Draft Environmental Assessment

Flat Creek
Section 206 Aquatic Ecosystem Restoration Project
City of Gainesville and Hall County, Georgia

Draft

Prepared by;
U.S. Army Corps of Engineers
Mobile District
Mobile, Alabama

January 2011

Contents

1.0 **Introduction** **5**
- 1.1 Location 5
- 1.2 Proposed Action 6
- 1.3 Purpose and Need 7
- 1.4 Authority 7

2.0 **Alternatives to the Proposed Action** **13**
- 2.1 Alternative A 13
- 2.2 Alternative B 13
- 2.3 Alternative G 13
- 2.4 Alternative V 14
- 2.5 No Action Alternative 14

3.0 **Existing Environment and Potential Consequences** **16**
- 3.1 Land Use 16
  - 3.1.1 Developed Land (Residential, Industrial, Commercial) 16
  - 3.1.2 Agricultural Land 17
  - 3.1.3 Transportation, Communication, Utilities, and Institutional 17
  - 3.1.4 Reservoirs 18
  - 3.1.5 Forested Areas 18
  - 3.1.6 Consequences 18
- 3.2 Air Quality 18
  - 3.2.1 Consequences 19
- 3.3 Noise 20
  - 3.3.1 Consequences 20
- 3.4 Physiography, Geology, and Soils 21
  - 3.4.1 Physiography 21
  - 3.4.2 Geology 21
  - 3.4.3 Soils 21
  - 3.4.4 Consequences 21
- 3.5 Aesthetics 23
- 3.6 Water Resources 24
  - 3.6.1 Surface Water 24
  - 3.6.2 Groundwater 24
  - 3.6.3 Floodplains 24
  - 3.6.4 Wetlands 24
  - 3.6.5 Stormwater 25
  - 3.6.6 Consequences 26
- 3.7 Biological Resources 28
  - 3.7.1 Flora and Fauna 28
  - 3.7.2 Endangered and Threatened Species 29
  - 3.7.3 Consequences 29
- 3.8 Cultural Resources 31
  - 3.8.1 Archaeological Resources 31
  - 3.8.2 Architectural Resources 31
  - 3.8.3 Consequences 32
- 3.9 Socioeconomics 33

Draft

3.9.1 Employment 33
3.9.2 Wages 33
3.9.3 Demographics and Housing: 33
3.9.4 Protection of Children: 33
3.9.5 Environmental Justice: 33
3.9.6 Recreation Areas: 34
3.9.7 Climate Change 34
3.9.8 Consequences 34
3.10 Hazardous and Toxic Substances 35
3.10.1 Toxic Release Inventory Sites 35
3.10.2 Resource Conservation and Recovery Information System Sites 35
3.10.3 Permit Compliance Systems 36
3.10.4 Environmental Data Resources, Inc. Radius Map Report 36
3.10.5 Consequences 36
3.11 Cumulative Effects Summary 37
3.11.1 Tentatively Selected Alternative X 37
3.11.2 No Action Alternative 38
4.0 **Coordination 39**
References 40

Figures

1 Flat Creek Watershed 9
2 Alternative I Problem Site 32 10
3 Alternative I Problem Site 32 Continued 11
4 Alternative J Problem Site 33 12

Tables

1 Ecosystem Restoration Alternative 15
2 Land Use in the Flat Creek Watershed 17
3 Summary of Potential Negative Environmental and Socioeconomic Impacts under the No Action Alternative 38

EA Appendix A: Section 404(B)(1) Evaluation

EA Appendix B: Coordination Letters

EA Appendix C: US Fish and Wildlife Service Draft Coordination Act Report

Draft

Acronyms and Abbreviations

ACF	Apalachicola-Chattahoochee-Flint
ACT	Alabama-Coosa-Tallapoosa
ARC	Atlanta Regional Commission
BMP	Best Management Practices
EA	Environmental Assessment
EPA	Environmental Protection Agency
ERM	Ecosystem Response Modeling
FEMA	Federal Emergency Management Agency
FWCA	Fish and Wildlife Coordination Act
GADNR	Georgia Department of Natural Resources
GAEPD	Georgia Environmental Protection Division
GGA	Georgia Geological Survey
GIS	Geographic Information System
NAAQS	National Ambient Air Quality Standards
NAHRGIS	Natural, Archaeological and Historic Resources Georgia Information System
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OAQPS	Office of Air Quality Planning and Standards
PCS	Permit Compliance System
PM2.5	Fine Particle Particulate Matter
PRP	Preliminary Restoration Plan
RCRIS	Resources Conservation and Recovery Information System
SHPO	State Historic Preservation Office
TMDL	Total Maximum Daily Load
TRI	Toxic Release Inventory
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGA	U.S. Geological Survey

Draft

1.0 Introduction

In 2002, the US Army Corps of Engineers, Mobile District (USACE) prepared a Section 206 Preliminary Restoration Plan (PRP) for Flat Creek Watershed for the City of Gainesville and Hall County. The PRP documented that Hall County and the City of Gainesville had experienced substantial growth and development over the past 20 years and that trend is expected to continue. It further stated that urban growth and development had adversely affected the biological integrity and water quality of streams within Hall County, such as Flat Creek and its tributaries. Major contributors to stream degradation were identified as sedimentation and erosion, as well as certain metals and fecal coliform.

USACE, City of Gainesville, and Hall County worked together to establish planning objectives for ecosystem restoration in the Flat Creek watershed. These planning objectives support the federal objective "to restore degraded ecosystem structure, function, and dynamic processes to more natural, self-sustaining conditions and improve the potential for long-term survival of aquatic and wetland complexes" (USACE, 2000).

1.1 Location

The Flat Creek Watershed is located in the Chattahoochee River Basin in the upper Piedmont physiographic province. The Chattahoochee River Basin is part of the larger Apalachicola-Chattahoochee-Flint (ACF) Rivers Basin, which flows south to the Gulf of Mexico and also drains portions of Alabama and Florida. The location of the ACF Rivers Basin, as well as the Alabama-Coosa-Tallapoosa (ACT) Rivers Basin, which flows south through Alabama and enters the Gulf of Mexico. Flat Creek is an eastern tributary to Lake Lanier, the largest lake (38,500 acres) located entirely within the State of Georgia. The Flat Creek Watershed encompasses 7,337 total acres (698 acres of which are inundated by Lake Lanier) and contains a total of 31 stream miles (6 miles of mainstem and approximately 25 miles of tributaries). Flat Creek is located entirely within Hall County. Approximately 35 percent of the watershed is located in the City of Gainesville, and less than 1 percent is located in the City of Oakwood. The total incorporated area of the watershed is approximately 2,617 acres, of which approximately 2,553 are located in Gainesville and 64 are located in Oakwood.

For the purposes of analysis completed for the Flat Creek ecosystem restoration project, the watershed was divided into three subwatersheds—Upper Flat Creek (headwaters), Lower Flat Creek, and the Flat Creek Embayment (includes Lake Lanier backwaters) (Figure 1). The three subwatersheds are approximately equal in area, yet they have notable land use differences. The Tentatively Selected Alternative (discussed below) is located in Upper Flat Creek. Three of the four action alternatives are located in Upper Flat Creek, and one is located in Lower Flat Creek.

Draft

1.2 Proposed Action

Tentatively Selected Plan Alternative X consists of stream restoration along approximately 2,500 linear feet of the mainstem of Flat Creek, in the upper portions of the watershed. The site specific components of problem sites 32 and 33 are detailed below.

Problem Site 32 (Figures 2 and 3) is a proposed 1,800-foot stream restoration project located on the mainstem of Flat Creek, just downstream of Dorsey Street. The stream restoration approach involves the following measures: engineered riffle creation, J-hook installation, boulder placement, rootwad placement, bankfull bench creation, bank grading, bank stabilization matting, riprap placement, streambank planting, and riparian planting (native hardwoods and seeding/mulching).

The bank grading and stabilization of the stream restoration will consist of the following:

- Clearing and grubbing 1.5 acres
- 7,600 square yards of grading
- 10, 000 live willow stakes
- 4,200 square yards of turf matrix
- 340 cubic yards of riprap
- 1.1 acres of seeding and mulching
- 8 rootwad and footer logs
- 8 of 3 to 3.5 feet diameter bracing boulders

The flow deflection of the stream restoration will consist of the following:

- 100 cubic yards of riprap
- 140 - 3 to 3.5 feet diameter boulders

The riparian zone restoration of the stream restoration will consist of the following:

- Planting of 800 native hardwood
- 0.5 acres of seeding and mulching of vegetation

The stream restoration project area has been channelized and is actively widening. Banks are roughly 9 feet tall and severely eroded (50 to 70 percent) along at least 700 feet of the project reach. The right bank riparian corridor includes lawns in sections of the reach, and the left bank riparian corridor is cleared for parallel utility right-of-way. The stream site is easily accessible by foot but not by vehicle.

Problem Site 33 (Figure 4) is a proposed 700-foot stream restoration project located on the mainstem of Flat Creek, in a commercial area near Atlanta Highway and Hilton Drive. This alternative would consist of a stream restoration approach which involves the following elements: engineered riffle creation, J-hook installation, boulder placement, bankfull bench creation, bank grading, bank stabilization matting, riprap placement, streambank planting, and riparian planting (native hardwoods and seeding/mulching).

The bank grading and stabilization of the stream restoration will consist of the following:

- 1 acres of clearing and grubbing

Draft

- 3,800 square yards of grading
- 3, 300 live willow stakes
- 1,500 square yards of turf matrix
- 115 cubic yards of riprap
- 0.8 acres of seeding and mulching

The flow deflection of the stream restoration will consist of the following:

- 45 cubic yards of riprap
- 80 - 3 to 3.5 feet diameter boulders

The riparian zone restoration of the stream restoration will consist of the following:

- Planting of 400 native hardwood
- 0.4 acres of seeding and mulching of vegetation

The stream area has been channelized and is actively widening. The right bank riparian corridor consists of lawns, structures in the floodplain and an area cleared for a parallel utility right-of-way. Banks are steep and severely or moderately eroded throughout the project area. The site is easily accessible by foot but not by vehicle.

1.3 Purpose and Need

The purpose of the Proposed Action is to restore habitat quality in Flat Creek and selected tributaries of Flat Creek and to prevent further water quality degradation in the Flat Creek watershed. The need for the Proposed Action is to address anthropogenic degradation that has historically occurred in the Flat Creek watershed and to allow for future development in the watershed without further degradation of habitat quality and water quality.

If no efforts are made to improve conditions in the watershed, overall stream health (which accounts for physical habitat, fish community, and benthic macroinvertebrate community conditions) are projected to decline by approximately 25 percent (Flat Creek Ecosystem Response Modeling (ERM); Appendix F of the Flat Creek Detailed Project Report). Without appropriate watershed restoration efforts, Flat Creek will continue to not support robust fish and benthic macroinvertebrate communities. As future development occurs, the percentage of land covered by impervious surfaces will increase, resulting in decreased infiltration and storage capacity of the watershed. This would increase both the volume and velocity of stormwater runoff, which would increase the delivery of pollutants such as nutrients, pathogens, and sediment. Additionally, when best management practices (BMPs) do not detain stormwater runoff, the stream channel will continue to erode and degrade.

1.4 Authority

To assist with funding associated with stream restoration activities; the Flat Creek ecosystem restoration project will include efforts to help determine the feasibility of utilizing federal funding through US Army Corps of Engineers (USACE) under Section 206 of the Water Resources Development Act to implement restoration projects. The Section 206 program is intended to protect and improve ecosystems and water quality conditions and to

Draft

implement projects that will enhance aquatic habitat. In compliance with requirements for potential federal funding under Section 206, this Environmental Assessment (EA) is being prepared to evaluate the environmental and socioeconomic effects of potential watershed improvement efforts, and the feasibility report will be prepared to detail the process used to identify and prioritize potential ecosystem restoration projects.

Draft

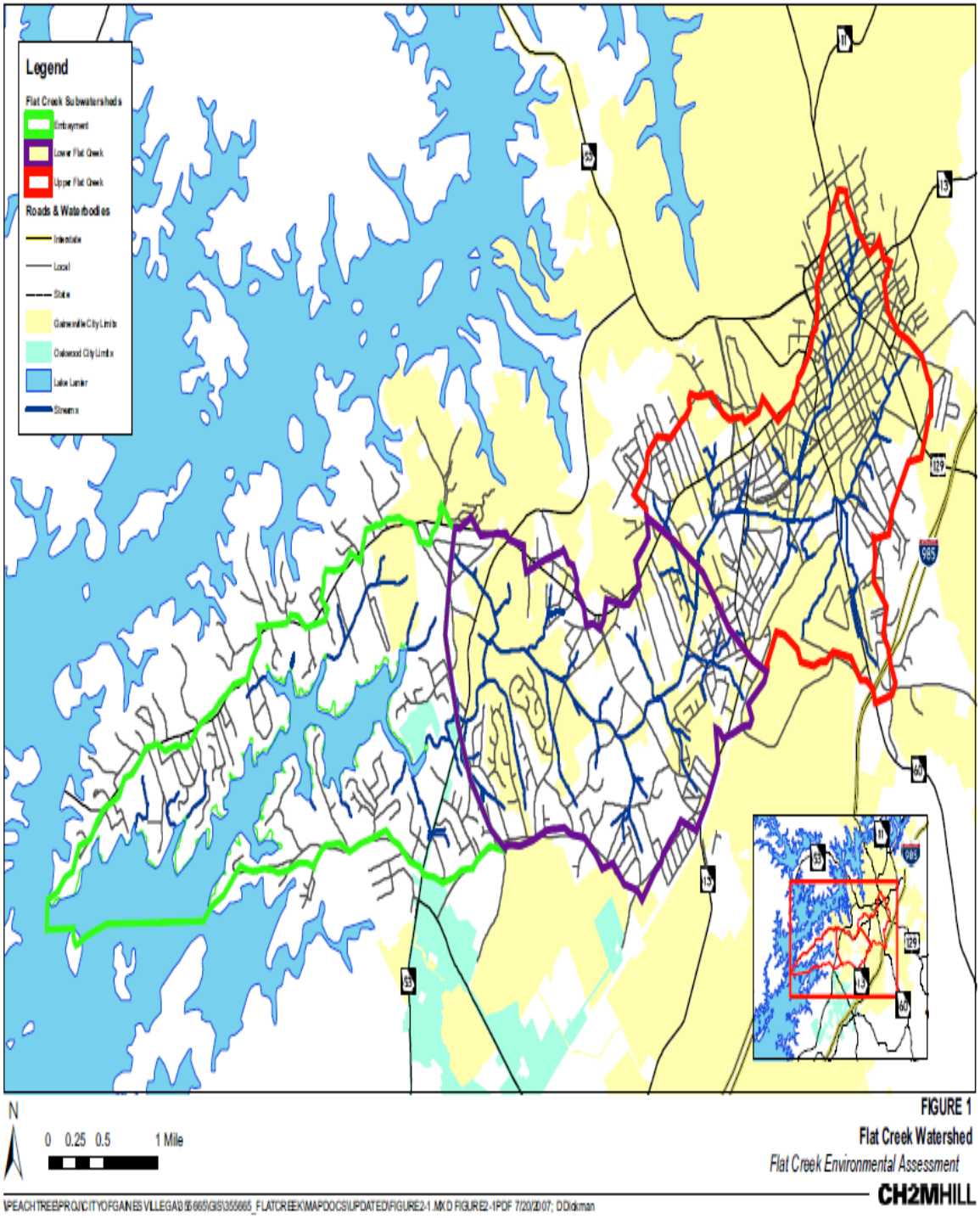

Figure 1 Flat Creek Watershed

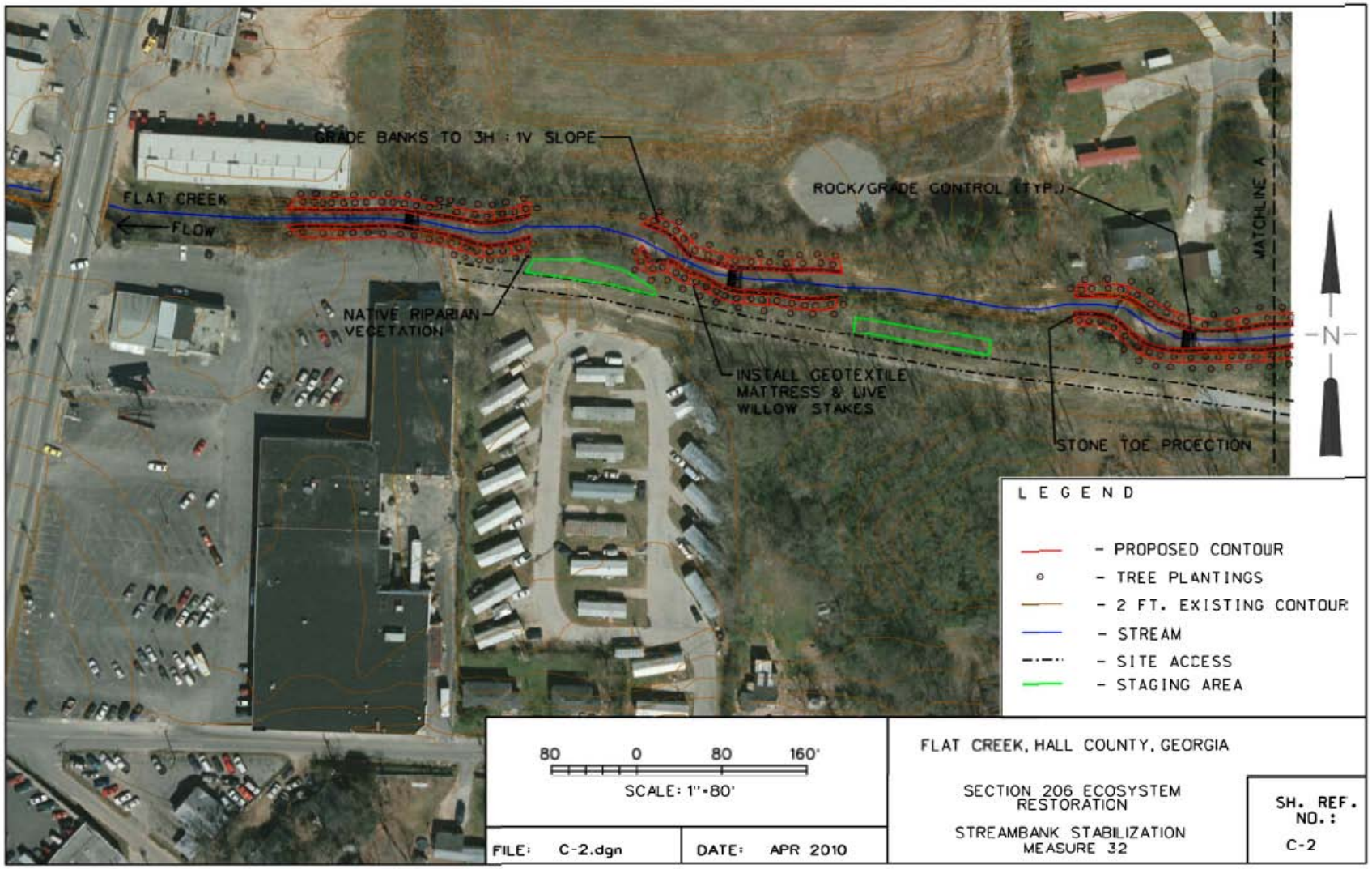

Figure 2 Alternative I Problem Site 32

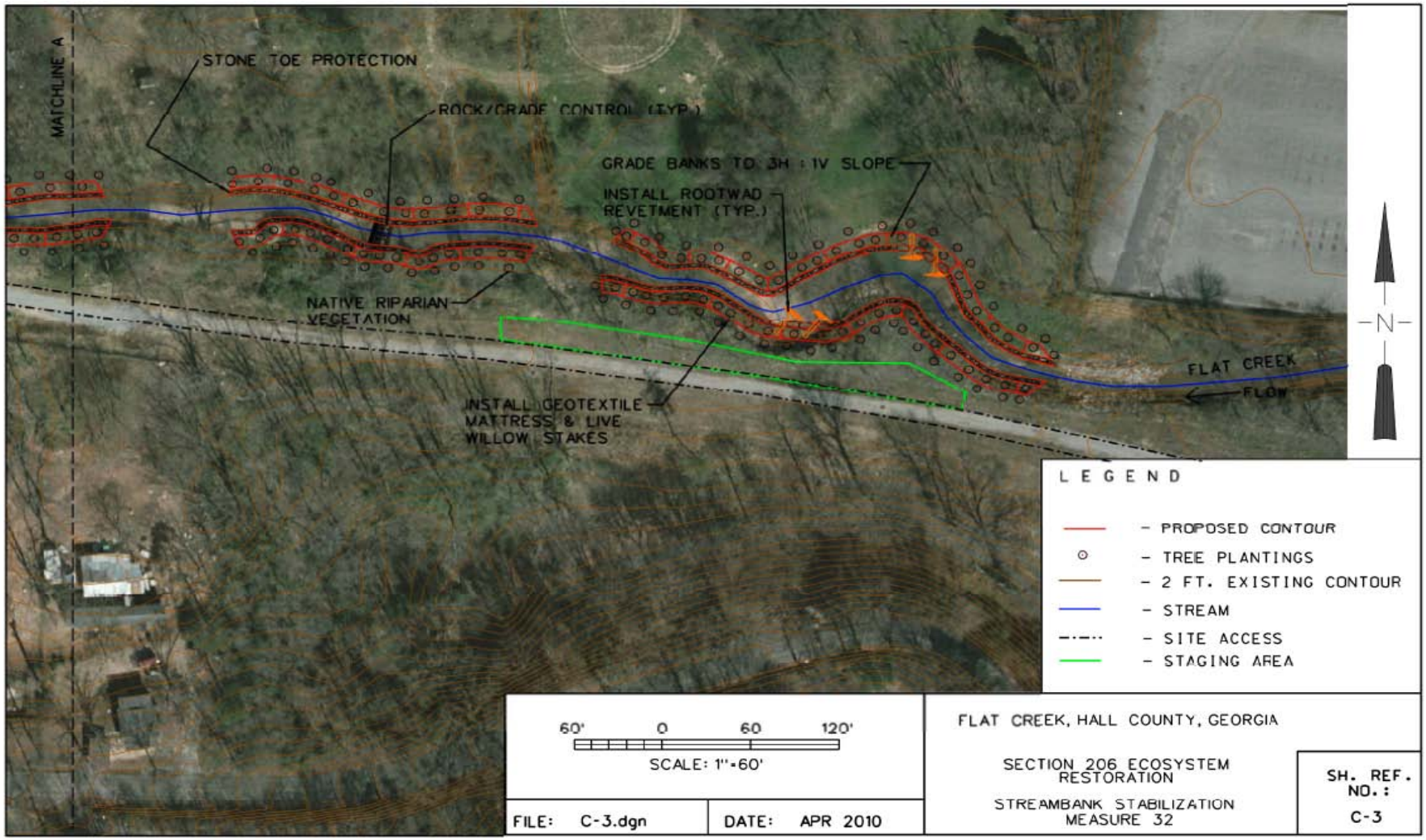

Figure 3 Alternative I Problem Site 32 Continued

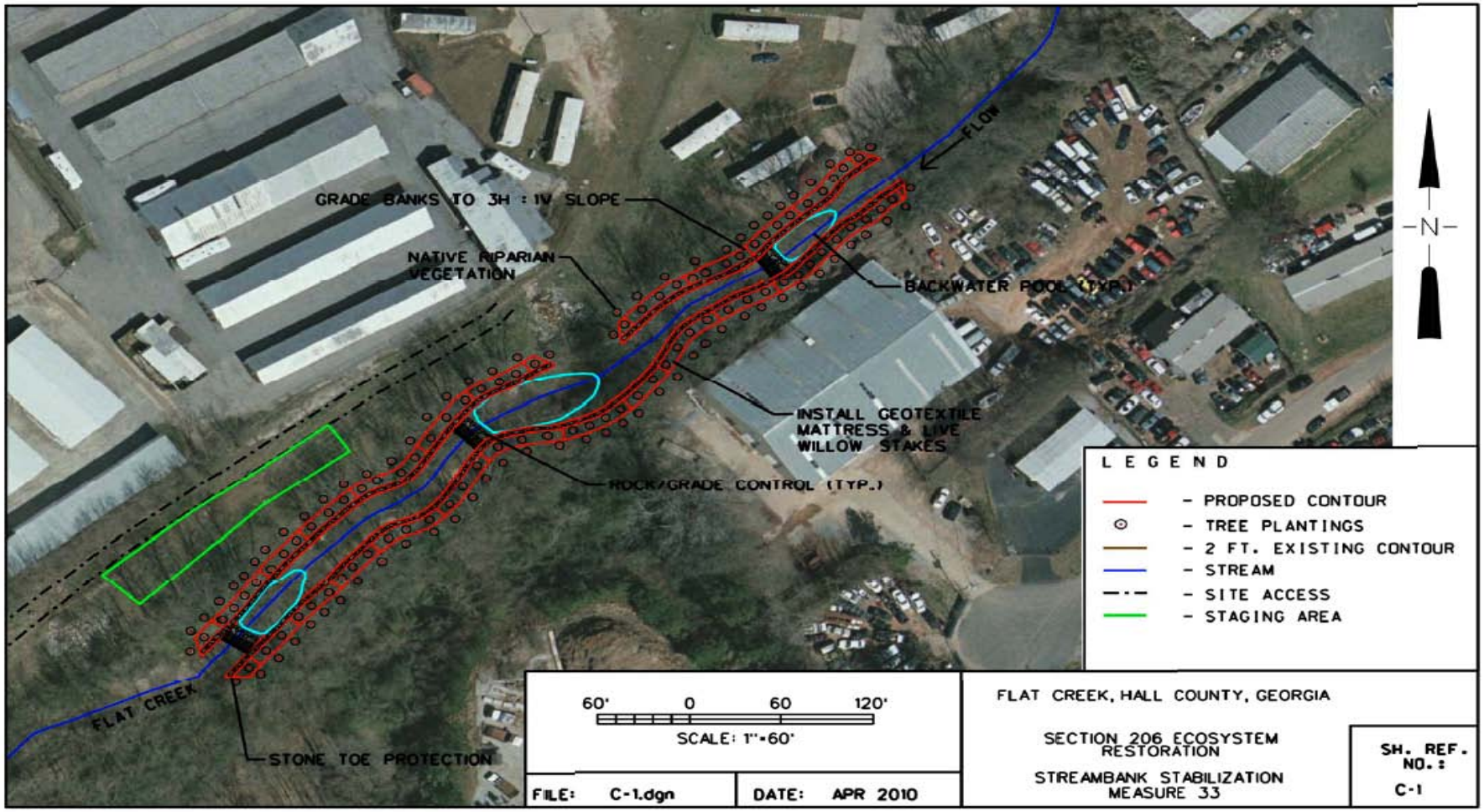

Figure 4 Alternative I Problem Site 33

2.0 Alternatives to the Proposed Action

Initially there were 24 alternatives (Alternatives A to X) (Table 1) and the No Action alternative considered as part of the Flat Creek project. The 24 alternatives were evaluated using the Ecosystem Response Model to determine the existing conditions in Flat Creek, based on existing biological monitoring data by comparing ecosystem benefits of the various project alternatives, using existing and predicted future biological scores. Of these 24 alternatives, 6 were evaluated as being best-buys and feasible projects which include the Tentatively Selected Alternative X, Alternatives A, B, G, V, and the No Action Alternative. The best-buy alternatives were determined according to USACE guidelines; cost-benefit analysis models; cost estimates; and benefit or environmental outputs.

Alternatives to the Tentatively Selected Plan are detailed below:

2.1 Alternative A

Alternative A is a stream restoration project located in upper Flat Creek. The project consists of 300 feet of grade control, bank stabilization, flow deflection, and riparian buffer improvements.

This stream restoration project consists of a variety of instream and bank/channel measures. These measures include engineered riffle, J-hooks, cross vanes, bank grading, creation of a bankfull bench, bank stabilization matting and streambank planting.

2.2 Alternative B

Alternative B is a proposed stream restoration project located in Upper Flat Creek. The project consists of 900 feet of stream restoration including grade control, bank stabilization, flow deflection, box culvert repair/removal, and riparian buffer enhancement. Restoration measures involved in this project include engineered riffle, J-hooks, cross vanes, boulders, creation of a bankfull bench, bank grading, bank stabilization matting, streambank planting, riparian planting of native hardwoods, and seeding and/or mulching.

2.3 Alternative G

Alternative G is a proposed stream restoration project located in Upper Flat Creek. The project consists of 200 feet of stream restoration including bank stabilization (spot repairs), flow deflection, and riparian buffer enhancement. Restoration measures in this project include J-hooks, creation of a bankfull bench, bank grading, bank stabilization matting, and streambank planting.

Draft

2.4 Alternative V

Alternative V includes a stream restoration project in combination with retrofits of detention basins located in Upper Flat Creek. The project consists of 2,500 feet of stream restoration including grade control, bank stabilization, flow deflection, riparian buffer enhancement, and retrofit of six existing dry detention basins. Restoration measures in this project include engineered riffle, J-hooks, boulders, rootwads, creation of a bankfull bench, bank grading, bank stabilization matting, riprap, streambank planting, riparian planting of native hardwoods, and seeding and/or mulching. The retrofit measures include outlet control structures and existing detention basins expansion.

2.5 No Action Alternative

The No Action Alternative would maintain conditions as they are. The Tentatively Selected Alternative and/or any of the action alternatives would not be implemented. If no action is taken, the Flat Creek Watershed will continue to degrade as additional development occurs, and it is likely that fish communities, benthic macroinvertebrate communities and water quality is projected to continue to decline by 25% according to the ERM.

NEPA requires that the No Action Alternative be evaluated to provide a baseline for comparison of the potential impacts of the proposed action. Accordingly, the no action alternative is evaluated in detail in this EA.

Draft

TABLE 1
Ecosystem Restoration Alternatives
Flat Creek Watershed Environmental Assessment

Alternative	Stream Problem Sites												BMP Problem Sites															
	1	2	18	23	25	26	28	29	32	33	39	42	A10687	A14199	A14911	A15015	A15094	CH015	CH016	CH022	CH025	CH027	CH033	CH036	CH048	CH053	CH062	CH106
A	X																											
B		X																										
C			X																									
D				X																								
E					X																							
F						X																						
G							X																					
H								X																				
I									X																			
J										X																		
K											X																	
L												X																
M	X			X																								
N					X								X										X					
O										X				X				X	X			X						X
P									X																X			
Q															X	X								X	X		X	
R												X					X				X							
S						X														X								
T		X					X	X																				
U		X					X	X			X																	
V									X	X				X				X	X			X				X		X
W						X						X					X			X	X							
X									X	X																		

3.0 Existing Environment and Potential Consequences

This section summarizes the general conditions of the physical and biological environment and the socioeconomic resources in the project area. The information was used to assess potential impacts resulting from implementation of the Tentatively Selected Alternative and the four additional action alternatives. These consequences, as well as environmental impacts which are expected with no project implementation (the No Action Alternative), are also summarized in this section.

3.1 Land Use

The Atlanta Regional Commission (ARC) collaborates with municipal governments to develop databases, including land use information, and makes the data available to the public for regional planning purposes. ARC's current land use Geographic Information System (GIS) database for the 20-county Atlanta region, was created using 2005 true color imagery provided by Aerials Express, Incorporated. Land use percentages in the Flat Creek Watershed and Hall County were determined using this database. Summaries of particular land use categories are provided below.

3.1.1 Developed Land (Residential, Industrial, Commercial)

The dominant land uses in the Flat Creek Watershed are residential (35 percent) and commercial/industrial (28 percent) (Table 2). The Upper Flat Creek subwatershed is dominated by industrial and commercial areas and is the most developed subwatershed, while the Lower Flat Creek and Embayment subwatersheds are predominantly residential. The Embayment subwatershed is the least developed, primarily because of the amount of acreage occupied by Lake Sidney Lanier (24 percent of the subwatershed).

Industrial and commercial areas in the Upper Flat Creek subwatershed occupy 64 percent of the subwatershed, and contribute to the extremely high percent impervious cover (51 percent). This impervious cover has a significant effect on water quality conditions in Flat Creek. The Upper Flat Creek subwatershed contains a number of chicken processing plants and feed mills, contributing to the high percentage of industrial areas. Only 20 percent of the Upper Flat Creek subwatershed is residential.

Both the Lower Flat Creek and Embayment subwatersheds are dominated by medium-density residential land use, which is defined as areas developed for single family residential use in which most houses are situated on 0.25-acre to 2-acre lots. As a result, the percent of impervious cover in these subwatersheds is much less than in the Upper Flat Creek subwatershed (Table 2). Because of the presence of Lake Lanier backwaters, 24 percent of the Embayment subwatershed is characterized as reservoir. If the lake were unaccounted for in this subwatershed, the Embayment would have a comparable percentage of total residential land use area (45 percent) to Lower Flat Creek (which is 43 percent residential).

Draft

In comparison to Hall County, the Flat Creek Watershed is significantly more developed, with residential, industrial, and commercial land use accounting for 63 percent of the total area compared to 27 percent of the total area in Hall County. Hall County contains a much larger percentage of undeveloped land (forests and agricultural lands) than does the Flat Creek Watershed (Table 2).

TABLE 2
Land Use in the Flat Creek Watershed
Flat Creek Watershed Environmental Assessment

Land Use Category	Flat Creek Embayment	Lower Flat Creek	Upper Flat Creek	Flat Creek Watershed	Hall County
Agriculture	4%	2%	0%	2%	24%
Residential	38%	46%	20%	35%	23%
Commercial/Industrial	2%	25%	64%	28%	4%
Reservoirs	24%	0%	0%	9%	8%
Parks/Cemeteries	14%	3%	1%	7%	1%
Forests	17%	16%	1%	12%	36%
Wetlands	0%	0%	<1%	<1%	1%
Utilities/Transportation/ Communications/Institutional	0%	7%	12%	6%	1%
Impervious Cover	5%	18%	51%	25%	N/A

Source: Atlanta Regional Commission (2005); Percent impervious cover was calculated from City data

Draft

3.1.2 Agricultural Land

Only 2 percent of the Flat Creek Watershed land (all within the Lower Flat Creek and Embayment subwatersheds) is categorized as agricultural land. This is substantially less than the dominance of agricultural land across Hall County (24 percent of the total area). Hall County's agricultural base, primarily in East and North Hall County, is dominated by poultry, livestock, and dairy farms. Agriculture contributes a large source of income to the area. Hall County ranks second in the state for Total Farm Gate Value, over $229 million, and for Total Poultry and Egg Value. The County also contains a considerable amount of beef stock, the twelfth largest in Georgia.

3.1.3 Transportation, Communication, Utilities, and Institutional

Twelve percent of the Upper Flat Creek subwatershed is categorized as transportation, communication, utilities, or institutional. This consists primarily of railroads and rail stations located in the subwatershed. Overall, 6 percent of the Flat Creek Watershed is categorized as transportation, communication, utilities, or institutional.

3.1.4 Reservoirs

Nearly one-quarter of the Embayment subwatershed is an embayment of Lake Sidney Lanier, which is the largest reservoir in Georgia and covers 38,000 acres. No other reservoirs occur within the Flat Creek Watershed. Overall, the area covered by reservoirs in the Flat Creek Watershed (9 percent of the total area) is comparable to the percent of area covered by reservoirs in Hall County (8 percent).

3.1.5 Forested Areas

While Upper Flat Creek is almost entirely developed, the Lower Flat Creek and Embayment subwatersheds include forested areas. Forests cover 17 percent of the Embayment subwatershed, 16 percent of Lower Flat Creek, and 12 percent of the total area of the Flat Creek Watershed. In comparison, forest areas cover 36 percent of Hall County.

3.1.6 Consequences

Tentatively Selected Alternative X

Construction involved in implementation of the stream restoration projects would not affect any land use types in the watershed. All land disturbances resulting from stream restoration projects would be limited to the Flat Creek stream buffer, which is classified as not developable.

Alternative A

The impacts of Alternative A would be the same as described for the stream restoration component of the Tentatively Selected Alternative.

Alternative B

The impacts of Alternative B would be the same as described for the stream restoration component of the Tentatively Selected Alternative.

Alternative G

The impacts of Alternative G would be the same as described for the Tentatively Selected Alternative.

Alternative V

The impacts of Alternative V would be the same as described for the stream restoration component of the Tentatively Selected Alternative.

No Action Alternative

Conditions would remain as they are. No impacts to land use would result from the No Action Alternative.

3.2 Air Quality

The Environmental Protection Agency's (EPA) Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards (NAAQS) for pollutants

Draft

considered harmful to public health and the environment. The OAQPS has set NAAQS for six principal pollutants, called criteria pollutants. These pollutants are: carbon monoxide (CO), nitrogen Dioxide (NO_2), Ozone (O_3), Lead (Pb), Particulates {particles with diameters of 10 micrometers or less (PM 10)}, and sulfur dioxide (SO_2) (EPA 2002). The State of Georgia has adopted the NAAQS as the state's air quality criteria.

Hall County is a part of a 20-county area that has been designated as nonattainment for the 8-hour Ozone standard, and part of a 22-county area designated as nonattainment for the Fine Particle Particulate Matter (PM 2.5) standard. Areas that are designated nonattainment or previously designated nonattainment for the 8-hour ozone and PM2.5 standards must show (through a process known as transportation conformity) that their transportation activities will not conflict with State air quality goals for that area.

3.2.1 Consequences

Tentatively Selected Alternative X

Construction of the Tentatively Selected Alternative would be similar to other moderate-sized construction projects in terms of impacts to air quality. Short-term emissions would result, but impacts would end when construction was complete. Construction activities could generate fugitive dust, but impacts would be limited through the use of appropriate BMPs, including sprinkling/irrigation, vegetative cover, and mulching, to minimize fugitive dust production. Significant impacts would be avoided through timing of construction activities to avoid any severe air quality alert days. Additional mitigation measures for short-term impacts include properly maintaining equipment and reducing the amount of equipment involved to the extent possible, so that (where applicable) equipment is not left idling for prolonged periods of time. Significant impacts would be avoided through timing of construction activities to avoid any severe air quality alert days.

Alternative A

The impacts of Alternative A would be the same as described for the Tentatively Selected Alternative.

Alternative B

The impacts of Alternative B would be the same as described for the Tentatively Selected Alternative.

Alternative G

The impacts of Alternative G would be the same as described for the Tentatively Selected Alternative.

Alternative V

The impacts of Alternative V would be the same as described for the Tentatively Selected Alternative.

Draft

No Action Alternative

No construction would occur. No impacts to air quality would result from the No Action Alternative.

3.3 Noise

The proposed project area is commercial/industrial and residential and noise levels in typical urban residential areas range from 58 dB to 72 dB (USACE, 1998).

3.3.1 Consequences

Tentatively Selected Alternative X

Noise associated with construction of the proposed restoration projects would be generated by the various trucks, backhoes, bulldozers, and other heavy equipment required. As these noise levels are higher than those typical in urban residential areas, construction activities will be limited to typical working hours, minimizing exposure to nearby residents, to mitigate the effects of noise in the project area. Nearby residences may experience interference with outdoor conversation, but any such interference would be only a minor nuisance. Additionally, workers will be required to wear appropriate hearing protection. No work would be done at night, so there would be no sleep disturbance. Any impacts from noise would be short-term and negligible.

Alternative A

The impacts of Alternative A would be the same as described for the Tentatively Selected Alternative.

Alternative B

The impacts of Alternative B would be the same as described for the Tentatively Selected Alternative.

Alternative G

The impacts of Alternative G would be the same as described for the Tentatively Selected Alternative.

Alternative V

The impacts of Alternative V would be the same as described for the Tentatively Selected Alternative.

No Action Alternative

No construction would occur. No impacts from noise would result under the No Action Alternative.

Draft

3.4 Physiography, Geology, and Soils

3.4.1 Physiography

The alternative actions are located in the Southern Inner Piedmont subecoregion of Georgia, in the larger Piedmont Level III Ecoregion (Griffith et al., 2001). The Piedmont is bounded to the north by more mountainous areas and to the south by the Southeastern Plains Ecoregion. Most of the Southern Inner Piedmont subecoregion is forested, with predominately oak-pine and oak-hickory forest types. Open pastures and cropland areas also exist in the subecoregion. Urban and suburban development is occurring in the region (Georgia Department of Natural Resources [GADNR], 2001).

3.4.2 Geology

Geology in the Piedmont Ecoregion consists primarily of Precambrian and Paleozoic metamorphic and igneous rocks. Metamorphic rock types include biotite gneiss, schist, slate, quartzite, phyillite, and amphibolite. Igneous rocks consist primarily of granite, but also include gabbro, mafic rocks, and diabase dikes. Overall, gneiss, schist, and granite are the dominant rock types (U.S. Department of Agriculture [USDA], 2006).

3.4.3 Soils

Soils in the Piedmont Ecoregion consist primarily of Utisols, Inceptisols, and Alfisols. The dominant rock types mentioned above are often covered with deep saprolite and red, clay-like or loamy subsoils which are generally well drained (USDA, 2006). Additionally, the soils tend to be fine-textured than those in the Southern Coastal Plain Ecoregion.

3.4.4 Consequences

Tentatively Selected Alternative X

The Tentatively Selected Alternative would have no impact on physiography and geology. The Tentatively Selected Alternative is small scale and would not change conditions at the landscape level or extend to the underlying geology. Some disturbance to soils would occur from construction of the Tentatively Selected Alternative. Since the project site contains two soil types, the areas with Madison sandy clay loam have a higher potential for erosion during construction. Heavy equipment would be used to move and compact soils, and remove debris in construction areas. Disturbed areas would be minimized, and the work would be confined to the final site boundaries. Sedimentation and erosion controls would be implemented to minimize erosion of surrounding soils due to soil/ground disturbance. Potential impacts to soils would be controlled and avoided through the use of appropriate BMPs and soil stabilization/re-vegetation techniques following construction. Appropriate BMPs would be selected based on site-specific conditions and could include, but would not be limited to, sediment barriers (silt fence or straw bales), temporary detention basins, grade stabilization with seed and mulch, and geotextile slope stabilization. Additionally, construction will be implemented during historically drier months to reduce the potential for erosion.

Site preparation for new structures would also require clearing and grading. Grading plans would be prepared to identify how sites would be graded, how drainage patterns would be

Draft

directed, and how runoff velocities would affect receiving waters. The grading plans would also provide information regarding when earthwork would start and stop, establish the degree and length of finished slopes, and specify where and how excess material would be disposed or where borrow materials would be obtained if needed. Berms, diversions, and other stormwater practices that require excavation and filling also would be incorporated into the grading plan. Erosion, sediment control and stormwater management goals would be considered in the grading plan. Grading crews would be supervised to ensure that the plans are implemented as intended.

Positive impacts to soils would result from implementation of the Tentatively Selected Alternative. Bank stabilization measures included in stream restoration would reduce the amount of erosion occurring in the stream channel and lead to a long-term decrease in soil loss. Riparian planting in the project area would also decrease the amount of soil loss and erosion in riparian areas. Benefits of project implementation include soil conservation across the 2500 feet of stream restoration included in restoration activities.

Alternative A

Alternative A is located in an area with Madison sandy clay loam, includes 300 feet of stream restoration. Construction in Alternative A has less potential than the Tentatively Selected Alternative to cause soil disturbance in the short-term, but also less potential for soil conservation in the long-term.

Alternative B

Since the construction length of Alternative B (900 feet) is less than that of the Tentatively Selected Alternative, there is expected to be less disturbances to soil. However, the soil found in the area of Alternative B, Madison sandy clay loam, has more of a potential to erode than Cartecay and Chewacla soils, which is found in certain areas of the Tentatively Selected Alternative. This may result in a higher degree of erosion at Alternative B, during construction, than at the Tentatively Selected Alternative.

The long-term positive impacts of Alternative B would be less than that of the Tentatively Selected Alternative. Since the length of stream restoration included in Alternative B is less than in the Tentatively Selected Alternative, there is less potential for soil conservation.

Alternative G

Alternative G includes approximately 200 feet of stream restoration, and therefore has less potential for soil disturbance during the construction phase, than does the 2500 feet of restoration involved in the Tentatively Selected Alternative. Additionally, the soil in the area of Alternative G (Madison sandy clay loam) has less potential for erosion than the Tentatively Selected Alternative, which would reduce short-term negative impacts. The long-term positive impacts to Alternative G would be less than those in the Tentatively Selected Alternative, since the length of Alternative G is shorter than that of the Tentatively Selected Alternative.

Alternative V

Alternative V would have the same as described for the Tentatively Selected Alternative.

Draft

No Action Alternative

Under the No Action Alternative, no land disturbance or construction would take place. Therefore, no direct impacts to geology, soils or topography would result from the No Action Alternative. There would be indirect negative impacts to soils. Absent the implementation of the Tentatively Selected Alternative, streambank degradation would continue and soils would be lost to erosion.

3.5 Aesthetics

At the project locations, the aesthetics of Flat Creek have been diminished by anthropogenic disturbances. Many areas have been infiltrated with trash and lawn debris, and severe erosion has led to turbid water conditions. Project locations are situated in residential and commercial areas, and the riparian vegetation, in many cases, has been cleared as a result of development. Flat Creek is highly channelized, and the straightened stream channel lends to a less aesthetically pleasing appearance.

Tentatively Selected Alternative X

The Tentatively Selected Alternative would have a positive impact on aesthetics. Stream restoration natural channel design techniques, utilizing features to return the stream to a more natural state, would cause the project area to be more aesthetically pleasing. The planting of native trees and grasses, and the removal of exotic plant species, along the stream channel would enhance the riparian areas at the project location. Stream bank stabilization would remove the sight of bare and sloughing banks, and would result in cleaner and clearer water at the project location. Additionally, debris and trash would be removed during the stream restoration activities and would improve aesthetics at the project site.

Alternative A

The impacts of Alternative A would be the same as described for the Tentatively Selected Alternative.

Alternative B

The impacts of Alternative B would be the same as described for the Tentatively Selected Alternative.

Alternative G

The impacts of Alternative G would be the same as described for the Tentatively Selected Alternative.

Alternative V

The impacts of Alternative V would be the same as described for the Tentatively Selected Alternative.

No Action Alternative

Under the No Action Alternative, no changes to Flat Creek would occur, and there would be no changes to aesthetics.

Draft

3.6 Water Resources

3.6.1 Surface Water

Georgia Environmental Protection Division (GAEPD) identifies segments of State streams in Georgia's 305(b)/303(d) List of Waters in accordance with Section 305(b) of the Clean Water Act. Section 305(b) requires states to monitor and report water quality conditions on a biannual basis. The List of Waters provides an assessment of surface water quality by listing assessed waters as either "supporting" or "not supporting" their designated use, and for waters not supporting their designated use, identifying the criterion violated and potential causes of impairment. The list places waters not supporting their designated use into one of five categories, which indicate the status of development by GAEPD of total maximum daily loads (TMDLs), a determination of the amount of a pollutant which can be introduced to a stream without causing the stream to violate its designated use.

Six miles of Flat Creek, from the headwaters to Lake Lanier, are identified in Georgia's 2008 305(b)/303(d) Draft List of Waters for violating its fishing use classification. The stream segment is listed for violating both fecal coliform standards and biological criteria for fish bioassessments, with the potential source of impairment listed as urban runoff. A TMDL has been developed for fecal coliform, and a draft TMDL has been developed for the impacted fish communities.

Draft

3.6.2 Groundwater

The identification of groundwater recharge areas is important for identifying alternative water sources. The Department of Natural Resources makes available its Hydrologic Atlas 18 database which identifies significant groundwater recharge areas in Georgia. Areas of thick soils are identified by aquifer type across the State based on testing conducted by the State, and on outcrop area, lithology, soil type, slope, density of lithologic contacts, geologic structure, the presence of karst, and potentiometric surfaces (U.S. Geological Survey [USGS], 2006). A few very small areas are classified as "probable areas of thick soils;" however no groundwater recharge areas are present within the Flat Creek Watershed (Georgia Geological Survey [GGS], 2007).

3.6.3 Floodplains

Typically, floodplains are designated and mapped by the National Flood Insurance Program, which is administered by the Federal Emergency Management Agency (FEMA). Official floodplain maps prepared by FEMA delineate intermediate regional flood zones (areas inundated by a flood having an average frequency of occurrence once in 100 years). All of the stream restoration projects are technically within the floodplain, as the purpose is to restore the stream channel.

3.6.4 Wetlands

Wetlands provide a critical habitat for a number of species, are a valuable land cover, and should be protected because they maintain average river levels, and they filter and purify surface water. Wetlands also reduce the frequency and intensity of flooding by storing water during storms and slowly releasing it. Especially significant is the ability of wetlands

to filter pollutants from urban runoff, leaking septic systems, agricultural runoff, and heavy metals from industrial sites. Due to the important role these areas play in the ecosystem, wetlands are provided appropriate protection through current federal and state regulations.

According to 2005 land use data provided by ARC, wetlands occupy an insignificant area of the Flat Creek Watershed area (only 10 acres, all of which are located in Upper Flat Creek). The National Wetlands Inventory database was used to map wetland areas in the area of each alternative to determine the approximate acreage of wetlands. A wetland delineation was conducted to determine the exact wetland acreage of the proposed project sites which is discussed in Section 3.6.6 Wetlands.

3.6.5 Stormwater

In 2007, an assessment of stormwater infrastructure in the Flat Creek Watershed was conducted to identify BMPs which were not offering adequate water quality and/or channel protection. Only 1 of the 30 field inventoried BMPs was assessed as meeting design standards set forth in the 2001 Georgia Stormwater Management Manual. In addition, water quality and stream assessment data analyzed for the Flat Creek Watershed Assessment provide evidence that the watershed has been severely impacted by stormwater runoff (CH2MHILL, 2007). During stream assessments, stream banks throughout Flat Creek mainstem and its tributaries were observed to be severely eroded, which is often a result of stormwater runoff and may be intensified by poor BMP function.

The Flat Creek Watershed has undergone land clearing as part of its development and urbanization. If sediment and erosion control practices are not applied correctly during land disturbances, nonpoint source pollution can result. Inadequate erosion control measures may contribute large quantities of sediment to the stream channel. Water quality data indicate that excessive sediment and high stormwater flows are a prevalent problem for streams in the Flat Creek Watershed, as seen by high levels of total suspended solids during wet weather and a high proportion of eroded banks in the Upper and Lower Flat Creek subwatersheds. Based on the urban nature of Upper Flat Creek, the main sources of sediment are assumed to be stormwater runoff and eroding stream banks. Bank erosion is caused by historical channel straightening and is increased by high stormwater flows resulting from impervious surfaces and inadequate buffers. The expected increase in construction and urbanization in the Lower Flat Creek subwatershed could further intensify impacts to the stream.

Land use data analysis conducted for the Flat Creek Watershed Assessment indicates that the dominant land uses throughout the watershed are highly impervious in nature, with Upper Flat Creek containing the greatest percentage of impervious surfaces. In impervious areas, stormwater runoff can carry loads of pollutants into the stream channel. These include animal waste, vegetative matter, pesticides, herbicides, fertilizer, and trace metals from urban surfaces such as roofing materials, flashing, galvanized pipes, brake linings, and tires. In addition, atmospheric pollutants can be deposited on impervious surfaces and delivered to the stream.

Draft

3.6.6 Consequences

Tentatively Selected Alternative X

Surface Water

Construction activities may lead to short-term water quality effects, including increased sedimentation and nonpoint source pollution. Additionally, modified surface water runoff patterns resulting from land disturbance may result in hydrologic impacts. However, any water quality and hydrologic impacts that could occur would be temporary and would end upon completion of construction. Construction would comply with Nationwide Permit 27 conditions and the Georgia Erosion and Sedimentation Act. To limit the degree of impact to Flat Creek, proper BMPs for sediment and erosion control will be used, in accordance with the Georgia Erosion and Sedimentation Act and local erosion and watershed protection ordinances. Construction will be implemented, to the extent feasible, during historically drier months to reduce the potential for impacts to surface water quality.

State Water Quality Certification and Stream Buffer Variance permits will be obtained from GAEPD during the planning, engineering and design phase. Water quality certification and stream buffer variance are mandated by state law and site specific; it would be in the best interest of the USACE to defer the application for these permits during the planning, engineering and design phase. This will ensure any changes to design prior to construction will not result in reapplying for this permit.

If construction of the Tentatively Selected Alternative would disturb greater than 1 acre of land, a Notice of Intent for a National Pollutant Discharge Elimination System (NPDES) Stormwater Construction Permit will be filed with GAEPD.

There would be long-term positive impacts from the implementation of the Tentatively Selected Alternative. Projected long-term effects to surface water include improvements to water quality in Flat Creek. The Tentatively Selected Alternative implementation includes: (1) riparian buffer enhancements to decrease nonpoint source pollution and sedimentation and (2) streambank stabilization measures to decrease bank erosion and instream sediment production. Both of these measures would improve the water quality in Flat Creek.

Groundwater

Construction would be limited to near surface areas and would not involve any harmful materials and/or potential pollutants. The Tentatively Selected Alternative would not be expected to impact groundwater resources.

Floodplains

Stream restoration project construction would occur inside designated floodplains; however floodplain maps will be considered in the design phase of the projects, and Tentatively Selected Alternative will be constructed in compliance with FEMA's guidance for "no-rise/no-impact" certification for proposed developments in designated floodways. There would be no negative impacts to floodplains.

Draft

There are potential long-term positive impacts from the implementation of the Tentatively Selected Alternative. The change in flood patterns has the potential to improve biological conditions in the watershed by leading to an increase in baseflow available to support aquatic communities during dry weather.

Wetlands

Wetland delineation was conducted on June 16, 2010 by CH2MHill in accordance with the U.S. Army Corps of Engineers Wetland Delineation Manual, January 1987. It was determined that no jurisdictional wetlands were identified at the proposed project sites. BMPs implemented during construction (silt fences, topsoil segregation and replacement, stabilization with seed and mulch; clay plugs, fiber mats for controlling erosion) would minimize the potential for indirect impacts to offsite wetlands.

There would be potential for long-term beneficial impacts to wetlands near the Tentatively Selected Alternative. Bank stabilization and grade control would reduce the potential for future channel incision and relocation, which would eliminate potential events that could negatively impact wetland hydrology.

Stormwater

Construction activities involved in the implementation of ecosystem restoration projects would have no significant negative short-term impacts on stormwater. Construction activities would comply with the Georgia Erosion and Sedimentation Act of 1975 and local erosion and watershed protection ordinances. Additionally, construction would comply with the Georgia Rules and Regulations for Water Quality Control, 391-3-6-18 (GADNR, 2004). Installation, use, and maintenance of appropriate stormwater control BMPs would prevent impacts from construction site stormwater. For BMP retrofit projects, existing stormwater BMPs would be compromised short-term during maintenance and/or retrofitting; however this is not expected to significantly impact stormwater. Additionally, construction will be implemented during historically drier months to reduce the potential for stormwater impacts.

The stream restoration component of the Tentatively Selected Alternative would be expected to have major positive long-term impacts on stormwater through reduction of nonpoint source pollution by improving riparian buffer conditions. The Tentatively Selected Alternative is expected both to improve the quality of stormwater entering the stream and to reduce the velocity, thus the detrimental impacts, of stormwater runoff.

Alternative A

The impacts of Alternative A would be the same as described for the stream restoration component of the Tentatively Selected Alternative.

Alternative B

The impacts of Alternative B would be the same as described for the stream restoration component of the Tentatively Selected Alternative.

Draft

Alternative G

The impacts of Alternative G would be the same as described for the Tentatively Selected Alternative.

Alternative V

The impacts of Alternative V would be the same as described for the stream restoration component of the Tentatively Selected Alternative.

No Action Alternative

No construction would occur so there would be no direct impacts to water resources. However, based on predictive analysis, water quality in Flat Creek is expected to decline in the future if no ecosystem restoration project is implemented (Flat Creek Ecosystem Response Modeling; Appendix F of the Flat Creek Detailed Project Report). Future development and continued degradation of existing conditions would decrease the quality and availability of surface water. Additionally, increases in stormwater velocity, resulting from future development, may result in an increase in frequency and intensity of flooding events, leading to further decline in Flat Creek's hydrologic condition and aquatic communities. The indirect impacts would be long-term and major.

3.7 Biological Resources

Biological resources in the area which have the potential to be impacted by the proposed action include flora and fauna; and endangered and threatened species common to the area.

3.7.1 Flora and Fauna

Flora

Typical plant species that may occur in the Flat Creek Watershed include the kudzu (*Pueraria lobata*), Chinese privet (*Ligustrum sinense),* princess-tree (*Paulownia tomentosa),* blackberry *(Rubus eubatus),* red Mulberry *(Morus rubra*), white oak (*Quercus alba),* Northern red oak (*Quercus rubra),* black oak (*Quercus velutina),* mockernut hickory (*Carya tomentosa),* pignut hickory (*Carya glabra),* American beech (*Fagus grandifolia),* loblolly pine (*Pinus taeda*), flowering dogwood (*Cornus florida),* sourwood (*Oxydendrum aroboreum),* blackgum (*Nyssa sylvatica),* musclewood (*Carpinus caroliniana*), tulip poplar (*Liriodendron tulipifera),* red maple (*Acer rubrum*), sugarberry (*Celtis laevigata*), sweetgum (*Liquidambar styraciflua*), christmas fern (*Polystichum acrostichoides*), cinnamon fern (*Osmunda cinnamomea),* netted chain fern (*Woodwardia areolata),* Jack-in-the-pulpit (*Arisaema triphyllum*), muscadine (*Vitus rotundifolia*), switchcane (*Arundinaria gigantean*), and false nettle (*Boehmeria cylindrical)* (Wharton, 1978; Brown & Kirkman, 2000).

Fauna

Typical fish species that may be found in the Flat Creek Watershed include redbreast sunfish (*Lepomis auritus),* green sunfish (*Lepomis cyanellus),* warmouth (*Lepomis gulosus),* bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides),* golden shiner (*Notemigonus crysoleucas),* blacktail shiner (*Cyprinella venusta),* spottail shiner (*Notropis*

Draft

hudsonius), creek chub (*Semotilus atromaculatus)* and flat bullhead (*Ameiurus sp. Cf. platycephalus).*

Other common animals that may occur in the Flat Creek Watershed include the brown snake (*Storeria dekayi*), northern water snake (*Neroida sipedon*), common garter snake (*Thamnophis sirtalis*), racer (*Coluber constrictor*), black ratsnake (*Elaphe obsoleta*), eastern/black kingsnake (*Lampropeltis getula*), copperhead (*Agkistrodon contortrix*), spotted salamander (*Ambystoma maculatum*), marbled salamander (*Ambystoma opacum*), red salamander (*Pseudotriton rubber*), spring peeper (*Pseudacris crucifer*), American toad (*Bufo americanus*), beaver (*Castor canadensis*), white-tail deer (*Odocoileus virginianus*), gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), opossum (*Didelphus virginiana*), and gray and red fox (*Urocyon cinereoargenteus, Vulpes velox*) (Wharton, 1978; University of Georgia [UGA]/Janecek & Scott, 2000).

3.7.2 Endangered and Threatened Species

According to the US Fish and Wildlife Service (USFWS) website, there are several state listed species that could be found in the proposed project area. State listed species include the threatened Chattahoochee crayfish (*Cambarus howardi*), the endanged golden seal (*Hydrastis Canadensis),* the rare Indian olive (*Nestronia umbellula)* and the rare Ozark bunchflower (*Veratrum woodii*). There are no Federal protected species (or their habitat) in the project vicinity.

3.7.3 Consequences

Tentatively Selected Alternative X

Flora and Fauna

Common animals in the area of the proposed action have the potential to be impacted. Temporary displacement of fish species (and possibly some macroinvertebrate species) is expected during the construction phase of the Tentatively Selected Alternative. In addition, there is the potential for incidental mortality of some animals in the area. Long-term, however, the project has the potential to significantly enhance physical habitat in Flat Creek, and thus lead to improvements in the health of fish and macroinvertebrate communities. Overall, the biological resources of Flat Creek are projected to significantly improve with implementation of the Tentatively Selected Alternative, due to an improvement in surface water and stormwater quality. Common plants would be disturbed or displaced during construction; however, the vegetation community would be expected to recover within one complete growing season. Long-term positive impacts to plant species are expected to result from the proposed action from improved bank stability. Certain proposed alternatives involve vegetative management and/or planting of the riparian corridor along Flat Creek and/or its tributaries. Vegetative management involves removing invasive plant species, such as kudzu or privet. These plants can cause structural damage, inhibit the growth of local plant species, and lead to extinction of endangered species. Therefore, this aspect of the Tentatively Selected Alternative is expected to have a positive impact on plants in the area. Additionally, planting of riparian buffers involves the establishment of trees or other woody vegetation in a riparian zone that has been reduced or cleared. Improving or increasing the

Draft

riparian vegetation will increase this biological resource and will provide additional habitat and cover for aquatic organisms.

In addition, the USFWS is has prepared a draft Fish and Wildlife Coordination Act (FWCA) report for this proposed project which has been coordinated with Georgia Department of Natural Resources (GADNR) for their review and concurrence.

Endangered and Threatened Species

By email correspondence dated 20 August 2010 regarding the preparation of the FWCA report, based on preliminary review of the information in their maps and files, the USFWS does not expect federally endangered or threatened species to occur in the project area. During this coordination USACE indicated that the project would have no effect on the flora and fauna of the proposed project area.

According to a letter dated 21 October 2010 in the draft FWCA report, the USFWS concluded that no federally protected species are likely to occur in the project area. Also in the draft FWCA report is a letter dated 12 October 2010 from GADNR – Wildlife Resources Division stating that based on the poor condition of the watershed and the information in the report, GADNR agreed with the recommendations of the USFWS and support the restoration project and they have no other comments on the project.

By email correspondence dated 18 November 2010, the Fish and Wildlife Service concurs with the Mobile District Corps of Engineers determination that the Flat Creek Aquatic Ecosystem Restoration Project will have no effect on Federally protected flora or fauna within the proposed project area.

Construction would result in small scale localized disturbance to the species in the project area. However, it is not expected that these species would occur in the proposed project area therefore no impacts would be expected.

Alternative A

The impacts of Alternative A would be the same as described for the Tentatively Selected Alternative.

Alternative B

The impacts of Alternative B would be the same as described for the Tentatively Selected Alternative.

Alternative G

The impacts of Alternative G would be the same as described for the Tentatively Selected Alternative.

Alternative V

The impacts of Alternative V would be the same as described for the Tentatively Selected Alternative.

Draft

No Action Alternative

If the No Action Alternative is selected, biological resources in Flat Creek are expected to undergo further decline. The existing degraded conditions of Flat Creek, in conjunction with planned future development in the watershed, will lead to a decline in the health of fish and macroinvertebrate communities. The *Flat Creek Ecosystem Response Modeling TM* included as Appendix F of the Flat Creek Detailed Project Report details the rationale behind this assumption and the methods used to project future conditions.

3.8 Cultural Resources

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources can be divided into two broad categories: Archaeological Resources (prehistoric and historic) and Architectural Resources.

Under the National Historic Preservation Act (NHPA) of 1966, as amended, only cultural resources included in or eligible for inclusion on the National Register of Historic Places (NRHP), defined as 'historic properties', warrant consideration with regard to adverse impacts from a proposed action.

Draft

3.8.1 Archaeological Resources

Prehistoric occupation of Georgia occurred nearly 12,000 years ago with villages clustered primarily along creeks, rivers or other water sources and areas that could provide easy access to good hunting areas and fertile agricultural fields. European settlement of the project area began in the late 1700s and the area developed into a farming region. Gainesville served as the County's main center of industry, primarily cotton, and also as a shipping point for lumber that was harvested in the mountains to the north. After World War II poultry replaced cotton as the main cash crop.

According to mapping performed for the Gainesville/Hall County Comprehensive Plan (2004), the Flat Creek Watershed contains one recorded archaeological site. This site is not near any of the considered alternative sites. An archaeological survey was conducted in the areas that would be impacted by the Tentatively Selected Alternative. No archaeological resources were identified. The archaeological report will be coordinated with the Georgia State Historic Preservation Office (SHPO) and appropriate Native American tribes to comply with Section 106 of the NHPA.

3.8.2 Architectural Resources

The National Register of Historic Places, a directory of sites that are significant on a national level, lists 21 resources in Hall County, Georgia, eight of which are located in the Flat Creek Watershed. All eight locations are in close proximity to downtown City of Gainesville, in the northern section of the Upper Flat Creek subwatershed, north of each of the alternative locations. The eight historic sites include Brenau College District, Federal Building and Courthouse, Gainesville Commercial Historic District, Green Street-Brenau Historic District,

Hall County Courthouse, Hall County Jail, Logan Building, and the Rucker, Beulah, House--School.

The Natural, Archaeological and Historic Resources Georgia Information System (NAHRGIS) database of historic resources includes buildings, structures, historic sites, landscapes, and districts included in the Georgia Department of Natural Resources, Historic Preservation Division's Historic Resources Survey or listed in the NRHP. The resources are significant at the local, state or national level. The NAHRGIS database lists 349 historic resources in Gainesville, and almost all are located in the Upper Flat Creek Watershed, north of Alternative B. Of the three historic resources located apart from the downtown City of Gainesville locations, one is in close proximity to an alternative.

3.8.3 Consequences

Tentatively Selected Alternative X

The implementation of the proposed action will have no impacts on archaeological or architectural resources. An archaeological survey (Appendix N of the Flat Creek Detailed Project Report) of the proposed project areas that comprise the Tentatively Selected Alternative resulted in negative findings. Also a review of the NRHP database and NAHRGIS did not reveal any significant structures or buildings in the proposed project location. The results of the survey will be coordinated with the GA SHPO and appropriate tribes to comply with Section 106 of the NHPA.

Alternative A

The impacts of Alternative B on archaeological and architectural resources would be the same as described for the Tentatively Selected Alternative.

Alternative B

The impacts of Alternative E on archaeological and architectural resources would be the same as described for the Tentatively Selected Alternative.

Alternative G

The impacts of Alternative G on archaeological and architectural resources would be the same as described for the Tentatively Selected Alternative

Alternative V

The impacts of Alternative V on archaeological and architectural resources would be the same as described for the Tentatively Selected Alternative.

No Action Alternative

There would be no impacts to archaeological or architectural resources under the No Action Alternative.

Draft

3.9 Socioeconomics

This section addresses the socioeconomic issues associated with the proposed project area. The socioeconomic indicators used include employment, wages, demographic characteristics, and housing costs. Recreational areas, as well as environmental justice and protection of children, are also described in this section. The socioeconomic statistics provided describe Hall County as a whole; it should be noted that the Flat Creek Watershed comprises the most populated and developed region in Hall County.

3.9.1 Employment

According to 2000 U.S. Census, less than 4 percent of the residents of Hall County are unemployed (U.S. Census Bureau, 2000). The largest industry in the County is manufacturing, with the most common worker segments being management and professional; sales and office; and production, transportation, and material moving. The chicken processing industry employs many Hall County residents and has had a significant impact on the population increase since 1990. Of the approximately 80,000 jobs in Hall County, over half of these jobs are located in the City of Gainesville (City of Gainesville and Hall County, 2004).

3.9.2 Wages

In 1999, the Hall County median per capita income was $19,690, with full-time male workers earning more than $7,000 more than female workers. The median household income was $44,908. According to the 2000 census, 16,980 individuals and 3,070 families were below the poverty line in Hall County. Estimates for 2005 projected that the number of families and individuals below the poverty line decreased, and inflation-adjusted dollars indicate that the per capita income for 2005 was $22,275. 1999 data revealed that almost 11,000 people were receiving Social Security income of an average $11,008, 906 people were receiving public assistance income, and 6,131 obtained an average retirement income of $18,301 (U.S. Census Bureau, 2000).

3.9.3 Demographics and Housing:

The project would not result in the movement of people into or out of the region or impact housing costs. There would be no change in regional demographics or housing demand. Therefore, these resource areas are excluded from analysis in the EA.

3.9.4 Protection of Children:

The nature of the project is to restore watershed function. This action would create no environmental health or safety risks to children. Accordingly, this resource area is not further evaluated in the EA.

3.9.5 Environmental Justice:

The project would not displace any portion of the population in the area nor create any environmental hardships for any portion of the population. Therefore, the action would not

Draft

disproportionately impact minority or low income populations and Environmental Justice is not further evaluated in the EA.

3.9.6 Recreation Areas:

Construction activities would be confined to the general area of the stream, which is not currently used for recreation, and would not interfere with existing recreation areas or impact future recreation opportunities. Most recreational fishing in the area occurs in Lake Lanier, to which Flat Creek is a tributary. Improvements to water quality which are expected to result from the project may enhance recreational opportunities at Lake Lanier, but not at the project area. Therefore, potential impacts to recreation are not analyzed in this EA.

3.9.7 Climate Change

The nature of the project is to restore the natural ecosystem and watershed function within Flat Creek. As such, there would be no permanent sources of greenhouse gas emissions. Insignificant emissions of greenhouse gases during construction would have no potential to affect climate change. In accordance with the guidance provided in USACE Engineering Circular EC 1165-2-211 (USACE 2009), USACE planning, engineering, and designing projects, must consider how sensitive and adaptable natural and managed ecosystems and human systems are to climate change and other related global changes, and consider alternatives that are assessed for possible future rates of sea-level change which can be caused by climate change. According to Appendix C of the EC "Flowchart to Account for Changes in Mean Sea Level", the first step in this determination is to decide whether the project would occur in a coastal/tidal/estuarine zone or in an area bordering such zones. In accordance with the flowchart, Flat Creek is not in such a zone and no further consideration to sea level change is necessary.

3.9.8 Consequences

Tentatively Selected Alternative X

The Tentatively Selected Alternative would have a temporary minor positive impact on socioeconomic factors. There would be temporary construction employment and associated wages. Suppliers in the surrounding area would have a short-term increase in the sale of construction-related materials. There would be no long-term impacts on employment or income in the area of the proposed action.

Alternative A

The impacts of Alternative A would be the same as described for the Tentatively Selected Alternative.

Alternative B

The impacts of Alternative B would be the same as described for the Tentatively Selected Alternative.

Draft

Alternative G

The impacts of Alternative G would be the same as described for the Tentatively Selected Alternative.

Alternative V

The impacts of Alternative V would be the same as described for the Tentatively Selected Alternative.

No Action Alternative

There would be no change in current socioeconomic conditions under the No Action Alternative. There would be no short-term increase in construction-related jobs and wages, and no associated increase in local sales of construction-related materials. There would be no impacts to demographics, housing costs, children, minorities, low income populations, or recreation areas.

3.10 Hazardous and Toxic Substances

In the area surrounding the alternative actions, numerous commercial and industrial facilities manufacture, store, or handle toxic chemicals and are regulated by one or more EPA permit programs. Most of the facilities which are in the Flat Creek Watershed are in the upper half of the watershed. A summary of potential hazardous and toxic substances is provided below.

3.10.1 Toxic Release Inventory Sites

The USEPA Envirofacts database, which contains information on several USEPA-regulated programs, can be used to identify hazardous and toxic substances that have the potential to pollute certain areas. One program of interest is the Toxic Release Inventory (TRI), a database that contains information about releases and transfers of more than 650 toxic chemicals and compounds to the environment. The TRI database includes release-transfer data organized hierarchically by facility, by year and chemical, and by medium of release (air, water, underground injection, land disposal, or offsite). Information such as the facility name, address, latitude/longitude, parent company, and USEPA identification number is provided by the database. There are approximately 45 TRI facilities located in Hall County, 13 of which are located in the Flat Creek Watershed.

3.10.2 Resource Conservation and Recovery Information System Sites

In addition, Envirofacts contains information regarding the Resource Conservation and Recovery Information System (RCRIS), a national program management and inventory system containing information about hazardous waste handlers. Most generators, transporters, storers, and disposers of hazardous waste are required to provide information about their activities to regional and national USEPA offices. The Resource Conservation and Recovery Act, as amended by the Hazardous and Solid Waste Amendment of 1984, regulates these locations. There are approximately 210 RCRIS facilities located in Hall County, of which 62 are located within the Flat Creek Watershed.

Draft

3.10.3 Permit Compliance Systems

All facilities which discharge effluent directly to surface waters, including industrial and municipal facilities, must obtain an NPDES permit which is administered by the State. These facilities are classified as Permit Compliance System (PCS) facilities by the USEPA, and information for each can be found in the Envirofacts database.

Three facilities in the Flat Creek watershed operate under NPDES permits. The Gainesville Flat Creek Water Reclamation Facility operates under a NPDES permit to discharge effluent (treated wastewater) to Flat Creek, just south of Old Flowery Branch Road.

Two additional industrial sites operate under NPDES permits: Dixie Mobile Home Park and Prime Pak Foods, Inc., a beef, poultry, and pork processor. These facilities are classified as PCS locations by the EPA Envirofacts database and are permitted to discharge to Flat Creek under specified limitations.

All three facilities are located downstream from the Alternative 33 and 32 subject properties.

The adjacent properties appear to have impacted the stream segments (problem sites 32 and 33) based on the reported spills and deteriorated habitat quality found in the 2009 watershed study (CH2M HILL, 2009). However, the identified recognized environmental conditions are not anticipated to have a negative impact on the USACE proposed property use to ecologically restore the creek banks and prevent further erosion.

3.10.4 Environmental Data Resources (EDR), Inc. Radius Map Report

EDR performed a search of all available environmental records, including state, federal and local databases, within the area of the Tentatively Selected Alternative. The report returned 452 records, or sites, of interest within a radius of at least 1.5 miles from the middle of the potential projects area. These sites include 127 from 14 categories of federal records and 325 from 7 categories of state and local records; however, a site can be listed in more than 1 database. The report uncovered no national priority list sites, oil or gas pipelines, or manufactured gas plants.

3.10.5 Consequences

Tentatively Selected Alternative X

CH2M HILL performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of the ASTM E1527 of two stream sections (problem sites 32 and 33) of Flat Creek. Any exceptions to, or deletions from, this practice are described in Section 11 of this report. This assessment has revealed evidence of historical recognized environmental conditions affecting the water quality in the creek. Most impacts have been transient in nature; however, overall creek water quality has been deteriorated due to long term surface run-off from the surrounding municipal area. There was no evidence identified that the creek bottom sediments or banks of the creek have been environmentally impacted. The identified recognized environmental conditions do not appear to limit the USACE intended property use to restore the creek banks and limit further erosion of the banks.

Draft

Alternative A

The impacts of Alternative A would be the same as described for the Tentatively Selected Alternative.

Alternative B

The impacts of Alternative B would be the same as described for the Tentatively Selected Alternative.

Alternative G

The impacts of Alternative G would be the same as described for the Tentatively Selected Alternative.

Alternative V

The impacts of Alternative V would be the same as described for the Tentatively Selected Alternative.

No Action Alternative

Implementation of the No Action Alternative would maintain current conditions in the Flat Creek Watershed. There would be no impact to hazardous and toxic substances.

3.11 Cumulative Effects Summary

The most severe environmental degradation may not result from the direct effects of any particular action, but from the combination of effects of multiple, independent actions over time. As defined in 40 CFR 1508.7 (CEQ Regulations), a cumulative effect 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."

Some authorities contend that most environmental effects can be seen as cumulative because almost all systems have already been modified. Principles of cumulative effects analysis are described (CEQ, 2006) as follows:

"For cumulative effects analysis to help the decision-maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to affected parties."

The following subsections detail how the Tentatively Selected Alternative and the No Action Alternative could interact with other past, present, or reasonably foreseeable future actions to generate impacts that, while individually small, could become substantial through incremental accumulation.

3.11.1 Tentatively Selected Alternative X

While the Tentatively Selected Alternative has the potential to provide substantial watershed improvement benefits when implemented as an individual project, the effects of

Draft

the proposed action should be evaluated in terms of its effects in conjunction with other watershed activities. Two potential changes in the watershed which could potentially interact with the results of the proposed action include: 1) population growth and urban development, and 2) the implementation of additional ecosystem restoration projects. Each is discussed briefly below.

Population Growth and Urban Development

As discussed previously, there is expected to be substantial future growth and development in the Flat Creek Watershed. This growth is projected to have negative impacts to Flat Creek associated with increase impervious cover, new construction, and additional anthropogenic pollutant sources. Though these impacts will mitigate the benefits of the Tentatively Selected Alternative, they are themselves the motivation behind implementing the Tentatively Selected Alternative. Additionally, the extensive analysis that was conducted on the benefits of the watershed projects accounted for these foreseeable changes to the watershed. Therefore, the expected benefits detailed throughout the document are expected to be provided, in spite of growth and development in the region.

Additional Ecosystem Restoration Projects

No ecosystem restoration projects are currently underway in the Flat Creek Watershed, though it is possible that the City or County will choose to implement projects in addition to the Tentatively Selected Alternative. The ability of the Tentatively Selected Alternative to meet its goal of improving biological health can be substantially enhanced by proper stormwater control upstream of the site or by the addition of other stream restoration projects in the area. While BMPs can reduce both nonpoint source pollution and sediment loading to a stream, the combination of a stream restoration project and a BMP retrofit project will maximize the improvement of water quality and stream conditions. If additional ecosystem restoration projects are implemented in Flat Creek, the positive impacts of the Tentatively Selected Alternative to stormwater quality, surface water quality, soils, and plant and animal communities will be substantially enhanced.

3.11.2 No Action Alternative

Under the No Action Alternative, future conditions in Flat Creek Watershed are expected to decline due to population growth and resulting development in the area (Flat Creek Ecosystem Response Modeling; Appendix F of the Flat Creek Detailed Project Report). The anticipated negative impacts on environmental and socioeconomic factors are summarized in Table 3 below. The No Action Alternative is not expected to have any long- or short-term positive impacts on environmental or socioeconomic conditions in the Flat Creek Watershed.

TABLE 3

Summary of Potential Negative Environmental and Socioeconomic Impacts under the No Action Alternative

Flat Creek Watershed Environmental Assessment

Resource Area	Impacts[a]
Surface Water	Future development and land use changes are expected to cause a decline in the quality of water in Flat Creek.

Draft

TABLE 3

Summary of Potential Negative Environmental and Socioeconomic Impacts under the No Action Alternative

Flat Creek Watershed Environmental Assessment

Resource Area	Impacts[a]
Floodplains	Existing build-up in the floodplains may result in the loss of land at certain project sites.
Wetlands	Future development and land use changes are expected to impact wetlands in the area of Flat Creek.
Stormwater	Stormwater BMPs in the Flat Creek Watershed will continue to not offer adequate water quality and channel protection without proper maintenance and retrofitting.
Flora and Fauna	Invasive species present in the project areas have the potential to compete with special concern plant communities and cause negative impacts.
Endangered and Threatened Species	Physical habitat in Flat Creek is expected to decline in the future, under the No Action Alternative (see Appendix A) and could lead to a further decline of special concern aquatic species.
Fish & Macroinvertebrate Communities	Fish and macroinvertebrate communities are expected to decline in the future, under the No Action Alternative, as outlined in Appendix A.

[a] No impacts to resource areas not listed

Draft

4.0 Coordination

As required by the National Environmental Policy Act, the Corps coordinated this project with various local, state and Federal agencies. During the early stages of development, the U.S. Fish and Wildlife Service, Georgia Department of Natural Resources, and Georgia Department of Environmental Protection (GAEPD) were solicited (Appendix B, Coordination Letters) for their comments and/or concerns regarding this proposed project. The Georgia State Historic Preservation Officer and Tribal Nations are being solicited for their comments and/or concerns regarding this proposed project once the revised cultural resource report has been submitted. Additionally, water quality certification and stream buffer variance will be obtained from GAEPD during the planning, engineering and design phase to ensure any changes to design prior to construction will not result in reapplying for this permit. Final coordination is ongoing.

Coordination with the general public will be accomplished by making the Draft Environmental Assessment and Draft 404(b)(1) Evaluation Report available through means of a joint public notice with USACE and GAEPD which will be placed on the USACE website and electronically mailed to interested parties and publication of a legal notice in the newspaper in the vicinity of the work. The draft environmental documents will have a 30-day comment period. Interested parties will be further advised that they could obtain a copy of the draft documents by calling or e-mailing the request to the USACE contact person identified in the public notice as well as downloading from the USACE, Mobile District web site: http://www.sam.usace.army.mil/pd/Pd1.htm.

References

Atlanta Regional Commission. 2005. LandPro 2005 Database. http://www.atlantaregional.com. Accessed March 3, 2008.

Barbour, M.T., K.J. Gerrisen, B.D. Snyder, and J.B. Stribling. 1999. *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Benthic macroinvertebrates and Fish, Second Edition*. EPA 841-B-99-002. U.S. Environmental Protection Agency Office of Water, Washington D.C.

Brown, Claud L., Kirkman, L. Katherine. 1990. *Trees of Georgia and Adjacent States*. Portland, Oregon.

CH2MHILL. 2000. *Community Watershed Assessment and Watershed Management Plan.* Prepared for Hall County and The City of Gainesville. Atlanta, GA.

CH2MHILL. 2006. City of Gainesville Watershed Protection Plan. Atlanta, GA.

CH2MHILL. 2007. *Flat Creek Watershed Assessment*. Atlanta, GA.

CH2MHILL. 2008. Ecosystem Response Modeling for the Flat Creek Watershed in Gainesville, Georgia. Atlanta, GA.

City of Gainesville and Hall County. 2004. *Gainesville/Hall County Comprehensive Plan*. Atlanta, GA.

Environmental Data Resources, Inc. 2008. The EDR Radius Map Report, Inquiry Number 02197732.1r.

Georgia Department of Natural Resources (GADNR). 2001. Comprehensive Wildlife Conservation Strategy, Georgia Ecoregions Descriptions.

GADNR. 2004. *Rules and Regulations for Water Quality Control*. Chapter 391-3-6. Revised February 2004.

GADNR. 2007. Standard Operating Procedures- Macroinvertebrate Biological Assessment of Wadeable Streams in Georgia. Environmental Protection Division, Watershed Protection Branch.

GADNR Wildlife Resources Division (WRD). 2007. List of Special Concern Animals, Plants and Natural Communities in Hall County, Georgia. http://georgiawildlife.dnr.state.ga.us/content/specieslocationbycounty. asp?lst County= Hall. Accessed March 31, 2008.

Georgia Environmental Protection Division (GAEPD). 2008. *Draft State 305(b)/303(d) Report.* Atlanta, Georgia.

Georgia Geologic Survey (GGS). 2007. Website for Georgia groundwater recharge areas. www.georgiaplanning.com/documents/atlas/gw**recharge**.pdf. Accessed March 21, 2008.

Draft

Georgia Stormwater Management Manual. 2001. Prepared by: AMEC Earth and Environmental, Center for Watershed Protection, Debo and Associates, Jordan Jones and Goulding, and Atlanta Regional Commission.

Griffith, G.E., J.M. Omernik, J.A. Comstock, S. Lawrence, G. Martin, A. Goddard, V.J. Hulcher, and T. Foster. 2001. Ecoregions of Alabama and Georgia. U.S. Geological Survey. Reston, Virginia.

Hall County, Georgia. Public website. http://www.hallcounty.org/. Accessed March 31, 2008.

Karr, J. R., K. D. Fausch, P. L. Angermeier, P.R. Yant, I. J. Schlosser. 1986. Assessing biological integrity in running waters, a method and its rationale. Illinois Natural History Survey Special Publication 5.

Mineral Management Service (MMS). 1999. *Clean Air Act Guidelines*.

National Parks Service, U.S. Department of the Interior. 2007. National Register of Historic Places (http://www.nps.gov/history/nr/). Accessed March 31, 2008.

National Resources Conservation Service. 2000. Soil Survey Geographic (SSURGO) Database. http://www.soils.usda.gov/survey/geography/ssurgo/. Accessed March 31, 2008.

Plafkin, J. L., M. T. Barbour, K. D. Porter, S. K. Gross, and R. M. Hughes. 1989. *Rapid Bioassessment Protocols for use in Streams and Rivers: Benthic Macroinvertebrates and Fish*. U.S. EPA, Assessment and Watershed Protection Division, EPA/440/4-89/001.

University of Georgia (UGA)/Janecek & Scott. 2000. *Snakes of Georgia and South Carolina*.

U.S. Army Corps of Engineers (USACE). 1998. Draft Environmental Impact Statement : Water Allocation for the Apalachicola-Chattahoochee-Flint (ACF) River Basin. Mobile District.

U.S. Census Bureau. 2000. State and County Quick Facts (http://quickfacts.census.gov/qfd/states/13/13139.html) Accessed March 31, 2008.

U.S. Department of Agriculture (USDA) National Resources Conservation Service (NRCS). Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/ accessed April 30, 2008.

U.S. Department of Transportation. Highway Construction Noise: Measurement, Prediction, and Mitigation. 1977.

U. S. Environmental Protection Agency (USEPA). 2006. Website for Georgia Envirofacts. http://www.epa.gov/enviro/. Accessed April 1, 2008.

USEPA Office of Water. 2000. Stormwater Phase II Final Rule Fact Sheet.

U. S. Fish and Wildlife Service (USFWS). 2008a. Critical Habitat for Threatened and Endangered Species. http://criticalhabitat.fws.gov. Accessed March 31, 2008.

USFWS. 2008b. National Wetlands Inventory. http://www.fws.gov/nwi/. Accessed March 26, 2008.

Draft

U.S. Geological Survey (USGS) Center for Spatial Analysis Technologies. 2006. http://csat.er.usgs.gov/statewide/layers/recharge.html. Accessed March 21, 2008.

Wharton, Charles H. 1978. *The Natural Environments of Georgia*. Atlanta, Georgia.

Draft

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)
FOR
FLAT CREEK
SECTION 206 AQUATIC ECOSYSTEM RESTORATION PROJECT
CITY OF GAINESVILLE AND HALL COUNTY, GEORGIA

1. **PROPOSED ACTION**: Tentatively Selected Plan Alternative X consists of stream restoration along approximately 2,500 linear feet of the mainstem of Flat Creek, in the upper portions of the watershed. The site specific components of problem sites 32 and 33 are detailed below.

Problem Site 32 is a proposed 1,800-foot stream restoration project located on the mainstem of Flat Creek, just downstream of Dorsey Street. The stream restoration approach involves the following measures: engineered riffle creation, J-hook installation, boulder placement, rootwad placement, bankfull bench creation, bank grading, bank stabilization matting, riprap placement, streambank planting, and riparian planting (native hardwoods and seeding/mulching).

The bank grading and stabilization of the stream restoration will consist of the following:

- Clearing and grubbing 1.5 acres
- 7,600 square yards of grading
- 10, 000 live willow stakes
- 4,200 square yards of turf matrix
- 340 cubic yards of riprap
- 1.1 acres of seeding and mulching
- 8 rootwad and footer logs
- 8 of 3 to 3.5 feet diameter bracing boulders

The flow deflection of the stream restoration will consist of the following:

- 100 cubic yards of riprap
- 140 - 3 to 3.5 feet diameter boulders

The riparian zone restoration of the stream restoration will consist of the following:

- Planting of 800 native hardwood
- 0.5 acres of seeding and mulching of vegetation

The stream restoration project area has been channelized and is actively widening. Banks are roughly 9 feet tall and severely eroded (50 to 70 percent) along at least 700 feet of the project reach. The right bank riparian corridor includes lawns in sections of the reach, and the left bank riparian corridor is cleared for parallel utility right-of-way. The stream site is easily accessible by foot but not by vehicle.

Problem Site 33 is a proposed 700-foot stream restoration project located on the mainstem of Flat Creek, in a commercial area near Atlanta Highway and Hilton Drive. This alternative would consist of a stream restoration approach which

Draft

involves the following elements: engineered riffle creation, J-hook installation, boulder placement, bankfull bench creation, bank grading, bank stabilization matting, riprap placement, streambank planting, and riparian planting (native hardwoods and seeding/mulching).

The bank grading and stabilization of the stream restoration will consist of the following:

- 1 acres of clearing and grubbing
- 3,800 square yards of grading
- 3, 300 live willow stakes
- 1,500 square yards of turf matrix
- 115 cubic yards of riprap
- 0.8 acres of seeding and mulching

The flow deflection of the stream restoration will consist of the following:

- 45 cubic yards of riprap
- 80 - 3 to 3.5 feet diameter boulders

The riparian zone restoration of the stream restoration will consist of the following:

- Planting of 400 native hardwood
- 0.4 acres of seeding and mulching of vegetation

The stream area has been channelized and is actively widening. The right bank riparian corridor consists of lawns, structures in the floodplain and an area cleared for a parallel utility right-of-way. Banks are steep and severely or moderately eroded throughout the project area. The site is easily accessible by foot but not by vehicle.

2. **NEED FOR PROPOSED ACTION**: The purpose of the Proposed Action is to restore habitat quality in Flat Creek and selected tributaries of Flat Creek and to prevent further water quality degradation in the Flat Creek watershed. The need for the Proposed Action is to address anthropogenic degradation that has historically occurred in the Flat Creek watershed and to allow for future development in the watershed without further degradation of habitat quality and water quality.

3. **ALTERNATIVES TO THE PROPOSED ACTION CONSIDERED**: Alternatives to the proposed action which were considered in the study include:

a. The No Action Alternative would maintain conditions as they are. The Tentatively Selected Alternative and/or any of the action alternatives would not be implemented. If no action is taken, the Flat Creek Watershed will continue to degrade as additional development occurs, and it is likely that fish communities, benthic macroinvertebrate communities and water quality will continue to decline.

b. Alternative A is a stream restoration project located in upper Flat Creek. The project consists of 300 feet of grade control, bank stabilization, flow deflection, and riparian buffer improvements.

Draft

This stream restoration project consists of a variety of instream and bank/channel measures. These measures include engineered riffle, J-hooks, cross vanes, bank grading, creation of a bankfull bench, bank stabilization matting and streambank planting.

c. Alternative B is a proposed stream restoration project located in Upper Flat Creek. The project consists of 900 feet of stream restoration including grade control, bank stabilization, flow deflection, box culvert repair/removal, and riparian buffer enhancement. Restoration measures involved in this project include engineered riffle, J-hooks, cross vanes, boulders, creation of a bankfull bench, bank grading, bank stabilization matting, streambank planting, riparian planting of native hardwoods, and seeding and/or mulching.

d. Alternative G is a proposed stream restoration project located in Upper Flat Creek. The project consists of 200 feet of stream restoration including bank stabilization (spot repairs), flow deflection, and riparian buffer enhancement. Restoration measures in this project include J-hooks, creation of a bankfull bench, bank grading, bank stabilization matting, and streambank planting.

e. Alternative V includes a stream restoration project in combination with retrofits of detention basins located in Upper Flat Creek. The project consists of 2,500 feet of stream restoration including grade control, bank stabilization, flow deflection, riparian buffer enhancement, and retrofit of six existing dry detention basins. Restoration measures in this project include engineered riffle, J-hooks, boulders, rootwads, creation of a bankfull bench, bank grading, bank stabilization matting, riprap, streambank planting, riparian planting of native hardwoods, and seeding and/or mulching. The retrofit measures include outlet control structures and existing detention basins expansion.

4. **FACTORS CONSIDERED IN DETERMINING THAT NO ENVIRONMENTAL IMPACT STATEMENT IS REQUIRED**: There have been no significant adverse issues raised regarding the recommended plan. There was no hazardous, toxic or radiological waste identified in the proposed project area; however an assessment revealed evidence of historical recognized environmental conditions affecting the water quality in the creek. No significant potential for contamination due to handling or disposal of hazardous, toxic or radiological waste material was identified for the recommended alternative. There will be no impacts to cultural resources. There is no effect to Federally protected flora or fauna within the proposed project area. There are no jurisdictional wetlands in the proposed project area.

5. **CONCLUSIONS**: An evaluation of the Environmental Assessment describing the proposed Flat Creek Aquatic Ecosystem Restoration Project shows that the proposed action would have no significant impacts on the environment. Therefore an Environmental Impact Statement is not warranted.

Date:_____

_____
Steven J. Roemhildt, P.E.
Colonel, Corps of Engineers
District Commander

Draft

EA APPENDIX A SECTION 404(B)(1) EVALUATION

Draft

DRAFT SECTION 404(B) (1) EVALUATION
FOR
FLAT CREEK
SECTION 206 AQUATIC ECOSYSTEM RESTORATION
CITY OF GAINESVILLE, HALL COUNTY, GEORGIA

1. PROJECT DESCRIPTION:

a. Location. Flat Creek is located entirely within Hall County. Approximately 35 percent of the watershed is located in the City of Gainesville, and less than 1 percent is located in the City of Oakwood. City of Gainesville, Hall County, Georgia (Figure 1).

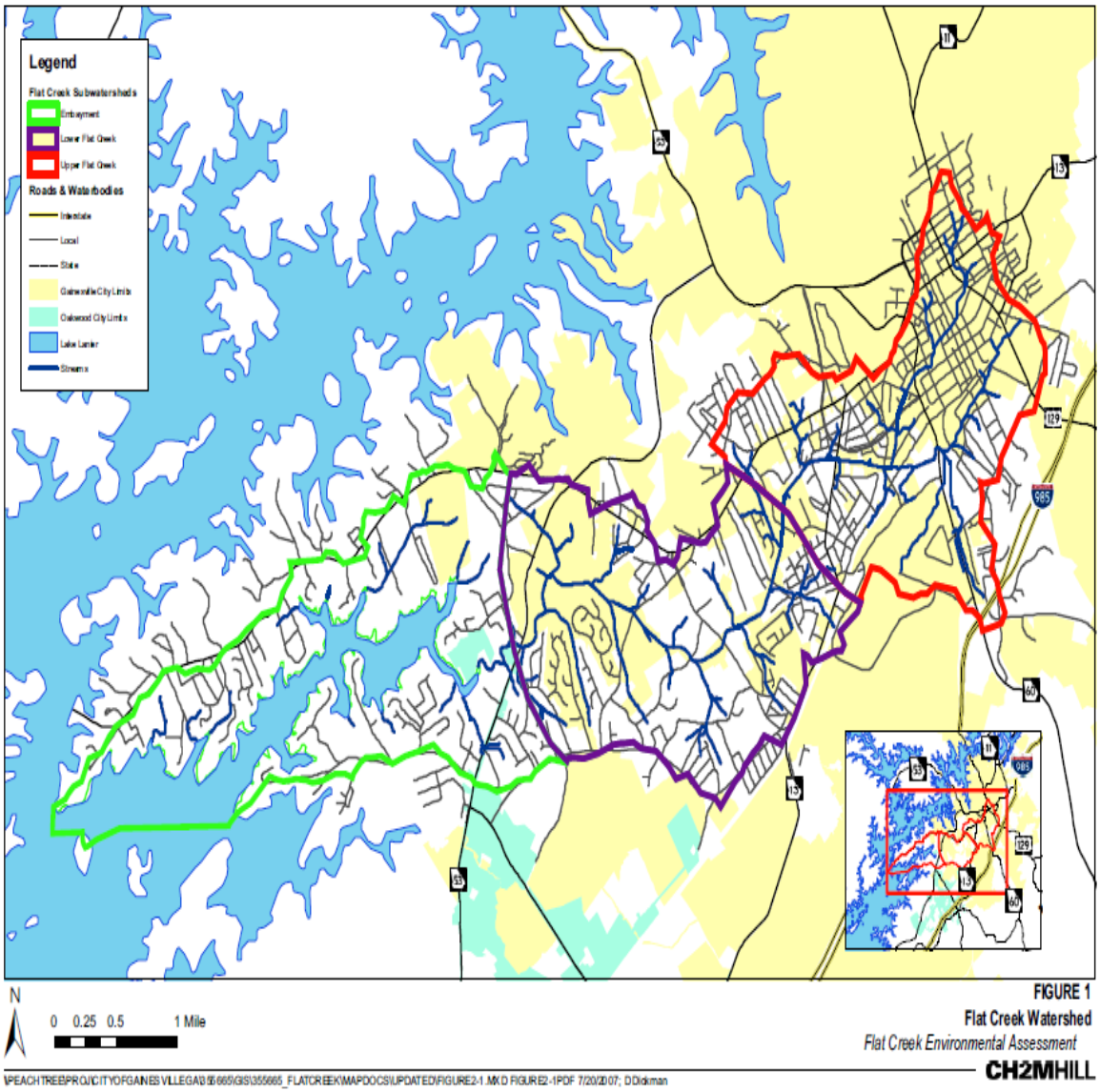

Figure 1. Flat Creek Watershed

b. General Description. Tentatively Selected Plan Alternative X consists of stream restoration along approximately 2,500 linear feet of the mainstem of Flat Creek, in the upper portions of the watershed. The site specific components problem sites 32 and 33 are detailed below.

Problem Site 32 is a proposed 1,800-foot stream restoration project located on the mainstem of Flat Creek, just downstream of Dorsey Street. The stream restoration approach involves the following measures: engineered riffle creation, J-hook installation, boulder placement, rootwad placement, bankfull bench creation, bank grading, bank stabilization matting, riprap placement, streambank planting, and riparian planting (native hardwoods and seeding/mulching).

The bank grading and stabilization of the stream restoration will consist of the following:

- Clearing and grubbing 1.5 acres
- 7,600 square yards of grading
- 10, 000 live willow stakes
- 4,200 square yards of turf matrix
- 340 cubic yards of riprap
- 1.1 acres of seeding and mulching
- 8 rootwad and footer logs
- 8 of 3 to 3.5 feet diameter bracing boulders

The flow deflection of the stream restoration will consist of the following:

- 100 cubic yards of riprap
- 140 - 3 to 3.5 feet diameter boulders

The riparian zone restoration of the stream restoration will consist of the following:

- Planting of 800 native hardwood
- 0.5 acres of seeding and mulching of vegetation

The stream restoration project area has been channelized and is actively widening. Banks are roughly 9 feet tall and severely eroded (50 to 70 percent) along at least 700 feet of the project reach. The right bank riparian corridor includes lawns in sections of the reach, and the left bank riparian corridor is cleared for parallel utility right-of-way. The stream site is easily accessible by foot but not by vehicle.

Problem Site 33 is a proposed 700-foot stream restoration project located on the mainstem of Flat Creek, in a commercial area near Atlanta Highway and Hilton Drive. This alternative would consist of a stream restoration approach which involves the following elements: engineered riffle creation, J-hook installation, boulder placement, bankfull bench creation, bank grading, bank stabilization matting, riprap placement, streambank planting, and riparian planting (native hardwoods and seeding/mulching).

The bank grading and stabilization of the stream restoration will consist of the following:

- 1 acres of clearing and grubbing
- 3,800 square yards of grading
- 3, 300 live willow stakes

Draft

- 1,500 square yards of turf matrix
- 115 cubic yards of riprap
- 0.8 acres of seeding and mulching

The flow deflection of the stream restoration will consist of the following:
- 45 cubic yards of riprap
- 80 - 3 to 3.5 feet diameter boulders

The riparian zone restoration of the stream restoration will consist of the following:
- Planting of 400 native hardwood
- 0.4 acres of seeding and mulching of vegetation

The stream area has been channelized and is actively widening. The right bank riparian corridor consists of lawns, structures in the floodplain and an area cleared for a parallel utility right-of-way. Banks are steep and severely or moderately eroded throughout the project area. The site is easily accessible by foot but not by vehicle.

c. Authority and Purpose. To assist with funding associated with stream restoration activities; the Flat Creek watershed improvement project will include efforts to help determine the feasibility of utilizing federal funding through USACE under Section 206 of the Water Resources Development Act to implement restoration projects. The Section 206 program is intended to protect and improve ecosystems and water quality conditions and to implement projects that will enhance aquatic habitat. The primary goal is to restore habitat quality and prevent further water quality degradation in the Flat Creek watershed.

d. General Description of Dredge or Fill Material.

(1) General Characteristic of Material. The fill material for the stream restoration consists of turf matrix, riprap, rootwad and footer logs, bracing boulders, and boulders.

(2) Quantity of Material. The quantity of material for problem site 32 includes 7,600 square yards of grading, 4,200 square yards of turf matrix, 440 cubic yards of riprap ,8 rootwad and footer logs, 8 - 3 to 3.5 feet diameter bracing boulders and 140 - 3 to 3.5 feet diameter boulders. Problem site 33 includes 3,800 square yards of grading, 1,500 square yards of turf matrix, 160 cubic yards of riprap and 80 - 3 to 3.5 feet diameter boulders.

(3) Source of Material. Fill materials will come from local manufacturers and quarries in the region.

e. Description of the Proposed Discharge Site.

(1) Location. The discharge sites are both located along the mainstem of Flat Creek where problem site 32 is just downstream of Dorsey Street and problem site 33 is in a commercial area near Atlanta Highway and Hilton Drive.

Draft

(2) Size. Problem site 32 is a 1,800-foot stream restoration site and problem site 33 a 700-foot stream restoration site.

(3) Type of Site. The fill sites are unconfined areas.

(4) Type of Habitat. The habitat of problem site 32 fill site consists of a combination of Cartecay and Chewacla soils and Madison sandy clay loam, 10 to 15 percent slopes, eroded while problem site 33 consists of Cartecay and Chewacla soils.

(5) Timing and Duration of Discharge. Construction and excavation activities are scheduled for a 2 to 3 year time frame.

f. Description of Disposal Method. Material will be placed in the designated area using land-based heavy equipment.

II. Factual Determinations:

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. There would be no impact on physiography and geology. Due to the preferred alternative being small scale, there would be no change to conditions at the landscape level or extend to the underlying geology. Problem site 32 has a 10 to 15 percent slopes with erosion.

(2) Sediment Type. The sediment type of the fill sites would be altered due to placement of riprap, rootwad and footer logs, boulder bracing and boulders. However, the change in sediment type is not expected to be significant since the fill material is of similar soil and rock composition of the original sediment type.

(3) Dredged/Fill Material Movement. The material used for fill should not experience any movement due to the riprap, rootwad and footer logs, boulder bracing and boulders being of such a size so as to prevent movement during high flows.

(4) Physical Effects on the Benthos. Some benthos would be destroyed by the discharge located in rirprap, rootwad and footer logs, boulder bracing and boulders sites. However, the placement of riprap material into the streambank will provide beneficial long-term habitat for the benthos. These areas will provide a stable habitat base in the streambank over time. Maintenance activities are not expected to adversely affect benthic communities that colonize the riprap, rootwad and footer logs, boulder bracing and boulder areas. It is anticipated that benthic communities will recolonize all construction sites within the streambank since undisturbed sites along the creek will serve as a source for recolonization.

(5) Actions Taken to Minimize Impacts (Subpart H). Construction Best Management Practices would be implemented at each site in order to minimize impacts to the streams.

b. Water Circulation, Fluctuation, and Salinity Determinations.

Draft

(1) Salinity. Not applicable.

(2) Water Chemistry. Water chemistry would not be significantly impacted.

(3) Clarity. Water clarity will be temporarily decreased during the construction activities due to increased turbidity associated with the excavation and fill activities. It is anticipated that water clarity will quickly return to pre-project conditions within a short time after construction activities cease.

(4) Color. Color would not be significantly impacted.

(5) Odor. No effect.

(6) Taste. No effect.

(7) Dissolved Gas Levels. Dissolved gas levels would not be significantly impacted.

(8) Nutrients. Nutrient levels would not be significantly impacted.

(9) Eutrophication. Eutrophication would not be significantly impacted.

c. Water Circulation, Fluctuation, and Salinity Gradient Determinations:

(1) Current Patterns and Circulation.

(a) Current Patterns and Flow. During construction there would be a short-term disruption in flow patterns, but application of sound engineering principles and best management practices will minimize these effects.

(b) Velocity. No significant impacts on water velocity are anticipated from placement of the riprap, boulders, boulder bracings, rootwad and footer loggers and turf matrix.

(2) Stratification. There would be no impacts on water stratification.

(3) Hydrologic Regime. There would be no impacts on the hydrologic regime.

(4) Normal Water Level Fluctuations. Creek levels will not be measurably affected.

(5) Salinity Gradients. Not applicable.

d. Suspended Particulate/Turbidity Determinants.

(1) Expected Changes in Suspended Particulate and Turbidity Levels in Vicinity of Disposal Sites. No significant effects are anticipated other than short-term localized increases on suspended particulate and turbidity levels in the immediate vicinity of the construction of the riprap, turf matrix, rootwad and footer logs, boulder bracings and boulders activities.

Draft

(2) Effects on Chemical and Physical Properties of the Water Column.

(a) Light Penetration. Reductions in light penetration at the proposed project sites due to temporary increases in turbidity during construction will be short-term and localized and are not expected to be significant

(b) Dissolved Oxygen. Dissolved oxygen will not be significantly impacted.

(c) Toxic Metals and Organics. No activities or processes resulting in toxic metal or organics contamination are part of this project.

(d) Pathogens. There would be no significant impacts on pathogen levels.

(e) Aesthetics. The local areas at each construction site would be adversely impacted during the construction activities. There would be a beneficially impact to the aesthetics of the stream restoration sites upon completion of the activities.

(3) Effects on biota.

(a) Primary Production, Photosynthesis. Temporary, localized impacts to primary production or photosynthesis levels may result from turbidity plumes generated by the construction activities. These effects would be localized and temporary.

(b) Suspension/Filter Feeders. Suspension/filter feeders may be temporarily affected within a localized area near the fill sites although this impact is expected to be minimal and insignificant.

(c) Sight Feeders. Sight-dependent species may suffer reduced feeding ability in a limited area for a limited time during excavation/fill activities. However, sight feeders are expected to leave the site during excavation and disposal operations, and return to the area as ambient conditions return.

(4) Actions taken to Minimize Impacts (Subpart H). Construction Best Management Practices would be implemented at each site in order to minimize impacts.

e. Contaminant Determinations. No contaminants harmful to the environment are known to exist in the proposed project area as determined by the environmental site assessment (Appendix J of the Flat Creek Detail Project Report) investigation where the proposed fill material would be placed during construction activities.

f. Aquatic Ecosystem and Organism Determinations.

(1) Effects on plankton. Plankton would not be significantly affected by the proposed project.

(2) Effects on Benthos. While short term adverse impacts will occur to the benthos in the area to be filled, long-term beneficial impacts are expected.

Draft

(3) Effects on nekton. Nektonic species are expected to temporarily leave the area during excavation and placement operations, and return to the area once turbidity levels return to ambient conditions.

(4) Effects on Aquatic Food Web. No significant impact is expected.

(5) Effects on Special Aquatic Sites

(a) Sanctuaries and Refuges. No sanctuaries or refuges would be affected by this project.

(b) Wetlands. No wetland vegetation would be affected by this project.

(c) Mud Flats. No mud flats would be affected by this project.

(d) Vegetated Shallows. No vegetated shallows would be affected by this project.

(e) Coral Reefs. Not applicable.

(f) Riffle and Pool Complexes. Minimal effects would occur to riffle or pool complexes within these project locations.

(6) Threatened and Endangered Species. According to the US Fish and Wildlife Service (USFWS) website, there are several state listed species that could be found in the proposed project area. State listed species include the threatened Chattahoochee crayfish (*Cambarus howardi*), the endanged golden seal (*Hydrastis Canadensis),* the rare Indian olive (*Nestronia umbellula)* and the rare Ozark bunchflower (*Veratrum woodii*).

The U.S. Army Corps of Engineers USACE has determined the proposed action will have no effect on federally listed species and/or their habitat in the proposed project area. By email correspondence dated 18 November 2010, the Fish and Wildlife Service concurs with the Mobile District Corps of Engineers determination that the Flat Creek Aquatic Ecosystem Restoration Project will have no effect on Federally protected flora or fauna within the proposed project area.

(7) Other Wildlife. The proposed project will have no significant impacts to other wildlife species.

(8) Actions to Minimize Impacts. Construction Best Management Practices would be implemented at each site in order to minimize impacts on the aquatic ecosystem and organisms.

g. Proposed Fill Site Determination.

(1) Mixing Zone Determination. State water quality requirements would be utilized for this project; therefore, turbidity outside the limits of the mixing zone shall not exceed the ambient turbidity by more than 50 Nephelometric Turbidity Units.

Draft

(2) Determination of Compliance with Applicable Water Quality Standards. The fill/placement operation will be in conformance with applicable Federal and State standards. Water Quality Certification, pursuant to Section 401 of the Clean Water Act, will be obtained from Georgia Department of Natural Resources, Environmental Protection Division.

(3) Potential Effects on Human Use Characteristics.

(a) Municipal and Private Water Supply. This project would have no impacts on municipal or private water supplies.

(b) Recreation and Commercial Fisheries. The proposed project would have no impact on recreational and commercial fisheries.

(c) Water Related Recreation. Not applicable.

(d) Aesthetics. Aesthetics would be temporarily impacted, but would have beneficial impacts when the project is complete.

(e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas Research Sites, and Similar Preserves. Not applicable.

(f) Other Effects. Not applicable.

(4) Determination of Cumulative Effects on the Aquatic Ecosystem. The proposed ecosystem restoration project will result in a negligible increase in the cumulative impacts on the aquatic ecosystem on Flat Creek. The impacts will be beneficial for habitat and water quality of Flat Creek.

(5) Determination of Secondary Effects on the Aquatic Ecosystem. The loss of benthic organisms and habitat on the fill sites in Flat Creek would have an insignificant adverse effect on the fishery resources in the proposed project area. Also, the temporary and localized increase in turbidity will insignificantly reduce primary production. The long-term impacts will be beneficial impacts to habitat and water quality of Flat Creek.

III. Findings of Compliance or Noncompliance with the Restrictions on Discharge.

a. Adaptation of Section 404(b) (1) Guidelines to the Evaluations. No significant adaptations of the guidelines were made relative to this evaluation.

b. Consideration of the Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse impacts on the Aquatic Ecosystem. The proposed activities represent the least environmentally damaging practicable alternative.

c. Compliance with State Water Quality Standards. The planned disposal of excavated material would not violate any applicable State water quality standards. Furthermore, water quality certification will be obtained from Georgia.

Draft

d. Compliance with Applicable Toxic Effluent Standard or Prohibition under Section 307 of the Clean Water Act. The fill material would not violate the toxic standards of Section 307 of the Clean Water Act.

e. Compliance with Endangered Species Act. The placement of fill and riprap material would be in compliance with the Endangered Species Act of 1973, as amended. In an email correspondence dated November 18, 2010, the USFWS concurs that the proposed action would have no effect on the federally protected flora or fauna within the proposed project area.

f. Compliance with Specific Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act. Not applicable.

g. Evaluation of Extent of Degradation of the Waters of the United States. The proposed fill plan is specified as complying with the requirements of these guidelines. The proposed activities would not contribute to significant degradation of waters of the United States. Nor would it result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing; life stages of organisms dependent upon the aquatic ecosystem; ecosystem diversity, productivity and stability; or recreational, aesthetic or economic values.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem.

(1) Avoid construction during critical life stages for aquatic organisms to the maximum extent practicable.

(2) An interdisciplinary team has evaluated sites, and project design altered per their recommendation.

(3) Appropriate construction best management practices will be implemented at each of the construction sites to minimize environmental impacts.

i. On the Basis of the Guidelines, the proposed Disposal Site for the Discharge of Dredged Material. The Flat Creek Watershed aquatic ecosystem restoration sites are specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

DATE: _____

_____
Steven J. Roemhildt, P.E.
Colonel, Corps of Engineers
District Commander

Draft

EA Appendix B: Coordination Letters

Draft

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF

August 10, 2010

Inland Environment Team
Planning and Environmental Division

Mr. F. Allen Barnes, Director
Georgia Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152 East Tower
Atlanta, Georgia 30334

Dear Mr. Barnes:

The U.S. Army Corps of Engineers (Corps), Mobile District is proposing a Section 206 Aquatic Ecosystem Restoration project along Flat Creek for stream restoration; and extended dry detention pond. The proposed project is entirely located in Hall County, Georgia. Therefore, we are requesting information from your Air Protection Branch and Watershed Protection Branch on the subject matter in relation to the proposed project area.

This project is one of several projects that are being discussed at the North Georgia Water Resources Agency (NGWRA) quarterly meetings which members of your staff have participated in. NGWRA original purpose was to create some scientifically defensible way to predict and later measure the impact of restoration and protection efforts. The group brings together individuals from all water-related agencies working in North Georgia to share information and expertise in order to improve environmental decision making, data gathering, analysis and prediction and to share opportunities through networking. The Ecosystem Restoration Model (ERM) was created as a result of these efforts. The model was built upon the current state of scientific knowledge and work to continually improve that project as the state of knowledge improves.

Initially there were 39 potential restoration measures that were identified. The 39 were then compared and evaluated based on watershed problems and opportunities in the Flat Creek watershed. Based on the comparison and evaluation, 29 of the potential restoration measures were screened for inclusion in the alternatives plans. The 29 restoration measures created 25 alternatives which were rigorously analyzed as either single-site or combination alternatives using the ERM. A description of the final array of alternatives and figures considered to have the greatest potential to improve the overall watershed conditions are enclosed.

We are requesting any new and /or updated information on air quality and water quality in the project area of influence.

We will utilize the requested information and other information and analyses to prepare an Environmental Assessment and other environmental documentation for this Flat Creek Section 206 Aquatic Ecosystem Restoration Project. Those environmental documents will also be coordinated with your office for review and comment. Our current schedule for that coordination is November 2010.

We are requesting that your agency review the enclosures and provide us the requested information on this subject by September 7, 2010. Please contact Ms. Velma Diaz at email address velma.f.diaz@usace.army.mil or telephone number 251-690-2025 for additional information.

Sincerely,

Kenneth P. Bradley,
Chief, Environment and Resources
Branch

Enclosure

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF

August 11, 2010

Inland Environment Team
Planning and Environmental Division

Ms. Sandy Tucker, Field Supervisor
US Fish and Wildlife Service
105 Westpark Drive, Suite D
Athens, Georgia 30606

Dear Ms. Tucker:

The U.S. Army Corps of Engineers (Corps), Mobile District is proposing a Section 206 Aquatic Ecosystem Restoration project along Flat Creek for stream restoration; and an extended dry detention pond. The proposed project is entirely located in Hall County, Georgia. Therefore, we are requesting information on endangered and threatened species that may be in the proposed project area. In addition, we are requesting your review of the enclosed draft scope of work for the preparation of a Fish and Wildlife Coordination Act (FWCA) report for the proposed project.

This project is one of several projects that are being discussed at the North Georgia Water Resources Agency (NGWRA) quarterly meetings which members of your staff have participated in. NGWRA original purpose was to create some scientifically defensible way to predict and later measure the impact of restoration and protection efforts. The group brings together individuals from all water-related agencies working in North Georgia to share information and expertise in order to improve environmental decision making, data gathering, analysis and prediction and to share opportunities through networking. The Ecosystem Restoration Model (ERM) was created as a result of these efforts. The model was built upon the current state of scientific knowledge and work to continually improve that project as the state of knowledge improves.

Initially there were 39 potential restoration measures that were identified. The 39 were then compared and evaluated based on watershed problems and opportunities in the Flat Creek watershed. Based on the comparison and evaluation, 29 of the potential restoration measures were screened for inclusion in the alternatives plans. The 29 restoration measures created 25 alternatives which were rigorously analyzed as either single-site or combination alternatives using the ERM. A description of the final array of alternatives and figures considered to have the greatest potential to improve the overall watershed conditions are enclosed.

We are requesting a list of federally protected species and any updated information on any of these in the project area of influence.

We will utilize the above information and other information and analyses to prepare an Environmental Assessment and other environmental documentation for this Flat Creek Section 206 Aquatic Ecosystem Restoration Project. Those environmental documents will also be coordinated with your office for review and comment. Our current schedule for that coordination is November 2010.

We are requesting that your agency review the enclosures and provide us comments on the draft scope of work for the FWCA by August 20, 2010 and the requested information on this subject by September 7, 2010. Please contact Ms. Velma Diaz at email address velma.f.diaz@usace.army.mil or telephone number 251-690-2025 for additional information.

Sincerely,

Kenneth P. Bradley,
Chief, Environment and Resources
Branch

Enclosures

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF

August 11, 2010

Inland Environment Team
Planning and Environmental Division

Mr. Dan Forster, Director
Georgia Department of Natural Resources
Wildlife Resources Division
2070 U.S. Highway 278, SE
Social Circle, Georgia 30025

Dear Mr. Forster:

The U.S. Army Corps of Engineers (Corps), Mobile District is proposing a Section 206 Aquatic Ecosystem Restoration project along Flat Creek for stream restoration; and extended dry detention pond. The proposed project is entirely located in Hall County, Georgia. Therefore, we are requesting information on fish and wildlife that may be in the proposed project area.

This project is one of several projects that are being discussed at the North Georgia Water Resources Agency (NGWRA) quarterly meetings which members of your staff have participated in. NGWRA original purpose was to create some scientifically defensible way to predict and later measure the impact of restoration and protection efforts. The group brings together individuals from all water-related agencies working in North Georgia to share information and expertise in order to improve environmental decision making, data gathering, analysis and prediction and to share opportunities through networking. The Ecosystem Restoration Model (ERM) was created as a result of these efforts. The model was built upon the current state of scientific knowledge and work to continually improve that project as the state of knowledge improves.

Initially there were 39 potential restoration measures that were identified. The 39 were then compared and evaluated based on watershed problems and opportunities in the Flat Creek watershed. Based on the comparison and evaluation, 29 of the potential restoration measures were screened for inclusion in the alternatives plans. The 29 restoration measures created 25 alternatives which were rigorously analyzed as either single-site or combination alternatives using the ERM. A description of the final array of alternatives and figures considered to have the greatest potential to improve the overall watershed conditions are enclosed.

In addition, we are requesting any new and /or updated information on threatened and endangered species for this project area. Preliminary review of the proposed activities indicates that the following state endangered and threatened species potentially have habitat in the project vicinity:

T – Bluestripe shiner *Cyprinella callitaenia*
E – Golden seal *Hydrastis canadensis*
T – Indian olive *Nestronia umbellula*

We will utilize the requested information and other information and analyses to prepare an Environmental Assessment and other environmental documentation for this Flat Creek Section 206 Aquatic Ecosystem Restoration Project. Those environmental documents will also be coordinated with your office for review and comment. Our current schedule for that coordination is November 2010.

We are requesting that your agency review the enclosures and provide us the requested information on this subject by September 7, 2010. Please contact Ms. Velma Diaz at email address velma.f.diaz@usace.army.mil or telephone number 251-690-2025 for additional information.

Sincerely,

Kenneth P. Bradley,
Chief, Environment and Resources
Branch

Enclosure

Flat Creek Project Description

The Flat Creek proposed aquatic ecosystem restoration project is entirely located in Hall County, Georgia (Figure 1). The Preferred Alternative consists of a combination of alternatives which include a best management practice (BMP) retrofit and two stream restoration projects located on the mainstem of Flat Creek.

Alternative CH048 (Figure 2) is a BMP retrofit component of Alternative P which involves transitioning a dry detention pond to a dry extended detention pond, in accordance with design standards set forth in the Georgia Stormwater Management Manual (GSMM; 2001). The BMP included in the Preferred Alternative is located near the Lee Gilmer Airport in the City of Gainesville.

The dry detention basin of the BMP retrofit will consist of the following:

- Clearing and grubbing 0.39 acres
- Approximately 2,000 cubic yards of excavation
- Approximately 180 cubic yards of fill
- Seeding and mulching 0.39 acres of vegetation
- 570 linear feet of chain link fence

The outlet structure for this BMP retrofit will consist of the following:

- A 30-inch corrugated metal riser with appurtenances
- 50 linear feet of 24-inch corrugated metal pipe
- 3 cubic yards of riprap
- 5 cubic yards of concrete

Alternative 32 (Figures 3 and 4)is a stream restoration component of Alternative P which is located on the mainstem of Flat Creek, in a commercial area between Atlanta Highway and Dorsey Street. It consists of a Level 3 restoration approach which involves restoring the degraded channel to a stable condition at its existing elevation, mimicking the dimension, pattern, and profile of a stable reference reach, and stabilizing and vegetating banks. Conceptual design components of the stream restoration include bank stabilization, flow deflection, and planting of the riparian corridor. The stream in the project area has been straightened and is actively widening. Banks are approximately 9 feet high and severely eroded (50-75 percent) over at least 700 feet of the project area. The right bank riparian corridor includes lawns in sections of the reach, and the left bank riparian corridor has been cleared for a parallel utility.

The bank grading and stabilization of the stream restoration will consist of the following:

- Clearing and grubbing 1.5 acres
- 7,600 square yards of grading
- 10, 000 live willow stakes
- 4,200 square yards of turf matrix
- 340 cubic yards of riprap
- 1.1 acres of seeding and mulching
- 8 rootwad and footer logs

Draft

- 8 of 3 to 3.5 feet diameter bracing boulders

The flow deflection of the stream restoration will consist of the following:

- 100 cubic yards of riprap
- 140 - 3 to 3.5 feet diameter boulders

The riparian zone restoration of the stream restoration will consist of the following:

- Planting of 800 native hardwood
- 0.5 acres of seeding and mulching of vegetation

Alternative 33 (Figure 5) is a stream restoration component of Alternative J that is located on the mainstem of Flat Creek, just downstream of Atlanta Highway. The project consists of a Level 3 stream restoration which involves restoring the degraded channel to a stable condition at its existing elevation, mimicking the dimension, pattern, and profile of a stable reference reach, and stabilizing and vegetating banks. Conceptual design components of the restoration include bank stabilization, flow deflection, vegetative management, and planting of the riparian corridor. The project area is characterized by a channel which has been straightened and is actively widening. The right bank riparian corridor consists of lawns, man-made structures in the floodplain, and a section which has been cleared for a parallel utility. Banks are steep and severely and/or moderately eroded throughout the project area.

The bank grading and stabilization of the stream restoration will consist of the following:

- 1 acres of clearing and grubbing
- 3,800 square yards of grading
- 3, 300 live willow stakes
- 1,500 square yards of turf matrix
- 115 cubic yards of riprap
- 0.8 acres of seeding and mulching

The flow deflection of the stream restoration will consist of the following:

- 45 cubic yards of riprap
- 80 - 3 to 3.5 feet diameter boulders

The riparian zone restoration of the stream restoration will consist of the following:

- Planting of 400 native hardwood
- 0.4 acres of seeding and mulching of vegetation

Draft

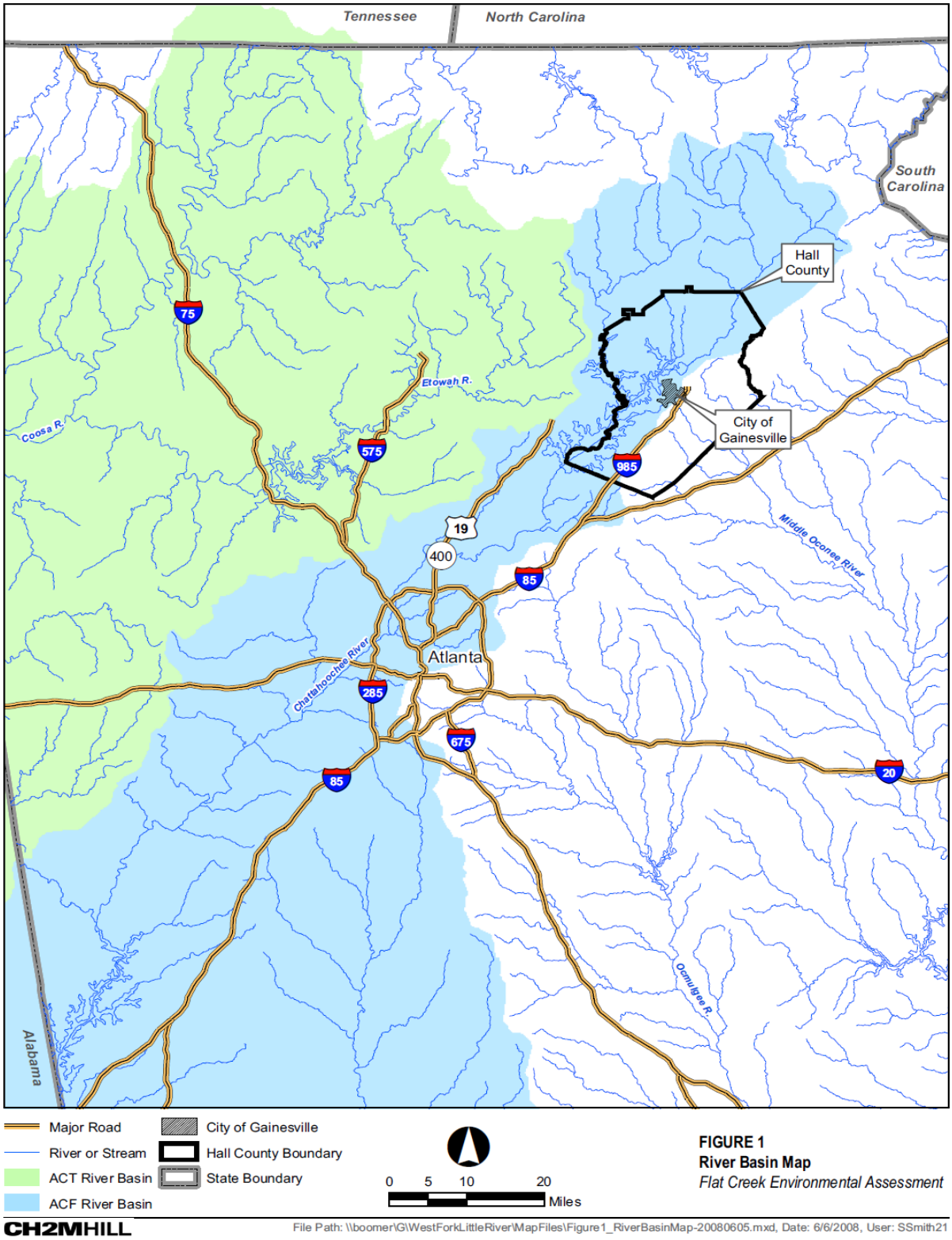

Figure 1. River Basin Map

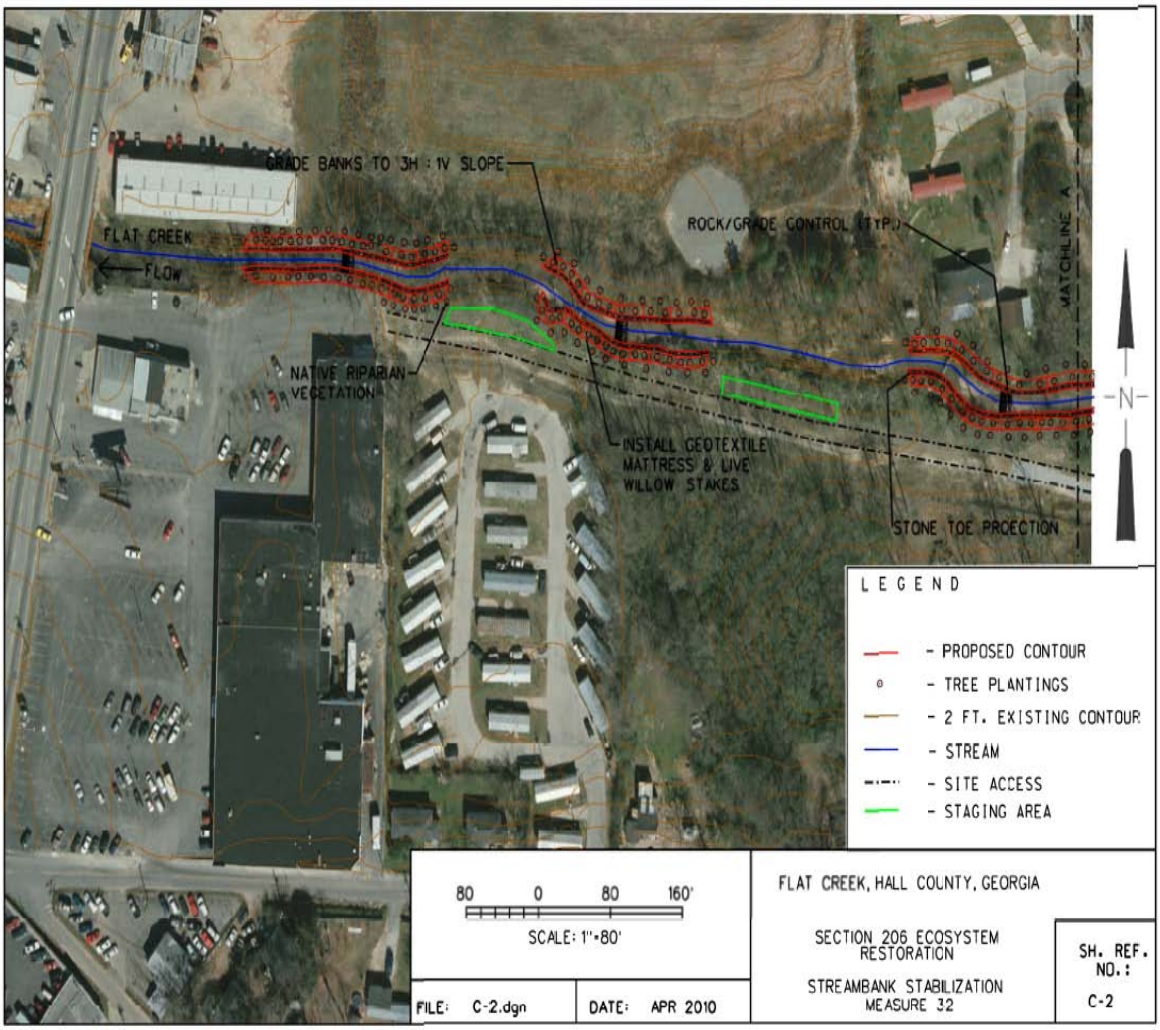

Figure 2. Alternative X Problem Site 32

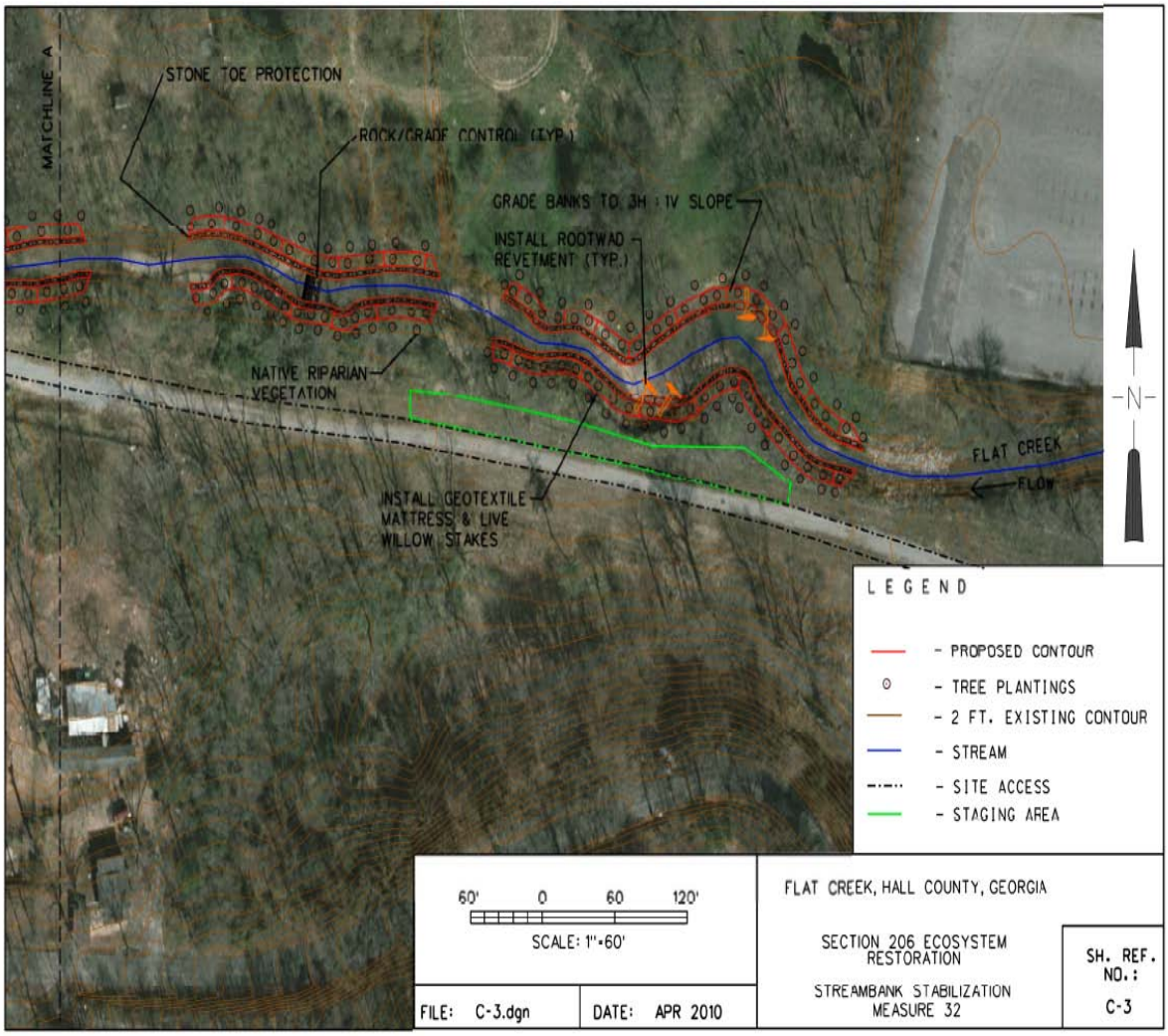

Figure 3. Alternative X Problem Site 32 Continued

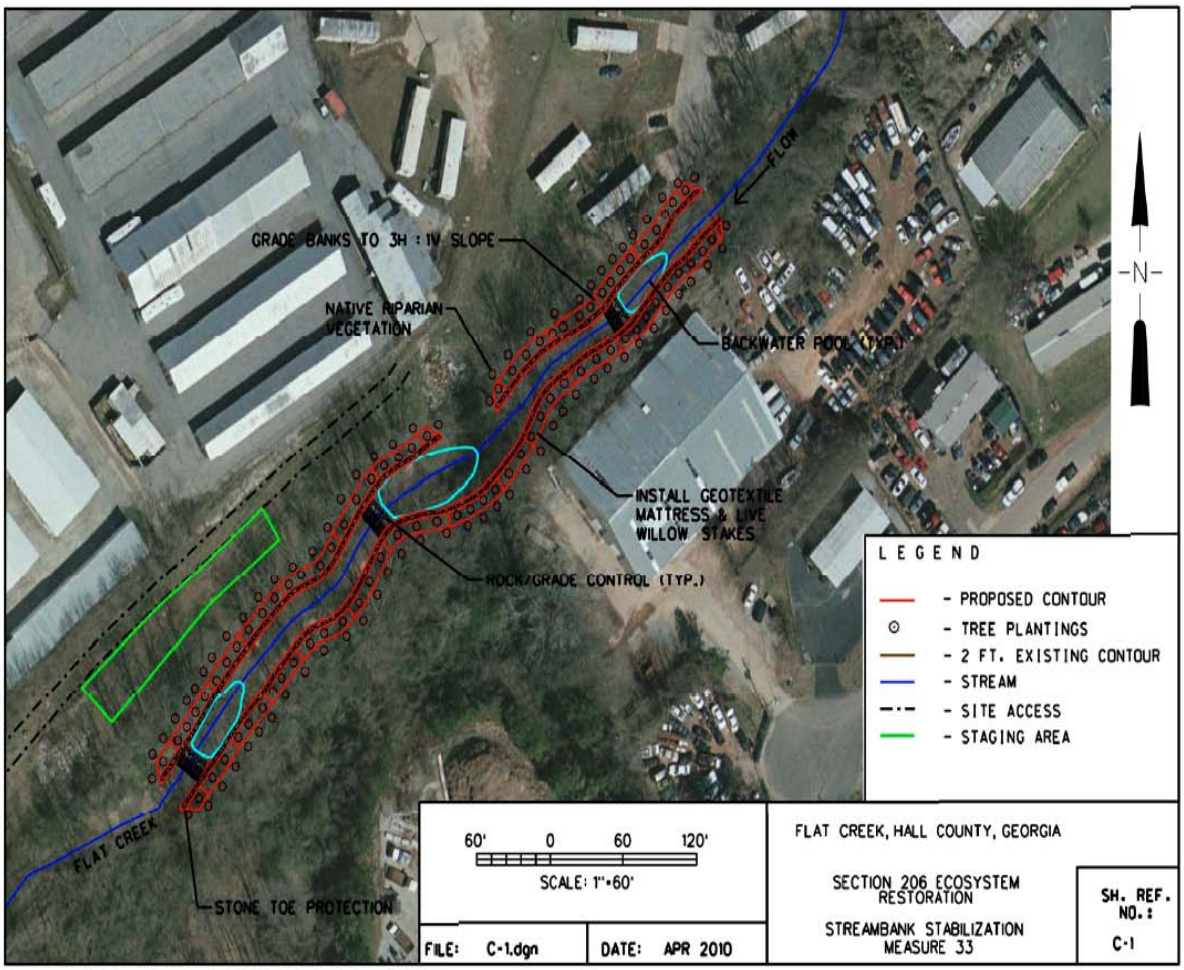

Figure 4. Alternative X Problem Site 33

Velma,

No Federally - protected species are likely to occur in the Flat Creek watershed in Hall County, Georgia. Therefore, the Fish and Wildlife Service concurs with the Mobile District Corps of Engineers determination that the Flat Creek Aquatic Ecosystem Restoration Project will have no effect on Federally - protected flora or fauna within the proposed project area.

Deborah_C_ Harris@fws.gov
U.S. Fish and Wildlife Service
105 Westpark Drive, Suite D
Athens, Georgia 30606
706-613-9493 ext 224
FAX: 706-613-6059
http://www.fws.gov/Athens <http://www.fws.gov/Athens>

"Diaz, Velma F SAM" <Velma.F.Diaz@usace.army.mil>

11/18/2010 10:50 AM To
<Deborah_C_Harris@fws.gov>
cc
Subject
Flat Creek E/T Determination

Draft

Debbie,

Based on the draft FWCA report and letter from GADNR on the review of the draft FWCA report, the US Army Corps of Engineers, Mobile District has made a determination that the Flat Creek Aquatic Ecosystem Restoration project will have no effect on flora and fauna within the proposed project area. We are requesting your concurrence on this determination.

Thanks,
Velma

Please note a response by email is sufficient.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, MOBILE DISTRICT
CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF:

March 3, 2011

Inland Environment Team
Planning and Environmental Division

Dr. David Crass
Division Director, Deputy State Historic Preservation Officer
Historic Preservation Division
Department of Natural Resources
254 Washington Street, S.W. Ground Level
Atlanta, Georgia 30334

Dear Dr. Crass:

The U.S. Army Corps of Engineers (USACE), Mobile District is proposing to undertake two separate ecosystem restoration projects in Hall County, Georgia to improve water quality, aquatic habitat and overall watershed management in portions of the West Fork Little River and Flat Creek watersheds, respectively. The West Fork Little River watershed is located in Hall County, Georgia, in the upper reaches of the Chattahoochee River Basin. The Flat Creek watershed is located in the City of Gainesville and Hall County, Georgia. These projects will be completed through the USACE Aquatic Ecosystem Restoration Program, which was authorized under Section 206 of the Water Resources Development Act of 1996 (P.L. 104-303). The Section 206 program allows county and local governments to seek funding and expertise from the federal government to assist with watershed improvement projects.

Each ecosystem restoration project will entail the construction or implementation of a number of improvement measures, or alternatives, placed in strategic locations of the respective watershed to reduce erosion and associated sedimentation, control streamflow, and improve aquatic ecosystems and biological communities. A total of approximately 22.5 acres will be impacted by improvement measures in the West Fork Little River Project. The Flat Creek project will impact approximately 7.5 acres. A Phase I archaeological survey was conducted at each of the improvement area locations to determine the effects the proposed undertakings would have on cultural resources. Due to the close proximity of the projects to each other and the small size, the results of the investigations for these projects were combined into one report. No resources were located during the investigation for either project. Pursuant to Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR 800, USACE has determined that the proposed undertakings will have no effect on historic properties as none are located within the areas of potential effects.

At this time we request that you review the enclosed cultural resources report and supporting documentation pursuant to Section 106 of the NHPA. Please provide comments and responses to this office within 30 calendar days of receipt of this letter.

Questions may be directed to Ms. Julie Morgan, USACE archaeologist, at (706) 856-0378, or via email, at julie.a.morgan@usace.army.mil. Thank you in advance for your efforts.

Sincerely,

Curtis M. Flakes
Chief, Planning and Environmental
Division

Enclosure

1. Description of Undertakings

1. West Fork Little River (WFLR). USACE is proposing to improve water quality in portions of the West Fork Little River watershed in Hall County, Georgia. The proposed project will entail:

- Stream restoration along approximately 470 linear feet of West Fork Little River, just north of Dahlonega Highway to include removal of invasive plants, planting of native species and removal of debris (Measures 4, 5, 6)
- 9.5 acres of created riparian wetlands incorporated into the adjacent floodplain areas along the restored stream channel north of Dahlonega Highway (Measure 7)*
- Stream restoration along approximately 100 linear feet of Bear Creek, within a mile of its confluence with West Fork Little River to include vegetation planting and geotextile mattresses for slope protection (Measure 17)

*Although a field investigation of Measure 7 (wetland) was included in the archaeological report, that particular improvement measure has since been deleted from the overall project due to an unwilling landowner and access problems.

Due to changes noted above, the WFLR project now entails only streambank restoration/stabilization. Photographs of the vegetation and site conditions of areas where the measures are proposed are contained in the cultural resources report.

2. Flat Creek. The Flat Creek Watershed is located in the Chattahoochee River Basin in the upper Piedmont physiographic province. The Chattahoochee River Basin is part of the larger Apalachicola-Chattahoochee-Flint (ACF) Rivers Basin, which flows south to the Gulf of Mexico and also drains portions of Alabama and Florida. Flat Creek is an eastern tributary to Lake Lanier, the largest lake (38,500 acres) located entirely within the State of Georgia. The Flat Creek Watershed encompasses 7,337 acres (698 acres of which are inundated by Lake Lanier) and contains a total of 31 stream miles (6 miles of mainstem and approximately 25 miles of tributaries). Flat Creek is located entirely within Hall County. Approximately 38 percent of the watershed is located in the City of Gainesville, and less than 1 percent is located in the City of Oakwood. The total incorporated area of the watershed is approximately 2,617 acres, of which approximately 2,553 are located in Gainesville and 64 are located in Oakwood. The project would consist of:

- Stream restoration that involves restoring the degraded channel to a stable condition at its existing grade, mimicking the dimension, pattern, and profile characteristic of a stable reference reach, and stabilizing and vegetating banks in two areas on the mainstem of Flat Creek (Measures 32, 33)
- Best Management Practice (BMP) retrofit. This retrofit involves transitioning a dry detention pond to a dry extended detention pond, in accordance with existing design standards. Recommendations to ensure adequate water quality and channel protection include retrofitting the BMP and clearing surrounding vegetation.

Photographs and aerial maps of the selected areas can be found in the accompanying cultural resources report.

2. Areas of Potential Effects (APE)

For each undertaking, the APE is defined as the construction footprint of the improvement measure and associated borrow areas, access roads and construction staging areas. The APE is not defined as the respective watershed, only the area of the proposed improvement features.

3. Efforts to Identify Historic Property

A Phase I archaeological survey was conducted by Brockington and Associates for each of the proposed undertakings (i.e., WFLR and Flat Creek) in the fall of 2010. No archaeological resources were identified or relocated as part of this study. No architectural resources were identified. A copy of the report of findings is included for review.

4. Effects to Historic Properties

The proposed undertakings will have no effect on historic properties as none are located within the APE.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, MOBILE DISTRICT
CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF:

March 3, 2011

Inland Environment Team
Planning and Environmental Division

Principal Chief Michell Hicks
Eastern Band of the Cherokee Nation
Qualla Boundary
Post Office Box 455
Cherokee, North Carolina 28719

Dear Chief Hicks:

The U.S. Army Corps of Engineers (USACE), Mobile District is proposing to undertake two separate ecosystem restoration projects in Hall County, Georgia to improve water quality, aquatic habitat and overall watershed management in portions of the West Fork Little River and Flat Creek watersheds, respectively. The West Fork Little River watershed is located in Hall County, Georgia, in the upper reaches of the Chattahoochee River Basin. The Flat Creek watershed is located in the City of Gainesville and Hall County, Georgia. These projects will be completed through the USACE Aquatic Ecosystem Restoration Program, which was authorized under Section 206 of the Water Resources Development Act of 1996 (P.L. 104-303). The Section 206 program allows county and local governments to seek funding and expertise from the federal government to assist with watershed improvement projects.

Each ecosystem restoration project will entail the construction or implementation of a number of improvement measures, or alternatives, placed in strategic locations of the respective watershed to reduce erosion and associated sedimentation, control streamflow, and improve aquatic ecosystems and biological communities. A total of approximately 22.5 acres will be impacted by improvement measures in the West Fork Little River Project. The Flat Creek project will impact approximately 7.5 acres. A Phase I archaeological survey was conducted at each of the improvement area locations to determine the effects the proposed undertakings would have on cultural resources. No resources were located during the investigation for either project. Pursuant to Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR 800, USACE has determined that the proposed undertakings will have no effect on historic properties as none are located within the areas of potential effects.

This letter and accompanying documentation is being provided to you as your tribe has previously expressed interest in consulting on projects located in this area of Georgia. At this time we request that you review the information pursuant to Section 106 of the NHPA and provide comments, information about sacred or traditional sites in the area, or other to this office within 30 calendar days of receipt of this letter.

Draft

Questions may be directed to Ms. Julie Morgan, USACE archaeologist, at (706) 856-0378, or via email at, julie.a.morgan@usace.army.mil. Thank you in advance for your efforts.

Sincerely,

Curtis M. Flakes
Chief, Planning and Environmental
Division

Enclosure

Draft

1. Description of Undertakings

1. West Fork Little River (WFLR). USACE is proposing to improve water quality in portions of the West Fork Little River watershed in Hall County, Georgia. The dominant land use types in Hall County are forests (38 percent), agriculture (25 percent), and residential (23 percent). The most developed areas of the County are located in and around the City of Gainesville and are associated with growth of the metropolitan Atlanta area. Land use plans for the County indicate a projected increase in residential development and decrease in agricultural land use in West Fork Little River watershed.

The proposed project will entail:

- Stream restoration along approximately 470 linear feet of West Fork Little River, just north of Dahlonega Highway to include removal of invasive plants, planting of native species and removal of debris (Measures 4, 5, 6)
- 9.5 acres of created riparian wetlands incorporated into the adjacent floodplain areas along the restored stream channel north of Dahlonega Highway (Measure 7)*
- Stream restoration along approximately 100 linear feet of Bear Creek, within a mile of its confluence with West Fork Little River to include vegetation planting and geotextile mattresses for slope protection (Measure 17)

*This particular improvement measure has since been deleted from the overall project.

Due to changes noted above, the WFLR project now entails only streambank restoration/stabilization. An aerial view of the proposed project area showing the locations of the proposed improvement measures is included as Figure 1.

By implementing the above improvement measures, it is anticipated that aquatic ecosystems and biological communities in the West Fork Little River watershed will improve and downstream sediment delivery to Lake Lanier will decrease over the next 25 to 50 years.

2. Flat Creek. The Flat Creek Watershed is located in the Chattahoochee River Basin in the upper Piedmont physiographic province. The Flat Creek Watershed encompasses 7,337 acres (698 acres of which are inundated by Lake Lanier) and contains a total of 31 stream miles (6 miles of mainstem and approximately 25 miles of tributaries). Flat Creek is located entirely within Hall County. Approximately 38 percent of the watershed is located in the City of Gainesville.

The Flat Creek Watershed was identified in 2006 as having unhealthy coliform concentrations, unstable banks, and degraded streams attributable to urban growth. To correct some of these problems the following improvements will be implemented:

Draft

- Stream restoration that involves restoring the degraded channel to a stable condition at its existing gradeand stabilizing and vegetating banks in two areas on the mainstem of Flat Creek (Measures 32, 33)
- Best Management Practice (BMP) retrofit. This retrofit involves transitioning a dry detention pond to a dry extended detention pond, in accordance with existing design standards. Recommendations to ensure adequate water quality and channel protection include retrofitting the BMP and clearing surrounding vegetation.

Stream restoration measures are recommended to return the streambed to a more natural condition, preventing further bank erosion and habitat degradation. The BMP retrofit project is recommended to complement stream restoration projects by treating stormwater before it enters the stream.

An aerial view of the proposed project area showing the locations of the proposed improvement measures is included as Figure 2.

2. Areas of Potential Effects (APE)

For each undertaking, the APE is defined as the construction footprint of the improvement measure and associated borrow areas, access roads and construction staging areas. The APE is not defined as the respective watershed, only the area of the proposed improvement features.

3. Efforts to Identify Historic Property

A Phase I archaeological survey was conducted by Brockington and Associates for each of the proposed undertakings (i.e., WFLR and Flat Creek) in the fall of 2010. No archaeological resources were identified or relocated during the investigation. No architectural resources were identified.

4. Effects to Historic Properties

The proposed undertakings will have no effect on historic properties as none are located within the APE.

Draft

REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, MOBILE DISTRICT
CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

March 3, 2011

Inland Environment Team
Planning and Environmental Division

Principal Chief Chad Smith
Cherokee Nation of Oklahoma
Post Office Box 948
Tahlequah, Oklahoma 74465

Dear Principal Chief Smith:

The U.S. Army Corps of Engineers (USACE), Mobile District is proposing to undertake two separate ecosystem restoration projects in Hall County, Georgia to improve water quality, aquatic habitat and overall watershed management in portions of the West Fork Little River and Flat Creek watersheds, respectively. The West Fork Little River watershed is located in Hall County, Georgia, in the upper reaches of the Chattahoochee River Basin. The Flat Creek watershed is located in the City of Gainesville and Hall County, Georgia. These projects will be completed through the USACE Aquatic Ecosystem Restoration Program, which was authorized under Section 206 of the Water Resources Development Act of 1996 (P.L. 104-303). The Section 206 program allows county and local governments to seek funding and expertise from the federal government to assist with watershed improvement projects.

Each ecosystem restoration project will entail the construction or implementation of a number of improvement measures, or alternatives, placed in strategic locations of the respective watershed to reduce erosion and associated sedimentation, control streamflow, and improve aquatic ecosystems and biological communities. A total of approximately 22.5 acres will be impacted by improvement measures in the West Fork Little River Project. The Flat Creek project will impact approximately 7.5 acres. A Phase I archaeological survey was conducted at each of the improvement area locations to determine the effects the proposed undertakings would have on cultural resources. No resources were located during the investigation for either project. Pursuant to Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR 800, USACE has determined that the proposed undertakings will have no effect on historic properties as none are located within the areas of potential effects.

This letter and accompanying documentation is being provided to you as your tribe has previously expressed interest in consulting on projects located in this area of Georgia. At this time we request that you review the information pursuant to Section 106 of the NHPA and provide comments, information about sacred or traditional sites in the area, or other to this office within 30 calendar days of receipt of this letter.

Draft

Questions may be directed to Ms. Julie Morgan, USACE archaeologist, at (706) 856-0378, or via email at, julie.a.morgan@usace.army.mil. Thank you in advance for your efforts.

Sincerely,

Curtis M. Flakes
Chief, Planning and Environmental
Division

Enclosure

Draft

1. Description of Undertakings

1. West Fork Little River (WFLR). USACE is proposing to improve water quality in portions of the West Fork Little River watershed in Hall County, Georgia. The dominant land use types in Hall County are forests (38 percent), agriculture (25 percent), and residential (23 percent). The most developed areas of the County are located in and around the City of Gainesville and are associated with growth of the metropolitan Atlanta area. Land use plans for the County indicate a projected increase in residential development and decrease in agricultural land use in West Fork Little River watershed.

The proposed project will entail:

- Stream restoration along approximately 470 linear feet of West Fork Little River, just north of Dahlonega Highway to include removal of invasive plants, planting of native species and removal of debris (Measures 4, 5, 6)
- 9.5 acres of created riparian wetlands incorporated into the adjacent floodplain areas along the restored stream channel north of Dahlonega Highway (Measure 7)*
- Stream restoration along approximately 100 linear feet of Bear Creek, within a mile of its confluence with West Fork Little River to include vegetation planting and geotextile mattresses for slope protection (Measure 17)

*This particular improvement measure has since been deleted from the overall project.

Due to changes noted above, the WFLR project now entails only streambank restoration/stabilization. An aerial view of the proposed project area showing the locations of the proposed improvement measures is included as Figure 1.

By implementing the above improvement measures, it is anticipated that aquatic ecosystems and biological communities in the West Fork Little River watershed will improve and downstream sediment delivery to Lake Lanier will decrease over the next 25 to 50 years.

2. Flat Creek. The Flat Creek Watershed is located in the Chattahoochee River Basin in the upper Piedmont physiographic province. The Flat Creek Watershed encompasses 7,337 acres (698 acres of which are inundated by Lake Lanier) and contains a total of 31 stream miles (6 miles of mainstem and approximately 25 miles of tributaries). Flat Creek is located entirely within Hall County. Approximately 38 percent of the watershed is located in the City of Gainesville.

The Flat Creek Watershed was identified in 2006 as having unhealthy coliform concentrations, unstable banks, and degraded streams attributable to urban growth. To correct some of these problems the following improvements will be implemented:

Draft

- Stream restoration that involves restoring the degraded channel to a stable condition at its existing gradeand stabilizing and vegetating banks in two areas on the mainstem of Flat Creek (Measures 32, 33)
- Best Management Practice (BMP) retrofit. This retrofit involves transitioning a dry detention pond to a dry extended detention pond, in accordance with existing design standards. Recommendations to ensure adequate water quality and channel protection include retrofitting the BMP and clearing surrounding vegetation.

Stream restoration measures are recommended to return the streambed to a more natural condition, preventing further bank erosion and habitat degradation. The BMP retrofit project is recommended to complement stream restoration projects by treating stormwater before it enters the stream.

An aerial view of the proposed project area showing the locations of the proposed improvement measures is included as Figure 2.

2. Areas of Potential Effects (APE)

For each undertaking, the APE is defined as the construction footprint of the improvement measure and associated borrow areas, access roads and construction staging areas. The APE is not defined as the respective watershed, only the area of the proposed improvement features.

3. Efforts to Identify Historic Property

A Phase I archaeological survey was conducted by Brockington and Associates for each of the proposed undertakings (i.e., WFLR and Flat Creek) in the fall of 2010. No archaeological resources were identified or relocated during the investigation. No architectural resources were identified.

4. Effects to Historic Properties

The proposed undertakings will have no effect on historic properties as none are located within the APE.

Draft

REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, MOBILE DISTRICT
CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

March 3, 2011

Inland Environment Team
Planning and Environmental Division

Principal Chief A. D. Ellis
Muscogee (Creek) Nation
Highway 75 Loop 56
Okmulgee, Oklahoma 74447

Dear Principal Chief Ellis:

The U.S. Army Corps of Engineers (USACE), Mobile District is proposing to undertake two separate ecosystem restoration projects in Hall County, Georgia to improve water quality, aquatic habitat and overall watershed management in portions of the West Fork Little River and Flat Creek watersheds, respectively. The West Fork Little River watershed is located in Hall County, Georgia, in the upper reaches of the Chattahoochee River Basin. The Flat Creek watershed is located in the City of Gainesville and Hall County, Georgia. These projects will be completed through the USACE Aquatic Ecosystem Restoration Program, which was authorized under Section 206 of the Water Resources Development Act of 1996 (P.L. 104-303). The Section 206 program allows county and local governments to seek funding and expertise from the federal government to assist with watershed improvement projects.

Each ecosystem restoration project will entail the construction or implementation of a number of improvement measures, or alternatives, placed in strategic locations of the respective watershed to reduce erosion and associated sedimentation, control streamflow, and improve aquatic ecosystems and biological communities. A total of approximately 22.5 acres will be impacted by improvement measures in the West Fork Little River Project. The Flat Creek project will impact approximately 7.5 acres. A Phase I archaeological survey was conducted at each of the improvement area locations to determine the effects the proposed undertakings would have on cultural resources. No resources were located during the investigation for either project. Pursuant to Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR 800, USACE has determined that the proposed undertakings will have no effect on historic properties as none are located within the areas of potential effects.

This letter and accompanying documentation is being provided to you as your tribe has previously expressed interest in consulting on projects located in this area of Georgia. At this time we request that you review the information pursuant to Section 106 of the NHPA and provide comments, information about sacred or traditional sites in the area, or other to this office within 30 calendar days of receipt of this letter.

Draft

Questions may be directed to Ms. Julie Morgan, USACE archaeologist, at (706) 856-0378, or via email at, julie.a.morgan@usace.army.mil. Thank you in advance for your efforts.

Sincerely,

Curtis M. Flakes
Chief, Planning and Environmental
Division

Enclosure

Draft

1. Description of Undertakings

1. West Fork Little River (WFLR). USACE is proposing to improve water quality in portions of the West Fork Little River watershed in Hall County, Georgia. The dominant land use types in Hall County are forests (38 percent), agriculture (25 percent), and residential (23 percent). The most developed areas of the County are located in and around the City of Gainesville and are associated with growth of the metropolitan Atlanta area. Land use plans for the County indicate a projected increase in residential development and decrease in agricultural land use in West Fork Little River watershed.

The proposed project will entail:

- Stream restoration along approximately 470 linear feet of West Fork Little River, just north of Dahlonega Highway to include removal of invasive plants, planting of native species and removal of debris (Measures 4, 5, 6)
- 9.5 acres of created riparian wetlands incorporated into the adjacent floodplain areas along the restored stream channel north of Dahlonega Highway (Measure 7)*
- Stream restoration along approximately 100 linear feet of Bear Creek, within a mile of its confluence with West Fork Little River to include vegetation planting and geotextile mattresses for slope protection (Measure 17)

*This particular improvement measure has since been deleted from the overall project.

Due to changes noted above, the WFLR project now entails only streambank restoration/stabilization. An aerial view of the proposed project area showing the locations of the proposed improvement measures is included as Figure 1.

By implementing the above improvement measures, it is anticipated that aquatic ecosystems and biological communities in the West Fork Little River watershed will improve and downstream sediment delivery to Lake Lanier will decrease over the next 25 to 50 years.

2. Flat Creek. The Flat Creek Watershed is located in the Chattahoochee River Basin in the upper Piedmont physiographic province. The Flat Creek Watershed encompasses 7,337 acres (698 acres of which are inundated by Lake Lanier) and contains a total of 31 stream miles (6 miles of mainstem and approximately 25 miles of tributaries). Flat Creek is located entirely within Hall County. Approximately 38 percent of the watershed is located in the City of Gainesville.

The Flat Creek Watershed was identified in 2006 as having unhealthy coliform concentrations, unstable banks, and degraded streams attributable to urban growth. To correct some of these problems the following improvements will be implemented:

Draft

- Stream restoration that involves restoring the degraded channel to a stable condition at its existing gradeand stabilizing and vegetating banks in two areas on the mainstem of Flat Creek (Measures 32, 33)
- Best Management Practice (BMP) retrofit. This retrofit involves transitioning a dry detention pond to a dry extended detention pond, in accordance with existing design standards. Recommendations to ensure adequate water quality and channel protection include retrofitting the BMP and clearing surrounding vegetation.

Stream restoration measures are recommended to return the streambed to a more natural condition, preventing further bank erosion and habitat degradation. The BMP retrofit project is recommended to complement stream restoration projects by treating stormwater before it enters the stream.

An aerial view of the proposed project area showing the locations of the proposed improvement measures is included as Figure 2.

2. Areas of Potential Effects (APE)

For each undertaking, the APE is defined as the construction footprint of the improvement measure and associated borrow areas, access roads and construction staging areas. The APE is not defined as the respective watershed, only the area of the proposed improvement features.

3. Efforts to Identify Historic Property

A Phase I archaeological survey was conducted by Brockington and Associates for each of the proposed undertakings (i.e., WFLR and Flat Creek) in the fall of 2010. No archaeological resources were identified or relocated during the investigation. No architectural resources were identified.

4. Effects to Historic Properties

The proposed undertakings will have no effect on historic properties as none are located within the APE.

Draft

REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, MOBILE DISTRICT
CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

March 3, 2011

Inland Environment Team
Planning and Environmental Division

Chief Gregory E. Pyle
Choctaw Nation of Oklahoma
Post Office Box 1210
Durant, Oklahoma 74702-1210

Dear Chief Pyle:

The U.S. Army Corps of Engineers (USACE), Mobile District is proposing to undertake two separate ecosystem restoration projects in Hall County, Georgia to improve water quality, aquatic habitat and overall watershed management in portions of the West Fork Little River and Flat Creek watersheds, respectively. The West Fork Little River watershed is located in Hall County, Georgia, in the upper reaches of the Chattahoochee River Basin. The Flat Creek watershed is located in the City of Gainesville and Hall County, Georgia. These projects will be completed through the USACE Aquatic Ecosystem Restoration Program, which was authorized under Section 206 of the Water Resources Development Act of 1996 (P.L. 104-303). The Section 206 program allows county and local governments to seek funding and expertise from the federal government to assist with watershed improvement projects.

Each ecosystem restoration project will entail the construction or implementation of a number of improvement measures, or alternatives, placed in strategic locations of the respective watershed to reduce erosion and associated sedimentation, control streamflow, and improve aquatic ecosystems and biological communities. A total of approximately 22.5 acres will be impacted by improvement measures in the West Fork Little River Project. The Flat Creek project will impact approximately 7.5 acres. A Phase I archaeological survey was conducted at each of the improvement area locations to determine the effects the proposed undertakings would have on cultural resources. No resources were located during the investigation for either project. Pursuant to Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR 800, USACE has determined that the proposed undertakings will have no effect on historic properties as none are located within the areas of potential effects.

This letter and accompanying documentation is being provided to you as your tribe has previously expressed interest in consulting on projects located in this area of Georgia. At this time we request that you review the information pursuant to Section 106 of the NHPA and provide comments, information about sacred or traditional sites in the area, or other to this office within 30 calendar days of receipt of this letter.

Draft

Questions may be directed to Ms. Julie Morgan, USACE archaeologist, at (706) 856-0378, or via email at, julie.a.morgan@usace.army.mil. Thank you in advance for your efforts.

Sincerely,

Curtis M. Flakes
Chief, Planning and Environmental
Division

Enclosure

Draft

EA APPENDIX C US FISH AND WILDLIFE SERVICE DRAFT COORDINATION ACT REPORT

Draft

DRAFT

Fish and Wildlife Coordination Act Report

Section 206 Aquatic Ecosystem and Streambank Restoration Project

Flat Creek

Hall County, Georgia

Draft

Prepared by:
Deborah Harris and Michael Pixley
Georgia Ecological Services
Athens, Georgia
October 2010

U.S. Fish and Wildlife Service
Southeast Region
Atlanta, Georgia

United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

OCT 21 2010

Mr. Kenneth P. Bradley
Chief, Environment and Resources Branch
Mobile District, Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628-0001

FWS Log Number:

Dear Mr. Bradley:

We are enclosing the Draft Fish and Wildlife Coordination Report on the Section 206 Aquatic Ecosystem Restoration Project along Flat Creek in Hall County. This report is submitted 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.). Our findings are based on information provided to us in your letter dated August 11, 2010, the 2010 draft Environmental Appendix provided by Mobile District personnel, coordination with Georgia Department of Natural Resources and two site visits.

The Service supports the Flat Creek Restoration Project. In addition to the stream restoration features proposed by the Corps of Engineers, this report identifies conservation measures to further enhance stream and riparian habitat for fish and wildlife resources.

No federally protected species are likely to occur in the project area. Georgia Department of Natural Resources has reviewed this draft report and agrees with our recommendations.

We appreciate the opportunity to comment on this project. If you have any questions, please contact staff biologist Deborah Harris at 706-613-9493 ext 224.

Sincerely,

Sandra S. Tucker

Sandra S. Tucker
Field Supervisor
Georgia Ecological Services

EXECUTIVE SUMMARY

The Flat Creek Study is being conducted under the authority of Section 206 of the Water Resources Development Act of 1994 (WRDA) through a partnership between the U.S. Army Corps of Engineers (USACE), the City of Gainesville, and Hall County. The USACE developed an Aquatic Ecosystem Restoration Feasibility Report for this project to identify, evaluate, and recommend to decision makers an appropriate, coordinated and implementable solution to the identified water resources problems and opportunities in the Flat Creek watershed. The purpose of this Fish and Wildlife Coordination Act (FWCA) Report is to ensure that wildlife conservation will receive equal consideration with other features of water resource development programs. In this report, the Fish and Wildlife Service (Service) describes existing fish and wildlife resources in the study area; predicts the future of these resources with and without the project; evaluates the tentatively selected plan; and identifies fish and wildlife conservation measures, with an emphasis on opportunities to restore fish and wildlife habitat within the scope of the aquatic restoration project. We have also provided comments under authority of section 7 of the Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. 1531 et seq.).

The USACE used the Ecosystem Restoration Model (ERM) to evaluate baseline conditions in the Flat Creek watershed and compare ecosystem benefits of various alternatives. Based on the ERM results, the USACE tentatively selected two stream components, sites 32 and 33 in the upper part of the watershed, for further investigation. The proposed action for these two sites involves restoring each degraded channel to a stable condition at its existing elevation, mimicking the dimension, pattern, and profile of a reference reach. Design prescriptions also include bank stabilization and deflection of flow away from the banks.

The Service supports the Flat Creek Restoration Project. Inclusion of Service recommendations would enhance the USACE goal of improving habitat quality and preventing further water quality degradation. In addition to the USACE- proposed restoration features, the major Service recommendations to increase the habitat value for aquatic species and wildlife include: (1) maintaining existing deep-rooted, and stable trees on the stream banks as much as possible; (2) incorporating an invasive species management plan into the project; (3) including natural instream habitat features, such as woody debris; (4) maintaining or reusing cobble substrate in the stream; (5) conducting biological monitoring before and 10 years after construction and applying adaptive management actions, as necessary; (6) rigorously enforcing the Total Maximum Daily Load (TMDL) Implementation Plan to improve water quality; (7) connecting restoration sites with a riparian corridor and continuing restoration upstream and downstream for habitat connectivity; (8) considering removal of certain structures from the flooplain to improve habitat and reduce the impacts of flooding; and (9) implementing or completing the nonstructural measures identified in the Environmental Appendix (USACE 2010). These non-structural measures include activities, programs, ordinances, or policies that promote protection and preservation of the physical stream conditions and conserve overall ecosystem integrity. Implementation of these nonstructural components, in partnership with the City of Gainesville and Hall County, would improve stream condition and water quality throughout the watershed.

Draft

This report has been coordinated with Georgia Department of Natural Resources (GADNR) who agrees with our recommendations and supports the restoration project. No federally protected species are likely to occur in the project area.

INTRODUCTION

AUTHORITY

Service involvement in this project is authorized by the FWCA (48 Stat. 401, as amended: 16 U.S.C. 661 et seq.). 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. We prepared this report with funds transferred from the USACE under the National Letter of Agreement between our agencies for funding of FWCA activities. This report constitutes the report of the Secretary of the Interior as required by Section 2(b) of the FWCA.

PURPOSE AND SCOPE

The USACE developed an Aquatic Ecosystem Restoration Feasibility Report for this project to identify, evaluate, and recommend to decision makers an appropriate, coordinated and implementable solution to the identified water resources problems and opportunities in the Flat Creek watershed. The specific goal is to investigate alternatives to restore habitat quality and prevent further water quality degradation in the Flat Creek watershed.

The purpose of this draft FWCA report is to ensure that wildlife conservation receives equal consideration and is coordinated with other features of the project. Our report describes existing fish and wildlife resources in the study area; predicts the future of these resources with and without the project; evaluates the tentatively selected plan; and identifies fish and wildlife conservation measures, with an emphasis on opportunities to restore fish and wildlife habitat within the scope of the aquatic restoration project.

COORDINATION WITH OTHER AGENCIES

The Service coordinated this report with GADNR, Wildlife Resources Division. GADNR agrees with the Service's recommendations. Their comments are included in Appendix A.

PRIOR STUDIES

The USACE developed a Preliminary Restoration Plan (PRP) for the Flat Creek watershed in 2002. The PRP documents that urban growth and development in Gainesville and Hall County has adversely affected biological integrity and water quality of streams in Hall County, such as Flat Creek and its tributaries. The PRP identified sedimentation and erosion as major contributors to stream degradation, as well as certain metals and fecal coliform (cited in USACE 2010).

Draft

DESCRIPTION OF STUDY AREA

The Flat Creek watershed is located in the Chattahoochee River Basin in Hall County, Georgia, upstream of Lake Sidney Lanier. The Chattahoochee River Basin is a component of the larger Apalachicola-Chattahoochee-Flint Rivers Basin (ACF Basin), which flows south to the Gulf of Mexico and also drains portions of Alabama and Florida (Figure 1). Flat Creek is an eastern tributary to Lake Lanier, the largest lake (38,500 acres) located entirely within the State of Georgia (Figure 2).

The Flat Creek watershed is located in Hall County, Georgia, within the upper Piedmont physiographic province. The watershed encompasses 7,337 total acres (698 acres of which are inundated by Lake Lanier) and contains a total of 31 stream miles (6 miles of mainstem and 25 miles of tributaries). Roughly 38 percent of the watershed is located in the City of Gainesville (USACE 2010). Given the urban character of the area, much of the natural vegetation in the watershed has been eliminated and replaced with introduced shrubs and grasses, buildings, parking lots, streets, and utilities. Natural vegetation that remains is concentrated on slopes and stream banks and consists of mixed pine and hardwoods. The stream channel has been adversely affected by man-made channel alterations such as culverts, dredging, straightening, pipings, riprap and gabion rock baskets, and hydrologic alterations including down-cut channels, lateral drainage ditches, headcuts, erosion, knickpoints, and bed erosion (USACE 2010)

The Georgia Environmental Protection Division (GAEPD) of GADNR classifies all water bodies in the State under a system of designated uses, each of which has specific water quality criteria that should be maintained. GAEPD designated Flat Creek under the “fishing use” category. The entire Flat Creek reach, from its headwaters in Gainesville downstream to Lake Lanier, does not support its designated use due to elevated levels of fecal coliform bacteria and impacted fish communities, potentially caused by urban runoff and other urban effects. GAEPD has established Total Maximum Daily Loads (TMDL) for Flat Creek, which states how much the pollutant load to the water needs to be reduced for the water to support its designated used. This allows quality-based controls to be developed to reduce pollution and restore and maintain water quality.

Draft

FISH AND WILDLIFE RESOURCE CONCERNS AND PLANNING OBJECTIVES

The most serious concern for fish and wildlife resources in Hall County is the continuing loss of habitat and poor water quality. Both conditions result from urban residential, commercial, and industrial development. Stream habitat continues to be altered and degraded by erosion, sedimentation, stormwater runoff, and loss of riparian vegetation. Flat Creek is entrenched with little or no floodplain in most reaches. Any remaining, naturally-vegetated floodplains are fragmented and isolated from other natural areas.

PLANNING OBJECTIVES

The Service developed the following planning objectives in consideration of the above resource concerns.

1. Assist the USACE in restoring and enhancing fish and wildlife habitat in the project area as part of the overall aquatic restoration strategy.
    a. Assist in the selection or modification of restoration design features that minimize adverse impacts to fish and wildlife resources.
    b. Assist in the selection of natural design features, wherever appropriate, that best enhance fish and wildlife habitat.
2. Support development and establishment of non-structural measures (including activities, programs, ordinances, or policies), such as the Watershed Improvement Plan, that promote protection and preservation of the physical stream conditions and conserve overall ecosystem integrity.
3. Support measures to improve water quality such as the TMDL Implementation Plan.

EVALUATION METHODOLOGY

The Service's evaluation methodology included review of information provided in the August 11, 2010, letter from the Mobile District, the 2010 Draft Environmental Appendix for this project, discussions with USACE, coordination with GADNR and other experts, and on-site field inspections. Service biologists and representatives from CH2MHill, the USACE, and Hall County made a site visit to the project areas along Flat Creek watershed on September 10, 2010. A Service representative made an additional site visit to alternative sites 32 and 33 on October 14, 2010, with a representative of Hall County and others.

DESCRIPTION OF FISH AND WILDLIFE RESOURCES

EXISTING RESOURCES

Land use patterns in a watershed are a major influence on fish and wildlife resources. USACE determined land use patterns in the Flat Creek watershed using the Atlanta Regional Commission's (ARC) LandPro 2005 Geographic Information System for the 20-county Atlanta region (cited in USACE 2010). According to this geodatabase, there are approximately 892 acres of forested land in the Flat Creek watershed, comprising 12% of the total land use. Of this forested land, over 370 acres surrounding Lake Lanier is protected and classified as undeveloped land. The remainder of the land use in the watershed is residential (35%), commercial (34%), reservoirs (9%), parks and cemeteries 7%, and the remaining 3% is a composite of roads and utilities (USACE 2010, Table 2-1). Approximately 25% of the watershed, on average, is impervious surface (USACE 2010).

For purposes of this study, the USACE (2010) divided the watershed into three subwatersheds: (1) Upper Flat Creek (Headwaters); (2) Lower Flat Creek; and (3) the Flat Creek Embayment (includes Lake Lanier backwaters). The three areas are roughly equal in size but have notable land use differences that dictate the quality and quantity of land and water available to fish and wildlife resources.

The Upper Flat Creek subwatershed is dominated by industrial and commercial areas, which comprise 76% of the watershed. This high level of development is the major contributor to the high impervious surface (51%). The Upper Flat creek subwatershed includes poultry processing

Draft

plants and feed mills, which are categorized as industrial area. Only 20% of the Upper Flat Creek subwatershed is residential. Forest cover is 1.3%.

The Lower Flat Creek subwatershed is predominantly residential, dominated by medium to high density residential land use with most houses on ¼ to 2-acre lots. This lot size pattern has resulted in much less impervious cover (18%). The Lower Flat Creek watershed also has 33% commercial land use and 15.9% forest cover.

The Embayment subwatershed has a similar residential use as Lower Flat Creek, the major difference being that Lake Lanier backwaters constitute 24% of the Embayment watershed. The percentage of commercial land use is 2%. Forest cover accounts for 17.4% of the Embayment. With less area for development, the resulting impervious cover is 8%.

These differences in the subwatersheds, particularly the percentage of impervious surface, are reflected in the Index of Biotic Integrity (IBA) and Benthic Macroinvertebrate Index (MBI) scores discussed below in the fish and aquatic invertebrate sections.

Throughout the Flat Creek watershed, habitat for upland species has been reduced primarily to small remnant patches of forest and narrow riparian corridors. Stream banks are mostly unstable and contribute high loads of sediment directly into streams. Stormwater runoff further erodes streambanks and scours channels, exacerbating the sediment problem. There is little instream habitat for aquatic fauna due to the excessive sediment load and loss of riparian buffers. Water quality and aquatic biological resources are affected by both point and nonpoint sources of pollutants in the watershed. We anticipate that only "generalist" wildlife species and non-sensitive fishes occur in small pockets of available habitat and degraded streams that remain in the basin.

On our site visit on October 14, 2010, we noted that Flat Creek is incised at sites 32 and 33. The top of the stream banks are vegetated with mature trees such as box elder (*Acer negundo)*, red maple (*Acer rubrum*), pecan (*Carya illinoensis*), sycamore (*Platanus occidentalis)*, honey locust (*Gleditsia triacanthos*), willow oak (*Quercus phellos*) and water oak (*Quercus nigra).* The midstory is dense, predominantly Chinese privet (*Ligustrum sinense*), but also smilax (*Smilax spp*.), blackberry (*Rubus spp*), and honeysuckle *(Lonicera japonica*). Site 33 also had a dense cover of English ivy (*Hedera helix*) on the trees and ground. The stream banks on both these sites were severely eroded in many places, but not continuously. Some sections were stable with deep-rooted vegetation. The substrate of the stream bottom at site 32 was sediment, but the area we visited on site 33 had cobble substrate.

The following section provides an inventory of species that are known to occur, historically occurred, or may occur in the study area. Note, however, that these collection records may not be all-inclusive because more intensive sampling has been conducted for some species groups and because these data come from various sources with different levels of detail for each species group. These results are a compilation of collection records made available by various individuals and resource agencies, and information is seldom based on comprehensive surveys of all potential habitat(s).

Draft

PROTECTED SPECIES

The USACE requested a list of federally-protected species in the project area (August 11, 2010 letter). We do not have records of federally-protected species in Hall County and, considering the lack of suitable habitat, it is not likely that federally-protected species occur in the Flat Creek project area. Therefore, no further action is required under section 7(a) (2) of the ESA for this project. However, if new information or changes in the project involve federally-listed species, further consultation with the Service will be required.

Table 1 lists species protected by the State of Georgia that occur in Hall County. GADNR reports records of three plants and one crayfish within a three mile radius of the project site. They had no records of high priority species or habitats within the project boundary (See GADNR comments in Appendix 1).

Table 1. State protected species in Flat Creek watershed.

Species	Federal Status	State Status	Habitat
Chattahoochee crayfish *Cambarus howardi*	No Federal Status	Threatened	Clear, free-flowing waters, often in riffle habitat from smaller tributary streams to the mainstem of the Chattahoochee
Golden seal *Hydrastis canadensis*	No Federal Status	Endangered	Moist deciduous hardwood forests with neutral or basic soils over bedrock that is high in calcium or magnesium
Indian olive *Nestronia umbellula*	No Federal Status	Rare	Dry open woodlands with mixed hardwood-pine canopy
Ozark bunchflower *Veratrum woodii*	No Federal Status	Rare	Lower slopes and stream terraces in moist, hardwood forests, usually over basic soils.

Draft

MAMMALS

To our knowledge, the project area has not been surveyed for mammals. Mammals that are likely to occur within the Flat Creek watershed are characterized by their generalist habits and their adaptability to human and urban environments. These species include the: eastern mole (*Scalopus aquaticus);* short-tailed shrew (*Blarina carolinensis);* big brown bat (*Eptesicus fuscus);* red bat (*Lasiurus borealis);* eastern pipistrelle (*Pipistrellus subflavus);* hoary bat (*Lasiurus cinereus)*; gray squirrel (*Sciurus carolinensis);* southern flying squirrel (*Glaucomys volans)*; eastern chipmunk (*Tamias striatus)*; white-footed mouse (*Peromyscus leucopus);* hispid cotton rat (*Sigmodon hispidus*);, eastern cottontail rabbit (*Sylvilagus floridanus*); muskrat (*Ondata zibethicus*); opossum (*Didelphis virginiana*); raccoon (*Procyon lotor*); gray fox (*Urocyon cinereoargenteus*); beaver (*Castor Canadensis*); coyote (*Canis latrans*); white-tailed deer (*Odocoileus virgianus*); and mink (*Mustela vison*). Introduced mammal species include the Norway rat (*Rattus norvegicus*) and house mouse (*Mus musculus*). On the October 14, 2010 site visit, we saw a gray squirrel, and signs of white-tailed deer and raccoon.

BIRDS

To our knowledge, the study area has not been systematically surveyed for birds. A bird list of the 177 species that may occur in Hall County is posted at: http://ebird.org/ebird/GuideMe?cmd=decisionPage&Ggetlocations=hotspots&hotspots=L63e

Small forested patches remaining in the Flat Creek watershed may provide resting places for migratory birds passing through the area or nesting areas for generalist species such as: blue jay (*Cyanocitta cristata*); American crow (*Corvus brachyyhrynchos)*; tufted titmouse (*Baeolophus bicolor)*; American robin (*Turdus migratorius);* Carolina wren (*Thryothorus ludovicianus*); Northern mockingbird (*Mimus polyglottos)*; European starling (*Sturnus vulgaris),* common grackle (*Quiscalus quiscula*); Northern cardinal (*Cardinalis cardinalis*); and house sparrow (*Passer domesticus*) (Schneider et al. 2010). Larger trees could support woodpeckers and owls. We noted cardinals, Carolina wrens, blue jays and grackles on our October 14, 2010, site visit.

AMPHIBIANS AND REPTILES

To our knowledge, the project area has not been professionally surveyed for amphibians and reptiles. Several herptofaunal species that have high tolerance to disturbance that could potentially occur in the project watershed include the: northern water snake (*Nerodia sipedon*); slider (*Trachemys scripta*); common musk turtle (*Sternotherus odoratus*); snapping turtle (*Chelydra serpentina*); eastern box turtle (*Terrapene carolina*); copperhead snake (*Agkistrodon contortix*); midland brown snake (*Storeria dekayi wrightorum*); eastern smooth earth snake (*Virginia valeriae valeriae*); eastern worm snake (*Carphophis amoenus*); redbelly snake (*Storeria occipitomaculata*); rough green snake (*Opheodrys aestivus*); eastern garter snake (*Thamnophis sirtalis*); ground skink (*Scincella lateralis*); five-line skink (*Eumeces fasciatus*); southern fence lizard (*Sceloporus undulates*); green anole (*Anolis carolinensis*); spring peeper (*Pseudacris crucifer*); upland chorus frog (*Pseudacris triseriata feriarum*); gray treefrog (*Hyla chrysocelis*); southern leopard frog (*Rana sphenocephala*); bullfrogs (*Rana catesbeiana*); green frogs (*Rana clamitans*); and Fowler's toad (*Bufo fowleri*) (John Jensen, herpetologist, GADNR, 2003, pers. comm.). Several salamanders occur in Atlanta and the surrounding area, but with shrinking habitats, their numbers are on the decline. Some of these species include northern slimy salamander (*Plethodon glutinosus),* spotted salamander (*Ambystoma maculatum*), Southern redback salamander (*Plethodon serratus*), and two-lined salamander (*Eurycea cirregera*) (Wilson 1998).

FISH

As part of this project, CH2MHill (USACE 2010) sampled fish communities in 2007 at four locations in the Flat Creek watershed. They collected 11 species, including sunfishes (6 species), minnows (4 species), and catfishes (1 species). The most common species were golden shiner (*Notemigonus crysoleucas*), redbreast sunfish (*Lepomis auritus*), and green sunfish (*Lepomis cyanellus*). GADNR (IBI) scores ranged from Poor to Very Poor (USACE 2010. Table 3-2). Historical fish scores in the Flat Creek watershed indicate significant degradation in the study area. Fish scores have been rated as "poor" or "very poor" since sampling began in 1999 and declining trends are apparent in two of the four sampling stations and stable in the other two.

Draft

No fish species designated as "sensitive" to environmental degradation were collected in Flat Creek. This metric is an indicator of degradation of stream habitats, which includes the effects of poor water quality, sedimentation, hydrologic modification, habitat alteration, and riparian zone disturbance. These types of disturbances are present throughout the Flat Creek watershed, leading to low overall ratings (USACE 2010).

The GADNR stream team collected data from Flat Creek in 2003. The site was ranked as very poor and the following fish species were collected during the survey: bluegill (*Lepomis macrochirus*); brown bullhead (*Ameiurus nebulosus)*; golden shiner; green sunfish; largemouth bass (*Micropterus salmoides; r*edbreast sunfish; and *s*pottail shiner (*Notropis hudsonius).* (Appendix A).

AQUATIC INVERTEBRATES

Benthic macroinvertebrate sampling in Flat Creek by CH2MHill in 2007 (USACE 2010) yielded a total of 36 taxa, including mostly chironimids (midges) and caddisflies (Trichoptera order). No Plecoptera taxa (stoneflies) were found at any of the sampling stations.

BMI scores (USACE 2010, Table 3-3) were in the lower range of possible values, indicating macrobenthic habitat has been affected in Flat Creek. The score at the most upstream station (with the highest percentage of development and impervious surface) had the lowest BMI score (17 out of a possible 100) which suggests significantly degraded conditions and poor water quality. BMI scores at the other four sampling stations lower in the watershed (ranging from 36-40) remained flat to decreasing over time.

FUTURE FISH AND WILDLIFE RESOURCES WITHOUT THE PROJECT

The Flat Creek watershed experienced significant growth and development over the last 20 years, and this trend is expected to continue. According to the US Census Bureau, the 1990 population estimate for Hall County was 95,428, and the 2006 population estimate was 173,256. This 82 percent increase was primarily due to growth in and around the City of Gainesville, as well as growth on the south side of the County associated with the metropolitan Atlanta area. These population increases are associated with more intensive land uses, which can increase nonpoint source pollution and potentially impact streams (USACE 2010).

Without the project, the Service would expect fish and wildlife resources to continue to decline in the Flat Creek watershed due to increasing residential and commercial development, increased urban stormwater runoff diverted into streams, more culverted road crossings, and decreasing forested and riparian habitat. Channel and streambank erosion due to accelerated stormwater runoff is expected to continue to be the primary reason for excess sedimentation into the streams. Water quality will continue to decline, thus wildlife and diversity of aquatic resources will likely continue to decline.

Draft

PLAN SELECTION PROCESS AND IDENTIFICATION OF EVALUATED ALTERNATIVES

The USACE used the ERM to identify and evaluate potential stream restoration measures for Flat Creek. Inputs to the ERM include biological data from multiple locations to calculate watershed-scale scores for: (1) the fish community; (2) the benthic macroinvertebrate community; (3) the physical habitat; (4) combined stream health (based on fish and benthic macroinvertebrate scores); and (5) Habitat Units (based on the combined stream health), all of which are representative of the watershed as a whole. The ERM outputs Habitat Units, which are representative of the projected improvement or decline across the watershed. Habitat Units were used to identify restoration alternatives that are the least costly for providing the greatest benefit. In the beginning, USACE compared and evaluated all potential restoration measures based on watershed problems and opportunities in Flat Creek Watershed. Based on this comparison and evaluation, they evaluated 39 potential restoration measures, creating 25 alternatives that were rigorously analyzed as either single-site or combination alternatives using the ERM. The alternatives with the greatest potential to improve overall watershed conditions were evaluated with respect to project cost.

SELECTED PLAN AND ALTERNATIVES BEING CONSIDERED

The tentatively selected plan (Alternative X) consists of stream restoration at two sites (32 and 33) along the main stem of Flat Creek (Figure 3). Plans at these locations include stream bank grading and stabilization, flow deflection, and riparian zone restoration.

Site 32 is a stream restoration site located on the mainstem of Flat Creek in a commercial area between Atlanta Highway and Dorsey Street. The stream has been straightened in this area and is actively widening. Banks are approximately nine feet high and severely eroded (50-75%) over at least 700 feet of the project area. The northeastern portion of the riparian corridor includes lawns in sections of the reach, and the southern riparian corridor has been cleared for a parallel utility. During the September 10, 2010, and October 14, 2010, site visits, Service biologists noted that sections of the riparian area consisted of a stable vegetated area with various hardwood species with a diameter at breast height (DBH) averaging around 10 inches. The goal at this site is to restore the degraded channel to a stable condition at its existing elevation, mimicking the dimension, pattern, and profile of a stable reference reach along with stabilizing and vegetating banks. Conceptual design components of the stream restoration include bank stabilization, flow deflection, and planting of riparian corridor.

Site 33 is a stream restoration component located on the mainstem of Flat Creek, just downstream of Atlanta Highway. The project area is characterized by a channel which has been straightened and is actively widening. The northern side of the riparian corridor consists of lawns, man-made structures in the floodplain, and a section that has been cleared for a parallel utility. Banks are steep and severely-to-moderately eroded throughout the project area.
This area has erodied banks, but not continuously. Some sections area stable with deep-rooted vegetation. The project consists of a stream restoration component which involves restoring the degraded channel to a stable condition at its existing elevation, mimicking the dimension,

Draft

pattern, and profile of a stable reference reach, and stabilizing and vegetating banks. Conceptual design components of the restoration include bank stabilization, flow deflection, vegetative management, and planting of the riparian corridor.

PROJECT IMPACTS AND EVALUATION OF SELECTED PLAN

The streams in the project area are unstable, degraded, and provide only poor aquatic habitat, although riparian corridors in some parts of the project area are vegetated with larger hardwood trees (>10 inch diameter at breast height). These trees may be stabilizing the banks and providing wildlife habitat for birds and other wildlife. Removal of this vegetation for grubbing and grading may result in temporary loss of streambank habitat.

Stream restoration will be beneficial if actions result in a redesigned stream with stable banks that moves its sediment and water, and provides habitat for diverse aquatic fauna.

FISH AND WILDLIFE CONSERVATION MEASURES

This project provides opportunities to improve stream habitat and water quality in the restoration and downstream reaches. In addition to the proposed restoration plans, we recommend that the following conservation measures be considered and implemented to enhance fish and wildlife habitat where possible:

1. In areas with eroded banks, grading the banks and replanting with native trees and shrubs suitable for the site would provide beneficial wildlife habitat.
   Where possible, in areas that are not eroded, preserving existing deep-rooted native riparian vegetation (dominant hard wood trees) will ensure bank stabilization and provide cover, foraging, and nesting habitat for birds, mammals, and herpetofauna.

2. Removal of privet and other invasive exotic vegetation is needed at both sites 32 and 33 to enhance wetlands and stream buffers. Invasive species reduce forest productivity and degrade diversity and wildlife habitat. Removal of invasive species requires a plan for multi-year treatments, but will allow a variety of native species of understory and ground vegetation to return, which will provide better food and cover for wildlife and improve the site for recreational use.

3. Instream habitat can be conserved by limiting the clearing of snags and other large woody debris to the minimum necessary for operating equipment within the bankfull channel. Other options to increase stream habitat diversity include the placement of submerged shelters such as whole trees, shrubs, or bush piles that can be used as cover for fish, a substrate for aquatic insects, and a source of detritus material.

4. Cobble substrate is an important habitat feature for aquatic species. In areas with a natural cobble substrate, we recommend leaving the cobble in place or removing it and replacing it after restoration.

Draft

5. Conducting biological monitoring before and after construction to evaluate the project's resultant effect on the fish and wildlife resources in the study area should be an essential project component. The results of such monitoring should be used to develop adaptive management practices to increase the success of the project.

6. The TMDL Implementation Plan developed for Flat Creek is an important conservation measure, and we encourage that it be rigorously enforced. The Implementation Plan identifies a set of actions to improve water quality with the goal of meeting water quality standards and supporting its designated use. Management actions identified in the TMDL Implementation Plan include the formation of a stakeholders group, ordinance revisions, ongoing monitoring, and public outreach.

   Mitigating the point and nonpoint pollution sources will aid in the recovery of aquatic fish and benthic invertebrates in Flat Creek. Until stormwater runoff and other major pollution sources are addressed and minimized, fish and wildlife habitat in Flat Creek will continue to deteriorate and the stream will continue to experience poor water quality. Mitigation of pollution is essential for long-term success of this project

7. The two restoration sites in this project could be components in the design and implementation of future, more comprehensive efforts to rehabilitate urban streams like Flat Creek. Connecting the two Flat Creek restoration sites with riparian habitat and stream restoration and continuing the restoration upstream and downstream would significantly increase the value of the project and provide greenway and recreational and educational opportunities.

8. Removing certain structures from the floodplain that are subject to frequent flooding would allow the floodplain to return to a natural condition and would provide greenspace and wildlife habitat. Removal of such structures would also be a beneficial flood control strategy because it would provide more area for overbank flooding without damaging property.

9. The nonstructural measures identified in the Environmental Appendix (USACE 2010) are excellent ways to increase the likelihood of success of this project and improve aquatic habitat and water quality throughout the watershed. We strongly support these measures, which include enforcement of protective ordinances, litter clean-up in stream corridors, adoption of protective stormwater ordinances, public education programs, development and implementation of an invasive species management plan, post-construction stormwater management, construction site inspection program, preservation of greenspace, and stream monitoring.

SERVICE RECOMMENDATIONS

The Service recommends the following measures be incorporated into the project to further improve aquatic diversity and wildlife habitat.

Draft

1. Maintain existing deep-rooted and stable vegetation (greater than 8-10 inch dbh), as much as possible for streambank stabilization and wildlife habitat.

2. Incorporate an invasive species management plan into the project.

3. Include natural instream habitat features for aquatic diversity.

4. Maintain or reuse cobble substrate where possible.

5. Include biological monitoring at the site before construction and ten years after construction to evaluate success of the project. Apply adaptive management actions, as necessary.

6. Establish an agreement with the appropriate entity to rigorously enforce the TMDL Implementation Plan developed for Flat Creek.

7. Consider connecting the two restoration sites and continuing the project upstream and downstream to improve habitat connectivity and provide recreational and educational opportunities.

8. Consider removal of certain structures from the flooplain to improve habitat and reduce the impacts of flooding.

9. Support, implement, and complete nonstructural measures identified in the Environmental Appendix (USACE 2010) in partnership with local sponsors.

SERVICE POSITION

The Service supports the recommended plan. Inclusion of above recommendations into the project would further meet the USACE purpose of improving habitat quality and preventing further water quality degradation in the Flat Creek watershed.

LITERATURE CITED

Georgia Department of Natural Resources (Environmental Protection Division. 2010. 305(b)/303 (d)). List Documents. http://www.state.ga.us/dnr/environ/.

Schneider, T.M., G. Beaton, T.S. Keyes, and N.Klaus. 2010. The breeding bird atlas of Georgia. University of Georgia Press, Athens, 497 pp.

U.S Army Corps of Engineers, Mobile District (USACE).2002. Section 206 preliminary restoration plan, aquatic ecosystem restoration project, Flat Creek watershed, Gainesville, Hall County, Georgia.

Draft

U.S. Army Corps of Engineers (USACE). 2010. *Draft* Environmental Appendix. Prepared by CH2MHill for U.S. Army Corps of Engineers, Mobile District.

Wilson, LA. 1998. The natural history of Atlanta. Pages6-13 i*n* J.R. Wilson,ed. Urban Wildlife. Georgia Wildlife Federation Press, Covington, GA.

Draft

U.S. Fish & Wildlife Service

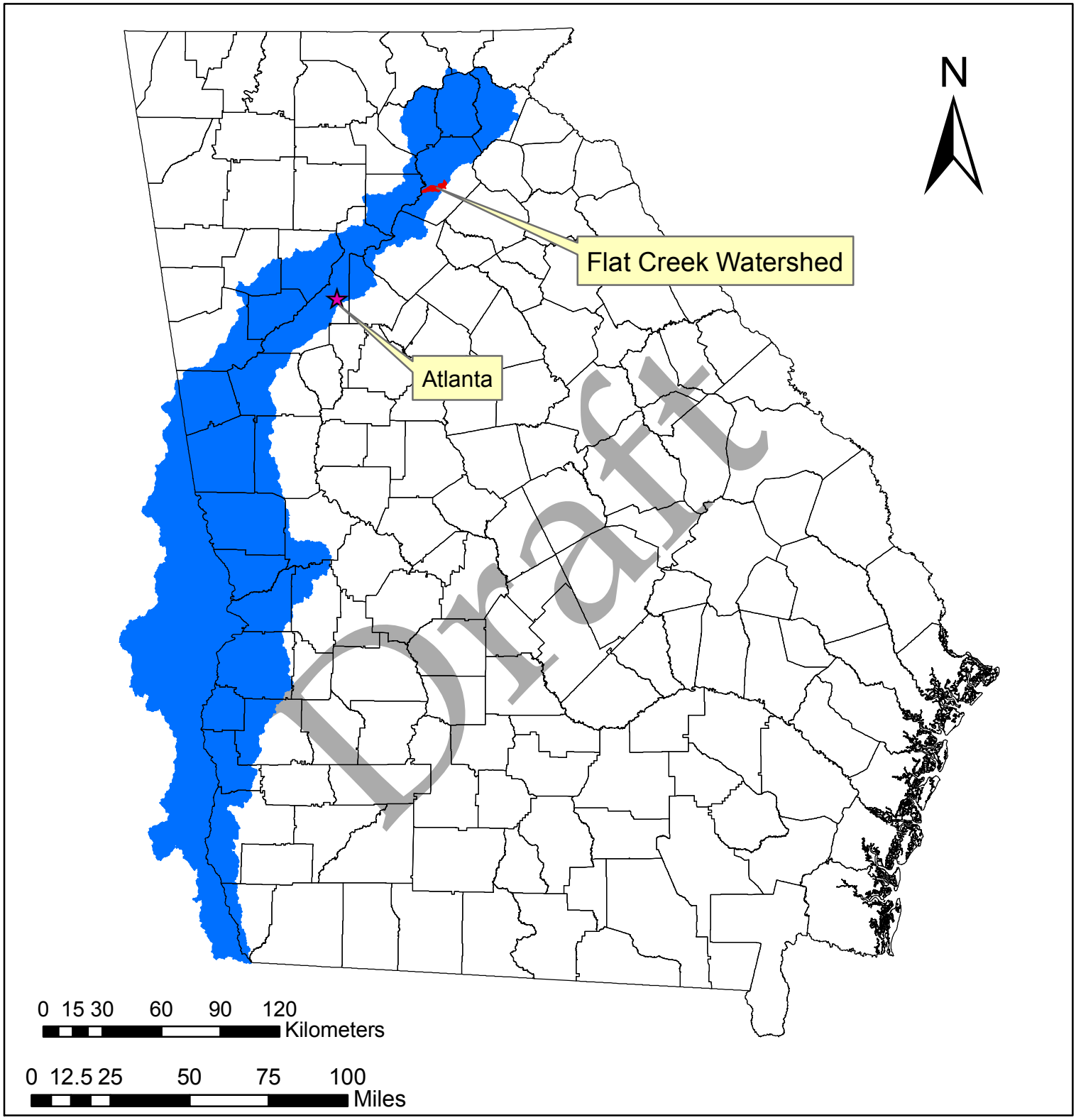

Fig. 1. Flat Creek Watershed

Map produced by:
Georgia Ecological Services Office
105 West Park Drive, Suite D
Athens, GA 30606 - July 10, 2010
Adapted From USACE 2010

Legend

- Chattahoochee River Basin
- Flat Creek Watershed

U.S. Fish & Wildlife Service

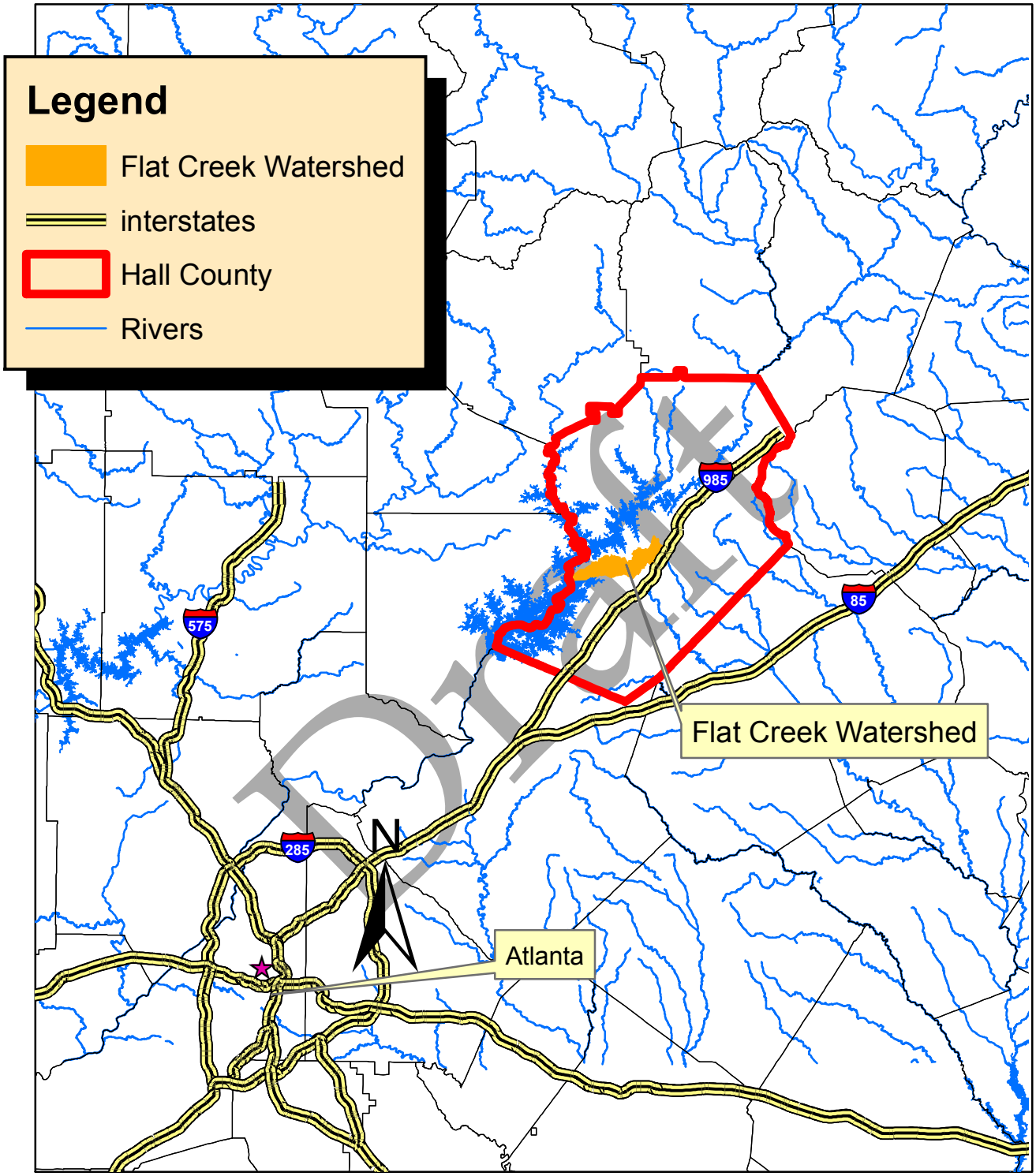

Fig. 2. Flat Creek Watershed

0 5 10 20 30 40 Kilometers

0 5 10 20 30 40 Miles

Map produced by:
Georgia Ecological Services Office
105 West Park Drive, Suite D
Athens, GA 30606 - July 10, 2010
Adapted From USACE 2010

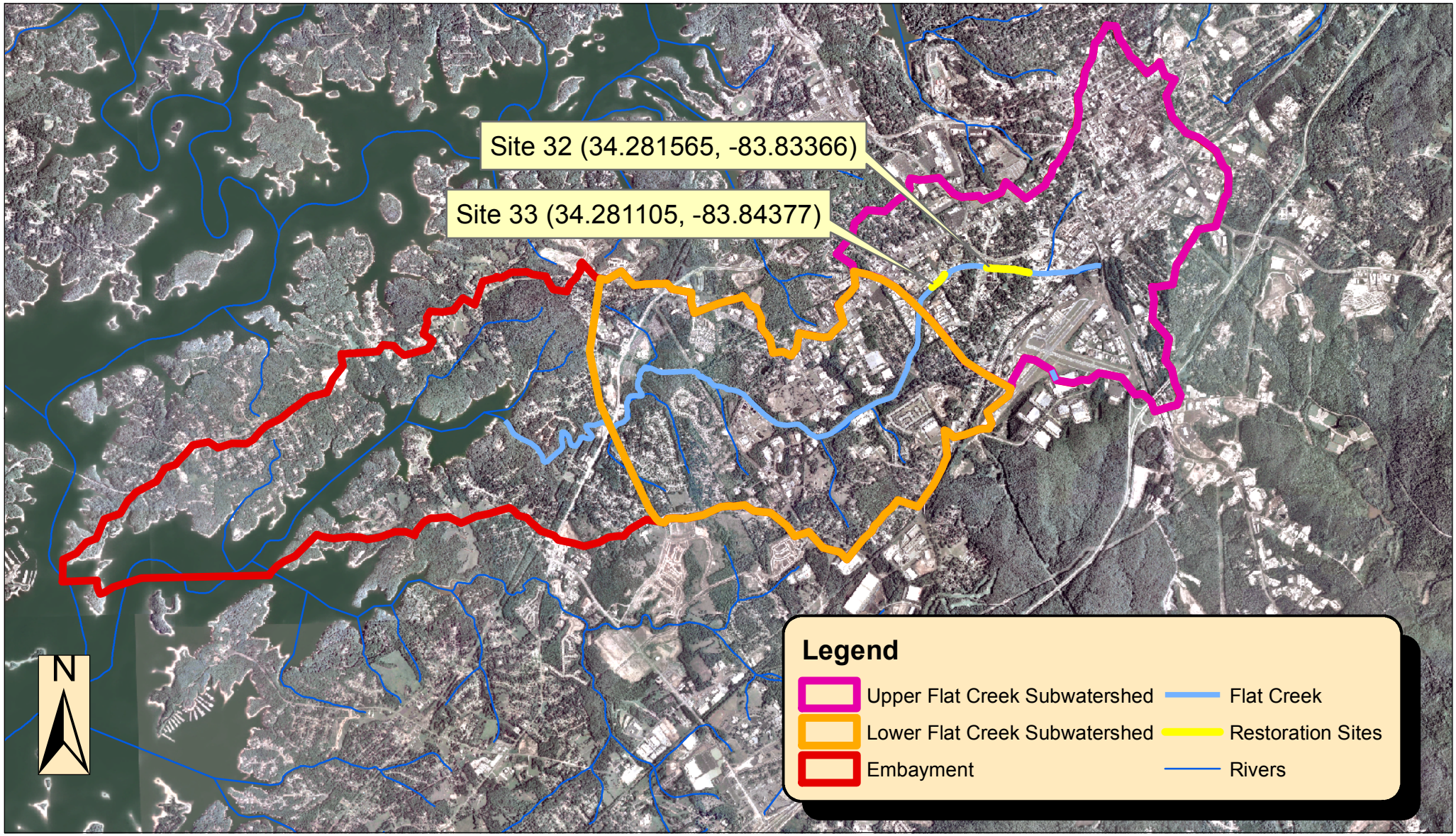

Fig. 3. Flat Creek Aquatic Restoration Project. Tentatively Selected Alternative X (Sites 32 & 33).

0 0.15 0.3 0.6 0.9 1.2 Miles

0 0.45 0.9 1.8 2.7 3.6 Kilometers

Map produced by
Georgia Ecological Services Office,
105 West Park Drive, Suite D,
Athens, GA 30606
Adapted from USACE 2010

Appendix A
Georgia Department of Natural Resources
Comment Letters

Draft

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

WILDLIFE RESOURCES DIVISION

CHRIS CLARK
COMMISSIONER

DAN FORSTER
DIRECTOR

October 12, 2010

Sandra Tucker
Field Supervisor
USFWS
105 West Park Drive, Suite D
Athens, GA 30606

Subject: Flat Creek Restoration Project FWCA Report

Dear Ms Tucker:

Thank you for the opportunity to review the Flat Creek Streambank Restoration Project. We have read the project summaries and the Fish and Wildlife Coordination Act Report. Based on the poor condition of the watershed and the information in the report, we agree with the recommendations of the USFWS and support the restoration project. We have no other comments on this project.

If I can be of further assistance, please let me know.

Sincerely,

Katrina Morris
Environmental Review Coordinator

Draft

NONGAME CONSERVATION SECTION
2065 U.S. HIGHWAY 278 S.E. | SOCIAL CIRCLE, GEORGIA 30025-4743
770.918.6411 or 706.557.3032 | FAX 706.557.3033 | WWW.GEORGIAWILDLIFE.COM

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
WILDLIFE RESOURCES DIVISION

CHRIS CLARK
COMMISSIONER

DAN FORSTER
DIRECTOR

October 12, 2010

Sandra Tucker, Field Supervisor
USFWS
105 West Park Drive, Suite D
Athens, GA 30606

Subject: Known occurrences of natural communities, plants and animals of highest priority conservation status on or near Flat Creek Restoration Project, Hall County, Georgia

Dear Ms Tucker:

This is in response to your request of October 8, 2010. According to our records, within a three-mile radius of there are the following Natural Heritage Database occurrences:

Embayment (-83.91859, 34.26132; NAD27):
GA *Cambarus howardi* (Chattahoochee Crayfish) [HISTORIC?] approx. 2.5 mi. S of site in Mud Creek
GA *Veratrum woodii* (Ozark Bunchflower) [EXTIRPATED?] approx. 1.5 mi. S of site

Lower Flat Creek (-83.86734, 34.26495; NAD27):
GA *Cambarus howardi* (Chattahoochee Crayfish) approx. 2.5 mi. SW of site in an unnamed tributary to Balus Creek

Upper Flat Creek (-83.84243, 34.27730; NAD27):
GA *Hydrastis canadensis* (Goldenseal) approx. 2.0 mi. SE of site
GA *Nestronia umbellula* (Indian Olive) approx. 1.5 mi. E of site
GA *Nestronia umbellula* (Indian Olive) approx. 2.0 mi. E of site
ALLEN CREEK WMA [GA DNR] approx. 2.0 mi. SE of site
Chicopee Woods Naure Preserve [Elachee Nature Center] approx. 1.5 mi. SE of site
Greenspace [Hall County] approx. 2.0 mi. NE of site

* Entries above proceeded by "US" indicates species with federal status (Protected, Candidate or Partial Status). Species that are federally protected in Georgia are also state protected; "GA" indicates Georgia protected species.

Recommendations:

We have no records of high priority species or habitats within the project boundary. The GA DNR stream team collected data from this site in 2003. The site was ranked as very poor and the following fish species were collected during the survey:

Draft

NONGAME CONSERVATION SECTION
2065 U.S. HIGHWAY 278 S.E. | SOCIAL CIRCLE, GEORGIA 30025-4743
770.918.6411 or 706.557.3032 | FAX 706.557.3033 | WWW.GEORGIAWILDLIFE.COM

Bluegill (Lepomis macrochirus)
Brown bullhead (Ameiurus nebulosus)
Golden shiner (Notemigonus crysoleucas)
Green sunfish (Lepomis cyanellus)
Largemouth bass (Micropterus salmoides)
Redbreast sunfish (Lepomis auritus)
Spottail shiner (Notropis hudsonius)

Because of poor current conditions at this site, this project is not likely to negatively impact these or other species within the Flat Creek watershed.

Data Available on the Nongame Conservation Section Website

By visiting the Nongame Conservation Section Website you can view the highest priority species and natural community information by Quarter Quad, County and HUC8 Watershed. To access this information, please visit our GA Rare Species and Natural Community Information page at: http://www.georgiawildlife.com/conservation/species-of-concern?cat=conservation
An ESRI shape file of our highest priority species and natural community data by quarter quad and county is also available. It can be downloaded from:
http://georgiawildlife.com/sites/default/files/uploads/wildlife/nongame/zip/gnhpds.zip

Disclaimer:

Please keep in mind the limitations of our database. The data collected by the Nongame Conservation Section comes from a variety of sources, including museum and herbarium records, literature, and reports from individuals and organizations, as well as field surveys by our staff biologists. In most cases the information is not the result of a recent on-site survey by our staff. Many areas of Georgia have never been surveyed thoroughly. Therefore, the Nongame Conservation Section can only occasionally provide definitive information on the presence or absence of rare species on a given site. Our files are updated constantly as new information is received. **Thus, information provided by our program represents the existing data in our files at the time of the request and should not be considered a final statement on the species or area under consideration.**

If you know of populations of highest priority species that are not in our database, please fill out the appropriate data collection form and send it to our office. Forms can be obtained through our web site (http://www.georgiawildlife.com/node/1376) or by contacting our office. If I can be of further assistance, please let me know.

Sincerely,

Katrina Morris
Environmental Review Coordinator

Draft

USACE RESPONSE TO USFWS RECOMMENDATIONS

USFWS RECOMMENDATION 1: Maintain existing deep-rooted and stable vegetation (greater than 8-10 inch dbh), as much as possible for streambank stabilization and wildlife habitat.

USACE RESPONSE: Maintaining existing deep rooted and stable vegetation is an important aspect of ecosystem restoration in the Flat Creek Watershed. USACE will consider this recommendation, where possible, as long as it does not adversely affect the hydrologic design of the Flat Creek restoration project.

USFWS RECOMMENDATION 2: Incorporate an invasive species management plan into the project.

USACE RESPONSE: Invasive species removal is a component of the Flat Creek restoration project; however, future activities would be the responsibility of the non-Federal sponsor (City of Gainesville).

USFWS RECOMMENDATION 3: Include natural instream habitat features for aquatic diversity.

USACE RESPONSE: Restoration activities at Flat Creek include various instream habitat features to restore natural channel stability and aquatic habitat.

USFWS RECOMMENDATION 4: Maintain or reuse cobble substrate where possible.

USACE RESPONSE: USACE will make efforts to maintain and/or reuse cobble substrate, where possible, as part of the restoration activities.

USFWS RECOMMENDATION 5: Include biological monitoring at the site before construction and ten years after construction to evaluate success of the project. Apply adaptive management actions, as necessary.

USACE RESPONSE: A Monitoring Plan was developed to evaluate the performance of restoration measures implemented for the Flat Creek watershed. This Monitoring Plan includes biological monitoring requirements for the two stream restoration. Ecosystem restoration objectives were established for achievable, measurable criteria to evaluate restoration implementation, identify any required adjustments, and determine if changes to structures, operations, and/or management are needed.

The Corps will conduct biological monitoring at two specific junctures, pre-construction and post construction. One pre-construction monitoring event and 2 post-construction monitoring events will be included as part of the cost-share implemented under USACE CAP, with 65 percent of the costs for ecosystem restoration paid by USACE, and the other 35 percent paid by the non-federal sponsor (in this case, the City of Gainesville). Any additional post-construction monitoring will be entirely the responsibility of the non-federal sponsor. After the monitoring period, the City of Gainesville, as the non-federal sponsor, will be responsible for all long-term management, operations, and maintenance of the restoration measures implemented as part of the Tentatively Selected Plan.

Draft

In accordance with the Corps planning guidance contained in ER 1105-2-100, Appendix F, adaptive management will not be performed and will not be a cost shared item in the CAP project. Should conditions arise that require field modifications or adjustments to the completed ecosystem restoration improvements, the City of Gainesville will be responsible for implementing the Adaptive Management and Contingency Plan.

USFWS RECOMMENDATION 6: Establish an agreement with the appropriate entity to rigorously enforce the TMDL Implementation Plan developed for Flat Creek.

USACE RESPONSE: An agreement of this nature is outside of the purview of USACE responsibilities.

USFWS RECOMMENDATION 7: Consider connecting the two restoration sites and continuing the project upstream and downstream to improve habitat connectivity and provide recreational and educational opportunities.

USACE RESPONSE: The stream reached located between the two restoration sites was not identified as a problem site during the field assessment. Based on the non-Federal sponsor budget, it could possibly be looked at in the future.

USFWS RECOMMENDATION 8: Consider removal of certain structures from the floodplain to improve habitat and reduce the impacts of flooding.

USACE RESPONSE: The only structures that are currently located in the floodplain are inhabited.

USFWS RECOMMENDATION 9: Support, implement, and complete nonstructural measures identified in the Environmental Appendix (USACE 2010) in partnership with local sponsors.

USACE RESPONSE: As required by USACE Planning guidance, non-structural measures must be a component of considerations for alternative formulation. Section 5.3.5 Non-structural restoration measures of the Environmental Appendix, states non-structural restoration measures include activities, programs, ordinances, or policies aimed at protecting streams and riparian buffers from activities that might cause adverse impacts. These measures do not involve construction-related activities, but rather establish programs or policies that promote protection and preservation of the physical stream conditions and overall ecosystem integrity.

Each of the non-structural measures identified would promote the sustainability of ecosystem restoration in the Flat Creek watershed; however many of these measures are outside of the Section 206 authority and would fall under the responsibility of the City of Gainesville and Hall County. The City of Gainesville and Hall County have all of these measures in place, except for invasive plant species removal.

Draft