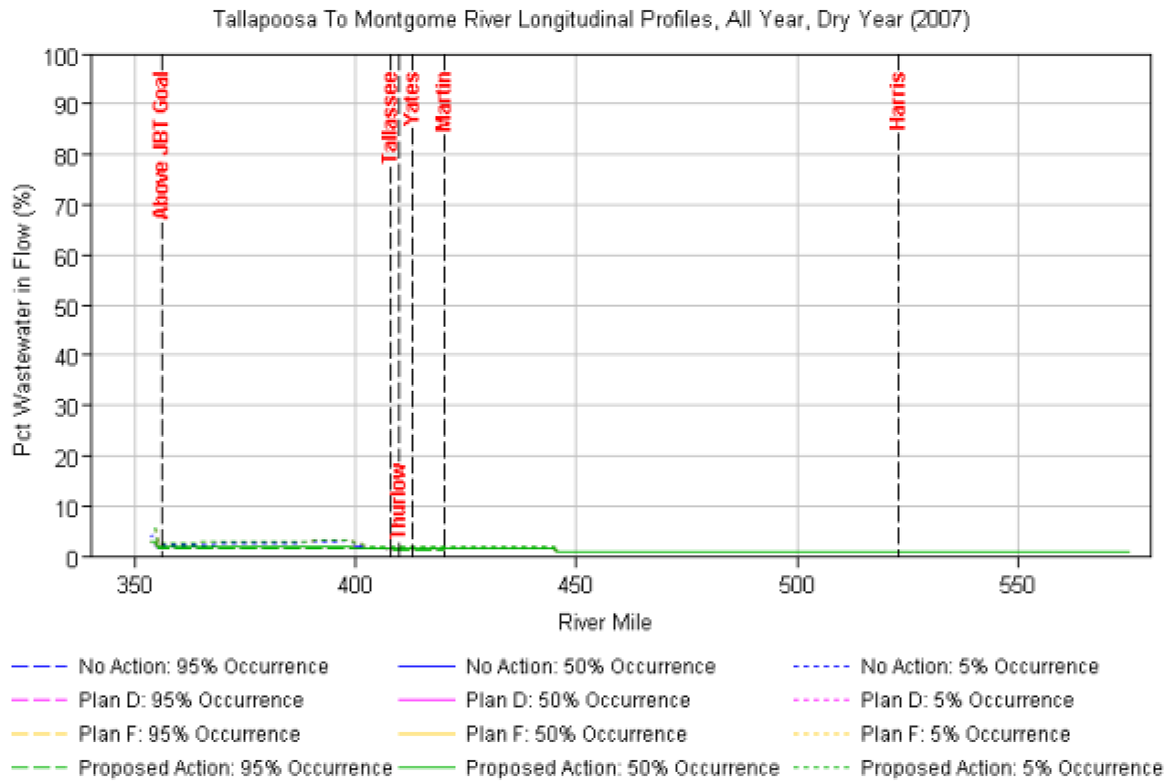


Figure 2.1-24 Tallapoosa River longitudinal profile of the percent of wastewater occurring in stream flow in 2007, a representative dry year.

2.2 Protection and enhancement of remaining free-flowing river habitats.

Identification and mapping of remaining free-flowing river habitats is generally beyond the scope of the current water control manual update. While the need is recognized, it is not a part of or affected by the Corps' effort to refine its operations to meet current conditions. The discussion that follows provides information that the Corps does have relevant to sediment transport, sedimentation, erosion and substrate characterization within our reservoirs.

The update of the ACT water control manual and plans focused on the operations of Corps reservoirs; therefore, it is most appropriate to focus on sediment transported by rivers rather than inputs from overland sources. However, comments are included where information was found that links land use change with an apparent effect on sediment loads. In general, the quantity and size of sediment transported by rivers is related to the size and frequency of dams in the river system. Impoundments behind dams serve as sediment traps where coarse bed material particles, typically sand and larger, settle in the lake headwaters where entering flows are slowed. Fine particles, typically silts and clays, can remain in suspension and pass through the lake downstream. Large impoundments typically trap most of

the sediment load retaining all the sand and coarser particles plus much of the silt- and clay-sized particles. Smaller, run-of-the-river impoundments tend to pass all sizes of suspended particles during low to moderate flows and coarser bed material particles during high flows. The impact of the impoundments on river form is that the upstream channels can aggrade sediment and undergo an increase in bed elevation, thus reducing the channel gradient. Below a dam the river typically becomes starved for sediment. The channel downstream of a dam might or might not respond to the reduction in sediment load. The channel response depends on how resistant to erosion the channel bed and banks are and how quickly sediment is replenished from downstream tributaries and upland erosion sources. A typical response for channels, with bed and banks composed of easily eroded sands, silts, or soft clays, is for the bed to degrade to a reduced elevation; the channel might also widen through bank erosion.

The four largest impoundments in the system—Lake Martin, Lake Allatoona, Carters Lake, and R.L. Harris Lake—act as sediment traps, retaining most of the sand and larger bed material. Lake Martin accounts for 31 percent of the storage volume in the basin. Lake Allatoona is next largest, with 13 percent, followed by Carters Lake and R.L. Harris Lake, each with 8 percent. Shoaling in Lake Martin is not considered to be a problem because of the huge volume of storage available. A summary of the 2000 Lake Allatoona sedimentation study is included in Section 2.2.2.7.

2.2.1 Tailwater Degradation

Tailwater degradation is the lowering of the river bed elevation immediately downstream of a dam. Three factors drive the occurrence and rate of tailwater degradation: a ready supply of sediment from upstream, erodibility of the bed material, and sufficient flow energy to transport the bed material. After a dam's construction, a large portion of the sediment (as much as 90 percent for large reservoirs) often becomes trapped in the lake above the dam. Flow below the dam, having lost its sediment load to the lake, now has excess capacity to transport sediment. If the bed and bank materials below the dam are composed primarily of erodible sands, silts, and clays, tailwater degradation occurs until either the gradient of the river is sufficiently reduced to dissipate the flow energy, or the bed erodes to a more durable material such as bedrock. A cursory investigation of the tailwater degradation below the ACT projects was made using available data.

2.2.1.1 Claiborne Lake

On the ACT system, the most downstream dam is Claiborne. The tailwater reach extends approximately 72.5 mi downstream to the mouth of the Tombigbee River. Construction on the project began in May 1965 and was completed in September 1976. The slope of the river below the dam is approximately 0.06 ft/mi. The pool has little storage, and it is considered a run-of-the-river project.

Flow and gage measurements have been made below the dam since 1980. They were collected and analyzed to evaluate the degradation below the dam. The tailwater is tidally influenced, and there is a noticeable hysteresis effect in the tailwater rating curve. However, some trends are noticeable. The data were used, along with the rating curves applicable during the time of the measurements, to relate the observed gage heights and flows to a theoretical flow of 10,000 cfs (Figure 2.2-1).

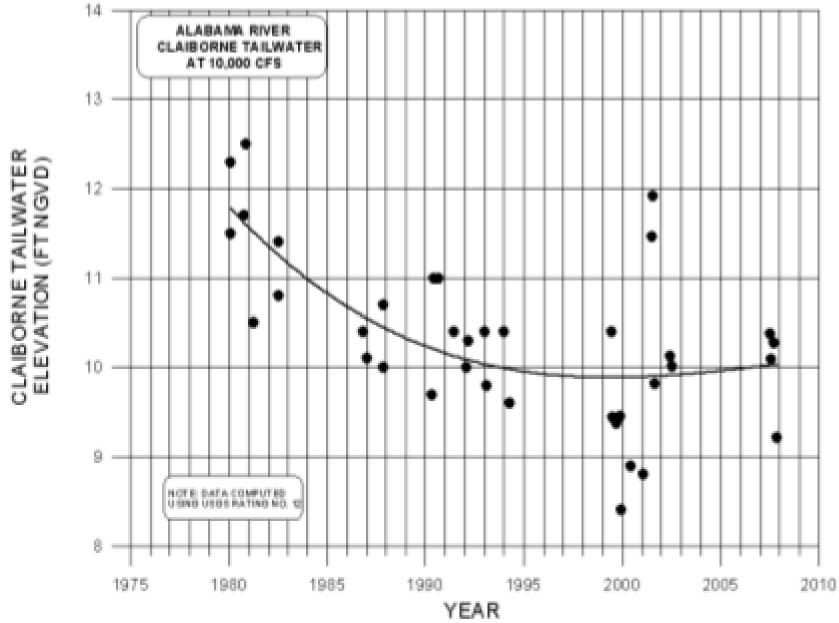


Figure 2.2-1 Claiborne Lake tailwater degradation.

A data gap exists between 1995 and 1999. In addition, the measurements after 2002 were all taken during extremely low flow and, thus, are less reliable because they are farther from the 10,000-cfs target. However, the data show a definite trend toward degradation from 1980 to 2000, perhaps caused by deepening and widening of the channel below the dam. From 2000 to 2007, the channel seems to be more stabilized. USGS has discontinued the rating curve at the site because of the variance in the gage caused by lockages, tides, and power generation at Millers Ferry Lock and Dam upstream.

2.2.1.2 Millers Ferry Lock and Dam and William "Bill" Dannelly Lake

Rating curve data are not available for Millers Ferry Lock and Dam tailwater.

2.2.1.3 Robert F. Henry Lock and Dam and R.E. "Bob" Woodruff Lake

Tailwater rating curve data are not available for Robert F. Henry Lock and Dam; however, historical sedimentation range surveys for the upper end of the Millers Ferry Lock and Dam pool (William "Bill" Dannelly Lake) were assessed for changes in the channel form. At range 30A, both widening and degradation have taken place since 1973 (Figure 2.2-2). However, the data show a drop in both widening and degradation rates since 1982. A trend plot of the sedimentation rates along the entire William "Bill" Dannelly Lake shows, for ranges 28A and 30A, bed degredation of about 0.5 ft per year from 1973 to 1982, and about 0.2 ft per year from 1980 to 1988 (Figure 2.2-3). For the next several ranges downstream from 28A, the bed has been at nearly a constant elevation. Data below range 20A indicate that the bed has been aggrading by several inches per year; thus, the scour is limited to the reach immediately below Robert F. Henry Lock and Dam.

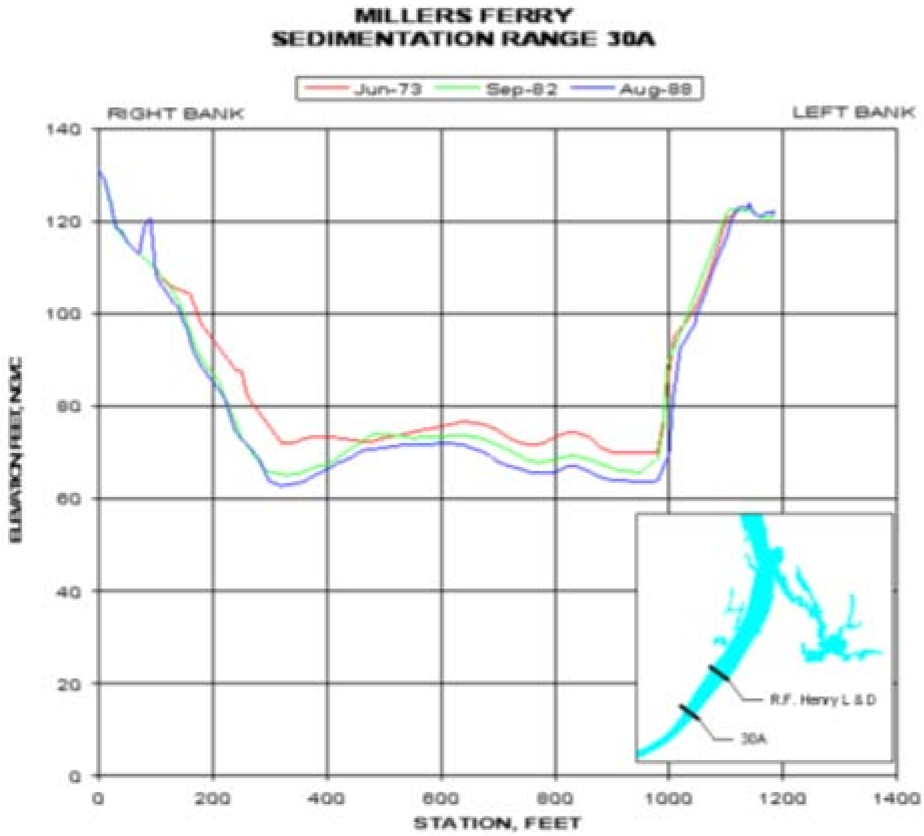


Figure 2.2-2 Tailwater degradation below Robert F. Henry Lock and Dam.

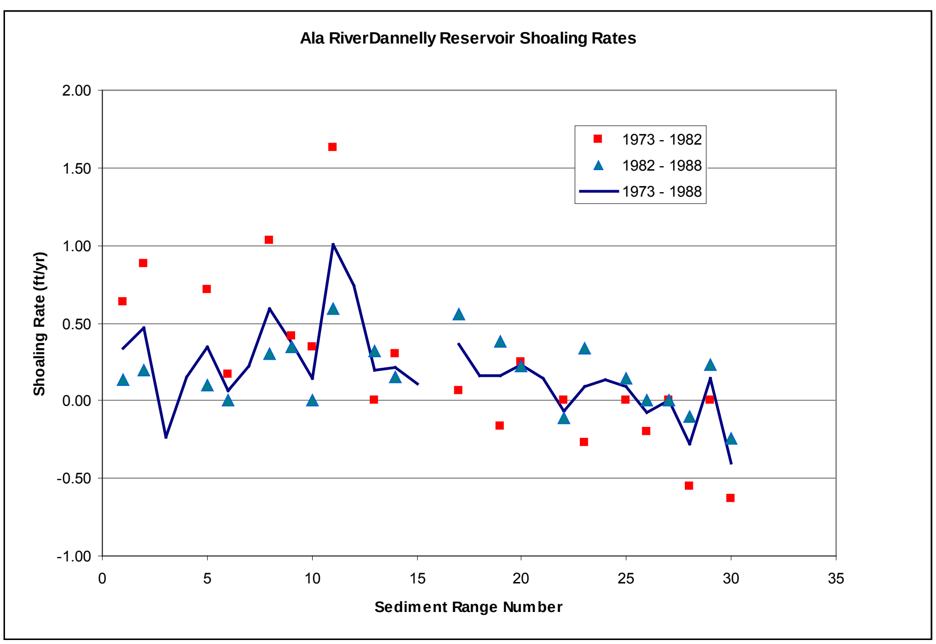


Figure 2.2-3 Shoaling rates for Millers Ferry Lock and Dam Pool, William "Bill" Dannelly Lake.

2.2.1.4 Logan Martin Lake

This APC dam was the second dam built as a part of an APC construction program that further developed the Coosa River in the late 1950s and the 1960s. Construction began in 1960, and operation began in 1964. No observable change has occurred in the tailwater rating curve developed for the project (Figure 2.2-4).

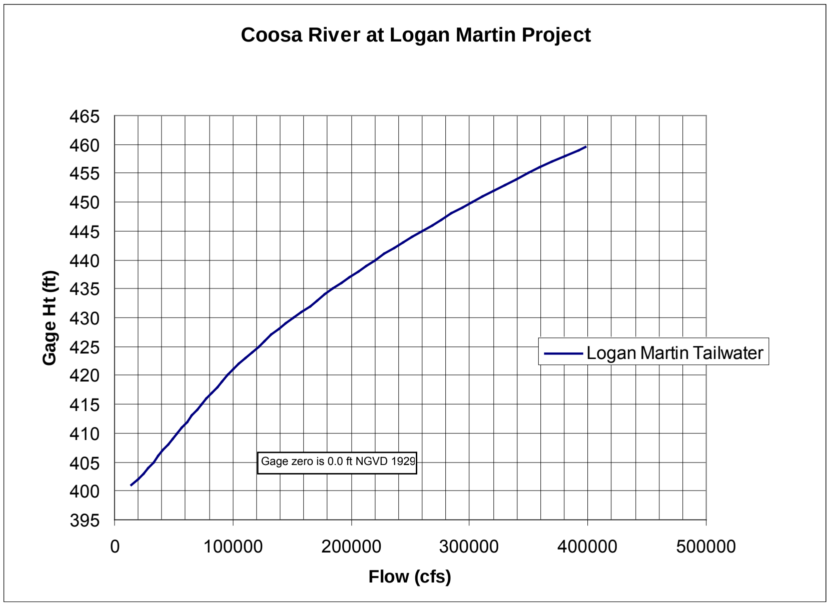


Figure 2.2-4 Logan Martin Lake tailwater rating curve.

2.2.1.5 H. Neely Henry Dam

This APC dam was part of an APC construction program that further developed the Coosa River in the late 1950s and the 1960s. Construction began in 1962, and operation began in 1966. No observable change has occurred in the tailwater rating curve developed for the project (Figure 2.2-5).

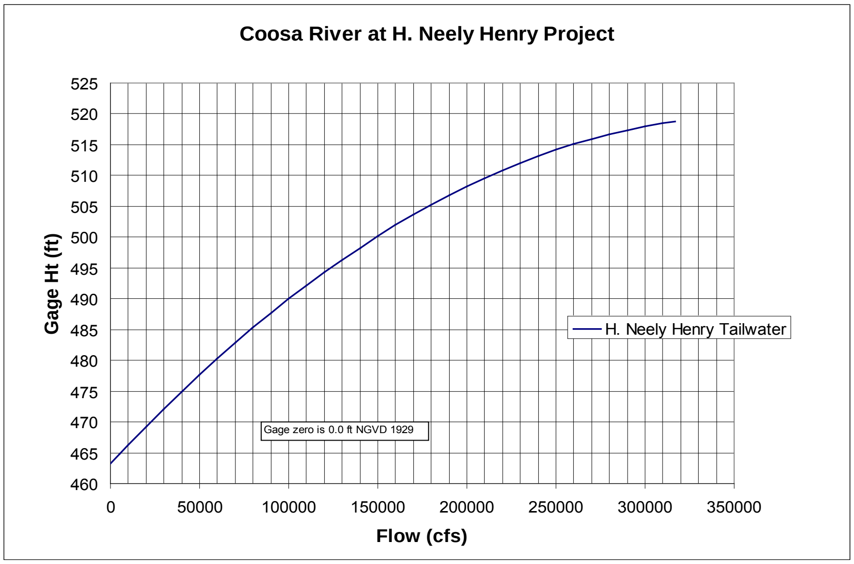


Figure 2.2-5 H. Neely Henry Dam tailwater rating curve.

2.2.1.6 Weiss Lake

This APC dam was part of an APC construction program that further developed the Coosa River in the late 1950s and the 1960s. Construction began in 1958, and operation began in 1961. There is a tailwater rating curve at both the power house and the spillway locations (Figure 2.2-6). No observable change has occurred in either of the tailwater rating curves developed for the project.

Figure 2.2-6 Weiss Lake tailwater rating curves.

2.2.1.7 R.L. Harris Lake

Construction began for this newest project on the Tallapoosa River in 1974, and operation began in 1983. No observable change has occurred in the tailwater rating curve developed for the project (Figure 2.2-7).

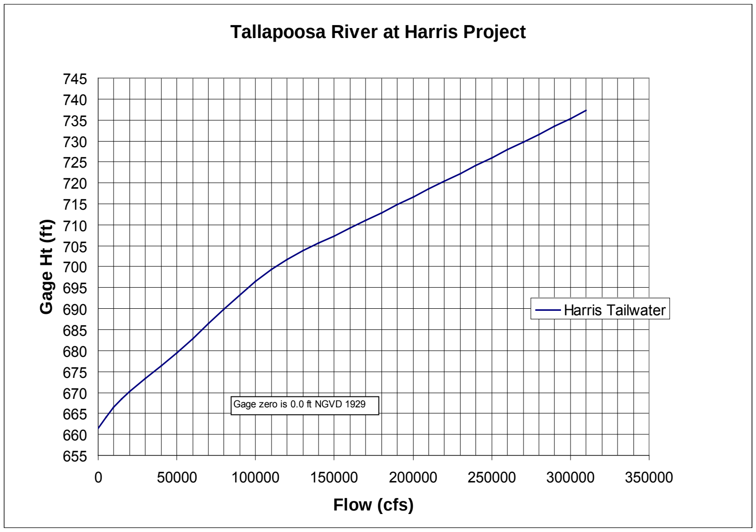


Figure 2.2-7 R.L. Harris Lake tailwater rating curve.

2.2.1.8 Carters Lake

Construction on Carters Lake was started in 1962 and completed in 1977. The USGS gage 0238500, (Coosawattee River at Carters) is at U.S. Hwy 411, just downstream of the Carters Reregulation Dam. Historic rating curve data extending from 1978 to 2008 at this gage were obtained from the USGS. The curves were plotted to determine the degree of movement in the curve over time (Figure 2.2-8).

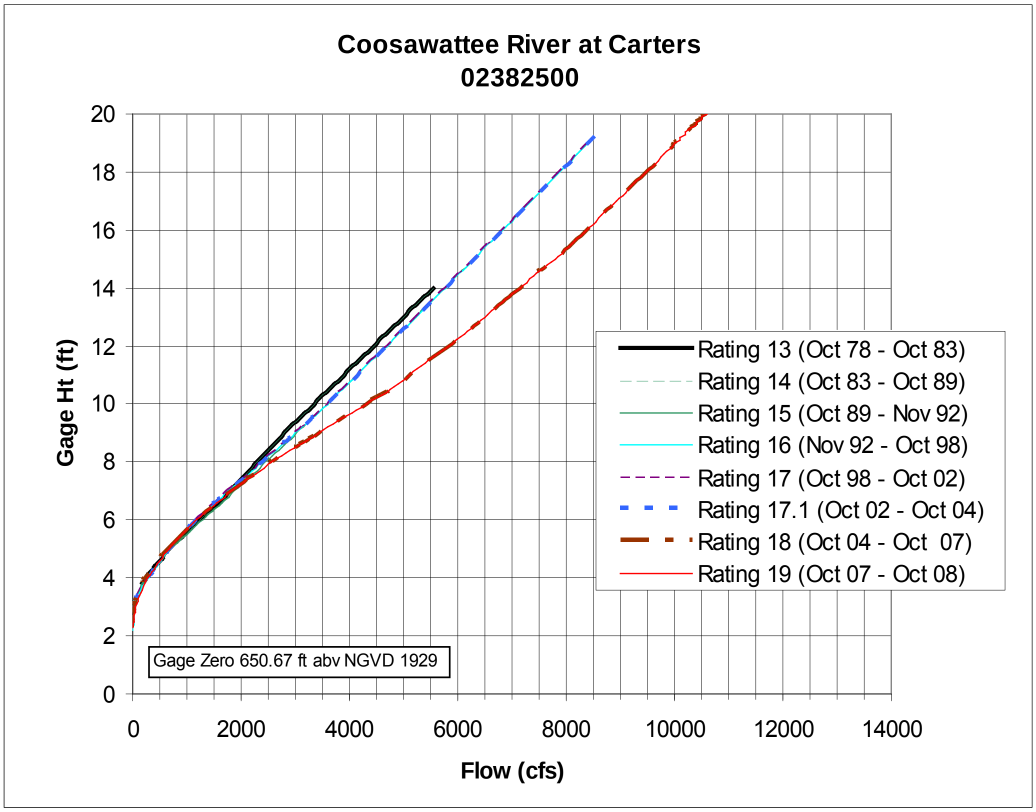


Figure 2.2-8 Carters Lake historic tailwater rating curves.

The curves show an obvious lowering of the tailwater of approximately 2–2.5 ft at flows above 3,000 cfs. However, the low flows do not appear to have been affected (Figure 2.2-9).

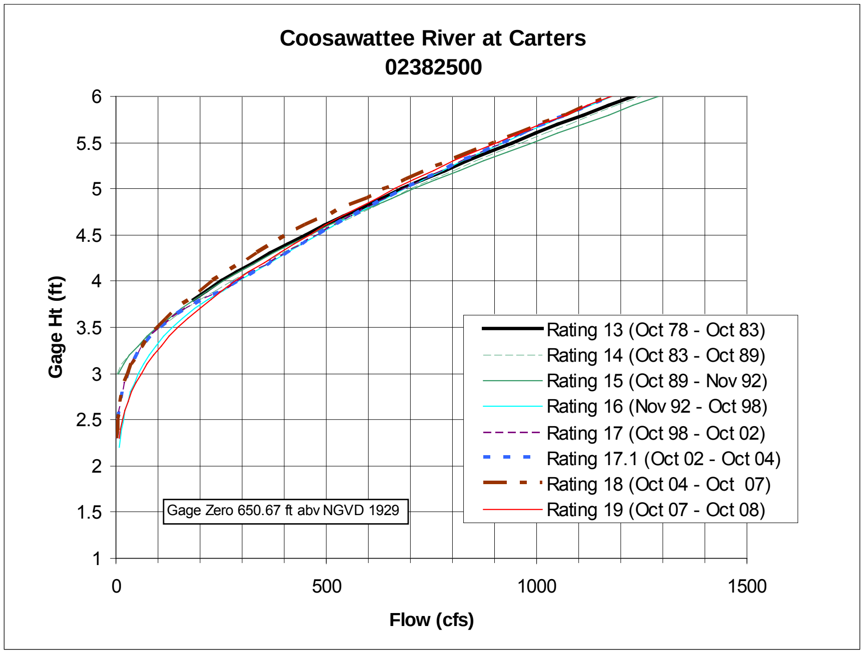


Figure 2.2-9 Carters Lake low-flow tailwater rating curves.

The lower part of the curve indicates that the channel has not degraded over time. The change in the upper part of the curve might have been because of the lack of high-flow data during the early years, and as more storms were observed, that part of the curve was well defined. Another possibility is that overbank clearing downstream might have occurred, or modifications to Hwy 411. The significant point is that the channel does not appear to have degraded. The presence of rock in the channel offers a reasonable and probable explanation for the lack of degradation.

2.2.1.9 Lake Allatoona

Construction on the dam was completed in 1950. The USGS gage 0239400, (Etowah River at Lake Allatoona, above Cartersville, Georgia) is 0.8 mi downstream from Lake Allatoona. Historic rating curve data extending from 1979 to 2008 at this gage were obtained from the USGS. The curves were plotted to determine the degree of movement in the curve over time (Figure 2.2-10). The curves show little difference over the period of record. The lower part of the curve shows no degradation over the 1979–2008 period, but degradation might have occurred during construction of the dam (Figure 2.2-11).

2.2.2 Impact of Existing Operations on River Channel Stability

A specific gage analysis was conducted at several USGS stream gaging stations in the basin to better understand the impact of dam operations on the stability of the rivers.

A cursory investigation of the condition of the pools was made to see if shoaling is a significant issue. Historic sediment ranges were evaluated where possible and other available data were used to estimate the appropriateness of using the existing area-capacity relationships in the modeling efforts.

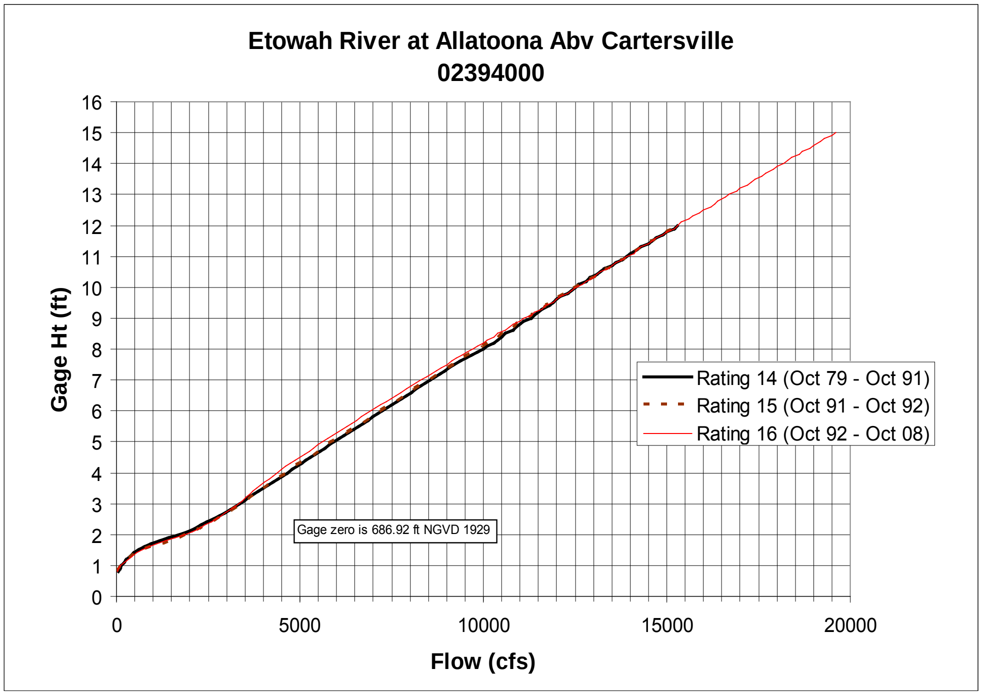


Figure 2.2-10 Lake Allatoona tailwater rating curve.

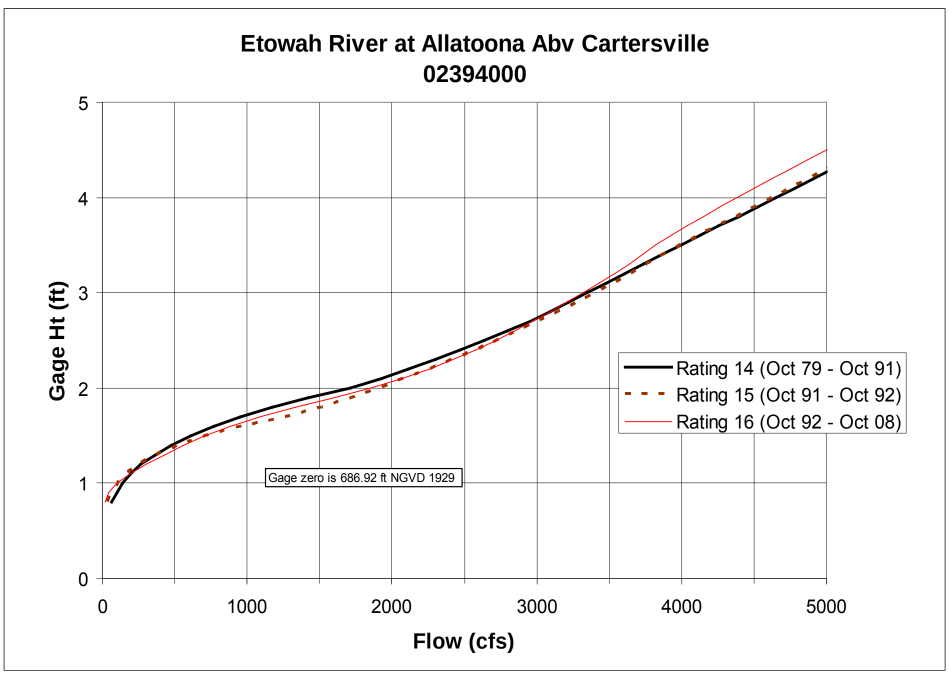


Figure 2.2-11 Lake Allatoona tailwater rating curve.

2.2.2.1 Claiborne Lake

Storage volume of the lake is listed at 96,360 ac-ft at elevation 35 ft. Sediment range surveys of the Claiborne Lake were made initially in 1982 and updated again in 2009. However, the pool has a relatively small amount of storage, and it is a run-of-the-river project. Operation of the project is not affected by the

storage lost to shoaling in the lake, and it is reasonable to assume that the existing area/capacity curve is adequate to use in modeling the system and to include in the present WCM update.

A table of the shoaling locations and total dredging amounts since 1981 is shown below (Table 2.2-1). The data show that the location of the greatest dredging/shoaling is at the Millers Ferry Lock and Dam lower approach at RM 133, although the frequency of dredging is greatest at the Claiborne Lake upper approach, with consecutive periods between dredging events of 2, 6, 5, and 12 years since 1985.

2.2.2.2 Millers Ferry Lock and Dam and William “Bill” Dannelly Lake

Storage volume of the lake is listed at 346,250 ac-ft at elevation 80.8 ft. Surveys of the 30 sediment ranges in William “Bill” Dannelly Lake were made initially in 1973, 1982, and again in 1988 (Figure 2.2-12). The surveys were repeated in 2009.

The sections show some shoaling in the lower part of the reservoir between 1973 and 1982, at a reduced rate between 1982 and 1988. All 30 ranges were compared using approximate methods on the basis of the channel elevation change for the two periods. Data were not available for all the sections in the 1982 survey, but rates were computed for all the available data (Figure 2.2-12).

Table 2.2-1
Claiborne Lake dredging 1981–2007

Mile	Bar name	Period	Dredged	Cubic yards
72.5	Claiborne Lock	05/28/85–05/31/85	34+45 to 41+95	8,706
	Upper Approach	05/24/87–05/26/87	NA	12,044
		07/22/93–07/23/93	0+00 to 4+50	9,451*
		06/05/95–06/06/95	66+50 to 64+00	8,730*
		10/15/07–10/16/07	2+06 to 7+37	8,120
107.9	Wilcox (Bar 107)	10/07/92–10/10/92	22+00 to 36+40	24,313
		09/21/97–09/25/97	44+83 to 30+60	28,263
		10/19/07–10/20/07	32+17 to 43+78	4,237
117.5	Holly Ferry	10/05/92–10/07/92	5+00 to 15+00	15,977
122.7	Walnut Bluff	09/25/92–10/05/92	1+00 to 14+50	38,529
		10/20/07–10/23/07	3+28 to 14+28	25,076
133.0	Millers Ferry Lock and Dam	08/15/90–08/25/90	21+10 to 24+60	86,710
	Lower Approach		33+90 to 55+23	
		08/17/92–08/23/92	22+00 to 25+00	1,242
		10/23/07–10/23/07	54+00 to 55+59	735

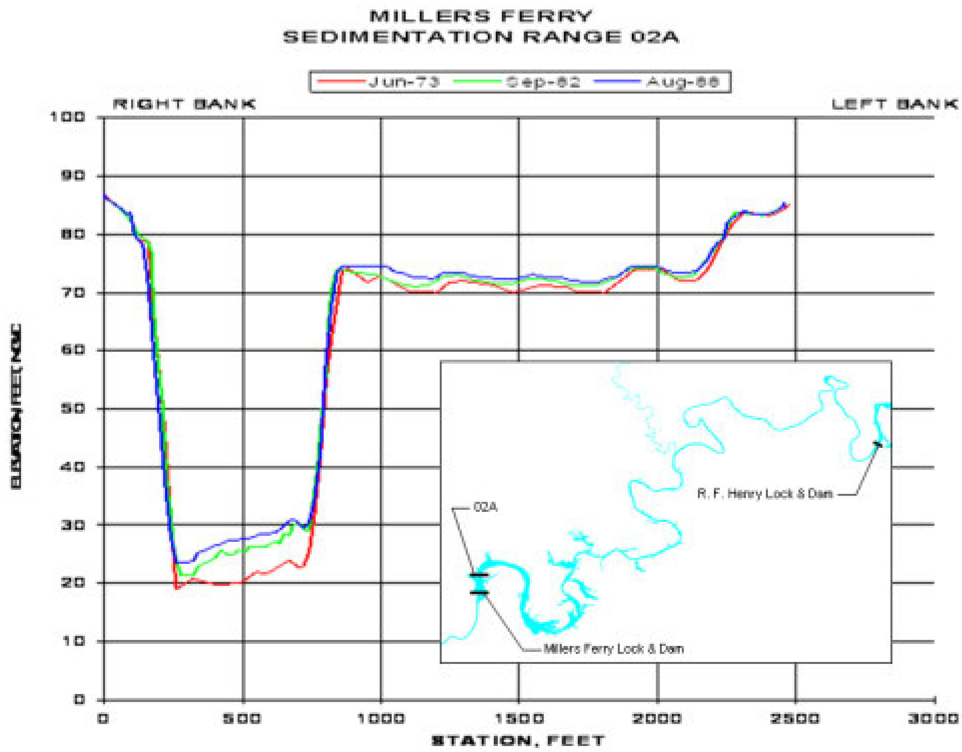


Figure 2.2-12 Cross section of Millers Ferry Lock and Dam Pool, William "Bill" Dannelly Lake, sedimentation range 02A.

For the 1973 to the 1982 period, shoaling and scour rate were the greatest, ranging from shoaling 1.6 ft/yr near Range 11, in the lower part of the lake to scouring 0.6 ft/yr at range 30 just below Robert F. Henry Lock and Dam. The 1982–1988 period shows that some shoaling occurred during that period over much of the lake with only minor scour in the upper lake reach. The overall trend from 1973 to 1988 indicates that, in general, scour has taken place immediately below Robert F. Henry Lock and Dam at range 30 downstream to about range 26. Sediment deposition has taken place from range 25 downstream to range 01, immediately above Millers Ferry Lock and Dam, at a rate of about 0.1 ft to 1.0 ft per year.

Geographic information system (GIS) data for the channel above Millers Ferry Lock and Dam were obtained in February 2009. The data can be used to develop a new area/capacity curve but would require additional hydrographic surveys to extend the limits to the top of banks. An update of the area/capacity curve would be helpful, but using the present curve for the present modeling effort is not unreasonable.

2.2.2.3 Robert F. Henry Lock and Dam and R.E. "Bob" Woodruff Lake

Storage volume of the lake is listed at 234,200 ac-ft at elevation 125 ft. Surveys of the R.E. "Bob" Woodruff Lake were made initially in 1974. The surveys were repeated in 1982 and 1988. They were re-surveyed again in 2009. Throughout the entire pool from 1974 to 1988, minor amounts of both shoaling and bank erosion occurred with the highest rates occurring between 1974 and 1982. The shoaling and bank erosion shown in Figure 2.2-13 is representative for all the sedimentation ranges in the pool.

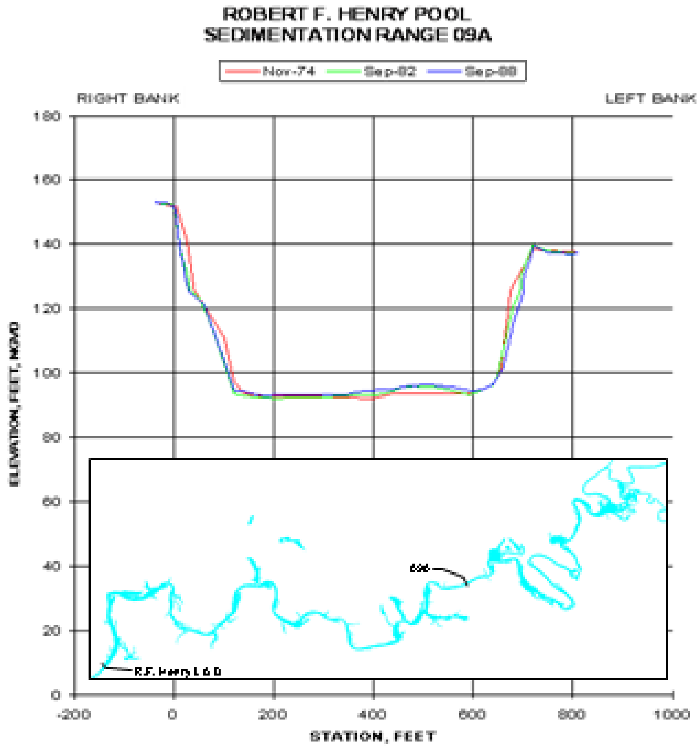


Figure 2.2-13 Cross section of Robert F. Henry Lock and Dam and R.E. "Bob" Woodruff Lake, sedimentation range 09A.

The sedimentation range surveys indicate that the overall change in storage is small, thus operation of the project would not be affected by the shoaling shown in the lake, and it is reasonable to assume that the existing area/capacity curve is adequate to use in modeling of the system and to include in the present WCM update.

2.2.2.4 Logan Martin Lake

Logan Martin Lake is in the Alabama counties of Calhoun, St. Clair, and Talladega. The lake has a surface area of 15,263 ac and 275 mi of shoreline at a normal pool elevation of 465 ft. Siltation studies by APC have been limited to evaluating the recreational impact of siltation at the mouths of tributaries. Studies indicate that shoaling over the years is reduced because of increased vegetation in the basin. Erosion studies indicate that sheet and rill erosion on cropland for 1982 was approximately 7.2 tons/ac/yr in Alabama. Sheet and rill erosion on cropland for 1997 was approximately 6.0 tons/ac/yr in Alabama. Cropland acreages were obtained from the National Agricultural Statistics Service (NASS) Web site for the years 1970 and 2001. Assuming no improvement in erosion control (worst case) from 1970 to 1982 and no improvement from 1997 to 2001, the percent change in erosion from 1970 to 2001 was derived (Table 2.2-2). The impact of the erosion on the Area/Capacity relationship has not been determined.

Table 2.2-2
Erosion 1970–1982 for counties in the ACT Basin

County	Year	Acres cultivated	% Change	Erosion rate	Tons soil eroded	% Change
Calhoun	1970	14,210		7.2	102,312	
	2001	5,518	–61.2%	6.0	33,108	–67.6%
Cherokee	1970	40,080		7.2	288,576	
	2001	32,518	–18.9%	6.0	195,108	–32.4%
Etowah	1970	20,200		7.2	145,440	
	2001	6,018	–70.2%	6.0	36,108	–75.2%
St. Clair	1970	4,810		7.2	34,632	
	2001	18	–99.6%	6.0	108	–99.7%
Talladega	1970	28,250		7.2	203,400	
	2001	18,318	–35.2%	6.0	109,908	–45.96%

2.2.2.5 H. Neely Henry Lake

H. Neely Henry Lake is in the Alabama counties of Calhoun, Cherokee, Etowah, and St. Clair. H. Neely Henry Lake has a surface area of 11,235 ac and 339 mi of shoreline at a normal pool elevation of 508 ft. Siltation studies by APC have been limited to evaluating the recreational impact of siltation at the mouths of tributaries. Studies indicate that shoaling over the years is reduced because of increased vegetation in the basin. Erosion studies indicate that sheet and rill erosion on cropland for 1982 was approximately 7.2 tons/ac/yr in Alabama. Sheet and rill erosion on cropland for 1997 was approximately 6.0 tons/ac/yr in Alabama. Cropland acreages were obtained from the NASS Web site for the years 1970 and 2001. Assuming no improvement in erosion control (worst case) from 1970 to 1982 and no improvement from 1997 to 2001, the changes shown in Table 2.2-2, for H. Neely Henry Lake are applicable.

2.2.2.6 Weiss Lake

Weiss Lake is in Cherokee County, Alabama (population 23,988, year 2000) and Floyd County, Georgia (population 90,565, year 2000). The surface area of the reservoir at a normal pool elevation of 564 ft is approximately 30,200 ac with approximately 447 mi of shoreline. Siltation studies by APC have been limited to evaluating the recreational impact of siltation at the mouths of tributaries. Studies indicate that shoaling over the years is reduced because of increased vegetation in the basin. Erosion studies indicate that sheet and rill erosion on cropland for 1982 was approximately 7.2 tons/ac/yr in Alabama. Sheet and rill erosion on cropland for 1997 was approximately 6.0 tons/ac/yr in Alabama. Cropland acreages were obtained from the NASS Web site for the years 1970 and 2001. Assuming no improvement in erosion control (worst case) from 1970 to 1982 and no improvement from 1997 to 2001, the changes shown in Table 2.2-2, for Weiss Lake are applicable.

2.2.2.7 Lake Allatoona

A cursory screening of the need for additional sedimentation range surveys to re-compute the area-capacity curve and of the shoaling tendencies of Lake Allatoona was made in the year 2000 (USACE, Mobile District 2000). That study was deemed adequate to determine the need for further re-survey of sediment ranges or reestablishing the area/capacity curve.

Analysis of the data revealed that sedimentation and scour had occurred in varying amounts throughout the lake. Overall, the analysis revealed consistently light or no sedimentation in the main body of the lake. Most of the high sedimentation occurred in the outermost reaches of the lake. The reaches are primarily high-inflow locations such as stormwater system outlets and at the mouths of tributary streams. As a result, increased sedimentation is most likely occurring on two levels: (1) sediment loads being carried into the lake with the tributary and outlet flows, and (2) increased flow velocities in those areas are actually eroding the channels and depositing the resulting sediment further downstream.

The level of increased sedimentation in the outermost reaches is not surprising because the area surrounding the lake has experienced dramatic development in recent years. Much of the development can be seen in Cobb County, especially along the I-75 corridor, and in Cherokee County between I-75 and I-575. The region has matured into a major part of suburban Atlanta, bringing with it extensive residential and commercial infrastructure.

The study indicates that the shoreline of Lake Allatoona seems to have experienced relatively little sedimentation or scour in the years since its construction. The shoreline appears to be consistent throughout each of the survey data set.

On the basis of the year 2000 study, it is reasonable to assume that the existing area/capacity curve is adequate for ResSim modeling and for continued use in the Lake Allatoona WCM.

2.2.2.8 Carters Lake

Storage volume of Carters Lake is listed at 242,200 ac-ft for inactive storage, 134,900 ac-ft for power storage, and 95,700 ac-ft for flood storage, for a total storage of 472,800 ac-ft at the top of the flood-control pool elevation of 1,099 ft. No post-construction surveys of the pool have been made since the pool was filled because the pool is 300–400 ft deep near the dam, and until recently, surveying equipment adequate to reach these depths was not available. Surveys were conducted in 2009. Modern equipment now exists to adequately survey at the depths required at Carters Lake. The surveys should be obtained and analyzed to decide if an update of the area/capacity curve would be warranted.

2.2.2.9 R.L. Harris Lake

R.L. Harris Lake is in the Alabama counties of Randolph and Clay. The lake has a surface area of 10,661 ac at a normal summer pool elevation of 793 ft. Construction was completed in 1983, and no sedimentation studies have been done on R.L. Harris Lake. However, because of the relatively recent completion date and other erosion/sedimentation data developed for other locations, it is reasonable to assume that the existing area/capacity relationship would be adequate for modeling purposes.

2.3 Aquatic organism passage at dams, particularly in the upstream direction.

Use of locks to aid in fish passage are currently being implemented and evaluated in cooperation with the Service, the Nature Conservancy, Auburn University and others. Other studies to define target species and investigate the feasibility of providing passage at select facilities are important, but beyond the scope of the current effort.

2.4 Temperature effects on species of concern from reservoirs and hydroelectric operations.

No studies were conducted for the DEIS for the WCM update. As new information becomes available adaptive management will be implemented. Water temperature changes that would be expected were described in Section 2.2. The effects of these potential changes on aquatic biota are further evaluated and presented in section 6.5 of the PDEIS.

2.5 Minimum flows available for Weiss bypass channel.

The USACE does not have control over the Weiss Bypass Channel. The minimum flows during the summer at this location should be discussed with FERC.

2.6 Conservation and recovery of natural flow variability, and reduction of effects of hydropower peaking flows on species of concern.

A return to “natural” (pre-dam) flow variability is not attainable or desirable given other Congressionally authorized purposes of hydropower, flood control, and recreation. The need for seasonal minimum flows is addressed at Carters via a minimum monthly flow release target from the re-regulation pool as part of the Proposed Action. At Lake Allatoona, where there is no re-regulation pool, implementation of a non-hydropower peaking operation for a natural flow regime would require a shutdown of hydropower production at the facility for a specified period of time. This would necessarily occur since there is no possible gradation of water releases between the “off” (0 cfs) and “on” (~3500 cfs) conditions per main hydropower unit. Such a shutdown is not considered practicable given that hydropower production is an important component of the regional power grid.

2.7 Maintenance of floodplain connectivity to flood pulses.

Studies are not currently available to address this question because there is no Lidar in non-reservoir sections of the Basin. USACE can provide stage and flow data but does not know what flows may be required.

Dedicated studies evaluating the effects of management actions on floodplain connectivity are not currently available. However, section 6.5.1 of the PDEIS will review the implications of the proposed management actions for the WCM update. USACE can provide stage and discharge data, but a comprehensive geomorphological assessment is necessary to determine the extent of flood pulses necessary to establish connectivity.

2.8 Potential for reintroductions, enhancements of listed species populations in the basin.

Reintroduction of species and enhancement of habitat for Federally listed species is beyond the scope of the current Water Control Manual update. Surveys for species and habitat for the proposed action have been coordinated with the Service and have been recently completed.

In 2010, the Corps sponsored a survey of mussel species in selected reaches of the Coosa River drainage in Georgia (Dinkins and Hughes 2011), representing the most comprehensive study of T&E mussels in the basin since Williams and Hughes (1998). The Corps has worked closely with the FWS and APC

during the development of the updated WCM to ensure both stakeholders concerns are addressed. We will continue this high level of communication and collaboration as opportunities for adaptive management and further study arise.

Dinkins, G and M. H. Hughes. 2011. Freshwater mussels (Unionidae) and aquatic snails of selected reaches of the Coosa River drainage, Georgia. Dinkins Biological Consulting, Powell, TN. January 2011.

Williams, J. D., and M. H. Hughes. 1998. Freshwater mussels (Unionidae) of selected reaches of the main channel rivers in the Coosa drainage of Georgia. U.S. Geological Survey, Florida, Caribbean Science Center, Gainesville, Florida. October 1998.

2.9 Restoration and maintenance of healthy water quality parameters for all life stages of aquatic species under a variety of flow conditions.

Species specific habitat and water quality requirements are lacking for many aquatic organisms inhabiting the ACT basin. Even fewer data are available to describe ontogenic shifts with respect to these environmental parameters. As such, dedicated studies of key species, including T&E or recreationally important species, should be undertaken to address this data need; however, the level of effort needed to accomplish this is beyond the intent of the current work.

As illustrated in Figure 2.2-15 and described in section 2.2, a large percentage of mainstem reaches in the ACT Basin meet current water quality standards. Section 6.5.3 of the DEIS will review the proposed management alternatives and the implications of water quality changes on aquatic biota. As previously stated, the Corps will continue to work closely with stakeholders in adaptive management and seek opportunities for further study.

2.10 Development of adaptive management protocols that include goals, objectives, research, and monitoring to allow greater understanding of riverine ecosystem response to complex variables.

Although we are not opposed to adaptive management to achieve specific objectives, when possible, the development of research and monitoring efforts goes beyond the stated scope of the current water control manual update, and therefore cannot be addressed in the DEIS.

Appendix VI: Corps' November 22, 2011, response to the Service's questions regarding the Corps' June 6, 2011 document.

Questions for the Corps regarding their June 6, 2011, Response to USFWS ACT PAL

1. Page 10: When would be the dates of the seasonal navigation releases? Please tell us if this will be a guaranteed minimum flow or if it will be only “as requested” by navigation interests. What will be the time span for these navigational releases, e.g., days or months?

   RESPONSE: There would not be seasonal navigation releases in the sense that navigation would be supported only during a specified range of dates. Instead, the Corps and APC would make releases on the Alabama River at any time that sufficient water were available to support navigation. The amount of water required to support navigation has been calculated for both a 9-foot channel and for a 7.5-foot channel for each month during the year. That volume of water varies because of an assumption that annual maintenance dredging will occur on the river. As the channel fills with sediment after dredging, through the year and up to the next dredging event, increasing volumes of water are required to provide a 7.5- or 9-foot channel. Once the dredging event occurs, the required volume declines.

   Because navigation requires large volumes of water to maintain the specified channel depths, adequate water would only occur during normal hydrologic conditions and drought conditions would require the suspension of those releases. Therefore the concept of a guaranteed minimum flow during normal hydrologic conditions would not apply since the required navigation flows would be much greater than typical environmental minimum.

   The required flows for each month are determined from the following tables. JBT goal is the combined Jordan-Bouldin-Thurlow flow and is essentially the same as the flow at Montgomery. As an example, from Table 1-1, in January a flow rate of 9,950 cfs would be required to support a 7.5-foot channel below Claiborne dam and to support that flow an APC release at JBT of 7,960 cfs would be required. Tables 1-2 and 1-3 show the basin inflows that would be required to meet those targets. Because the APC reservoirs historically have had storage available for release or requirements for refilling (shown as negative numbers) the basin inflows may be lesser or greater than the navigation target.

Table 1-1 Monthly Navigation Flow Target in CFS

Month	9.0-ft target below Claiborne Lake (cfs)	9.0-ft JBT goal (cfs)	7.5-ft target below Claiborne Lake (cfs)	7.5-ft JBT goal (cfs)
Jan	11,600	9,280	9,950	7,960
Feb	11,600	9,280	9,950	7,960
Mar	11,600	9,280	9,950	7,960
Apr	11,600	9,280	9,950	7,960
May	11,075	8,880	9,740	7,792
Jun	10,550	8,480	9,530	7,624
Jul	10,025	8,080	9,320	7,456
Aug	9,500	7,680	9,110	7,288
Sep	9,500	7,280	8,900	7,120
Oct	9,500	7,280	8,900	7,120
Nov	11,600	9,280	9,950	7,960
Dec	11,600	9,280	9,950	7,960

Table 1-2 Basin Inflow Above APC Projects Required To Meet A 9.0-Ft Navigation Channel (cfs)

Month	APC navigation target	Monthly historic storage usage	Required basin inflow
Jan	9,280	–994	10,274
Feb	9,280	–1,894	11,174
Mar	9,280	–3,028	12,308
Apr	9,280	–3,786	13,066
May	8,880	–499	9,379
Jun	8,480	412	8,068
Jul	8,080	749	7,331
Aug	7,680	1,441	6,239
Sep	7,280	1,025	6,255
Oct	7,280	2,118	5,162
Nov	9,280	2,263	7,017
Dec	9,280	-994	10,274

Table 1-3 Basin Inflow Above APC Projects Required To Meet A 7.5-Ft Navigation Channel (cfs)

Month	APC navigation target	Monthly historic storage usage	Required basin inflow
Jan	7,960	–994	8,954
Feb	7,960	–1,894	9,854
Mar	7,960	–3,028	10,988
Apr	7,960	–3,786	11,746
May	7,792	–499	8,291
Jun	7,624	412	7,212
Jul	7,456	749	6,707
Aug	7,288	1,441	5,847
Sep	7,120	1,025	6,095
Oct	7,120	2,118	5,002
Nov	7,960	2,263	5,697
Dec	7,960	-994	8,954

2. Page 29: Why would there be such oxygen differences from the no action alternative just below Carters in Figure 2.1-7? Figure 2.1-7 is during a dry year, so wouldn't they most likely be releasing a Zone 2 240 cfs flow under the proposed action alternative? That would seem to be the same type of release as under the no action alternative for a dry year.

RESPONSE: The oxygen differences from the no action alternative stem from the modeled values occurring in the Carters Reregulation Pool. As seen in the following two figures (2-1 and 2-2), the Reregulation Pool water surface elevation can be distinctly lower during dry years compared to normal and wet years, leading to lowered modeled DO values.

The other figures that follow (Figures 2-3, 2-4, 2-5 and 2-6) show the DO levels and pool water surface elevations for wet and normal years respectively. During normal years, little change would be expected except under rare occurrences (5% occurrence).

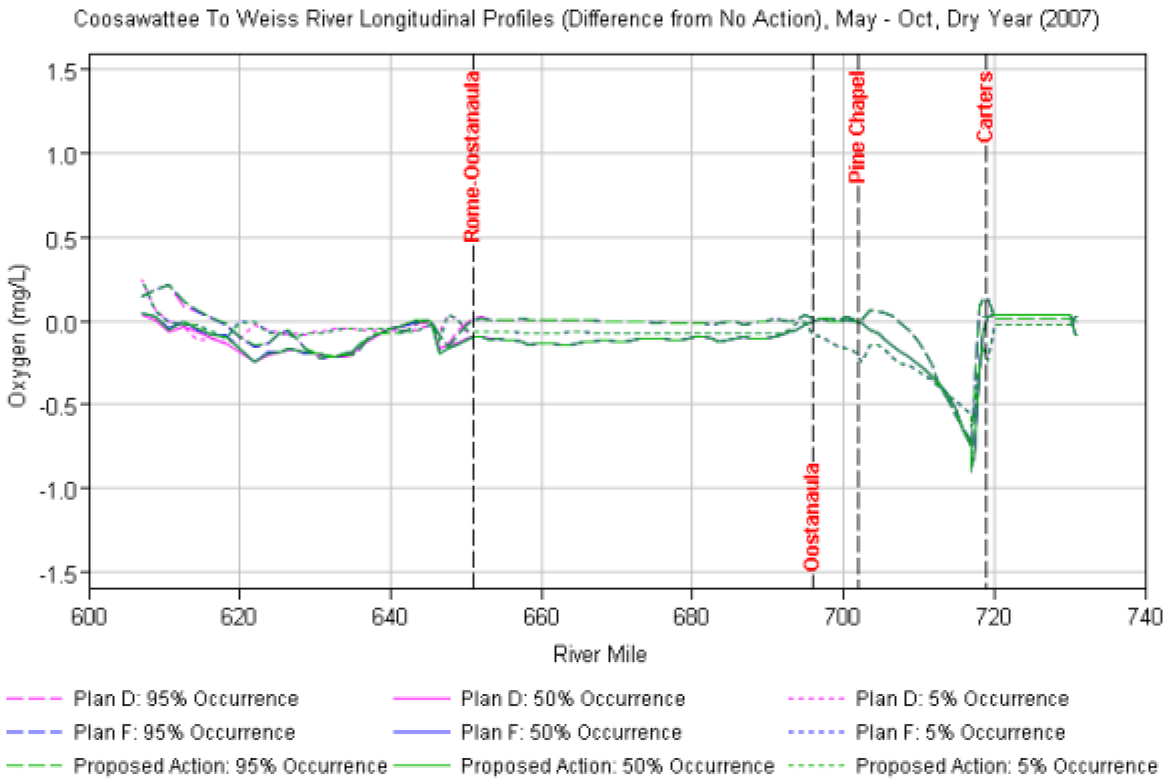


Figure 2-1. Oxygen longitudinal profile for May to October in a representative dry-weather year (2007) from Carters Lake downstream to Weiss Lake.

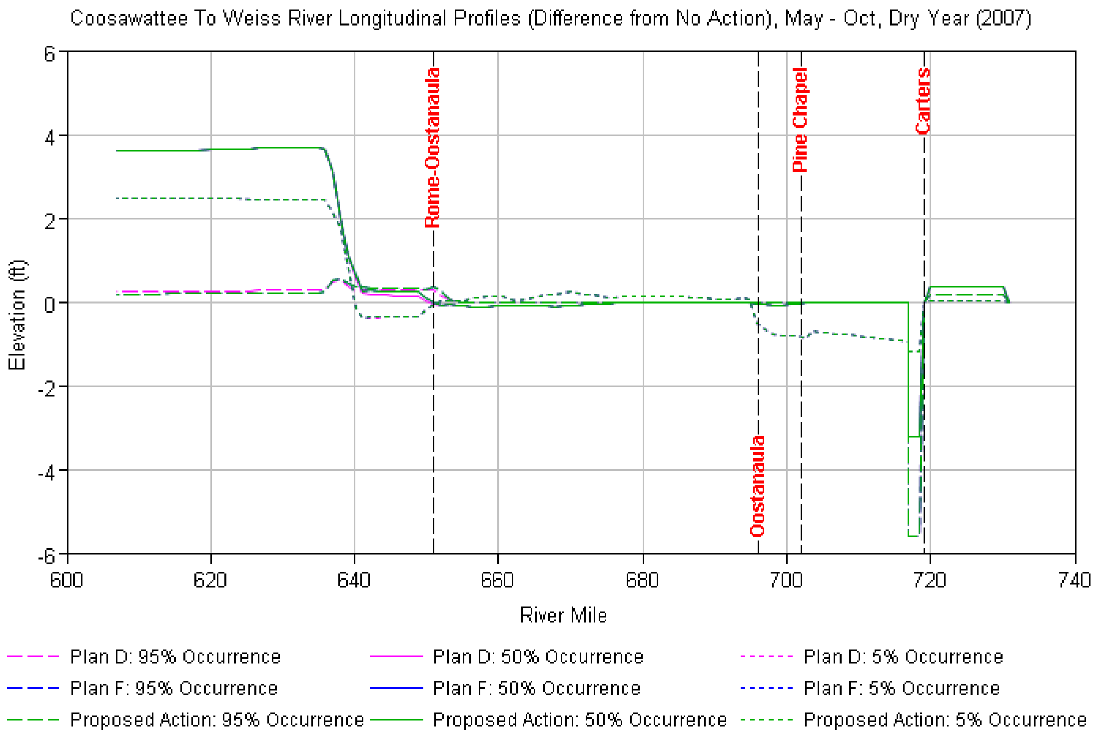


Figure 2-2. Water surface elevation longitudinal profile for May to October in a representative dry-weather year (2007) from Carters Lake downstream to Weiss Lake.

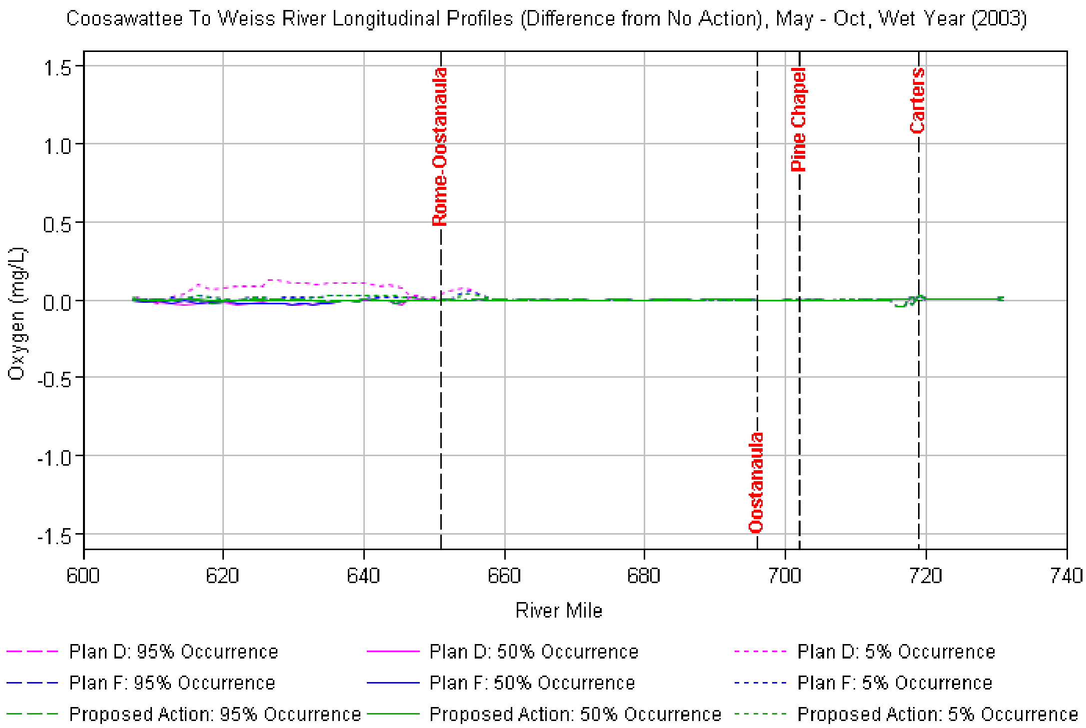


Figure 2-3. Oxygen longitudinal profile for May to October in a representative wet-weather year (2003) from Carters Lake downstream to Weiss Lake.

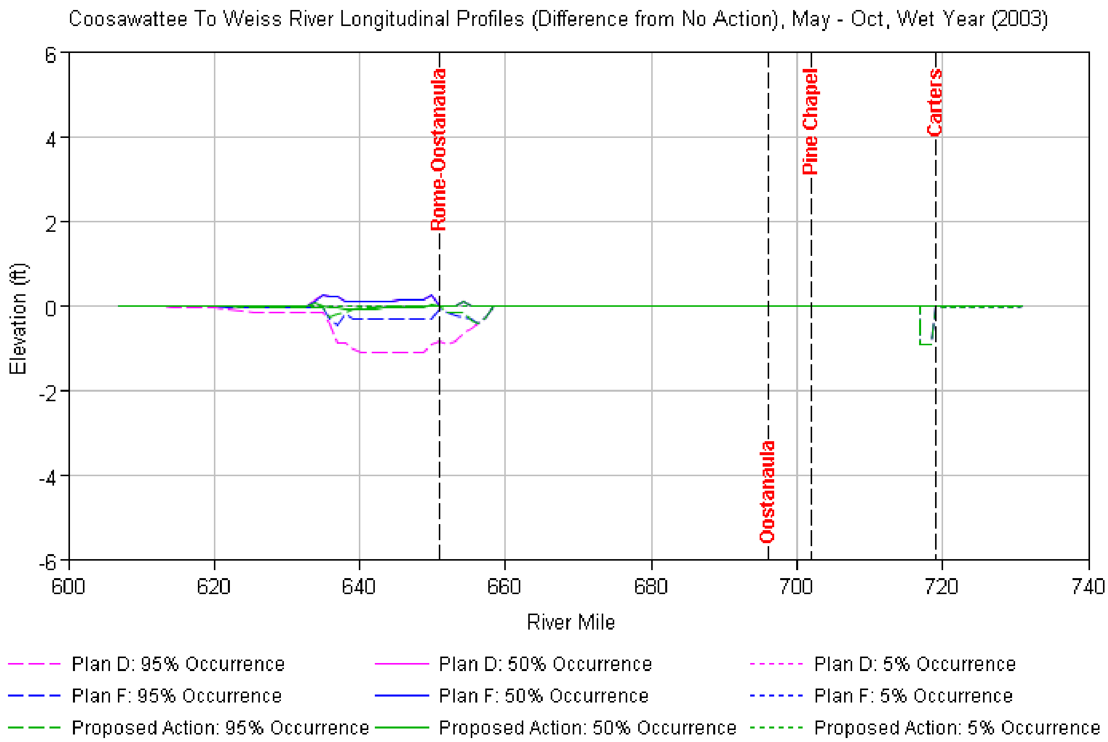


Figure 2-4. Water surface elevation longitudinal profile for May to October in a representative wet-weather year (2003) from Carters Lake downstream to Weiss Lake.

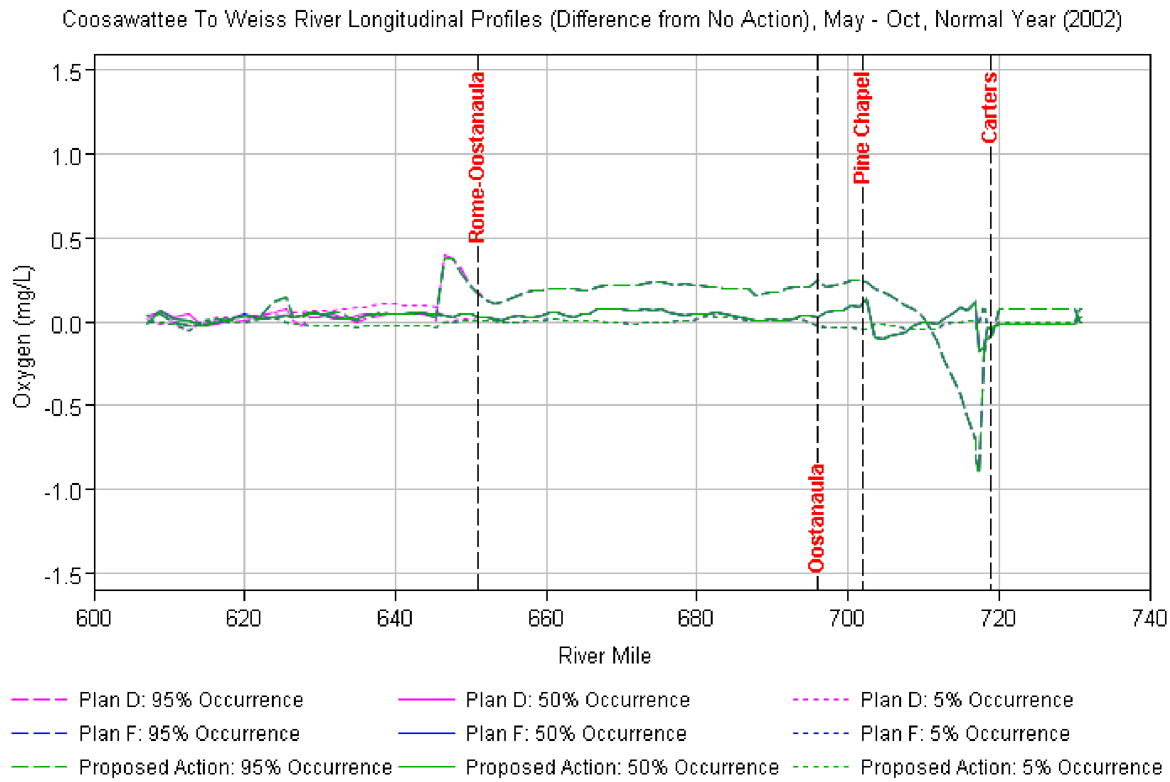


Figure 2-5. Oxygen longitudinal profile for May to October in a representative normal-weather year (2002) from Carters Lake downstream to Weiss Lake.

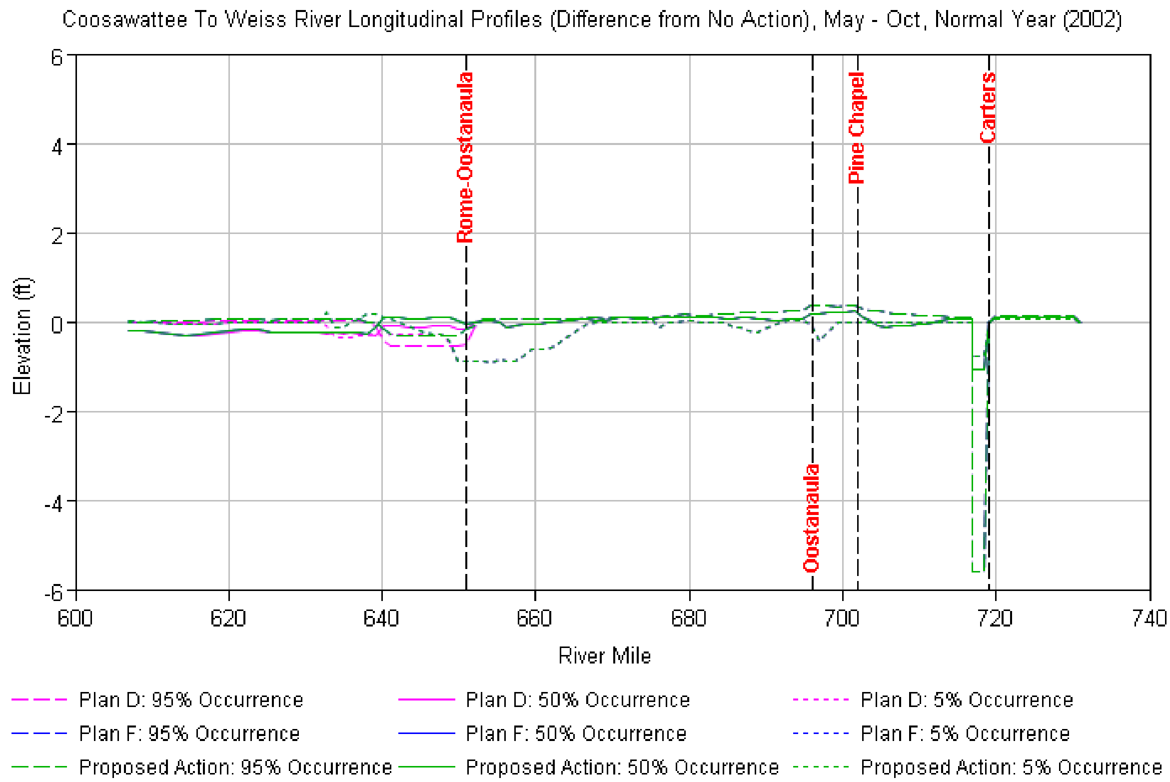


Figure 2-6. Water surface elevation longitudinal profile for May to October in a representative normal-weather year (2002) from Carters Lake downstream to Weiss Lake.

3. Page 29: We need to see a similar plot for the same stretch of river as in Figure 2.1-7, but for when Carters is operating under Zone 1 in the proposed action alternative (probably wet and normal years). I'm assuming Figure 2.1-7 represents Carters operating under Zone 2 in the proposed action alterative.

   RESPONSE: Plots provided in response to Question 2.

4. Page 29: We need to see similar plots as in Figure 2.1-7, but for the Etowah to Weiss stretch of river for dry and wet years.

   RESPONSE: During dry-weather conditions, similar to 2007, oxygen in the Etowah River could be reduced because of changes in stream flow and the ability to assimilate nutrients when compared to the No Action Alternative. In the Etowah River during dry-weather conditions around RM 680, where the greatest deviations from No Action Alternative would be expected, changes in DO are shown in the modeled results but are still expected to meet State water quality standards. In extreme dry-weather *conditions concentrations would be expected to increase by nearly 0.4 mg/L (Figure 4-1); that would be expected to benefit aquatic life during critical periods. Figures 4-2 and 4-3 present normal and wet years respectively.*

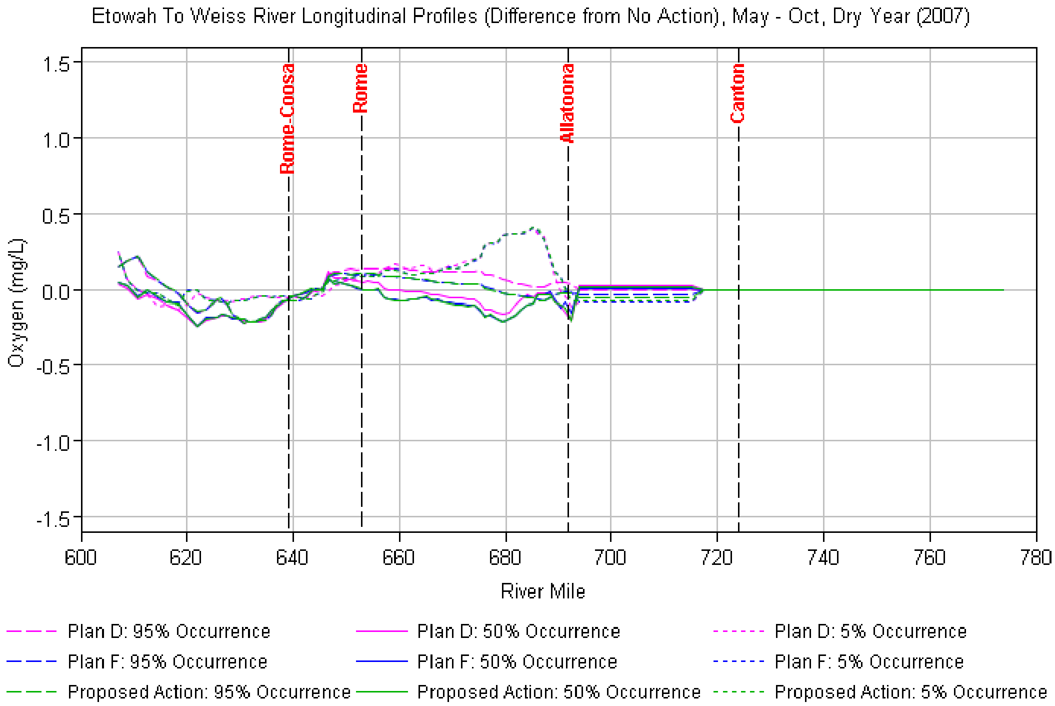


Figure 4-1. Etowah River oxygen longitudinal profile for May to October in a representative dry-weather year (2007).

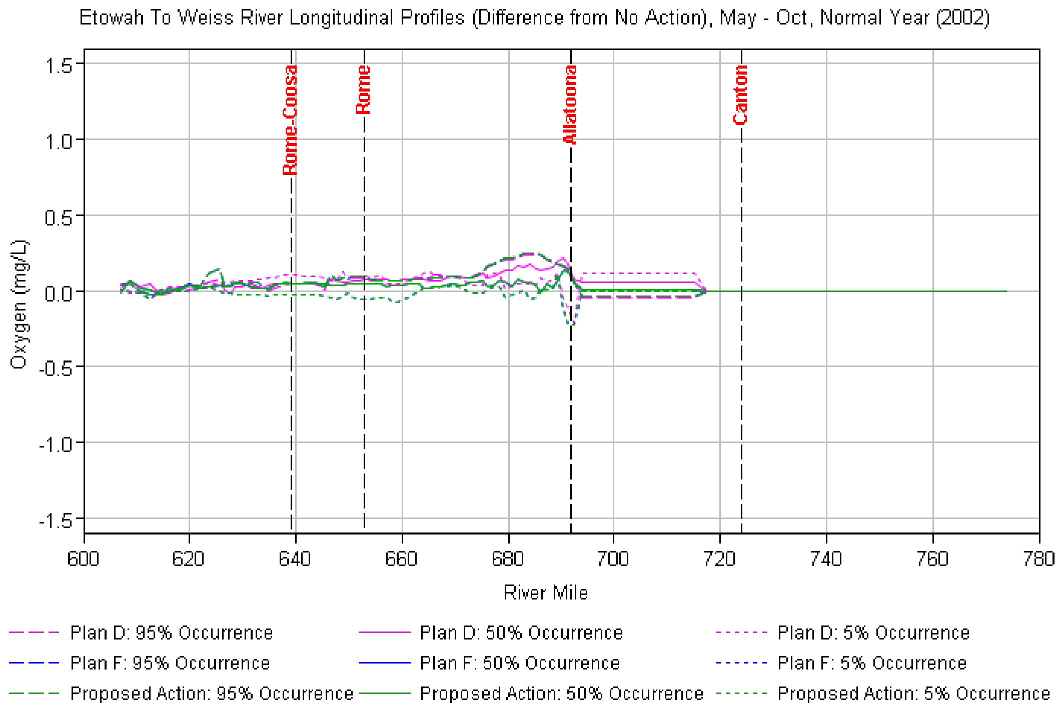


Figure 4-2. Etowah River oxygen longitudinal profile for May to October in a representative normal-weather year (2002).

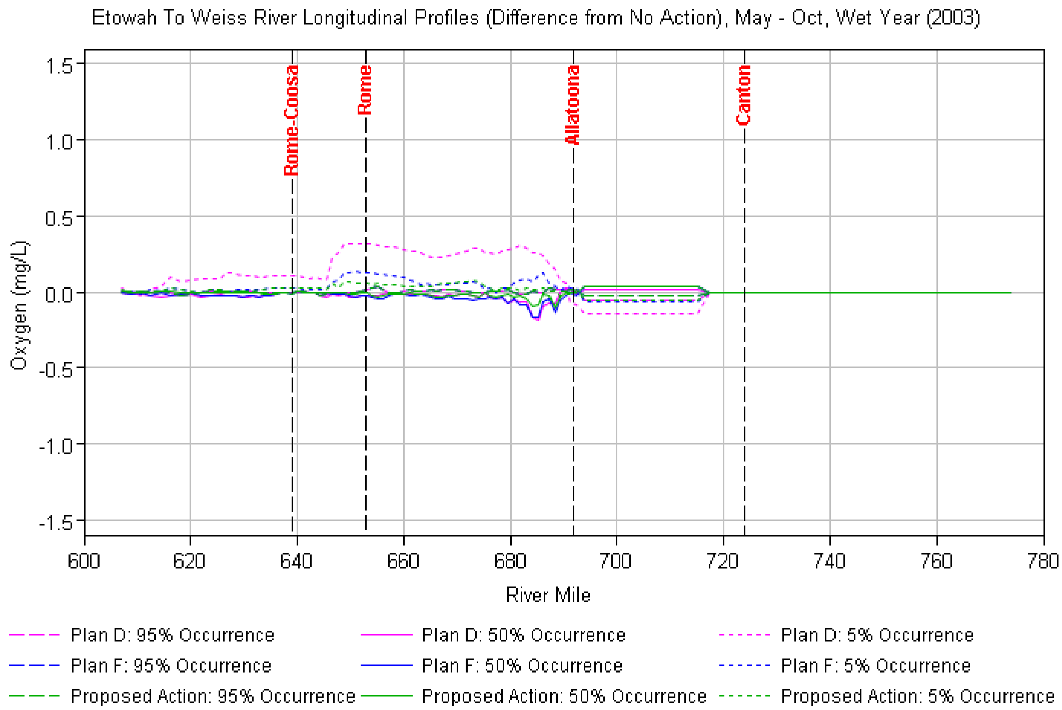


Figure 4-3. Etowah River oxygen longitudinal profile for May to October in a representative wet-weather year (2003).

5. How was the RES-SIM model developed and how well do it's (ie. the baseline) conditions represent actual operations? Has this type of assessment been completed, specifically for parameters that are biologically relevant? Could the model output be updated through 2010?

RESPONSE: The ResSim model development was a collaborative effort involving the Hydrologic Engineering Center (HEC-developers of ResSim), Alabama Power Company (APC-owner of 11 dams) and Corps of Engineers (owner of remaining 6 dams). In 2006 Mobile District began working with HEC to create ResSim watershed models based on established HEC-5 models simulating 1977, 1995, and 2008 physical and operational conditions. The three HEC-5 models hold significance as the tools "of record" used for analyses concerning the previous Environmental Impact Statement and the 1990's Comprehensive Study. After ensuring that the corresponding ResSim models could effectively reproduce the HEC-5 results, Mobile District, APC and HEC created another ResSim model that captured the most significant operations as of 2008. This model was presented to stakeholders in October 2008 and generally accepted as a promising improvement to ACT reservoir system modeling. Refinements to the model and inclusion of ResSim software enhancement occurred for the next two years. The final model was presented to the Stakeholders at the May 2011 modeling overview session. The Baseline Condition represents continuation of the current water control operations at each of the federal projects in the ACT Basin. The Corps' operations have changed incrementally since completion of the 1951 ACT Master Manual. Each operational rule within the model was evaluated based on meeting the intended purpose. Some example operational rules include minimum flow requirements, hydropower demand, fish spawning support, flood control and water supply. The model is not expected to exactly match actual operations. Real-time operation includes continuous adjustment to basin wide conditions that incorporate the flexibility within the water control manuals. However, when comparing the model and current operation, *the timing of reservoir changes and response to hydrologic conditions are the same. Several comparisons that include reservoir levels and releases, stream flows and generation were evaluated to ensure the rules captured the intent.*

The current modeling cannot be updated to include 2010 until the unimpaired flow data set is update. Efforts to update the unimpaired flow will not begin until Spring 2012.

6. As is being done in the ACF, are you using 2007 demand data and a 10 to 15-year WCM planning window for the WCM update process? If so, what is your reasoning for assuming that future water supply demands would remain constant with 2007 demand data?

   RESPONSE: For the Corps projects and other parts of the basin, water demand for modeling is based on the highest demand year under existing storage contracts. In the ACT that year was 2006 (2007 for ACF). Although basin water use will generally be greater with future population growth, there is no assumption in our modeling providing for potential reallocations or new contracts that could be implemented or the source of future water supply. Projecting future water storage contracts or withdrawals from Corps reservoirs would be speculative without detailed analysis of many variables including population projections, conservation efforts, groundwater and regional reservoir development, etc. and was beyond the scope of the current effort.

7. For the water quality analyses, is it appropriate to have all dry years represented by 2007 and normal years by 2003?

   RESPONSE: HEC5-Q simulations were limited to 2000-2008 time period. Separate years were selected to represent wet, dry and normal hydrologic conditions. It is appropriate to select a year within the simulation to analyze typical impacts for hydrologic conditions such as dry, normal or wet. Given that the modeled output are presented to understand system-wide changes the representative years where held constant. See the response to Question 8.

8. The terms dry, wet and normal years are used without clear explanation regarding what constitutes these designations. This needs to be made very clear. How were they defined, and does the term "rainfall conditions" actually mean a discharge-related variable?

   RESPONSE: For the purposes of the water quality analysis the dry, wet, and normal years were based on seasonal flows. Table 8-1 presents the total flow and volume at three locations in the basin for the water quality modeled period. The range of flows during that time was representative of similar time periods for which records exist and representative of the hydrologic historical data generally. Therefore, the individual years were grouped as dry, wet or normal based on their ranking within the modeled period.

Table 8-1. Baseline ResSim flows from April – November

	Apr-Nov flow cfs-day	Acre-feet

Key: Dry **Normal** **Wet**

Coosa State Line		
2007	51179	101,513
2008	73894	146,567
2000	101387	201,098
2006	130694	259,228
2001	173033	343,206
2002	197664	392,062
2004	321745	638,172
2005	372080	738,010
2003	488511	968,947

Tallapoosa JBT goal		
2008	250808	497,471
2000	375230	744,257
2006	557077	1,104,946
2007	576868	1,144,201
2002	608689	1,207,316
2001	707346	1,403,000

2004	880075	1,745,602
2005	1661516	3,295,570
2003	1955839	3,879,350

Alabama River Pulp

2007	1438549	2,853,320
2000	2006368	3,979,573
2008	2237304	4,437,628
2006	2871352	5,695,243
2002	3764203	7,466,187
2001	3786927	7,511,261
2004	5382016	10,675,073
2005	8844107	17,542,031
2003	10075127	19,983,724

9. How do water demands, current and future, change with Georgia reservoirs: Hickory Log Creek, Russel Creek, Richland Creek, Shoal Creek, and Calhoun Creek? These do not appear to be included in the PAL response analysis.

   RESPONSE: The projects listed are proposed, except for Hickory Log Creek which is now completed. The water control plan analysis only considers current water demands. Attempts to make such analyses would require speculation regarding the eventual size, construction, withdrawals and other variables as described in answer to question 6 above.

10. Why are there no guide curves for Claiborne Lake, W. Dannelly Lake, and R E Woodruff Lake (R F Henry Lock and Dam)? In the preferred alternative will all guide curves stay the same as the No Action alternative except H Neely Henry and Lake Allatoona?

    RESPONSE: Guide curves are not established at the three Alabama River Lakes because of the lack of available storage and lack of flood control operations. These projects are considered run-of-river, i.e. water is generally passed as it is released from the upstream APC projects with only very limited ability to store and release that water at a future time.

11. Why is the Weiss Bypass minimum flow issue out of the scope of the project? It requires COE water to flow into APC jurisdiction.

RESPONSE: The regulation of Weiss Bypass minimum flows is under the direct jurisdiction of the FERC license and controlled by releases by APC. Although water from the upstream Corps projects enters Weiss Lake there are also inflows from tributaries downstream of the projects. As such there is no direct dependence upon specific flow at the Corps projects for the flow APC provides to the bypass.

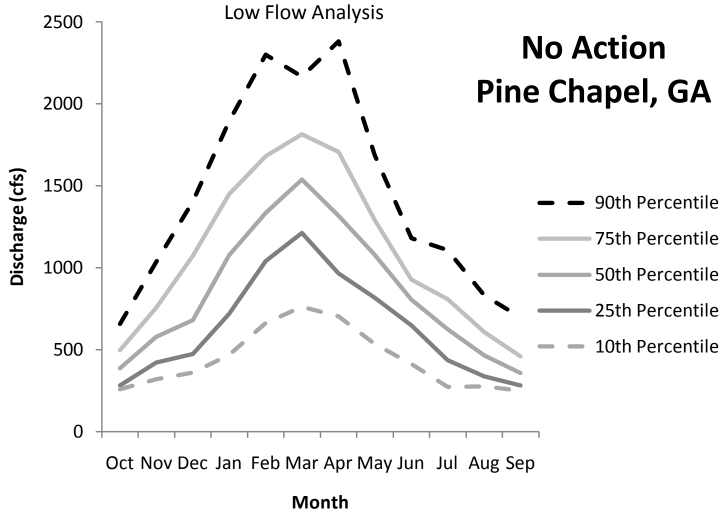
12. Similar to ‘note for talking with Will’: Why is there no IHA analysis?

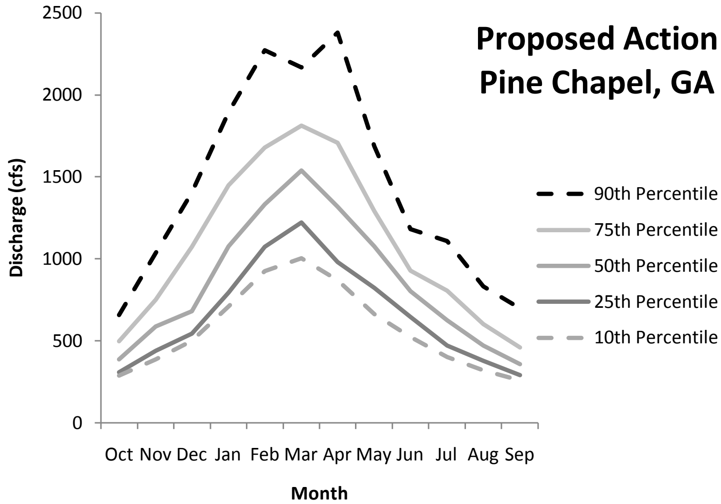
RESPONSE: In response to this request, IHA was evaluated as described below.

- *IHA was run at three locations.*
    1) *Pine Chapel, GA*
    2) *Etowah at Rome, GA*
    3) *Oostanaula at Rome, GA*
- *High and low analyses based on FWS spreadsheets were run at the same locations*
- *Analyses based on previous feedback from FWS on ACF using spreadsheets provided by FWS. Spreadsheet analyses are available upon request, but not provided at this time due to large size (>200 megabyte total).*
- *Analysis represents RES SIM modeled output from 10/1/1939 through 9/30/2008*
- *Results are summarized in the following three figures.*

Pine Chapel, GA

Low Flow Analysis

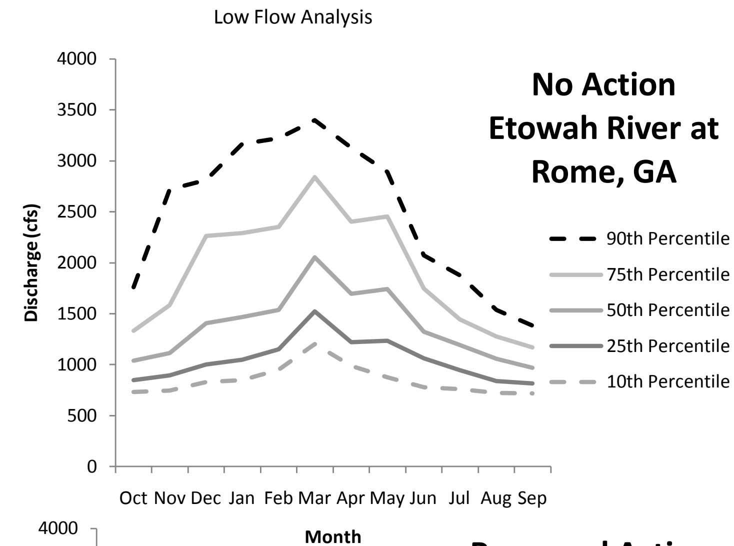


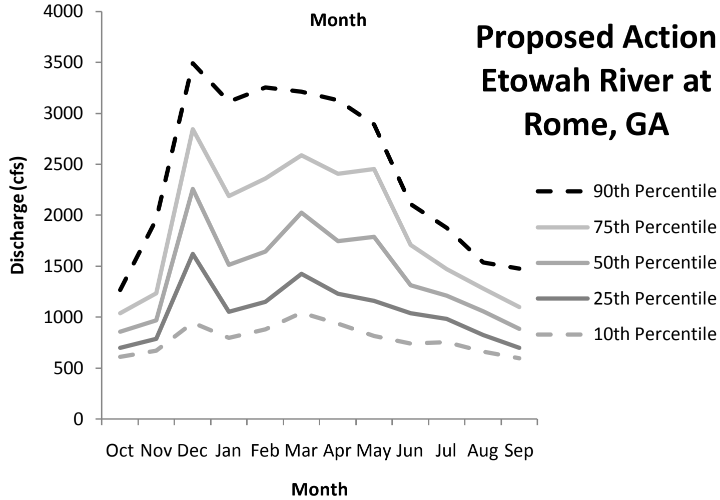


High Flow Analysis

Pine Chapel, Georgia No Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	1751.54	7671.26	10317.16
Magnitude	2039 -4138	7920 -9346	10733-11341
Frequency	4-8	0-1	$\geq$ 10 year RI
Duration	3-12	22-38.5	26-98.5
Rise Rate	169-545	414-1075	525-1154
Fall Rate	169-415	213-592	175-712
Timing	Annually	Nov - Apr	Dec - Mar

Pine Chapel, Georgia Proposed Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	1742.29	7671.26	10317.16
Magnitude	1972-4072	7921-9346	10733-11342
Frequency	4-8	0-1	$\geq$ 10 year RI
Duration	3-12	22-38.5	26-98.5
Rise Rate	153-499	414-1060	525-1154
Fall Rate	152-394	213-592	175-712
Timing	Annually	Nov - Apr	Dec - Mar
Date Range	10/1/1939	to	9/30/2008
User inputs data in orange cells.			





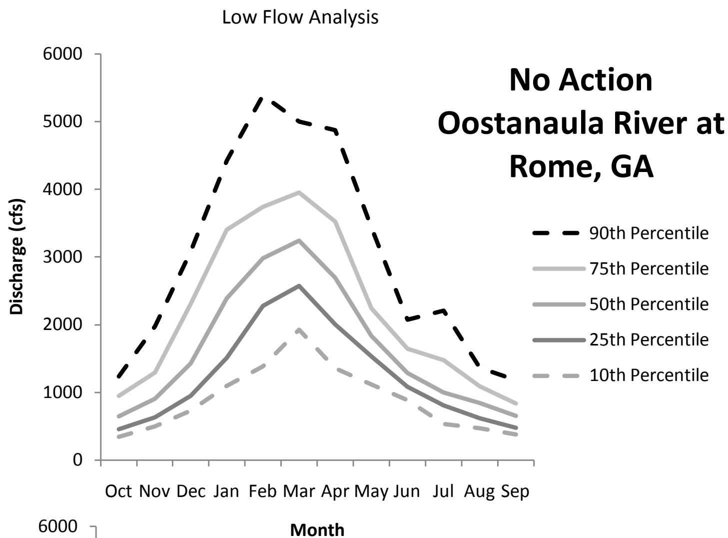
Etowah River at Rome, GA

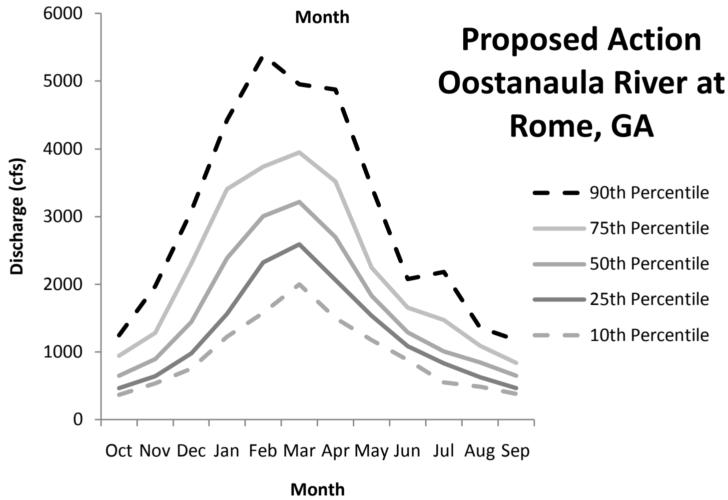
High Flow Analysis

Etowah River at Rome, Georgia No Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	2862	11289	13287
Magnitude	3038-4591	8366-9461	10970-12213
Frequency	4-8	0-1	$\geq$ 10 year RI
Duration	3-8	10-23.25	20.25-40.75
Rise Rate	186-524	714-1332	440-1287
Fall Rate	199-495	463-1324	346-823
Timing	Annually	Jan - May (more than 2 per month)	Oct - Apr (more than 2 per month)

Etowah River at Rome, Georgia Proposed Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	2923.60	11324.96	13287.49
Magnitude	3381-6949	11526-12273	13503-14683
Frequency	4-8	0-1	$\geq$ 10 year RI
Duration	4-12	18.25-51.75	44.5-70.5
Rise Rate	271-829	416-1561	404-974
Fall Rate	235-657	332-839	259-391
Timing	Annually	Nov - Apr (more than 2 per month)	Feb - Mar (more than 2 per month)
Date Range	10/1/1939	to	9/30/2008
User inputs data in orange cells.			

Oostanaula River at Rome, GA





High Flow Analysis

Oostanaula River at Rome, Georgia No Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	4101	23042	33456
Magnitude	5022-11898	24240-28782	35821-40018
Frequency	4-8	0-1	≥ 10 year RI
Duration	4-13.5	24.5-54.5	30.25-41.5
Rise Rate	471-1235	912-2624	1428-3731
Fall Rate	441-1151	864-1906	1170-2233
Timing	Annually	Dec - Apr (more than 2 per month)	Jan (more than 2 per month)

Oostanaula River at Rome, Georgia Proposed Action Alternative			
	High pulse	Small Flood	Large Flood
Threshold used	4090	23042	33456
Magnitude	4999-11815	24240-28782	35821-40016
Frequency	4-8	0-1	≥ 10 year RI
Duration	4-13	24.5-54.5	30.25-41.5
Rise Rate	468-1214	912-2624	1429-3730
Fall Rate	440-1145	864-2052	1170-2233
Timing	Annually	Dec - Apr (more than 2 per month)	Dec - Mar (more than 2 per month)
Date Range	10/1/1939	to	9/30/2008
User inputs data in orange cells.			

Questions for the Corps regarding their June 6, 2011, Response to USFWS ACT PAL - Continued

1. If available, please provide us with the agreement between SEPA and the Corps for hydropower generation in the ACT for Fish and Wildlife Service's records.

   RESPONSE: The Memorandum of Understanding with amendments is being provided separately.

.

2. It would be valuable to us to have an analysis showing the hydrologic differences between the no action and the proposed action alternative in terms of the timing, duration, and magnitude of high and low flows. Can this be provided?

   RESPONSE: Refer to IHA analysis in response to Question 12 above.

3. Do you have data or information that shows the efficacy of the fish spawning operations in Lake Allatoona?

   RESPONSE: No data is available. In the past this data has been requested from Georgia DNR but has not been received. However, other studies indicate that high water levels inundating shoreline vegetation during spawning periods frequently have been associated with enhanced reproductive success and strong year class development for largemouth bass, spotted bass, bluegill, crappie, and other littoral species. Conversely, low or declining water levels can adversely affect reproductive success by reducing the area of available littoral spawning and rearing habitats. Therefore, we conclude that fish spawning operations have had a beneficial impact on recreational fisheries.

4. We note that hydrologic data from 2008 to 2010 have not been incorporated into modeling efforts we have reviewed. Would incorporation of these data likely change any results or interpretation?

   RESPONSE: Expanding the flow record to include 2009 and 2010 calendar years, would not impact the results. The most critical recorded periods are within the 70 year period, 1939-2008.

5. Could an approach to improve water quality below Corp projects be provided? This information does not appear to be included in the response to the PAL.

Response: In general, DO and temperature are the parameters most impacted by the Corps projects, as discussed in the PAL and in the response. Those impacts are due to factors inherently associated with large reservoirs in general and with the projects specifically, such as lake stratification, depth of release water, minimum flows and hydropower generation. We believe that the proposed operational update would have few if any negative impacts to water quality and some potential benefits. As discussed in section 1.2 of the response, a revised seasonal minimum flow is proposed at the Carters re-reg dam that would provide water quality benefits. Beyond that, for reasons discussed in sections 2.1, 2.4, and 2.6, we have not identified other operational methods that would achieve water quality improvement compared to the current operation without having other negative consequences. The Corps remains open to further discussion regarding specific recommendations for improving water quality at any of its projects.

6. On page 61, you state that "The effects of these potential changes on aquatic biota are further evaluated and presented in section 6.5 of the PDEIS." An evaluation of the effects of the proposed action are directly pertinent to our review and drafting of the FWCAR. The document supplied to us includes 62 pages through section 2.10. Can you provide us with Section 6.5 of the PDEIS and other related material?

RESPONSE: The requested section of the Draft EIS is being reorganized and edited and is currently unavailable. However, the following discussion contains our current analysis and contains the same information as that which is being used in the EIS preparation.

Fish and Aquatic Resources

Rivers

This summarizes the effects of alternative water management plans on biological resources in riverine portions of the ACT Basin. Results are based on HEC-ResSim model simulations of project operations under the alternative plans over a 70-year period of record (1939–2008). Descriptions of the likely effects of the current operation and the proposed action on riverine biota are presented for the following locations in the basin: (1) Coosawattee River downstream of Carters Reregulation Dam; (2) Etowah River downstream of Allatoona Lake; (3) Coosa River at Rome, Georgia; (4) Alabama River at Montgomery, Alabama; and (5) Alabama River downstream of Claiborne Lock and Dam.

Coosawattee River downstream of Carters Reregulation Dam

The following subsections describe the effects of the current operation and proposed action on stream flow and water quality conditions as they relate to biological resources in the Coosawattee River downstream of Carters Reregulation Dam. The No Action Alternative provides a requirement for a continuous minimum flow of 240 cfs downstream of Carters Reregulation Dam. The alternative plans include seasonally variable minimum flow targets consistent with recommendations made by the USFWS. Any fish and aquatic resources inhabiting this reach would be expected to experience no adverse effects.

Current Operation

USFWS has recommended seasonal minimum flow targets ranging from 240 cfs to 865 cfs (Table 6.1-1). The current operation would be expected to meet the recommended monthly targets from 76 percent of the time during October to as much as 90 percent of the time during June.

Water quality conditions are expected to improve under the current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. As such, there would be no adverse effects on fish and aquatic resources.

Table 6.1-1.
Coosawattee River downstream of Carters Reregulation Dam, seasonally variable minimum flow targets, percent of time targets would be met or exceeded

Month	Monthly minimum flow target (cfs)	Percent of time flow target would be equaled or exceeded	
		Current operation	Proposed operation
January	660	81%	98%
February	790	85%	98%
March	865	87%	98%
April	770	86%	97%
May	620	88%	96%
June	475	90%	94%
July	400	85%	95%
August	325	82%	95%
September	250	80%	97%
October	275	76%	98%
November	350	89%	98%
December	465	81%	97%

Proposed Action

HEC-ResSim model results indicate that adding the seasonally variable minimum flow targets would not yield significant changes in the mean daily flows over the period of record. However, notable improvements would be expected during low-flow events. Minimum flows of 240 cfs would occur only about 4 percent of the time, compared to 9 percent for the current operation. The proposed plan would be expected to meet the USFWS-recommended monthly minimum flows targets at least 94 percent of the time during all months of the year and as high as 98 percent during several months (Table 6.1-1). For example, flows in March and December would exceed the seasonal minimum targets during 98 percent and 97 percent of the days, respectively. Similarly, changes in water quality, with respect to temperature and DO values, would be expected to be negligible.

Thus, compared to the current operation, the effects of operational features on flow and water quality conditions under the proposed action would be negligible and not expected to adversely affect fish and aquatic resources in the Coosawattee River downstream of Carters Reregulation Dam.

Etowah River downstream of Allatoona Lake

The following subsections describe the effects of the current operation and proposed operation on stream flow and water quality conditions as they relate to biological resources in the Etowah River downstream of Allatoona Lake. Flow conditions are directly influenced by water management activities at Allatoona Lake. Under both alternatives, the Allatoona Lake project must meet the requirement to provide a continuous minimum release of 240 cfs. There would be no adverse effects on fish and aquatic resources inhabiting the Etowah River downstream of Allatoona Lake. In the figures that follow the current operation is labeled as ‘no action’ and the proposed action is labeled as ‘plan G’.

Current Operation

HEC-ResSim modeling over the 70-year period of hydrologic record (1939–2008) indicates a range of mean daily flows between 1,600 and 2,500 cfs from January through May, declining 1,000 to 1,300 cfs from June through September, and increasing to 1,300 to 2,300 cfs from October through December (Figure 6.1-1). An evaluation of a flow duration curve suggests that violation of the 240 cfs minimum flow requirement would occur less than one percent of the time. The Etowah River flow duration curves in September and December, periods in which key operational changes to Allatoona Lake are proposed, indicate that flows would be at the minimum level of 290 cfs about 28 percent of the time in September (Figure 6.1-2) and 15 percent of the time in December (Figure 6.1-3).

Water quality conditions are expected to improve under the current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. Overall, there would be no adverse effects on fish and aquatic resources.

Figure 6.1-1. Etowah River downstream of Allatoona Dam, average daily discharge (cfs) over the modeled period of record (1939–2008).

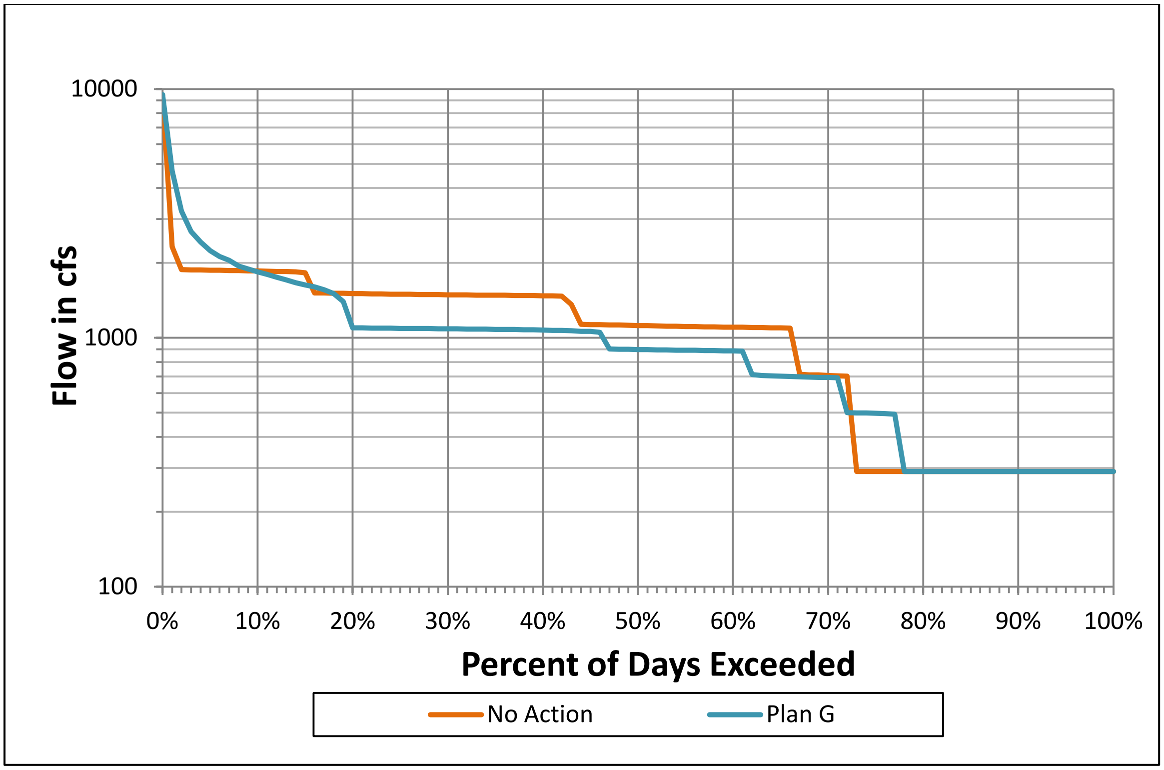


Figure 6.1-2. Etowah River downstream of Allatoona Dam, daily discharge (cfs)—percent of days exceeded for September over the modeled period of record (1939–2008).

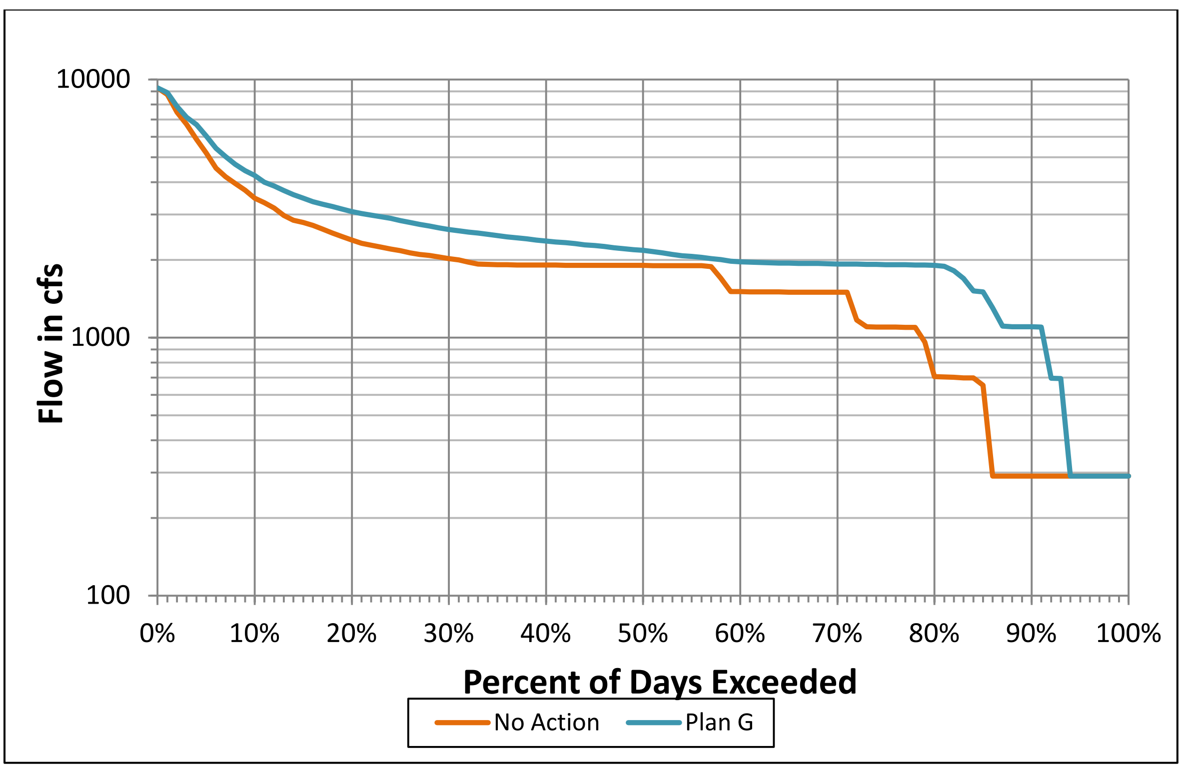


Figure 6.1-3. Etowah River downstream of Allatoona Dam, daily discharge (cfs)—percent of days exceeded for December over the modeled period of record (1939–2008).

Proposed Action

The proposed revision of the number (from two to four) and shape of the action zones under would be expected to temper full peaking hydropower releases during dry conditions to conserve storage. The phased guide curve and reduction of hydropower generation during the fall drawdown period would shift the timing of releases over an extended drawdown period between September and December. That would result in higher water levels in Allatoona Lake in October through December compared to the current operation. However, the overall effect on total releases over the duration of the drawdown period would be negligible. The expected increase in flows during December under the proposed action compared to the current operation should offset lower releases earlier in the phased drawdown period.

Implementing the phased guide curve at Allatoona Lake and reduction of hydropower generation during fall drawdown would be expected to have little effect on downstream water temperature and DO concentrations.

With respect to the current operation, the effects of operational features on flow and water quality conditions under the proposed plan would not be expected to affect fish and aquatic resources on the Etowah River downstream of Allatoona Lake.

Coosa River at Rome, Georgia

The following subsections describe the effects of the current operation and proposed plan on stream flow and water quality conditions as they relate to fish and aquatic resources in the Coosa River at Rome, Georgia. Flow conditions at that location are affected by water management activities at Carters Lake and Allatoona Lake. The proposed operational changes could change the quantity or timing of the downstream flow regime. Fish and aquatic resources inhabiting the Coosa River at Rome would experience only minimal adverse effects.

Current operation

Average daily flows under the current operation in the Coosa River peak at about 12,800 cfs by the end of March and decrease through late spring and summer to a minimum of approximately 2,700 cfs in September (Figure 6.1-4). The flow-duration curves for September and December were selected to help determine the effects of alternative water management measures for Carters Lake and Allatoona Lake (Figures 6.1-5 and 6.1-6). September values coincide with the low-flow period for the Coosa River at Rome and the beginning of fall drawdown at Allatoona Lake. The median flow value modeled over the period of record is 2,445 cfs. December presents higher flows, coinciding with the end of the drawdown period at Allatoona Lake. The median flow during that period is 4,769 cfs.

Water quality conditions are expected to improve under current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. Overall, there would be no adverse effects on fish and aquatic resources.

Figure 6.1-4. Coosa River at Rome (Georgia), average daily discharge (cfs) over the modeled period of record (1939–2008).

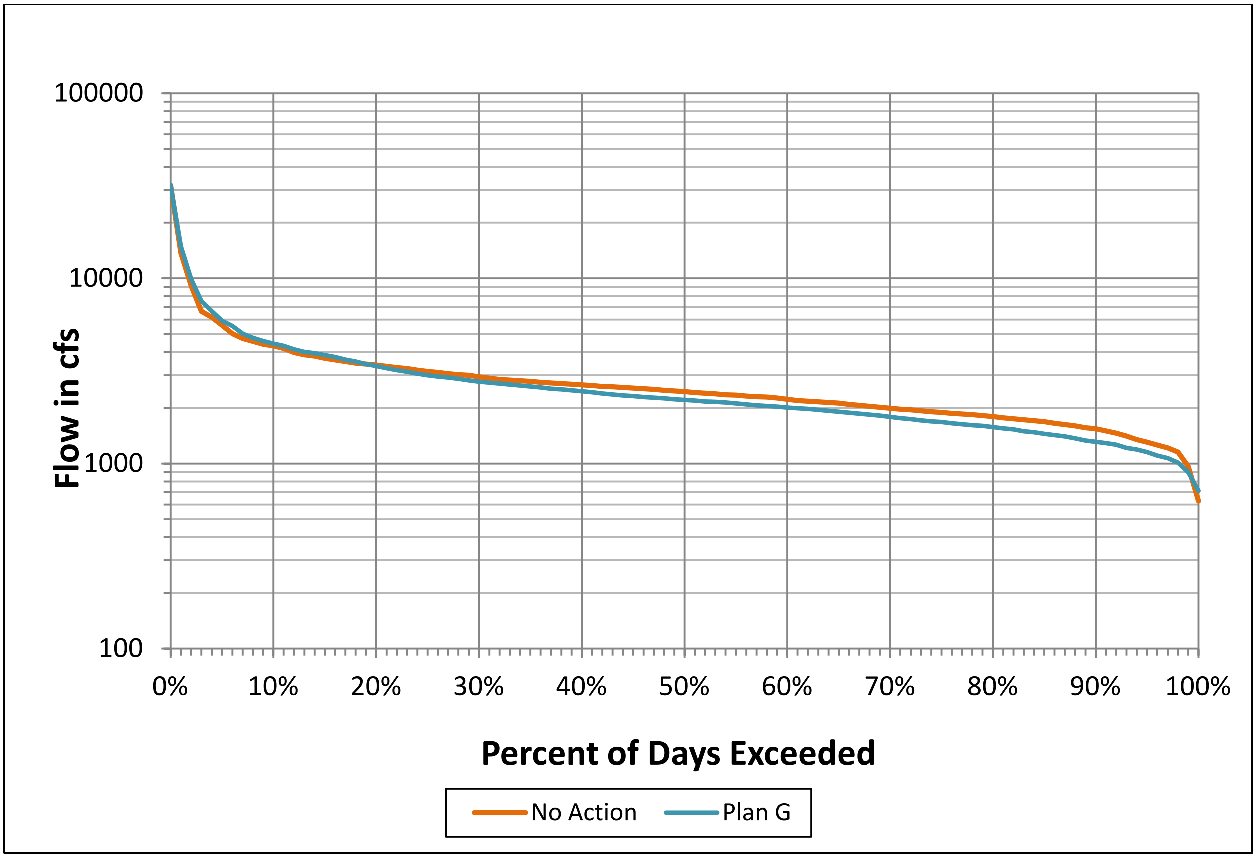


Figure 6.1-5. Coosa River at Rome, Georgia, daily discharge (cfs)—percent of days exceeded for September over the modeled period of record (1939–2008).

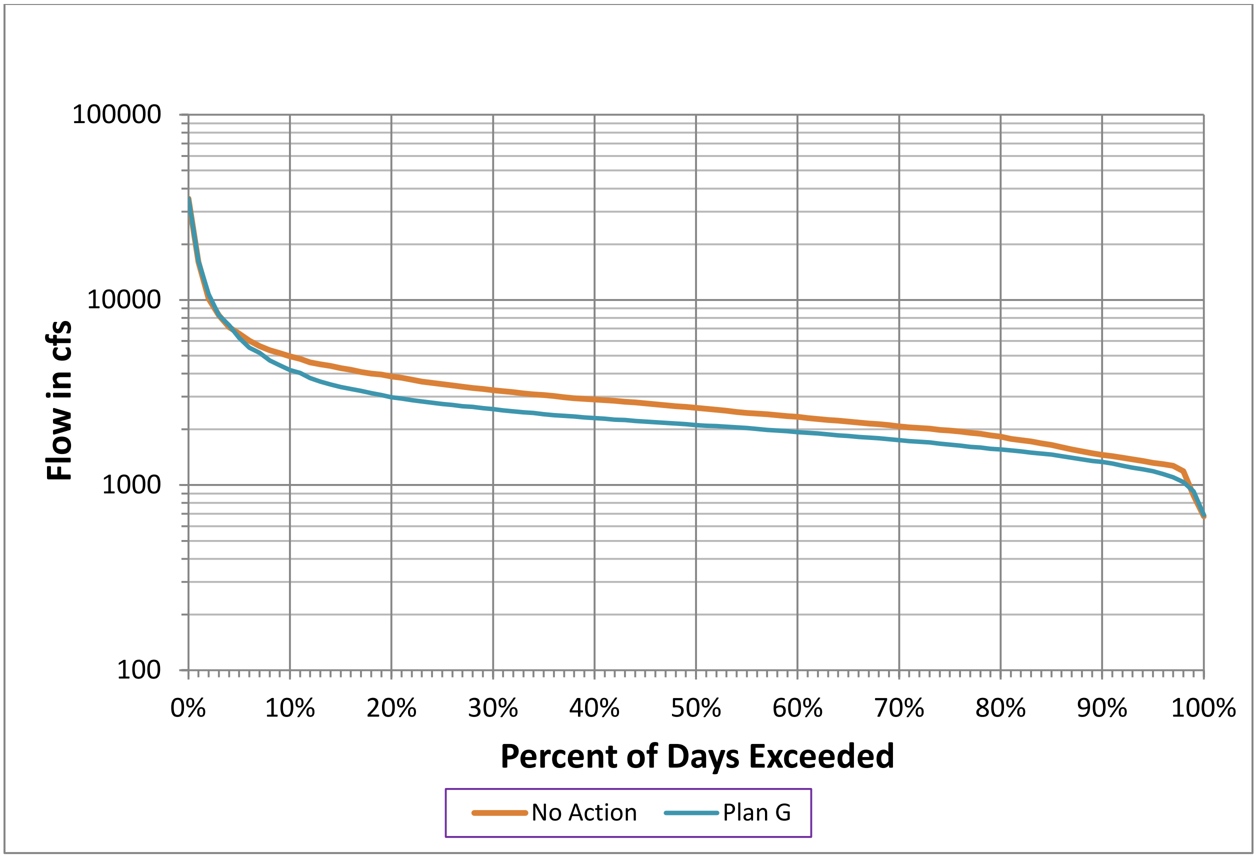


Figure 6.1-6. Coosa River at Rome, Georgia, daily discharge (cfs)—percent of days exceeded for October over the modeled period of record (1939–2008).

Proposed Action Alternative

Over the modeled period of record, the percent of days that proposed action and the current operation would likely exceed 7Q10 values is in the range of 86 percent or higher (Table 6.1-2). From January through July, values between the plans would be about the same. During August to November, the proposed action would reduce the number of days the Coosa River flows at Rome would exceed 7Q10 values from 2 to 4 percent below the current operation. In December, the proposed action would likely increase the number days the 7Q10 values would be exceeded by 4 percent over the current operation. Thus, the operational changes of the proposed operation, particularly the reduction in hydropower generation at Allatoona Lake during fall drawdown, would be expected to shift releases from September through December. However, the model suggests those changes would not significantly affect flow characteristics in the Coosa River at Rome compared to the current operation.

Compared to the current operation, the effects of operational features on flow and water quality conditions under the proposed plan would not be expected to affect fish or aquatic resources on the Coosa River at Rome.

Table 6.1-2.
Coosa River at Rome, Georgia—Percent of days (by month) over the modeled period of record (1939–2008) that flows would likely exceed 7Q10 value

Month	7Q10 flow value	Percent of days flow would exceed 7Q10 value

		Current operation	Proposed Action
January	2,544	92%	93%
February	2,982	93%	94%
March	3,258	97%	96%
April	2,911	93%	93%
May	2,497	92%	92%
June	2,153	92%	91%
July	1,693	93%	93%
August	1,601	91%	89%
September	1,406	93%	86%
October	1,325	94%	90%
November	1,608	92%	90%
December	2,043	93%	97%

Alabama River at Montgomery, Alabama

The following subsections describe the effects of the current operation and proposed action on stream flow and water quality conditions as they relate to fish and aquatic resources in the Alabama River at Montgomery, Alabama. Flow conditions at that location are mainly controlled by water management activities at APC projects upstream on the Coosa and Tallapoosa Rivers and are minimally affected by projects in the upper portion of the basin (e.g., Carters Lake and Allatoona Lake). A flow target (weekly average of 4,640 cfs) has been established at the location to meet navigation and waste assimilation objectives for the Alabama River downstream of Montgomery. It is also an important component of drought management and response. Fish and aquatic resources inhabiting the Alabama River at Montgomery would experience no adverse effects.

Current operation

Average daily flows over the 70-year modeled period of record indicate peak flows slightly above 46,000 cfs by the end of March, followed by a rapid decline to 15,000 cfs by the end of May, and a minimum level of about 8,600 cfs in early September (Figure 6.1-7). In the fall, average flows gradually increase to about 30,000 cfs by the end of December. The percent exceedance of flow levels ranges from approximately 900 cfs to 220,000 cfs (Figure 6.1-8). Under the current operation, the 4,640 cfs minimum flow target would be met 99 percent of the time.

Water quality conditions are expected to improve under the current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. Therefore, there would be no adverse effects on fish and aquatic resources.

Figure 6.1-7. Alabama River at Montgomery, average daily discharge (cfs) over the modeled period of record (1939–2008).

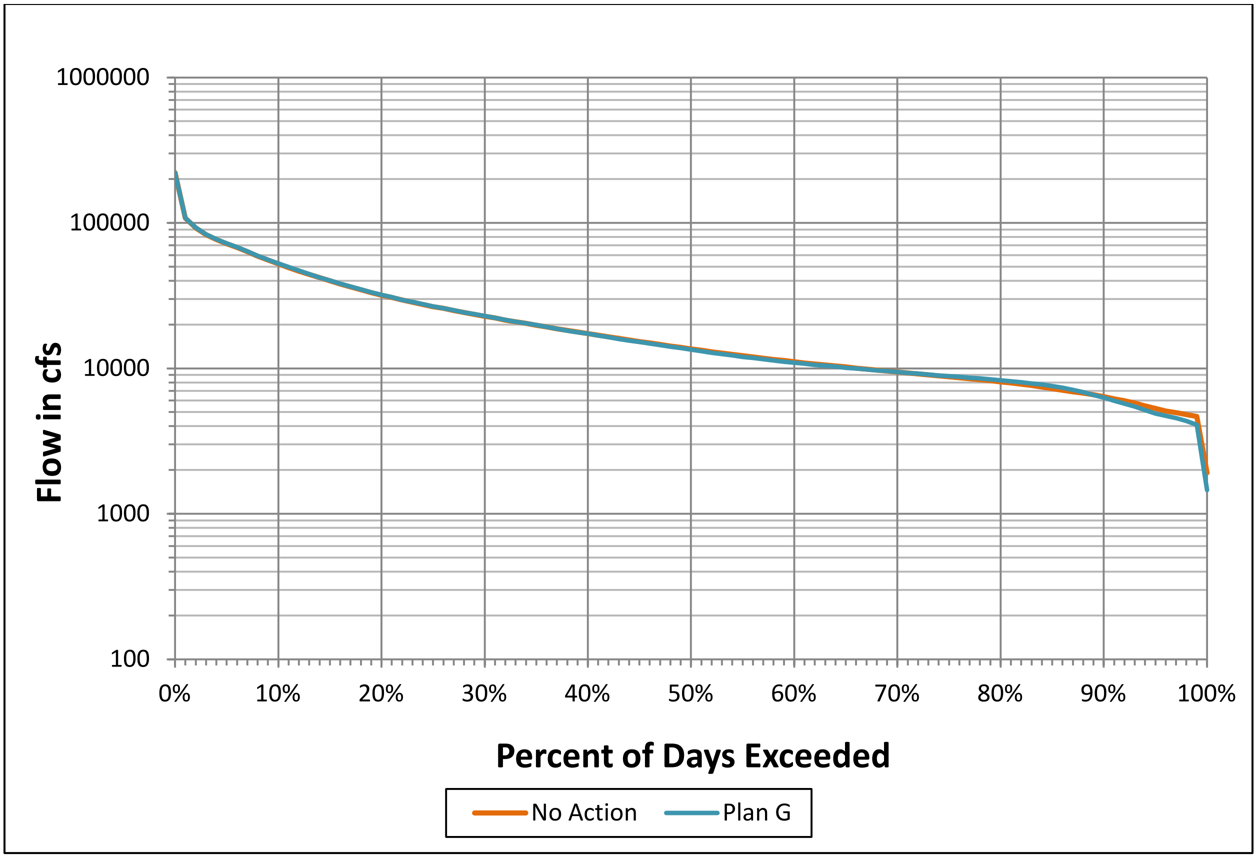


Figure 6.1-8. Alabama River at Montgomery, daily discharge (cfs)—percent of days exceeded over the modeled period of record (1939–2008).

Proposed Action Alternative

The effects of operational features on flow and water quality conditions under the proposed plan would result in adjustments designed to meet navigational needs when sufficient flows are available and would provide progressively more stringent drought management plans under dry conditions. Those objectives would be at least partially met by the proposed action with little change on overall flow characteristics of the Alabama River at Montgomery. Under the alternative, the minimum flow target would be expected to be met 96 percent of the time.

Because the reservoirs above the Alabama River at Montgomery have limited storage and function more as run-of-river operations, water quality parameters would not be expected to change.

With respect to the current operation, the effects of operational features on flow and water quality conditions under proposed action would not be expected to affect fish and aquatic resources on the Alabama River at Montgomery.

Alabama River downstream of Claiborne Lock and Dam and Lake

The following subsections describe the effects of the current operation and proposed plan on stream flow and water quality conditions as they relate to biological resources in the Alabama River downstream of Claiborne Lock and Dam and Lake. A minimum flow target of 6,600 cfs, is designated at that location. That flow collaterally supports navigational uses, but the minimum flow alone is not sufficient to maintain a viable navigation channel in the lower Alabama River downstream of Claiborne Lock and Dam, with or without maintenance dredging in that reach. Fish and aquatic resources inhabiting the Alabama River at Claiborne Lock and Dam and Lake, as well as downstream of the lock and dam, would experience no adverse effects.

Current operation

Average daily flows in the Alabama River downstream of Claiborne Lock and Dam and Lake over the 70-year modeled period of record are presented in Figure 6.1-9. Peak flows occur at just below 68,000 cfs at the end of March and rapidly decline, falling to a minimum of about 10,600 cfs in early September. The ability of Robert F. Henry Lock and Dam and Millers Ferry Lock and Dam to reregulate flows is limited and, thus, do not exert an effect on flows downstream of Claiborne Lock and Dam and Lake. The percent exceedance of flows levels ranges from approximately 800 cfs to 269,000 cfs (Figure 6.1-10). Under the current operation, the 6,600 cfs minimum flow target would be met 98 percent of the time over the period of record.

Water quality conditions are expected to improve under the current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. Overall, no adverse effects would be expected on fish and aquatic resources.

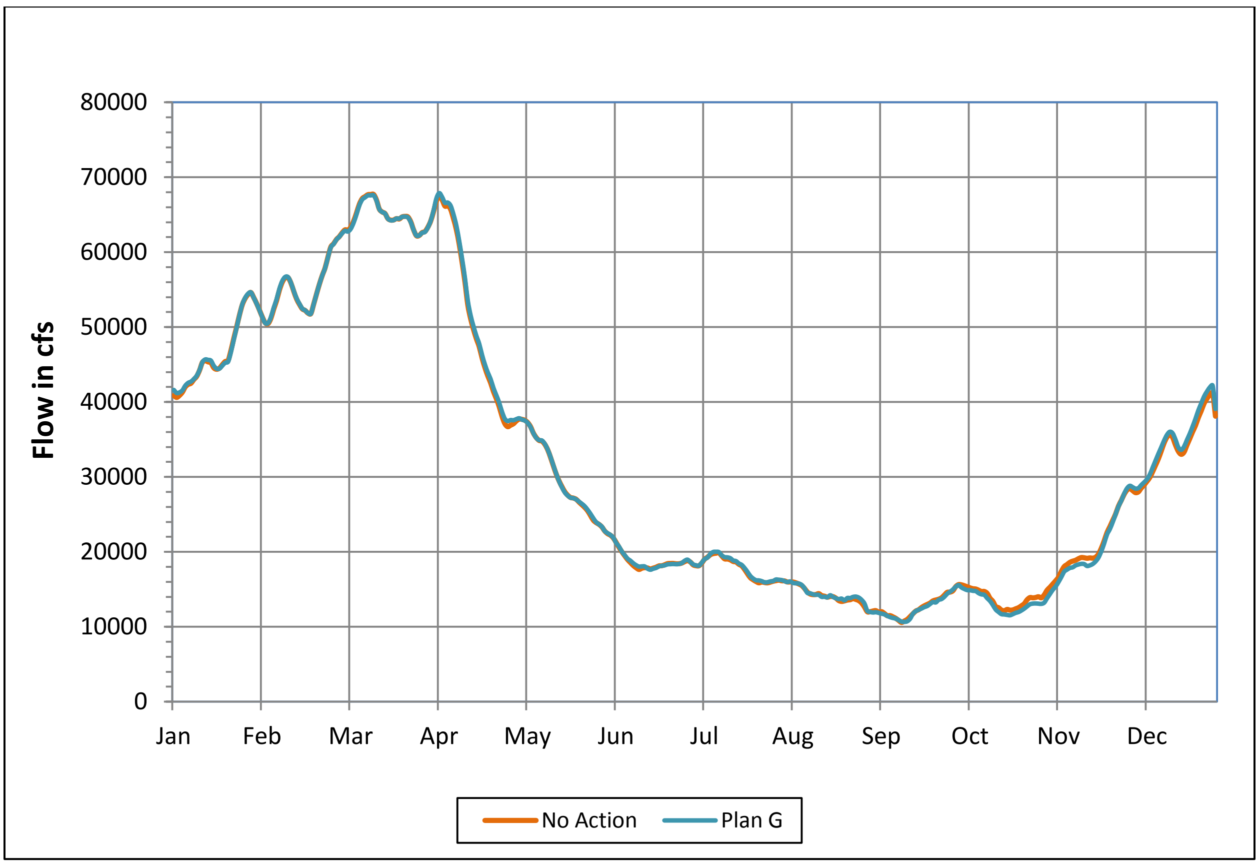


Figure 6.1-9. Claiborne Lock and Dam, average daily discharge (cfs) over the modeled period of record (1939–2008).

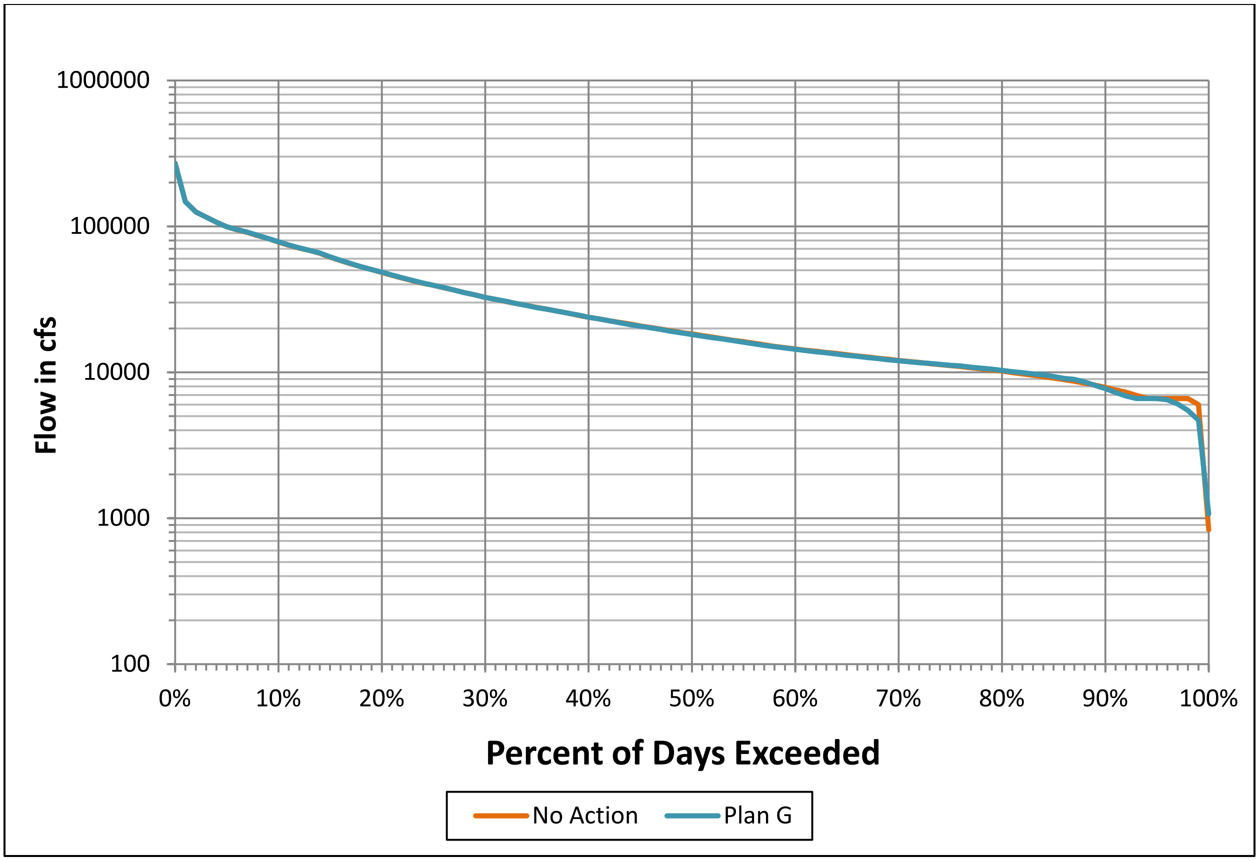


Figure 6.1-10. Downstream of Claiborne Lock and Dam, daily discharge (cfs)—percent of days exceeded over the modeled period of record (1939–2008).

Proposed Action

With respect to the current operation, the effects of operational features on flow and water quality conditions under the proposed action would result in adjustments designed to meet navigational needs when sufficient flows are available and would provide progressively more stringent drought management plans under dry conditions. Objectives would be at least partially met by with little change to overall flow characteristics downstream of Claiborne Lock and Dam and Lake. Under the proposed operation, the minimum flow target would be expected to be met 95 percent of the time.

Water temperatures under low-flow conditions would be expected to increase by approximately 1.8 °F (1.0 °C) upstream of Robert F. Henry Lock and Dam (Figure 6.1-11 in response to flows decreasing by 2,500 cfs. However, temperatures would stabilize downstream and show little change downstream of Claiborne Lock and Dam and Lake. Median DO concentrations would be expected to show an inverse response, decreasing approximately 1.0 mg/L upstream of Robert F. Henry Lock and Dam and with little difference from No Action Alternative values downstream of Claiborne Lock and Dam and Lake.
With respect to the current operation, the effects of operational features on flow and water quality conditions under the proposed action would not be expected to affect fish and aquatic resources on the Alabama River at Claiborne Lock and Dam and Lake and on the lower Alabama River downstream of the lock and dam.

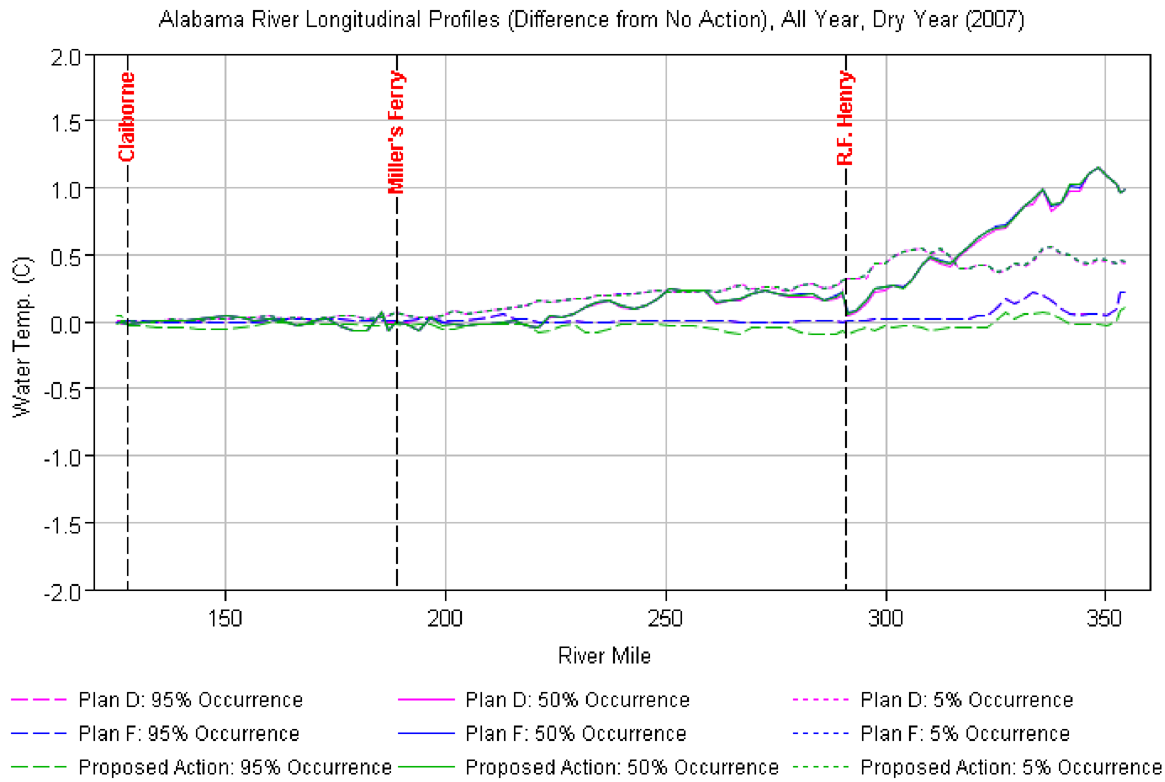


Figure 6.1-11. Alabama River water temperature longitudinal profile for a representative dry-weather year (2007).

Reservoirs

This section describes the general effects on reservoir fisheries and other aquatic resources associated with operational changes to reservoir management in the ACT Basin. The proposed changes would most notably affect lake levels in the upper portion of the basin, particularly at Allatoona Lake. Thus, a detailed assessment of modeled surface water elevation data at Allatoona Lake was conducted. The assessment uses a performance measure developed by USFWS and is based on work products of the Comprehensive Study (USACE, Mobile District 1998a) to characterize the potential effect of the alternative flow scenarios on habitat suitability of select recreationally important species. The lack of any substantive change in habitat in response to the operational alternatives at Allatoona Lake confirms the exclusion of further analyses of downstream reservoirs, where modeled water quantity and water quality data suggest that changes would be minimal.

Operational flow changes affect habitat for reservoir fisheries and other aquatic resources mainly through changes in water levels, changes in reservoir flushing rates (retention times), and associated changes in water quality parameters, such as primary productivity, nutrient loading, DO concentrations, and vertical stratification. Seasonal water level fluctuations can substantially influence littoral (shallow-water) habitats, decreasing woody debris deposition, restricting access to backwaters and wetlands, and limiting seed banks and stable water levels necessary for native aquatic vegetation (Miranda 2008).Those limitations, in turn, significantly influence the reproductive success of resident fish populations. High water levels inundating shoreline vegetation during spawning periods frequently have been associated with enhanced reproductive success and strong year class development for largemouth bass, spotted bass, bluegill, crappie, and other littoral species (Ploskey and Reinert 1995; Ryder et al. 1995). Conversely, low or declining water levels can adversely affect reproductive success by reducing the area of available littoral spawning and rearing habitats.

In a study of 11 Alabama reservoirs, which included 6 reservoirs in the ACT Basin, Maceina and Stimpert (1998) found consistent relations between the production of strong crappie year classes and wet winters before crappie spawning. Wet winters resulted in shorter retention time (i.e., higher flushing rates) in reservoirs with stable water levels, and higher water levels in fluctuating reservoirs. High winter inflows might favor crappie production by increasing nutrient loading, which in turn stimulates primary and secondary production later in the growing season (Maceina and Stimpert 1998; Ploskey and Reinert 1995). In reservoirs with stable water levels and low retention, longer post-winter retention also was associated with greater crappie production, possibly related to reduced flushing of young-of-year fish in the discharge from the impoundment and more stable feeding conditions (Maceina and Stimpert 1998).

Fish passage is provided at Claiborne Lock and Dam and Millers Ferry Lock and Dam through the manipulation of lock schedules during February through May to benefit migratory fish. Monitoring the effectiveness of those operations and determining the species using the locks is part of an ongoing collaborative study between The Nature Conservancy, Auburn University, ADCNR, USFWS, and others. The continued operation of the locks for the purposes of providing passage is anticipated to remain unchanged and, thus, will not be affected under the No Action or Proposed Action Alternatives.

Allatoona Lake

Performance measures developed by USFWS during the Comprehensive Study were used in the evaluation of surface water elevations at Allatoona Lake. The performance measures assess reservoir fisheries habitat on the basis of the premise that greater departure of reservoir levels from optimum levels for critical guilds of fishes (e.g., littoral spawning, rearing) results in greater effects on their habitats. The performance measure uses modeled output of daily reservoir elevations over the 70-year period of record and *acceptability levels* of reservoir elevations (i.e., suitability criteria) for critical guilds as identified for each reservoir by regional fisheries experts in an iterative questionnaire survey developed by Ryder et al. (1995). The performance measure also incorporates day-to-day reservoir level stability over critical spawning and rearing periods as a weighting factor, with stable or rising levels having a positive effect and falling levels having a negative effect on fish habitat. Performance measure scores were computed for each year in the period of record at Allatoona Lake. Scores range between 0 for least acceptable and 1.0 for most acceptable reservoir level habitat conditions (USACE, Mobile District 1998a). A graphical example for Allatoona Lake is given in Figure 6.1-12.

Median performance measure values (50^{th} percentile) of all modeled alternatives in Allatoona Lake were low (0.23 to 0.25), indicating a lack of suitable fisheries habitat (Table 6.1-3). However, the range of values over the period of record shows little change among the operational alternatives. The subtle differences in performance measures can be attributed to operational changes of the fall drawdown and are most notable between the current operation and proposed action during the rearing and summer habitat critical periods. Acceptability levels track closely during the spawning period, showing a slight divergence in late May (Figure 6.1-13). Values remain below 0.5 until the latter half of April, reaching suitable levels for spawning of recreationally important species, such as largemouth bass, spotted bass, and crappie. Similar rearing habitat values are maintained for both alternatives at levels below 0.4 throughout the critical period of June 1 to November 1, with the proposed action exhibiting a greater decline and falling below the current operation in response to drawdown levels during late September and October (Figure 6.1-14). Acceptability level scores of summer habitat follow a similar trajectory, falling below 0.2 by early August (Figure 6.1-15).

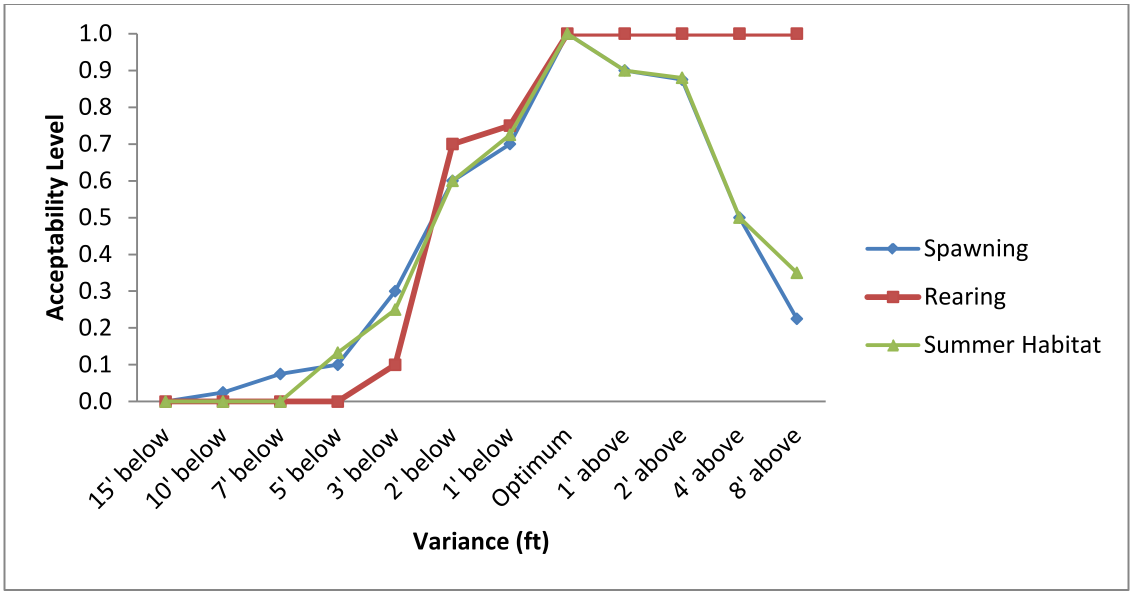


Figure 6.1-12. Example of acceptability scores for varying surface water elevations at Allatoona Lake.

Table 6.1-3.
Range of annual performance measure values of fisheries habitat at Allatoona Lake over the modeled period (1939–2008)

	Current Operation	Proposed Action Alternative
10th Percentile	0.09	0.09
25th Percentile	0.18	0.16
50th Percentile	0.25	0.24
75th Percentile	0.32	0.30
90th Percentile	0.38	0.37
Minimum	0.00	0.01
Maximum	0.54	0.51

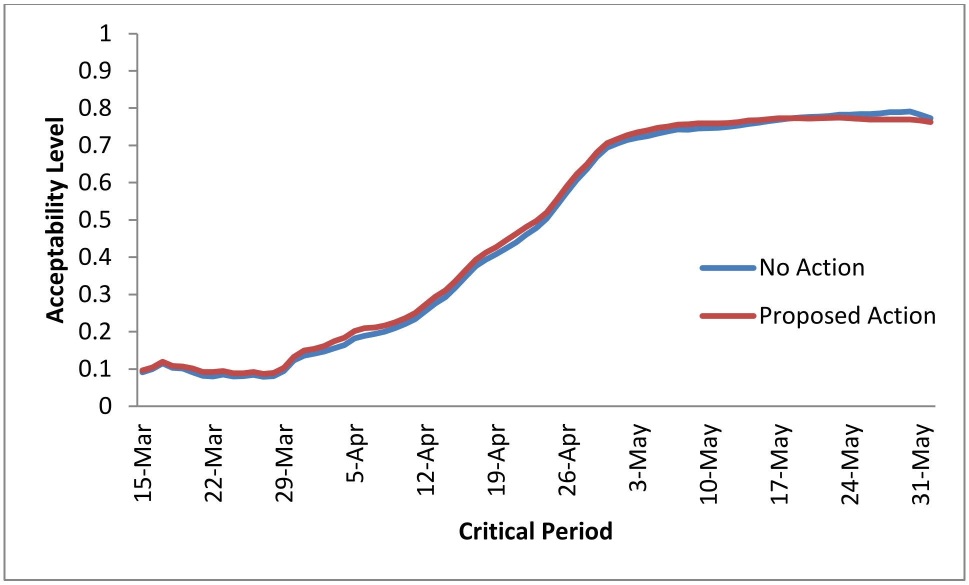


Figure 6.1-13. Daily spawning habitat acceptability level values of the current operation and the proposed action at Allatoona Lake over the modeled period (1939–2008).

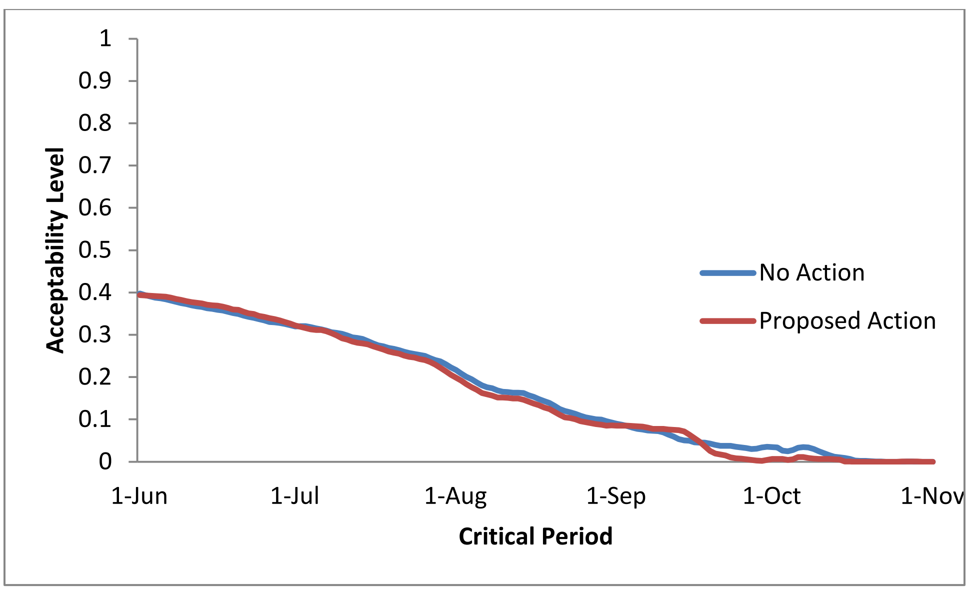


Figure 6.1-14. Daily rearing habitat acceptability level values of the current operation and the proposed action at Allatoona Lake over the modeled period (1939–2008).

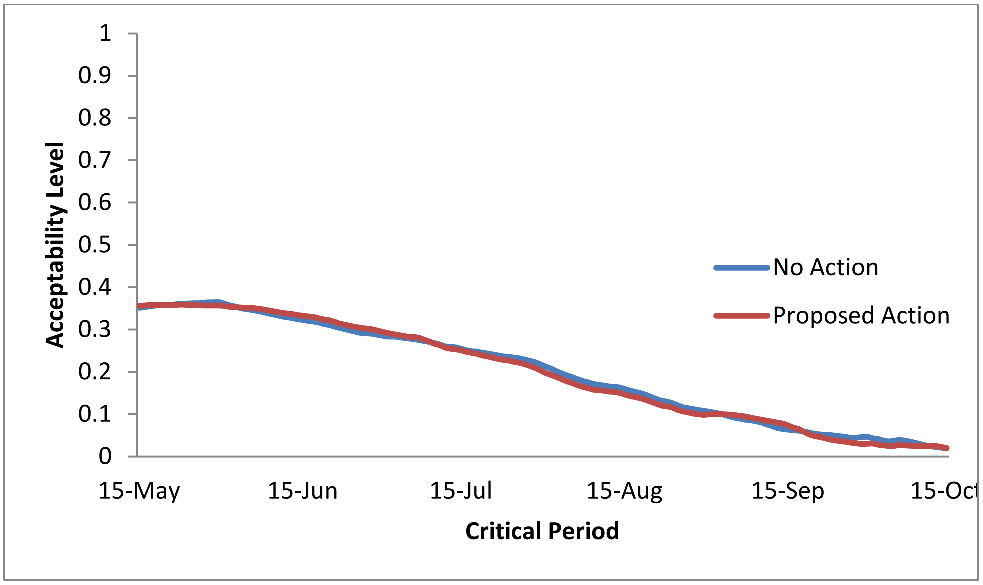


Figure 6.1-15. Daily summer habitat acceptability level values of the current operation and the proposed action at Allatoona Lake over the modeled period (1939–2008).

Current Operation

The current operation would maintain marginally higher performance measure values than the proposed action. The difference is attributable to proposed operational changes during the fall drawdown period and is most notable in rearing habitat acceptability level values in September and October. However, the differences would not result in any appreciable change in fish habitat among alternatives. Because operational changes would be most significant at Allatoona Lake, the lack of any notable change in fish habitat is applicable to other facilities in the ACT Basin, where the influence of the proposed modifications would be dampened. No adverse effects on fish or aquatic resources are expected.

Proposed Action

On the basis of modeled water surface elevations over the 70-year period of record, implementing the proposed plan would offer no significant change to fish habitat compared to the current operation. Operational changes would be most pronounced at Allatoona Lake. Thus, the lack of any notable change in fish habitat is applicable to other facilities in the ACT Basin, where the influence of the proposed modifications would be dampened. No adverse effects on fish or aquatic resources would be expected.

Estuaries

Estuaries exist at the junction between freshwater and salt water, and their function is integrally linked to freshwater inputs. Principal consequences of managing freshwater flow to estuaries are related to the magnitude and timing of flows (Mann and Lazier 1991). Freshwater flows are important in maintaining the delivery of material and energy critical to estuarine productivity and in providing habitat conditions conducive to maintaining the diversity and abundance of the estuarine community.

Oyster fisheries can be threatened by both drought and flood, and there is evidence of beneficial and detrimental effects of each (Livingston 1991; Wilber 1992; Livingston et al. 2000; Turner 2006; Wang et al. 2008; Buzan et al. 2009). Flow management can exacerbate those conditions, although it is also possible that it decreases flood magnitudes (through peak suppression and decreased drought severity through required releases) thereby mitigating some of the effects. However, flow management operations could result in more frequent and longer-duration periods of low flow if flows are retained upstream for required uses, forcing downstream management of a lower flow scenario than would be natural. Extended periods of low flow increase estuarine salinity. Some authors suggest that increased salinities threaten oyster fisheries (e.g., Livingston et al. 2000), whereas others indicate the opposite might be true (e.g., Turner 2006). More explicit hydrodynamic models of oyster population processes indicate more dramatic effects on oyster growth at lower salinities (higher flow) than under increased salinities, where growth rates are stable (Wang et al. 2008). Salinity and, therefore, freshwater discharge are important to oyster production. Many other factors, however, also affect oyster production. Little evidence suggests that the proposed operational changes, as opposed to drought or those other factors, would have a detrimental effect on oyster productivity in Mobile Bay.

Current Operation

As discussed earlier, flows modeled over the 70-year period of record in the Alabama River downstream of Claiborne Lock and Dam and Lake peak at just below 68,000 cfs at the end of March, declining to a minimum of approximately 10,600 cfs in early September. Under the current operation, the established 6,600 cfs minimum flow requirement would be met 98 percent of the time over the period of record.

Water quality conditions are expected to improve under the current operation as states adhere to defined regulations regarding wasteload allocation and managing NPDES facilities and nonpoint sources. There would be no adverse effects on fish or aquatic resources.

Proposed Action

Changes in flow characteristics and water quality as far downstream as the Mobile Bay estuary would be expected to be minimal or non-detectable for the proposed action. Both flow magnitude and timing would be expected to be similar for wet, dry, and normal years. Thus, with respect to the current operation, the flow management operations for flow and water quality conditions would not be expected to affect fish or aquatic resources in Mobile Bay under the proposed action.

Protected Species

Reservoir operations can influence two types of direct or indirect actions that could affect the habitats of federal- and state-protected species listed in Table 6.1-4.

- Alteration of flow regimes in reservoirs and downstream of dams
- Water quality degradation

The agencies implementing or regulating such actions would be responsible for determining the project-specific effects on protected species, because the effects would depend on where and how the actions occur. The following discussion guides assessment efforts when agencies are facing those choices.

Alteration of Flow Regimes in Reservoirs and Downstream of Dams

Little information is available on the linkages between flow regime characteristics and the life histories of protected species occurring in the basin. While this is beyond the scope of the current effort, it might be possible to quantify optimal flow regimes for some of or all the riverine-dependent species, or even minimum flow regimes that would ensure each species' survival and persistence in the basin. Such an effort would show that some species do best in wet years and others do best in dry years. However, overall biological diversity and ecosystem function benefit from inter-annual variations in species success (Tilman et al. 1994). Previous efforts at riverine ecosystem restoration have demonstrated that it is not possible to simultaneously optimize conditions for all species (Sparks 1992, 1995; Toth 1995). Therefore, the best strategy for protecting the ecology and biodiversity of the basin, including its protected species, is to maintain or restore to some extent the natural patterns of variability of flow regimes throughout the basin.

Water Quality Degradation

Riverine communities generally require clean water with sufficiently high dissolved oxygen concentration and appropriate temperatures. Although water quality has improved in the ACT Basin since the 1970s because of controls on point source pollutant discharges under the CWA, water quality problems related largely to nonpoint source sedimentation and other contaminants continue in many river reaches. Biological conditions in the ACT Basin are most severely degraded in the urbanized reaches of the basin (Frick et al. 1998). Water quality degradation is a frequently cited concern for the riverine-dependent species included in the *Comprehensive Study's Protected Species Report* (Ziewitz et al. 1997). It is quite likely that water quality is a limiting factor for several of the species, including many of the 16 federally listed mussels listed in Table 6.1-4. Any actions that could alter water quality must address effects on the protected species.

Table 6.1-4.
Federally protected species potentially affected by water allocation in the ACT Basin

State	Common name	Scientific name	Endemic	Federal	AL	GA	Sub basin	Habitat
	Mammals							
AL	Alabama beach mouse	*Peromyscus p. ammobates*		E	SP		MB	Scrub dunes of the coastal strand community
AL	Perdido Key beach mouse	*P. p. trissyllepsis*		E	SP		MB	Scrub dunes of the coastal strand community
AL	West Indian manatee	*Trichechus manatus*		E	SP	E	MB	Open estuarine
	Birds							
AL/GA	Wood stork	*Mycteria americana*		E	SP	E	UCO, LCO, T, AL	Forested wetland/shallow water
	Fish							
AL	Gulf sturgeon	*Acipenser oxyrinchus desotoi*		T	SP		AL	Riverine mainstem
AL	Pygmy sculpin	*Cottus paulus*	Y	T	SP		LCO	Riverine/tributary, coldwater spring (only)
AL/GA	Blue shiner	*Cyprinella caerulea*	Y	T	SP	E	LCO, UCO	Riverine/mainstream/large tributary/rocky
GA	Etowah darter	*Etheostoma etowahae*	Y	E		E	UCO	Riverine/mainstream/ tributary/riffle
GA	Cherokee darter	*E. scotti*	Y	T		T	UCO	Riverine/tributary small-medium streams
AL	Cahaba shiner	*Notropis cahabae*	Y	E	SP		AL	Riverine/mainstream/pool/ clear waters
GA	Amber darter	*Percina antesella*	Y	E		E	UCO	Riverine/mainstream/large tributary/riffle
AL/GA	Goldline darter	*P.aurolineata*	Y	T	SP	T	UCO, AL	Riverine/mainstream/riffles and runs
GA	Conasauga logperch	*P. jenkinsi*	Y	E		E	UCO	Riverine/mainstream/riffles and runs
AL	Alabama sturgeon	*Scaphirhynchus suttkusi*	Y	E	SP		AL	Riverine/mainstream/large tributary/sand and gravel substrates
	Insects							
AL	Mitchell's satyr butterfly	*Neonympha m. mitchellii*		E	SP			
	Mollusks							
AL/GA	Upland combshell	*Epioblasma metastriata*		E	SP	E	UCO, AL	Riverine, stable gravel or sandy gravel substrates
AL/GA	Southern acornshell	*E. othcaloogensis*	Y	E	SP	E	LCO, AL, UCO	Riverine/rock and gravel substrates
AL	Southern combshell	*E. penita*		E	SP		AL	Riverine, stable gravel or sandy gravel substrates
AL	Orangenacre mucket	*Lampsilis perovalis*		E	SP		AL	Riverine, stable gravel or sandy gravel substrates
AL/GA	Finelined pocketbook	*L. altilis*		T	SP	T	AL, LCO, UCO, T	Riverine, stable gravel or sandy gravel substrates
AL	Alabama pearlshell	*Margaritifera marrianae*		C			AL	Riverine/stable or sandy gravel substrate

Table 6.1-4. (continued)

State	Common name	Scientific name	Endemic	Federal	AL	GA	Sub basin	Habitat
	Mollusks (continued)							
AL/GA	Alabama moccasinshell	*Medionidus acutissimus*		T	SP	T	UCO	Riverine/rivers and large creeks
AL/GA	Coosa moccasinshell	*Medionidus parvulus*		E	SP	E	UCO	Riverine, stable gravel or sandy gravel substrates
GA	Painted clubshell	*Pleurobema chattanoogaense*		C		E	UCO	Riverine/medium size rivers/stable gravel or sandy gravel substrate
AL/GA	Southern clubshell	*P. decisum*		E	SP	E	AL, T	Riverine/medium size rivers/stable substrate
AL/GA	Southern pigtoe	*P. georgianum*	Y	E	SP	E	UCO, LCO	Riverine, stable gravel or sandy gravel substrates
GA	Georgia pigtoe	*P. hanleyanum*	Y	E*		E	UCO	Riverine/medium size rivers/stable gravel or sandy gravel substrate
AL/GA	Ovate clubshell	*P. perovatum*		T	SP	E	T	Riverine, stable gravel or sandy gravel substrates
AL	Heavy pigtoe	*P. taitianum*		E	SP		AL	Riverine/stable grave or sandy gravel substrates
	Inflated heelsplitter	*Potomilus inflatus*		T	SP		AL, LCO, UCO, T	Riverine/stable grave or sandy gravel substrates
AL/GA	Triangular kidneyshell	*Ptychobranchus greenii*		E	SP	E	UCO, AL, LCO	Riverine/high quality riffle-run
	Snails							
AL	Lacy elimia	*Elimia crenatella*	Y	T	SP		LCO	Riverine/mainstream/ tributary riffle
AL	Round rocksnail	*Leptoxis ampla*	Y	C	SP		AL	Riverine/mainstream/ tributary riffle
GA	Georgia rocksnail	*L. downei*		E*		E	UCO	Riverine/mainstream/ tributary riffle
GA	Interrupted rocksnail	*L. foremani*		E*		E	LCO, UCO	Riverine/mainstream/ tributary riffle
AL	Plicate rocksnail	*L. plicata*		T	SP			Riverine/mainstream/ tributary riffle
AL	Painted rocksnail	*L. taeniata*	Y	C	SP		LCO	Riverine/mainstream/ tributary riffle
AL	Flat pebblesnail	*Lepyrium showalteri*	Y	E	SP		AL	Riverine/mainstream/ tributary riffle
AL/GA	Cylindrical lioplax snail	*Lioplax cyclostomaformis*	Y	E	SP		AL	Riverine/mainstream/ tributary riffle
AL	Tulotoma snail	*Tulotoma magnifica*	Y	E	SP		AL, LCO	Riverine/mainstream/ tributary riffle
	Plants							
AL	Price's potato bean	*Apios priceana*		T			AL	Mesic soils in open areas along creeks
AL/GA	Georgia rockcress	*Arabis georgiana*		C		T	UCO	Dry, shallow soils on rocky bluffs & sandy loam soils on eroding river banks
AL/GA	Alabama leather flower	*Clematis socialis*		E		E	UCO	Mesic flats along intermittent creeks

Table 6.1-4. (continued)

State	Common name	Scientific name	Endemic	Federal	AL	GA	Sub basin	Habitat
	Plants (continued)							
AL	Whorled sunflower	*Helianthus verticillatus*		E			UCO	Relict praries, moist prarie-like openings along creeks
AL/GA	Mohr's Barbara's buttons	*Marshallia mohrii*		T		T	LCO, UCO	Palustrine/emergent/open water
AL/GA	White fringeless orchid	*Platanthera integrilabia*		C		T	T, UCO	Boggy areas at stream heads and seepage slopes
AL	Harperella	*Ptilimnium nodosum*		E			LCO, UCO	Palustrine/riverine
GA	Michaux's Sumac	*Rhus michauxii*		E		E	UCO	Sandy or rocky open woods on acidic soils
AL/GA	Kral's water-plantain	*Sagittaria secundifolia*		T			UCO	Riverine/tributary/riffle/run/pool
AL/GA	Green pitcher-plant	*Sarracenia oreophila*		E		E	LCO, T, UCO	Palustrine/forested, bogs, streambanks
AL	AL canebrake pitcher plant	*Sarracenia rubra alabamensis*	Y	E			LCO, T	Palustrine, sandhills, seeps, bogs, and swamps
AL/GA	Georgia aster	*Symphyotrichum georgianum*		C		T	UCO	Post oak-savanna communities and relict praries
AL/GA	TN yellow-eyed grass	*Xyris tennesseensis*		E		E	LCO, UCO	Palustrine; margins in and along spring runs and wet meadows
	Reptiles and Amphibians							
AL	Reticul. flatwoods salamander	*Ambystoma bishopi*		T	SP		AL	Open-canopied, flatwoods & savannas dominated by longleaf pine
AL/GA	Loggerhead sea turtle	*Caretta caretta*		T	SP	E	MB	Open estuarine
AL/GA	Green sea turtle	*Chelonia mydas*		T	SP	T	MB	Open estuarine
AL	Eastern indigo snake	*Drymarchon corais couperi*		T	SP	T	AL	Flatwoods, tropical hammocks, dry glades and moist bogs
AL	Kemp's ridley sea turtle	*Lepidochelys kempii*		E	SP	E	MB	Open estuarine
AL	Red hills salamander	*Phaeognathus hubrichti*		E	SP		AL	Steep sloped ravines and bluffs dominated by hardwoods
AL	Black pine snake	*Pituophis melanoleucus lodingi*		C	SP		AL	Xeric, fire-maintained longleaf pine forest
AL	Alabama red-belly turtle	*Pseudemys alabamensis*		E	SP		AL	Rivering/mainstream/palustrine/open estuarine/sub and intertidal

Notes:
E = listed as endangered; C = candidate species for listing; T = listed as threatened; SC = federal species of special concern; SP = species formally protected; R = rare, no legal status; Y = species is endemic to basin; s/a = protected because of similar appearance to the listed species; CO = Coosa; LCO = Lower Coosa; UCO = Upper Coosa; AL = Alabama; T = Tallapoosa; MB = Mobile Bay.

Coosawattee River downstream of Carters Reregulation Dam

The following subsections describe the effects of the current operation and proposed action on protected species in the Coosawattee River downstream of Carters Reregulation Dam. Modeled output of stream flow and water quality over the period of record were evaluated to with respect to the distribution of federally listed species and designated critical habitat units within the subbasin. As previously stated, dedicated studies to address the impacts of the proposed operational changes on protected species not are available and are beyond the scope of this effort.

This segment of the ACT Basin is inhabited by several federally listed species of freshwater mussels, fish and a single snail species (see Table 6.1-4). Critical habitat has been designated for mussels, including the southern acornshell, ovate clubshell, southern clubshell, upland combshell, triangular kidneyshell, Alabama moccasinshell, Coosa moccasinshell, southern pigtoe and fine-lined pocketbook (Figure 6.1-16). The federally threatened goldline darter and federally endangered interrupted rocksnail also exist along this reach.

Current Operation

USFWS has recommended seasonal minimum flow targets ranging from 240 cfs to 865 cfs. Under the current operation, March and December targets (selected as examples to represent seasonality and months during which USFWS recommended minimum flows are higher than the current 240 cfs requirement) are already met approximately 87 and 81 percent of the time, respectively, under current operations. Water quality conditions are expected to improve for the current operation, as states adhere to defined regulations regarding wasteload allocation, management of NPDES facilities and non-point sources. Conditions under this alternative are consistent with current conditions and thus the current operation is not expected to affect protected species on the Coosawattee River downstream of Carters Reregulation Dam.

Proposed Action Alternative

HEC-ResSim model results indicate that the addition of the seasonally variable minimum flow targets would not yield significant changes in the mean daily flows over the period of record. However, notable improvements are realized during low flow events. Flows at the minimum levels of 240 cfs occur approximately 4 percent of the time under the proposed action, compared to 9 percent for the current operation. Changes in water quality, with respect to temperature and dissolved oxygen values, would be expected to be minor for the proposed action. Thus, with respect to the current operation, the effects of operational features on flow and water quality conditions presented under the proposed action would be expected to have no adverse effects on protected species of the Coosawattee River downstream of Carters Reregulation Dam.

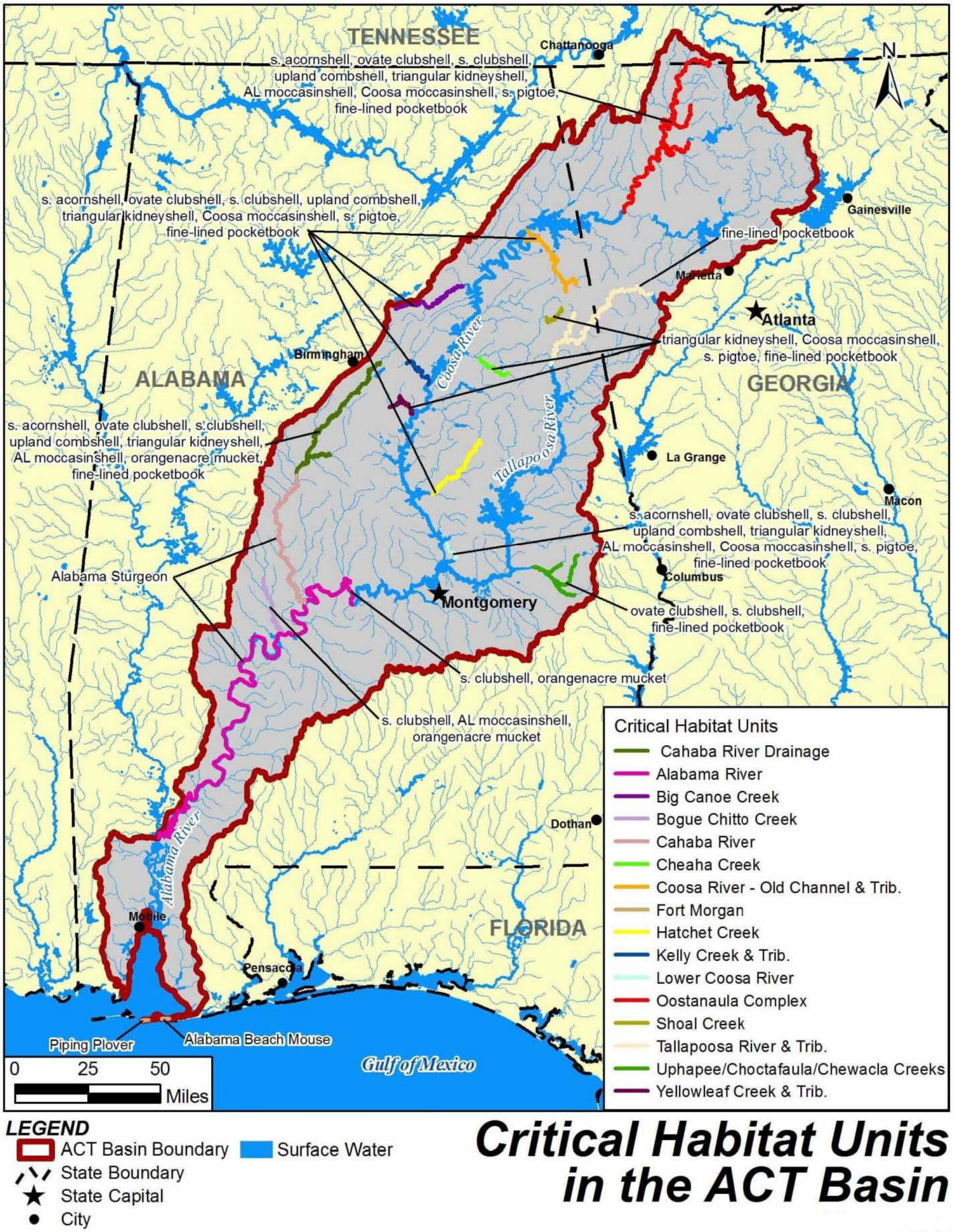


Figure 6.1-16. Critical Habitat Units in the ACT Basin.

Etowah River downstream of Allatoona Lake

The following subsections describe the effects of the current operation and proposed action on protected species in the Etowah River downstream of Allatoona Lake. Modeled output of stream flow and water quality over the period of record were evaluated to with respect to the distribution of federally listed species and designated critical habitat units within the subbasin. As previously stated, dedicated studies to address the impacts of the proposed operational changes on protected species are not available and are beyond the scope of this effort.

Federally listed species in the Etowah River downstream of Allatoona Lake includes eight freshwater mussel species, three fish species and two snail species. Critical habitat has not been established along this reach (Figure 6.1-16). With exception to two mussel species and one fish species, which are federally threatened, all are currently listed as endangered.

Current Operation

Flow conditions over the modeled period are expected to remain consistent with current conditions and water quality is expected to improve as States adhere to defined regulations regarding wasteload allocation, management of NPDES facilities and non-point sources. Thus, the current operation is not expected to affect protected species on the Etowah River downstream of Allatoona Lake.

Proposed Action

The proposed operation proposes a revision of the number and reshaping of the action zones to temper full peaking hydropower releases during dry conditions. It also implements a phased guide curve and reduction of hydropower generation during the fall drawdown period, shifting the timing of releases between September and December. However, the overall effect of these actions is negligible as increased flows during December should offset lower releases earlier in the phased drawdown period. Changes in water temperature and dissolved oxygen are minor.

Compared with the current operation, the effects of operational features on flow and water quality conditions presented under the proposed operation would not be expected to affect protected species on the Etowah River downstream of Allatoona Lake.

Coosa River at Rome, Georgia

The following subsections describe the effects of the current operation and proposed action on protected species in the Coosa River at Rome, Georgia. Modeled output of stream flow and water quality over the period of record were evaluated to with respect to the distribution of federally listed species and designated critical habitat units within the subbasin. As previously stated, dedicated studies to address the impacts of the proposed operational changes on protected species are not available and are beyond the scope of this effort.

Federally listed species in the Coosa River at Rome includes eleven freshwater mussel species, two fish species and two snail species. Critical habitat has not been established along this reach (Figure 6.1-16). All species are federally endangered, except two species of mussels which are federally threatened.

Current Operation

Flow conditions over the modeled period are expected to remain consistent with current conditions and water quality is expected to improve as states adhere to defined regulations regarding wasteload allocation, management of NPDES facilities and non-point sources. Thus, the current operation is not expected to affect protected species on the Coosa River at Rome.

Proposed Action

Operational changes under the proposed operation, particularly the reduction in hydropower generation at Allatoona Lake during fall drawdown, would be expected to shift the timing of releases from September through December. However, model runs suggest that these changes will not significantly affect flow characteristics in the Coosa River at Rome compared to the current operation and will have negligible effects on water quality. Thus, the proposed action is not expected to affect protected species on the Coosa River at Rome.

Alabama River at Montgomery, Alabama

The following subsections describe the effects of the current operation and proposed action on protected species in the Alabama River at Montgomery, Alabama. Modeled output of stream flow and water quality over the period of record were evaluated with respect to the distribution of federally listed species and designated critical habitat units within the subbasin. As previously stated, dedicated studies to address the impacts of the proposed operational changes on protected species are not available and are beyond the scope of this effort.

This segment of the ACT Basin is inhabited by several federally listed species, including three species of freshwater mussels (inflated heelsplitter, heavy pigtoe and southern clubshell), one fish species (Alabama sturgeon) and a single snail species (tulotoma snail). Critical habitat has been designated for the Alabama sturgeon (Figure 6.1-16). The impact of the proposed operational changes on the availability of sturgeon habitat cannot be determined because flow requirements for the species are poorly understood.

Current Operation

Over the modeled period of record, the current opertion meets the 4,640 cfs minimum flow target 99 percent of the time. Water quality conditions are expected to improve as states adhere to defined regulations regarding wasteload allocation, management of NPDES facilities and non-point sources. These features offer no substantial change to current conditions, thus the current operation is not expected to affect protected species on the Alabama River downstream of Montgomery.

Proposed Action

The proposed action would result in adjustments to meet navigational needs when sufficient flows are available, but also provides drought management plans under dry conditions which become progressively more stringent as condition worsen. However, because reservoirs above the Alabama River at Montgomery function more like run-of-river operations, water quality parameters would not be expected to change in response to the proposed action. The minimum flow target under the proposed plan is expected to be met 96 percent of the time and the influence on water temperature and dissolved oxygen is minor.

Compared to the current operation, the effects of operational features on flow and water quality conditions presented under the proposed action are not expected to affect protected species on the Alabama River downstream of Montgomery.

Alabama River downstream of Claiborne Lock and Dam and Lake

The following subsections describe the effects of the current operation and proposed action on protected species in the Alabama River downstream of Claiborne Lock and Dam and Lake. Modeled output of stream flow and water quality over the period of record (1939 – 2008) were evaluated to with respect to the distribution of federally listed species and designated critical habitat units within the subbasin. As previously stated, dedicated studies to address the impacts of the proposed operational changes on protected species are not available and are beyond the scope of this effort.

Federally listed species in the Alabama River downstream of Claiborne Lock and Dam and Lake include the inflated heelsplitter and heavy pigtoe (mussels), Alabama sturgeon (fish) and tulotoma snail. Critical habitat for Alabama sturgeon extends down to Mobile Bay (Figure 6.1-16). However, flow requirements for the species are poorly understood, thus inhibiting the ability to determine the effects of the proposed operational features on Alabama sturgeon habitat.

Current Operation

Over the modeled period of record, the current operation meets the 6,600 cfs minimum flow target 98 percent of the time. Water quality conditions are expected to improve as States adhere to defined regulations regarding wasteload allocation, management of NPDES facilities and non-point sources. These features offer no substantial change to current condition, thus the current operation is not expected to affect protected species on the Alabama River at Claiborne Lock and Dam and Lake and on the lower Alabama River downstream of the lock and dam.

Proposed Action

Implementation of the proposed operation will result in adjustments to meet navigational needs when sufficient flows are available, but also provides drought management plans under dry conditions which become progressively more stringent as conditions worsen. However, under this alternative, the minimum flow target is expected to be met 95 percent of the time and the influence on water temperature and dissolved oxygen is minor.

With respect to the current operation, the effects of operational features on flow and water quality conditions presented under the proposed operation would not be expected to affect protected species on the Alabama River at Claiborne Lock and Dam and Lake and on the lower Alabama River downstream of the lock and dam.

Appendix B

Part III:
Endangered Species Act Section 7 Consultation Documentation

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DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

February 18, 2014

REPLY TO
ATTENTION OF

Inland Environment Team
Planning and Environmental Division

Mr. William Pearson
Field Supervisor
U.S. Fish and Wildlife Service
1208-B Main Street
Daphne, Alabama 36526

Dear Mr. Pearson:

The enclosed document provides a Biological Assessment (BA) pursuant to the informal consultation procedures of Section 7 of the Endangered Species Act for the proposed Water Control Manual (WCM) updates for the Alabama-Coosa-Tallapoosa (ACT) River Basin. As discussed in the document, we believe that for all of the listed species and/or designated Critical Habitat occurring within the ACT Basin, there will be either a "no effect" or "likely to affect, but unlikely to adversely affect" result of the proposed action. We request your concurrence with each of these determinations. In addition we request an updated list of listed species from those of the U.S. Fish and Wildlife Service's scoping comment letter dated October 16, 2008, and the Department of Interior letter dated May 29, 2013, which provided comments on the Draft Environmental Impact Statement.

Thank you for your continued assistance in the update of the WCM. If you have any questions regarding the BA or wish to discuss it or the proposed action either by telephone or in person, please contact Mr. Chuck Sumner at (251) 694-3857 or email at lewis.c.sumner@usace.army.mil.

Sincerely,

Curtis M. Flakes
Chief, Planning and Environmental
Division

Enclosure

BIOLOGICAL ASSESSMENT
PROPOSED UPDATE OF THE WATER CONTROL MANUAL FOR THE ALABAMA-COOSA-TALLAPOOSA RIVER BASIN IN GEORGIA AND ALABAMA

1. INTRODUCTION

On 1 March 2013, the U.S. Army Corps of Engineers, Mobile District (USACE) released a Draft Environmental Impact Statement (DEIS) for an Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa (ACT) River Basin in Georgia and Alabama. The DEIS has been provided to the U.S. Fish and Wildlife Service (Service) Daphne, Alabama and Athens, Georgia field offices. Other related communication between our agencies include a Service scoping comment letter dated October 16, 2008 to USACE District Commander Byron Jorns, a Planning Aid Letter (PAL) from the Service Daphne Field Office to USACE District Commander Byron Jorns dated May 3, 2010, a response to the PAL from USACE Mobile District dated June 6, 2011, USACE November 22, 2011 Response to Service Questions, a Draft Fish and Wildlife Coordination Act Report (DFWCAR) provided by the Service Daphne Field Office, dated December 21, 2012, and a USACE Mobile District response to the DFWCAR dated February 8, 2013. In addition, a Department of the Interior letter commenting on the DEIS dated May 29, 2013, provided Service comments and a list of Federally listed threatened and endangered species potentially affected by the proposed action. The ACT Basin supports a wide variety of wildlife and is home to approximately 230 species that are protected or included as candidate species by the states and the federal government. Of those, 143 are federally listed as Threatened or Endangered. These species can be further broken down to species that are associated with riverine habitat, which, because of where they occur, have the greatest potential to be affected by changes in basin operations. Table 1 is a list of the species potentially affected by the proposed action based on available information, the Service scoping comment letter of October 16, 2008, and the Department of the Interior (DOI) letter commenting on the DEIS dated May 29, 2013. Because the Service scoping letter and DOI comment letter are over 180 days old, USACE is requesting verification of the species list.

Table 1. Listed Species Potentially Affected by USACE Proposed Action.

Common Name	Scientific Name	Status[1]	Critical Habitat within Affected Area
Mitchell's satyr butterfly	*Neonympha m. mitchellii*	E	No
Wood stork	*Mycteria americana*	E	No
Red cockaded woodpecker	*Picoides borealis*	E	No

Alabama beach mouse	*Peromyscus polionotus ammobates*	E	No
West Indian manatee	*Trichechus manatus*	E	No
Kemp's ridley sea turtle	*Lepidochelys kempii*	E	No
Eastern indigo snake	*Drymarchon corais couperi*	T	No
Black pine snake	*Pituophis melanoleucus lodingi*	C	No
Red hills salamander	*Phaeognathus hubrichti*	T	No
Alabama red-belly turtle	*Pseudemys alabamensis*	E	No
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	T	No
Blue shiner	*Cyprinella caerulea*	T	No
Etowah darter	*Etheostoma etowahae*	E	No
Cherokee darter	*Etheostoma scotti*	T	No
Cahaba shiner	*Notropis cahabae*	E	No
Amber darter	*Percina antesella*	E	Yes
Goldline darter	*Percina aurolineata*	T	No
Conasauga logperch	*Percina jenkinsi*	E	Yes
Alabama sturgeon	*Scaphirhynchus suttkusi*	E	Yes
Finelined pocketbook	*Lampsilis altilis*	T	Yes
Orange-nacre mucket	*Lampsilis perovalis*	T	Yes
Alabama moccasinshell	*Medionidus acutissimus*	T	Yes
Coosa moccasinshell	*Medionidus parvulus*	E	Yes
Ovate clubshell	*Pleurobema perovatum*	E	Yes
Southern clubshell	*Pleurobema decisum*	E	Yes
Southern pigtoe	*Pleurobema georgianum*	E	Yes
Triangular kidneyshell	*Ptychobranchus greenii*	E	Yes
Southern acornshell	*Epioblasma othcaloogensis*	E	Yes
Upland combshell	*Epioblasma metastriata*	E	Yes
Alabama pearlshell	*Margaritifera marrianae*	E	Yes
Southern combshell	*Epioblasma penita*	E	No
Heavy pigtoe	*Pleurobema taitianum*	E	No
Alabama heelsplitter	*Potomilus inflatus*	E	No
Georgia pigtoe	*Pleurobema hanleyianum*	E	Yes
Interrupted rocksnail	*Leptoxis foremani*	E	Yes
Rough hornsnail	*Pleurocera foremani*	E	Yes
Lacy elimia	*Elimia crenatella*	T	No
Round rocksnail	*Leptoxis ampla*	T	No
Painted rocksnail	*Leptoxis taeniata*	T	No
Flat pebblesnail	*Lepyrium showalteri*	E	No

Cylindrical lioplax snail	*Lioplax cyclostomaformis*	E	No
Tulotoma snail	*Tulotoma magnifica*	T	No
Price's potato bean	*Apios priceana*	T	No
Georgia rockcress	*Arabis Georgiana*	C	Yes
Alabama leather flower	*Clematis socialis*	E	No
Whorled sunflower	*Helianthus verticillatus*	C	No
Mohr's Barbara's buttons	*Marshallia mohrii*	T	No
White fringeless orchid	*Platanthera integrilabia*	C	No
Harperella	*Ptilimnium nodosum*	E	No
Michaux's Sumac	*Rhus michauxii*	E	No
Kral's water-plantain	*Sagittaria secundifolia*	T	No
Green pitcher-plant	*Sarracenia oreophila*	E	No
Alabama canebrake pitcher plant	*Sarracenia rubra alabamensis*	E	No
Georgia aster	*Symphyotrichum georgianum*	C	No
Tennessee yellow-eyed grass	*Xyris tennesseensis*	E	No
[1]E - Endangered, T - Threatened, C – Candidate			

All of the species listed in Table 1 have a dependence on the aquatic environment or occur in geographic proximity to the aquatic environments of the ACT basin. However, of these, Mitchell's satyr butterfly, Red cockaded woodpecker, Alabama beach mouse, Kemp's ridley sea turtle, Eastern indigo snake, Black pine snake, Price's potato bean, Alabama leather flower, Whorled sunflower, Mohr's Barbara's buttons, White fringeless orchid, Michaux's Sumac, and Georgia aster are found in areas outside the range of aquatic habitats potentially impacted by flow regime or water quality changes (i.e. nearby upland areas). Therefore, there would be no effect on these species and they are not further addressed in this biological assessment. Effects to the remaining species in Table 1 are evaluated in this biological assessment and the results of that effects analysis are described in the EFFECTS ANALYSIS section below.

2. PURPOSE AND NEED

The purpose and need for the federal action is to determine how the federal projects in the ACT Basin should update operations for their authorized purposes, in light of current conditions and applicable law, and to implement those operations through updated water control plans and manuals. The action will result in updated plans and manuals that comply with existing Corps regulations and reflect operations under existing congressional authorizations, taking into account changes in basin hydrology and demands from years of growth and development, new/rehabilitated structural features, legal developments, and environmental issues. Corps regulations also provide specific policy and guidance for inclusion of drought contingency plans as part of Corps' overall water control management activities. To be effective, the drought plan for the ACT Basin must incorporate a comprehensive, basin-wide approach that considers the interrelationship of Corps projects and Alabama Power Company (APC) projects in the basin.

This WCM update includes a proposed drought plan for the basin developed in collaboration with APC. In addition to operations at Corps projects in the ACT basin, flood control operations at two APC projects (H. Neely Henry and R.L. Harris) would be updated in their respective water control manuals.

In order to understand the purpose of this proposed action, it is also important to understand the limits of the action and what is not included. USACE is not proposing to build, install, or upgrade any facilities. USACE is not proposing to modify any authorized project purpose via this action, although the extent to which some can be achieved may be affected. This action is limited to the way reservoir levels are managed and water is released from them.

3. PROPOSED ACTION

Throughout development of the water control manual update and preparation of the DEIS, the USACE provided summaries of the proposed action to the Service. Therefore, the proposed action is summarized here and reference made to the full discussion in Section 5 of the DEIS.

Operations under the Proposed Action include the following:

• Implement a revised drought plan with enhancements recommended by the Service.

• Provide for seasonal navigation releases to support commercial navigation in the Alabama River for a 9.0-ft or 7.5-ft channel depth as long as sufficient basin inflow above the APC projects is available. When sufficient flows cannot be provided to continue to support a minimum 7.5-ft navigation channel, navigation could be impeded and flows at Montgomery would be reduced to 4,640 cfs (7Q10). If one or more of the drought operations triggers (low basin inflows, low composite conservation storage, or low state line flows) are met, minimum flows at Montgomery would be dropped below 4,640 cfs in accordance with specific protocols developed collaboratively between the Corps and APC (discussed in detail in Section 5 of the DEIS).

• APC projects would continue to operate under their current Federal Energy Regulatory Commission (FERC) licenses with specific operational requirements.

• The APC project, H. Neely Henry Lake (Coosa River), which operates with a revised guide curve under a FERC license variance (with Corps concurrence) would continue to operate under its revised guide curve.

• Allatoona Reservoir would continue to provide for a 240-cfs minimum flow.

• The existing guide curve at Allatoona Reservoir would be revised to implement a phased fall drawdown period from early September through December. Refined operations at Allatoona Reservoir would include use of four action zones shaped to mimic the seasonal demands for hydropower. Modifications to the hydropower schedule would be put in place to provide greater operational flexibility to meet power demands while conserving storage. Specifically, under the PAA, hydropower generation would be reduced during annual drawdown in the fall (September through November).

•The current minimum flow requirement would remain 240 cfs from Carters Reregulation Dam. Refined operations at Carters Reservoir would include the use of two action zones to manage downstream releases. The top of the new action zone 2 begins at elevation 1,066 ft in January, increasing to 1,070.5 ft in May, dropping to 1,070 ft by October, and returning to elevation 1,066 ft through December. When Carters Reservoir is in action zone 1, minimum flow releases at Carters Reregulation Dam would be equal to the seasonal minimum flow. Those minimum flow releases are based on the mean monthly flow upstream of Carters Reservoir. If Carters Reservoir elevations drop into action zone 2, minimum flow releases from Carters Reregulation Dam would be 240 cfs.

• The Corps reserves 6,371 ac-ft of storage space in Allatoona Reservoir for water supply for the City of Cartersville, GA and 13,140 ac-ft for the Cobb County Marietta Water Authority. Total storage space allocated to water supply is 19,511 ac-ft.

• The Corps reserves 818 ac-ft in Carters Reservoir for water supply for the City of Chatsworth, GA.

• The Corps would continue to manage fish spawning operations at Allatoona Reservoir. During the largemouth bass spawning period, from March 15 to May 15, the Corps seeks to maintain generally stable or rising reservoir levels at Allatoona Reservoir. Generally stable or rising levels are defined as not lowering the reservoir levels by more than 6 inches, with the base elevation generally adjusted upward as levels rise from increased inflows or refilling of the reservoir.

• The Corps would continue migratory fish passage operations at Claiborne Lock and Dam and Millers Ferry Lock and Dam.

4. ACTION AREA

Service regulations define "action area" as all areas affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). The ACT water control manual update specifically addresses releases from the five federal projects, navigation support and flood risk management actions at two Alabama Power Company ("APC") projects (H. Neely Henry Dam and Lake and R.L. Harris Dam and Lake). These releases are accomplished through the respective independent operations of all of the USACE and APC reservoirs in the ACT River Basin. Although, the action area includes all aquatic habitats downstream of the USACE upstream-most ACT projects, Allatoona Reservoir and Carters Reservoir, ending with and including Mobile Bay (Figure 1), large portions of the middle basin are regulated by APC's operation of its FERC licensed projects. In addition to the two listed above, the APC projects include Weiss Dam and Lake, Logan Martin Dam and Lake, Lay Dam and Lake, Mitchell Dam and Lake, Walter Bouldin Dam and Lake, Jordan Dam, Martin Dam and Lake, Yates Dam and Thurlow Dam. This portion of the basin was addressed by the Service in its June 7, 2012 Biological Opinion (BO) issued for the proposed Federal Energy Regulatory Commission's relicensing of APC's seven hydropower projects on the Coosa River. The river flow regime in this portion of the middle basin is predicated on the operation of those seven APC hydropower projects rather than upstream operations at USACE projects. These APC operations have already been consulted on and are subject to the terms and conditions of the June 7, 2012 BO and Incidental Take Statement. Therefore, while the action area includes all aquatic habitats that are downstream of the USACE upstream-most ACT projects, Allatoona Dam and Carters Dam, ending with and including Mobile Bay, the effects analysis of the USACE proposed action are limited to the aquatic habitats downstream of Allatoona Dam and Carters Dam to the APC-owned Weiss Dam; and from Montgomery down to and including Mobile Bay. This portion of the action area, which we address in the remainder of this BA, is shown in Figure 2. Hereafter, our use of the term "action area" refers to this limited portion of the broader action area.

5. STATUS OF THE SPECIES/CRITICAL HABITAT

During preparation of the DEIS, surveys for listed species in the ACT basin were conducted in cooperation with the Service. These were previously provided to the Service and include (1) Quantitative Sampling of *Pleurobema taitianum* in the Alabama River; (2)Survey for *Tulotoma magnifica* in Mainstem of Alabama River, Freshwater Mussels (Unionidae) and Aquatic Snails of Selected Reaches of the Coosa Drainage, Georgia; (3) Burrow Occupancy of the Red Hills Salamander at Haines Island Park and Survey for Populations West of the Alabama River; (4) Fish assemblage survey of selected sites in the Alabama River and associated Tributaries; (5) Inventory of Federally Listed and Sensitive Plant and Select Animal Species on U.S. Army Corps of Engineers Landholdings along the Alabama River.

All individual species descriptive information is from USFWS resource documents located at http://www.fws.gov/endangered and from the NatureServe Explorer at http://www.natureserve.org/explorer referenced from the USFWS site. The information presented here is a summary of the species and Critical Habitat and/or habitat requirements. The DEIS also has additional information regarding the historic and current ranges of the species. That information is located in section 2.5.4 of the DEIS.

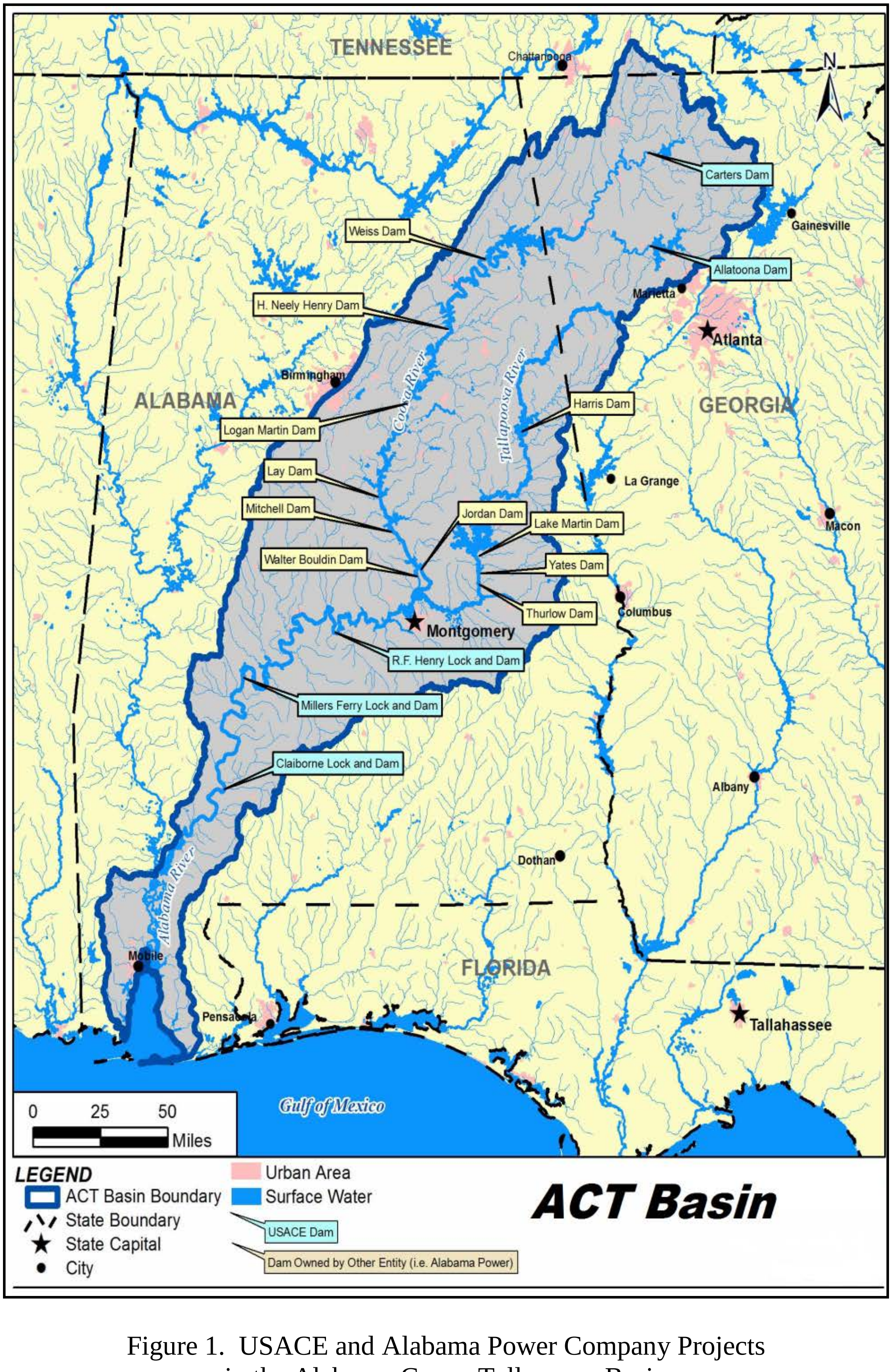

Figure 1. USACE and Alabama Power Company Projects
in the Alabama-Coosa-Tallapoosa Basin

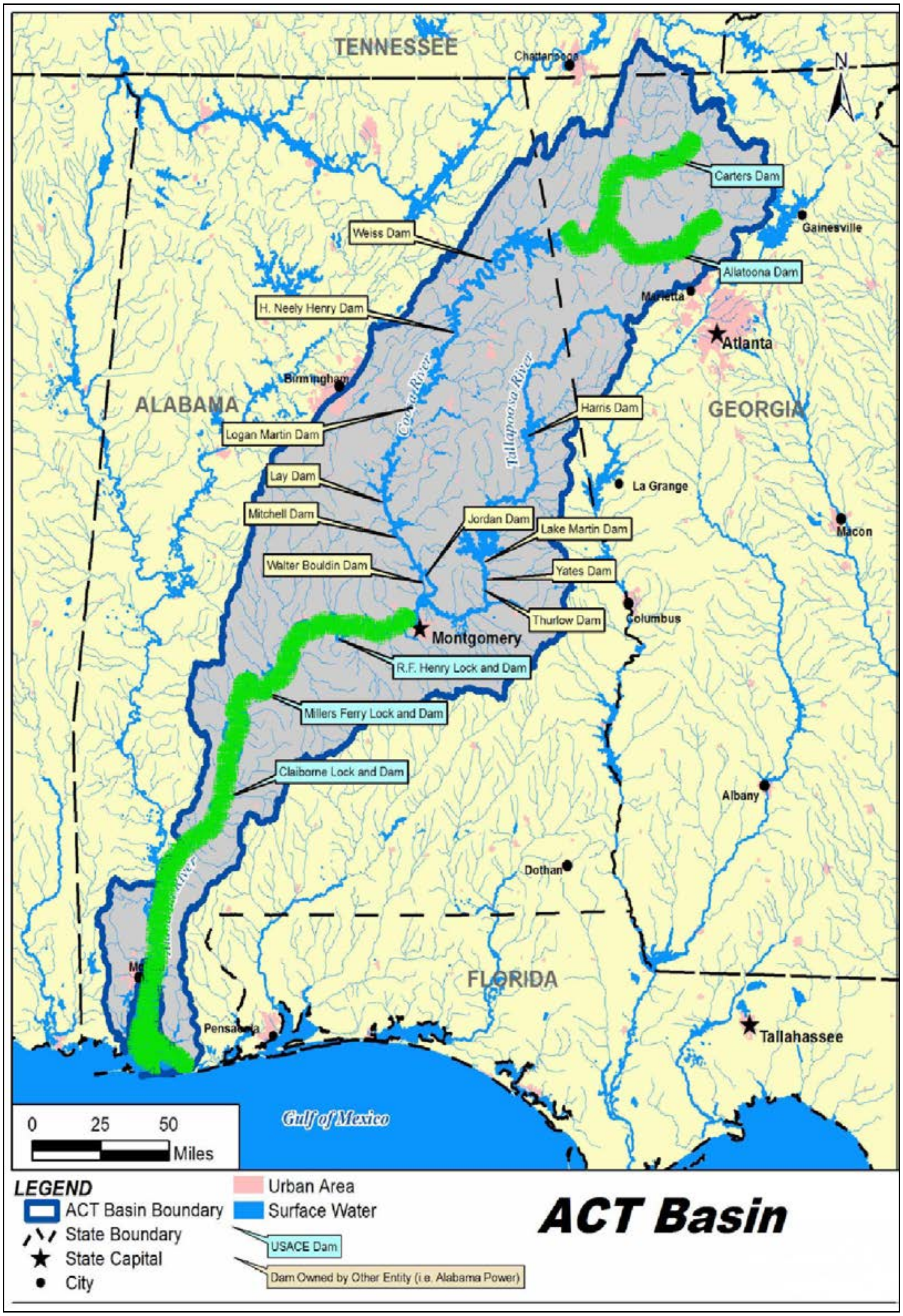

Figure 2. Limited Action Area Downstream of USACE Projects
in the ACT Basin (green shading).

Birds

Wood stork (*Mycteria Americana),* is a wetland dependent bird species and loss of foraging wetlands is the primary threat. The species is only indirectly associated with riverine habitat.

Mammals

West Indian manatee (*Trichechus manatus),* is found in marine, estuarine and freshwater environments. The species is occasionally found in Mobile Bay and into the Mobile River. In 2012, a single individual was sighted near Claiborne Dam on the Alabama River. The species is intolerant of cold and does not overwinter in Alabama.

Reptiles and amphibians

Red hills salamander (*Phaeognathus hubrichti)* is found in Butler, Conecuh, Covington, Crenshaw, Monroe, and Wilcox Counties in Alabama, in the lower portions of the Alabama River basin. The species is found typically on steep sloped ravines and bluffs dominated by hardwoods with high soil moisture and full tree canopy. The lower ACT basin has bluffs and ravines associated with the species preferred riverine habitat which could be impacted by changes in river flows.

Alabama red-belly turtle (*Pseudemys alabamensis),* is found in Mobile and Baldwin Counties, Alabama in quiet backwaters of upper Mobile Bay in water generally one to two meters in depth. The species occurs within riverine habitat potentially affected by changes to flows or water quality.

Fish

Gulf sturgeon (*Acipenser oxyrinchus desotoi),* is listed in the lower Alabama River basin, in Baldwin, Clarke, Monroe, Washington and Mobile Counties, Alabama. The species is primarily marine/estuarine in winter; it migrates to upper rivers in spring for spawning; returns to sea/estuary in fall; some may remain near spawning areas. First two years are spent in riverine habitats. Spawns in fresh water (sometimes tidal) usually over bottom of hard clay, rubble, gravel, or shell. Critical habitat has been designated for the Gulf sturgeon but does not include the Mobile River and sub-basins, including the Alabama River. The Service has indicated that there is no recent documented spawning in those rivers, and for that reason critical habitat was not designated. It seems likely that because at least two of the Primary Constituent Elements (PCE's) associated with the designated critical habitat units are not met, spawning remains unlikely in the Mobile and Alabama Rivers. Those PCE's are river spawning sites, and a safe and unobstructed migratory pathway (an unobstructed river or dammed river that still allows for passage of the species). The species occurs within riverine habitat potentially affected by changes to flows or water quality.

Blue shiner (*Cyprinella caerulea),* occurs in Tennessee, Alabama and Georgia counties in the Coosa River basin. The species is restricted to the Conasauga River and tributaries in Tennessee and Georgia, Coosawattee River and tributaries in Georgia upstream of Carters Dam, and Weogufka and Choccolocco creeks and lower Little River, tributaries of Coosa River in Alabama. Habitat includes cool, clear, small to medium-sized rivers over firm substrates (sand, gravel, or rubble) in pools, backwaters, and areas of moderate current. The species occurs within riverine habitat potentially affected by changes to flows or water quality.

Etowah darter (*Etheostoma etowahae),* is found in the Etowah mainstem and eight tributaries in Georgia. The species has been reported in the Etowah River downstream of Allatoona Dam. However, the species is known to co-occur with the closely related greenbreast darter in this reach and may in fact represent a distinct hybrid population segment. The results of genetic testing to confirm this theory are not available yet (Brett Albanese, Georgia Department of Natural Resources, personal communication, 2011). Counties include Bartow, Cherokee, Dawson, Lumpkin, Paulding and Pickens. Typically, the species is found in riffles of streams with moderate to strong current over gravel or cobble substrate. It is also found in medium size rivers with riffles and strong currents. It is intolerant of stream impoundments. The species occurs within riverine habitat potentially affected by changes to flows or water quality.

Cherokee darter (*Etheostoma. scotti),* occurs in several Georgia counties in the Coosawattee and Etowah River watersheds. Habitat includes pools and adjacent riffles of creeks and small rivers about 1-15 meters wide, with moderate gradient and predominantly rocky bottoms; usually in shallow water in sections of reduced current, typically in runs above and below riffles and at the ecotones of riffles and backwaters; associated with large gravel, cobble, and small boulder substrates; uncommonly or rarely over bedrock, fine gravel, or sand; most abundant in sections with relatively clear water and substrates mainly clear of silt. It is intolerant of impoundment. The species occurs mostly within tributaries to riverine habitat potentially affected by changes to flows or water quality.

Cahaba shiner (*Notropis cahabae),* is limited to the Cahaba River basin, a major tributary to the Alabama River. Habitat includes flowing pools, usually over sand or gravel, in the main channel of medium-sized rivers. It moves into lower reaches of small tributaries during flood events and is occasionally found at the heads of pools and in shallow gravel riffles. The species occurs within riverine habitat potentially affected by changes to flows or water quality.

Amber darter (*Percina antesella),* is found in several Georgia counties in the ACT basin and several counties in Tennessee upstream of Allatoona and Carters Reservoirs. The current range includes the Coosa River system, the mainstream Etowah River upstream of Allatoona Reservoir, tributaries upstream of the area influenced by Allatoona Reservoir, and the Coosawattee River downstream of Carters Reservoir. It occurs in flowing pools and deeper runs with clean substrates of sand and fine gravel with scattered. It has been found associated with vegetation in riffle areas in midsummer.

Usually it is in cool, clear water up to 60 cm deep, with moderate to swift current. Critical habitat has been designated on the Conasauga River from Polk County, Tennessee downstream approximately 33.5 miles to the Georgia State Highway 2 Bridge, Murray County, Georgia. The species occurs within riverine habitat potentially affected by changes to flows or water quality.
Goldline darter (*Percina aurolineata),* is found in several Alabama counties in the Cahaba River basin and in several Georgia counties in the Coosawattee River basin. Its habitat includes fast rocky runs of small to medium rivers, main channels in areas of white-water rapids to three or more feet deep, and substrates of bedrock, boulders, rubble and gravel. The species occurs within riverine habitat potentially affected by changes to flows or water quality.

Conasauga logperch (*Percina. jenkinsi),* is found in Murray County, Georgia and Bradley County Tennessee on the Conasauga River above Carters Reservoir. Critical habitat has been designated on the Conasauga River from Polk County, Tennessee downstream approximately 11miles to the Georgia State Highway 2 Bridge, Murray County, Georgia. The species occurs within riverine habitat potentially affected by changes to flows or water quality.

Alabama sturgeon (*Scaphirhynchus suttkusi),* is found in the Alabama River in Autauga, Baldwin, Bibb, Clarke, Dallas, Monroe, Perry and Wilcox Counties, Alabama. Habitat includes the main channels of major rivers in areas below the Fall Line; most specimens have been taken in moderate to swift current at depths of 6-14 meters, over sand and gravel or mud; a couple records are from oxbow lakes. This species apparently prefers relatively stable substrates of gravel and sand in river channels with swift currents. Spawning occurs probably in areas with current, perhaps on hard substrates that may occur in main channels or in deep-water habitats associated with channel-training structures in major rivers or possibly in tributaries.

Critical habitat has been designated by the Service in a Final Rule, 50 CFR Part 17 (Federal Register (FR)/Volume 74, Number 104, Pages 26488-26510). That rule designated as critical habitat 326 miles of river channel from the Alabama River confluence with the Tombigbee River upstream to the R.F. Henry Lock and Dam, and the Cahaba River from its confluence with the Alabama River upstream to U.S. Highway 82 in Bibb County, Alabama.

As stated in the Final Rule, the primary constituent elements (PCE) of critical habitat for the Alabama sturgeon are: (i) A flow regime (*i.e.,* the magnitude, frequency, duration, seasonality of discharge over time) necessary to maintain all life stages of the species in the riverine environment, including migration, breeding site selection, resting, larval development, and protection of cool water refuges (*i.e.,*tributaries); (ii) River channel with stable sand and gravel river bottoms, and bedrock walls, including associated mussel beds; (iii) Limestone outcrops and cut limestone banks, large gravel or cobble such as that found around channel training devices, and bedrock channel walls that provide riverine spawning sites with substrates suitable for embryo deposition and development; (iv) Long sections of free-flowing water to allow spawning migrations and development of embryos and larvae; (v) Water temperature not exceeding 32° Celsius (90° Fahrenheit); dissolved oxygen levels not less than 5 milligrams per liter (mg/L) (5 parts per million (ppm)), except under extreme conditions due to natural causes or downstream of existing hydroelectric impoundments, where it can range from 5 mg/L to 4 mg/L (5 ppm to 4 ppm); and pH within the range of 6.0 to 8.5.

The Service changed the first PCE from the originally proposed minimum flow at Montgomery, Alabama of 4,640 cubic feet per second (cfs) to the final wording to reflect that the species' flow needs are relative to the season of the year. The discussion in the FR indicated that flows greater than 4,640 cfs are likely needed in the spring to successfully spawn. On the other hand, it stated that while lower flows may involve adverse effects, depending on other factors, such low flows may not result in measureable adverse effects or constitute a threshold for adverse modification of Critical Habitat.

In the FR, the Service noted that during 2007 and 2008, the Alabama River Basin experienced the worst drought ever recorded. However, the discussion also noted that the 2007-2008 drought may have actually been normal in the context of the past 1000 years and that the 40-year period prior to the present may have been exceptionally wet. The Service stated their belief that the species is adapted to period low-flow conditions similar to the 2007-2008 drought, but that they do not believe that the sturgeon is adapted to survive extended drought periods where water quality is compromised by excessive discharges that the river is unable to assimilate.

As stated earlier, the proposed action would be expected to achieve flows of 4,640 cfs 96% of the time and overall, achieve flows similar to the current conditions (see Figures 6.1-42 and 6.1-43 of the DEIS). In October and November average daily flows would be slightly lower (up to 4%) than for the current operation. As shown in DEIS Table 6.1-4, the proposed action would result in Drought Level 3 operations 1.2% of the time based on the 1939-2008 modeled hydrologic conditions. The Drought Level 3 operation would come as a result of implementation of a basin wide drought plan as shown in DEIS Table 4.2-9. The drought plan was developed in coordination with the Service and has received its concurrence in previous communications.

APC projects on the Coosa and Tallapoosa Rivers ultimately determine the flows on the Alabama River at Montgomery and downstream to the USACE Claiborne project. This is due to APC control of all storage downstream of Allatoona and Carters Reservoirs (which together comprise only 17% of basin storage), down to the three USACE projects on the Alabama River. This results in the three lower USACE projects being almost entirely dependent on APC releases for inflows and because there they have no storage capacity must pass those inflows as they are received.

Actual flows on the Alabama River at Montgomery were cut by APC by 57% from the 4,640 cfs level during the 2007 drought to approximately 2,000 cfs. The drought plan developed by APC for its Coosa relicensing effort was developed in coordination with USACE for this manual update in order to provide a single basin-wide drought plan and under it the lowest permitted flows during Drought Level 3 operations would be about

2,000 cfs . The Service did not consider potential impacts to the sturgeon in its June 7, 2012 Biological Opinion (BO) issued for the APC Coosa River Project.

Because there would be almost no changes on river flows due to the proposed action, there would be no changes to river morphology including substrates, banks and channels. There would be no impacts on rock, cobble or gravel outcroppings. There would be no impact to feeding or spawning habitat. There would be no changes to long reaches of free-flowing water. As noted previously, there would be negligible changes in water quality on the Alabama River.

The Alabama sturgeon and its critical habitat occur within riverine habitat potentially affected by changes to flows or water quality. USACE believes that because flows as a result of the proposed action would be generally the same as the baseline condition, flows during extreme drought would be similar to those of 2007, that the proposed action would cause no changes in flows or water quality conditions that could impact those areas.

Mollusks

Several listed mussel and snail species occur in the ACT basin. All are benthic, aquatic organisms with specific substrate, flow and water quality requirements that would be potentially impacted by changes to river conditions. A summary of those requirements is provided for each species as shown. Locations where the species are indicated by the Service to potentially occur are indicated by the following codes: *uco=upper Coosa basin, lco=lower Coosa basin, al=Alabama River basin, t= Tallapoosa River basin.*

Finelined pocketbook (*Lampsilis altilis),* usually found in creeks, high gradient, low gradient, medium river, moderate gradient, riffles, sand and gravel substrates. *uco, lco, al*

Orange-nacre mucket (*Lampsilis perovalis),* in creeks medium river, moderate gradient, riffles, sand, gravel, cobble substrate in swift current. *al lco*

Alabama moccasinshell (*Medionidus acutissimus*), in big rivers, medium rivers, high, low gradient, sand or gravel substrate in clear water of moderate flow. *uco,lco, al*

Coosa moccasinshell (*Medionidus parvulus),* in creeks, small rivers high to medium gradient with riffles, sand and gravel substrate in clear streams. *uco lco, al*

Ovate clubshell (*Pleurobema perovatum*), in big rivers to medium rivers and creeks, moderate gradient, pools and riffles, sand gravel shoals. *lco, al, t*

Southern clubshell (*Pleurobema decisum),* in large rivers to small streams, with sand and gravel substrate on shoals or in center of river. *al uco, lco, t*

Southern pigtoe (*Pleurobema georgianum),* in big rivers, medium rivers, streams, shoals with stable gravel and sandy-gravel substrates. *uco, lco*

Triangular kidneyshell (*Ptychobranchus greenii),* in big rivers to medium rivers and creeks, moderate gradient, pools and riffles, substrate of firm coarse gravel and sand. *uco, lco*

Southern acornshell (*Epioblasma othcaloogensis),* in creeks medium river, moderate gradient, riffles on coarse particle substrates. *uco, lco, al*

Upland combshell (*Epioblasma metastriata),* in creeks, medium rivers of moderate gradient and swift currents on stable substrates. *uco, al*

Critical habitat has been designated (50 CFR, Part 17, Federal Register Volume 69, Number 126, Pages 40084-40171) for the ten species described above within the Mobile River basin. Some of the critical habitat units are designated in the Tombigbee River basin and are therefore not affected by the proposed action in the ACT. Other units are within the ACT. Unit 14 is designated on the Alabama River, in Alabama from the confluence with the Cahaba River upstream to the confluence with Big Swamp Creek for the Southern clubshell and the Orange-nacre mucket. Unit 15 is designated in Alabama on Bogue Chitto Creek from the confluence with the Alabama River upstream to U.S. Highway 80 for the Southern Clubshell, Alabama moccasinshell, and the Orange-nacre mucket. Unit 16 is designated on the Tallapoosa River from U.S. Highway 431 in Alabama upstream to McClendon Creek in Georgia and includes Cane Creek in Alabama and Mud and McClendon Creeks in Georgia for the Fine-lined pocketbook. Unit 17 is designated on the Uphapee Creek in Alabama from U.S. Highway 199 upstream through Choctafaula, Chewacla and Opintlocco Creeks for the Ovate clubshell, Southern clubshell and Fine-lined pocketbook. Unit 18 is designated on the Coosa River mainstem from the power line crossing southeast of Maple Grove, Alabama upstream to Weiss Dam, Terrapin Creek and South Fork Terrapin Creek for the Southern acornshell, Ovate clubshell, Southern clubshell, Upland Combshell, Triangular Kidneyshell, Coosa moccasinshell, Southern pigtoe, and fine-lined pocketbook. Unit 19 is designated in Alabama on Hatchet Creek for the Southern acornshell, Ovate clubshell, Southern clubshell, Upland combshell, Triangular kidneyshell, Coosa moccasinshell, Southern pigtoe, and fine-lined pocketbook. Unit 20 is designated in Alabama on Shoal Creek for the Triangular kidneyshell, Coosa moccasinshell, Southern pigtoe, and fine-lined pocketbook. Unit 21is designated on Kelly Creek from the confluence with the Coosa River upstream to the confluence of Shoal Creek and Shoal Creek from the confluence with Kelly Creek upstream to the St. Clair/Shelby County, Alabama line for the Southern acornshell, Ovate clubshell, Southern clubshell, Upland combshell, Triangular kidneyshell, Coosa moccasinshell, Southern pigtoe, and Fine-lined pocketbook. Unit 22 in Alabama includes Cheaha Creek from the confluence with Choccolocco Creek upstream to Chinnabee Lake dam for the Triangular kidneyshell, Coosa moccasinshell, Southern pigtoe, and Fine-lined pocketbook. Unit 23 in Alabama includes Yellowleaf Creek and Muddy Prong Creek for the Triangular kidneyshell, Coosa moccasinshell, Southern pigtoe, and fine-lined pocketbook. Unit 24 in Alabama includes Big Canoe Creek for the Southern acornshell, Ovate clubshell, Southern clubshell, Upland Combshell, Triangular Kidneyshell, Coosa Moccasinshell, Southern pigtoe, and Fine-lined pocketbook. Unit 25 in Georgia includes the Oostanaula River mainstem from its confluence with the Etowah River upstream to the confluence of the Conasauga and Coosawattee River, the Coosawattee River mainstem from its confluence with the Conasauga River upstream to Georgia State Highway 136, the Conasauga River mainstem from the confluence with the Coosawattee River upstream to Murray County Road 2, and Holly Creek for the Southern acornshell, Ovate clubshell, Southern clubshell, Upland combshell, Triangular kidneyshell, Alabama moccasinshell, Coosa moccasinshell, Southern pigtoe, and Fine-lined pocketbook. Unit 26 includes the Coosa River mainstem from Alabama State Highway 111 upstream to Jordan Dam for the Southern acornshell, Ovate clubshell, Southern clubshell, Upland combshell, Triangular kidneyshell, Alabama moccasinshell, Coosa moccasinshell, Southern pigtoe, and Fine-lined pocketbook.

The primary constituent elements include: (i) Geomorphically stable stream and river channels and banks; (ii) A flow regime (*i.e.*, the magnitude, frequency, duration, and seasonality of discharge over time) necessary for normal behavior, growth, and survival of all life stages of mussels and their fish hosts in the river environment; (iii) Water quality, including temperature, pH, hardness, turbidity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; (iv) Sand, gravel, and/or cobble substrates with low to moderate amounts of fine sediment, low amounts of attached filamentous algae, and other physical and chemical characteristics necessary for normal behavior, growth, and viability of all life stages; (v) Fish hosts, with adequate living, foraging, and spawning areas for them; And (vi) Few or no competitive nonnative species present.

Alabama pearlshell (*Margaritifera marrianae),* in headwater streams slow to moderate velocity with substrates of sand, mud or gravel. *al*

Critical habitat has been designated for the Alabama pearlshell (50 CFR, Part 17, FR, Volume 77, Number 196, Pages 61664-61719). Within the ACT, critical habitat is limited to one habitat unit. Unit AP1 has been designated on the mainstem of Big Flat Creek from State Route 41 upstream 35 miles, Flat Creek and Dailey Creek upstream from their confluence with Big Flat Creek in Alabama.

Primary constituent elements include: (i) Geomorphically stable stream and river channels and banks (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation). (ii) Stable substrates of sand or mixtures of sand with clay or gravel with low to moderate amounts of fine sediment and attached filamentous algae. (iii) A hydrologic flow regime (magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species are found, and to maintain connectivity of rivers with the floodplain, allowing the exchange of nutrients and sediment for habitat maintenance, food availability, and spawning habitat for native fishes. (iv) Water quality, including temperature (not greater than 32 °C), pH (between 6.0 to 8.5), oxygen content (not less than 5.0 milligrams per liter), hardness, turbidity, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages. (v)

The presence of fish hosts. Diverse assemblages of native fish species will serve as a potential indication of host fish presence until appropriate host fishes can be identified.

Southern combshell (*Epioblasma penita),* in high gradient, medium river, riffles, sandy gravel to gravel-cobble substrate. *al*

Heavy pigtoe (*Pleurobema taitianum),* in big rivers to medium rivers and creeks, moderate gradient, pools and riffles, substrate in Alabama River is composed of gravel with large component of coarse sand. *al*

Alabama heelsplitter (*Potomilus inflatus),* big rivers to medium rivers, moderate gradient, pools, riffles. Substrate includes soft stable bars of sand mud, silt and sandy-gravel. *al*

Georgia pigtoe (*P. hanleyianum),* in medium rivers, high gradient, medium gradient, riffles with sand-gravel-cobble bottom. *uco lco t*

Critical habitat has been designated for the Georgia pigtoe and two snail species described below, the Interrupted rocksnail and the Rough hornsnail (50 CFR Part 17, FR Volume 75, Number 211, Pages 67512-67550).

For the Georgia pigtoe, Habitat Unit 1 includes the channel of the Conasauga River from the confluence of Minnewaga Creek, Polk County, Tennessee, downstream to U.S. Highway 76. Unit 2 includes the channel of Terrapin Creek from Alabama Highway 9 downstream to the confluence with the Coosa River and the Coosa River from Weiss dam downstream one mile below the confluence with Terrapin Creek, in Alabama. Unit 3 includes the channel of Hatchet Creek from Clay County Road 4, Clay County Alabama downstream to the Confluence with Swamp Creek.

Primary constituent elements include: (i) Geomorphically stable stream and river channels and banks (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation). (ii) A hydrologic flow regime (the magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species is found. Unless other information becomes available, existing conditions at locations where the species occurs will be considered as minimal flow requirements for survival. (iii) Water quality (including temperature, pH, hardness, turbidity, oxygen content, and chemical constituents) that meets or exceeds the current aquatic life criteria established under the Clean Water Act (33 U.S.C. 1251–1387). (iv) Sand, gravel, cobble, boulder, or bedrock substrates with low to moderate amounts of fine sediment and attached filamentous algae. (v) The presence of fish host(s) for the Georgia pigtoe (species currently unknown). Diverse assemblages of native fish will serve as a potential indication of presence of host fish.

Interrupted rocksnail (*Leptoxis foremani),* in shoals, riffles and reefs of small to large rivers. Attached to bedrock, boulders, cobble and gravel. *uco, lco*

For the Interrupted rocksnail, Habitat Unit 1 includes the Coosa River from Weiss Dam downstream to one mile below the confluence with Terrapin Creek, Alabama . Unit 2 includes the channel of the Oostanaula River from the confluence of the Conasauga and Coosawattee Rivers, downstream to Georgia Highway 1 Loop, in Georgia. Unit 3 includes the Coosa River fro Jordan Dam downstream to Alabama Highway 111 in Alabama.

Primary constituent elements include: (i) Geomorphically stable stream and river channels and banks (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation). (ii) A hydrologic flow regime (the magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species is found. Unless other information becomes available, existing conditions at locations where the species occurs will be considered as minimal flow requirements for survival. (iii) Water quality (including temperature, pH, hardness, turbidity, oxygen content, and chemical constituents) that meets or exceeds the current aquatic life criteria established under the Clean Water Act (33 U.S.C. 1251–1387). (iv) Sand, gravel, cobble, boulder, or bedrock substrates with low to moderate amounts of fine sediment and attached filamentous algae.

Rough hornsnail (*Pleurocera foremani),* in creeks and medium rivers of moderate gradient, on gravel, cobble, bedrock and mud. Tolerant of silt deposition. *lco*

For the Rough hornsnail, Habitat Unit 1 includes the Coosa River from Jordan Dam downstream to the confluence with the Tallapoosa River, in Alabama. Unit 2 includes Yellowleaf Creek from the confluence of Morgan Creek downstream to one mile below Alabama Highway 25 in Alabama.

Primary constituent elements include: (i) Geomorphically stable stream and river channels and banks (channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation). (ii) A hydrologic flow regime (the magnitude, frequency, duration, and seasonality of discharge over time) necessary to maintain benthic habitats where the species is found. Unless other information becomes available, existing conditions at locations where the species occurs will be considered as minimal flow requirements for survival. (iii) Water quality (including temperature, pH, hardness, turbidity, oxygen content, and chemical constituents) that meets or exceeds the current aquatic life criteria established under the Clean Water Act (33 U.S.C. 1251–1387). (iv) Sand, gravel, cobble, boulder, or bedrock substrates with low to moderate amounts of fine sediment and attached filamentous algae.

Lacy elimia (*Elimia crenatella),* snail on the mainstem of the Coosa River found on rock shoals and gravel bars, under rock slabs in small streams with a moderate current and sand, gravel, cobble substrates. *lco*

Round rocksnail (*Leptoxis ampla),* in creeks high gradient, medium rivers in riffles and shoals over gravel cobble or rocky substrate in strong currents. *lco*

Painted rocksnail (*Leptoxis taeniata),* in medium rivers, high gradient to moderate gradient, riffles. Shoals and riffles of rivers on substrates of cobble and gravel. More tolerant of siltation than other snails. *lco, al*

Flat pebblesnail (*Lepyrium showalteri),* in clean smooth stones in rapid current of small to large high gradient river shoals. *lco al*

Cylindrical lioplax snail (*Lioplax cyclostomaformis),* found in isolated mud deposits under large rocks and boulders in rapid currents of streams and river shoals. *lco, al*

Tulotoma snail (*Tulotoma magnifica),* in large rivers to creeks, low-moderate gradient, riffles. Riffles and shoals on the undersides of large rocks. *lco al*

Plants

Georgia rockcress (*Arabis Georgiana),* is found in found in several counties throughout the ACT basin on dry, shallow soils on rocky bluffs and sandy loam soils on eroding river banks. There would be no erosion or disturbance to river banks as a result of the proposed action.

Critical Habitat for the Georgia rockcress has been proposed (50 CFR Part 17, No. 177, Pages 56506-56540. Eighteen critical habitat units are proposed and occur in scattered locations through the ACT and ACF River basins in Alabama and Georgia. Primary constituent elements include (i) Large river bluffs with steep and/or shallow soils that are subject to localized disturbances that limit the accumulation of leaf litter and competition within the Lower Gulf Coastal Plain, Upper Gulf Coastal Plain, Red Hills, Black Belt, Piedmont, and Ridge and Valley Physiographic Provinces of Georgia and Alabama. (ii) Well-drained soils that are buffered or circumneutral generally within regions underlain or otherwise influenced by granite, sandstone, or limestone. (iii) A mature, mixed-level canopy with spatial heterogeneity, providing mottled shade and often including species such as eastern red cedar, America hophornbeam, chinquapin oak, white ash, southern sugar maple, and redbud with a rich diversity of grasses and forbs characterizing the herb layer. (iv) Intact habitat with mature canopy and discrete disturbances, buffered by surrounding habitat to impede the invasion of competitors.

Harperella (*Ptilimnium nodosum),* is found in Cherokee, DeKalb, and Marshall Counties, Alabama and several counties in Georgia outside the ACT basin. Occurs in three habitat types: rocky/gravelly shoals or cracks in bedrock outcrops beneath the water surface in clear, swift-flowing streams (usually in microsites that are sheltered from rapidly moving water); edges of intermittent pineland ponds or low, wet savannah meadows on the Coastal Plain; and granite outcrop seeps. In all habitat-types, the species occurs in a narrow range of water depths; it is intolerant of deep water and of conditions that are too dry. However, the plants readily tolerate periodic, moderate flooding. It is listed as occurring in the upper Coosa River.

Kral's water-plantain (*Sagittaria secundifolia),* is found in several counties in the Coosa River basin including Cherokee, Clay, Coosa, DeKalb, Lawrence, and Winston, Alabama, and Chatooga, Georgia. Preferred habitat is undammed riverine reaches on exposed shoals or rooted among loose boulders in sands, gravels, and silts in pools up to 1 m deep. Stream bottoms are typically narrow and bounded by steep slopes.

Green pitcher-plant (*Sarracenia oreophila*) is found in several ACT counties including Calhoun, Cherokee, DeKalb, Etowah, Jackson, Marshall, and St. Clair, Alabama and Gilmer, Towns, and Union, Georgia. Habitat is composed of sandstone streambanks, mixed oak or pine flatwoods and seepage bogs. All habitats are generally moist, but the species does not occur in areas where flooding is regular and soils are continually saturated. In bogs the species grows away from continually flooded areas about two feet above summer water levels.

Alabama canebrake pitcher plant (*Sarracenia rubra alabamensis),* is found in Autauga, Chilton and Elmore Counties in the lower Coosa and upper Alabama River watersheds. Preferred habitat includes sandhill seeps, swamps, and sloping bogs along the Fall Line Hills that divide the upper Coastal Plain and Piedmont physiographic regions. Soils are deep peaty sands or clays. The plants grow best exposed to full or nearly full sun. Historically, fire played an important role in maintaining the open character of these habitats.

Tennessee yellow-eyed grass (*Xyris tennesseensis*), occurs in several counties in Alabama and Georgia, including those in the Coosawattee, Etowah, and Coosa River basins. The species is found in open or thin canopy woods in gravelly seep-slopes or gravelly bars and banks of small streams, springs and ditches.

6. ENVIRONMENTAL BASELINE

As described in the Section 7 Consultation Handbook, the environmental baseline is a "snapshot" of a species' health at a specified point in time. It does not include the effects of the proposed action, but rather provides an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat (including designated critical habitat), and ecosystem, within the action area. The baseline includes anticipated effects of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process (cite handbook). The action under review is the USACE Update of the Water Control Manual for the ACT River Basin in Georgia and Alabama. In the case of an ongoing water project, such as the USACE projects in the ACT, the total effects of all past activities, including the effects of construction and past operation, current non-federal activities, and federal projects with completed section 7 consultations, form the environmental baseline. Based on the description given above, the environmental baseline also includes effects of the currently approved dredging operations and other navigation maintenance activities. The environmental baseline considers the effects of operating the basin-wide system of dams and reservoirs, regardless of owner, since completion of the last project in the ACT basin. There are a total of 18 dams on the mainstems of the Alabama, Coosa, and Tallapoosa Rivers, including those shown in Figure 1 plus the Carters Re-regulation Dam and the Thomson Weinman Dam. The Thomson Weinman Dam is a low head dam located approximately 10 miles downstream of Allatoona Dam which was previously used as a hydropower facility by the City of Cartersville and is now abandoned. The last project complete was Harris Dam owned by APC, located on the Tallapoosa River and was completed in 1983. The Affected Environment Section (Section 2) of the DEIS provides a detailed description of the actions influencing the condition of the environmental Baseline and that information is incorporated by reference. The affected environment, as described in the DEIS, for the proposed action includes the Alabama, Coosa and Tallapoosa Rivers and all areas in the basin from the headwaters downstream to the mouth of the Alabama River at its confluence with the Tombigbee River where it forms the Mobile River, and downstream to include the Mobile Bay.

7. EFFECTS ANALYSIS

This section is an analysis of the effects of the proposed action on the species and critical habitat. The previous "Environmental Baseline" section considers the effects of the past and current operations. This section addresses the future direct and indirect effects of implementing the proposed action.

7.1. FACTORS CONSIDERED

For the purposes of this BA we consider three principal components of the species' environment in the action area: channel morphology, flow regime, and water quality. Physical habitat conditions for the listed species in the action area are largely determined by flow regime, and channel morphology sets the context for the flow regime. Although channel morphology has changed relative to the pre-dam period in the river sections below the USACE projects, it is likely that the rate of change has slowed and it appears to have entered a somewhat dynamic equilibrium condition based on the maintenance needs of the navigation channel portions of the action area. We have no ability at this time to predict specific effects on channel morphology due to the influence of the proposed action on the flow regime. The proposed action relates to water management at federal projects in the ACT basin and includes limits on the extent to which the USACE alters basin inflow into the downstream river segments via operations of the ACT dams and reservoirs; therefore, the primary focus of this analysis is the flow regime of the rivers with and without the proposed action. Our analysis of flow regime and water quality alteration relative to the listed species and critical habitats considers the following factors based on the 1998 Consultation Handbook (USFWS 1998).

Proximity of the action: The proposed action may affect habitat occupied by all life stages of the listed species described above in the rivers below USACE projects. Portions of these rivers are also designated as critical habitat. The proposed action includes releases from USACE dams and may affect some of the species' life history stages and habitat features from as close as immediately below the dam to many miles downstream.

Distribution: The proposed action could alter flows in the rivers downstream of the USACE dams and alter freshwater inflow to Mobile Bay. The distribution of the various species considered is described in the Status of the Species section above. This analysis examines how the proposed action may variously affect different portions of the action area according to the distribution of the species and important habitat features in the action area.

Timing: The proposed action could alter flows in the rivers downstream of the USACE dams and alter freshwater inflow to Mobile Bay at all times of the year. It will reduce flows when increasing conservation storage in the ACT reservoirs and increase flows when decreasing conservation storage. Therefore, we examine how the proposed action may alter the seasonal timing of biologically relevant flow regime features in our analysis.

Nature of the effect: The proposed action will reduce flows when increasing conservation storage in the ACT reservoirs and increase flows when decreasing conservation storage. Flow regime and water quality may be affected by the actions. Therefore, we examine how the proposed action may affect the listed species and critical habitat elements through flow regime and water quality analyses focused on key locations in the basin.

Duration: This proposed action is a modification to the current operations at the USACE projects in the ACT River Basin and the operations described under the proposed action are applicable until revised or until another updated Water Control Plan is adopted. Although the duration of the proposed action is indefinite, the nature of its effects is such that none are permanent. The USACE can alter its reservoir operations at any time; therefore, flow alterations that may result from the proposed action will not result in permanent impacts to the habitat of any of the listed species. Therefore, we examine how implementation of the proposed action may alter the duration of high flows and low flows that are relevant to the listed species and critical habitats.

Disturbance frequency: The proposed action is applicable year round; therefore, changes to the flow regime and water quality parameters may occur at any time and/or continuously until such time as the proposed action is revised or until another updated Water Control Plan is adopted. Therefore, we examine how implementation of the proposed action may alter the frequency of high flows and low flows that are relevant to the listed species and critical habitats.

Disturbance intensity and severity: The proposed action may variously affect the flow regime depending on time of year, basin inflow, and conservation storage levels. Therefore, we examine how the proposed action affects the magnitude of high and low flow events relative to the baseline. However, for the species considered, the most relevant adverse effects are likely those that occur during low flow conditions due to exposure of aquatic habitat and organisms, desiccation of individuals, spawning areas and food sources, increased access by predators and associated changes in water quality.

7.2. ANALYSIS FOR EFFECTS OF THE ACTION

The Effects Analysis for the proposed action uses the HEC-ResSim Model to simulate flow operations in the ACT Basin. The DEIS impact analysis included HEC-5Q model simulations to evaluate the impacts of proposed alternative water management plans on long-term, system-wide, stream and reservoir water quality. This information is also used in the Effects Analysis to assess potential water quality changes resulting from the proposed action. Details about the ResSim model and 5Q model are provided below in the MODEL DESCRIPTION section.

We determine the future effect of project operations, as prescribed by the proposed action, by comparing the environmental conditions expected to occur under the proposed action to the environmental baseline. The flow regime of the environmental baseline is described using post-1983 flow records, because this period represents the complete hydrology of the current configuration of the ACT federal and non-federal reservoir projects that influence the river flows in the action area. The proposed action simulations were simulated utilizing the maximum contracted amounts for municipal and industrial (M&I) withdrawals from USACE reservoirs for all years and the maximum observed M&I and Agricultural demands (2006) for all other locations throughout the simulated period. Since consumptive demands in locations other than federal reservoirs are not controlled by the USACE and vary over time, we impose the highest observed consumptive demands as a conservative estimate of potential M&I demands. This conservative estimate represents a greater demand in most years than was actually observed.

As described above, the principal factor examined in determining effects for the proposed action is the flow regime in the rivers below USACE projects and how the flow regime affects habitat conditions for the listed species. Differences between the Baseline (observed flows) and proposed action simulated flow regimes are generally attributable to the USACE discretionary operations. However, it should be noted that some of the differences are also attributable to the conservative demand set utilized in the proposed action simulations. In many years this represents a higher consumptive demand than actually occurred in the observed Baseline flow regime. The observed Baseline flow regime also includes incremental changes in operation that have occurred at both federal and non-federal reservoirs over time due to maintenance at hydropower facilities, operations for public health and safety, and other discretionary operations. Except in very general terms, it is not possible to describe a single set of reservoir operations that apply to the entire post-1983 period. Although these operational anomalies are typically small in duration and magnitude, they can influence the analysis. Therefore, if the proposed action does not significantly differ from the Baseline, its effect on the species/habitat is considered to be a continuation of the Baseline effect, if any.

7.3. MODEL DESCRIPTION

HEC-ResSim

The HEC-ResSim model was used to simulate reservoir operations in the ACT Basin. HEC-ResSim is a state-of-the-art tool for simulating flow operations in managed systems. It was developed by the USACE Hydrologic Engineering Center (HEC) to aid engineers and planners performing water resources studies in predicting the behavior of reservoirs and to help reservoir operators plan releases in real time during day-to-day and emergency operations. This effects analysis used HEC-ResSim Version 3.2DEV "Build 3.2.1.15R" (USACE, 2014). The label "DEV" means that the software is undergoing final testing before distribution as an official version.

HEC-ResSim has a graphical user interface designed to follow Windows® software development standards. The model's interface can be learned without extensive tutorials. Familiar data entry features make model development easy, and localized mini plots graph the data entered in most tables so that errors can be seen and corrected quickly. A variety of default plots and reports, along with tools to create customized plots and reports, facilitate output analysis.

HEC-ResSim provides a realistic view of the physical river/reservoir system using a map-based schematic. The program's user interface allows the user to draw the network schematic as a stick figure or as an overlay on one or more geo-referenced maps of the watershed. HEC-ResSim represents a system of reservoirs as a network composed of four types of physical elements: junctions, routing reaches, diversions, and reservoirs. By combining those elements, the HEC-ResSim modeler is able to build a network capable of representing anything from a single reservoir on a single stream to a highly developed and interconnected system like that of the ACT Basin. A reservoir is the most complex element of the reservoir network and is composed of a pool and a dam. HEC-ResSim assumes that the pool is level (i.e., it has no routing behavior), and its hydraulic behavior is completely defined by an elevation-storage-area table. The real complexity of HEC-ResSim's reservoir network begins with the dam.

Most federal reservoirs are authorized by Congress to operate for one or more of the following purposes: flood risk management, power generation, navigation, water supply, recreation, and environmental quality. Those purposes typically define the goals and constraints that describe the reservoir's release objectives. Other factors that might influence the objectives include time of year, hydrologic conditions, water temperature, current pool elevation (or zone), and simultaneous operations by other reservoirs in a system. HEC-ResSim uses an original rule-based description of the operational goals and constraints that reservoir operators must consider when making release decisions.

To provide a potential range of flows that might be experienced while the proposed action scenario is in effect, the ResSim model simulates river flow and reservoir levels using a daily time series of unimpaired flow data as input for a certain period of record. Whereas basin inflow is computed to remove the effects of reservoir operations from observed flow, unimpaired flow is developed to remove the effects of both reservoir operations and consumptive demands from observed flow. The ResSim model imposes reservoir operations and consumptive demands onto the unimpaired flow time series to simulate flows and levels under those operations and demands. The unimpaired flow data set is the product of the Tri-State Comprehensive Study, in which the States of Alabama, Florida, and Georgia, participated.

The current unimpaired flow data set for the ACT represents the years 1939 through 2011. The USACE has not yet computed unimpaired flow for 2012-current day. Unimpaired flow computations require actual water use data from the two States and 2011 is the most recent year of this data provided to the USACE. For purposes of evaluating the proposed action, a 73-year unimpaired flow hydrologic period of record (1939 through 2011) was used to run the simulations. However, for the purposes of this effects analysis, we focus on the data from 1983 through 2011, because this period represents the complete hydrology of the current physical configuration of the ACT federal and private reservoir projects with an unimpaired flow computation.

HEC-5Q

An HEC-5Q model was developed for the Alabama-Coosa-Tallapoosa (ACT) Basin, in support of the Environmental Impact Statement (EIS) for the Water Control Manual Update Study. The purpose of the HEC-5Q model was to evaluate the impacts of proposed alternative water management plans on long-term, system-wide, stream and reservoir water quality. HEC-5Q was selected as a logical choice for the water quality model because it is compatible with HEC-ResSim and has been used for previous analyses of the ACT. HEC-5Q was aligned to work seamlessly with the HEC-ResSim model used to evaluate the water management alternatives.

The HEC-5Q modeling software used for the 1999 EIS was updated to implement a 6-hour time step to capture diurnal variations, which are often important. Then the 1999 HEC-5Q model of the ACT was extended to simulate the reservoirs as well as the rivers. The ACT HEC-5Q model was then adjusted to approximate the 2000 – 2008 observed data, followed by verification with additional observations at key locations. The revised HEC-5Q model was used to make preliminary observations using present-day water quality loading parameters applied to water levels and flows for four proposed water management alternatives. This work was performed in close coordination with water quality and water management technical staff members from Mobile District, Tetra Tech, the Hydrologic Engineering Center (HEC), and Resource Management Associates (RMA).

The water quality model was created to serve as a defensible screening tool to make relative comparisons of the impacts among various water management alternatives. The central focus of this effort was to enable the EIS team to evaluate the differences in water quality between alternatives over a growing season. The water quality model was evaluated for the 2000 – 2008 period to best capture the effects of recent population, water usage, and land use on pollution levels. The evaluation also ensured that the model exhibited the tendencies seen in the observed data and that it was sufficient to provide reasonable longterm estimates of water quality through the ACT system. The 2000 – 2008 period includes hydrologic conditions that were representative of "normal" instream flows, as well as years with high flow or drought conditions. Point (wastewater) and non-point (tributary streams) inflow quality was developed from database information compiled during this analysis.

HEC-5Q follows well-known solutions for key water quality values and does not attempt to simulate the concentration changes or transport of every type of constituent. Its one-dimensional nature limits the amount of input data and detail of results at sites. Although these limitations restrict the depth of analysis possible from its results, they also relieve heavy burdens regarding prohibitively long computation time and large input data requirements. The simplified inputs and calculation, and connection to HEC-ResSim, make possible relative comparisons of the water quality impacts of water management alternatives broadly across the basin. This comparison can also be used to evaluate effects to listed species in the action area. A detailed description of the HEC-5Q model is provided in Appendix D of the DEIS.

7.4. MODEL SIMULATIONS

HEC-ResSim

For purposes of evaluating alternative operational plans for the ACT water control plan update, a 73-year hydrologic period of record (1939 through 2011) was run using the HEC-ResSim hydrologic simulation software. The results of this simulation are presented in the DEIS. However, for the purposes of this Biological Assessment, we focused on the data from 1983-2011. To ensure comparisons that are most likely to reveal anthropogenic differences between the sets of environmental conditions (Proposed Action and Baseline) and not hydrologic differences between years, we use the output from the ResSim models for the period that is also represented in the baseline, which is 1983 through 2011 (29 years). Using only the latter 29 years of the ResSim results removes 44 years of model results from our analysis. However, the later 29 years of the simulated period appear to represent the most "critical" period for the model, as this is when reservoir levels and flows reach their lowest levels in the simulation. Further, the basin experienced below normal precipitation and basin inflow levels from 2006 through much of 2008 and record low conservation storage levels were recorded per calendar date in 2007 and 2008. A limitation of comparing modeled flows to observed flows is that the model uses a set of "rules" that result in some of the predicted outputs and they do not reflect the actual variation and special circumstances that may affect the observed data. For example, the model uses an assumed minimum flow at the Allatoona project of exactly 240 cfs while the observed normal fluctuation may be several percent higher or an emergency situation may require temporary suspension of releases.

HEC-5Q

HEC-5Q was used to simulate water quality in the ACT basin under the current reservoir operation and three alternative reservoir operation scenarios for the 2000 – 2008 period. The results are available in the DEIS and consist of time series, cumulative occurrence profiles, and longitudinal river profiles of occurrence of each water quality parameter (Water temperature, Dissolved Oxygen (D.O.), 5-Day Uninhibited BOD (BOD5U), Nitrate-Nitrogen (NO3-N), Ammonia-Nitrogen (NH3-N), Phosphate-Phosphorous (PO4-P), Municipal and Industrial Wastewater as Percent of Flow, Phytoplankton (Algae) reported as Chlorophyll a).

In the flow regime effects analysis, the simulated flows are compared to the observed flows during the 1983 through 2011 period. Observed water quality data for these various parameters is not consistently available for the locations analyzed in the effects section below. Therefore, we are using the current reservoir operation (No Action) simulation as a surrogate for the observed baseline. Although the HEC-ResSim model has been updated to simulate through 2011, the updated HEC-5Q water quality results for this same period are not yet available. The DEIS presents the water quality simulation results for the 2000-2008 period. We utilize these results to analyze the effects, if any, to listed species based on changes to water quality due to implementation of the proposed action.

7.5. GENERAL EFFECTS ON THE FLOW REGIME

The proposed action will not change the general nature of water management at USACE projects, i.e. it will continue to reduce flows when attempting to increase conservation storage (Spring) and increase flows when decreasing conservation storage (Fall). In addition to the discussion of effects of the proposed action on hydrology as presented in the DEIS, the effects of the proposed action on the flow regime is also evaluated by comparing the environmental conditions expected to occur under the proposed action to the environmental baseline.

Flow statistics were evaluated at four locations in the ACT. These include the Allatoona Dam tailwater, the Carters Re-Regulation Dam tailwater, the Alabama River at Montgomery, Alabama, and the Claiborne Dam tailwater. The first two were chosen because they represent the points where flows are most directly impacted by the USACE releases. Montgomery was chosen because it represents the point where the cumulative impact of upstream USACE releases and APC releases combine to provide water to the three run-of-river USACE projects downstream. As run-of-river projects, their releases are controlled by upstream releases. Claiborne was chosen because of its position as the most downstream point of water regulation in the ACT by USACE. This analysis is provided in Appendix A in Figures 1-52 and a discussion of the results is provided below.

This comparison of flows is related to each of the FACTORS CONSIDERED in section 7.2 above.

Proximity of the Action and Distribution. The USACE proposed action has the potential to most directly impact those species that are closest to the two upstream projects. This is because the proposed water management plan involves discretionary decisions primarily at the Allatoona and Carters projects and few if any water management decisions at the downstream run-of-river projects. The effects of releases from the upstream reservoirs become ameliorated due to the influence of other tributaries and the water management decisions made at the APC projects. As seen at the Montgomery and Claiborne locations (see discussion for those locations below) there are no significant differences between the baseline and proposed action flows. Although reservoir management decisions can affect river conditions many miles downstream of a reservoir, the effects to species would be expected to be reduced. Therefore, the Alabama River would be subject to less impacts than the areas immediately downstream of Allatoona or Carters dams. As an example, due to proximity, the Etowah darter, Amber darter and the other fish and mussel species discussed above are more likely affected by releases from headwater projects than species occurring lower in the system, such as the Alabama sturgeon. Discretionary operations at Allatoona Dam and Carters Dam have little to no potential effect on this species.

Timing, Nature of the effect, Disturbance Frequency, and Disturbance intensity and severity. Because these factors are largely interdependent and evaluated based on a comparison of the simulated proposed action and baseline flow regimes, they are discussed together. Figures 1-4 illustrate the average annual flows at Allatoona, Carters, Montgomery, and Claiborne expressed as frequency (% of days) that daily average discharge (cfs) values are exceeded during the years 1983-2011. The proposed action simulated flow regime closely approximates the environmental baseline flow regime at each location. We examine how the proposed action operations would affect the seasonal timing and magnitude frequency of the flow in the rivers at these four locations below.

Allatoona

Specific information regarding minimum flows or other flow regime requirements for the Etowah darter, the only potentially known species occurring downstream of Allatoona in the Etowah River, are not available. Figures 5-16 show the frequency (% of days) that daily average discharge (cfs) values are exceeded during the years 1983-2011 for each calendar month at the Allatoona Dam tailrace. When examined monthly, Allatoona releases under the proposed action typically resulted in higher flows during low flow conditions (flow values that are exceeded at least 75% of the time)as compared to the baseline. This is particularly evident during the winter through late spring months, which may be beneficial to spawning and rearing activities of aquatic species inhabiting the river below Allatoona Dam. Discharges during the summer months under the proposed action closely approximate those of the baseline and effects, if any, are considered a continuation of the baseline effect. Although the daily average flows evaluated under the baseline and proposed action conditions provide valuable insight into the seasonal distribution of flows below the dam, it is important to note that throughout the baseline period and under the proposed action the hydropower peaking operation at Allatoona Dam results in significant periods of time each day when only a minimum release of 240 cfs occurs. Interruptions to this hydropower peaking operation occur when high inflows above the dam necessitate continuous hydropower generation and/or releases through the spillway gates or when special operations or equipment malfunctions necessitate. Under the proposed action, like the baseline, hydropower generation would continue to occur at least 5 days per week throughout the year resulting in a daily minimum flow of 240 cfs and daily maximum releases of either 3,250 or 6,500 cfs, (at this time, only one hydropower unit is operational and therefore the maximum hydropower release is 3,250 cfs). During flood risk management operations, additional releases may also occur through the spillway gates. During most times of the year throughout the baseline period and under the proposed action, hydropower generation occurs roughly 4-8 hours per day resulting in a flow an order of magnitude higher than the 240 cfs minimum flow that occurs for the remaining 16-20 hours. This is a dominant feature of the aquatic environment below the Allatoona project that exists under both the baseline and proposed action. Therefore, the effects to listed species, if any, as a result of the proposed action are considered a continuation of the baseline effect. Releases from Allatoona Dam under the proposed action would not be expected to change flows in tributaries where species such as the Cherokee darter could occur. There would be no expected effects to listed species, such as the Amber darter and Etowah darter, occurring in river segments upstream of the dam..

Carters

Based on information available to USACE there is no specific information regarding minimum flows or other flow regime requirements for the species occurring downstream of Carters Dam in the Coosawattee River. Those species include Amber darter and the freshwater mussel species described in the Status of the Species/Critical Habitat section above. Species that are known to occur upstream of Carters Reservoir and potentially occurring downstream include the Blue shiner (also found in Alabama). Figures 17-28 show the frequency (% of days) that daily average discharge (cfs) values are exceeded during the years 1983-2011 for each calendar month at the Carters Dam tailrace. The proposed action provides flows closely approximating those observed in the baseline period. However, the proposed action typically resulted in higher flows during low flow conditions (flow values that are exceeded at least 75% of the time) as compared to the baseline. This is a result of the seasonal minimum flow schedule, developed in close coordination with the Service, incorporated into the proposed action. The background for the flow schedule stems from a series of letters (Service to USACE 19 June 2003, USACE to Service 15 August 2003) telephone calls and meetings proposing such a schedule in the context of informal Section 7 consultation. As described in Section 3, Proposed Action, when the reservoir level is in Zone 1 a seasonal minimal flow would be in place. When in Zone 2, a minimum discharge of 240 cfs would be in place. Table 2 below describes the monthly minimum flow schedule when operating in Action Zone 1, incorporated into the proposed action and the corresponding minimum flow requirement in place during the baseline period.

Table 2. Monthly Minimum Releases (cfs) at Carters Re-Regulation Dam for Proposed Action and Baseline in Action Zone 1[1]												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Proposed	660	790	865	770	620	475	400	325	250	275	350	465
Baseline	240	240	240	240	240	240	240	240	240	240	240	240

[1]Minimum Releases in Zone 2 is 240 cfs

The seasonal monthly flow schedule prescribed in the proposed action includes a provision for reducing the minimum flow requirement when the pool level enters Action Zone 2 in order to ensure maintenance of at least the 240 cfs release. This reduction in flows is typically realized during the warmer months of the year and accordingly results in slightly lower flows during drought events (flows exceeded at least 90% of the time) than occurred under the baseline during the summer months. The graphs show that for most months, the ability to meet the revised monthly minimum releases would be achieved about 95% of the time. Amber darter critical habitat occurs upstream of Carters dam but would not be affected by the proposed action. Conasauga logperch and its Critical Habitat are found upstream of Carters dam. Although the species potentially occurs below Carters it has not been reported and upstream populations and Critical Habitat would not be affected.

Montgomery and Claiborne

Alabama sturgeon is potentially found in the Alabama River from Montgomery downstream to below Claiborne. For the listed critical habitat the PCEs include "A flow regime (*i.e.*, the magnitude, frequency, duration, seasonality of discharge over time) necessary to maintain all life stages of the species in the riverine environment, including migration, breeding site selection, resting, larval development, and protection of cool water refuges (*i.e.*,tributaries)". There is no specific information regarding flow requirements for the species. Figures 29-52 show the frequency (% of days) that daily average discharge (cfs) values are exceeded during the years 1983-2011 for each calendar month at the Montgomery and Claiborne. In all months the simulated proposed action flow regime is nearly identical to the baseline flow regime with the exception of proposed action resulting in higher flows during drought periods (flows that are exceeded at least 90% of the time) than the baseline condition. This is likely a beneficial effect to the species. The proposed action flow regime is not expected to have any effect on the other PCE's including channel morphology, substrate or water temperatures.

It should be noted that because of the intervening APC reservoirs on the Coosa and contributing flows released from the APC Martin and Harris Reservoirs from the Tallapoosa River, the impact at Montgomery and Claiborne from the USACE operations at Allatoona and Carters would likely be overshadowed by any operational deviations by APC. For example this was observed during the 2007 drought when APC effectively cut flows at Montgomery by 57%. Flows in the Cahaba River where the Cahaba shiner is known to occur would remain unchanged by USACE discretionary operations.

For other potentially affected species, including Wood stork, West Indian manatee and Red belly turtle there is no information relating to flow regimes (timing, distribution, duration, etc.) that would allow more refined determinations of affects. Therefore, since the proposed action flow regime is consistent with the baseline flow regime, effects, if any, are considered to be a continuation of the baseline effect.

In order to further evaluate the disturbance intensity and severity, we focus on the most extreme low and high flow events at each of the locations. Figures 53-60 show the average daily flow from 1983-2011 that is exceeded at least 90% of the time (extreme low flow) and 10% of the time (extreme high flow) under both the baseline and simulated proposed action flow regimes at each of the four locations.

Figure 53 presents average daily flows at Allatoona at the 90% exceedance rate for the calendar year. As these flows would be exceeded 90% of the time, they represent low flows that could be expected during drought conditions. In general, the figure shows that the proposed action would result in higher low flows than the baseline during the December-May time period and approximately equal flows during other parts of the year.

Figure 54 presents average daily flows at Allatoona at the 10% exceedance rate for the calendar year. As these flows would be exceeded only 10% of the time, they represent high flows. The general pattern of high flow events is consistent between the two flow regimes. However, the proposed action simulation does result in somewhat lower magnitude high flow events during the summer and fall months. This is most notable during the month of October when the proposed action includes a reduction in hydropower production related to the step down guide curve that is not present in the baseline condition.

Figure 55 presents average daily flows at Carters Re-Reg at the 90% exceedance rate for the calendar year.. In general, the figure shows that the proposed action would result in higher low flows than the baseline during the entire year. During the months of June and September, the proposed action results in slightly lower low flow conditions than occur in the baseline for these same months. However, the difference in flow values during these two months is generally only 50-150 cfs.

Figure 56 presents average daily flows at Carters Re-Reg at the 10% exceedance rate for the calendar year. The proposed action simulation and observed flow regimes are generally consistent throughout the calendar year, with the proposed action resulting in occasionally higher spring flow spikes and slightly lower summer and fall high flow events.

Figure 57 presents average daily flows at Montgomery at the 90% exceedance rate for the calendar year.. The proposed action simulation and observed flow regimes are generally consistent throughout the calendar year, with the proposed action consistently resulting in slightly higher low flows. The improvements in lower flows realized under the proposed action would be a beneficial effect to listed species. Higher flows during low-flow conditions would allow greater mobility during spring migrations. This would benefit species such as the Alabama sturgeon as well as host fish species for listed mussels in the Alabama River.

Figure 58 presents average daily flows at Montgomery at the 10% exceedance rate for the calendar year.. With respect to high flows, the proposed action simulation and observed flow regimes are essentially identical throughout the calendar year.

Figure 59 presents average daily flows at Claiborne at the 90% exceedance rate for the calendar year.. The proposed action simulation and observed flow regimes are generally consistent throughout the calendar year, with the proposed action consistently resulting in slightly higher low flows. This is most evident during the spring and early winter. Higher flows during low-flow conditions would allow greater mobility during spring migrations. This would benefit species such as the Alabama sturgeon as well as host fish species for listed mussels in the Alabama River.

Figure 60 presents average daily flows at Claiborne at the 10% exceedance rate for the calendar year.. With respect to high flows, the proposed action simulation and observed flow regimes are essentially identical throughout the calendar year.

Of the plant species discussed in STATUS OF SPECIES only Krals water plantain and Harparela are aquatic or living directly in the riverine environment. Neither occur directly in the mainstream of ACT Rivers and would therefore likely not be effected. Other plant species including Georgia rockcress, Green pitcher plant, Alabama canebrake pitcher plant and Tennessee yellow-eye grass live in close proximity to the rivers throughout the ACT basin, but there is little likelihood that the proposed action would have effects on river banks or wetlands in which they occur due to the overall similarity of flow regimes when the proposed action is compared to the baseline.

The flow regime analysis indicates that effects, if any, as a result of implementing the proposed action are generally a continuation of the baseline effect, with the exception of the proposed action resulting in beneficial effects to some of the flow dependent factors. These beneficial effects are generally attributable to the drought plan and seasonally varying minimum flow from the Carters Re-Regulation dam, both of which the Service has expressed support for in the Draft Fish and Wildlife Coordination Report.

7.6. GENERAL EFFECTS ON WATER QUALITY

The overall effect of the Proposed Action Alternative on water quality would be expected to be negligible. A full discussion of water quality impacts is found in Section 6.1.2 of the DEIS. State agencies would continue to apply adaptive management techniques to more precisely define the ACT system’s assimilative capacity. Water quality is closely tied to flow conditions, and based on the discussion above, the proposed operational changes in the Proposed Action Alternative would be expected to have little effect on water temperature, DO, phosphorous and nitrogen levels, chlorophyll *a* levels in the ACT Basin. A discussion of the HEC-5Q water quality simulation results is provided below. As described in the Model Description section, this analysis is summarized from the DEIS and compares the no action simulation to the proposed action simulation.

Water Temperature

Modeled results indicate that especially during low-flow conditions, there would be some locations with either slightly higher or lower water temperatures compared to the current operation. In the Alabama River at the confluence of the Coosa and Tallapoosa Rivers median water temperatures during low-flow periods are predicted to increase by as much as 1.8 °F (DEIS Figures 6.1-54).

The river reach immediately downstream of Allatoona Reservoir and Carters Reservoir would be expected to experience slightly decreased median water temperatures during periods of dry weather. Implementing a phased guide curve at Allatoona Reservoir and reducing hydropower during fall drawdown would be expected to have little effect on water temperatures in the lake and in reaches downstream. In the Etowah River from Allatoona Dam downstream to the Coosa River, median water temperatures would be expected to be slightly less than the No Action Alternative. Those slightly decreased water temperatures during dry periods from the No Action Alternative would be expected to have a negligible effect on aquatic species. During periods of drought, median water temperatures downstream of Carters Reregulation Dam are predicted to decrease by 0.9 °F immediately downstream of the dam (DEIS Figure 6.1-58).

Dissolved Oxygen

The proposed operational changes in the Proposed Action Alternative would be expected to have variable results on dissolved oxygen (DO) levels depending on flow conditions and location. The greatest changes in median DO would be expected during drought conditions. The timing and quantity of flow influence the system's ability to assimilate oxygen-demanding pollutants that results in changes in DO. As shown in Table 6.1-7 of the DEIS, most modeled locations would see dry-weather changes in DO from -0.05 to 0.05 milligrams per liter (mg/L), compared to current conditions, essentially constituting no change. Below Allatoona Reservoir, there would no change in DO (DEIS Figure 6.1-63), below Carters Reservoir (DEIS Figure 6.1-64) there would be a predicted decrease in DO of about 0.1 mg/L during extreme drought years. On the Alabama River (DEIS Figure 6.1-70) above R.F. Henry there would be DO decreases up to 0.5 mg/L from the current condition, during drought years, and further downstream to Claiborne Lake there would be varying results from slight DO decreases of <0.5 mg/L to slight increases of up to < 0.5 mg/L. Although the predicted variability would see some locations with slight DO decreases and others with slight increases, overall there would be no consistent pattern of changes and the proposed action is considered to have a negligible effect.

Phosphorous and Nitrogen

The proposed operational changes in the Proposed Action Alternative on would be expected to have variable results on phosphorous and nitrogen levels depending on flow conditions and location. The greatest changes would be expected during drought conditions. On the Coosa River during dry years, there would be a small overall increase in phosphorous (up to approximately 0.01 mg/L) (DEIS Figure 6.1-75) which is considered negligible. Other locations would see variable phosphorous levels generally in the range of ±0.1 mg/L. In the Coosawattee and Oostanaula Rivers during dry years, nitrogen is expected to increase up to approximately 0.1 mg/L downstream to the confluence with the Etowah River (DEIS Figure 6.1-73). Nitrogen on the Coosa River is elevated upstream of Weiss Lake less than 0.1 mg/L and then drops downstream of Weiss Lake. On the Alabama River, there would be negligible change from current conditions during the growing season.

Chlorophyll *a*

The proposed operational changes in the Proposed Action Alternative on would be expected to have variable results on chlorophyll *a* levels depending on flow conditions and location. Overall, the effect would be negligible. During periods of dry weather, there would be increased chlorophyll *a* levels upstream of Weiss Lake that would correspond with increases in phosphorous (DEIS Figure 6.1-98). At that location, chlorophyll *a* would be expected to increase about 10 mg/L compared to current operations during drought conditions.

7.7. CUMULATIVE EFFECTS

Cumulative effects of the proposed action on the environment in general are discussed in greater detail in Section 6.9 of the DEIS. Reference is made to that discussion; however, this discussion is focused on potential effects to federally listed threatened and endangered species.

Cumulative effects in ecosystems are defined as, “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 Code of Federal Regulations Parts 1500–1508). Constructing dams in riverine ecosystems abruptly, severely, and permanently alters many important physical and biological processes involving the movement of water, energy, sediments, nutrients, and biota. Eighteen dams impound mainstem channels of the ACT Basin, eliminating, fragmenting, and dramatically altering riverine habitat. USACE owns and operates five of those with APC owning the remainder. It should be re-emphasized that although the Alabama portion of the basin wide drought plan was developed in coordination with APC, USACE has no operational control over their water releases. During droughts, flows on the Coosa River below Weiss Dam (APC owned), the Tallapoosa River below Harris Dam (APC owned) and the Alabama River are almost entirely dependent on those APC releases from upstream projects.

As discussed in the DEIS there are a total of 280 other reservoirs in the basin that are 20 acres or larger in size with an average size of about 62 acres, totaling about 17,200 acres. These reservoirs which currently exist are part of the environmental baseline. Together they have had a cumulative effect on past alterations of flows in the ACT basin. In addition, there are several additional reservoirs that have been proposed and are in the process of planning or permitting by regulatory agencies (Table 2.1-6 of DEIS). There are a total of 56 locations (Table 2.1-20 DEIS) in the upper ACT basin in Georgia that have been deemed suitable by the State of Georgia for future water supply reservoir construction. Although the latter represent speculative ideas for future water supply, they cannot be completely discounted.

Water quality is influenced by a number of factors, including pollutant loads and in-stream flows (water quantity). Pollutant loads include both point and nonpoint sources of pollution. Point sources of pollution are regulated by USEPA through the NPDES under the Water Pollution Act of 1972 as amended. Nonpoint sources of pollution are also targeted to reduce pollutant loads under the Water Pollution Act of 1972 as amended through TMDLs. Enforcement of reductions is varied because of limited resources. As activities in the ACT Basin change from forested to urban land cover, especially in the headwaters areas of the Etowah River Basin, peak flows in the system are likely to increase and base flows in the system are likely to decrease. Urban land cover generally decreases interception of rainfall and infiltration, increasing stormwater runoff. That would be expected to result in less assimilative capacity during periods of low flow because base flow decreases. The combined total of all these activities including reservoirs past and future along with growing M&I demand, land use, point source discharge and resulting water quality could have future impacts on the environment in general and on listed species in particular.

USACE believes that the proposed action would not add to or worsen the cumulative effects described above. We believe that there would be no cumulative effect on listed species and for some factors as previously discussed would represent an improvement.

8. CONCLUSION

Based on the effects analyses described above, the USACE has determined that the proposed action may affect but is not likely to adversely affect Wood stork, West Indian manatee, Red hills salamander, Alabama red-belly turtle, Gulf sturgeon, Blue shiner, Etowah darter, Cherokee darter, Cahaba shiner, Amber darter, Goldline darter, Conasauga logperch, Alabama sturgeon, Finelined pocketbook, Orange-nacre mucket, Alabama moccasinshell, Coosa moccasinshell, Ovate clubshell, Southern clubshell, Southern pigtoe, Triangular kidneyshell, Southern acornshell, Upland combshell, Alabama pearlshell, Southern combshell, Heavy pigtoe, Alabama heelsplitter, Georgia pigtoe, Interrupted rocksnail, Rough hornsnail, Lacy elimia, Round rocksnail, Painted rocksnail, Flat pebblesnail, Cylindrical lioplax snail, Tulotoma snail, Georgia rockcress, Harperella, Kral's water-plantain, Green pitcher-plant, Alabama canebrake pitcher plant and Tennessee yellow-eyed grass. It may affect but is not likely to adversely affect critical habitat for Amber darter, Conasauga logperch, Alabama sturgeon, Finelined pocketbook, Orange-nacre mucket, Alabama moccasinshell, Coosa moccasinshell, Ovate clubshell, Southern clubshell, Southern pigtoe, Triangular kidneyshell, Southern acornshell, Upland combshell, Alabama pearlshell, Georgia pigtoe, Interrupted rocksnail, Rough hornsnail and Georgia rockcress.

Therefore, we request concurrence with this determination per section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq).

Appendix A

Figures

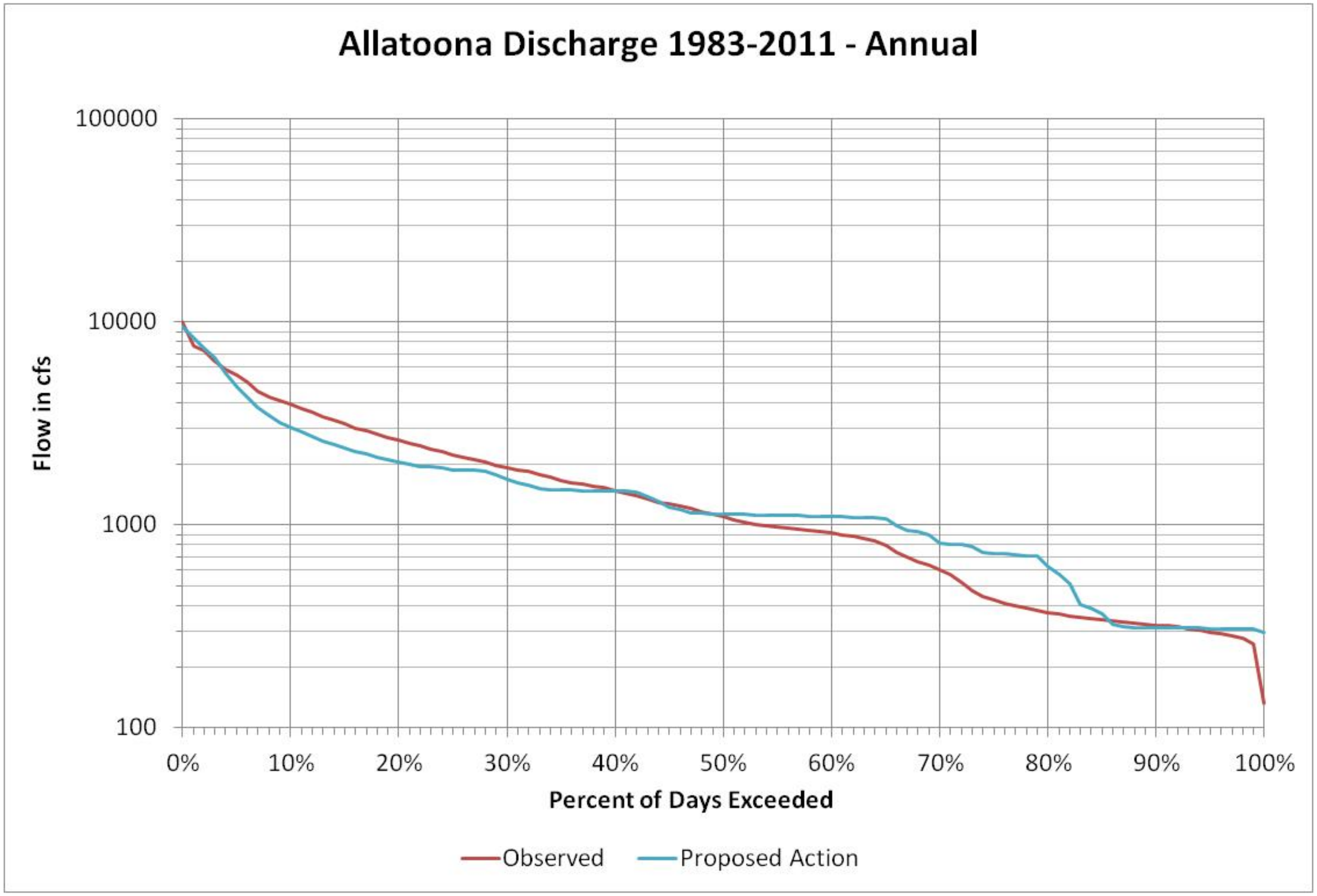

Figure 1. Comparison of Observed Data and Modeled Proposed Action for Average Annual Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

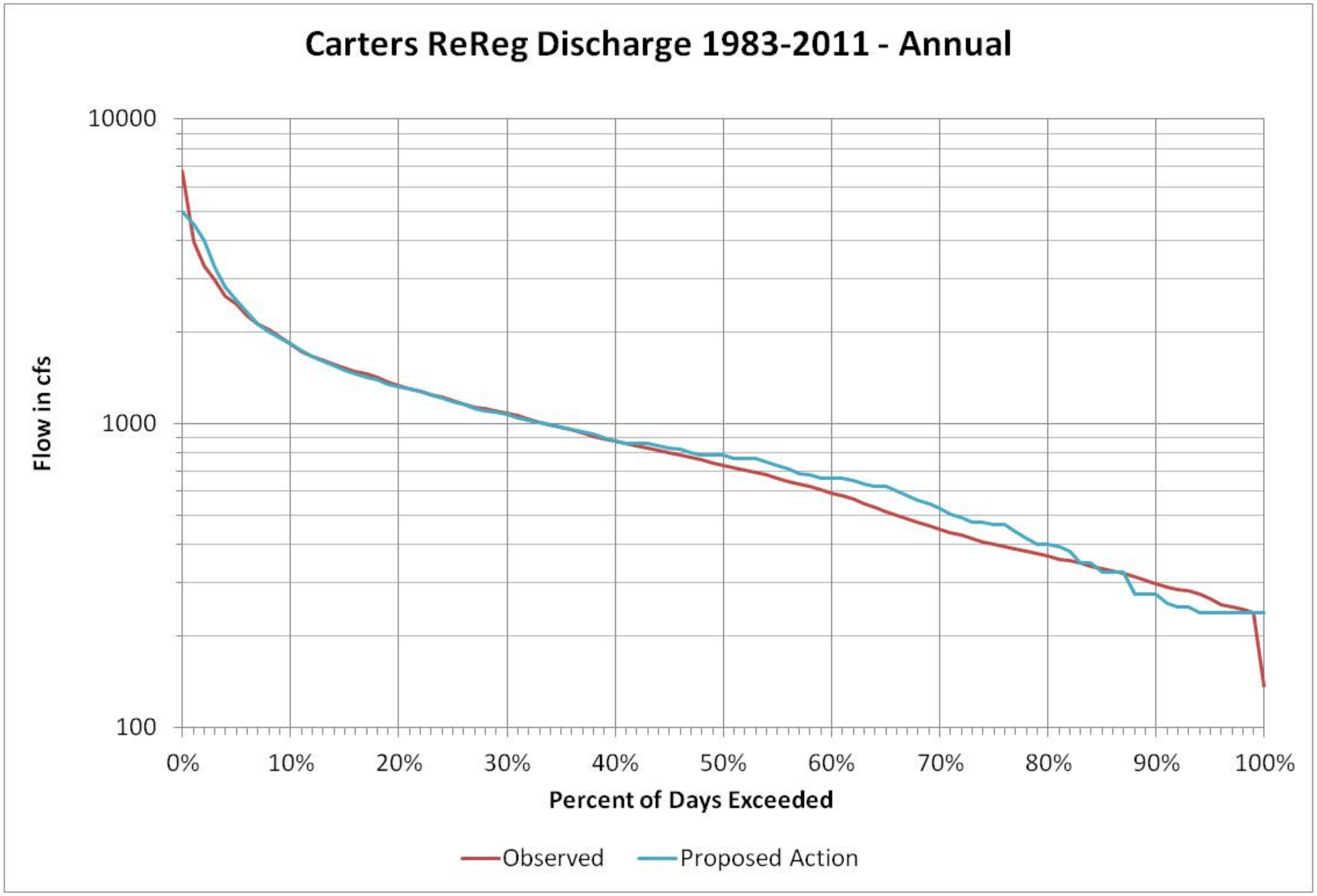

Figure 2. Comparison of Observed Data and Modeled Proposed Action for Average Annual Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

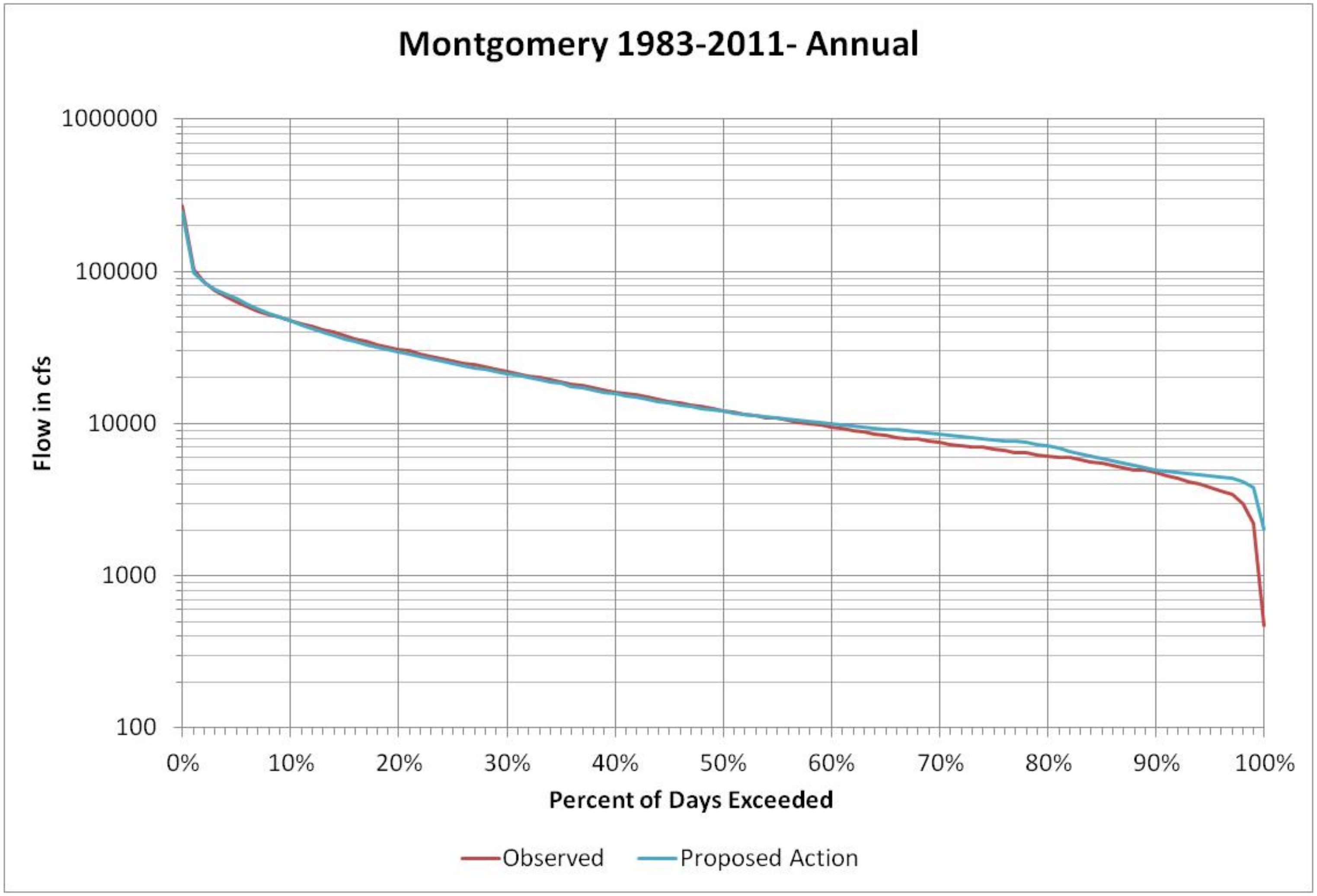

Figure 3. Comparison of Observed Data and Modeled Proposed Action for Average Annual Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

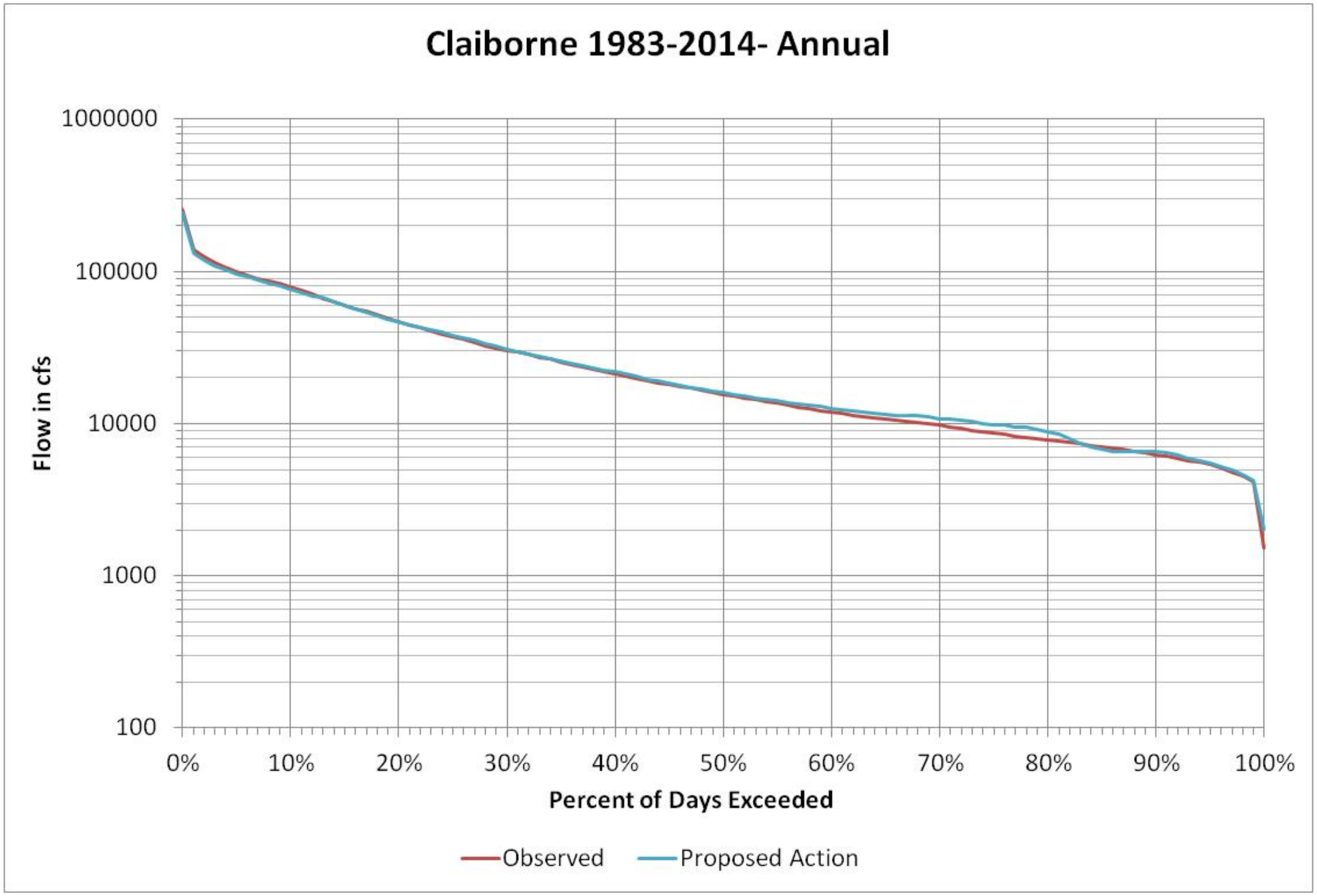

Figure 4. Comparison of Observed Data and Modeled Proposed Action for Average Annual Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

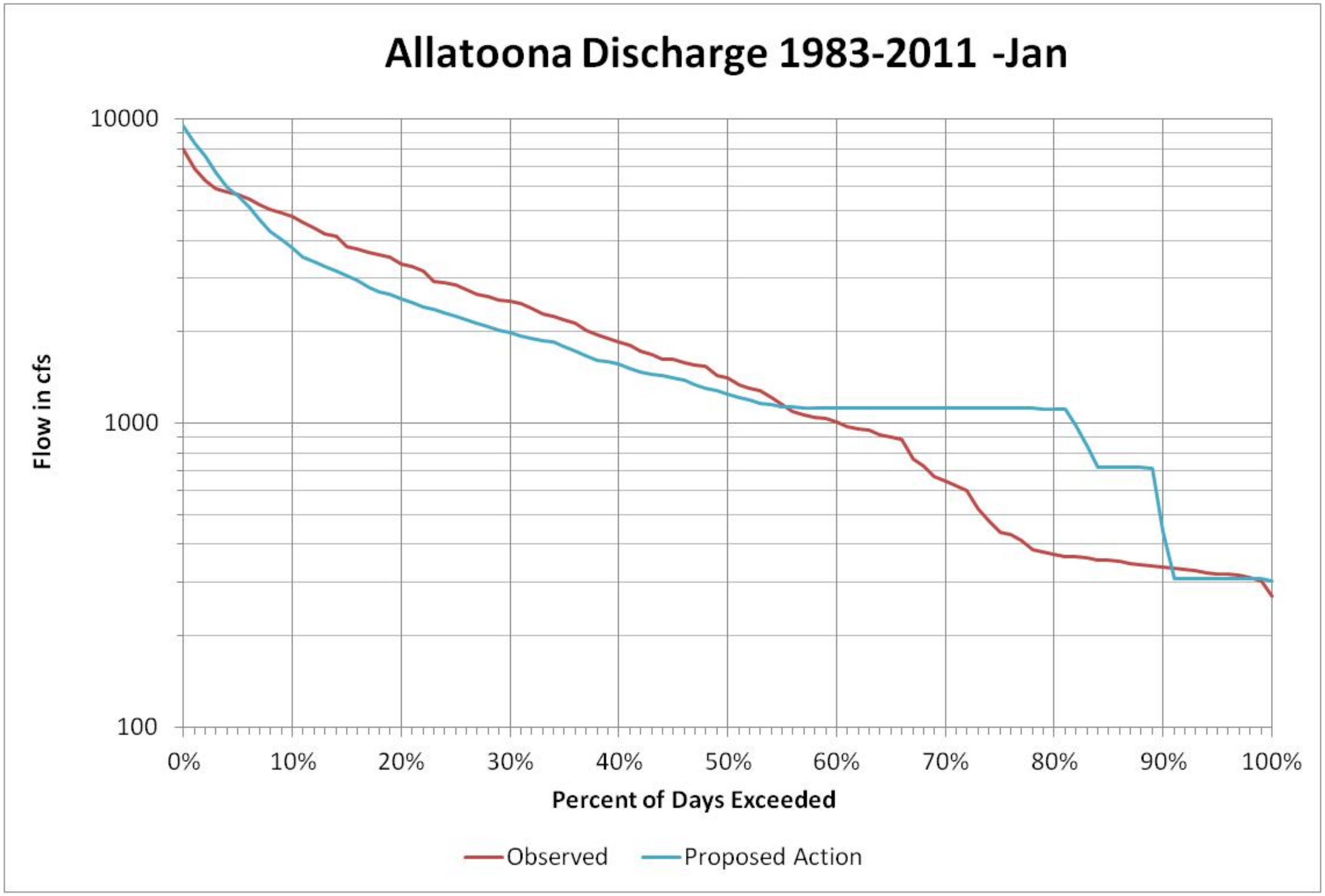

Figure 5. Comparison of Observed Data and Modeled Proposed Action for Average January Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

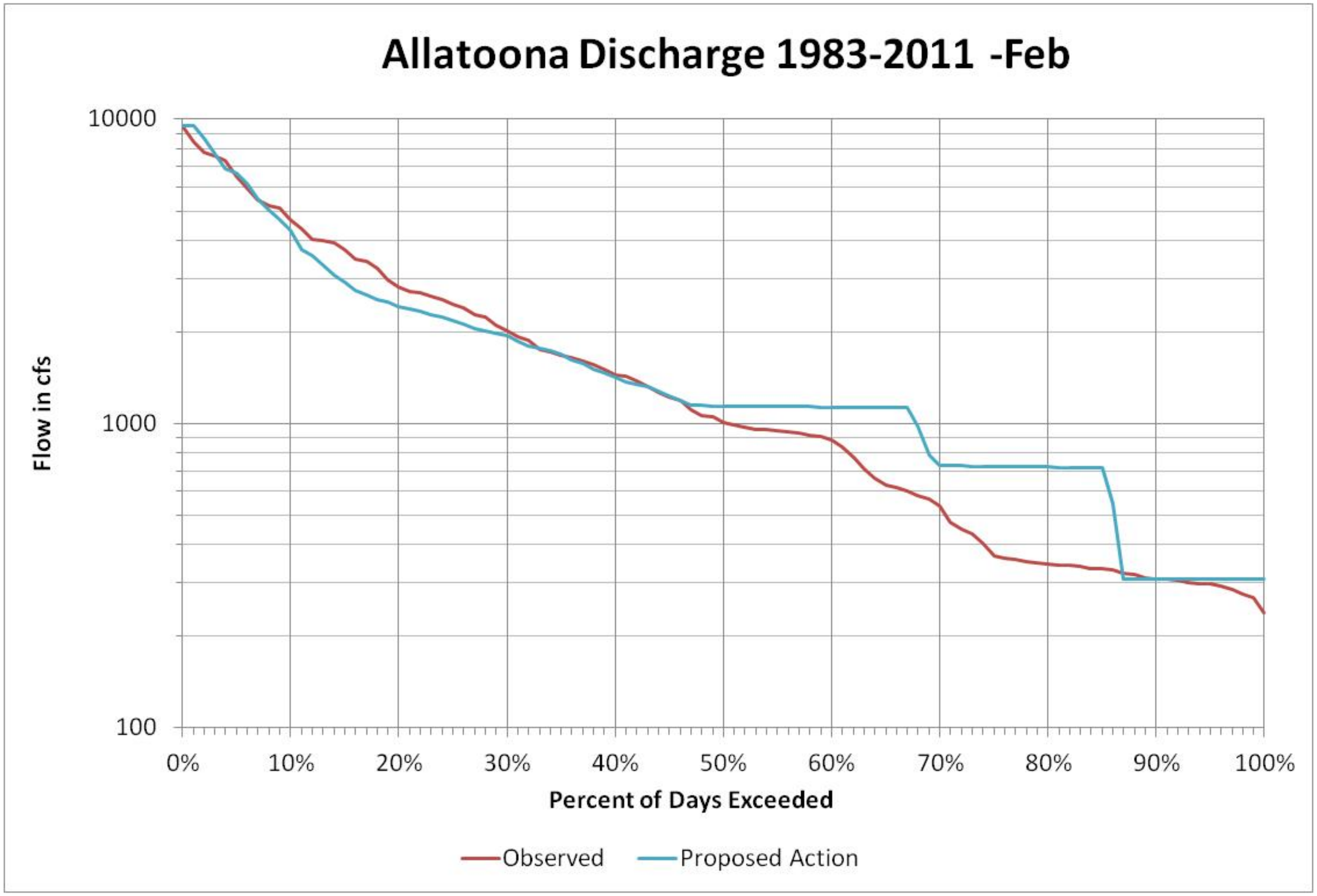

Figure 6. Comparison of Observed Data and Modeled Proposed Action for Average February Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

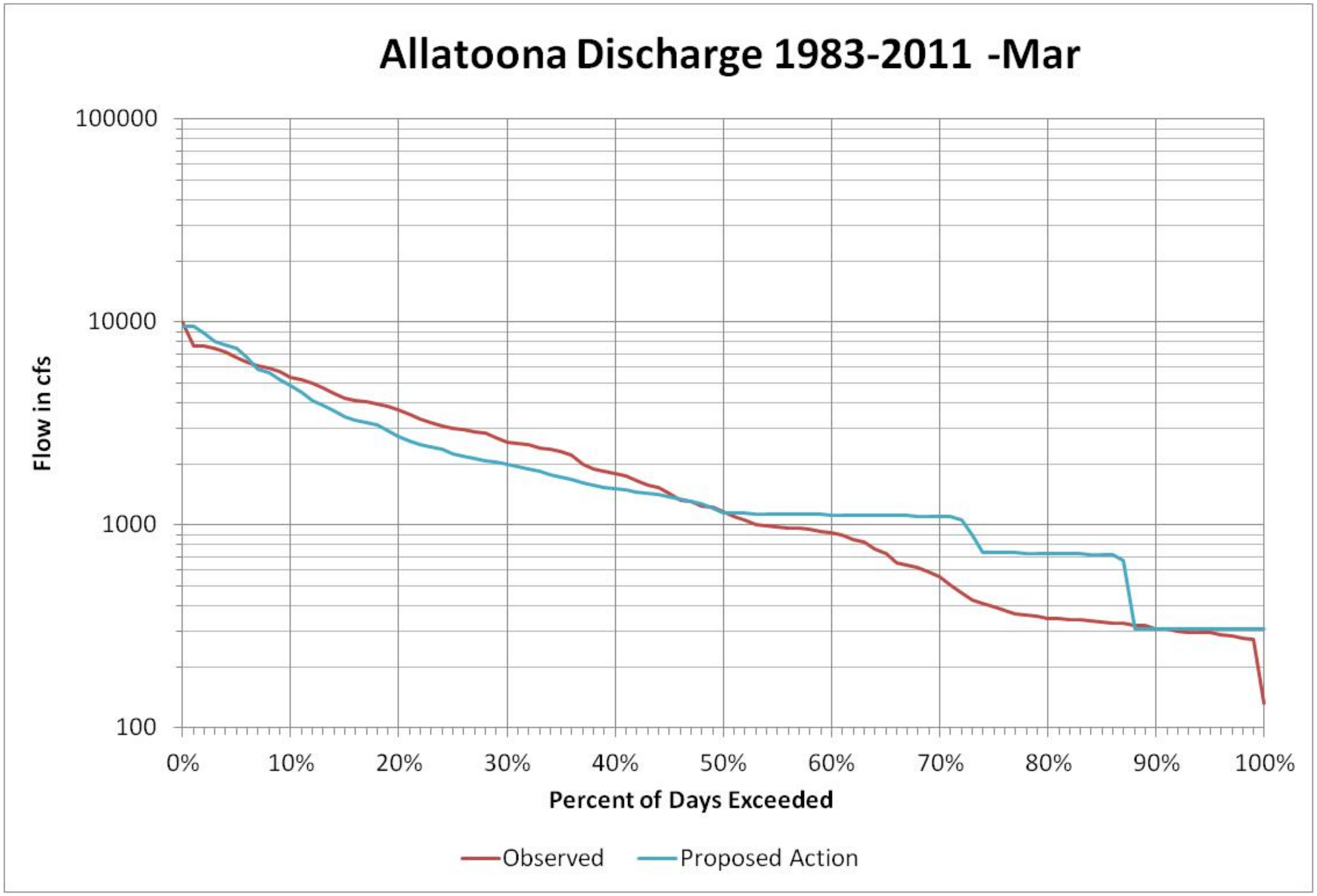

Figure 7. Comparison of Observed Data and Modeled Proposed Action for Average March Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

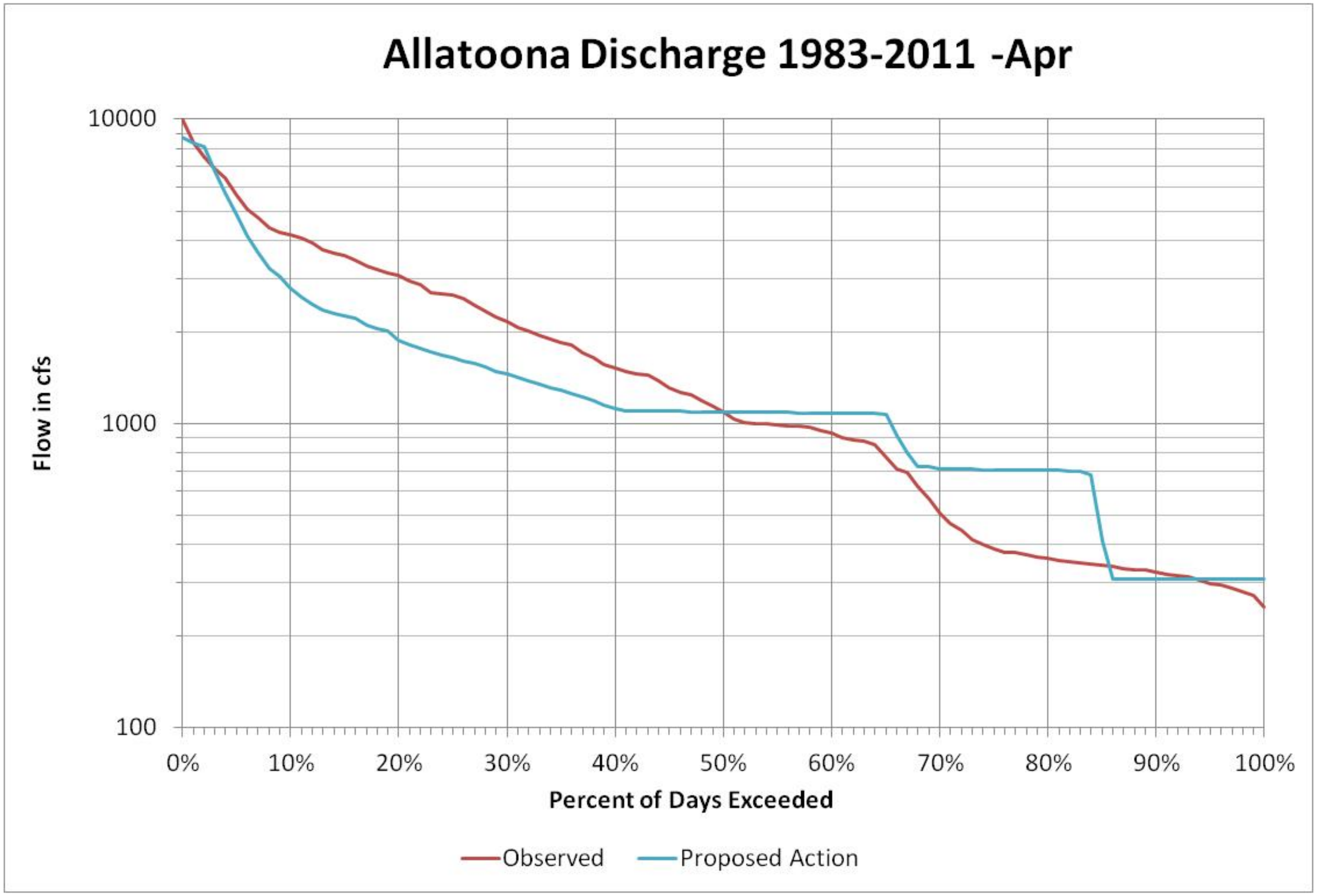

Figure 8. Comparison of Observed Data and Modeled Proposed Action for Average April Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

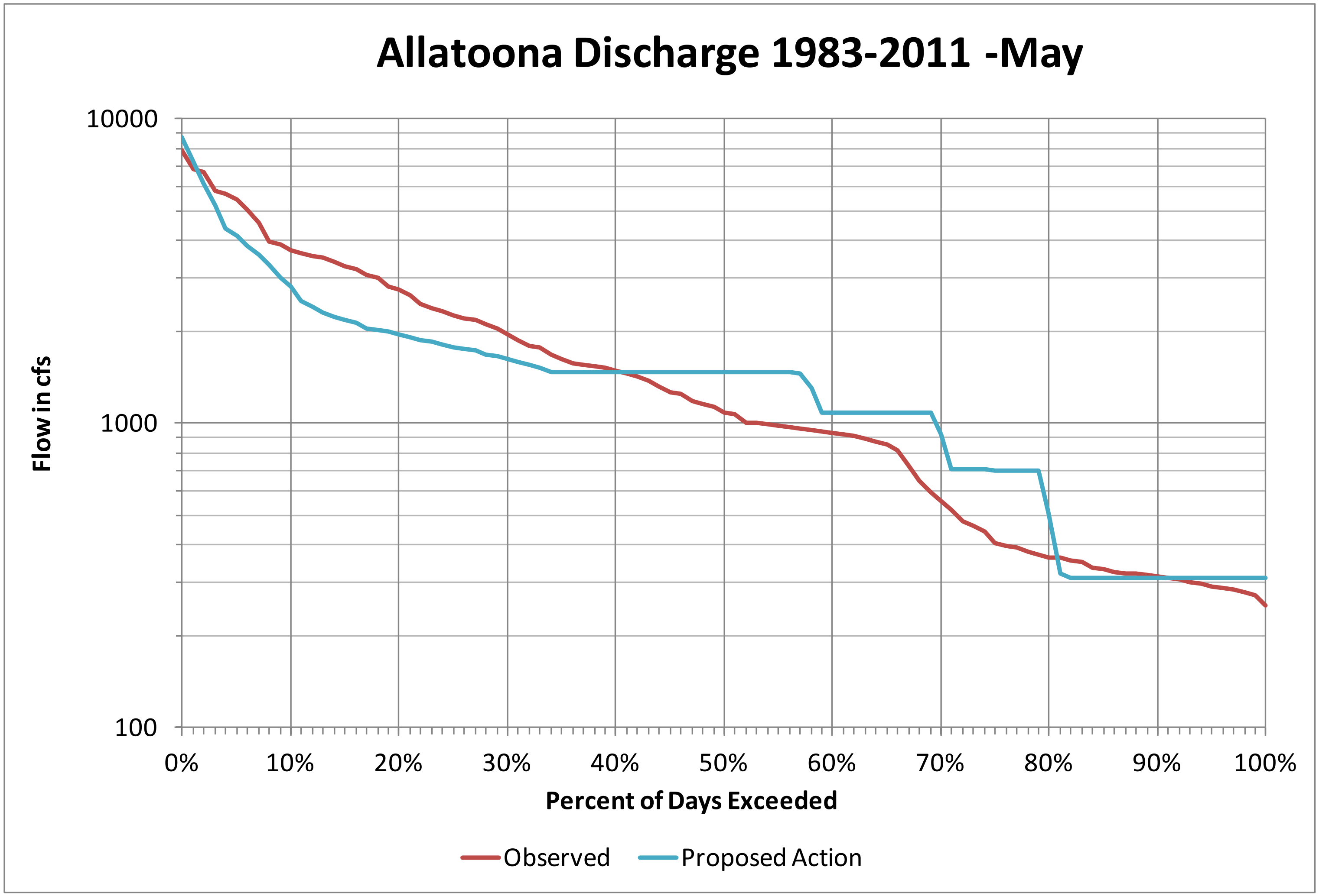

Figure 9. Comparison of Observed Data and Modeled Proposed Action for Average May Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

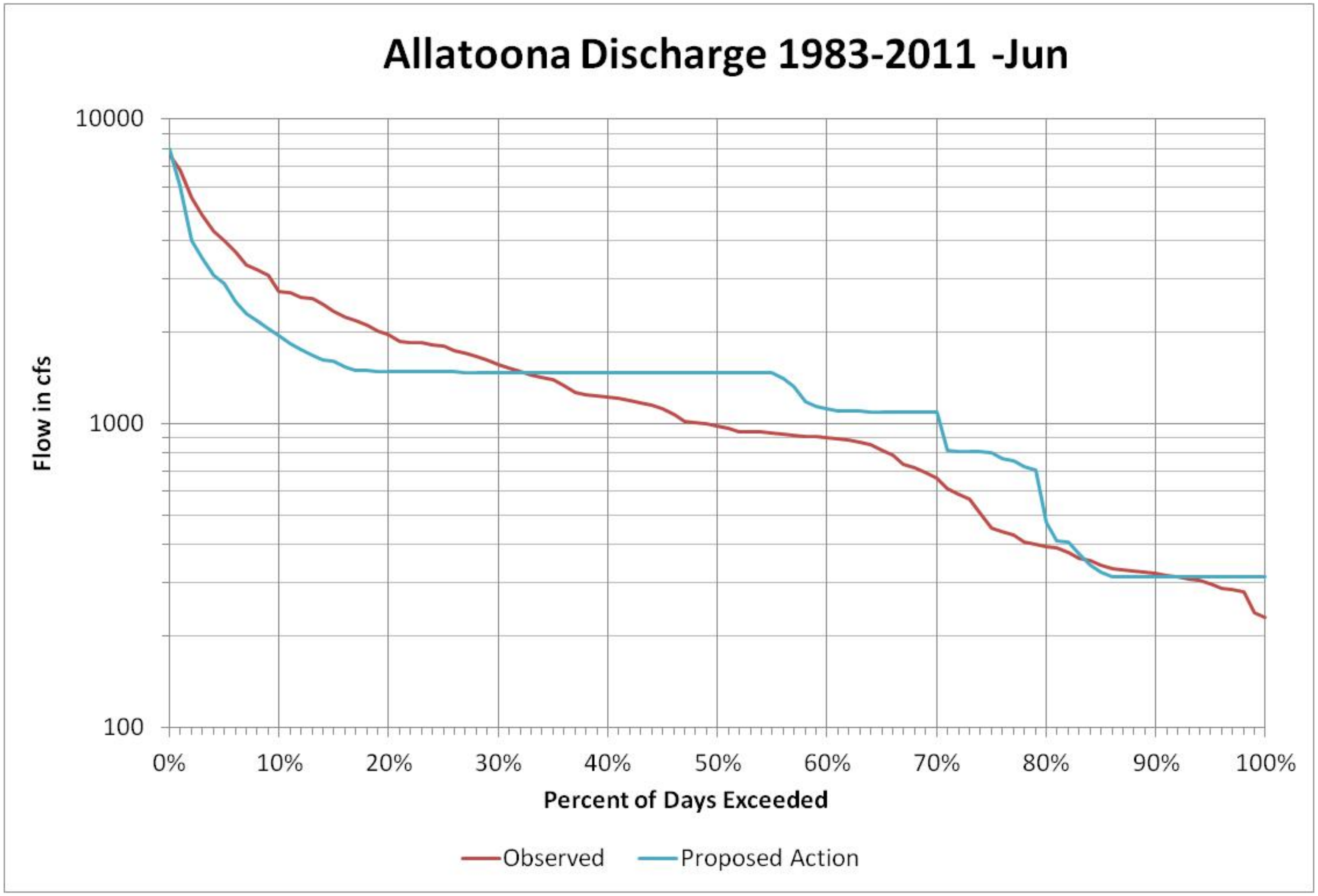

Figure 10. Comparison of Observed Data and Modeled Proposed Action for Average June Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

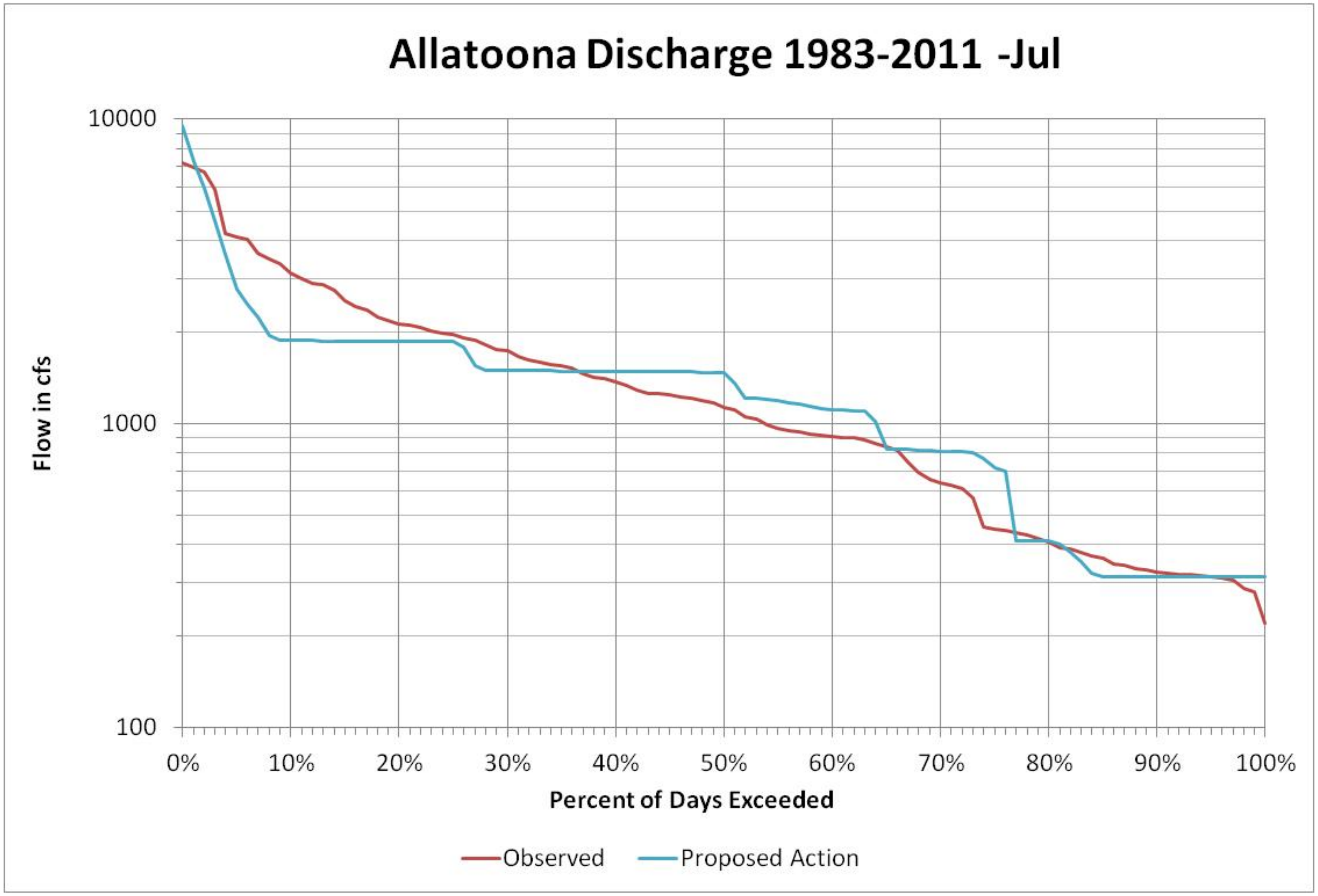

Figure 11. Comparison of Observed Data and Modeled Proposed Action for Average July Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

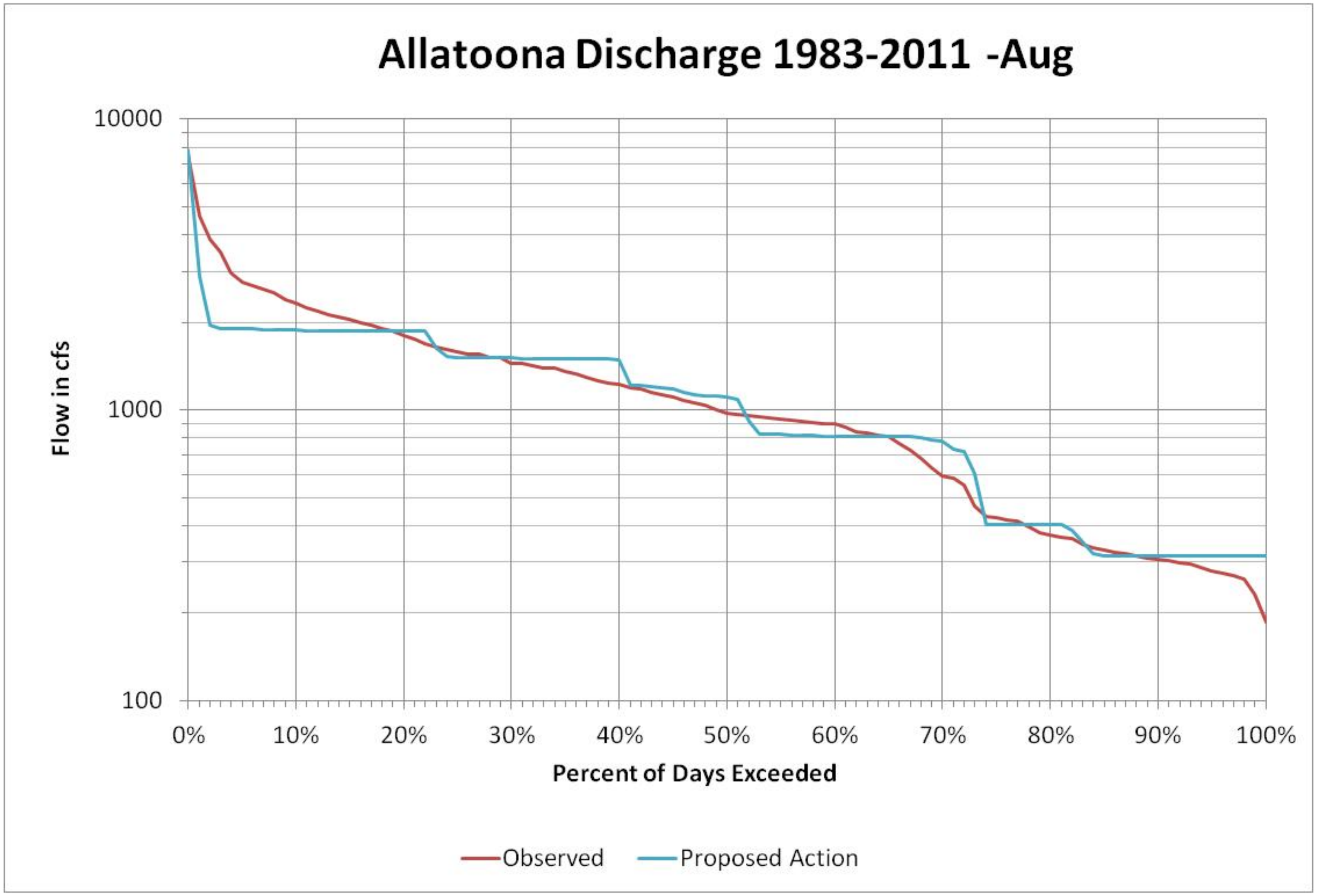

Figure 12. Comparison of Observed Data and Modeled Proposed Action for Average August Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

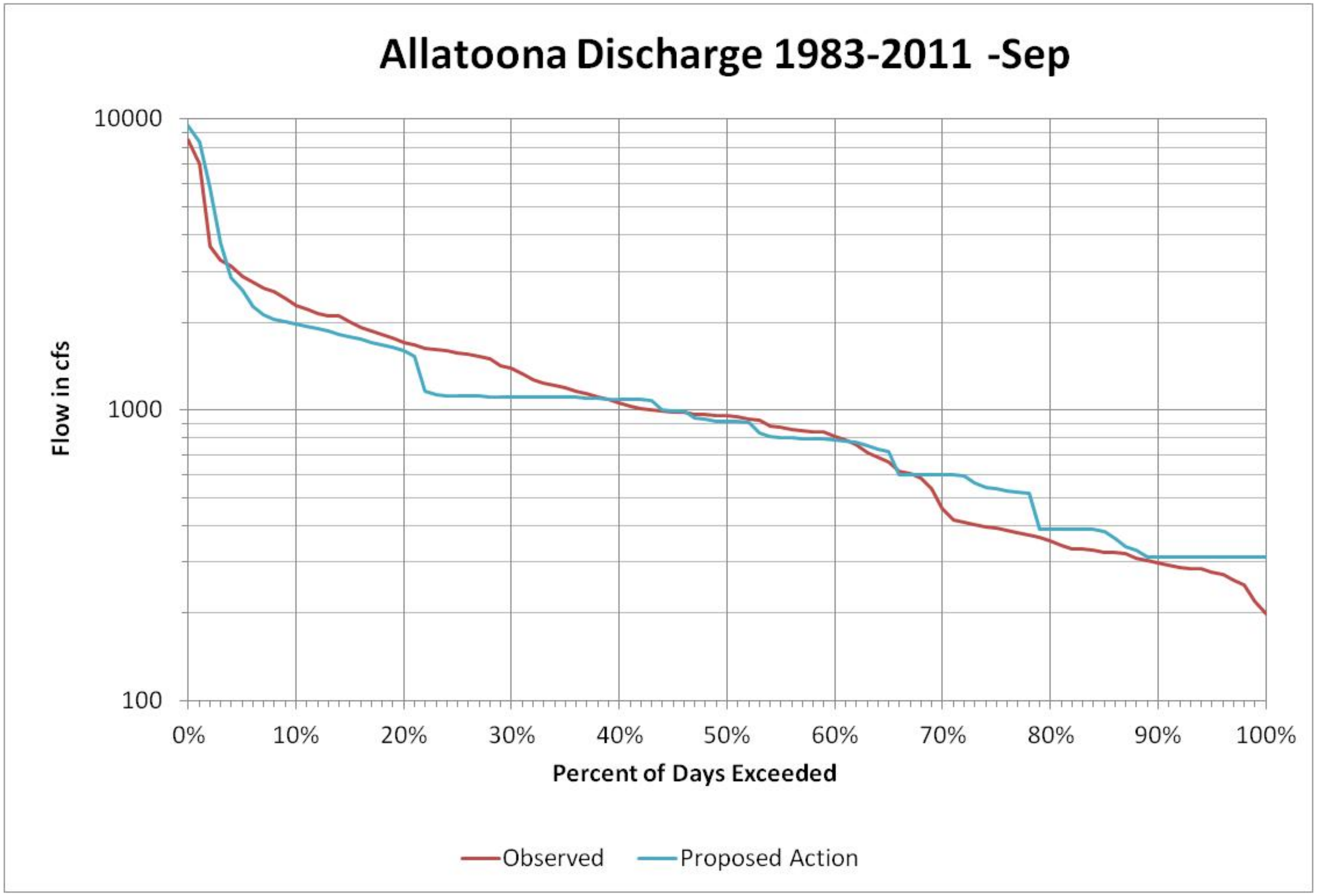

Figure 13. Comparison of Observed Data and Modeled Proposed Action for Average September Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

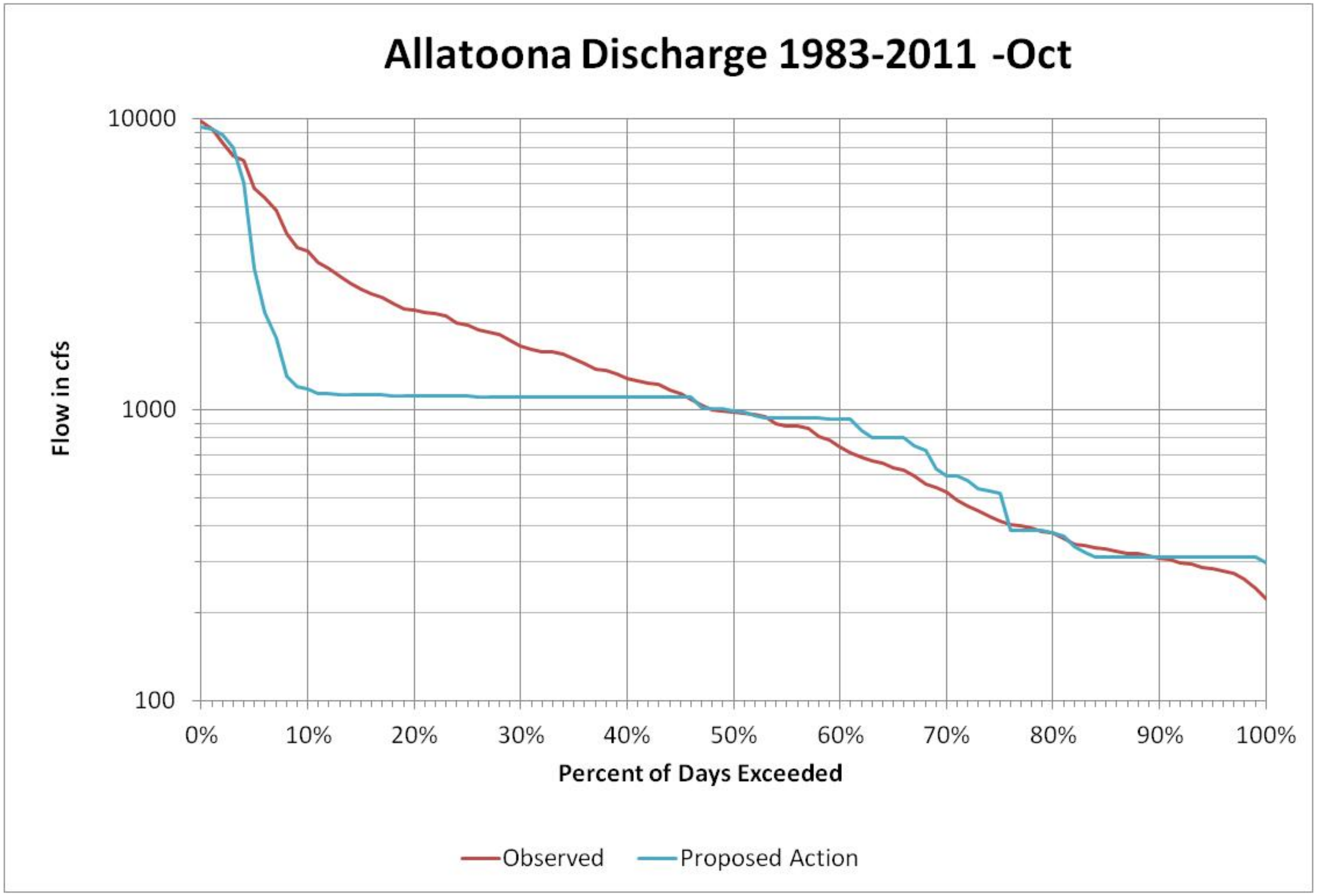

Figure 14. Comparison of Observed Data and Modeled Proposed Action for Average October Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

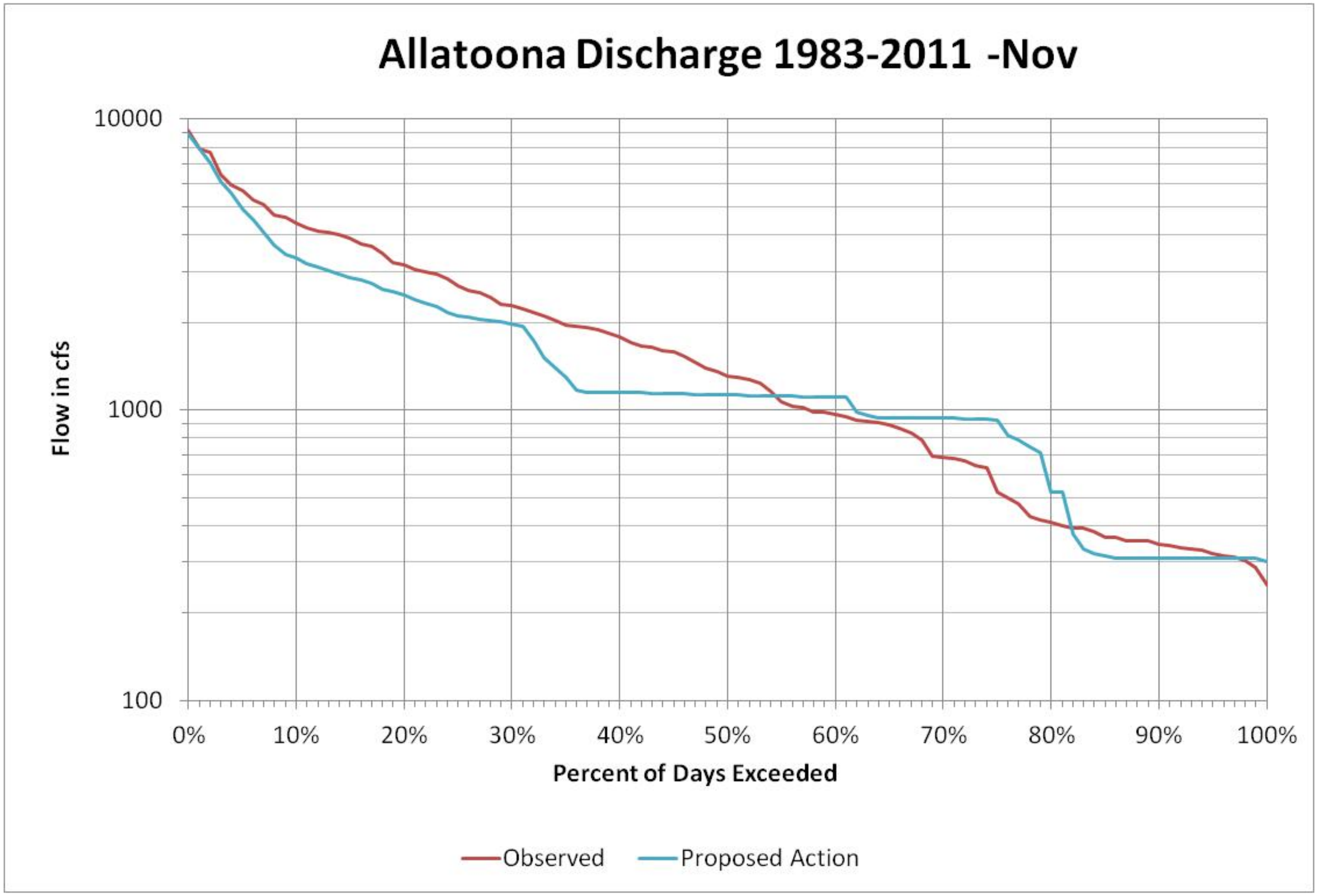

Figure 15. Comparison of Observed Data and Modeled Proposed Action for Average November Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

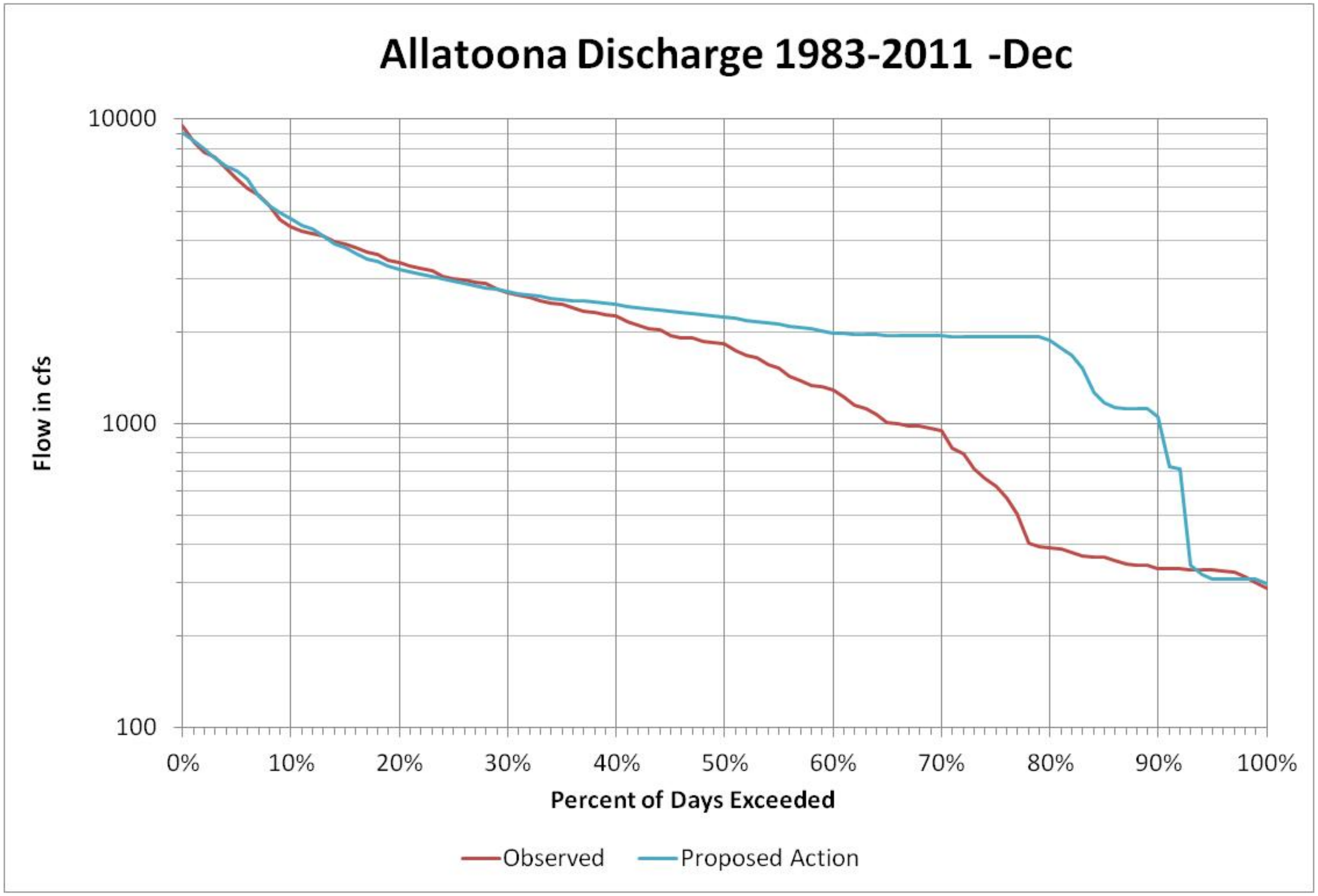

Figure 16. Comparison of Observed Data and Modeled Proposed Action for Average December Flow Duration in Percent Days Exceeded at the Allatoona Dam Tailrace, years 1983-2011.

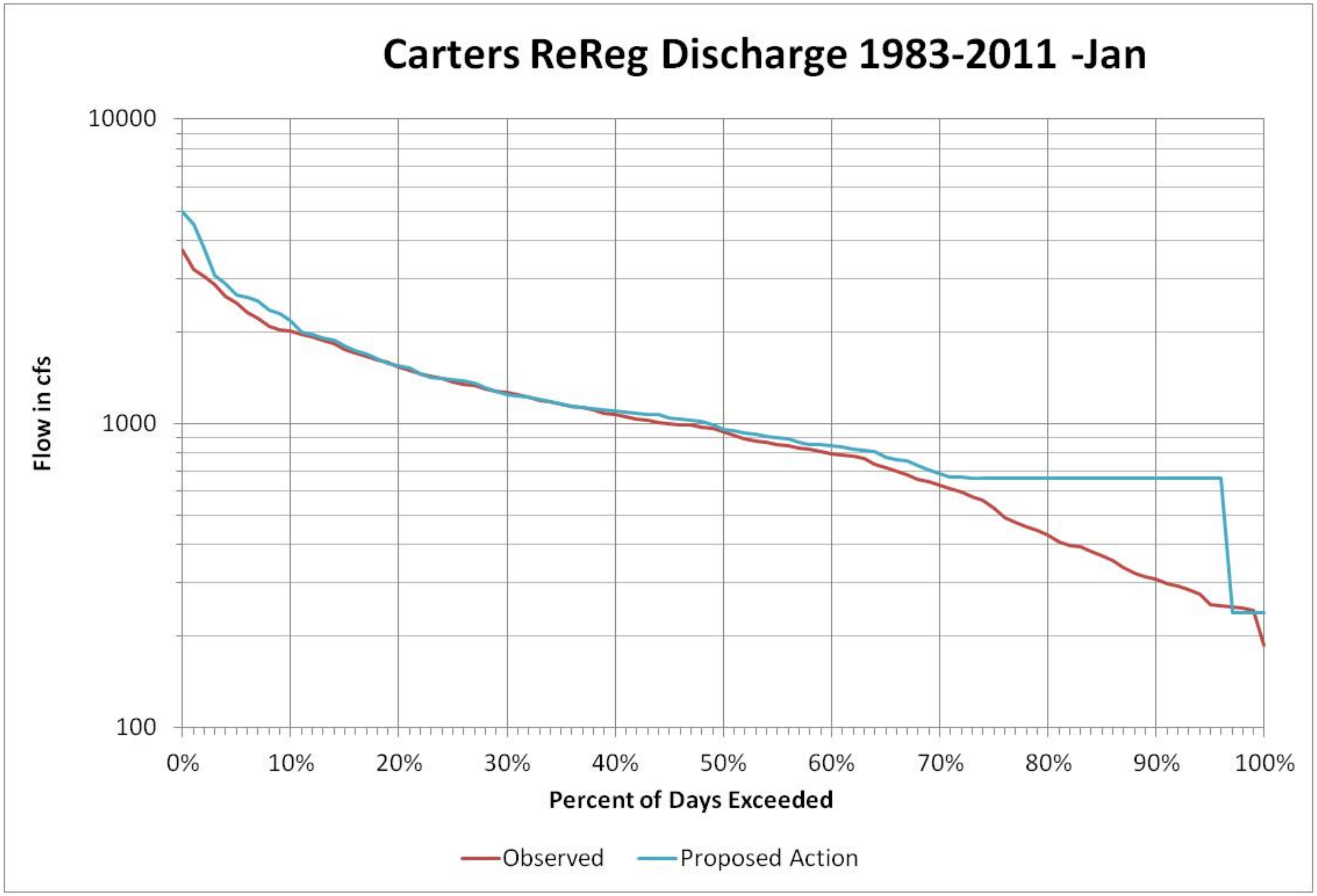

Figure 17. Comparison of Observed Data and Modeled Proposed Action for Average January Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

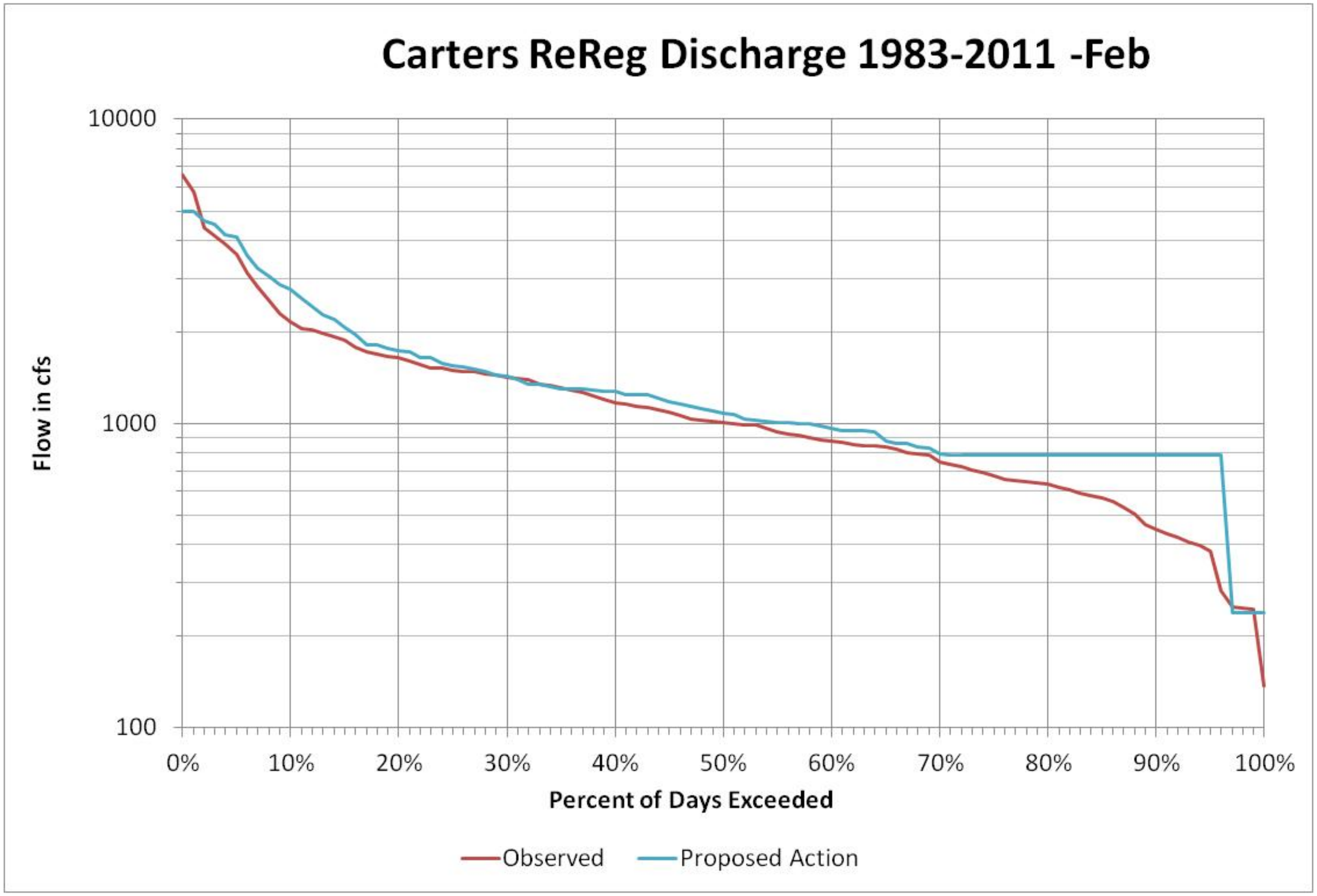

Figure 18. Comparison of Observed Data and Modeled Proposed Action for Average February Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

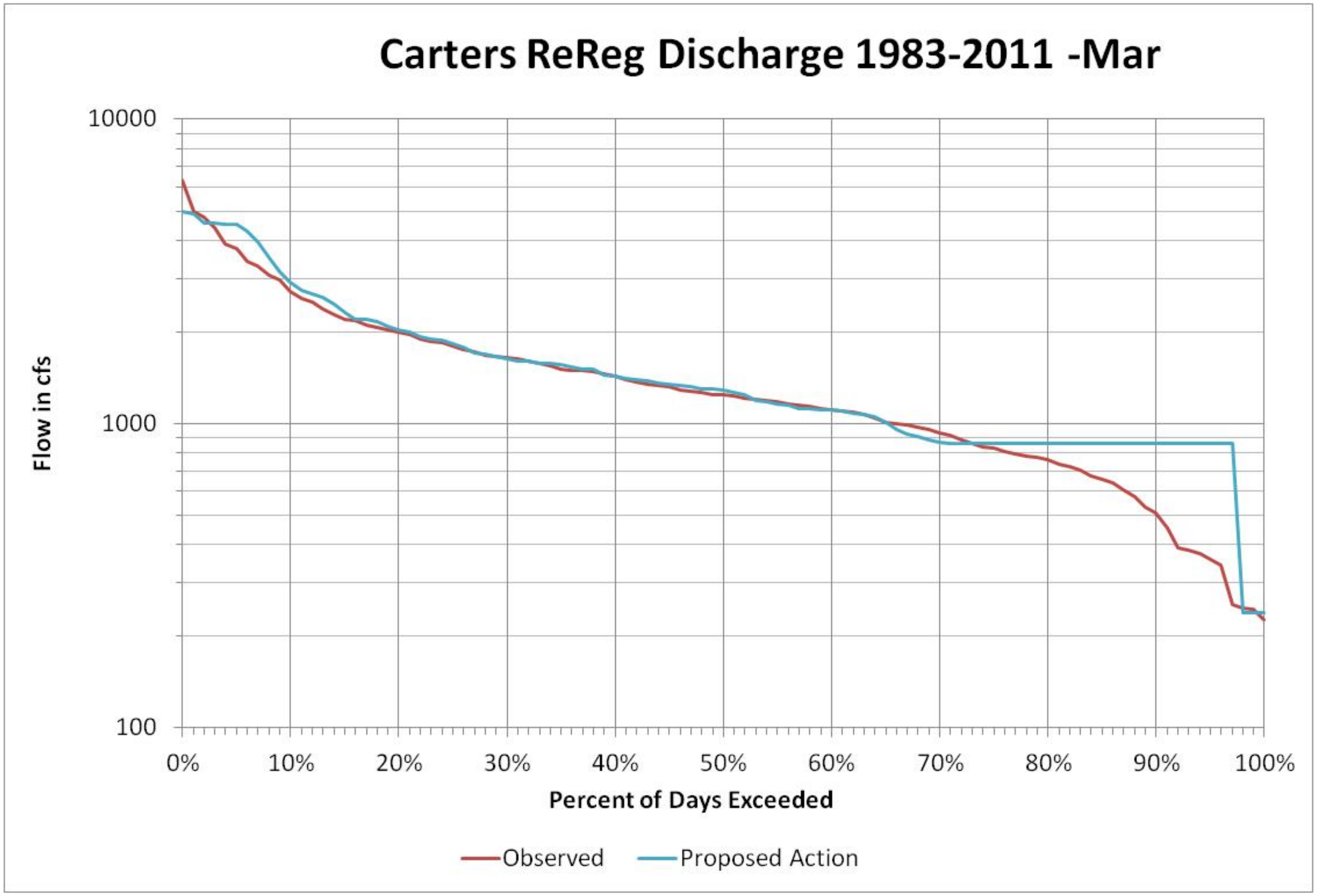

Figure 19. Comparison of Observed Data and Modeled Proposed Action for Average March Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

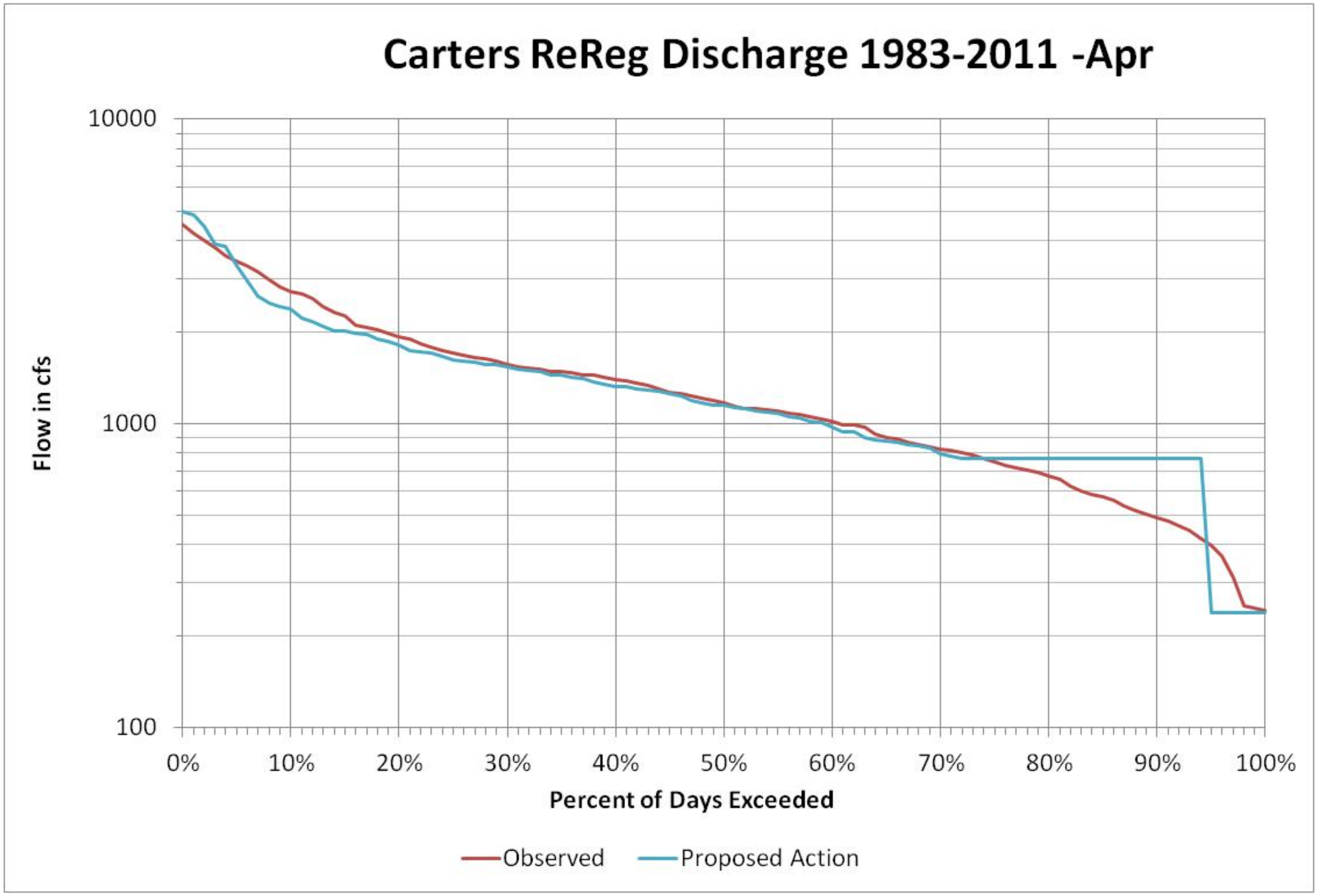

Figure 20. Comparison of Observed Data and Modeled Proposed Action for Average April Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

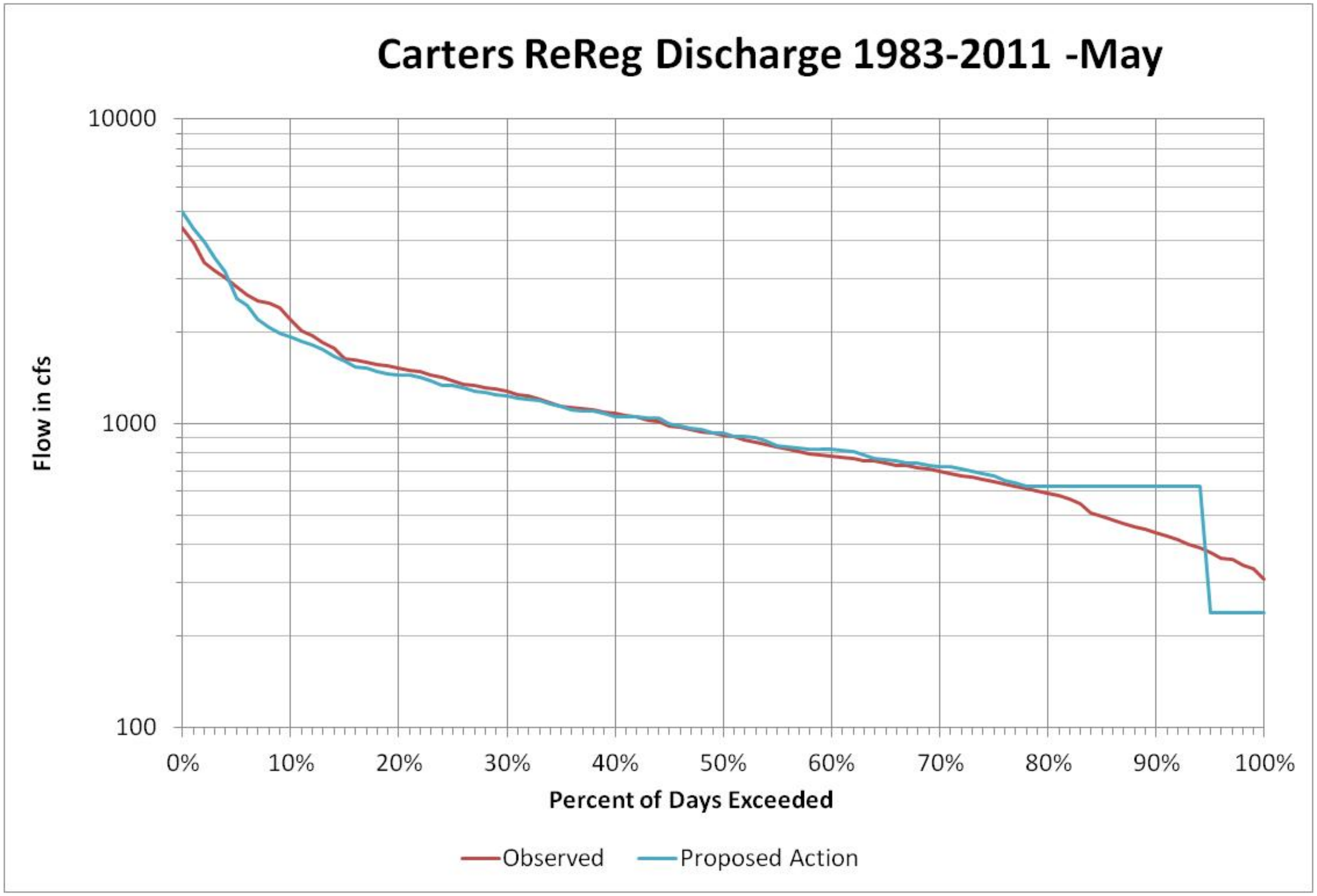

Figure 21. Comparison of Observed Data and Modeled Proposed Action for Average May Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

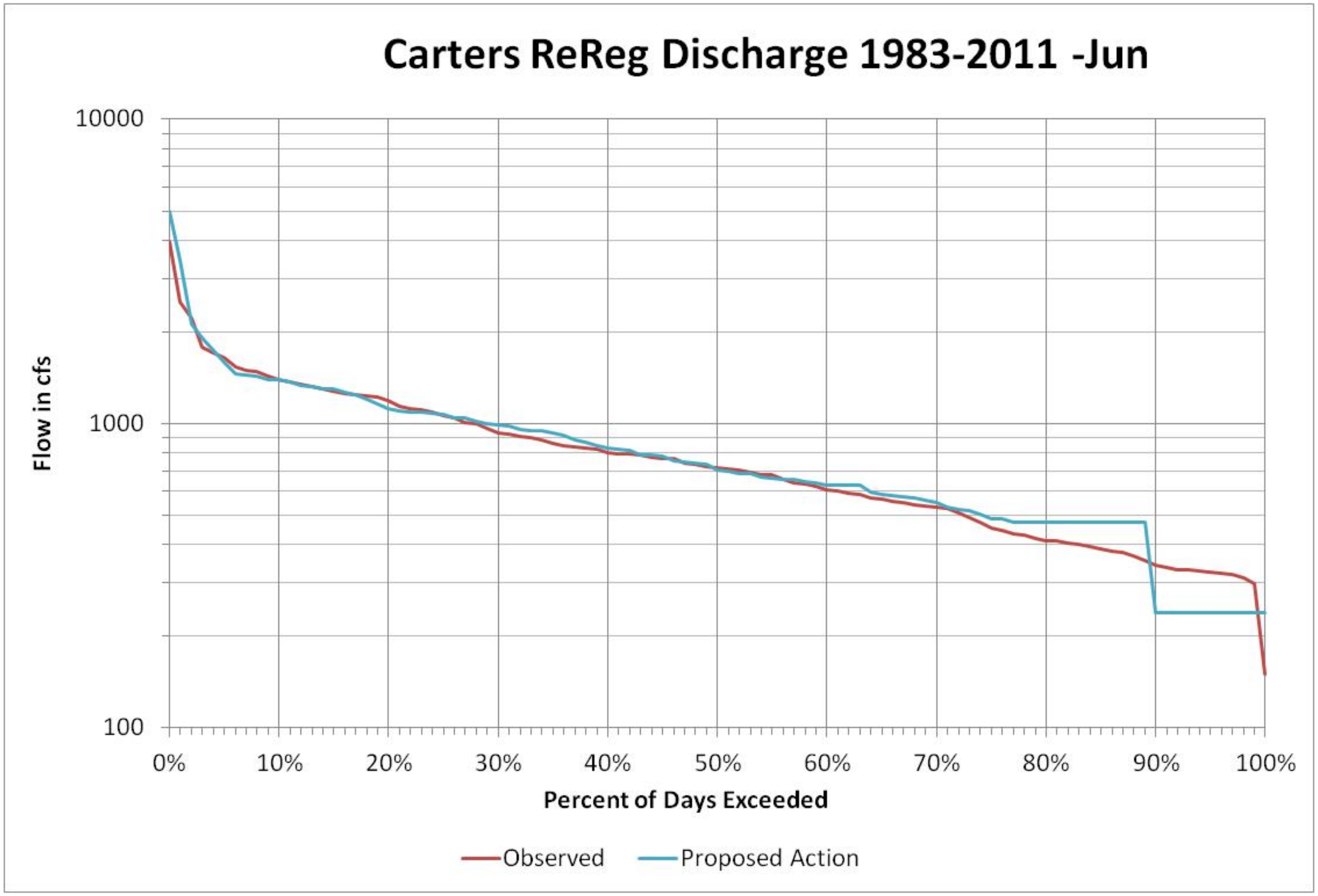

Figure 22. Comparison of Observed Data and Modeled Proposed Action for Average June Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

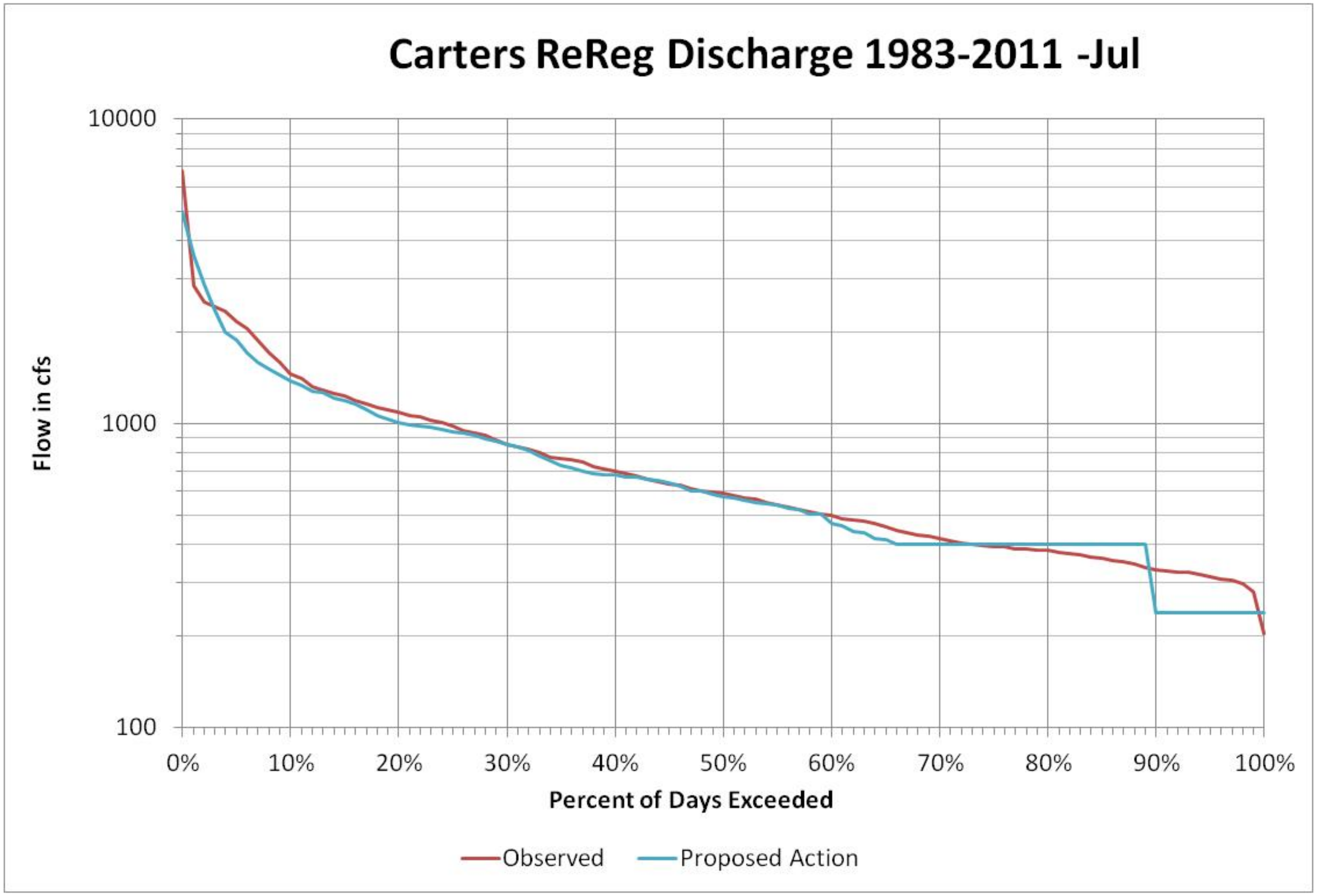

Figure 23. Comparison of Observed Data and Modeled Proposed Action for Average July Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

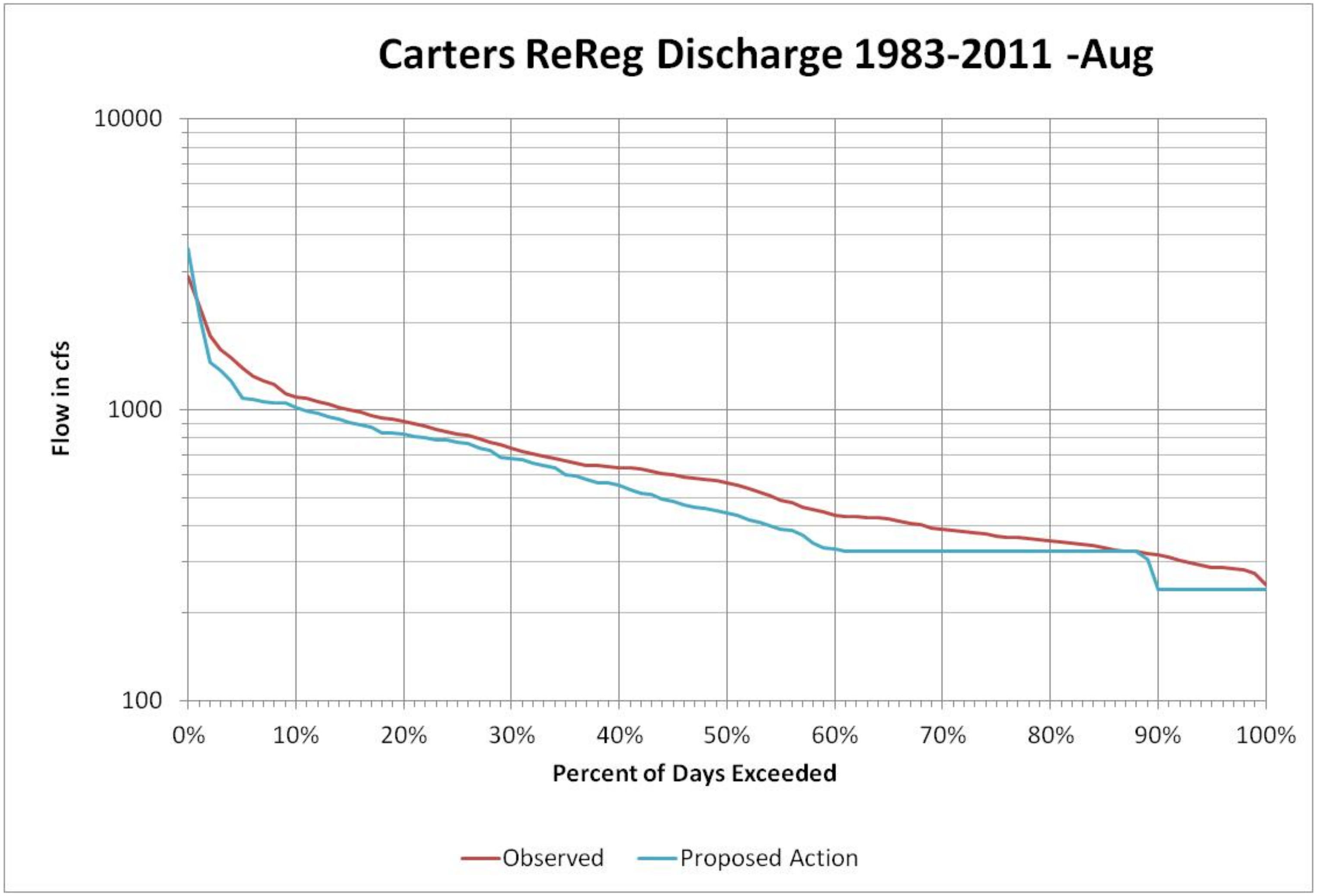

Figure 24. Comparison of Observed Data and Modeled Proposed Action for Average August Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

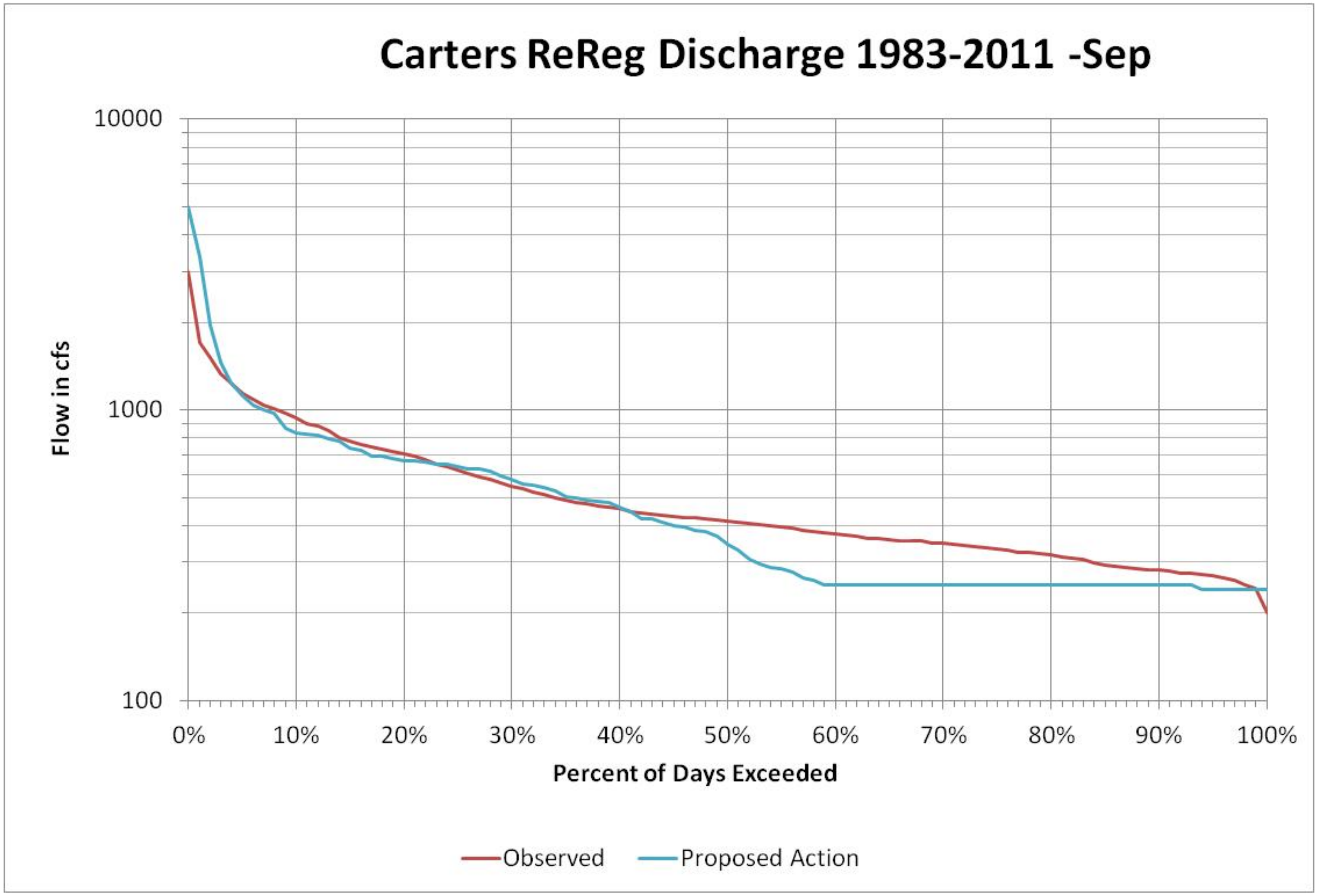

Figure 25. Comparison of Observed Data and Modeled Proposed Action for Average September Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

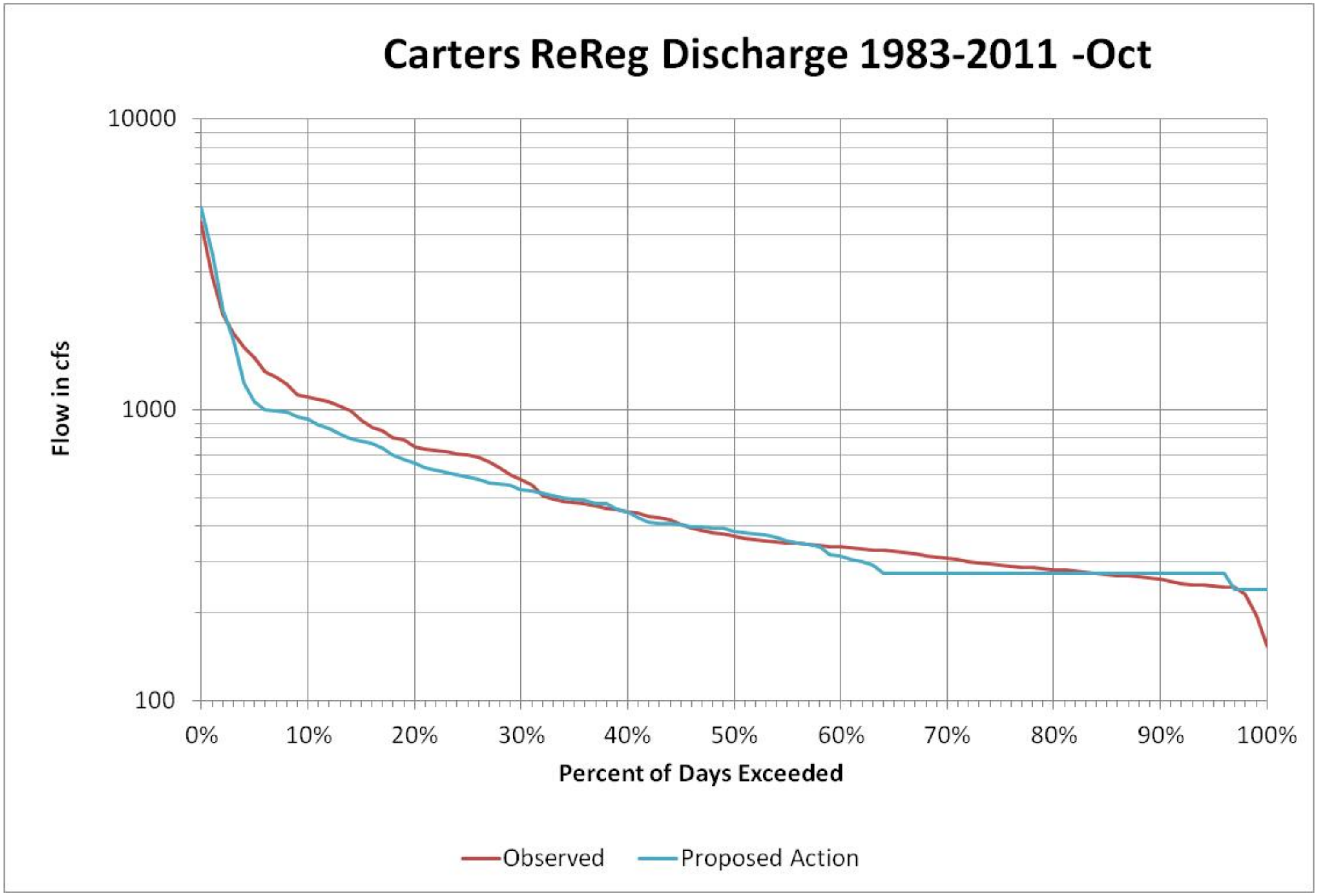

Figure 26. Comparison of Observed Data and Modeled Proposed Action for Average October Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

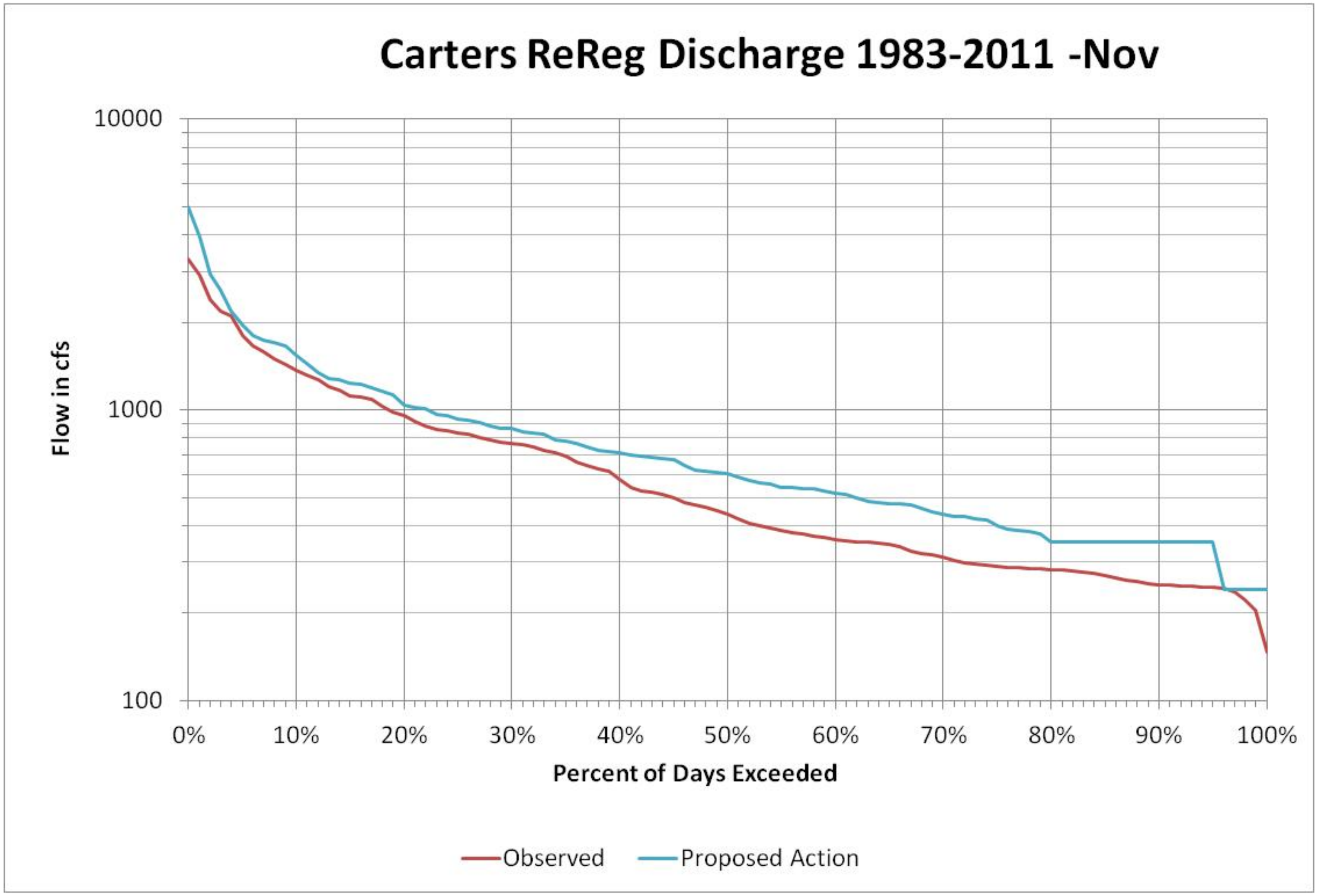

Figure 27. Comparison of Observed Data and Modeled Proposed Action for Average November Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

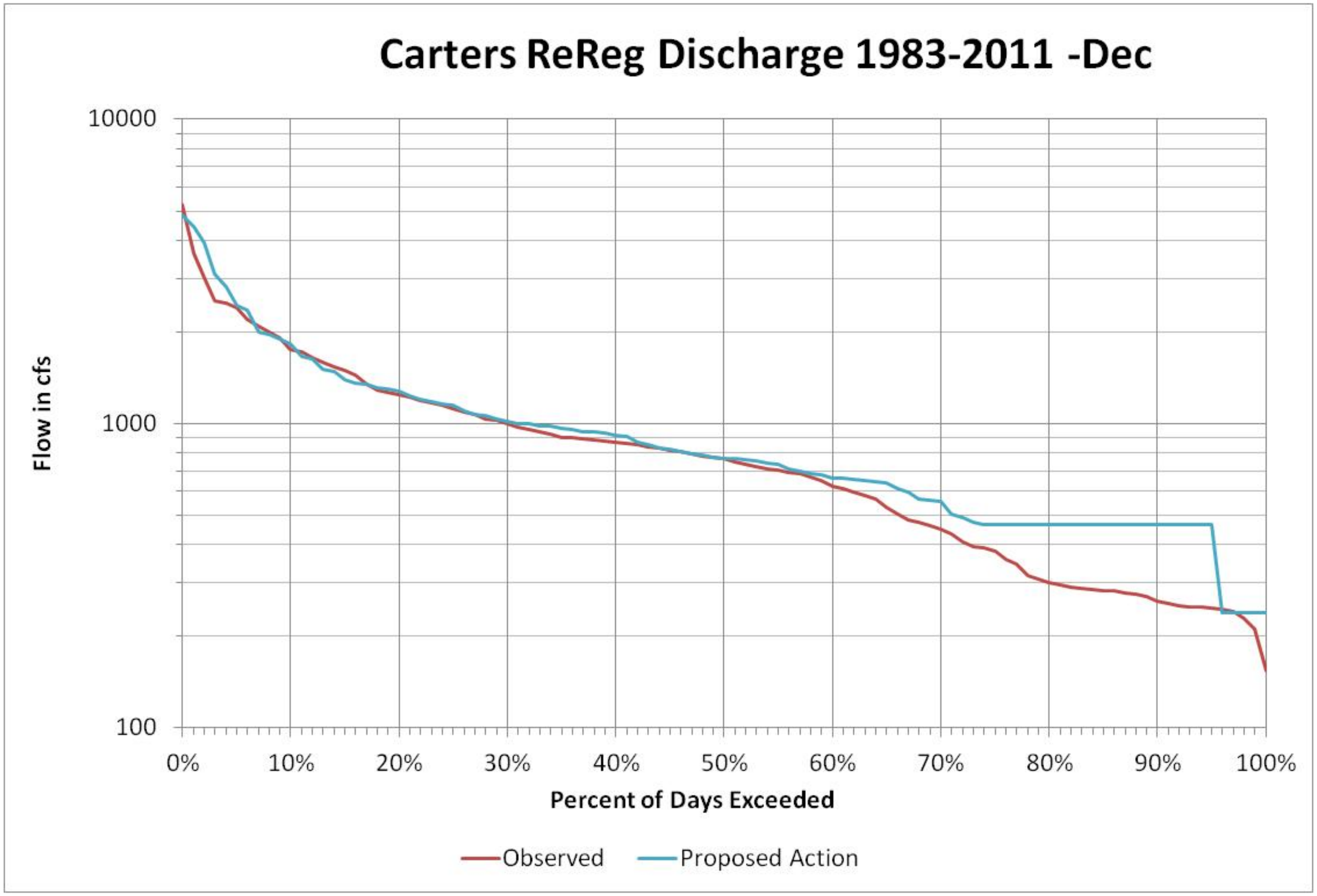

Figure 28. Comparison of Observed Data and Modeled Proposed Action for Average December Flow Duration in Percent Days Exceeded at the Carters ReRegulation Dam Tailrace, years 1983-2011.

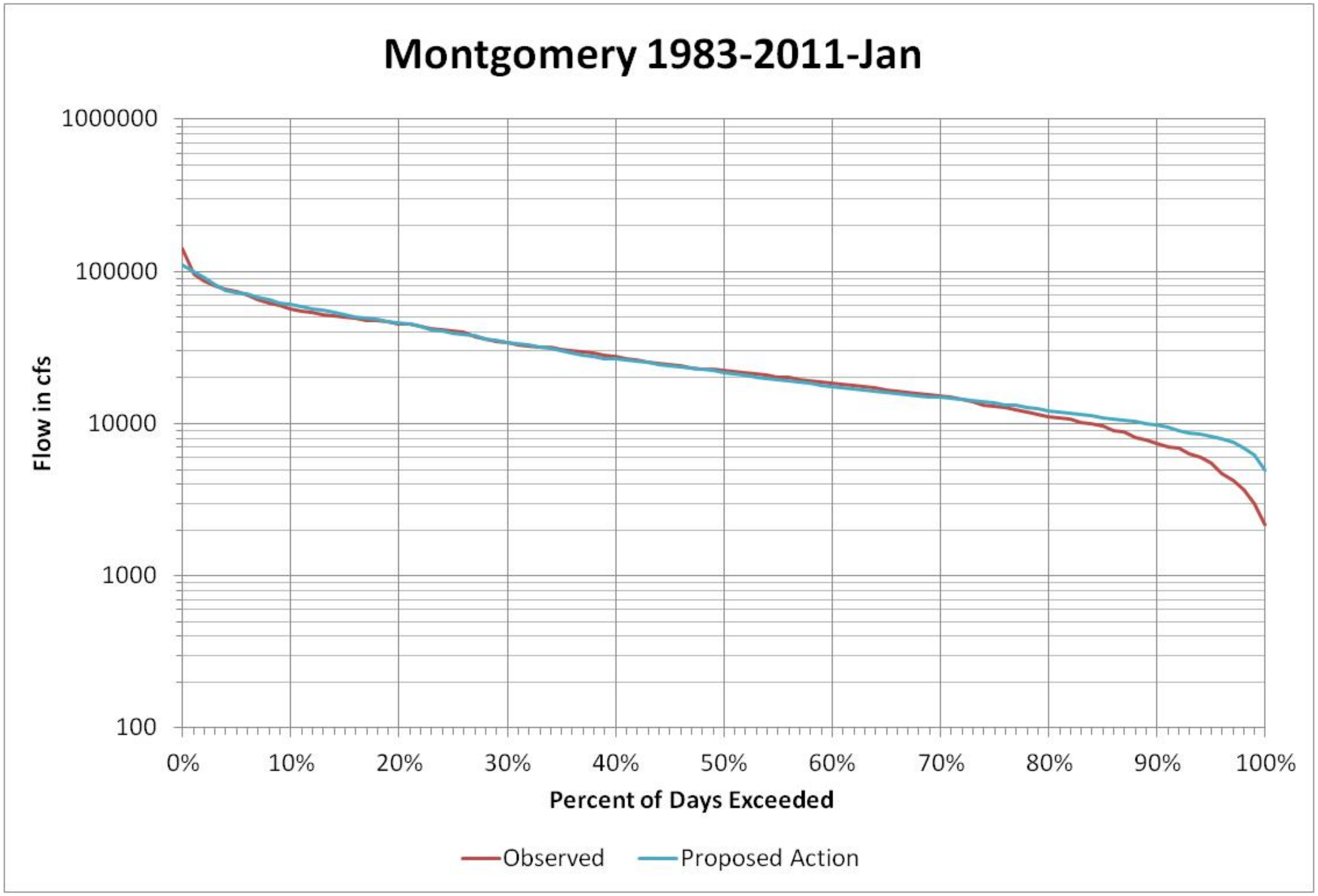

Figure 29. Comparison of Observed Data and Modeled Proposed Action for Average January Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

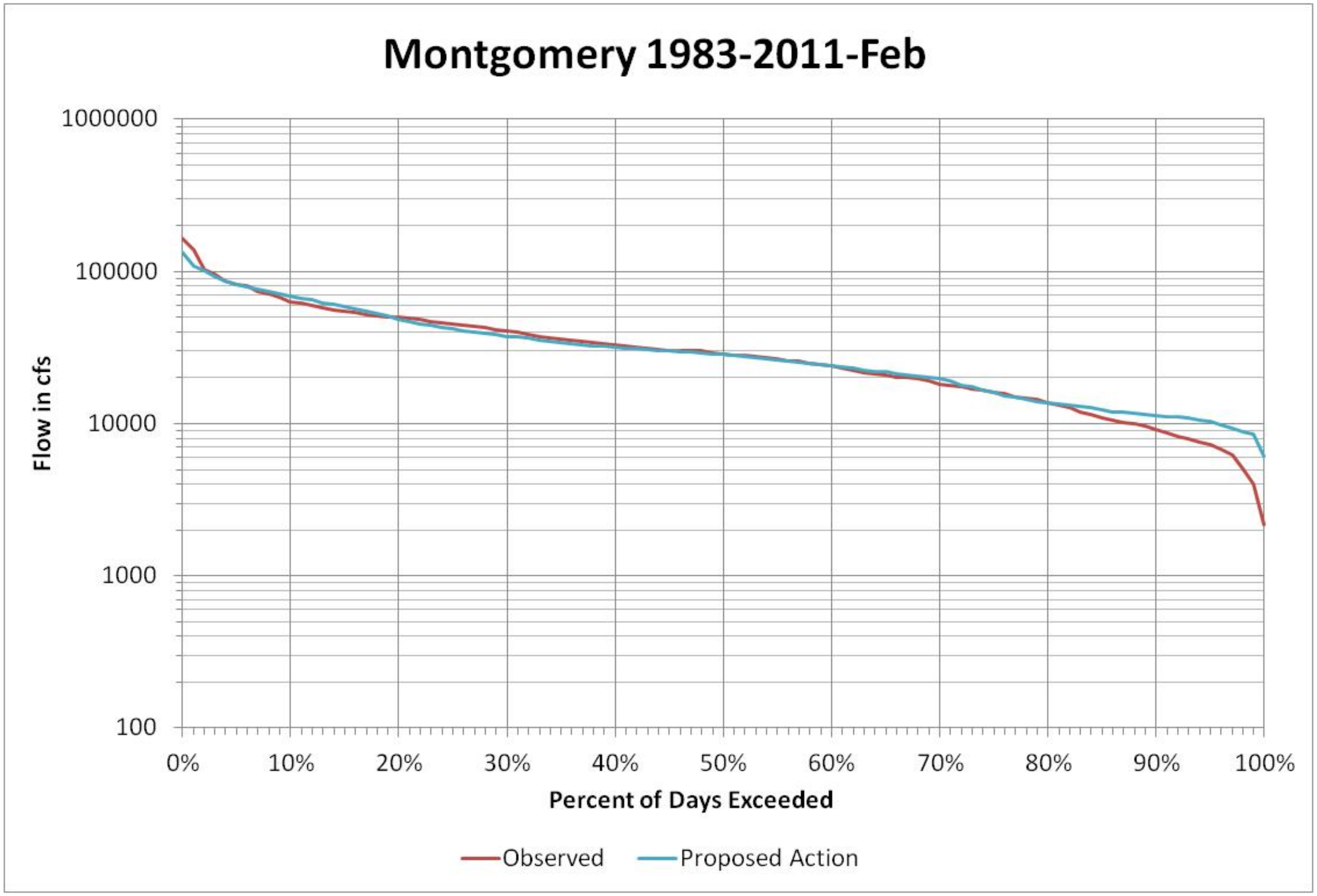

Figure 30. Comparison of Observed Data and Modeled Proposed Action for Average February Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

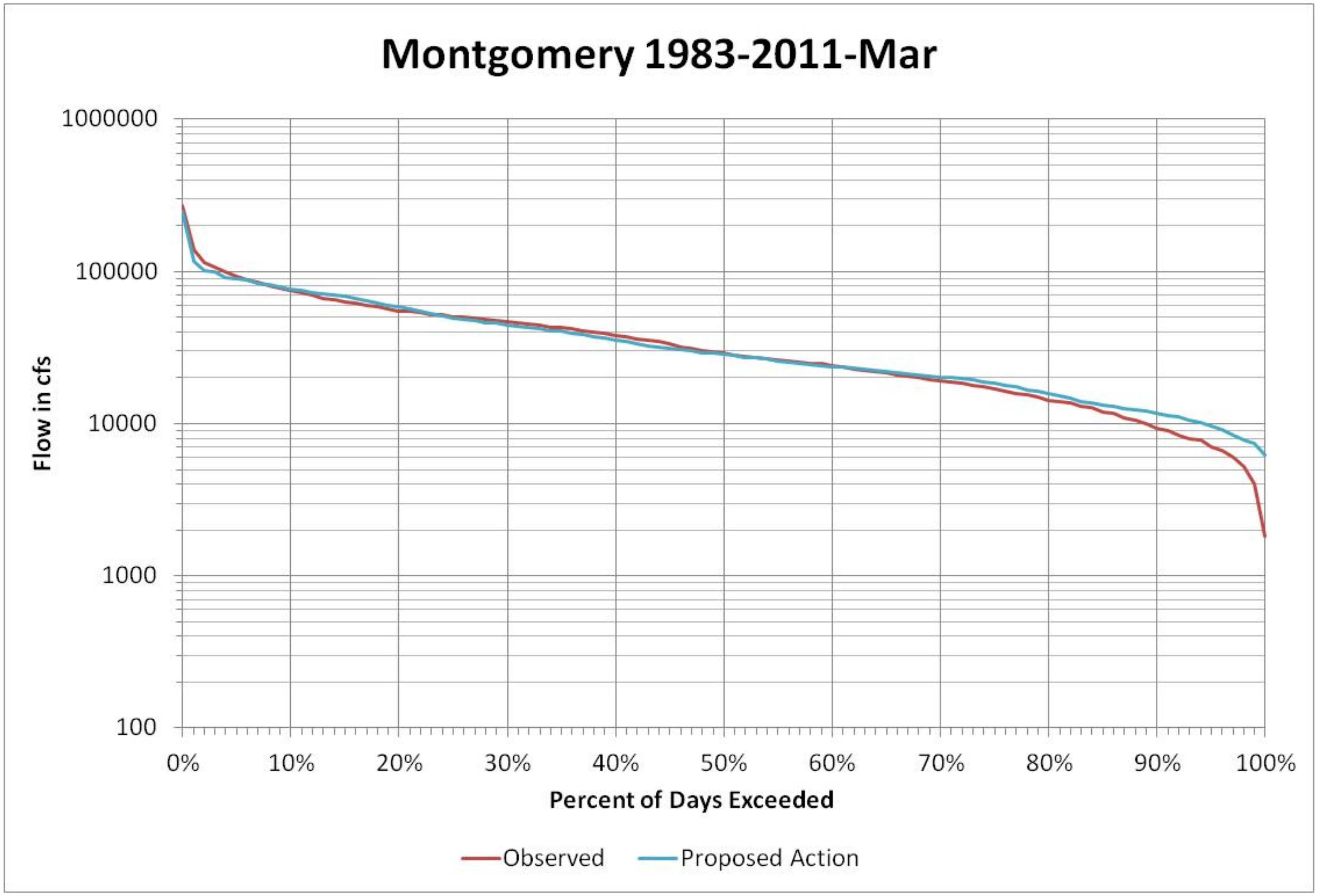

Figure 31. Comparison of Observed Data and Modeled Proposed Action for Average March Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

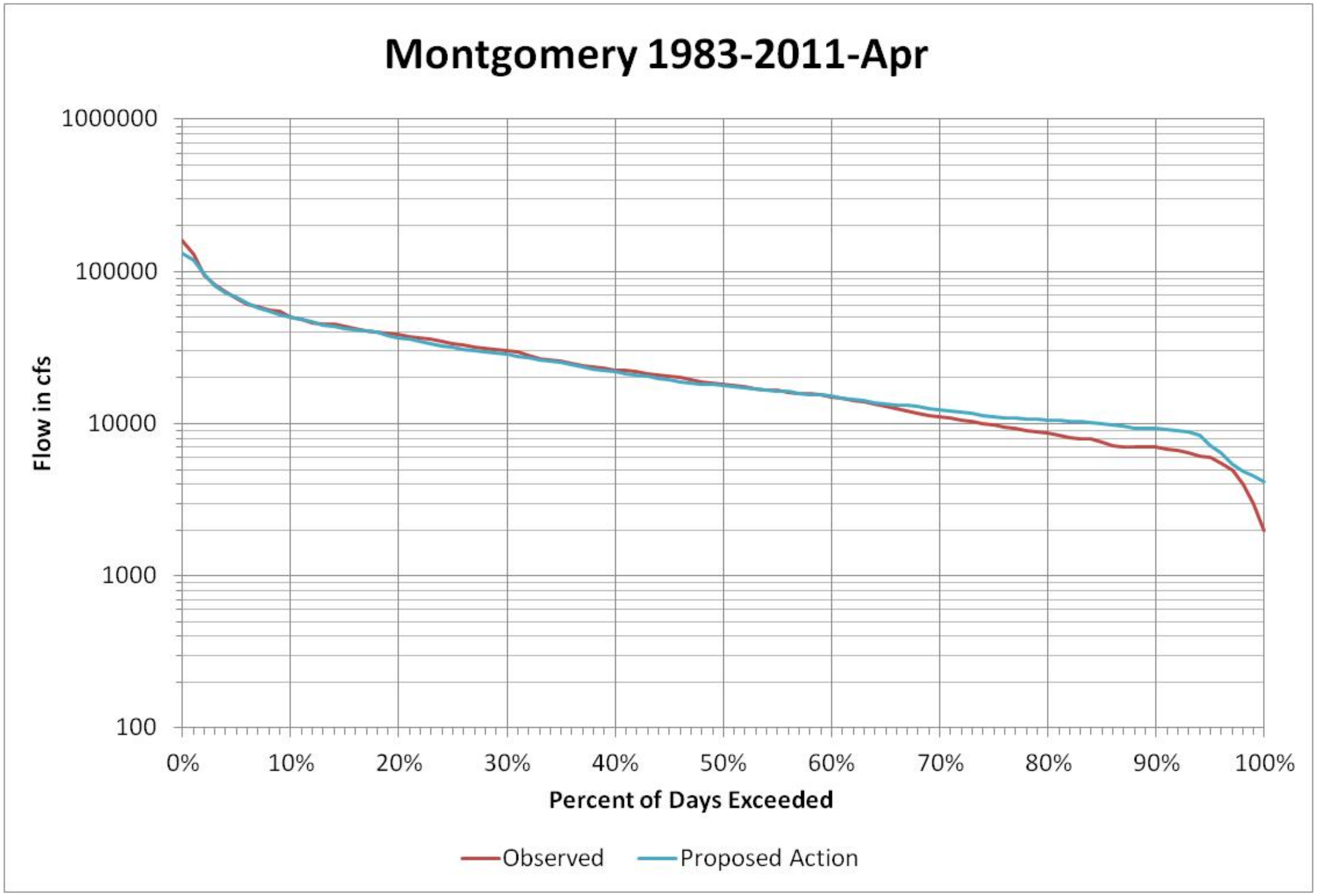

Figure 32. Comparison of Observed Data and Modeled Proposed Action for Average April Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

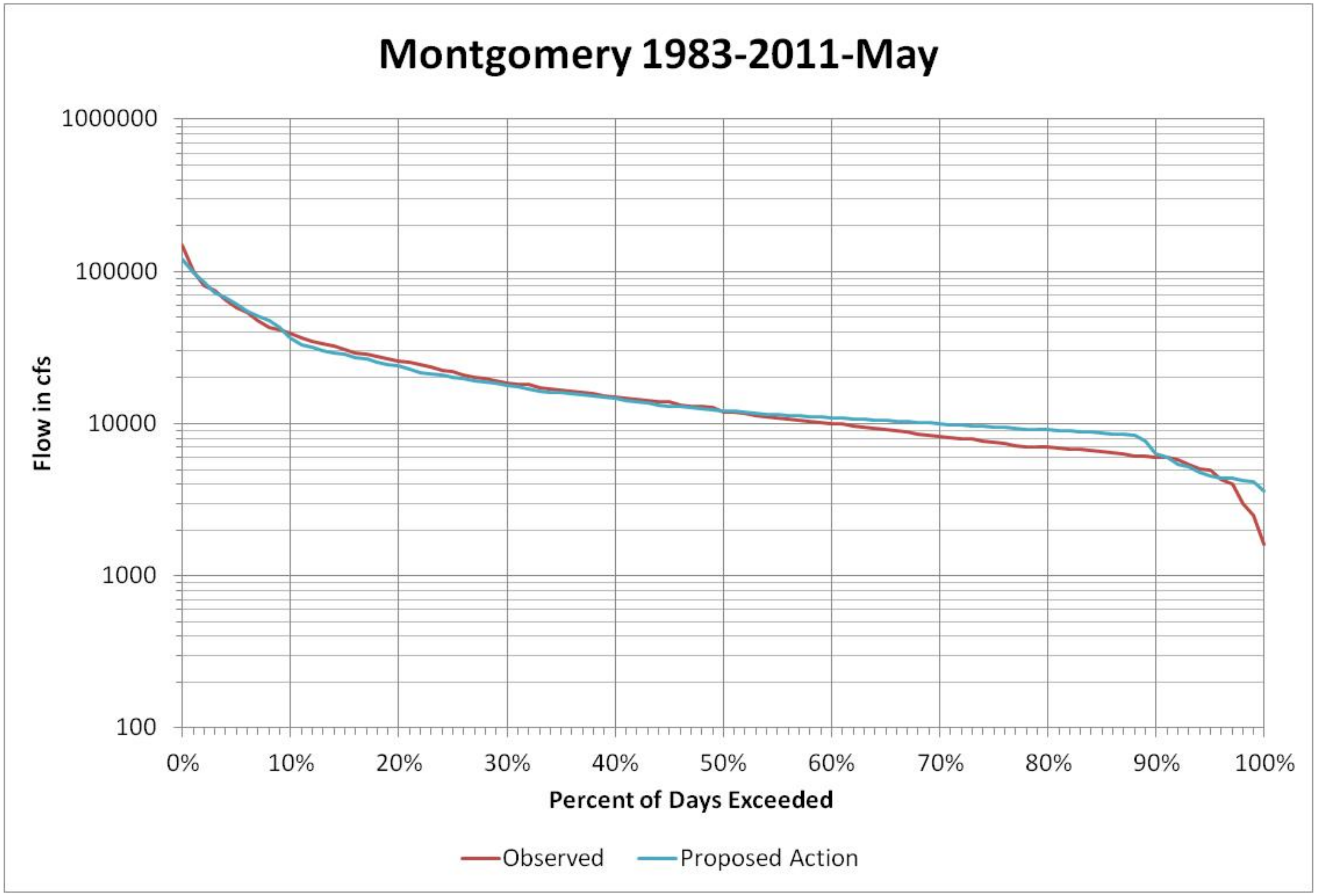

Figure 33. Comparison of Observed Data and Modeled Proposed Action for Average May Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

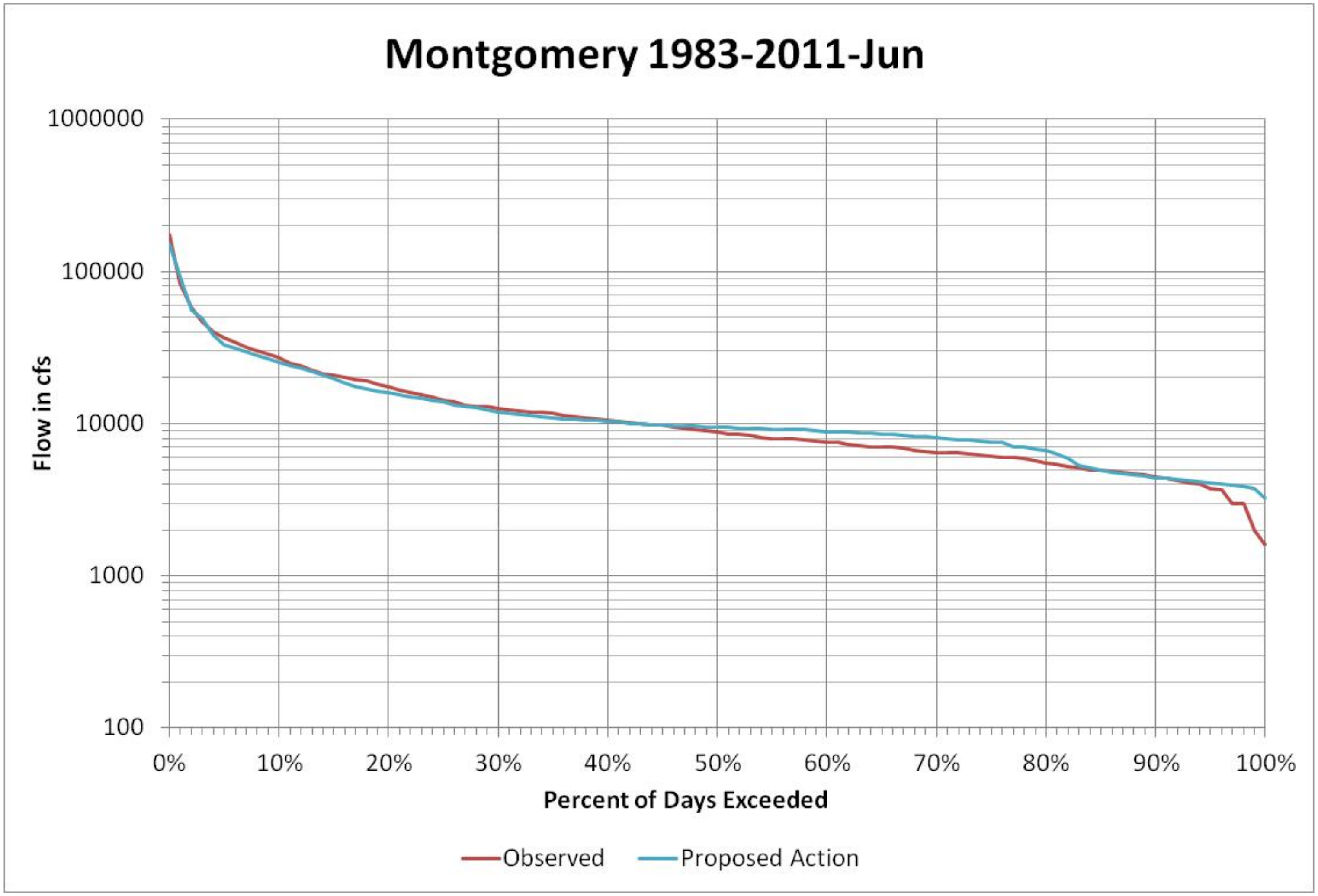

Figure 34. Comparison of Observed Data and Modeled Proposed Action for Average June Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

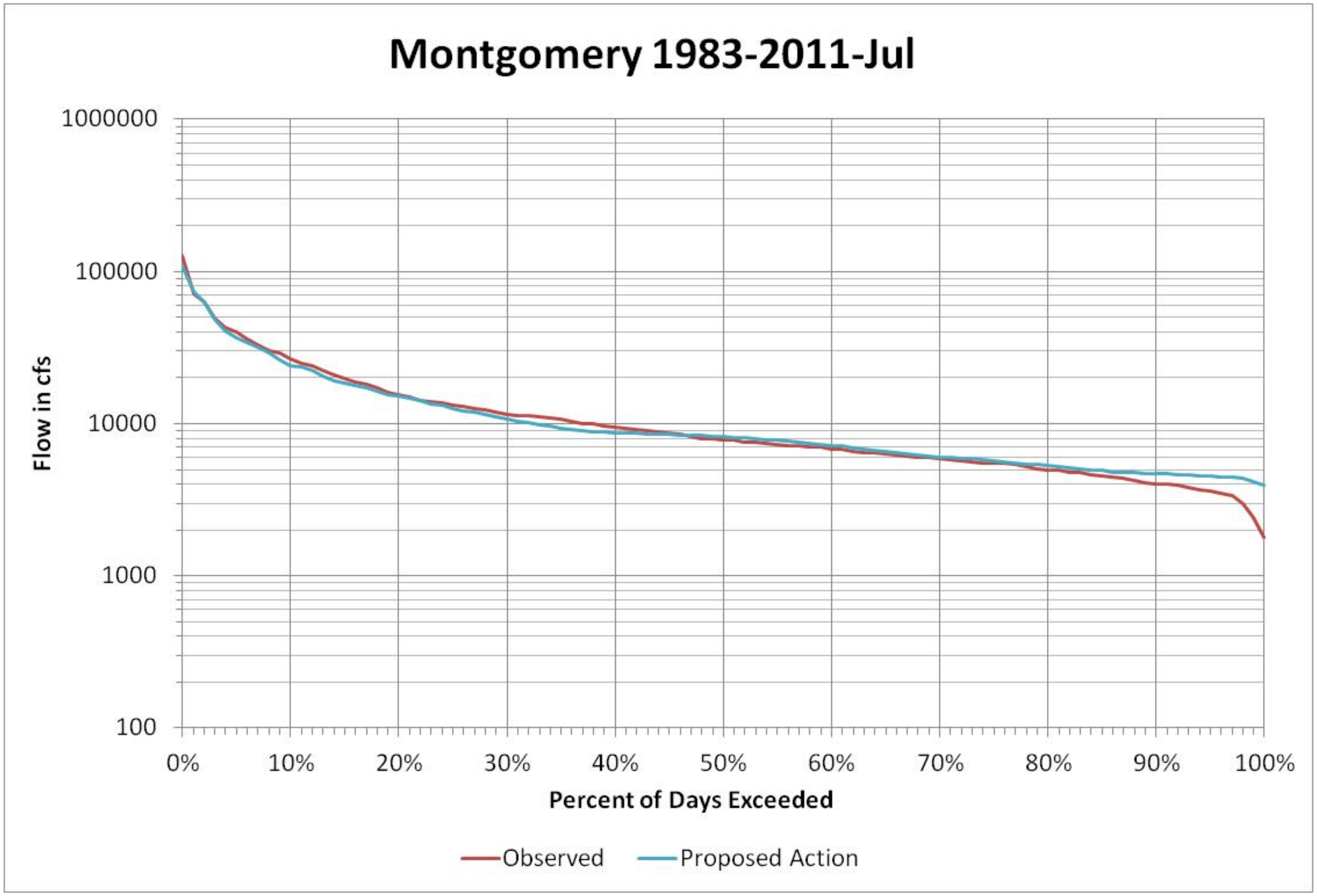

Figure 35. Comparison of Observed Data and Modeled Proposed Action for Average July Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

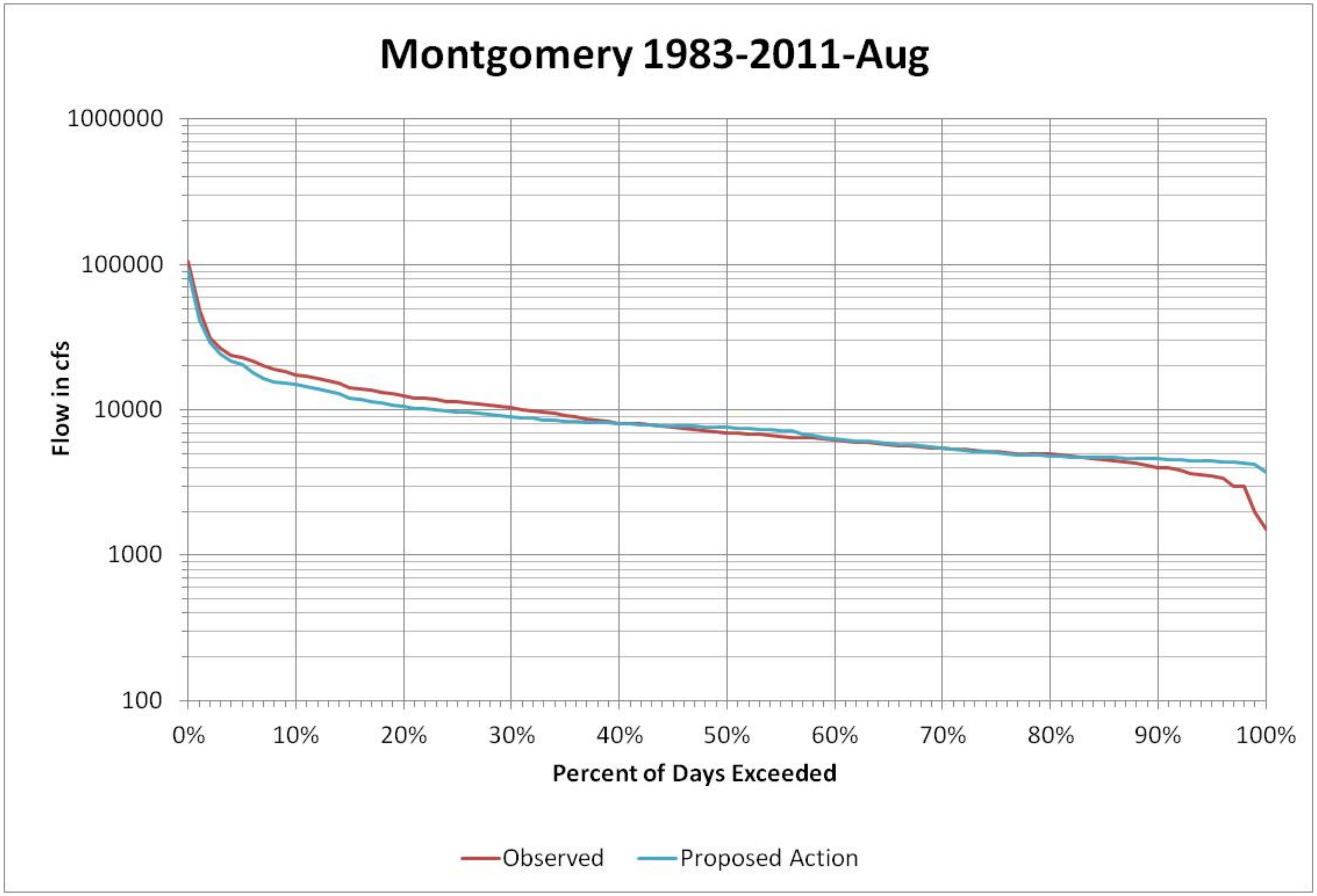

Figure 36. Comparison of Observed Data and Modeled Proposed Action for Average August Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

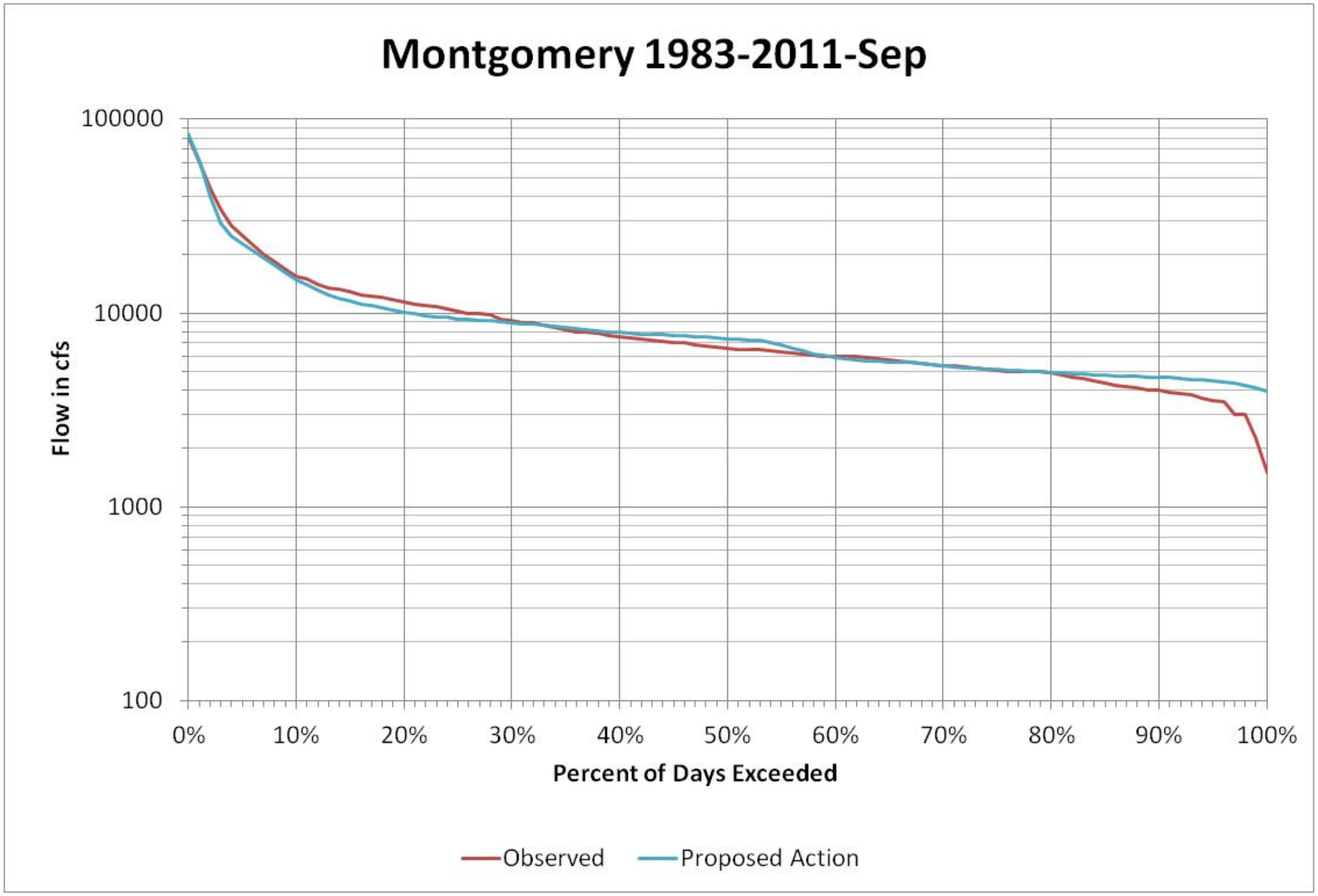

Figure 37. Comparison of Observed Data and Modeled Proposed Action for Average September Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

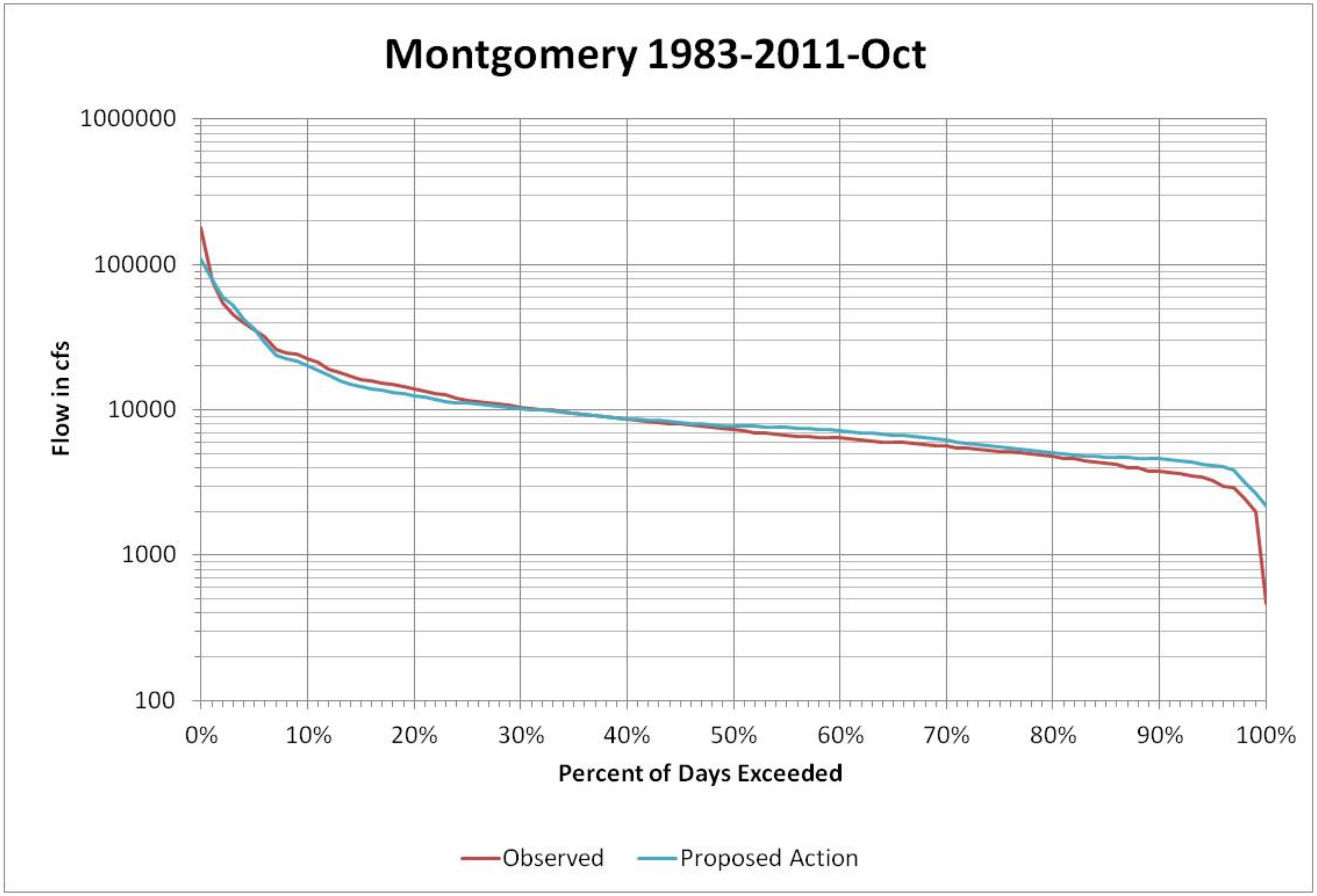

Figure 38. Comparison of Observed Data and Modeled Proposed Action for Average October Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

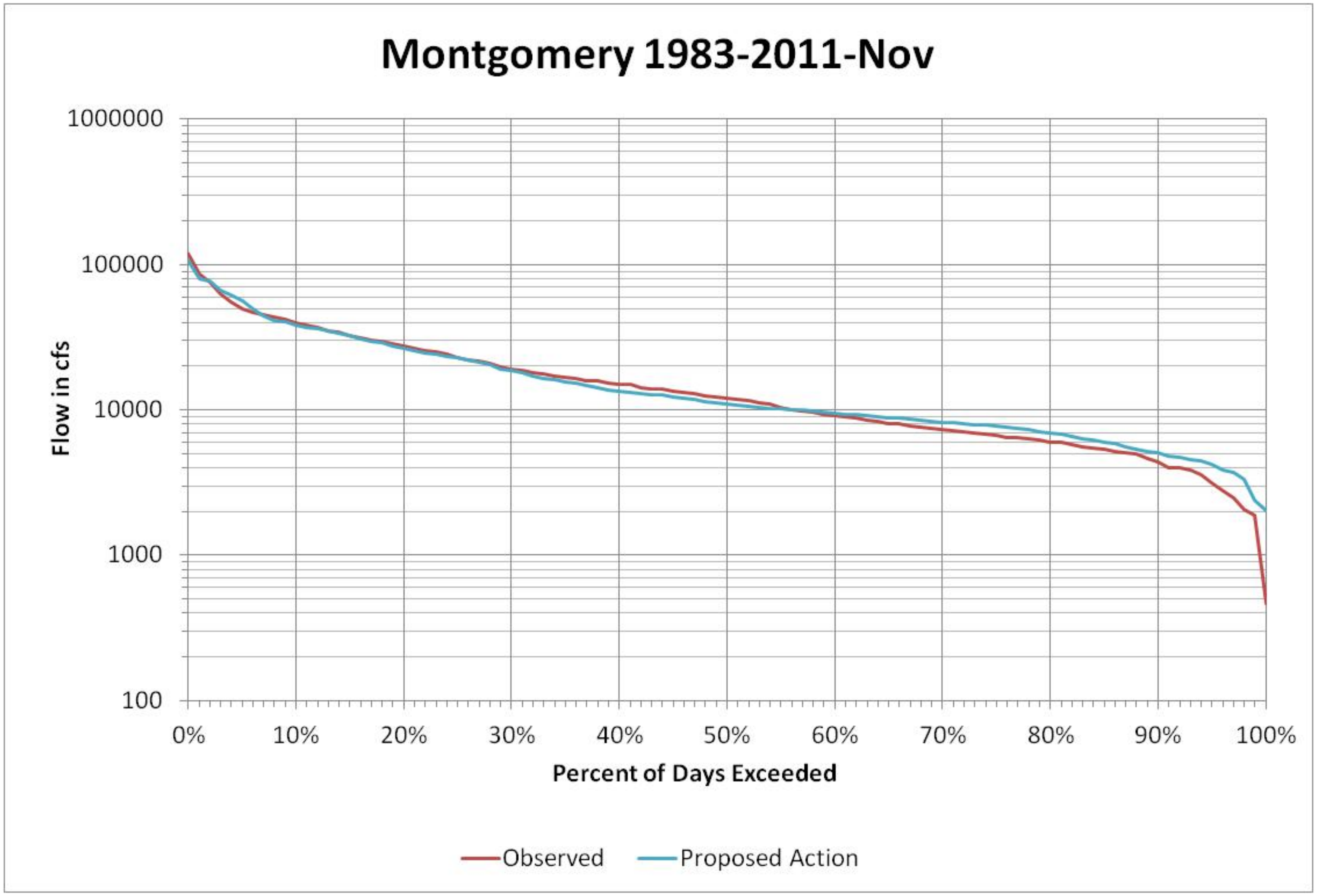

Figure 39. Comparison of Observed Data and Modeled Proposed Action for Average November Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

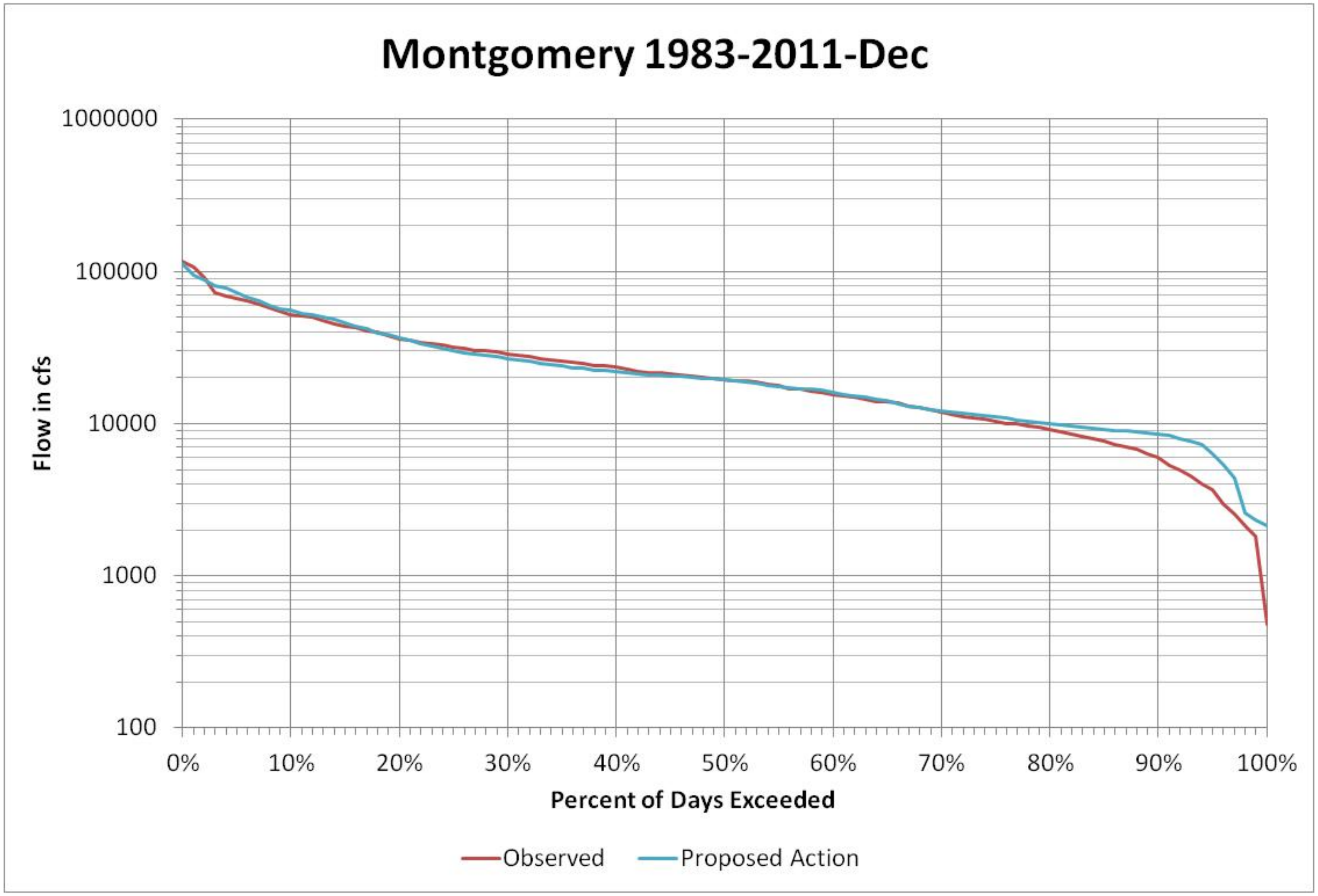

Figure 40. Comparison of Observed Data and Modeled Proposed Action for Average December Flow Duration in Percent Days Exceeded at Montgomery, years 1983-2011.

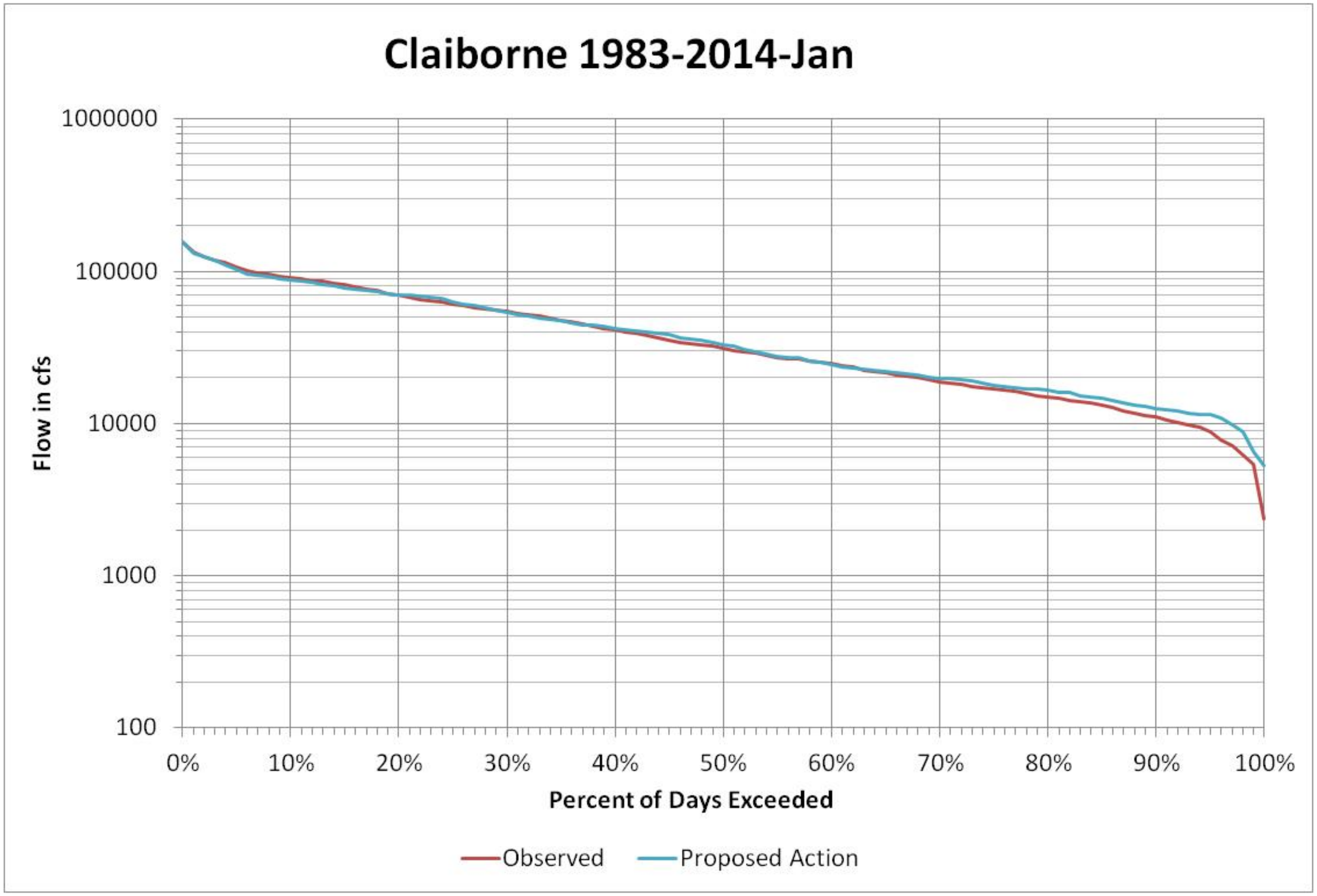

Figure 41. Comparison of Observed Data and Modeled Proposed Action for Average January Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

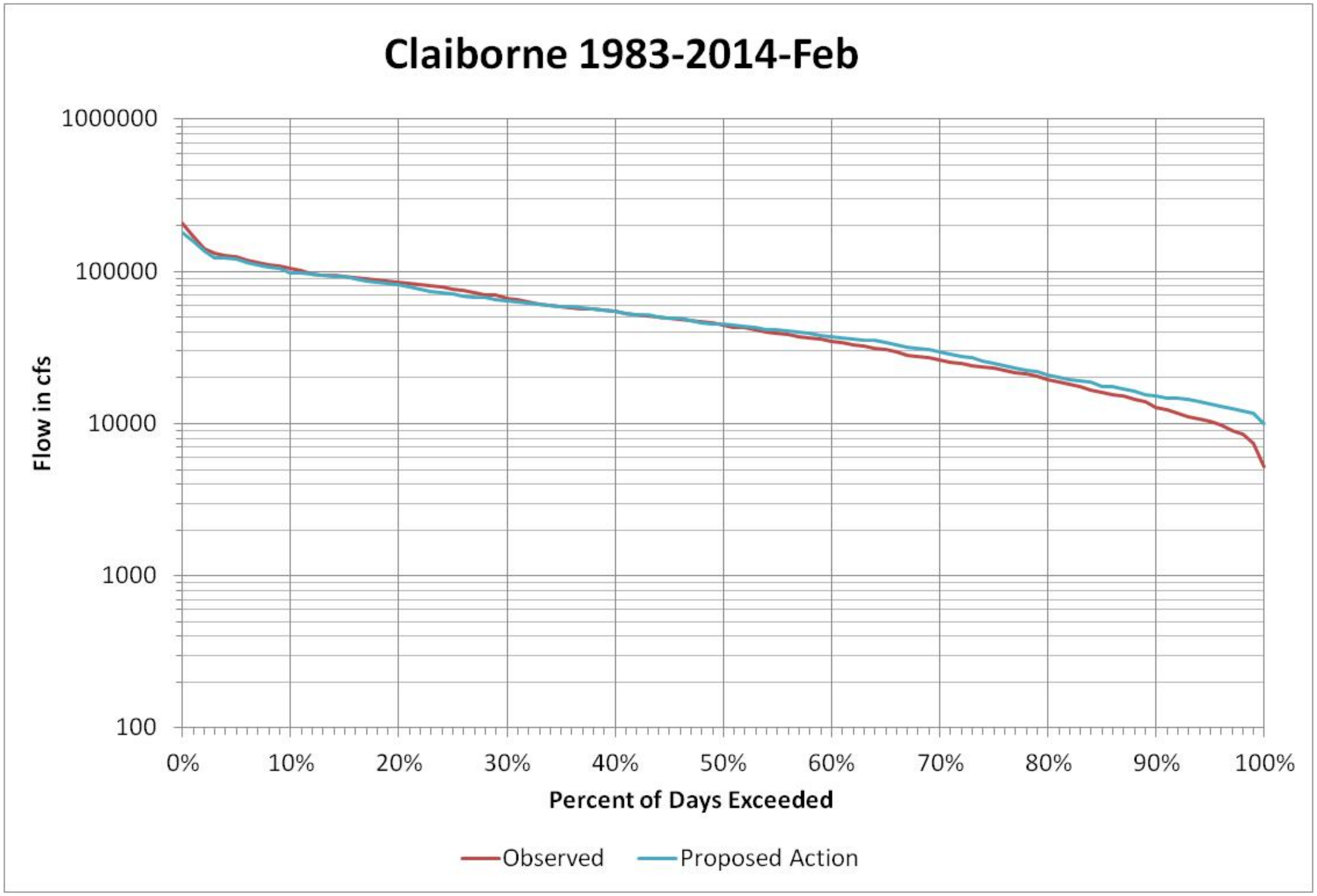

Figure 42. Comparison of Observed Data and Modeled Proposed Action for Average February Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

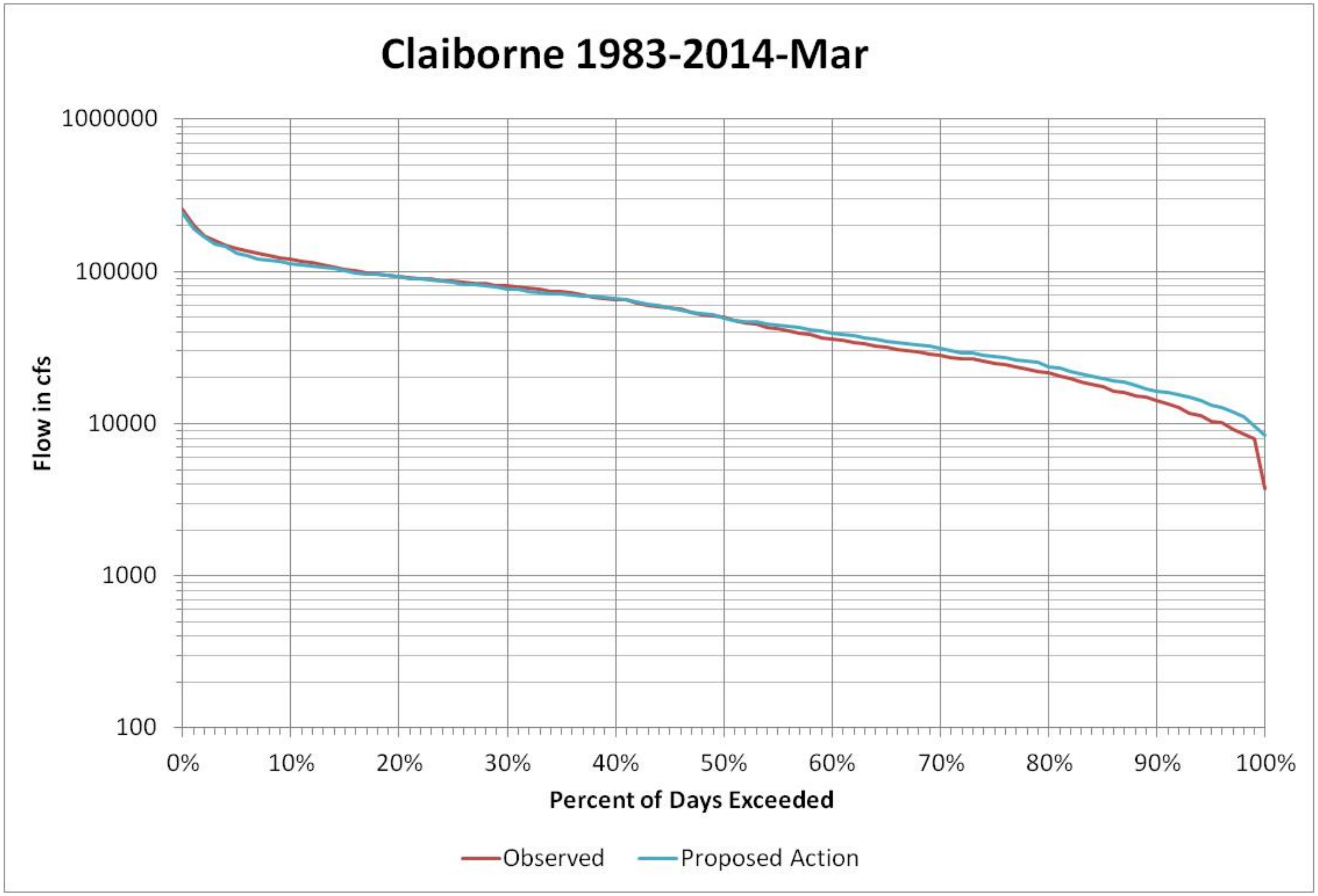

Figure 43. Comparison of Observed Data and Modeled Proposed Action for Average March Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

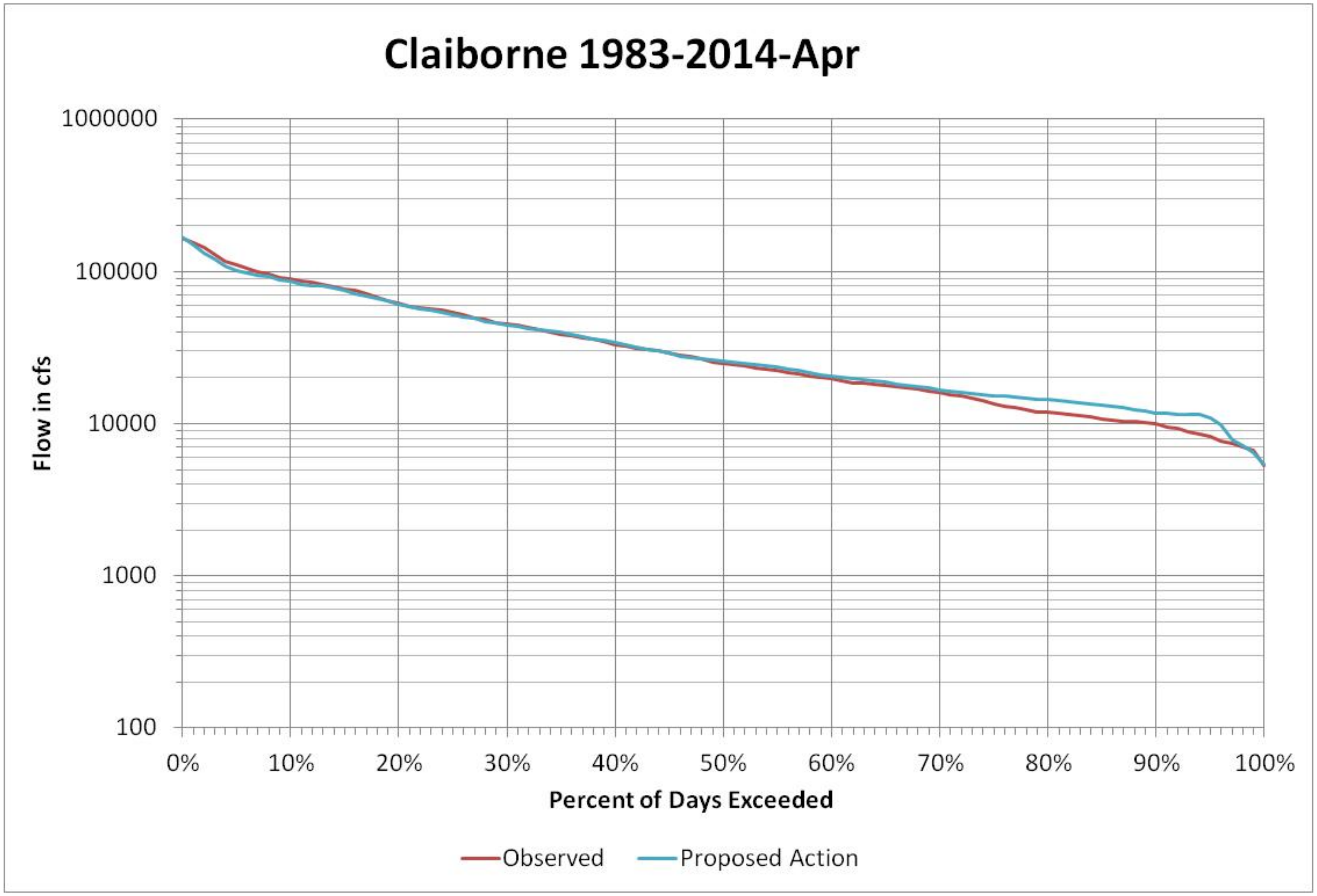

Figure 44. Comparison of Observed Data and Modeled Proposed Action for Average April Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

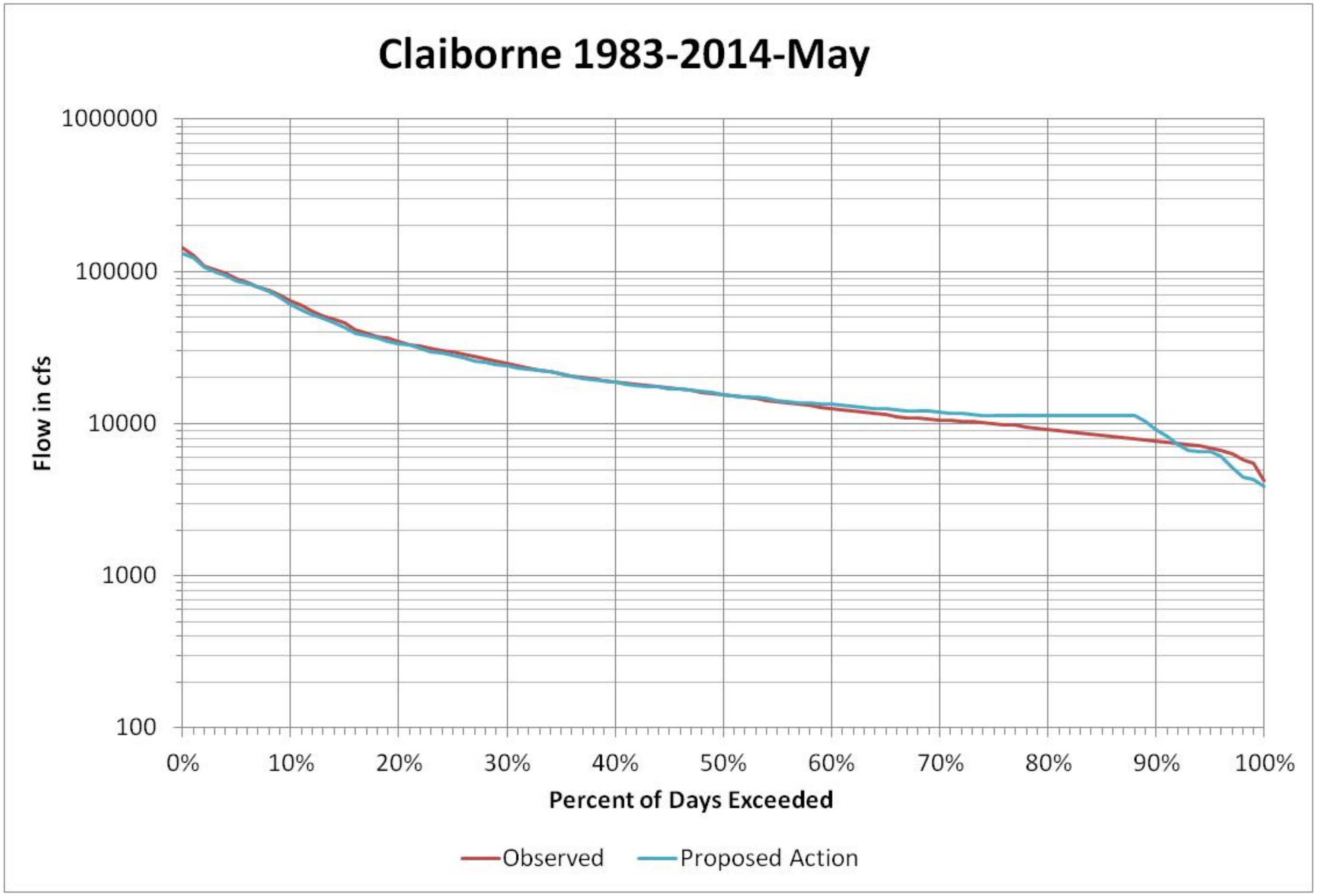

Figure 45. Comparison of Observed Data and Modeled Proposed Action for Average May Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

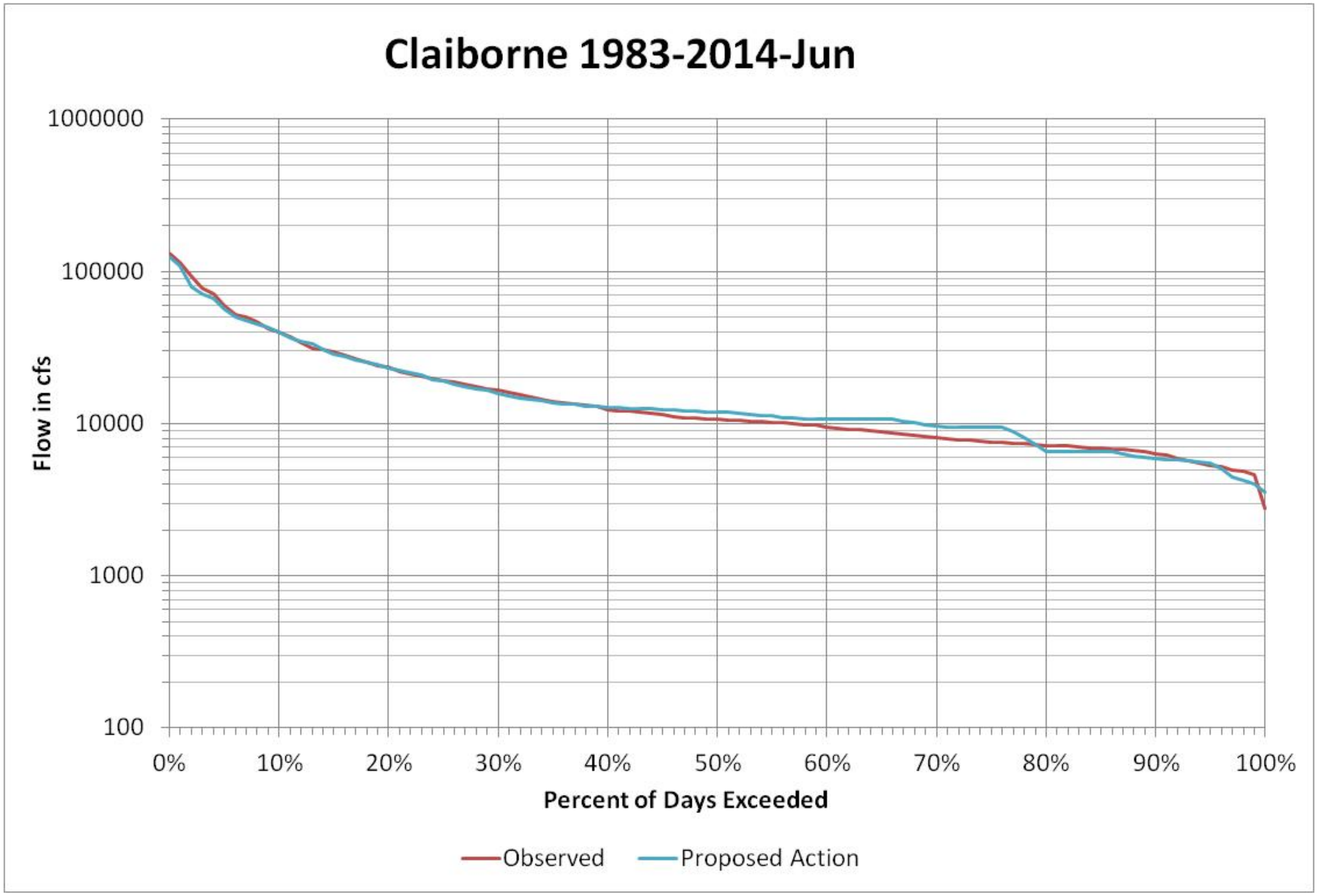

Figure 46. Comparison of Observed Data and Modeled Proposed Action for Average June Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

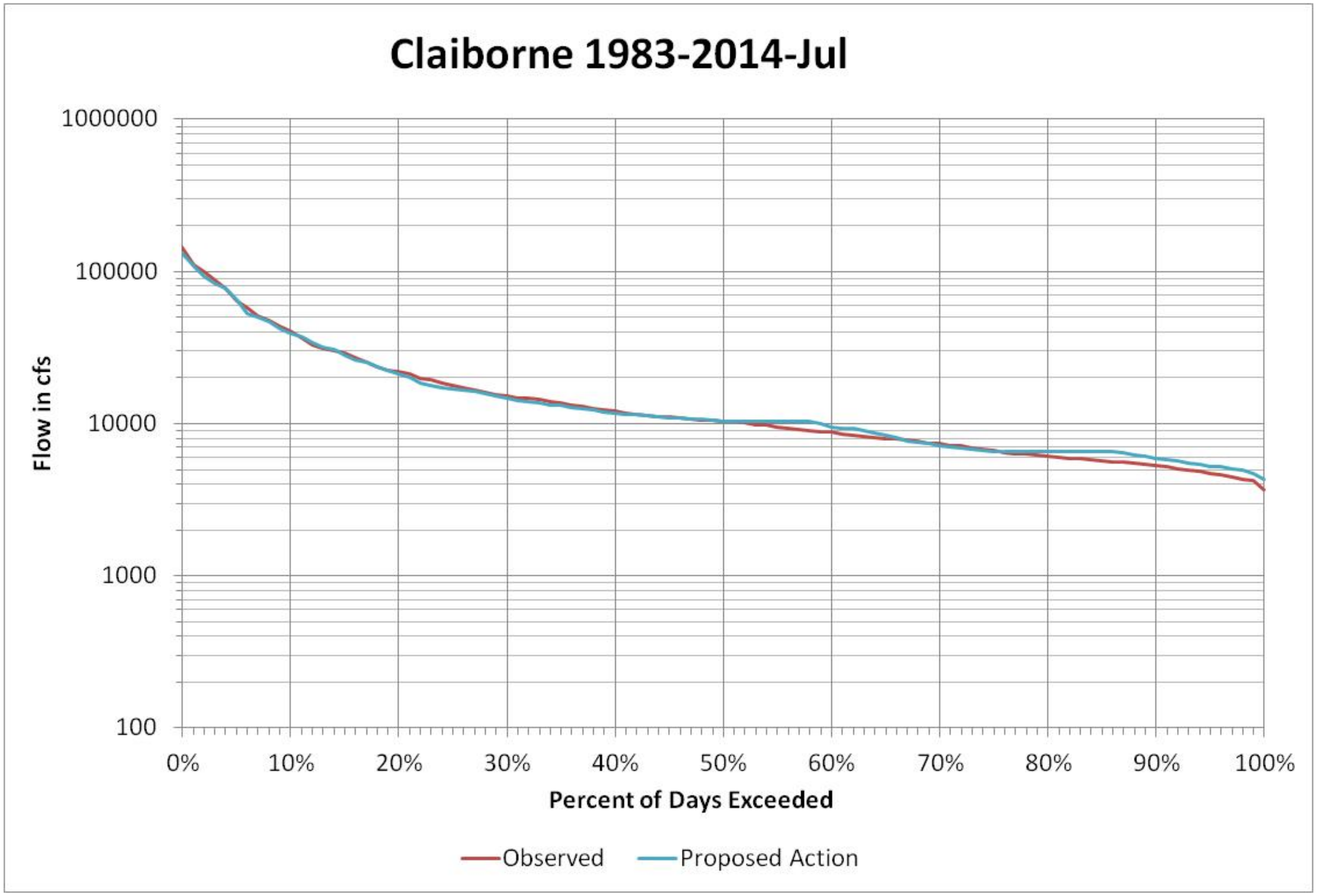

Figure 47. Comparison of Observed Data and Modeled Proposed Action for Average July Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

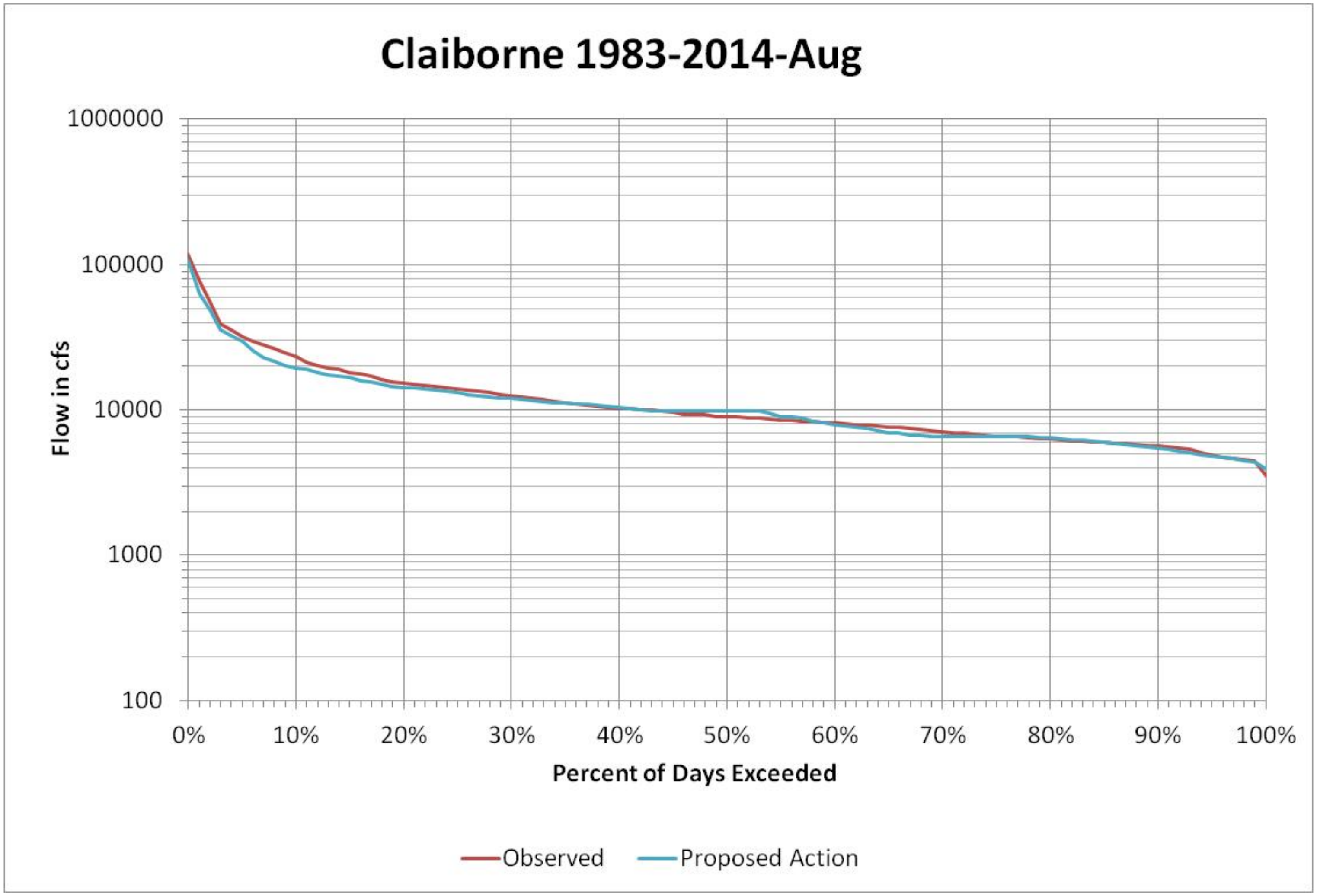

Figure 48. Comparison of Observed Data and Modeled Proposed Action for Average August Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

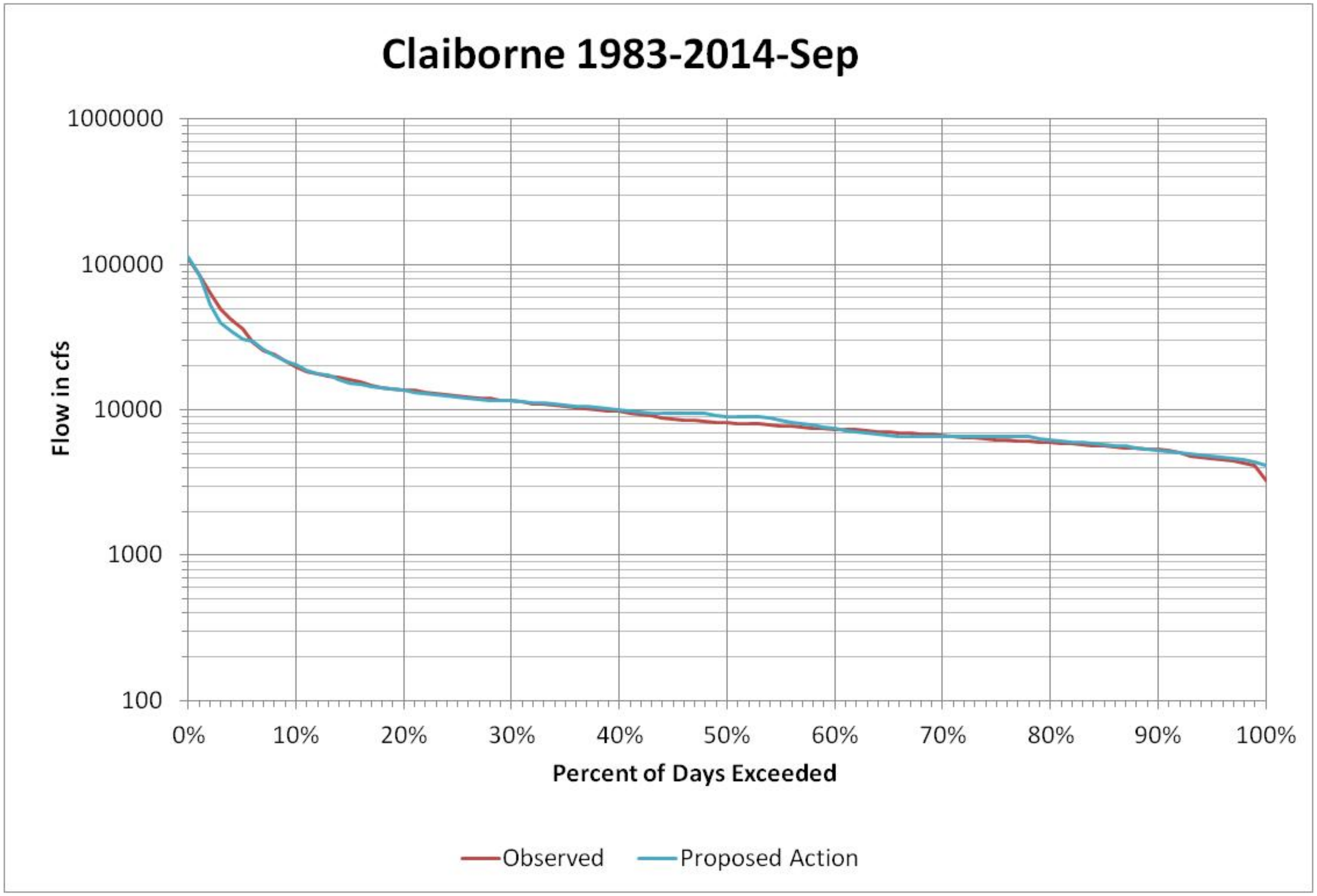

Figure 49. Comparison of Observed Data and Modeled Proposed Action for Average September Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

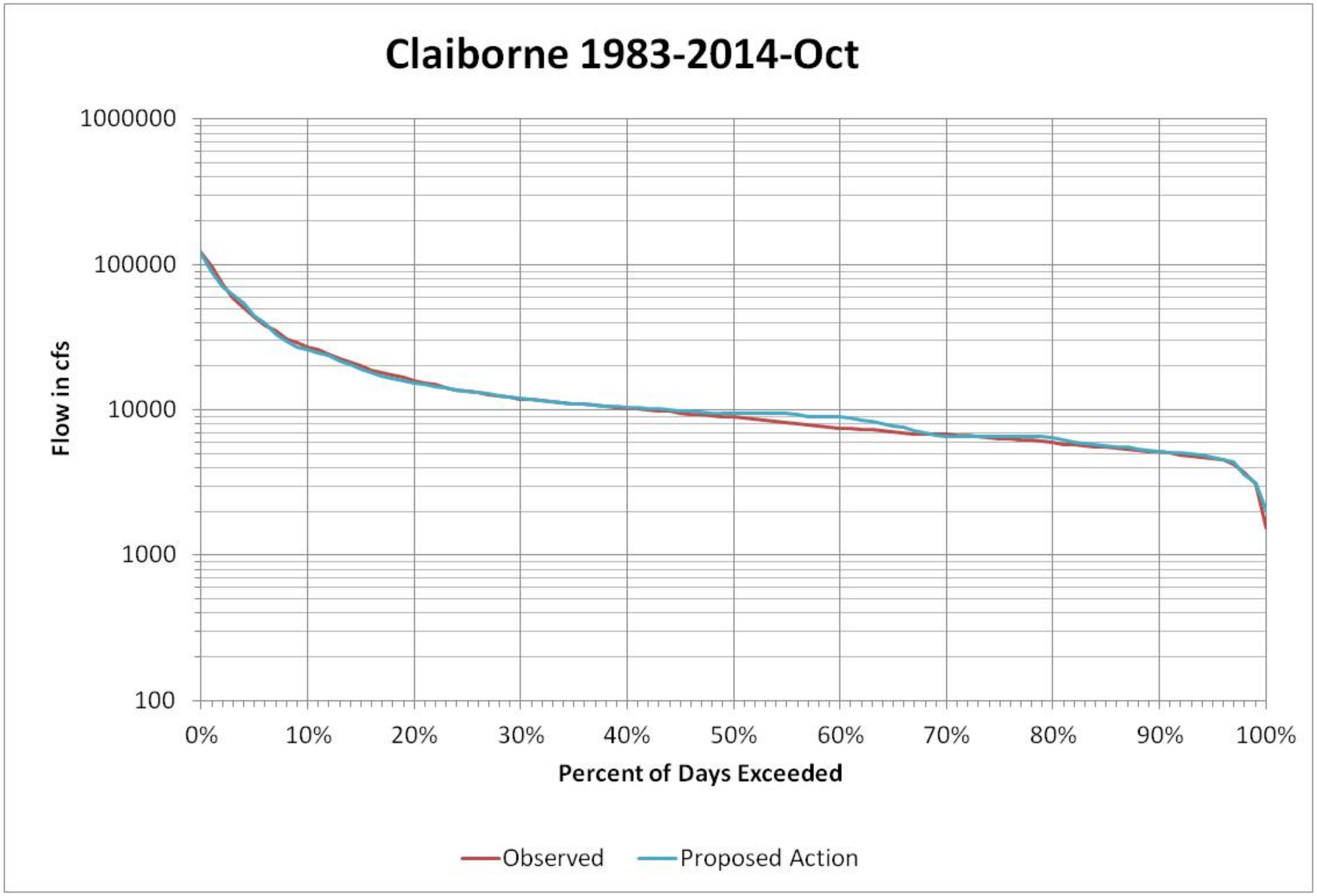

Figure 50. Comparison of Observed Data and Modeled Proposed Action for Average October Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

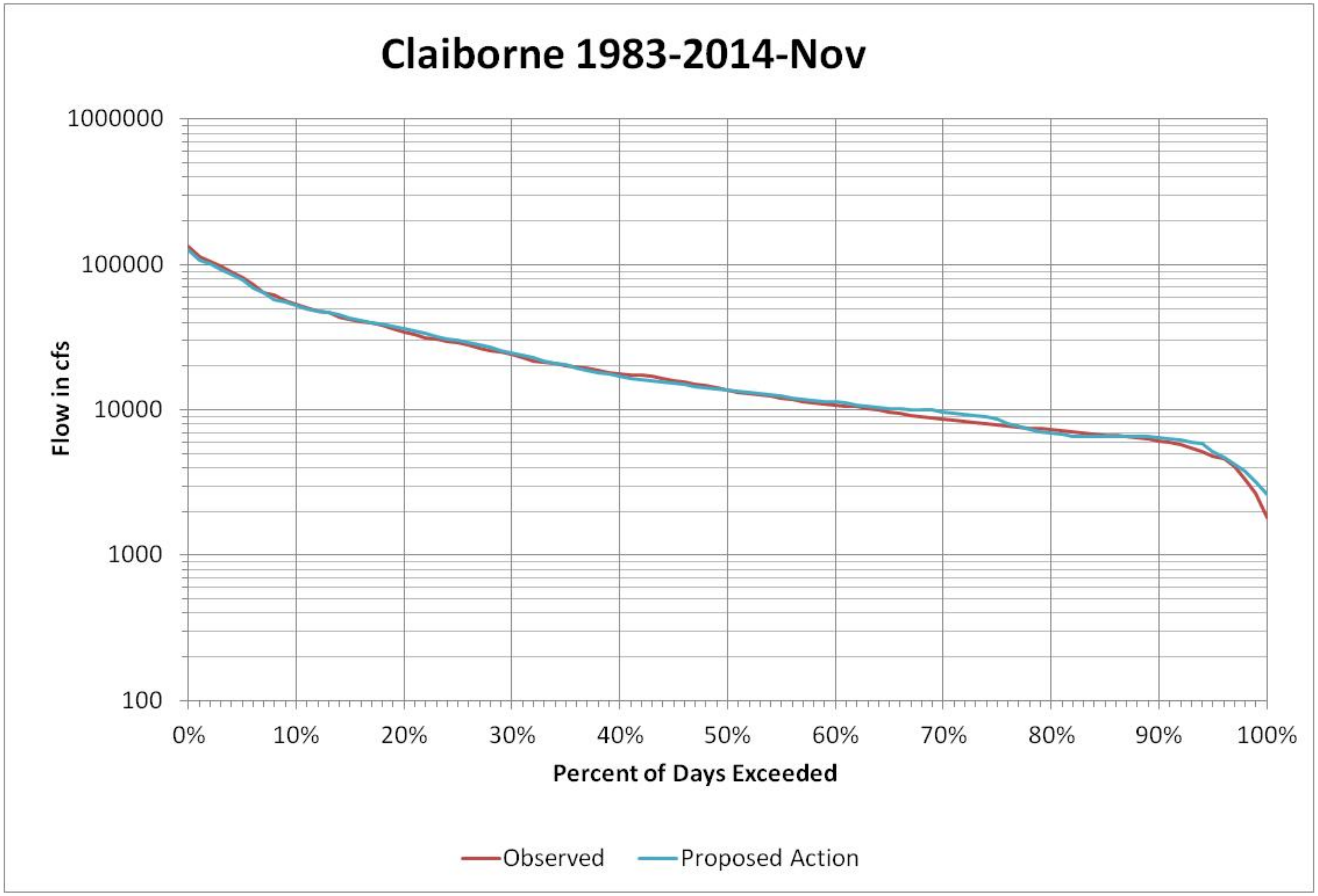

Figure 51. Comparison of Observed Data and Modeled Proposed Action for Average November Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

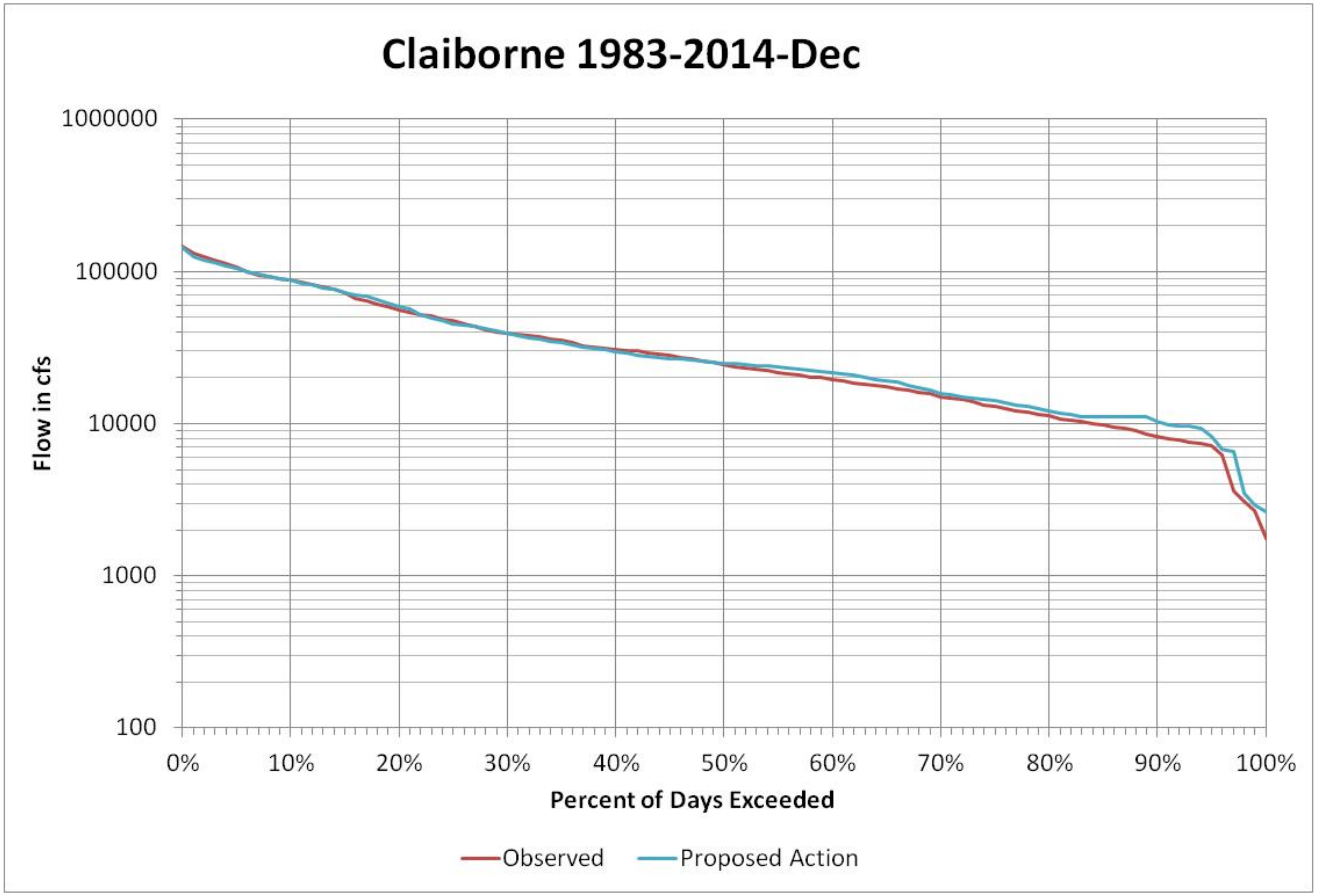

Figure 52. Comparison of Observed Data and Modeled Proposed Action for Average December Flow Duration in Percent Days Exceeded at the Claiborne Dam Tailrace, years 1983-2011.

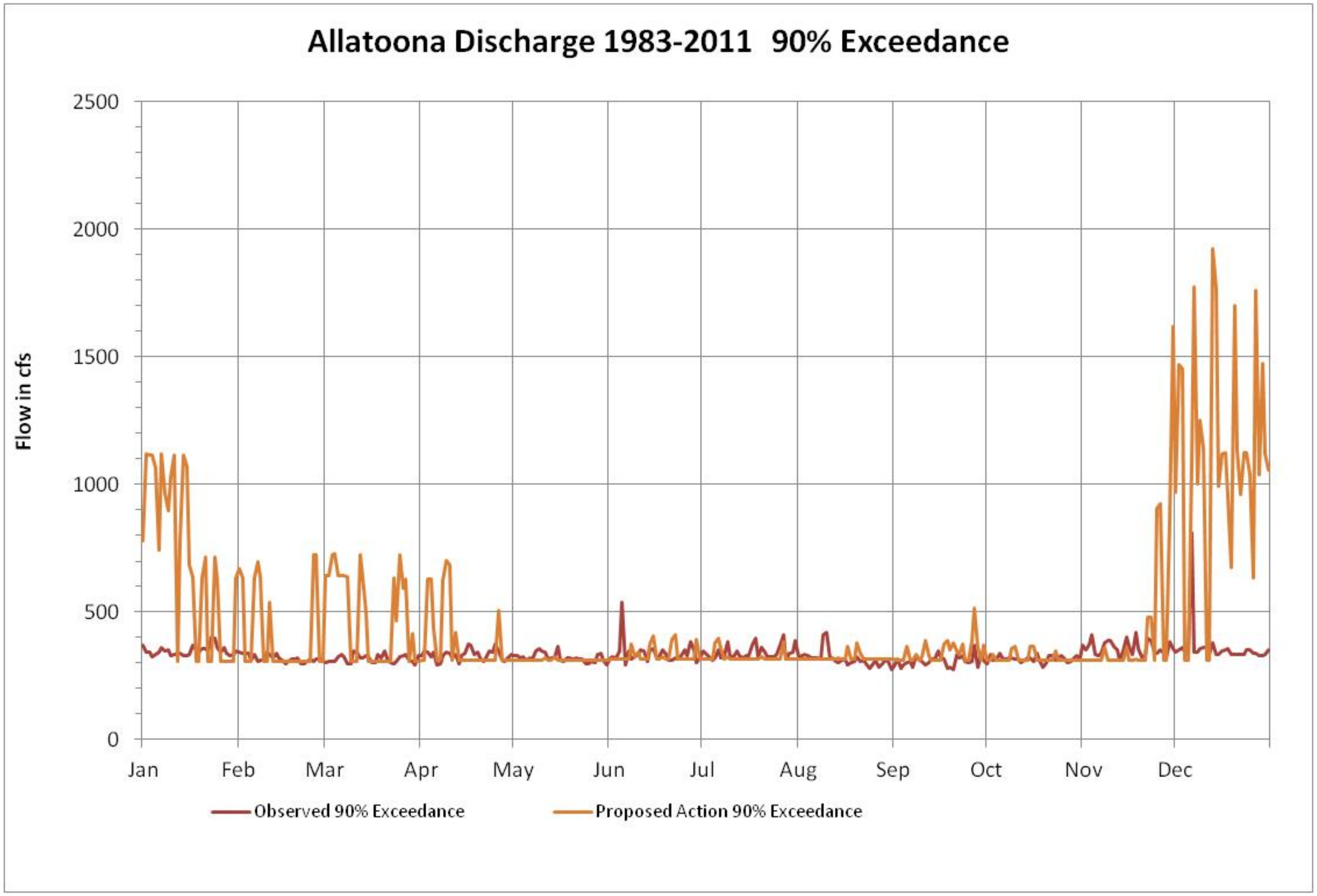

Figure 53. Comparison of Observed Data and Modeled Proposed Action for 90% Exceedance Flow at the Allatoona Dam Tailrace , years 1983-2011.

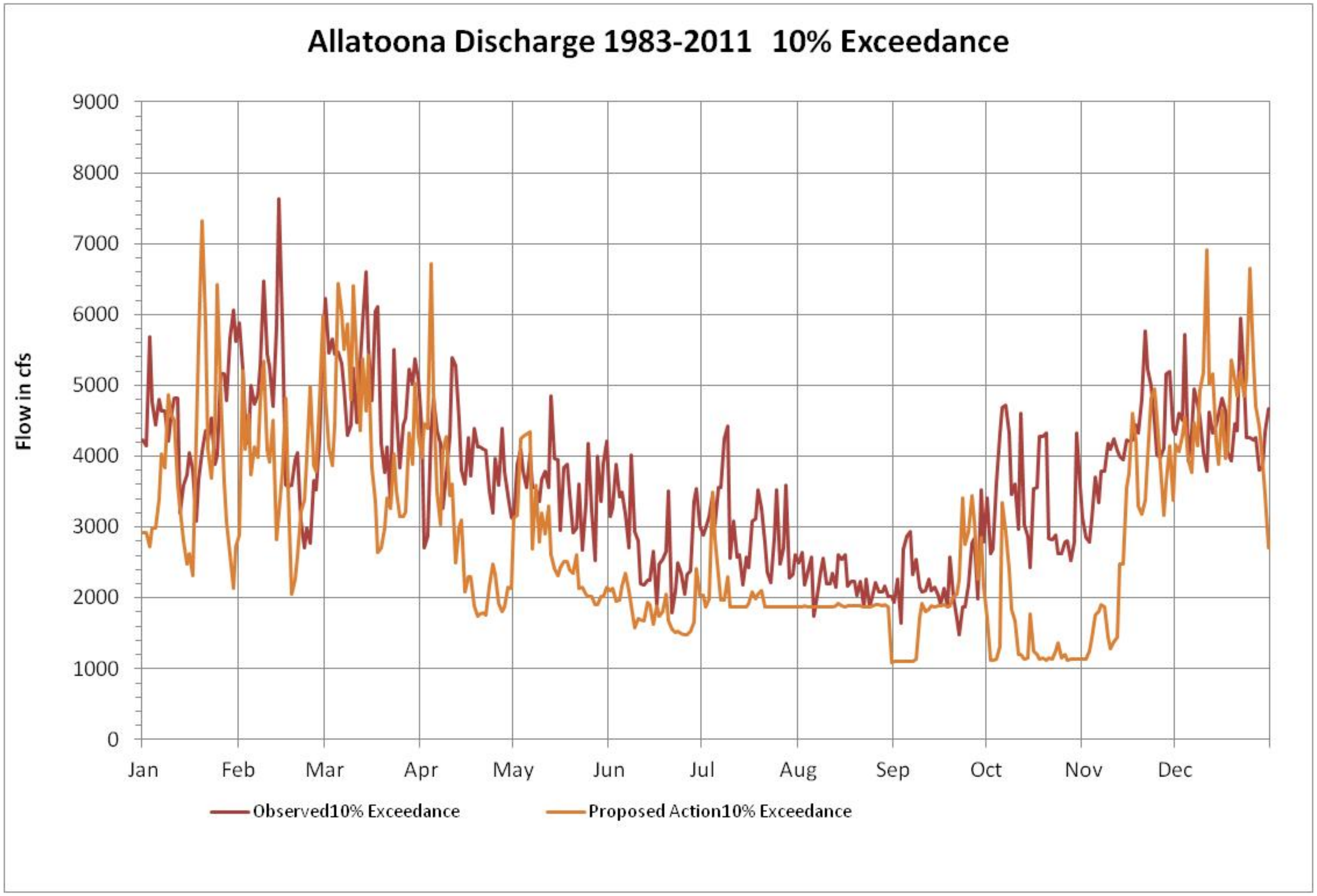

Figure 54. Comparison of Observed Data and Modeled Proposed Action for 10% Exceedance Flow at the Allatoona Dam Tailrace , years 1983-2011.

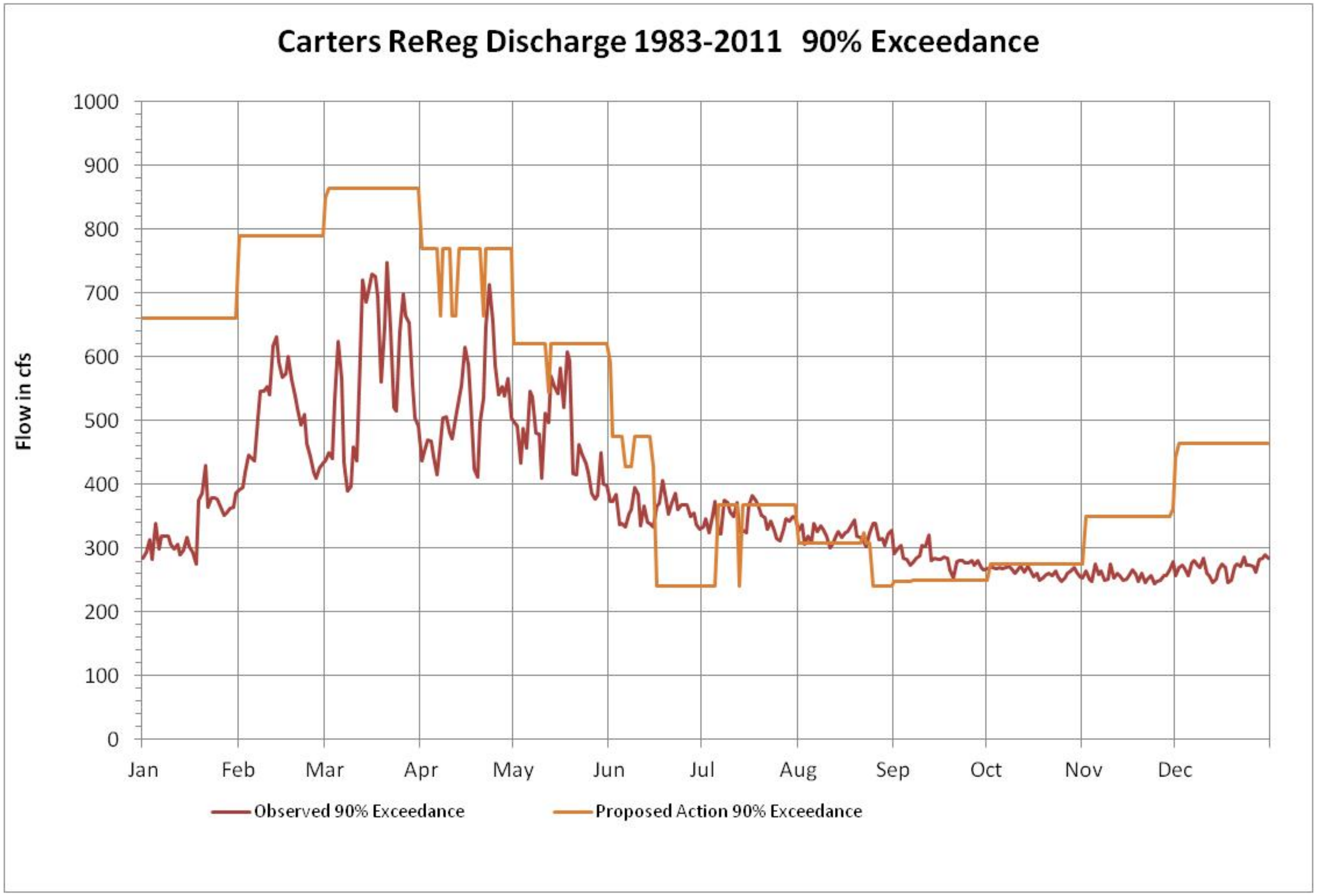

Figure 55. Comparison of Observed Data and Modeled Proposed Action for 90% Exceedance Flow at the Carters Dam Tailrace , years 1983-2011.

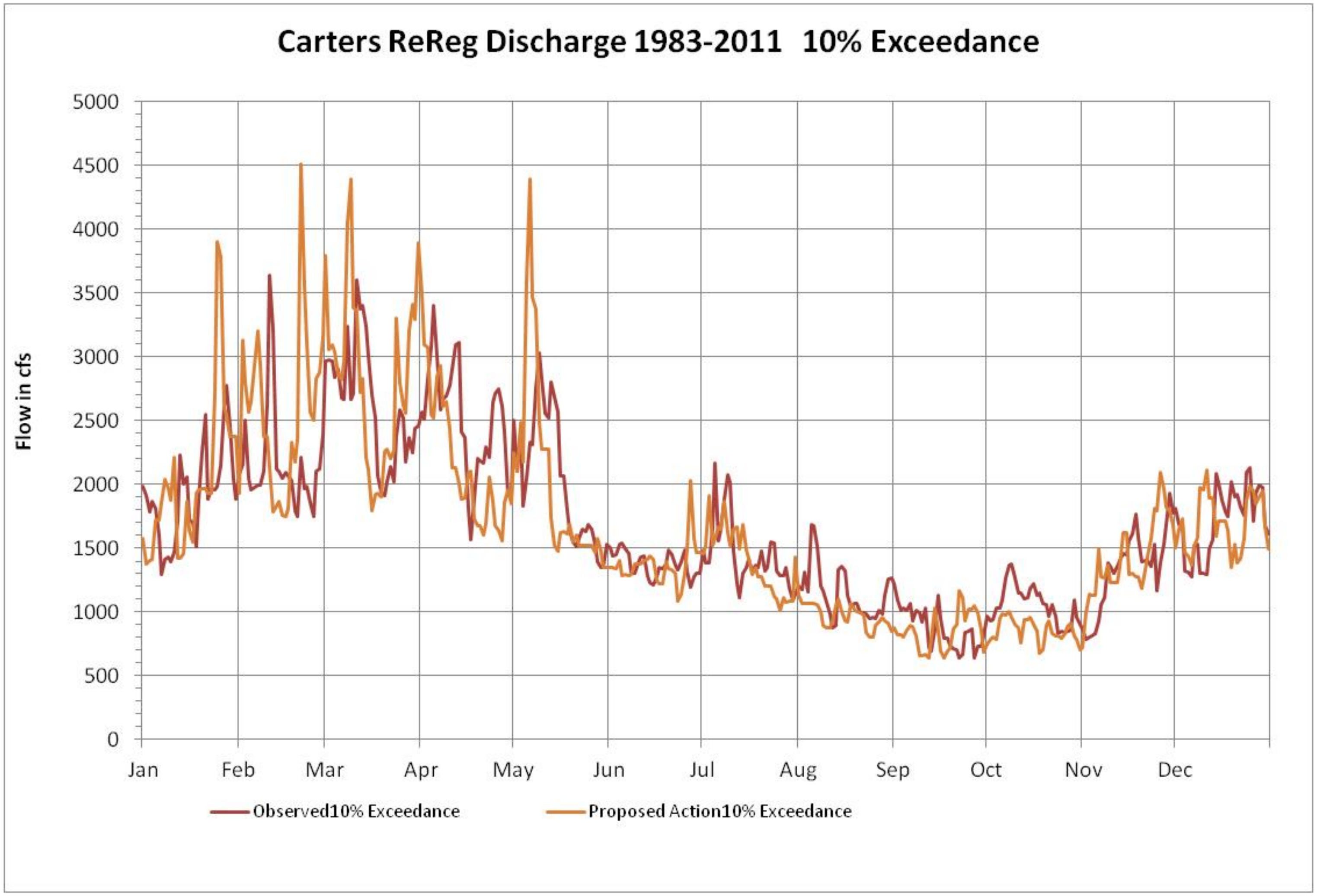

Figure 56. Comparison of Observed Data and Modeled Proposed Action for 10% Exceedance Flow at the Carters Dam Tailrace , years 1983-2011.

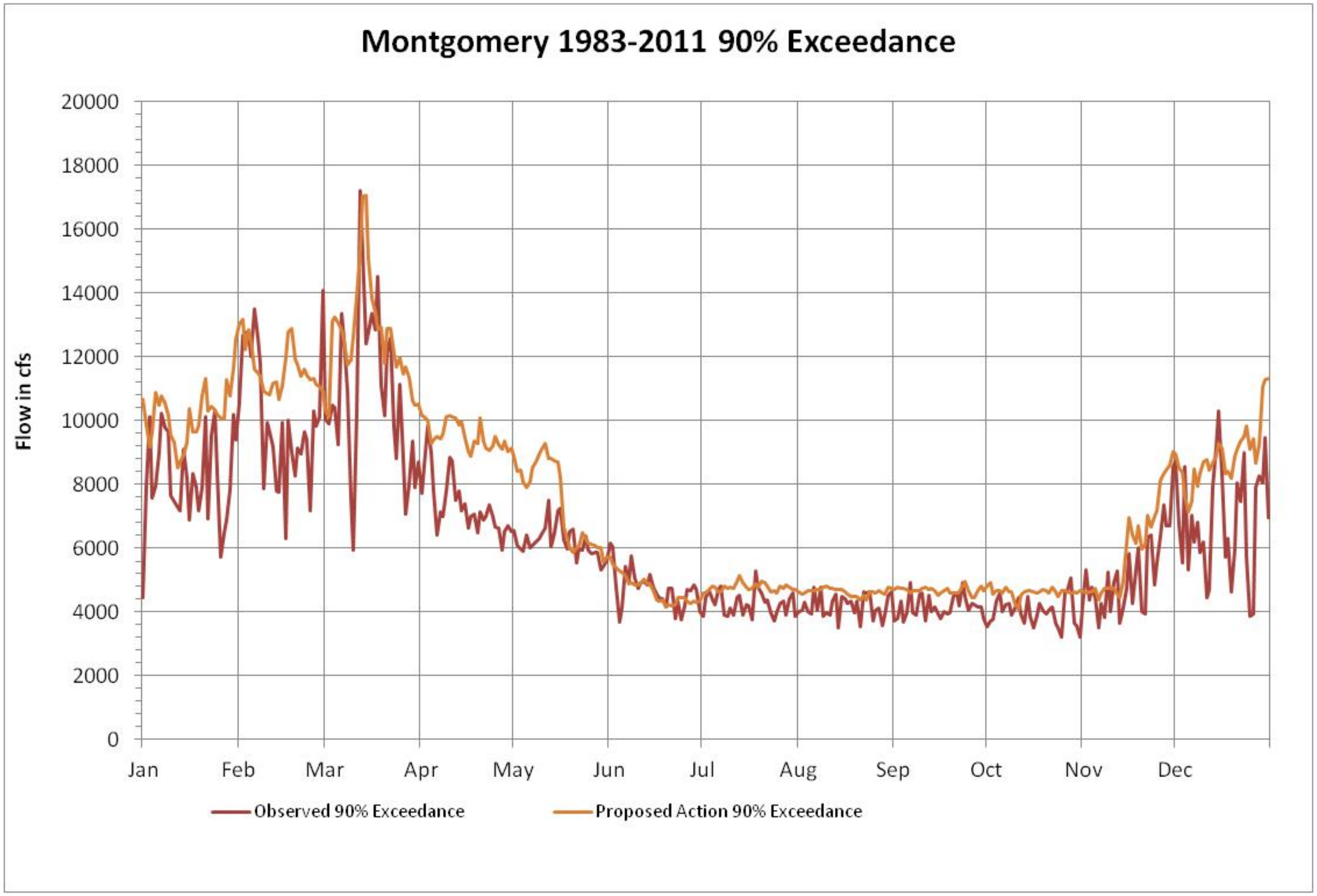

Figure 57. Comparison of Observed Data and Modeled Proposed Action for 90% Exceedance Flow at Montgomery, years 1983-2011.

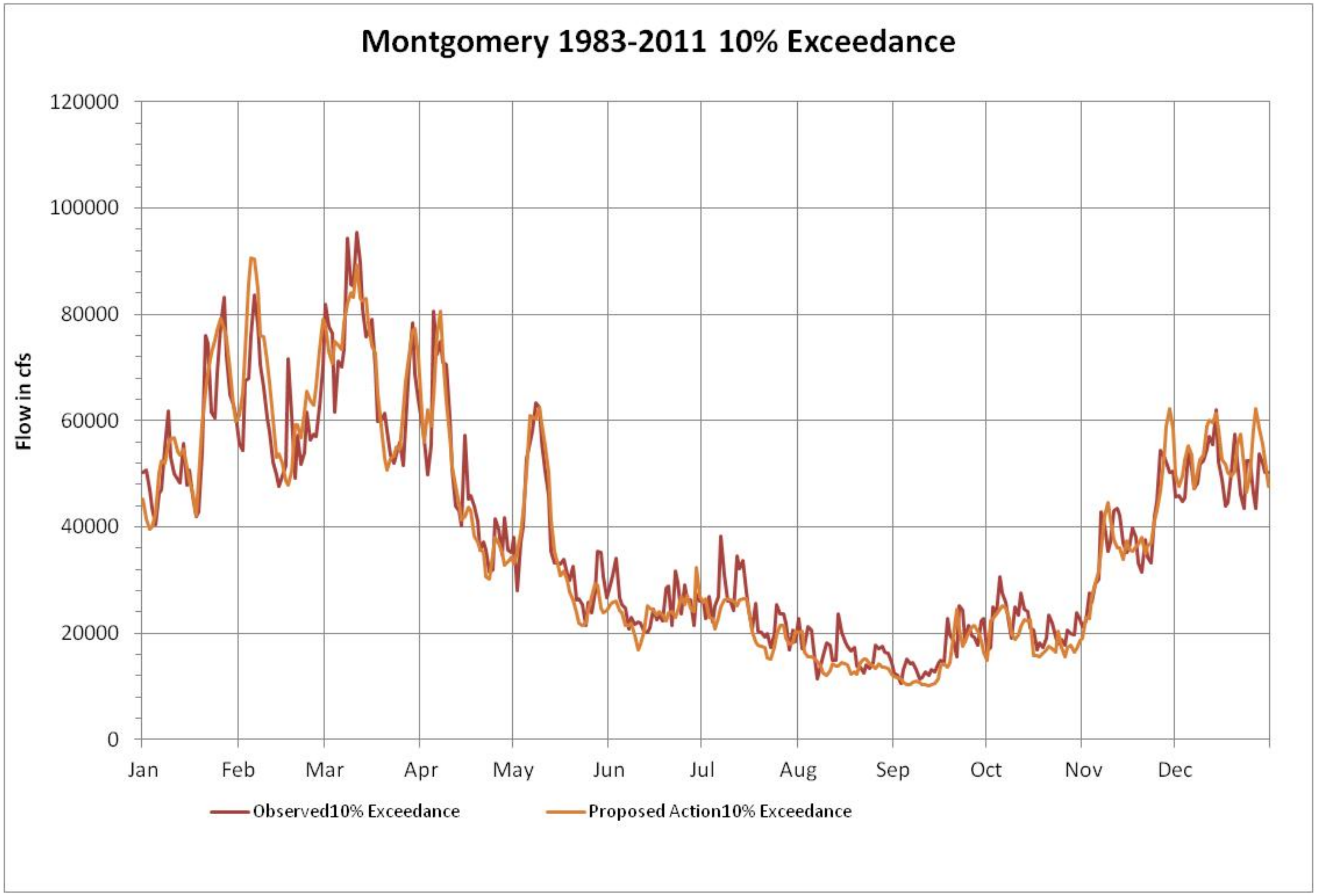

Figure 58. Comparison of Observed Data and Modeled Proposed Action for 10% Exceedance Flow at Montgomery, years 1983-2011.

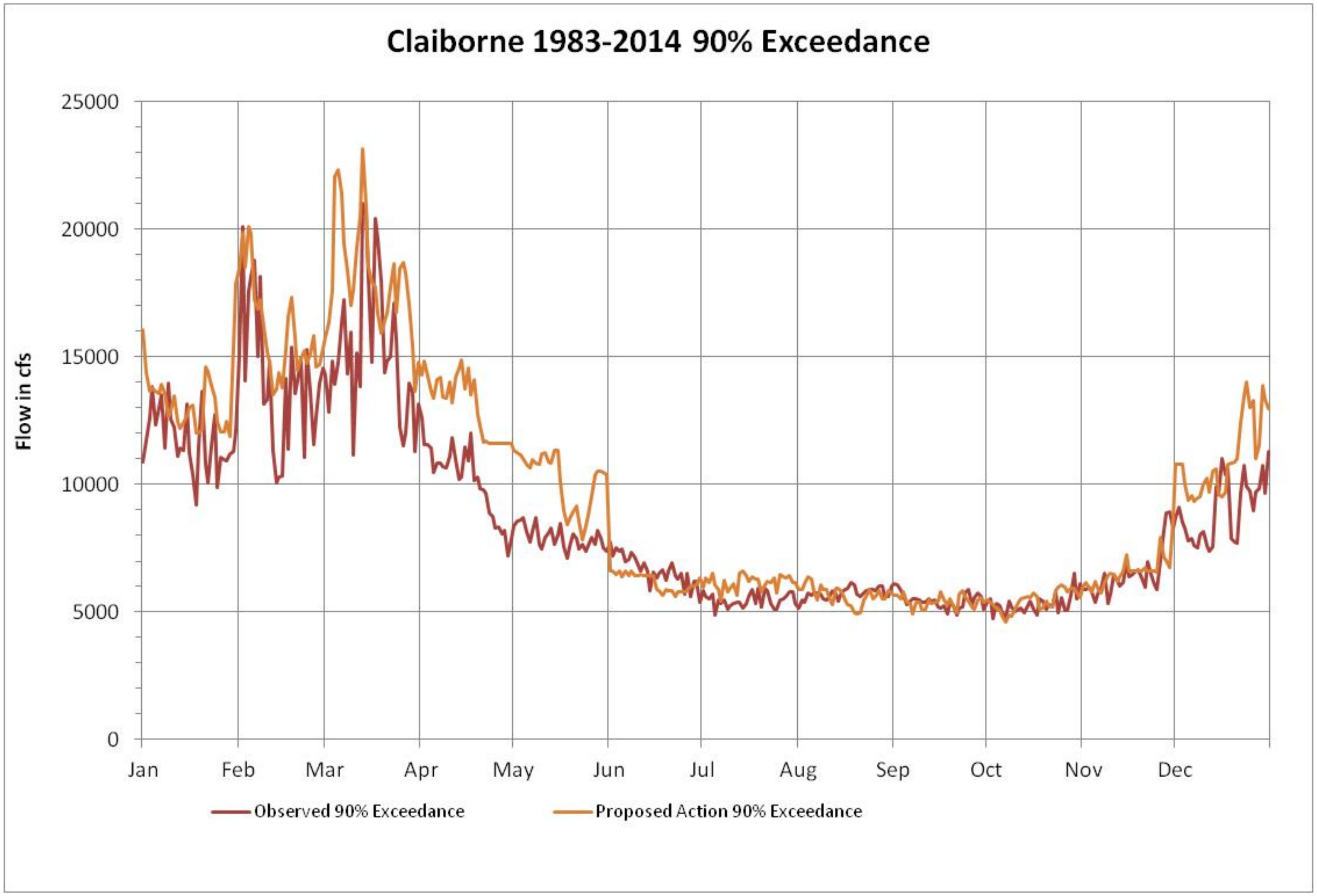

Figure 59. Comparison of Observed Data and Modeled Proposed Action for 90% Exceedance Flow at the Claiborne Dam Tailrace , years 1983-2011.

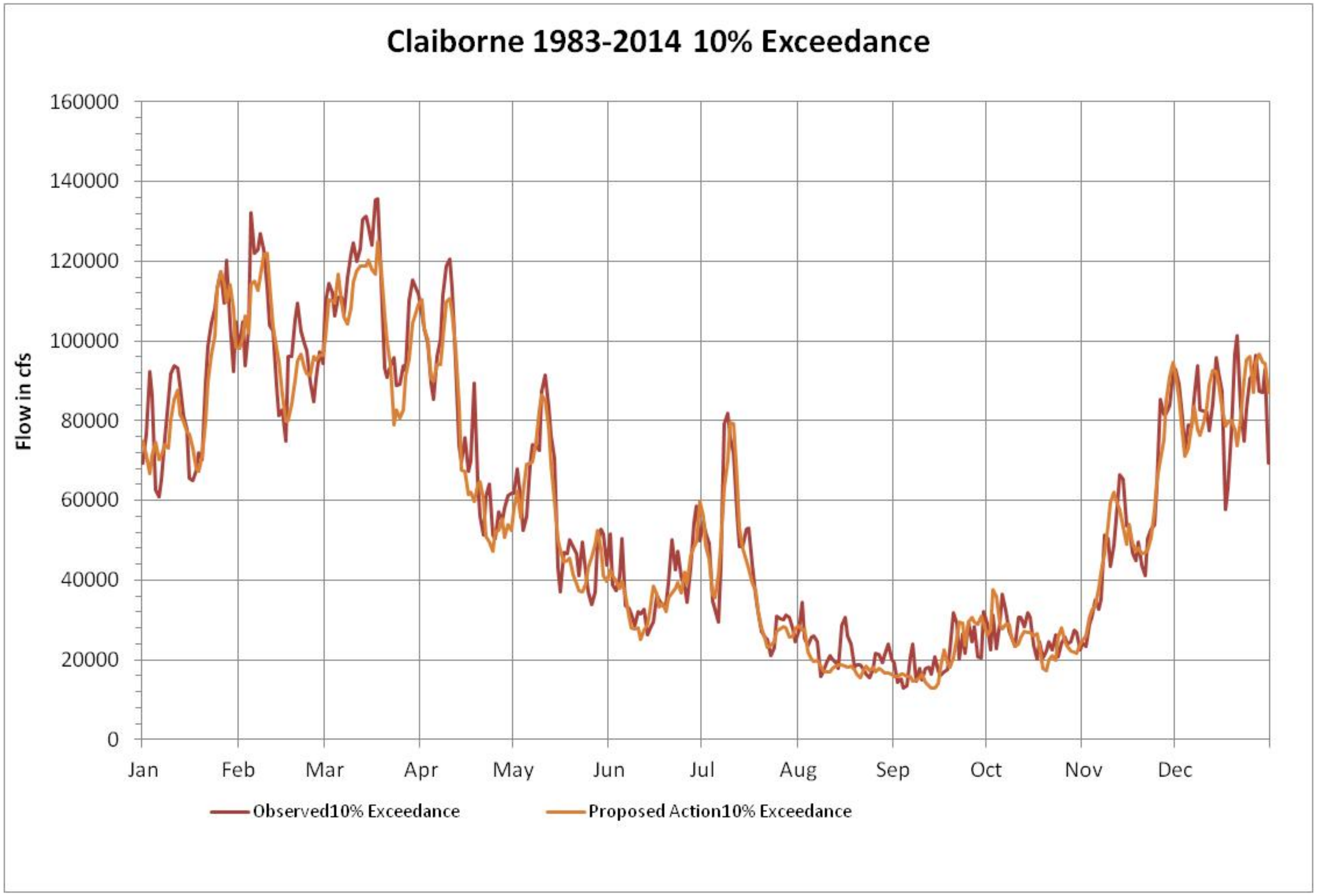

Figure 60. Comparison of Observed Data and Modeled Proposed Action for 10% Exceedance Flow at the Claiborne Dam Tailrace , years 1983-2011.

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

March 19, 2014

REPLY TO
ATTENTION OF

Inland Environment Team
Planning and Environmental Division

Mr. William Pearson
Field Supervisor
U.S. Fish and Wildlife Service
1208-B Main Street
Daphne, Alabama 36526

Dear Mr. Pearson:

I am writing in regards to U.S. Army Corps of Engineers (USACE) Biological Assessment (BA) for the proposed Water Control Manual update for the Alabama-Coosa-Tallapoosa River basin. The BA was provided to you by letter dated February 18, 2014. The enclosed addendum to the BA provides further information that we wish to include.

Thank you for your continued assistance in the update of the WCM. If you have any questions regarding the BA, this addendum or wish to discuss it or the proposed action either by telephone or in person, please contact Mr. Chuck Sumner at (251) 694-3857 or email at lewis.c.sumner@usace.army.mil.

Sincerely,

for [signature]
Curtis M. Flakes
Chief, Planning and Environmental
Division

Enclosure

ADDENDUM TO BIOLOGICAL ASSESSMENT

PROPOSED UPDATE OF THE WATER CONTROL MANUAL FOR THE ALABAMA-COOSA-TALLAPOOSA RIVER BASIN IN GEORGIA AND ALABAMA, CONSERVATION MEASURES TO BE IMPLEMENTED

Based on continuing discussion and consultation between USACE and the Service, and pursuant to informal consultation procedures of the Endangered Species Act, the following conservation measures will be implemented by USACE. The purpose of the measures is to confirm that there would be no adverse affect to amber darter and mussel Critical Habitat in the Coosawattee River below Carters Dam. A specific plan of implementation for each measure will be developed jointly by the Service and USACE within 60 days of Service concurrence with the "may affect but not likely to adversely affect" determination as stated within the BA. The schedule for implementation of the measures would be subject to currently available and future funding.

1. **Quantify the stage-discharge relationships at ungaged sites in the Coosawattee River.**

   Measurements will be taken to determine the relationship between flow releases at Carters Re-regulation dam and river stage at specific locations below the dam. The exact number and locations will be determined in further collaboration but is estimated to not exceed three sites including existing gage sites at Pine Chapel and Carters at four flow rates.

   Rationale: Stage-discharge relationships for ungaged locations are critical for determining water level changes in response to dam operation changes. Water level increases or decreases can result in a change in the net amount or spatial distribution of mesohabitats. Recording water level in the lower river during known flows will aid in the evaluation of effects at the mesohabitat scale.

2. **Assess the spatial distribution and amount of shallow mesohabitats as a function of discharge.**

   Shallow water habitat suitable for Amber Darter continued survival and reproduction will be mapped from near Carters Re-regulation Dam to the confluence with the Conasauga River forming the Oostanaula River. This task will primarily involve identification of shoals and riffles, and general sediment descriptions, with a goal to identify the number, location and extent of those areas. Combined with the stage-discharge relationships, effects on both the net area and spatial distribution of shallow habitats can be assessed. The specific methodology is to be determined in collaboration, but will generally involve multiple transects the length of the river mapping bathymetry and sediment characteristics.

Rationale: Approximately 20 sites have previously been identified by the Service as potential shallow-water amber darter habitat locations in the Coosawattee River. However, these locations were crudely characterized using limited technologies, and were identified at a range of discharges, thereby confounding the identification of shallow locations. However, it was concluded that shallow habitats seemed to be limited in the Coosawattee River. Additional detailed habitat mapping is needed to determine the number and extent of the sites.

3. **Characterize habitat characteristics within representative shallow mesohabitats at a range of discharges.**

   A subset of the number of sites identified from task 2 above will be sampled to determine suitable microhabitat within them. The task will involve determining bed sediment size, vegetative cover, water depth, and velocity along transects at a minimum of four discharges. The specific methodology will be determined in collaboration but is estimated to include ten shoal habitat locations previously identified.

   Rationale: The amount of suitable microhabitat within shoals and riffles varies with flow magnitude. This general methodology will enable USACE to determine the extent to which the microhabitats that are nested within mesohabitats are affected.

If, as a result of tasks 1-3 listed above, a determination is made that a degradation of the extent or quality of amber darter shoal habitat in the Coosawattee River is occurring as a result of the proposed action and that such degradation could over time lead to an adverse affect to the species, further consultation with the Service would be conducted to determine appropriate further actions such as fish sampling or other conservation measures.

4. **Assess potential bank erosion rate as a function of discharge.**

   River bank erosion will be estimated by visual identification of likely erosion sites, followed by physical measurement of bank locations compared to fixed points such as stakes, trees, pilings, etc. Photographic evidence of erosion will be made and included as part of a determination of overall effect of the proposed action on river bank erosion in the Coosawattee River. The estimated rate of bank erosion due to the proposed action will be compared to the baseline erosion rate under current conditions. The baseline rate will be estimated using visual identification and measurement as described above and any other available information such as existing stage-discharge data from existing gages and any available historic aerial photography. The specific methodology will be determined in collaboration and will include specific sites and flows for inclusion.

   Rationale: The geomorphic response to baseflow alteration under the Proposed Action Alternative is not expected to be extreme. There may be minor effects to channel morphology, suspended sediment load, and bed sediment composition should channel banks erode at rates that exceed erosion rates under the No Action Alternative. Alteration to the bed sediment composition could affect habitat used by both Amber Darter and mussel Critical Habitat in the river.

If, as a result of task 4, a determination is made that excessive bank erosion in the Coosawattee River is occurring as a result of the proposed action and that such erosion could over time lead to an adverse affect to listed mussel Critical Habiat, further consultation with the Service would be conducted to determine appropriate further actions.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

IN REPLY REFER TO
2010-I-0141

MAR 20 2014

Colonel Jon J. Chytka
U.S. Army Corps of Engineers, Mobile District
P.O. Box 2288
Mobile, AL 36628-0001

Dear Colonel Chytka:

This letter responds to your Biological Assessment (BA), received on February 20, 2014, and your request for concurrence that all effects of the Proposed Action, the Water Control Manual (WCM) updates for the Alabama-Coosa-Tallapoosa (ACT) River Basin, will have either "no effect" or "may affect, but not likely to adversely affect" endangered or threatened species. We have reviewed the information and provide the following comments in accordance with the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. § 1531 *et seq.*). It should be noted that the scheduling of hydropower per the Corps-Southeastern Power Administration (SEPA) contract is a federal action that is separate, but related to the federal action of the WCM update. Hence, consultation regarding the SEPA contract is not covered under this consultation. Our comments regarding compliance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq.*), and the Migratory Bird Treaty Act (40 Stat. 755, as amended; 16 U.S.C. § 703 *et seq.*) were provided in the Draft Fish and Wildlife Coordination Act Report, dated December 21, 2012. Those comments remain valid.

Proposed Action

Below is a summary of operations under the Proposed Action. Details of the operations can be found in Section 5 of the Draft Environmental Impact Statement. Operations under the Proposed Action include the following:

• Implement a revised drought plan, the Alabama Drought Response Operations Proposal (ADROP), with enhancements recommended by the Service.

• Provide for seasonal navigation releases to support commercial navigation in the Alabama River for a 9.0-ft or 7.5-ft channel depth as long as sufficient basin inflow above the APC projects is available. When sufficient flows cannot be provided to continue to support a minimum 7.5-ft navigation channel, navigation could be impeded and flows at Montgomery would be reduced to 4,640 cfs (7Q10). If one or more of the ADROP drought operations triggers are met, minimum flows at Montgomery would be dropped below 4,640 cfs.

PHONE: 251-441-5181 FAX: 251-441-6222

•Alabama Power Company (APC) projects would continue to operate under their current Federal Energy Regulatory Commission licenses with specific operational requirements.

• The APC project, H. Neely Henry Lake (Coosa River), which operates with a revised guide curve under a FERC license variance (with Corps concurrence) would continue to operate under its revised guide curve.

• Allatoona Reservoir would continue to provide for a 240-cfs minimum flow.

• The existing guide curve at Allatoona Reservoir would be revised to implement a phased fall drawdown period from early September through December. Refined operations at Allatoona Reservoir would include use of four action zones shaped to mimic the seasonal demands for hydropower.

• Refined operations at Carters Reservoir would include the use of two action zones to manage downstream releases. The current minimum flow requirement would remain 240 cfs from Carters Reregulation Dam when in zone 2. Zone 1 operations include a seasonally varying minimum flow.

• The Corps reserves 6,371 ac-ft of storage space in Allatoona Reservoir for water supply for the City of Cartersville, GA and 13,140 ac-ft for the Cobb County Marietta Water Authority. Total storage space allocated to water supply is 19,511 ac-ft.

• The Corps reserves 818 ac-ft in Carters Reservoir for water supply for the City of Chatsworth, GA.

• The Corps would continue to manage fish spawning operations at Allatoona Reservoir.

• The Corps would continue migratory fish passage operations at Claiborne Lock and Dam and Millers Ferry Lock and Dam.

<u>Conservation Measures</u>

Conservation measures have been agreed upon by the Corps and the U.S. Fish and Wildlife Service (Service) on the Coosawattee River below Carters Dam, in a March 19, 2014, Addendum to the BA which was provided by your staff. The purpose of the measures is to confirm that there would be no adverse affect to the amber darter and mussel Critical Habitat in the Coosawattee River below Carters Dam. A specific plan of implementation for each measure will be developed jointly by the Service and Corps within 60 days of this letter. We look forward to implementing the monitoring plan included in the conservation measures and to future coordination with the Corps.

Recommendations

To protect the integrity of the ACT Basin and provide enhancements for listed species we provide the following recommendations:

- Continue migratory fish passage operations at Claiborne Lock and Dam and Millers Ferry Lock and Dam. We recommend the Corps continue working with the Alabama River Fish Passage Working Group and support further research to determine the efficacy of conservation lockages.
- Develop a basin wide Conservation Plan pursuant to Section 7(a)(1) of the ESA which requires all Federal agencies to use their authorities to carry out programs for the conservation (i.e., recovery) of endangered and threatened species and includes specific conservation measures that are contingent upon opportunity and annual appropriations, and other authority and budgetary constraints.
- Continue communication with the Alabama Drought Response Operations Proposal (ADROP) partnership.
- Develop an adaptive management plan and monitoring program to allow greater understanding of riverine ecosystem response to complex variables programs, to determine the effects the updated operations on federally protected species, migratory and resident fishes, and macroinvertebrates (e.g., mussel and snail populations) and add additional data to models as more data are collected.
- The May 3, 2010, Planning Aid Letter identifies research that is useful for the management of natural resources and river flows in an informed manner. These research needs remain pertinent, and we look forward to addressing them in collaboration with you.
- Future modifications to Corps dams (e.g. replacement of turbines, generators, or parts therein) or contracts may require consultation, and temporary maintenance activities may represent research opportunities. Therefore, we recommend semiannual meetings between the Service and the Corps to discuss foreseeable modifications and maintenance activities.

Conclusion

We have reviewed the information provided in your correspondence and concur with your determination that the proposed action will have either "no effect" or "may affect, but not likely to adversely affect" federally endangered or threatened species or adversely modify critical habitat. In view of this, we believe that requirements of section 7 of the ESA have been satisfied. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner that was not previously considered; (2) this action is subsequently modified in a manner not previously considered in this assessment; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action

If you have any questions, please contact Alabama Ecological Services Field Office staff biologist Jennifer Pritchett (251) 441-6633 or Georgia Ecological Services Field Office staff biologists Alice Lawrence or Will Duncan at (706) 613-9493.

Sincerely,

William J. Pearson

William J. Pearson
Field Supervisor
Alabama Ecological Services Field Office

cc: Georgia Ecological Services Field Office, attention Will Duncan and Alice Lawrence