Allatoona Dam and Lake

- Reservoir with full summer conservation pool at elevation 840 feet msl
- 82.2 megawatt (MW) power plant

Legend

- Withdrawal
- Pump
- Release
- Wastewater Return

Not to scale

Weiss Dam and Lake

- Reservoir with full summer power pool at elevation 564 feet msl
- 87.75 MW power plant

Logan Martin Dam and Lake

- Reservoir with full summer power pool at elevation 465 feet msl
- 128.25 MW power plant

US Army Corps of Engineers
Mobile District

What is *induced surcharge*, and why do I care?

Induce means to force, and *surcharge* means extra. So, in an *induced surcharge operation*, you are forcing extra storage to be created in the reservoir by opening the spillway, or tainter, gates. With the top of the spillway gates at a higher elevation, additional storage is created and, with the gates open, more water is released from the reservoir.

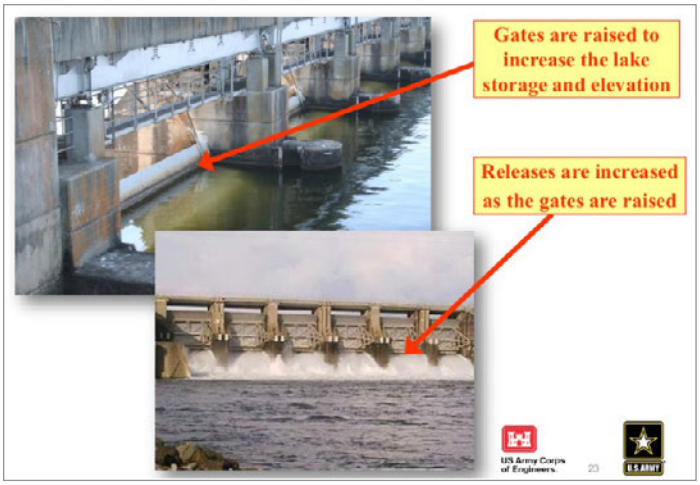
For more information, visit https://hec-ressim.blogspot.com/2016/03/induced-surcharge.html.

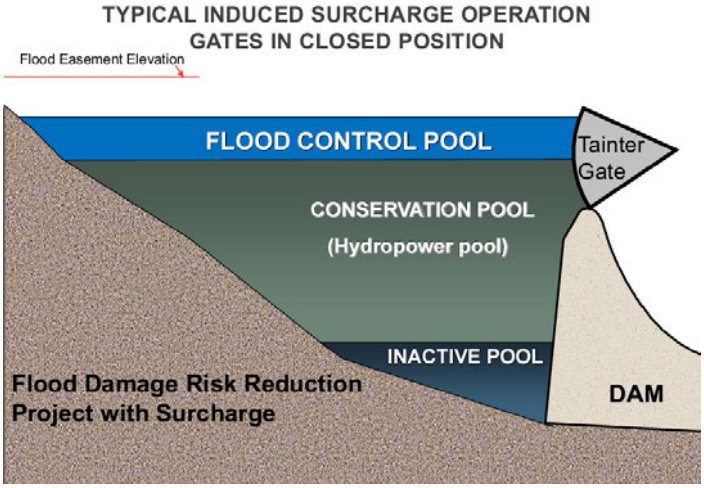
In reservoir operations, there is a *tainter gate* that keeps water in the reservoir. Flood easements, land with little to no development maintained natural in case of flooding, are held, by reservoir managers, around the reservoir to allow the lake level to rise from the *conservation pool* to the *flood control pool* during flood operations.

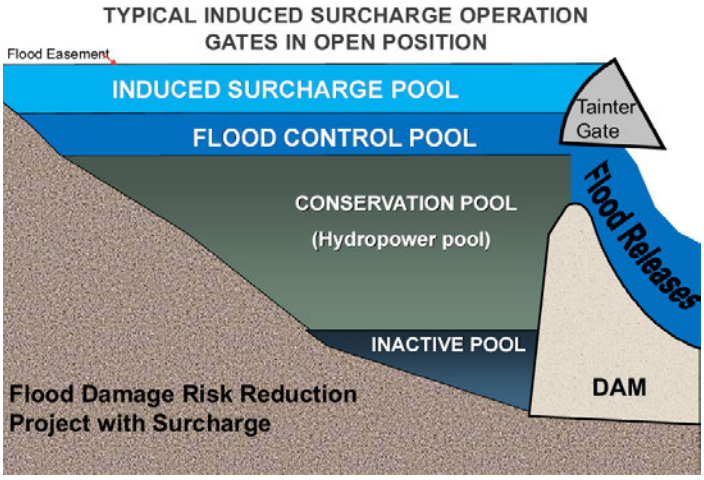
An induced surcharge operation allows more water to be held in the *induced surcharge pool*. Raising the tainter gate to release water can allow for additional space for flood storage. Water is released at a slower rate to allow water to fill behind the gate. The top of the induced surcharge pool occurs when the tainter gate is opened all the way.

This type of operation will occur during moderate to major flood events at Weiss Dam and Logan Martin Dam.

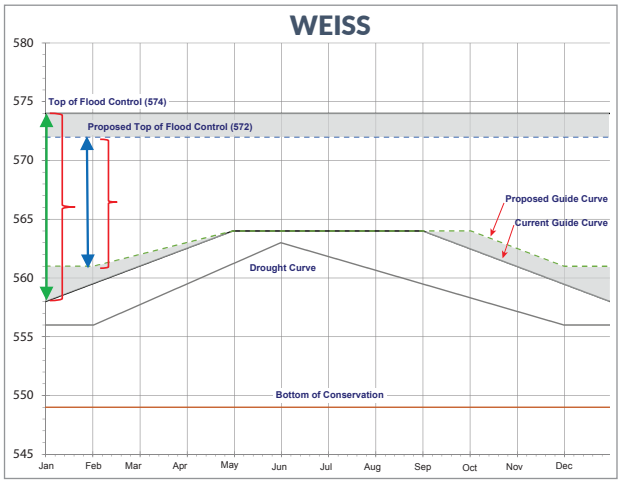
If you live near a reservoir or downstream from a reservoir, induced surcharge operations effect the timing and volume of water levels. The USACE flood study will look at how proposals, or *measures*, would be expected to change water levels in reservoirs and downstream and the duration of higher flows downstream.







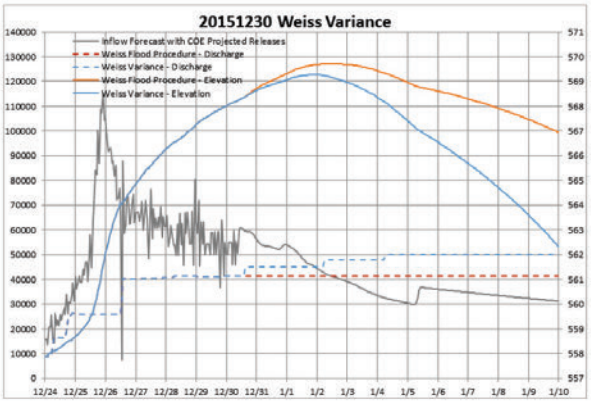
Alabama Power Company Proposed Changes



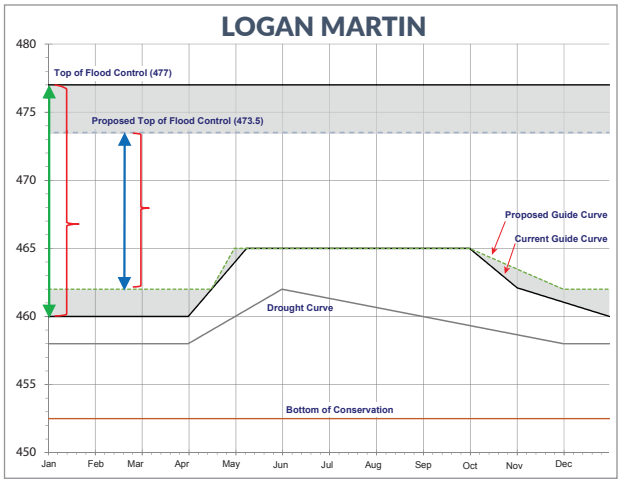
Green is the current level, and blue is the proposed level.
Shaded areas = Loss in flood storage

Weiss Project Proposal

1. Raise winter level from **558** feet to **561** feet.
2. Lower top of flood control from **574** feet to **572** feet.
3. Results in 30% reduction in winter flood control storage.
4. Results in 24% reduction in summer flood control storage.
5. During induced surcharge operation, increase releases at the same reservoir elevations.



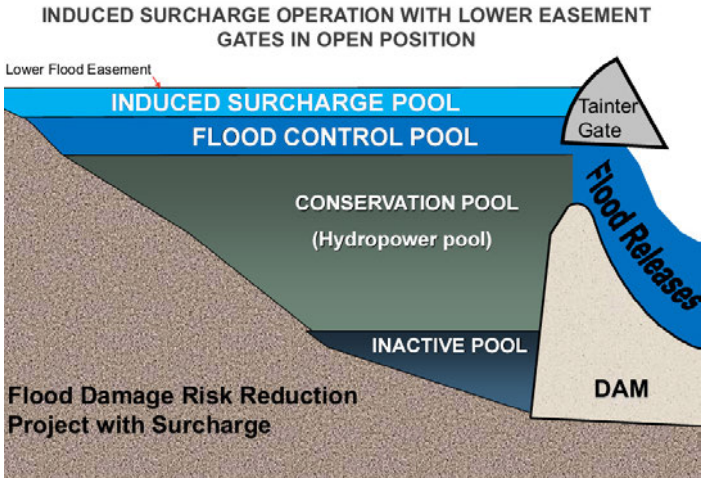
Orange is the current level, and blue is the proposed level.



Green is the current level, and blue is the proposed level.
Shaded areas = Loss in flood storage

Logan Martin Project Proposal

1. Raise winter level from **460** feet to **462** feet.
2. Lower top of flood control from **477** feet to **473.5** feet.
3. Results in 35% reduction in winter flood control storage.
4. Results in 35% reduction in summer flood control storage.
5. During induced surcharge operation, increase releases at same reservoir elevations.



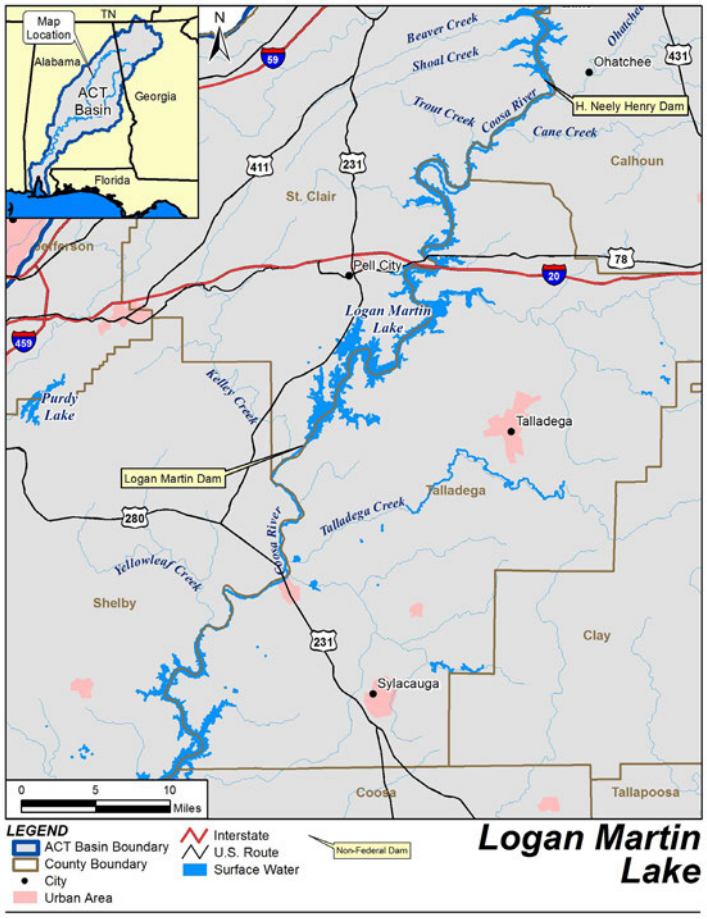
Ultimately this proposal would lower the induced surcharge pool. The study will look at how this proposal, and any other feasible measures identified during scoping, would be expected to change water levels in reservoirs and downstream and the duration of higher flows downstream.

US Army Corps of Engineers
Mobile District

Logan Martin Lake

Project Description

Logan Martin Lake is located in Alabama on the Coosa River, about 13 miles upstream from the City of Childersburg, Alabama. Operated by Alabama Power Company (APC), the reservoir is used for hydropower generation, flood risk management, navigation flow augmentation, maintenance of water quality, industrial and municipal water supply, irrigation withdrawals, recreation, and habitat for fish and wildlife conservation. The project consists of a dam with a concrete gated spillway section with earth-fill abutment dikes. The spillway has six tainter gates and one trashbay gate. The powerhouse has three units with a total generating capacity of 128.25 megawatts. The lake has 275 miles of shoreline and a maximum depth of 69 feet at the dam.



Quick Facts

Location: River Mile 99.5; Coosa River; Saint Clair, Talladega, and Calhoun Counties, AL

Drainage area above damsite: 7,770 square miles

Construction completed: 1964

Project purposes: Flood risk management, hydropower, navigation, recreation, water supply, water quality, and fish and wildlife

Area of reservoir: 15,269 acres

Full summer pool level: 465 feet NGVD29

Full winter pool level: 460 feet NGVD29

Flood storage capacity: 245,300 acre-feet

Conservation storage capacity: 144.383 acre-feet

Number of generating units: 3

Total generating capacity: 128.25 megawatts

Dam: Concrete gated spillway section with earth-fill abutment dikes

Spillway crest: 432 feet NGVD29

Spillway gates: 6 tainter gates, 1 trash gate

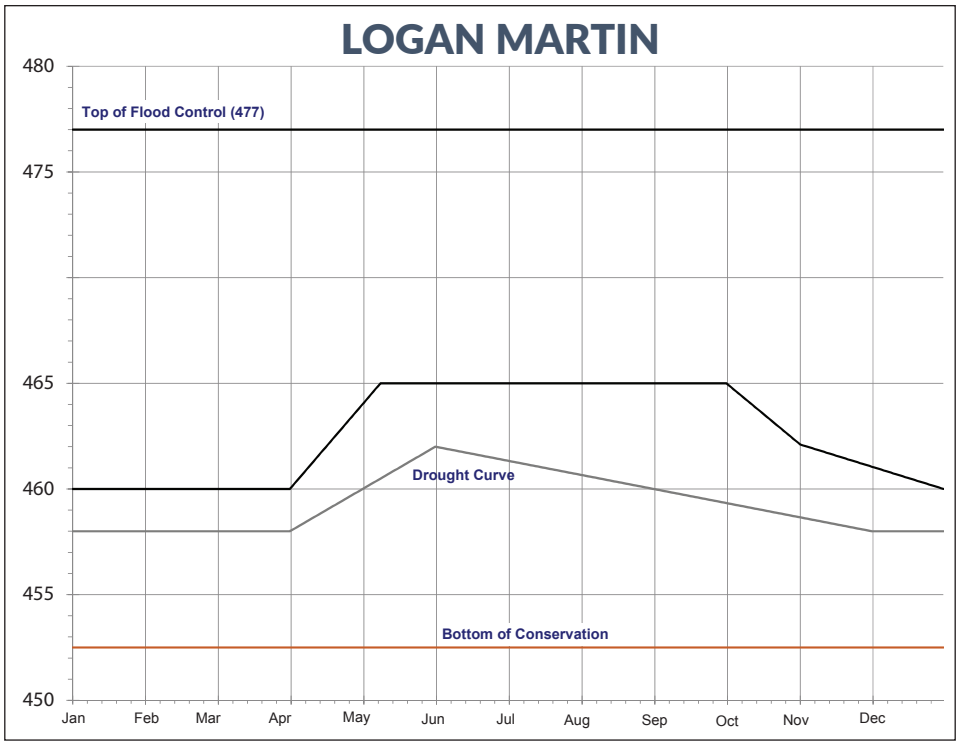
Owner: Alabama Power Company

Water Control Operations

APC usually operates the Logan Martin Dam and Lake project in a peaking mode for several hours per day during the week, depending on electrical power demand. Discharges from the Logan Martin Dam powerhouse enter the upper reaches of Lay Lake immediately downstream from the Logan Martin Lake.

APC operates Logan Martin Dam and Lake in coordination with its other hydropower projects on the Coosa River for flood risk management and navigation in accordance with regulations prescribed by the Secretary of the Army. The APC and the U.S. Army Corps of Engineers (USACE) adopted a Memorandum of Understanding (MOU) in December 1965 concerning the operation of the Logan Martin Lake project, which, along with the USACE 1968 Water Control Manual (WCM) for the project, guides implementation of the regulations. The MOU and the associated WCM clarify the responsibilities of the two agencies for operation of the project for flood risk management and other purposes and provide for the orderly exchange of hydrologic data.

Whenever the basin inflow causes the Logan Martin Lake reservoir to rise above the guide curve elevation all inflow up to a total of 50,000 cubic feet per second is passed through the power plant until its discharge capacity is exceeded. After that, as inflows and pool levels increase, excess flows are passed through the spillway until the pool levels recede to the guide curve elevation and within the discharge capacity of the powerhouse, in accordance with specific operational procedures detailed in the project's WCM.

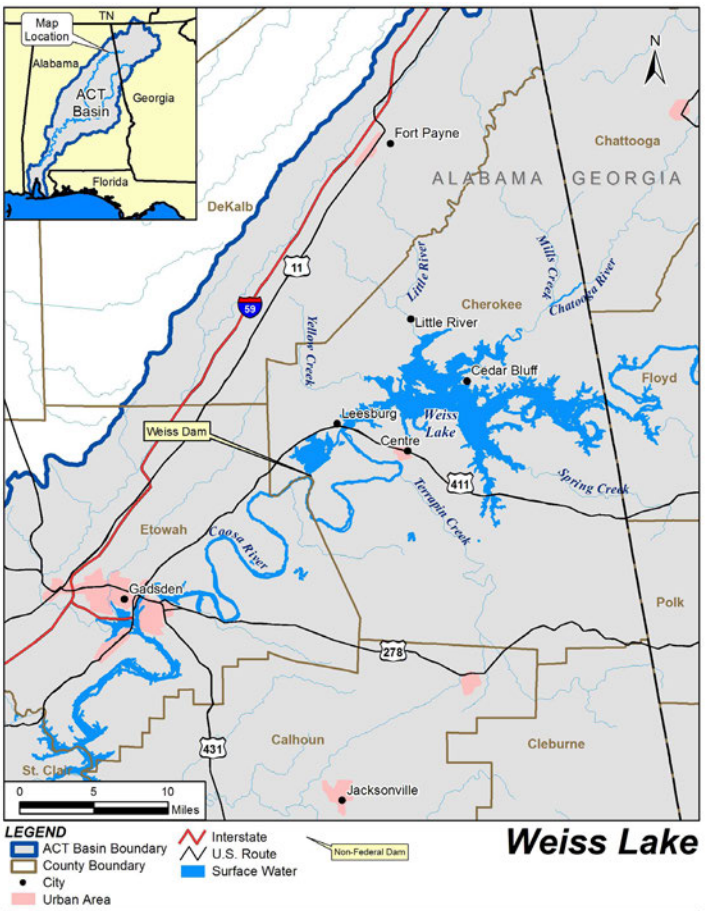


US Army Corps of Engineers
Mobile District

Weiss Lake

Project Description

Weiss Lake, located mostly in northeastern Alabama, is the farthest upstream of the seven Alabama Power Company (APC) reservoirs on the Coosa River. It has a surface area of 30,027 acres and extends about 52 miles upstream from Weiss Dam, including about 11 miles that extend into northwestern Georgia. The reservoir has 447 miles of shoreline and a maximum depth of 62 feet, and is relatively shallow at a depth of about 10 feet at normal pool elevation. Weiss Lake is used for hydropower generation, flood risk management, navigation flow augmentation, maintenance of water quality, industrial and municipal water supply, irrigation withdrawals, recreation, and habitat for fish and wildlife conservation. The generating capacity of the project is 87.75 megawatts.



Quick Facts

Location: River Mile 226; Coosa River; Cherokee County, AL

Drainage area above damsite: 5,270 square miles

Construction completed: 1960

Project purposes: Flood risk management, hydropower, navigation, recreation, water supply, water quality, irrigation withdrawals, and fish and wildlife

Area of reservoir: 30,027 acres

Full summer pool level: 564 feet NGVD29

Full winter pool level: 558 feet NGVD29

Flood storage capacity: 397,000 acre-feet
(Pool level 564 feet to 574 feet)

Conservation storage capacity: 263,417 acre-feet

Number of generating units: 3

Total generating capacity: 87.75 megawatts

Dam: Concrete gated spillway section with earth-fill abutment dikes

Spillway crest: 532 feet NGVD29

Spillway gates: 6

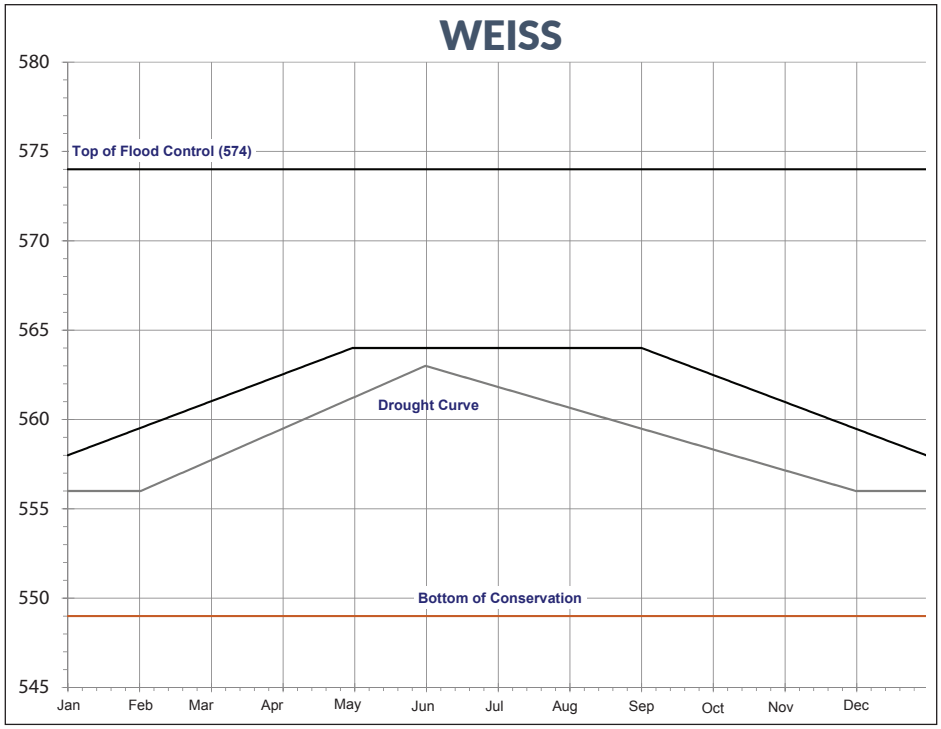
Owner: Alabama Power Company

Water Control Operations

APC usually operates the Weiss Dam and Lake project to produce hydropower as needed by the electrical grid. Typical operation for power generation ranges from 1 to 6 hours per day during the week, with no generation on the weekend. The dam's operation is coordinated with releases from H. Neely Henry Lake to keep the pool levels in balance and fairly stable. Discharges through the Weiss Dam powerhouse flow into a 1,300-foot-long, man-made tailrace canal to reenter the Coosa River at the downstream end of the bypass reach. Discharges from the powerhouse tailrace enter the upper reaches of APC's downstream H. Neely Henry Lake, which has a normal full-pool elevation of 508 feet. The H. Neely Henry Lake pool inundates the Weiss Lake tailwater at the power plant.

APC operates Weiss Dam and Lake in coordination with its other hydropower projects on the Coosa River for flood risk management and navigation in accordance with regulations prescribed by the Secretary of the Army. The APC and the U.S. Army Corps of Engineers (USACE) adopted a Memorandum of Understanding (MOU) in December 1965 concerning the operation of the Weiss Lake project, which, along with the USACE 1965 Water Control Manual (WCM) for the project, guides implementation of the regulations. The MOU and the associated WCM clarify the responsibilities of the two agencies for operating the project for flood risk management and other purposes and provide for the orderly exchange of hydrologic data.

Whenever the basin inflow causes the Weiss Lake reservoir to rise above the guide curve elevation, APC operates the power plant at full-gate capacity around the clock until the reservoir recedes to the level of the guide curve. When the reservoir level reaches elevation 564 feet, all inflow is passed through the power plant until its discharge capacity is exceeded. After that, as inflows and pool levels increase, excess flows are passed through the spillway until the pool levels recede to the guide curve elevation and within the discharge capacity of the powerhouse, in accordance with specific operational procedures detailed in the project's WCM.



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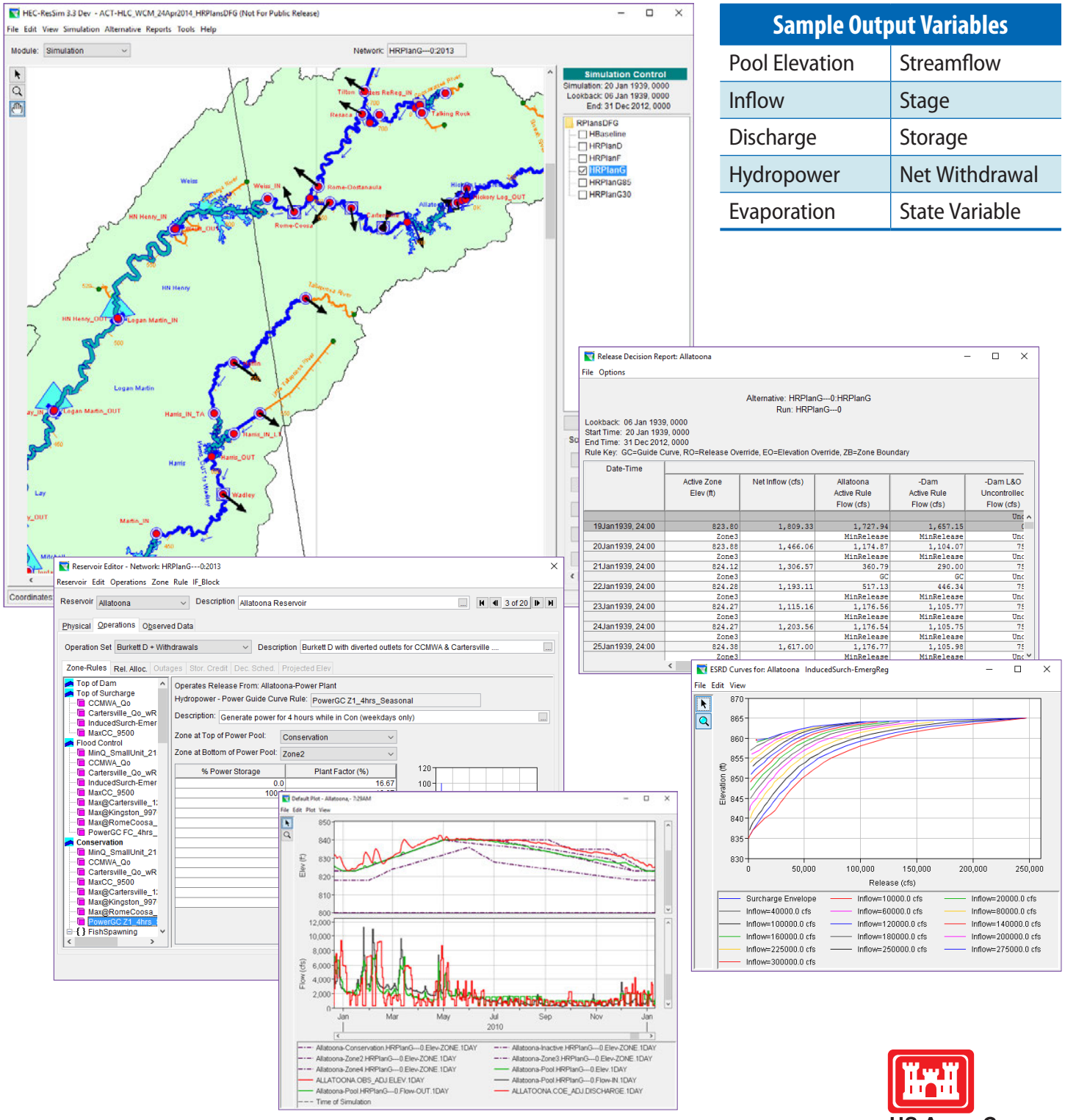
Reservoir System Simulation (HEC-ResSim) Software Developed by the U.S. Army Corps of Engineers



Sample Output Variables	
Pool Elevation	Streamflow
Inflow	Stage
Discharge	Storage
Hydropower	Net Withdrawal
Evaporation	State Variable

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Reservoir Modeling and Analysis

Floodplain Analysis

Water Quality

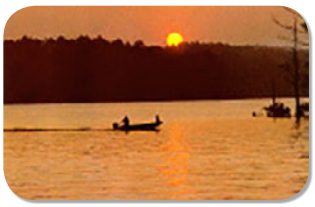
Riverine Aquatic Analyses

Protected Species

Economic Analyses

Riparian Wetland Analyses

Reservoir Fisheries Analyses



Freshwater Inflows & Habitat

HEC-ResSim Outputs

US Army Corps of Engineers
Mobile District

What's covered under the NEPA umbrella?

The National Environmental Policy Act (NEPA) (42 U.S.C. 4321 *et seq.*)

NEPA requires federal agencies to consider impacts on the human environment from proposed actions and document environmental impacts during project planning. The Council on Environmental Quality (CEQ) regulations (40 CFR parts 1500-1508) and Engineering Regulation 200-2-2 [33 CFR part230] govern how NEPA is implemented by the U.S. Army Corps of Engineers (USACE).

The NEPA process also provides a framework for compliance with other environmental statutory requirements. The most commonly applicable laws and policies for water resource projects are listed here.

Anadromous Fish Conservation Act of 1965, as amended (16 U.S.C. 757 *et seq.*) (AFC) Authorizes the Secretary of Commerce and the Secretary of the Interior to enter into cooperative agreements with states and other nonfederal interests for the conservation, development, and enhancement of the fishery resources of the U.S. for species that migrate from salt to fresh water to spawn.

Antiquities Act of 1906, as amended (16 U.S.C. 433) Regulates salvage of any object of antiquity in marine protected areas in which the U.S. has the authority to protect submerged cultural resources.

Archaeological and Historic Preservation Act, as amended (16 U.S.C. 469) (AHPA) Requires federal agencies to identify and recover data from archeological sites threatened by their actions, and to preserve historical and archaeological data that might be lost specifically through dam construction.

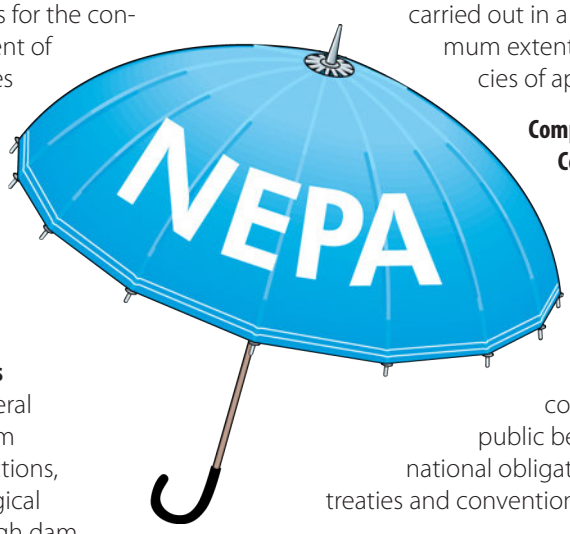
Archeological Resources Protection Act, as amended (16 U.S.C. 470aa-470mm) (ARPA) Requires permits and provides for civil and criminal penalties for persons disturbing archaeological resources on federal and tribal land without a permit.

Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) Prohibits the take of bald and golden eagles (including parts, nests, and eggs) without a federal permit.

Clean Air Act (42 U.S.C. 7401 *et seq.*) (CAA) Requires agencies to comply with state air quality standards set in state implementation plans.

Clean Water Act (33 U.S.C. 1251 *et seq.*), also known as the Federal Water Pollution Control Act of 1948, as amended (CWA) Protects, restores, and enhances the quality of the nation's waters. Requires federal agencies to consider, during the planning for any reservoir, storage to regulate streamflow for water quality control.

Coastal Barrier Resources Act of 1982 (16 U.S.C. 3501-3510) Protects undeveloped coastal barriers and related areas by prohibiting direct and indirect federal funding of various projects in these areas that might support development.



Coastal Zone Management Act (16 U.S.C. 1451-1456) (CZMA) Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of approved state management programs.

Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601-9675) (CERCLA) Requires reporting of releases and cleanup of releases of hazardous substances; also assigns liability for cleanup.

Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3901-3932) Promotes the conservation of wetlands to maintain the public benefits they provide and to fulfill international obligations contained in various migratory bird treaties and conventions.

Endangered Species Act (16 U.S.C. 1531) (ESA) Requires consultation with the U.S. Fish and Wildlife Service (USFWS) to ensure that actions do not jeopardize threatened or endangered species or their critical habitat.

Federal Water Project Recreation Act of 1965, as amended (16 U.S.C. 4601-12 *et seq.*) Requires federal agencies to consider potential outdoor recreational opportunities and fish and wildlife enhancement when planning navigation, flood control, reclamation, hydroelectric, or multipurpose water resource projects.

Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*) (FWCA) Requires consultation with the USFWS on actions affecting stream modifications.

Flood Control Act of 1944, as amended (16 U.S.C. 460) Authorizes the USACE to construct, maintain, and operate public park and recreational facilities at water resource development projects.

Food Security Act of 1985 (16 U.S.C. 3811 *et seq.*) Denies federal farm program benefits to producers who converted wetlands after December 23, 1985, and creates a system for inadvertent violations allowing farmers to regain lost federal benefits if they restore converted wetlands.

Historic Sites Act of 1935 (16 U.S.C. 461-467) Provides for the preservation of historic American sites, buildings, objects, and antiquities of national significance and for other purposes.

Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (16 U.S.C. 1801) Requires federal agencies to notify National Oceanic and Atmospheric Administration Fisheries regarding a proposed action that might adversely affect essential fish habitat.

Migratory Bird Treaty Act (16 U.S.C. 703-712) (MBTA) Decrees that all migratory birds and their parts (including eggs, nests, and feathers) are fully protected.

National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 *et seq.*) (NHPA) Requires agencies to identify historic properties subject to effect by their actions, and to consult with the State Historic Preservation Officer and others about alternatives and mitigation.

Native American Graves Protection and Repatriation Act (25 U.S.C. 3001-3013) (NAGPRA) Provides protection of Native American graves and for other purposes, including to clarify the right of ownership of artifacts.

Noise Control Act of 1972 (42 U.S.C. 4901 *et seq.*) Directs federal agencies to comply with applicable federal, state, and local noise control regulations.

Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6901 *et seq.*) (RCRA) Regulates the collection, storage, transport, and disposal of hazardous and solid waste and regulates underground storage tanks.

Rivers and Harbors Act of 1899, as amended and supplemented (33 U.S.C. 401 *et seq.*) Authorizes USACE to regulate the construction of any structure or work within navigable waters. Further amendments and supplements prohibit the construction of any bridge, dam, dike, or causeway over or in navigable waterways of the U.S. without congressional approval and provide that storage may be included for present and future municipal or industrial water supply in USACE or U.S. Bureau of Reclamation projects.

Safe Drinking Water Act (42 U.S.C. 300f *et seq.*) (SDWA) Protects the quality of drinking water the public receives from public water systems.

Water Resources Development Act of 1986, as amended (33 U.S.C. 2201 *et seq.*) Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the nation's water resources infrastructure.

Watershed Protection and Flood Prevention Act (16 U.S.C. 1001 *et seq.*) Provides for cooperation with state and local constituents for the purpose of preventing erosion, floodwater, and sediment damages in the watersheds of the rivers and streams of the U.S. and furthering the conservation, development, utilization, and disposal of water and the conservation and utilization of land thereby preserving, protecting, and improving the nation's land, and water resources and the quality of the environment.

Executive Order (EO) 11514: Protection and Enhancement of Environmental Quality Federal agencies shall initiate measures needed to direct their policies, plans, and programs to meet national environmental goals. The CEQ, through the Chairman, shall advise and assist the President in leading this national effort.

EO 11593: Protection and Enhancement of the Cultural Environment Directs federal agencies to preserve, restore, and maintain federally owned sites, structures, and objects of historical, architectural, or archaeological significance.

EO 11988: Floodplain Management Directs all federal agencies to avoid, if possible, development and other activities in the 100-year base floodplain.

EO 11990: Protection of Wetlands Directs all federal agencies to avoid, if possible, adverse effects on wetlands and to preserve and enhance the natural and beneficial values of wetlands.

EO 12088: Federal Compliance with Pollution Control Standards Delegates responsibility to the head of each executive agency for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution.

EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations Requires each federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

EO 13045: Protection of Children from Environmental Health Risks and Safety Risks Requires each federal agency to make it a high priority to identify and assess environmental health risks and safety risks that could disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks.

EO 13175: Consultation and Coordination with Indian Tribal Governments Requires agencies, in formulating or implementing policies that have tribal implications, to consult with tribal officials regarding the need for federal standards and any alternatives that would limit the scope of federal standards or otherwise preserve the prerogatives and authority of Indian tribes.

EO 13186: Responsibilities of Federal Agencies to Protect Migratory Birds Directs federal agencies to promote the conservation of migratory birds. Created a Council for the Conservation of Migratory Birds, of which USACE is a member.

EO 13693: Planning for Federal Sustainability in the Next Decade Directs federal agencies to improve environmental performance and federal sustainability by promoting facility energy and water conservation and efficiency, and reducing greenhouse gas emissions.

EO 13751: Safeguarding the Nation from Impacts of Invasive Species Directs federal agencies to prevent the introduction of invasive species and to detect, control, and monitor invasive species to minimize their negative ecological, economic, and human health impacts.

US Army Corps
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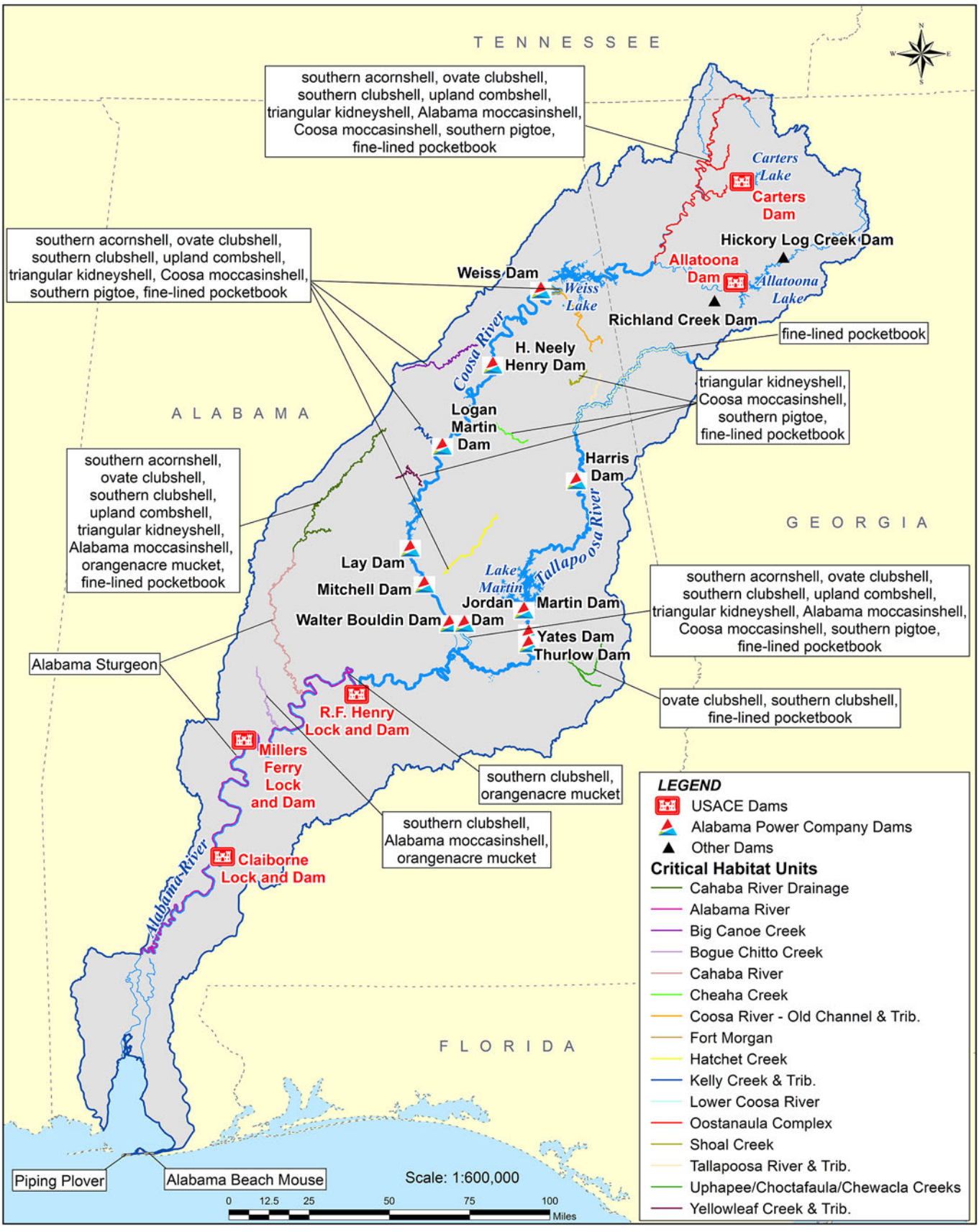
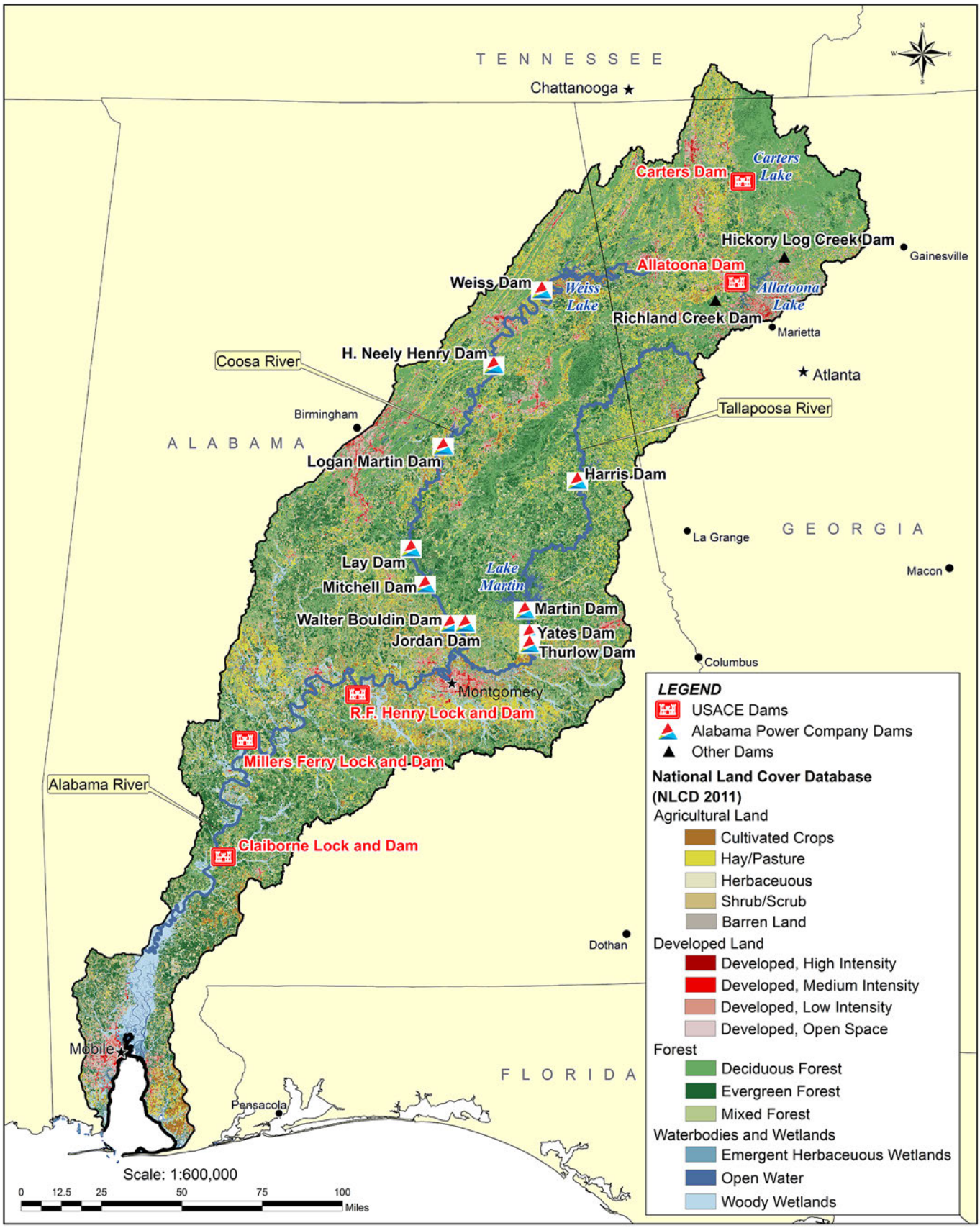
Environmental Resource Maps

Critical Species Habitat



Land Use

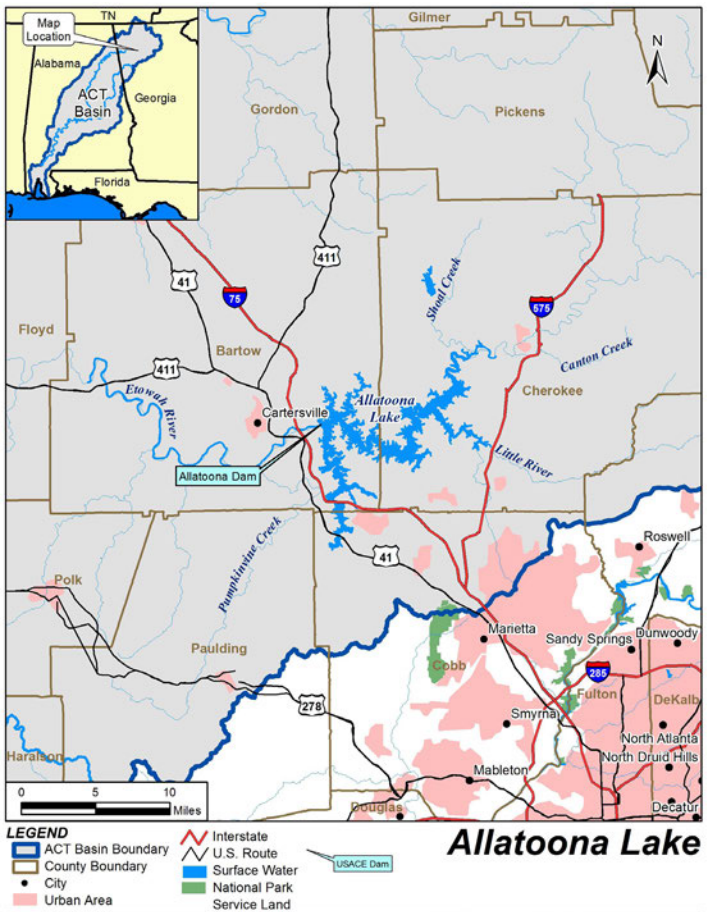


US Army Corps of Engineers
Mobile District

Allatoona Lake

Project Description

Allatoona Lake is located in Georgia on the Etowah River, about 32 miles northwest of Atlanta and 26 miles east-southeast of Rome, Georgia. The 1,122-square-mile drainage area lies on the southern slope of the Blue Ridge Mountains. Operated by the U.S. Army Corps of Engineers (USACE), Allatoona Dam and Lake is a multiple-purpose project, originally authorized for hydropower, flood risk management, and navigation. Later congressional legislation added public recreation, water quality, fish and wildlife conservation, conservation of federally listed threatened and endangered species and their critical habitat, and water supply. The Allatoona Project is generally operated as a peaking plant for producing hydroelectric power, and, during off-peak periods, maintains a continuous flow of 240 cubic feet per second through the small unit. Reservoir releases required for conservation, or flood risk management operations will normally be used to produce hydropower. Such production is scheduled during peak energy demand hours throughout the week.



Quick Facts

Location: River Mile 47.86; Etowah River; Bartow County, GA

Drainage area above damsite: 1,122 square miles

Construction completed: 1949

Project purposes: Flood risk management, hydropower, navigation, recreation, water supply, water quality, and fish and wildlife

Area of reservoir: 11,862 acres

Full summer pool level: 840 feet NGVD29

Full winter pool level: 823 feet NGVD29

Flood storage capacity: 302,574 acre-feet

Conservation storage capacity: 284,580 acre-feet

Number of generating units: 3—2 @ 40 megawatts and 1 @ 2.2 megawatts

Total generating capacity: 82.2 megawatts

Dam: Concrete gravity-type structure with curved axis, top elevation of 880 feet NGVD29, and length of 1,250 feet

Spillway crest: 835 feet NGVD29

Operating action zones: 4

Owner: U.S. Army Corps of Engineers

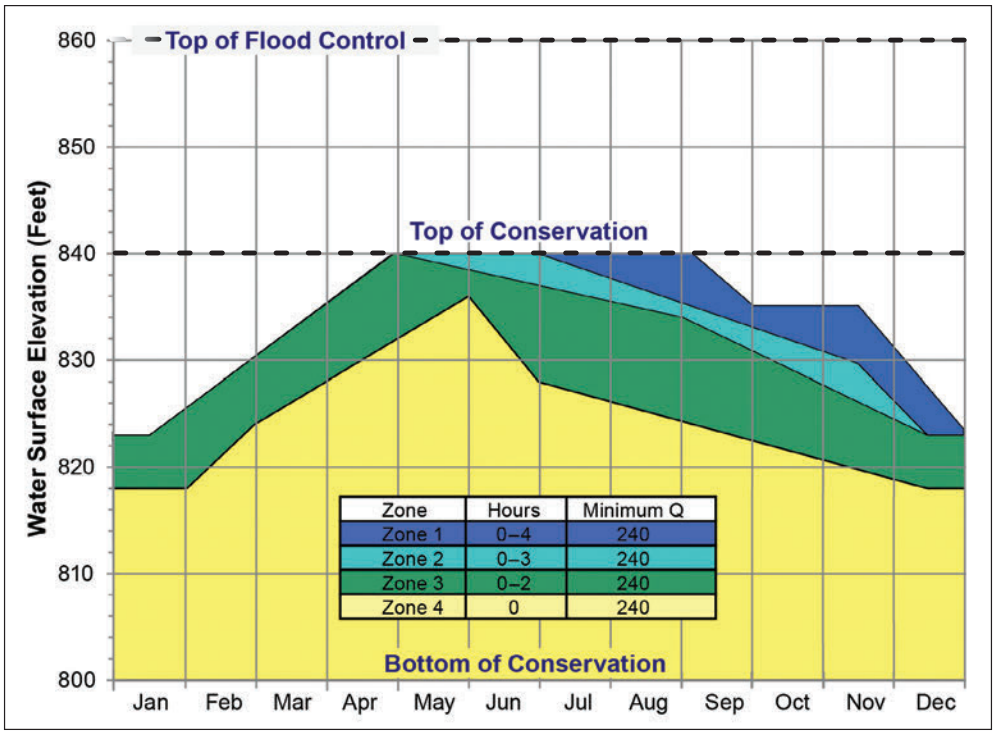
Water Control Operations

Water levels in Allatoona Lake remain fairly stable during normal operating conditions. Lake levels vary only several inches, except during high inflows to the basin and flood storage drawdown in the winter, which reduces the pool from 840 feet to 823 feet. Flood flows captured in the reservoir are generally released slowly over subsequent weeks, unless additional flood flows are anticipated. Power releases from USACE's Allatoona Lake during the low-flow season augment flows at the Alabama Power Company's projects along the Coosa River. The hydropower releases also provide water for municipal and industrial needs in the Rome, Georgia, area and for navigation on the Alabama River downstream of Montgomery, Alabama during the dry season.

Current Allatoona Dam and Lake project operations are governed by *action zones* that define general operating principles and parameters when lake-level conditions are below the top of the conservation pool at any point during the year. The action zones for the project are shown in the figure. The line between zones is a guideline that does not dictate any mandatory, absolute change in outflow policy.

The existing guide curve at Allatoona Lake was revised in 2015 to implement a phased fall drawdown period from early September through December. Refined operations at Allatoona Lake include use of four action zones shaped to mimic the seasonal demands for hydropower. Modifications to the hydropower schedule are in place to provide greater operational flexibility to meet power demands while conserving storage.

USACE also manages fish spawning operations at Allatoona Lake. During the largemouth bass spawning period, from March 15 to May 15, USACE seeks to maintain generally stable or rising reservoir levels at Allatoona Lake. 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.



Allatoona Lake action zones for project operation.

US Army Corps of Engineers
Mobile District