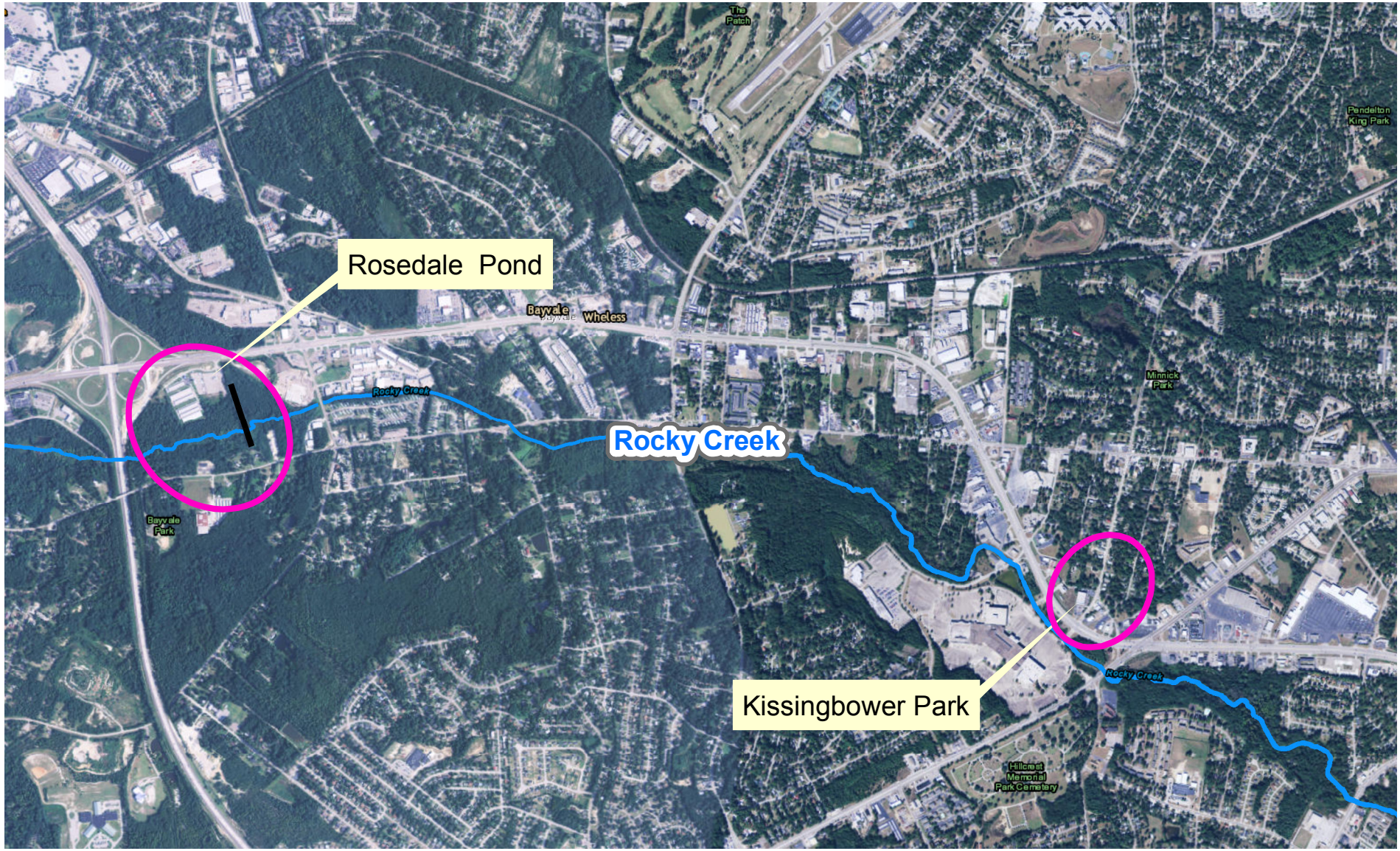
APPENDIX A

FIGURES

Augusta Rocky Creek, Georgia
Environmental Assessment



N
W E
S

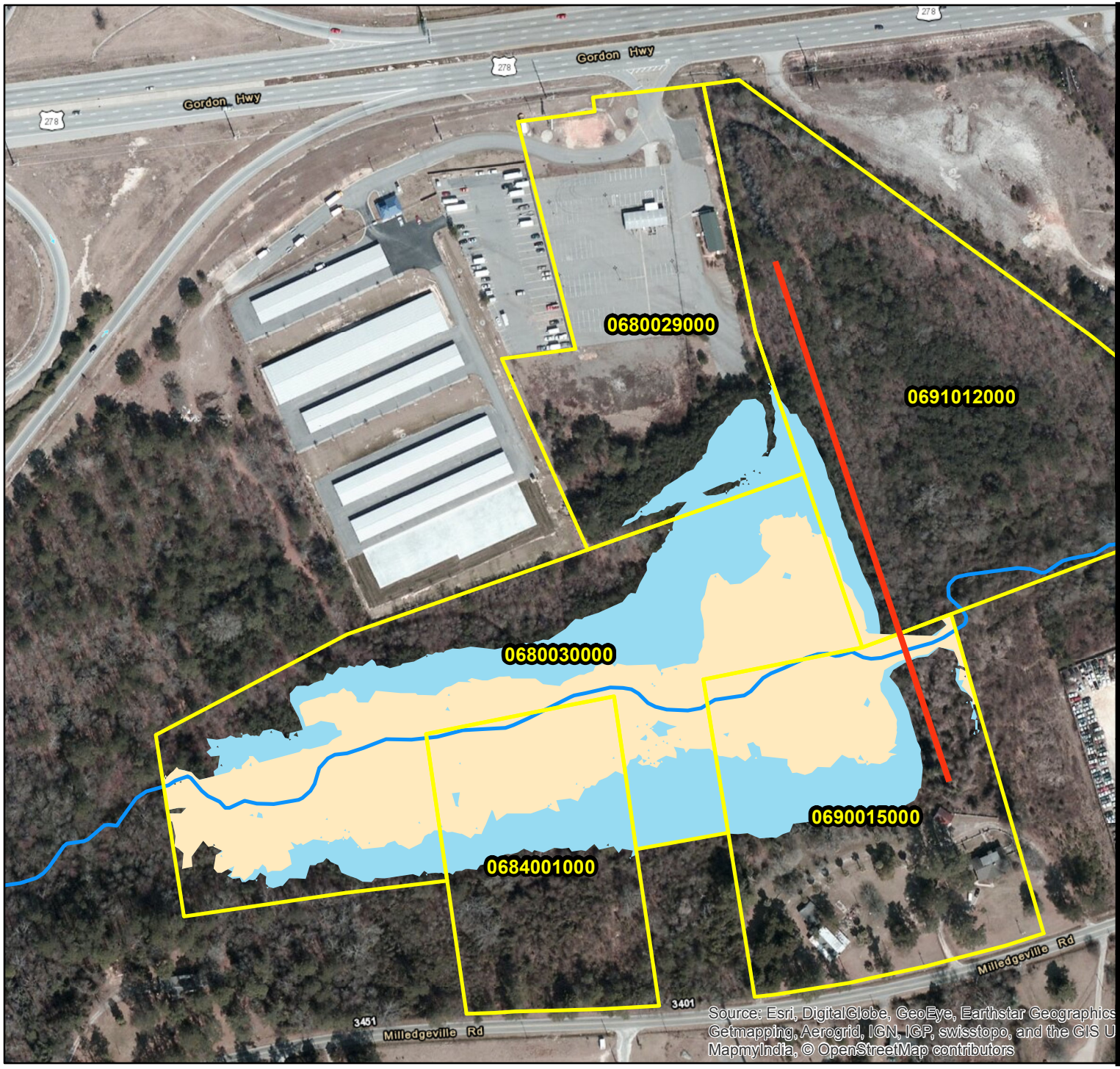
0 0.15 0.3 0.6 0.9 1.2 Miles

Rocky Creek Location and Vicinity

Rocky Creek
Augusta, GA

Figure 1

US Army Corps of Engineers®



US Army Corps of Engineers ®
Savannah District

Legend

- Rosedale Dam Centerline
- Parcel No. (Dec-2014)
- RockyCreek
- 100-year w/o Project*
- 100-year w/ Project*
- Real Estate Easement

*Future year 2030 flow

Rosedale Detention Basin

Figure 2

Rocky Creek,
Augusta Georgia

N
W E
S

0 100 200 400
Feet

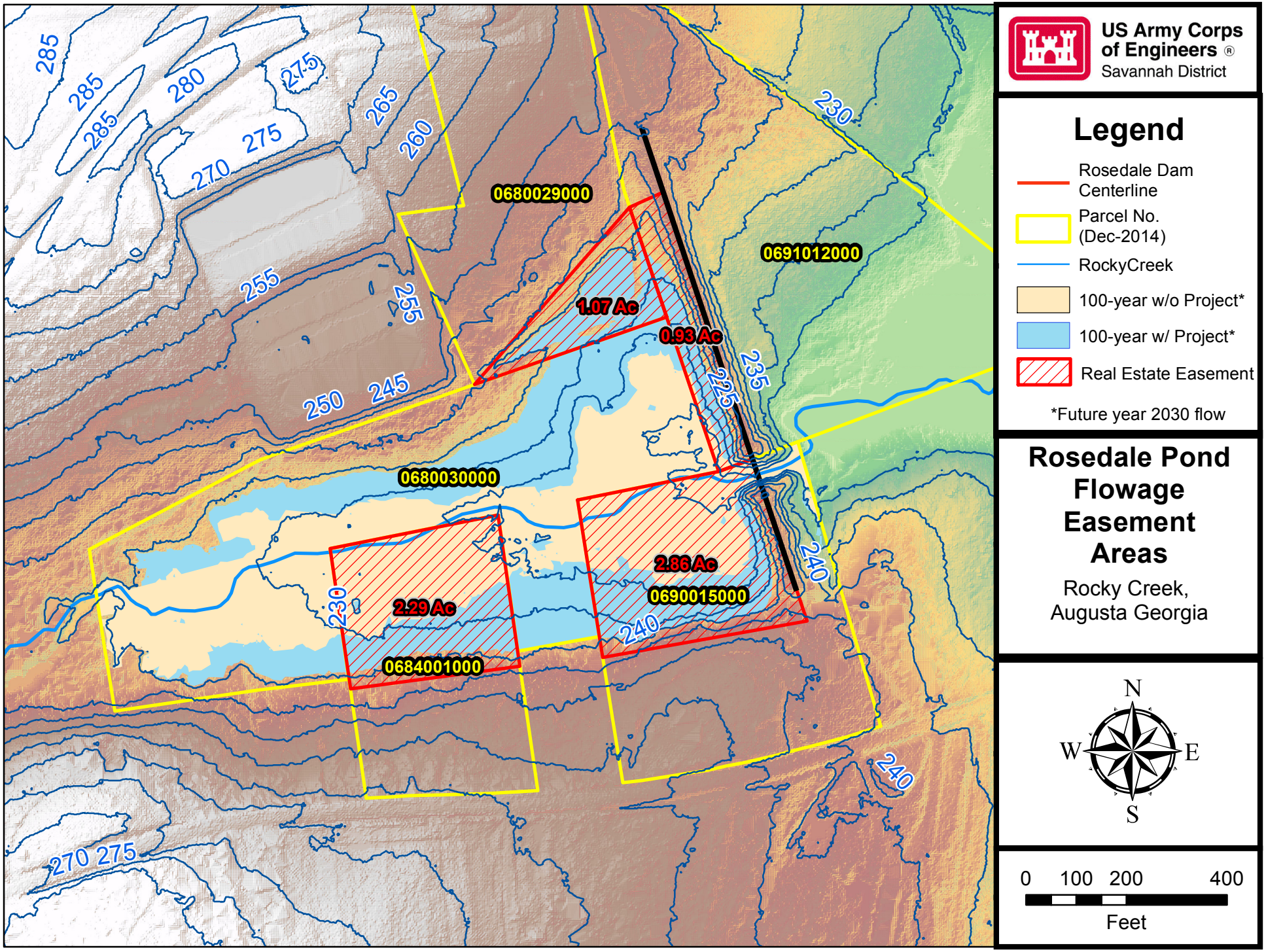
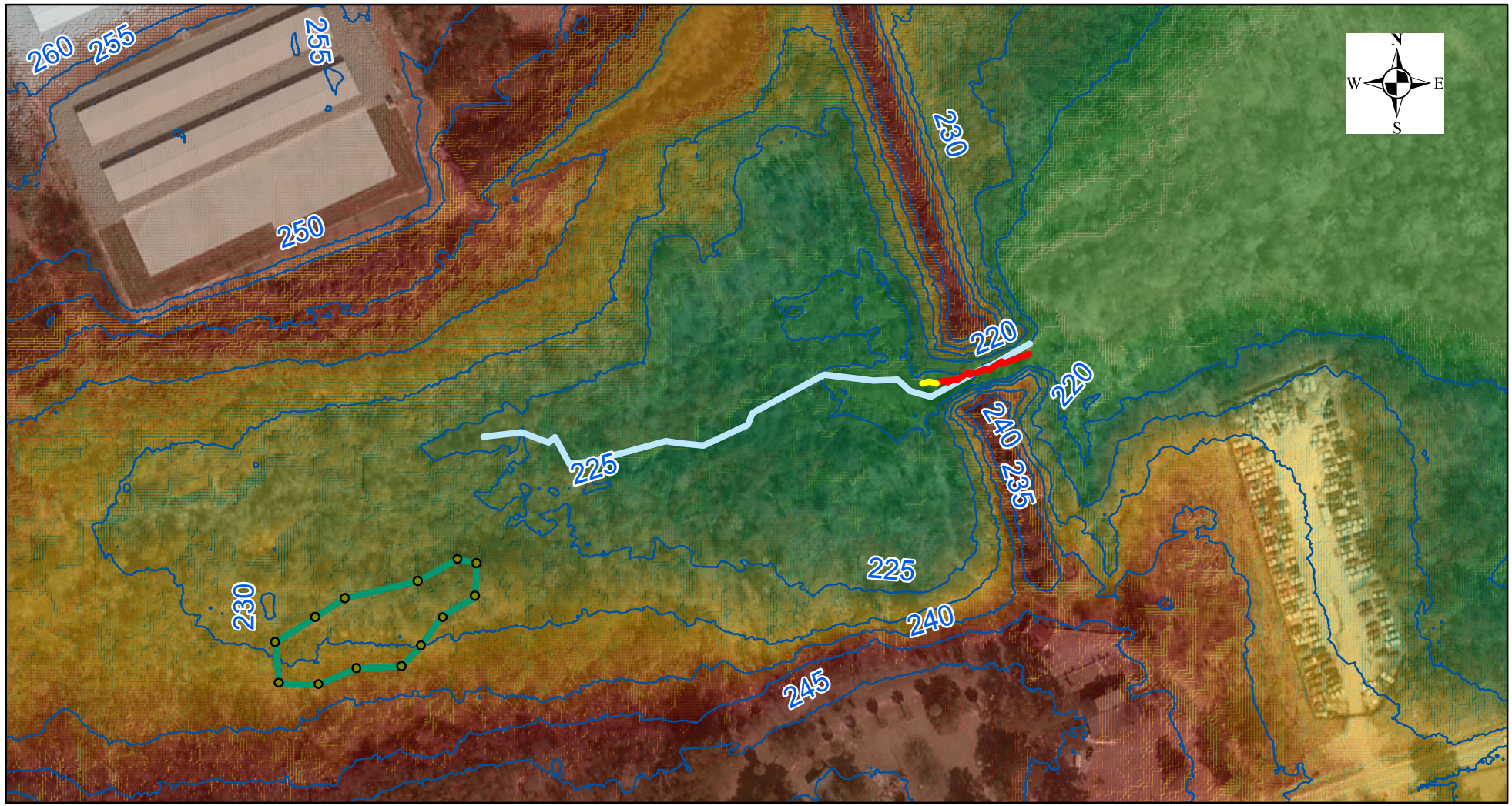


Figure 3 - Flowage Easements Topo



0 50 100 200 300 400 Miles

300 150 0 300 Feet

Legend

Surveyed Features

- Delineated Wetlands (0.4 AC)
- Creek
- Wall
- Weir

Rosedale Pond Wetland Delineation

Rocky Creek
Augusta, GA

US Army Corps of Engineers®

Figure 4 - Wetland Delineation

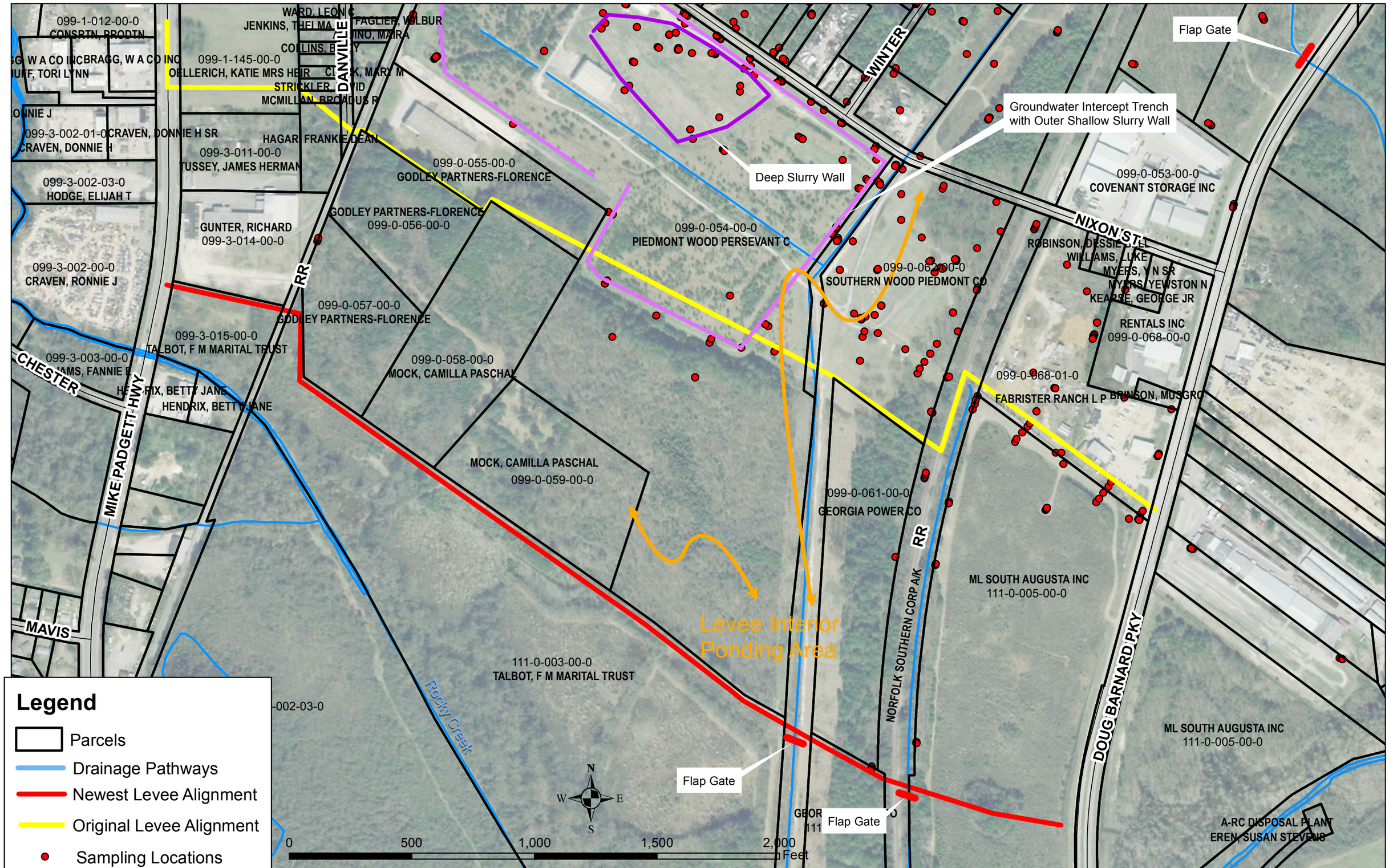
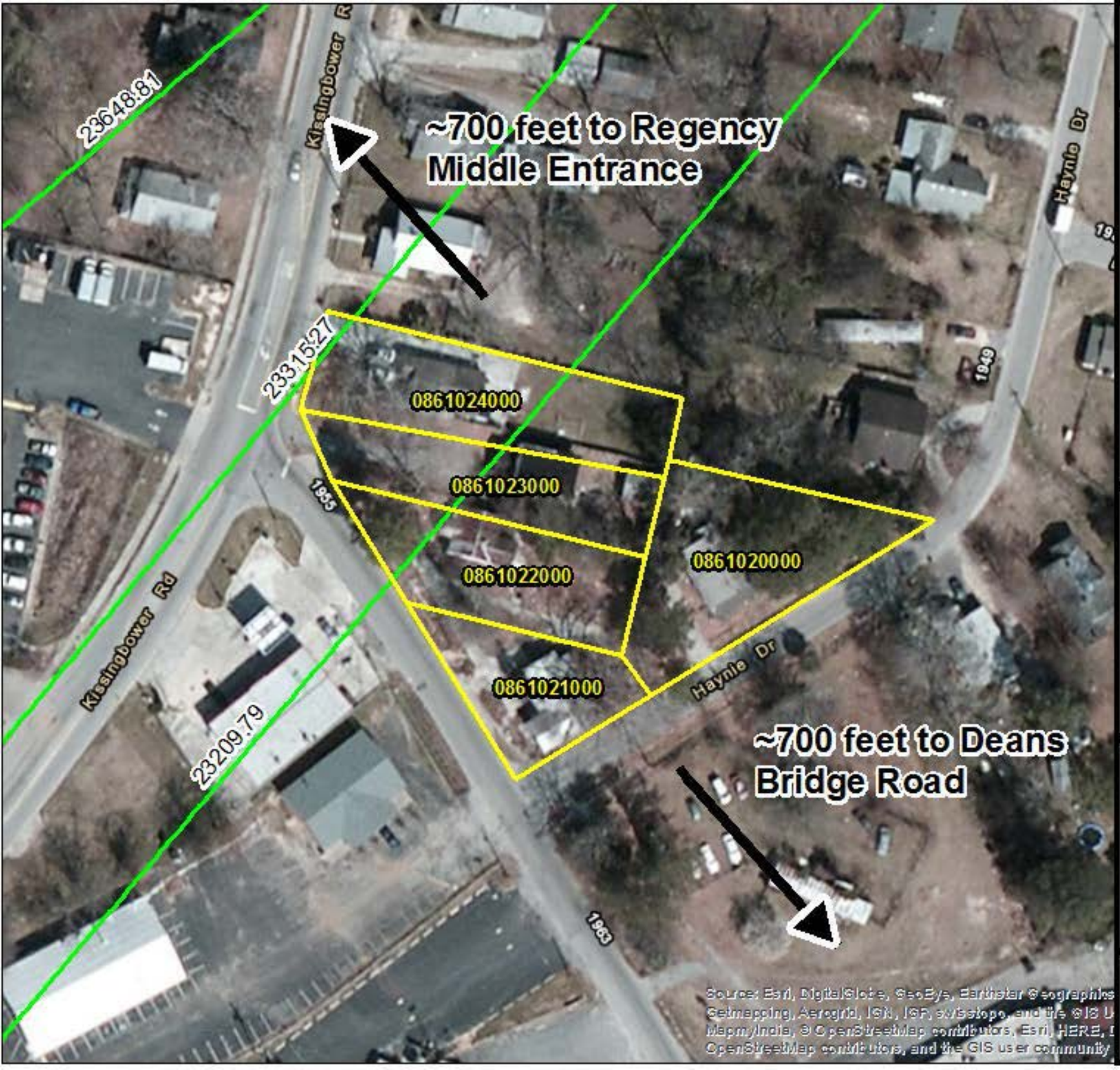


Figure 5 - Nixon Levee



US Army Corps of Engineers ®
Savannah District

Legend

Stream Station (HEC-RAS)

Parcel No. (Dec-2014)

RockyCreek

*Future year 2030 flow

Kissingbower Property Buyouts Location

Rocky Creek, Augusta Georgia

Figure 6

N
W E
S

0 30 60 120
Feet

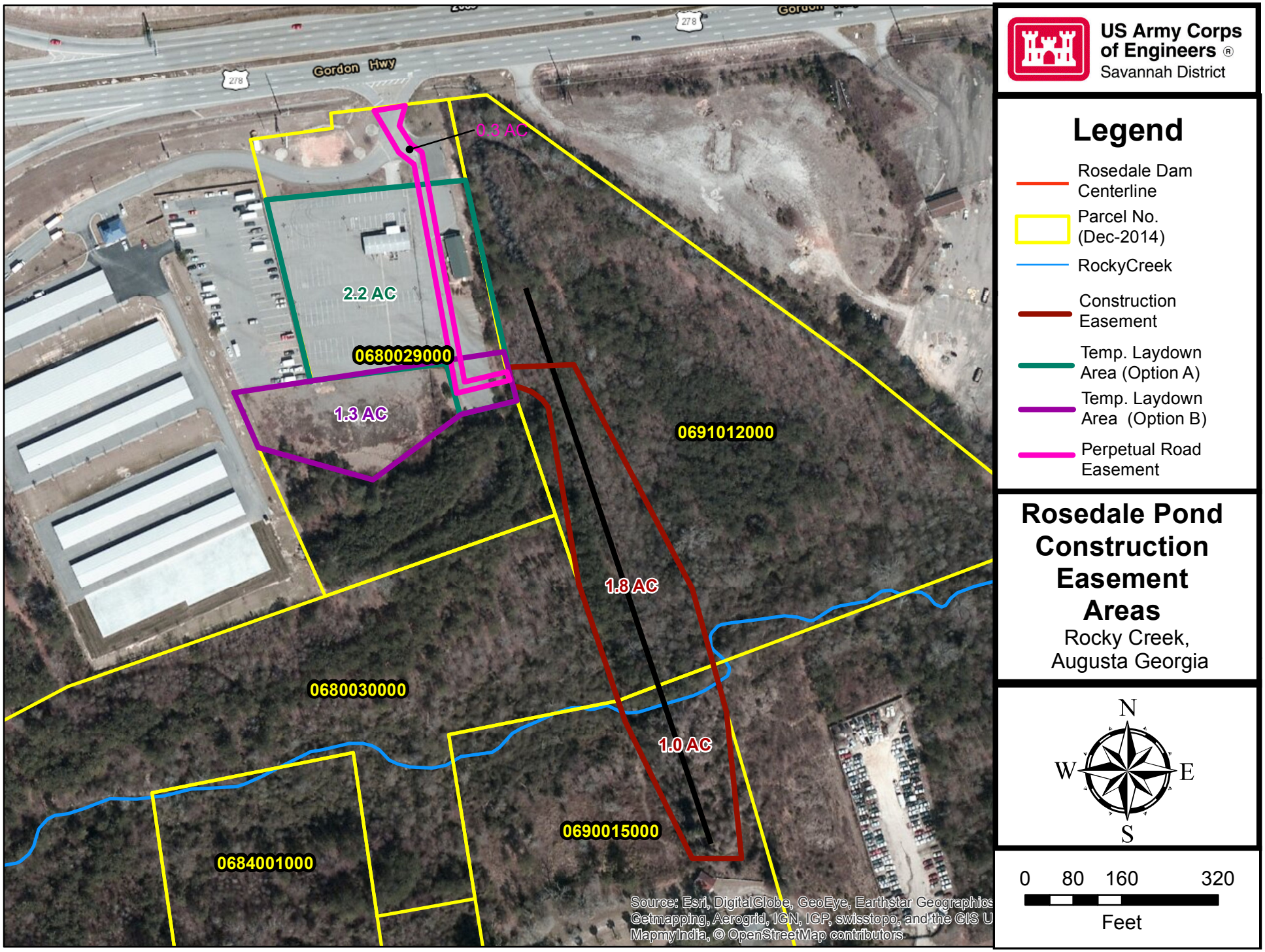
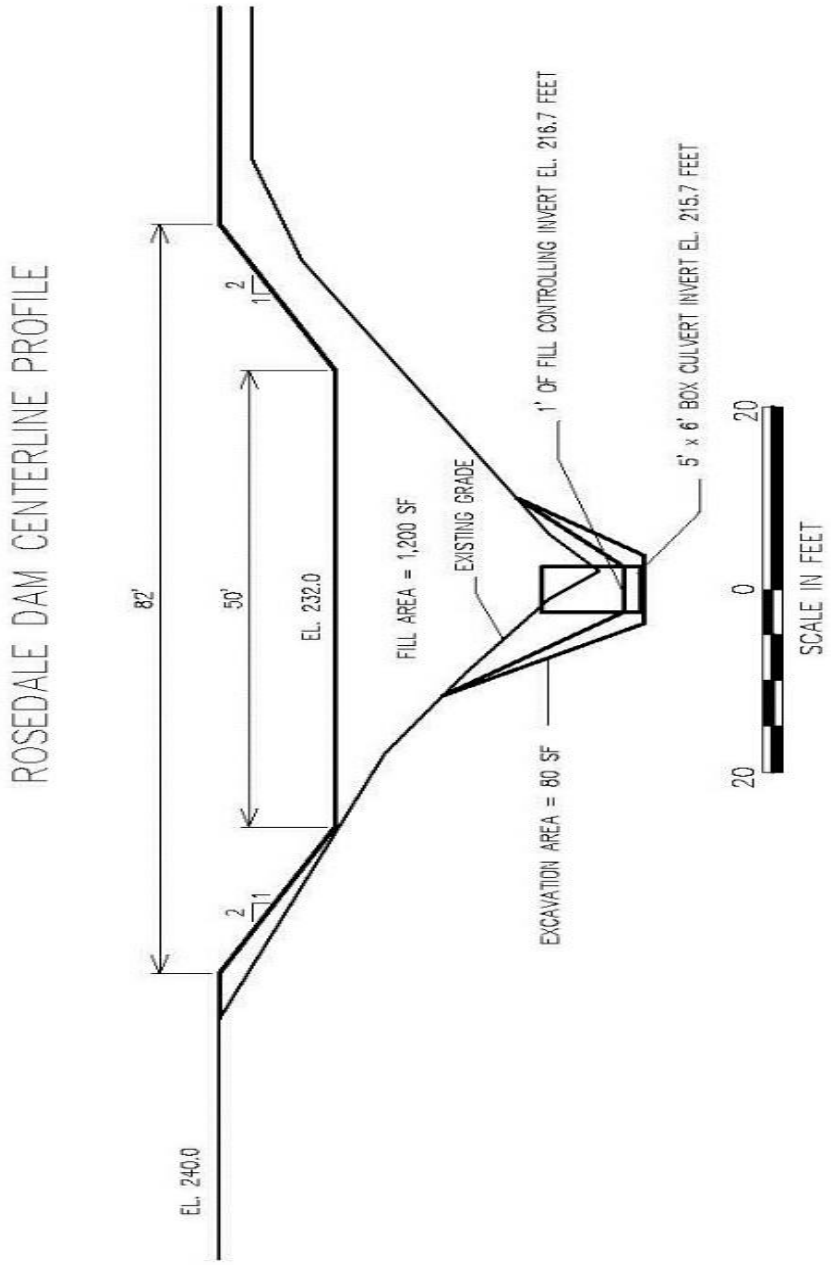


Figure 7 - Construction Easements

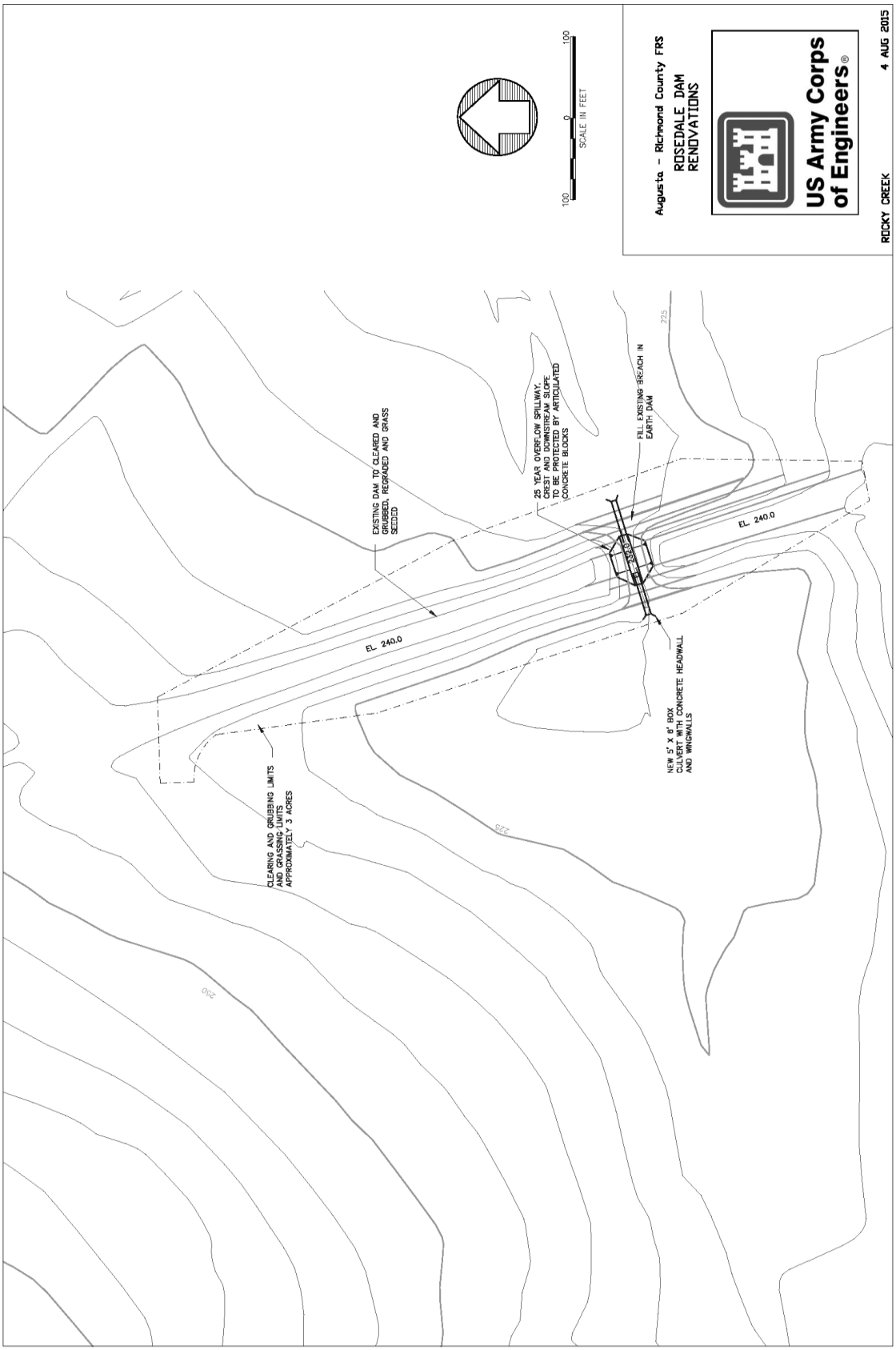
APPENDIX B

TECHNICAL DRAWINGS

Table of Contents



Drawing 1: Rosedale Dam Centerline Profile



Drawing 2: Rosedale Dam Renovations

APPENDIX C

Coordination and Permits

Augusta Rocky Creek, Georgia
Environmental Assessment

Appendix C

Table of Contents

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Georgia Department of Natural Resources
2 Martin Luther King, Jr. Drive, S.E., Suite 1152 East Tower, Atlanta, Georgia 30334-9000
Noel Holcomb, Commissioner
Carol A. Couch, Ph.D., Director
Environmental Protection Division
404/656-4713

August 31, 2005

Mr. David V. Schmidt
Chief, Planning Division
Savannah District, Corps of Engineers
P.O. Box 889
Savannah, Georgia 31402-0889

Re: Water Quality Certification
Joint Public Notice Planning Division
Flood Control Project
Savannah River Basin
Richmond County

Dear Mr. Schmidt:

Pursuant to Section 401 of the Federal Clean Water Act, the State of Georgia issues this certification to the Savannah District, U.S. Army Corps of Engineers, an applicant for a federal permit or license to conduct an activity in, on or adjacent to the waters of the State of Georgia.

The State of Georgia certifies that there is no applicable provision of Section 301; no limitation under Section 302; no standard under Section 306; and no standard under Section 307, for the applicant's activity. The State of Georgia certifies that the applicant's activity will comply with all applicable provisions of Section 303.

This certification is contingent upon the following conditions:

1. All work performed during construction will be done in a manner so as not to violate applicable water quality standards.

2. No oils, grease, materials or other pollutants will be discharged from the construction activities which reach public waters.

This certification does not relieve the applicant of any obligation or responsibility for complying with the provisions of any other laws or regulations of other federal, state or local authorities.

It is your responsibility to submit this certification to the appropriate federal agency.

Sincerely,

Carol A. Couch, Ph.D.
Director

CAC:kp

cc: Ms. Lisa Westberry
Ms. Sandy Tucker
Mr. Ron Mikulak
Mr. Kay Davy

APPENDIX D

Fish and Wildlife Coordination Act Report

Augusta Rocky Creek, Georgia
Environmental Assessment

United States Department of the Interior
Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
706-613-9493 Fax: 706-613-6059

West Georgia Sub Office
P.O. Box 52560
Ft. Benning, Georgia 31995-2560
706-544-6428 Fax: 706-544-6419

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

January 21, 2014

Mr. David Walker
US Army Corps of Engineers
Savannah District Planning Division
100 W. Oglethorpe Ave.
Savannah, GA 31401

Re: FWS Log Number: NG 14-67 Rich

Dear Mr. Walker:

Thank you for your December 6, 2013, email providing the updated materials for the Augusta Flood Control Project. To summarize our understanding, the Army Corps of Engineers (ACOE) developed a plan in 2005 under authority of the Water Resources Development Act of 1966, Section 414 which authorized you to address current and future needs for flood damage prevention and reduction, as well as water supply and other related water resource needs (such as fish and wildlife). In collaboration with the ACOE and Georgia Department of Natural Resources (GADNR), the US Fish and Wildlife Service (Service) prepared a final Fish and Wildlife Coordination Act (FWCA) 2(b) report (dated August 2005) that evaluated the project and included opportunities to enhance fish and wildlife resources. Funding for the complete 2005 project was never authorized, and the ACOE and August-Richmond County have since reduced the project size. They are now in the early stages of restarting this smaller project. The ACOE is seeking authorization for the project under Section 205 of the 1948 Flood Control Act, which is limited to Flood Control features. Under authority of the FWCA (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq), the Service is submitting this letter as an update to our 2005 report and reaffirmation of our conservation recommendations contained in that report.

CURRENT PROJECT
Table 1 shows the changes in the project from the 2005 project. The 2014 study would be limited to the Rosedale Dam Renovation and the Kissingbower Road Park features. The ACOE anticipates that these two features will remain unchanged from the 2005 project; therefore, the environmental mitigation features built into their design would remain the same.

Rosedale Dam Renovation
Our 2005 FWCA report stated that the renovation of the exiting Rosedale Dam would not cause significant changes to the existing condition (in reference to fish and wildlife resources). The renovation would improve conditions for aquatic resources because the new Dam will have a permanent breach in the creek bed to allow for normal creek flow and fish passage. The proposed rock cross vane will reduce near-bank shear stress, thus reducing downstream erosion. There have

been no changes in the plan since 2005, and the Service continues to support the Rosedale Dam Renovation feature.

Kissingbower Road Park
The project would remove structures from approximately 1.13 acres of floodplain and create a public park. Landscaping would consist of preserving the existing trees on site and adding shade trees, ornamental trees, and a shrub hedge along the fence, where needed, to screen and buffer the park from the neighbors.

Removal of these man-made structures would be a beneficial flood control strategy because it would provide a wider floodplain for overbank flooding without damaging property. Leaving the existing trees and adding the additional landscaping and park features would make this area a valuable asset for the community. We continue to support this proposed action.

Omitted Features
The Service has no objections or concerns about eliminating Nixon Levee or the Wheeless Detention Basin from the 2014 study.

The recreational trail was also omitted. This trail would have provided the neighborhood access to a natural area in the midst of an urban landscape.

The elimination of the two stream restoration features at Wheeless Road and Peach Orchard Road, however, is of concern to the Service because these restorations would not only improve stream and floodplain habitat for fish and wildlife resources, but would also provide flood reduction by adding flood storage capacity and reducing erosion and sedimentation downstream. We recommend that the ACOE and Augusta-Richmond County reconsider the stream restoration features and recreational trail if funds are available.

Endangered and Threatened Species
We have updated our county list for Richmond County since 2005 (Table 2) to remove the bald eagle due to its recovery from its previous "threatened" status; and add the gopher tortoise, which is now a Federal candidate species. We do not expect federally endangered or threatened species to occur in the specific project area.

GADNR lists approximately 16 animals and 17 plants in Richmond County, in addition to the federally listed species. GADNR should be contacted for the most accurate information; however, in our preliminary review of GIS data, we did not note any state-listed species occurring in the project area.

Coordination with Georgia Department of Natural Resources (GADNR)
We coordinated our review and comments with GADNR. Their January 3, 2014, letter (enclosed) states that the project purpose, flood control, remains contained within the original 2005 plan. They state that the major changes are the loss of ecosystem restoration measures, including 10,720 linear feet of stream restoration and 2.6 miles of recreational trail. Although GADNR understands these ecosystem measures were a separable component to the flood control project and subject to funding availability, they encourage the non-federal sponsor to keep the ecosystem plans available for future consideration should alternative funding opportunities arise.

Service Recommendations and Position

The currently proposed study in Rocky Creek under Section 205 of the 1948 Flood Control Act is contained within the activities reviewed in the Service's Final 2005 FWCA Report. The Service supports the updated Augusta Food Control Plan including the renovation of Rosedale Dam and the nonstructural feature at Kissingbower Road Park. These features will not only provide flood reduction benefits, but also improve stream and wetland habitat and provide recreational opportunities.

We recommend inclusion of the two stream restoration features because of their role in flood reduction. If this is not feasible, we recommend consideration of these features in future aquatic restoration funding.

We also continue to recommend that Richmond County-City of Augusta consider incorporating the three conservation measures as discussed 2005 FWCA Report wherever possible in this and other projects throughout the county. Briefly, the conservation measures include the following actions:

- Restore and enhance fish and wildlife resources.
- Develop a comprehensive watershed management system to reduce flooding and improve water quality.
- Provide additional opportunities for natural resource enjoyment, education, and recreation for the public.

Thank you for the opportunity to review the latest update to the Augusta flood control study. We agree with your determination that the proposed project is contained within the 2005 proposed action and that a new FWCA 2(b) report is not required. However, please incorporate this FWCA update into your final project planning and reporting. We would be glad to work with you on development of a transfer fund agreement if the ACOE would like our further participation in site visits, team meetings, or development of new project features.

We appreciate your interest in conservation of fish and wildlife resources. If you have any questions or need more information, please contact biologist Deborah Harris at Deborah_C_Harris@fws.gov or 706-613-9493 ext. 224.

Sincerely,

John Doresky
Acting Field Supervisor

Enclosure

Table 1. Changes in Project from 2005 EA (ACOE 12/6/2013 email).

Project Feature/ Environmental Issue	2005 EA/FONSI	2014 EA/FONSI
Kissingbower Road Park	Kissingbower Road Park non-structural alternative (buy out of 3 to 5 homes) and develop park space	Conceptually unchanged from 2005 project. Buy out and demolition of homes may be less since some have been removed; recreational park/greenspace is still included
Rosedale Dam Renovation/ Detention Basin (NED Plan)	Insert 150-ft culvert 1 ft. below grade in dam breach at creek, fill to 233.p feet to form a notch for all flows between the 50 and 100-year flood events. Designed to hold water 3-4 hours during average summer rain event and 12 hrs in typical flood event. Rock cross vane downstream of dam.	Unchanged from 2005 project; still includes mitigative features as described above (e.g. rock cross vanes, etc).
Project Purpose	Authority Combined Flood Control (NED plan) and Ecosystem Restoration (NER Plan). NER Plan (stream restoration features) was a separable element to proposed NED Plan and subject to funding constraints and delayed implementation*	Flood Control (NED Plan) only under Section 205 Authority. NER portions of 2005 project may be implemented under separate authorities in the future (e.g. 206 ecosystem restoration)
Nixon Levee	Nixon Levee was part of project as proposed in 2005 EA/FONSI: however, became infeasible after 2005 due to HTRW liability issues related to industrial contamination in project area	Eliminated due to HTRW liability issues related to industrial contamination in project area
Wheeless Detention Basin	The sheet pile detention structure designed for storm detention as in Rosedale Dam above	Eliminated due non-Federal sponsor (NFS) withdrawing support
Peach Orchard Stream Restoration (NER Plan)*	8220 linear feet of Priority 3 stream restoration *	Not authorized under section 205 authority
Wheeless Stream Restoration (NER Plan)*	2500 linear feet of Priority 2 stream restoration	Not authorized under section 205 authority
Recreation trail (NER Plan)*	10-foot wide 2.6-mile long trail on top of Nixon Levee*	Eliminated due to its association with Nixon Levee that was eliminated (discussed above)
Water Quality (WQ) certification	Obtained from GADNR Aug 31, 2005 for the proposed action as described in 2005 EA/ FONSI	Proposed action is contained in the 2005 proposed action; will coordinate with GADNR EPD Jennifer Welte to determine if USACE should reapply for WQ certification
Threatened & Endangered Species	No effect	Same, updated list (Table 2)
Wetlands	No impacts	Assumed to be same as 2005, subject to verification
Cultural Resources	No effect	Assumed to be same as 2005, subject to verification

Table 2. Federally protected species in Richmond County (U.S. Fish and Wildlife Service, January 2014).

Species	Federal status	State status	Habitat
Red-cockaded woodpecker (Picoides borealis)	Endangered	Endangered	Fort Gordon. Nest in mature pine with low understory vegetation (<1.5m); forage in pine and pine hardwood stands > 30 years of age, preferably > 10" dbh
Wood stork (Mycteria Americana)	Endangered	Endangered	Phinizy Swamp. Primarily feed in fresh and brackish wetlands and nest in cypress or other wooded swamps
Gopher tortoise Gopherus polyphemus	Candidate	Threatened	Fort Gordon and surrounding sandhills. Well-drained, sandy soils in forest and grassy areas; associated with pine overstory, open understory with grass and forb groundcover, and sunny areas for nesting
Shortnose sturgeon (Acipenser brevirostrum)	Endangered	Endangered	Found in Savannah River below New Savannah River below new Savannah Bluff Lock and Dam.
Relict trillium (Trillium reliquum)	Endangered	Endangered	Moist hardwood forests. Currently found along banks of Savannah River.

APPENDIX E

SECTION 404 (B) (1) EVALUATION OF DREDGE AND FILL MATERIAL

SECTION 404 (B) (1) EVALUATION

FOR

AUGUSTA ROCKY CREEK
SECTION 205 FEASIBILITY STUDY,
RICHMOND COUNTY, GEORGIA

FEBRUARY 2016

TABLE OF CONTENTS

Page No.

SECTION 404(B) (1) EVALUATION
OF DREDGE AND FILL MATERIAL

AUGUSTA ROCKY CREEK
SECTION 205 FEASIBILITY STUDY
RICHMOND COUNTY, GEORGIA

1.0 INTRODUCTION

The following evaluation is prepared in accordance with Section 404(b)(1) of the Clean Water Act of 1977 to evaluate the environmental effects of the proposed placement of dredged or fill material in waters of the United States. Specific portions of the regulations are cited and an explanation of the regulation is given as it pertains to the project. These guidelines can be found in Title 40, Part 230 of the Code of Federal Regulations.

2.0 PROPOSED ACTION AND ENVIRONMENTAL SETTING

2.1 ENVIRONMENTAL SETTING

Rocky Creek: Rocky Creek is found in the southern part of the county and flows toward the Savannah River. The downstream portion of the creek enters the Phinizy Swamp and exits into the Savannah River through Butler Creek. Topography of the basin is typical of the piedmont region, with surface elevations ranging between 700 and 1,000 feet, North Atlantic Vertical Datum 1988 (NAVD 88).

2.2 PROPOSED ACTION

2.3 GENERAL DESCRIPTION

Rocky Creek:
Land use throughout this portion of the Rocky Creek basin is typical of urban streams and has been developed primarily for residential subdivisions; while some is occupied by commercial and industrial property. This development involved much fill material that destroyed most of the natural flood storage of the original floodplain and wetland ecosystems within the watershed. The Tentatively Selected Plan (TSP) would restore some of this lost natural flood storage capacity and reduce economic damages from flooding in some of the developed areas of this drainage basin.

Most of the impacts to the environment from implementation of the TSP would be beneficial; and there have not been any significant adverse impacts identified to natural resources. As designed, the Rosedale detention area would limit downstream scour and loss of aquatic habitat by reducing the peak flow rate and energy of storm water discharges to the receiving stream (USEPA 1999). Subsequent to this reduction to downstream erosion, benefits may occur to wetlands, floodplains, riparian vegetation, and bottomland hardwoods.

The proposed structural improvement detailed below includes renovation of Rosedale Dam into a detention area. This detention area does not involve excavation and is designed to utilize the natural existing flood storage capacity of the existing floodplain/wetland areas for floodwater detention. The detention area as designed is expected to hold water 3-4 hours during an average summer rain event; approximately 12 hours during typical flood events; and approximately 21 hours (no more than 36 hours) during the 25-year flood event (over an approximate area of 21 acres).

The detention of water for longer periods in the detention area may create or enhance some wetland functions and values like the filtering of excessive nutrients and other pollutants from runoff, and decreasing sedimentation/erosion, and enhancing wetland vegetation. The treatment efficiency of detention areas is usually limited to removal of suspended solids and associated contaminants due to gravity settling. Their removal of pollutants of potential water quality concern can be limited (USEPA 1999).

Description of Actions Subject to Section 404 of Clean Water Act

Rocky Creek: There are no significant amounts of wetlands in the vicinity of the project impact area and there are no activities in the proposed action that are within jurisdictional wetlands as determined by a jurisdictional wetland delineation (Buck Engineering 2004; and USACE 2015a). There is one 0.4 of an acre wetland within the area of detention for flood events (Appendix A; Figure 4); but not near the stream channel, construction areas (Rosedale Dam renovations), or within areas receiving sedimentation. The detention area does not involve excavation and is designed to utilize the natural existing flood storage capacity of the floodplain areas for floodwater detention. The Rosedale Dam Detention Area would not adversely impact any jurisdictional wetlands or floodplains, which have been degraded in the past by the extensive development of the floodplain. This detention area as designed is expected to hold water 3-4 hours during an average summer rain event; and approximately 12 hours during typical flood events.

The proposed action includes approximately 55 cubic yards of fill for renovating Rosedale Dam within the stream channel, which are waters of the U.S. (but are not jurisdictional wetlands). The proposed renovations include placing a 5 by 6-foot (150-foot long) concrete box culvert through the breach in the dam for normal creek flow (Drawings 1 and 2; Appendix B). The breach would then be filled to elevation 232.0 feet NAVD 88 to form a notch for all flows up to the 25-year flood event. The entire structure would require clearing, grubbing and grassing (5 acres) to protect the structural integrity of the earthen dam. The box culvert would be sunk 1 foot below grade [per 2005 US Fish and Wildlife Coordination Act Report (FWCAR)] to allow development of a natural stream channel through the culvert and facilitate passage of wildlife (see Drawings 1 & 2; Appendix B). The total impact from fill material to the stream channel would be 150 linear feet.

Another benefit of the sunken box culvert at the Rosedale Dam renovation would result from avoiding the potential for scouring of the channel bottom along the edge of the culvert, which would create a barrier to wildlife passage through the culvert. This barrier would have created

hazards by forcing wildlife to go around the culvert instead of utilizing the safety of the creek for movement/migration through this area. In addition to improving the conditions for wildlife passage along the canal greenway, this culvert modification would provide a more suitable substrate for wildlife that may inhabit or pass through the culvert.

The box culvert has been designed to approximate the existing channel width, to allow normal low flow and bed load sediment to pass unimpeded. This design would allow the upstream detention area to remain dry under normal weather conditions, with only normal creek flows passing through. Per recommendations from the US Fish and Wildlife Service (USFWS) and EPA, the culvert is designed to maintain bank full width and allowing proper shear stress for proper bed load transport (USFWS 2015 and Able 2003b). In the Design and Implementation (D/I) Phase, the size of the culvert may be modified, as needed to achieve these goals.

Rock revetments would be used at the face and outlet of the detention structure to reduce potential erosion and scouring at the structure; with a subsequent reduction in sedimentation and turbidity further downstream. Operations and Maintenance (O&M) of the area would include removal of sedimentation before accumulation is excessive enough to kill existing vegetation. The accumulation of sediment is expected to be small; and therefore, the potential for adverse impacts to existing vegetation would be expected to be less than the baseline condition. The detention area is not expected to result in increased sediment loads for the creek. Furthermore, the detention area would be expected to decrease the amount of sediment discharged further downstream during flood events by slowing down the floodwaters and detaining some of the sediments.

Threatened, Endangered and other Listed Species

The US Fish and Wildlife Service (USFWS) concurred that the proposed action is not likely to adversely affect Federally protected species in their Fish and Wildlife Coordination Act Report dated January 2014 (Appendix D). The only Federally protected species under USFWS jurisdiction that is known to use the vicinity is the endangered wood stork (*Mycteria americana*). This species is known to use the nearby Phinizy Swamp Complex site on a regular basis for feeding; this Swamp Complex is located approximately 5 miles southeast of the project site. The proposed action is not expected to have any adverse impacts to this species.

None of the state listed species or their habitat have been identified within the project impact area during site investigations; therefore no significant impact to these resources is expected.

3.0 SUBPART B - COMPLIANCE WITH THE GUIDELINES

The following objectives should be considered in making a determination of any proposed discharge of dredged or fill material into waters of the U.S.

3.1 RESTRICTIONS ON DISCHARGE - (SECTION 230.10)

"(a) ***except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practical alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences."***

No other practicable alternative with less environment impacts on the aquatic ecosystem has been identified.

"(b) ***Discharge of dredged material shall not be permitted if it;"***

"(1) ***Causes or contributes, after consideration of disposal dilution and dispersions, to violations of any applicable state water quality standard;"***

"(2) ***Violates any applicable toxic effluent standard or prohibition under Section 370 of the Clean Water Act."***

The analytical results of sediment sampling indicated that no contamination exists that would impact planned construction activities with implementation of this project. Fill material requirements for the project would primarily come from the re-use of existing soil on site and any remaining needs would come from local approved sources.

"(3) ***Jeopardizes the continued existence of species listed as endangered and threatened under the Endangered Species Act of 1973, as amended."***

Endangered Species are addressed in the EA for this action. No federally listed species have been found on the site and the work is expected to have no affect on listed species.

"(4) ***Violates any requirements imposed by the Secretary of Commerce to protect any marine sanctuary designated under Title Ill of the Marine Protection Research and Sanctuaries Act of 1972."***

No marine sanctuary or other items addressed under this act would be affected by the proposed work.

"(c) ***Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of the waters of the United States. Findings of significant degradation related to the proposed discharge shall be based upon appropriate factual determinations, evaluations, and tests required by Subparts B and G of the consideration of Subparts C-F with special emphasis on the persistence and permanence of the effects contributing to significant degradation considered individually or collectively include:"***

"(1) Significantly adverse effects of the discharge of pollutants on human health or welfare including, but not limited to effects on municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites."

The proposed work is expected to improve water quality and conservation. Therefore, this project is expected to have a beneficial effect on, fish, shellfish, wildlife, and special aquatic sites; and may have a beneficial effect on water supplies and plankton.

"(2) Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent upon aquatic ecosystems, Including the transfer, concentration, and spread of pollutants or their by-products outside the disposal site through biological, physical, and chemical processes."

The analytical results of sediment sampling indicated that no contamination exists that would impact planned construction activities with implementation of this project.

"(3) Significantly adverse effects of the discharge of pollutants on aquatic ecosystems diversity, productivity, and stability. Such effects may include, but are not limited to, loss of fish and wildlife habitat or loss of the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy; or"

"(4) Significantly adverse effects of the discharge of pollutants on recreational, aesthetic, and economic values."

By slowing down water flow through the basin during flood events, the proposed project would enhance the function of existing wetlands/floodplains consequently improving fish and wildlife habitat quality of the project impact area. These improvements to the stream ecosystem would facilitate filtering and absorption of any contamination present in the drainage basin. No effects due to the discharge of pollutants are expected. The detention area would be expected to result in minor beneficial impacts on the filtering of pollutants.

"(d) ***Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted unless appropriate and practical steps have been taken which will minimize the potential adverse impacts of the discharge on the aquatic ecosystem."***

As designed (see description under proposed action), the detention area should limit downstream scour and loss of aquatic habitat by reducing the peak flow rate and energy of storm water discharges to the receiving stream.

In addition, the design of Rosedale Dam was modified based on recommendations to the PDT from the USFWS to allow more natural flows through the stream channel. The box culvert would be sunk 1 foot below grade [per US Fish and Wildlife Coordination Act Report (FWCAR)] to allow development of a natural stream channel through the culvert and facilitate passage of wildlife (see Drawings 1 & 2; Appendix B). The box culvert would allow the upstream detention area to remain dry under normal weather conditions, with only normal creek flows passing through.

The box culvert was designed to be approximately the existing channel width, to allow low flow and bed load sediment to pass unimpeded. In the D/I Phase, the design may be modified as needed.

Another benefit of the sunken box culvert at the Rosedale Dam renovation would result from avoiding the potential for scouring of the channel bottom along the edge of the culvert, which would create a barrier to wildlife passage through the culvert. This barrier would have created

hazards by forcing wildlife to go around the culvert instead of utilizing the safety of the creek for movement/migration through this area. In addition to improving the conditions for wildlife passage along the stream, this culvert modification would provide a more suitable substrate for wildlife that may inhabit or pass through the culvert.

3.2 FACTUAL DETERMINATION. - (SECTION 230.11)

3.2.1 Physical Substrate Determinations

Consideration shall be given to the similarity in particle size, shape, and degree of compaction of the material proposed for discharge and the material constituting the substrate at the disposal site and any potential changes in substrate elevation and bottom contours.

Fill material requirements for the project would primarily come from the re-use of existing soil on site and any remaining needs would come from local approved sources. If locally approved sources are used, soils would be selected that are compatible with existing soils.

Possible loss of environmental values

No losses of environmental value are expected and the features in the project design are designed to improve environmental values of the project area.

Actions to minimize impacts

Any fill material used would be the minimum necessary to fulfill the project design; and existing soil on site will be re-used to the maximum extent practicable.

The box culvert at the Rosedale Dam renovation would be buried 1 foot below grade to avoid the potential for scouring of the channel bottom along the edge of the culvert that would create a barrier to wildlife passage through the culvert. This barrier would have created hazards by forcing wildlife to go around the culvert instead of utilizing the safety of the creek for movement/migration through this area. In addition to improving the conditions for wildlife passage along the canal greenway, this culvert modification would provide a more suitable substrate for wildlife that may inhabit or pass through the culvert.

As designed, the detention area should limit downstream scour and loss of aquatic habitat by reducing the peak flow rate and energy of storm water discharges to the receiving stream (USEPA 1999).

3.2.2 Water Circulation, Fluctuations, and Salinity Determinations

Consideration shall be given to water chemistry, salinity, clarity, color, odor, taste, dissolved gas levels, temperature, nutrients, and eutrophication plus other appropriate characteristics. Also to be considered are the potential diversion or obstruction of flow, alterations of bottom contours, or other significant changes in the hydrologic regime. Changing the velocity of water flow can result in adverse changes in location, structure, and dynamics of aquatic

communities, shoreline erosion and deposition, mixing rates and stratification, and normal water-level fluctuation patterns. These effects can alter or destroy aquatic communities.

As designed, the detention area should limit downstream scour and loss of aquatic habitat by reducing the peak flow rate and energy of storm water discharges to the receiving stream; and should also prevent loss of wetlands and riparian vegetation from erosion and scouring.

3.2.2.1 Loss of Environmental Value

As described above, this project is designed to increase environmental value of the site by improving the function of floodplains, a stream, and wetlands within a degraded ecosystem. Past land use and development throughout this portion of the Rocky Creek basin has involved much fill material that destroyed most of the natural flood storage of the original floodplain and wetland ecosystems within the watershed; as well as increased flow velocities during storm events. The Tentatively Selected Plan (TSP) would restore some of this lost natural flood storage capacity and reduce flows during flood events.

3.2.2.2 Actions to Minimize Impacts

Proposed fills are the minimum necessary to accomplish project purposes. The proposed culvert at Rosedale Dam is specifically designed to accomplish project purposes.

The Rosedale Dam renovation is designed to be approximately the existing channel width to allow low flow and bed load sediment to pass unimpeded. In the D/I Phase, the notch may be modified as needed. The notch will need to be at proper cross section for bank full width; allowing proper shear stress for proper bed load transport.

3.2.3 Suspended Particulate/Turbidity Determinations

Effects due to potential changes in the kinds and concentrations of suspended particulate/turbidity in the vicinity of the disposal site. Factors to be considered include grain size, shape and size of any plume generated, duration of the discharge and resulting plume, and whether or not the potential changes will cause violations of applicable water quality standards. Consideration shall include the proposed method, volume, location, and rate of discharge, as well as the individual and combined effects of current patterns, water circulation and fluctuations, wind and wave action, and other physical factors on the movement of suspended particulates.

Turbidity impacts due to construction are expected to be temporary. In addition, plans include sediment barriers and silt screens to restrict turbidity and sediment loss during construction.

3.2.3.1 Loss of Environmental Values

Due to reduction in light transmission, reduction in photosynthesis, reduced feeding and growth of sight dependent species, direct destructive effects to nektonic and planktonic species, reduced DO, increased levels of dissolved contaminants, aesthetics.

Impacts are expected to be minor and temporary and cease soon after construction is completed.

3.2.3.2 Actions to Minimize Impacts

The District follows sediment and erosion control best management practices in its designs. As stated above, barriers will be installed to minimize sediment loss and turbidity during construction.

The analytical results of sediment sampling indicated that no contamination exists that would impact planned construction activities with implementation of this project.

The detention of water for longer periods in the detention areas may create or enhance some wetland functions and values like the filtering of excessive nutrients and other pollutants from runoff that would contribute to turbidity that are present in the drainage basin; decreasing sedimentation/erosion, and establishing wetland vegetation.

3.2.4 Contamination Determination

Consider the degree to which the proposed discharge will introduce, relocate, or increase contaminants. This determination shall consider the material to be discharged, the aquatic environment at the proposed disposal site, and the availability of contaminants. Consideration of Evaluation and Testing (parts 230.60, and 230.61).

There is no reason to expect any contaminant related impacts from the proposed work.

3.2.5 Aquatic Ecosystem and Organism Determinations

Effect on the structure and function of the aquatic ecosystem and organisms and effect on the re-colonization and existence of indigenous aquatic organisms or communities.

3.2.5.1 Threatened and Endangered Species

This work is expected to have no effect on threatened or endangered species.

3.2.5.2 Fish, Crustaceans, Mollusks and other Aquatic Organisms in the Food Web

This project is expected to result in minor improvement in the habitat for these animals.

3.2.5.3 Other Wildlife

This project is expected to result in minor improvement in the habitat for other wildlife.

3.2.5.4 Special Aquatic Sites

The detention area does not involve excavation and is designed to utilize the natural existing flood storage capacity of the floodplain/wetland areas for floodwater detention. A jurisdictional wetland delineation has been conducted (USACE 2015) includes a 0.4 of an acre jurisdictional wetland (USACE 2015a) and is illustrated in Figure 4 of Appendix A. The detention area would not adversely impact any jurisdictional wetlands or floodplains since the TSP does not involve any excavation or discharge of fill material into the detention area.

The proposed detention area and vicinity have been degraded in the past by the extensive development of the floodplain. The detention area as designed is expected to hold water 3-4

hours during an average summer rain event; approximately 12 hours during typical flood events; and no more than 36 hours during the 25-year flood event **(**over an approximate area of 21 acres). The detention area impacted by floodwater detention does include a portion of the 0.4 acre of jurisdictional wetlands (USACE 2015).

The detention of water for longer periods in the detention areas may create or enhance some wetland functions and values like the filtering of excessive nutrients and other pollutants from runoff, and decreasing sedimentation/erosion, and establishing wetland vegetation.

3.2.5.5 Potential Effects on Human Use Characteristics

The proposed work is expected to result in positive impacts regarding this issue.

3.2.5.6 Possible Loss of Environmental Values

The proposed work is expected to increase the environmental value of the site.

3.2.5.7 Actions to Minimize Impacts

The proposed work is expected to result in positive impacts to the environment.

3.2.6 Proposed Disposal Site Determination

Each disposal site shall be specified through application of the guidelines. The mixing zone shall be confined to the smallest practicable zone within each specified disposal site that is consistent with the type of dispersion determined to be appropriate by the application of the guidelines.

The proposed amount of fill required for the renovation of Rosedale Dam is the minimum required to fulfill the project purpose of Flood Risk Management. No practicable alternatives are available that produce the same benefits.

3.2.7 Determination of Cumulative Effects on the Aquatic Ecosystem

Cumulative effects attributable to the discharge of dredged or fill material in waters of the United States should be predicted to the extent reasonable and practical.

Beneficial impacts from the detention area would be expected to offset to a minor degree the many past adverse impacts to the stream ecosystem and floodplain from many decades of development activities. Land use throughout this portion of the Rocky Creek basin is typical of urban streams and has been developed primarily for residential subdivisions; while some is occupied by commercial and industrial property. This development involved much fill material that destroyed most of the natural flood storage of the original floodplain and wetland ecosystems within the watershed. The Tentatively Selected Plan (TSP) would restore some of this lost natural flood storage capacity of floodplains and wetlands within the watershed.

3.2.8 Determination of Secondary Effects on the Aquatic Ecosystem

Secondary effects are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material.

The box culvert at the Rosedale Dam renovation would be buried 1 foot below grade to avoid the potential for scouring of the channel bottom along the edge of the culvert that would create a barrier to wildlife passage through the culvert. This barrier would have created hazards by forcing wildlife to go around the culvert instead of utilizing the safety of the creek for movement/migration through this area. In addition to improving the conditions for wildlife passage along the canal greenway, this culvert modification would provide a more suitable substrate for wildlife that may inhabit or pass through the culvert.

Habitat for many animals would be improved from these features as well as habitat diversity for the area. Secondary beneficial effects on water quality may occur in Phinizy Swamp, which is downstream of Rocky Creek.

4.0 FINDINGS OF COMPLIANCE OR NONCOMPLIANCE WITH RESTRICTIONS ON DISCHARGE – (SECTION 230.12)

4.1 DETERMINATIONS

a. That an ecological evaluation of the discharge of dredged material associated with the proposed action has been made following the evaluation guidance in 40 CFR 230.6, in conjunction with the evaluation considerations at 40 CFR 230.5.

b. That potential short-term and long-term effects of the proposed action on the physical, chemical, and biological components of the aquatic ecosystem have been evaluated and it has been found that the proposed discharge will not result in significant degradation of the environmental values of the aquatic ecosystem.

c. That there are no less environmentally damaging practicable alternatives to the proposed work that would accomplish project goals and objectives. Several alternatives were eliminated for not accomplishing all project goals or for being too costly. The No Action alternative is found to be unacceptable.

(1) That the proposed action will not cause or contribute to violations of any applicable State water quality standards, will not violate any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act, will not jeopardize the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, and will not violate any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972.

(2) That the proposed work will not cause or contribute to significant degradation of the waters of the United States.

(3) That the discharge includes all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem.

4.2 FINDINGS

Based on the determinations made in this Section 404 (b) (1) evaluation, the finding is made that, with the conditions enumerated in this document, the proposed action complies with the Section 404(b)(1) Guidelines.

APPENDIX F

Threatened and Endangered Species Listed in Richmond County, Georgia

Augusta Rocky Creek, Georgia Environmental Assessment

Protected Species Listed in Richmond County

Scientific Name	Common Name	Federal Status	State Status
Birds			
Mycteria americana	Wood stork	T	E
Picoides borealis	Red-cockaded woodpecker	E	E
Reptiles			
Gopherus polyphemus	Gopher tortoise	C	T
Heterodon simus	Southern hognose snake	N	T
Fish/Shellfish			
Acipenser brevirostrum	Shortnose sturgeon	E	E
Acipenser oxyrinchus oxyrinchus	Atlantic sturgeon	E	E
Plants			
Stylisma pickeringii var. pickeringii	Pickering's morning-glory	N	T
Ceratiola ericoides	Rosemary	N	T
Trillium reliquum	Relict Trillium	E	E
Sarracenia rubra	Sweet pitcher-plant	N	T

E - Endangered T - Threatened R - Rare N - None SC - Species of Concern C - Candidate
TR - Tracked Species
Source: The information in this table was provided by the USFWS in February 2016

APPENDIX G

8-Step Process for EO 11988: Floodplain Management

8-Step Process for
EO 11988: Floodplain Management

Augusta Rocky Creek Georgia Flood Risk Management Section 205 Feasibility Study
--Section 205, 1948 FCA (P.L. 80-858), as amended
--Decision Process for E.O. 11988 as Provided by 24 CFR §55.20

Step 1: ***Determine whether the action is located in a 100-year flood plain (or a 500-year flood plain for critical actions).***

This action is located in a 100-year flood plain. Figure 5 of the feasibility report displays the 100 year flood plain in the study area. The Tentatively Selected Plan (TSP) is the combination of the Rosedale Detention Area and the Kissingbower Buyouts with Park. Therefore, E.O. 11988 applies. An evaluation of direct and indirect impacts associated with construction, occupancy, and modification of the flood plain is required.

Rosedale Dam Detention Area: This structural alternative proposes to modify the former Rosedale Dam into a detention area to reduce flood risks downstream without increasing flood risks upstream. Specifically, the Rosedale Detention area will reduce the peak flow downstream for rain events. The structure's design is targeted to have the largest flood reduction impact up to the 25-year flood event (4 percent chance of exceedance in any given year). At flows larger than the 25-year flood event, the overflow weir will be used to pass water in addition to culvert flow. The detention structure will still provide a reduction in peak flows and water surface elevations downstream at flows greater than the 25-year event; however, the incremental water surface elevation reduction will decrease as flow increases. Kissingbower Buyouts with Recreational Park: This non-structural alternative proposes to acquire five properties, demolish and remove the existing structures occupying the properties, and develop a passive recreation park on the vacant lands that remain. Therefore, this analysis considers impacts to the floodway along with concerns for loss of life and property.

Step 2: ***Notify the public for early review of the proposal and involve the affected and interested public in the decision making process.***

Coordination with the sponsor has been ongoing since approximately 2002. They have acted as the link between the USACE and the public. Some public concerns that were brought to USACE attention are:

- Damage to existing homes and commercial developments from storm events within flood plain
- Erosion, sedimentation, and subsequent impacts to wetlands and aquatic habitat from implementation of the proposed action
- Access thru private property in performance of maintenance on culvert/weir

A draft EA was sent out for public review in 2005 for a larger project that included the Rocky Creek Basin.

Discussions between homeowners and the sponsor has suggested the willingness of the homeowners to sell properties located in the Kissingbower area.

Step 3: ***Identify and evaluate practicable alternatives.***

The objective of this study is to reduce flood risks within the 500-year flood plain of the Rocky Creek Basin in an economically justified, environmentally sound, and technically feasible manner.

The planning constraints identified in this study are as follows:
• Avoid or minimize environmental impacts from flood risk management measures.
• Minimize induced damages resulting from the implementation of flood risk reduction measures.

Augusta Rocky Creek FRM Section 205 study considered several alternative sites and actions:

A. Locate the Project Within the Flood plain

1. Rosedale Dam Detention Area Alone

The structural alternative, Rosedale Dam Detention Area Improvement, would convert the formerly breached earthen dam to a detention structure. The renovations proposed at this location include placing a reinforced concrete box culvert through the existing breached embankment in the creek bed for normal creek flow. This would consist of a low-level 5 feet wide x 6 feet high culvert outlet, approximately 150 linear feet in length, set to elevation 215.7 feet NAVD 88 with a controlling invert at elevation 216.7 feet NAVD 88. Because this is an inline detention structure, the outlet is set equal to the existing channel invert (1 foot below channel surface) so that there is no impoundment of water during normal low flow.

At flows less than a 25-year flood event, flow will be handled through the culvert alone, while flows larger than the 25-year flood event will use the overflow weir. The detention structure will still provide a reduction in peak flows and water surface elevations downstream at flows greater than the 25-year event. However the incremental water surface elevation reduction will decrease as flow increases.

2. Kissingbower Buyout Alone

This non-structural measure would require mandatory acquisition of five properties; two are vacant and three of the properties contain a structure (refer to the Main Report Section 5.4 “Real Estate Requirements” for more detail). By demolishing these structures, they will be eliminated from the flood plain. The remaining land would be, in perpetuity, converted to greenspace. Two of the houses were inundated with 4 to 5.5 feet of water during the 100-year flood. Meanwhile, the third house received 2.5 feet of flooding above the first floor elevation.

3. Kissingbower Buyout with Park

This alternative includes the non-structural Kissingbower buyouts with the added feature of a recreation park which is intended to provide passive recreation benefits to the area. The proposed recreational park would require acquisition of five residential properties; two are vacant and three contain structures. This recreation facility, sought to be located on the 5 acquired parcels (including the bottom vacant triangular lot (0.3 of an acre) on Haynie Street), would encompass approximately 1.32 acres of the flood plain.

4. Rosedale Detention Area and Kissingbower Buyout with Park (TSP)

This alternative would consist of a combination of both the structural improvements at Rosedale Dam and non-structural improvements in the form of a recreational park in the Kissingbower area. Impacts would include a combination of impacts identified for the detention area and the buyout plans described above.

B. Locate the Project Outside of the Flood Plain

No alternatives located outside of the flood plain were considered as part of the final array. During preliminary analysis, alternatives which did not meet the goals of the project, were not cost effective, or involved HTRW and were eliminated. Some of the alternatives considered in 2005 consisted of improvements that were proposed to be constructed outside of the flood plain.

C. No Action or Alternative Actions that Serve the Same Purpose

A no action alternative was considered and rejected because without any action, the Rocky Creek Basin would continue to be subjected to frequent flooding. Such flooding would result in substantial losses to properties in the future. Subsequently, property values would be expected to decrease in the vicinity. Additional information quantifying property losses are included in the economic analysis (Appendix A) of the Feasibility Report

Step 4: ***Identify Potential Direct and Indirect Impacts of Associated with Flood Plain Development.***

Section 4.5 of the Environmental Assessment for this project describes the impacts to the flood plain that would be expected under each alternative. With implementation of the Tentatively Selected Plan (TSP), the Rosedale Dam Detention Area would slow floodwaters within the existing flood plain and would not adversely impact the flood plain. The TSP would restore some of the lost natural flood plain storage capacity (from decades of flood plain development) and reduce economic damages from flooding in some of the developed areas of this drainage basin.

Converting residential use of the flood plain to greenspace and recreational use would have a beneficial impact to flood plain management in the affected area. The acquisition of the property for a recreation park would prohibit further development in that portion of the flood plain in the future.

Step 5: ***Where practicable, design or modify the proposed action to minimize the potential adverse impacts to lives, property, and natural values within the flood plain and to restore, and preserve the values of the flood plain.***

The Rosedale Dam Detention Area would restore some of the lost natural flood plain storage capacity from decades of development and thereby reduce economic damages from flooding in some of the developed areas of this drainage basin. As designed, the Rosedale Dam Detention Area would limit downstream scour and loss of aquatic habitat by reducing the peak flow rate and energy of storm water discharges to the receiving stream. The reduction of downstream erosion may provide benefits to wetlands, associated flood plains, riparian vegetation, and bottomland hardwoods.

The non-structural feature would result in benefits to the flood plain by converting residential use of the flood plain to greenspace/recreational use in the area, which would assist in management of the flood plain.

Step 6: ***Reevaluate the Alternatives.***

Although the TSP is in a flood plain, the project has been designed in order to minimize effects on flood plain values.

The no action alternative is impracticable because it will not satisfy the need to provide FRM to the affected communities.

Step 7: ***Determination of No Practicable Alternative***

It is our determination that there is no practicable alternative for locating the project out of the flood zone. This is due to the need to reduce flood risks within the 500-year flood plain of the Rocky Creek Basin and the ability to mitigate and minimize impacts on human health, public property, and flood plain values.

A final notice will be published during the public review of these documents.

Step 8: ***Implement the Proposed Action***

USACE will assure that this plan, as modified and described above, is executed and necessary language will be included in all agreements with participating parties. USACE will also take an active role in monitoring the construction process to ensure no unnecessary impacts occur nor unnecessary risks are taken.