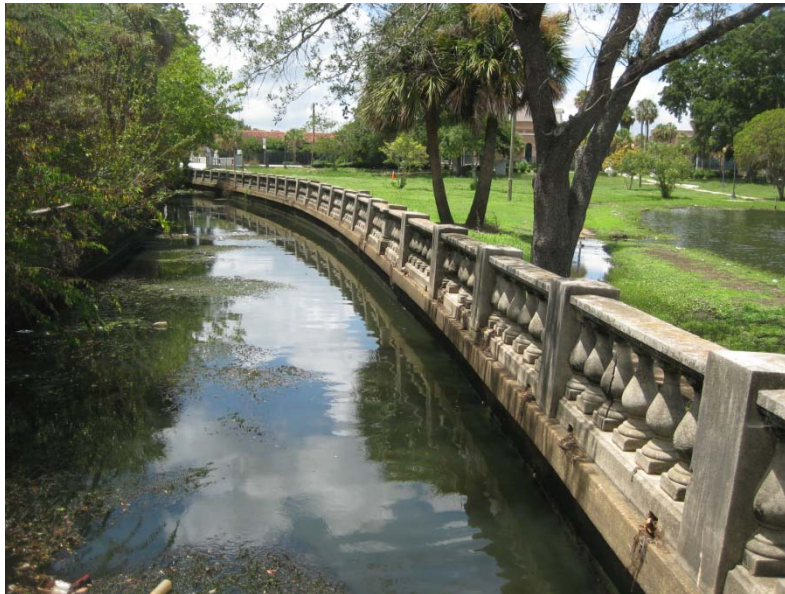


**HOGAN'S CREEK**  
**CITY OF JACKSONVILLE**  
**DUVAL COUNTY, FLORIDA**

**DRAFT**  
**DETAILED PROJECT REPORT**



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of Engineers ©**

**SECTION 206**  
**ECOSYSTEM RESTORATION PROJECT**

Jacksonville District  
South Atlantic Division

August 2012

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## **EXECUTIVE SUMMARY**

This document is submitted under the authority of Section 206 of the Water Resources Development Act of 1996 (PL 104-303), as amended. This report was initiated at the request of the City of Jacksonville, the non-Federal Sponsor, by letter dated 12 September 2000. Under the Continuing Authorities Program, the U.S. Army Corps of Engineers (USACE) has authority to investigate the potential for water resource improvements such as this investigation at Hogan's Creek, without additional specific Congressional authorization.

The USACE, in partnership with the City of Jacksonville, investigated potential measures to restore the stream channel to conditions that existed prior to development and modification of the creek watershed. The creek is located within the central area of the City of Jacksonville, Duval County, Florida. Draining a surface area of 2000 acres, the creek originates in the downtown community of Springfield and meanders through both urban and industrial areas of the city. The southeasterly terminus of Hogan's Creek is hydraulically connected to the St. Johns River, a designated American Heritage River.

Unfortunately, it has been determined that hazardous, toxic and radiological waste (HTRW) exists on all properties owned by City of Jacksonville (COJ) within the project area. Based on Federal policy and guidelines any USACE participation under the Section 206 Ecosystem Restoration Program would first require these contaminated sites to be remediated either by the non-federal sponsor or current landowners. Hence we have determined there is no Federal interest in any further Section 206 Ecosystem Restoration action at Hogan's Creek at this time.

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## 1 INTRODUCTION

### 1.1 BY WHOSE AUTHORITY IS THIS REPORT BEING DONE?

This document is a Detailed Project Report submitted under the authority of Section 206 of the Water Resources Development Act (WRDA) of 1996 (PL 104-303), as amended. The act reads, in part, as follows:

“...The Secretary may carry out an aquatic ecosystem restoration and protection project if the Secretary determines that the project – (1) will improve the quality of the environment and is in the public interest; and (2) is cost effective.”

Section 206 studies are subject to USACE budgetary authority limits of \$5,000,000 per project and \$25,000,000 annually programmatically.

### 1.2 WHAT IS THE PURPOSE OF THIS STUDY?

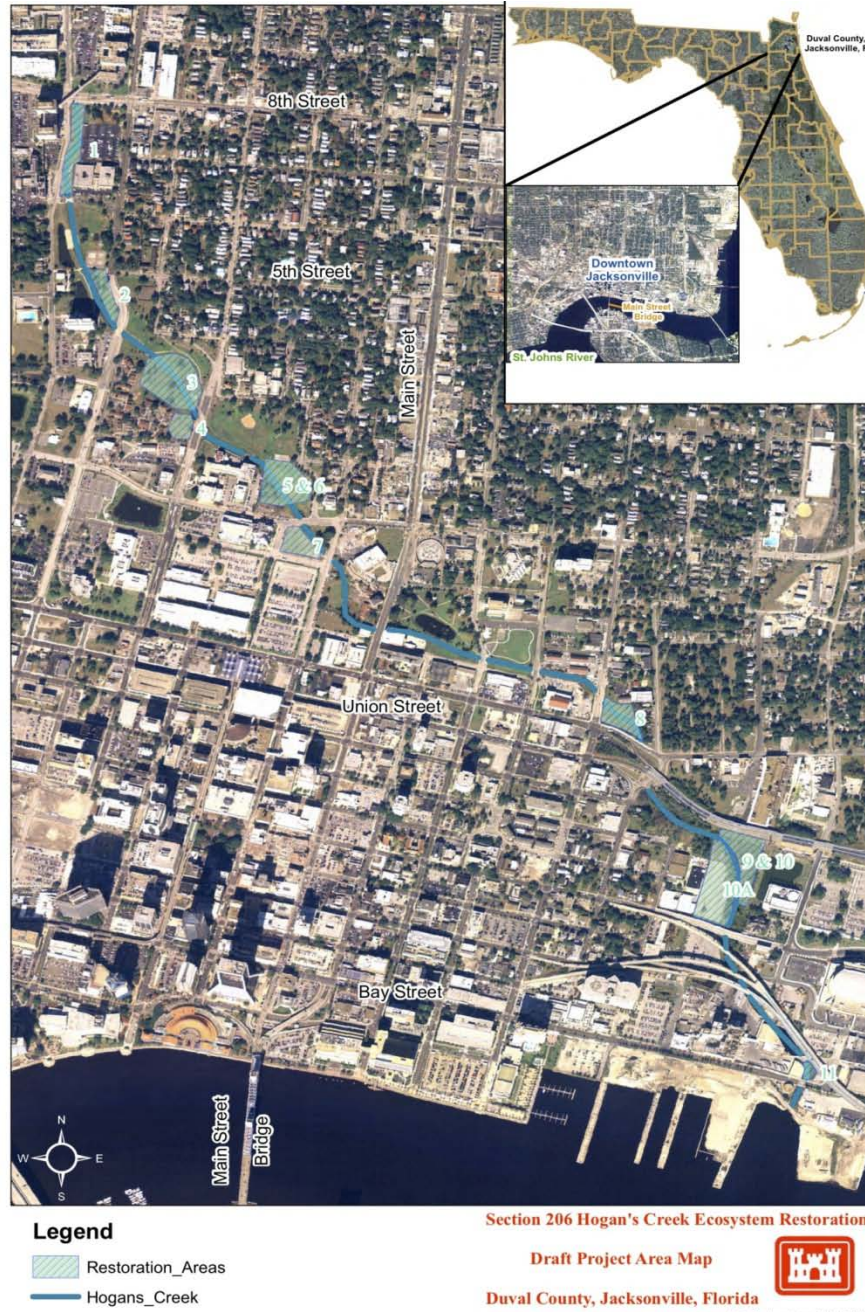
The purpose of this study is to examine alternative designs for the restoration of the Hogan’s Creek aquatic ecosystem.

The overall goal is to restore a healthy aquatic habitat in the creek by providing ecological benefits including:

- The removal of sediment accumulations
- Removal of exotic vegetation
- Creation of wetland habitats

### 1.3 WHERE IS THE PROJECT LOCATED?

Hogan’s Creek is located in the City of Jacksonville, in Duval County located in northeastern Florida (**Figure 1**).

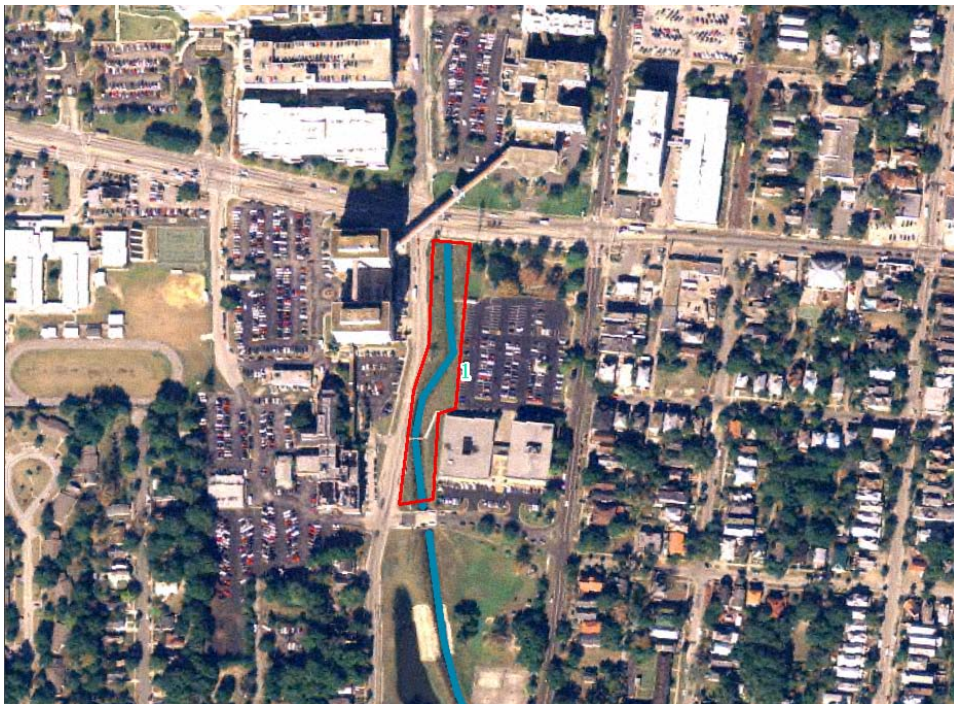


**Figure 1. Location of Hogan’s Creek and potential restoration area locations**

## 1.4 WHAT AREAS ARE BEING STUDIED FOR AQUATIC ECOSYSTEM RESTORATION?

**Locations:** For proper orientation please refer to the project area map in Figure 1. Note all polygons for restoration areas are draft and not to actual size/scale. Additional images are included below for more detailed information with a short description of the problems associated with each location.

### Restoration Area 1



**Figure 2: Restoration area 1 location from 8th Street to 6th Street**

Detailed problem: 1) Hazardous, Toxic and Radioactive Waste (HTRW) detected; 2) Rainfall runoff from parking lot to the east and from road to the west; 3) nuisance/invasive species present (Hydrilla); 4) decreased aquatic habitat and ecological function; 5) Surrounded by ash remediation sites; west: Fifth and Cleveland Unit 1 and east: Fifth and Cleveland Unit 2.

**Restoration Area 2**



**Figure 3: Restoration area 2 location between 6th Street and 4th Street**

Detailed problem: (1) Hazardous, Toxic and Radioactive Waste (HTRW) detected - restoration area within ash remediation site, surrounded by ash remediation sites; west: Fifth and Cleveland Unit 1 and east: Fifth and Cleveland Unit- 2; 2) urban rainfall runoff; 3) sedimentation.

**Restoration Area 3**



**Figure 4: Restoration area 3 location: between 4th Street and slightly south of 3rd Street**

Detailed problem: 1) The creek and the NE portion of the restoration area are contained within the Fifth and Cleveland Unit 2 ash contamination site; 2) Hazardous, Toxic and Radioactive Waste (HTRW) contamination was confirmed by sampling and testing.

**Restoration Area 4**



**Figure 5: Restoration area 4 location: Between 3rd Street and 2nd Street.**

Detailed problem: 1) Surrounded by ash remediation site to east: Fifth and Cleveland Unit 2; 2) Hazardous, Toxic and Radioactive Waste (HTRW) materials are suspected due to the proximity to the ash contamination site but have not been confirmed by sampling.

**Restoration Area 5**



**Figure 6: Restoration area 5 location: Between 2nd and 1st Street to the east of the creek**

Detailed problem: (1) The restoration area is contained within the Fifth and Cleveland Unit 2 Ash Remediation Site; 2) Hazardous, Toxic and Radioactive Waste (HTRW) materials are suspected due to the proximity to the ash contamination site but have not been confirmed by sampling.

### Restoration Area 6



**Figure 7: Restoration area 6 location: Between 2nd and 1st Street to the west of the creek**

Detailed problem: (1) The restoration area is contained within the Fifth and Cleveland Unit 2 Ash Remediation Site; 2) Hazardous, Toxic and Radioactive Waste (HTRW) contamination was confirmed by sampling and testing.



**Restoration Area 7**



**Figure 8: Restoration area 7 location between 1st Street and Bethel Baptist Street**

Detailed problem: 1) Downstream Fifth and Cleveland Unit 2 ash remediation site; 2) sedimentation; 3) loss of wetland habitat; 4) Hazardous, Toxic and Radioactive Waste (HTRW) materials are suspected due to the proximity to the ash contamination site but have not been confirmed by sampling.

**Restoration Area 7E**



**Figure 9: Restoration area 7E location is west of restoration area 7 and shown in yellow**

Detailed problem: 1) Hazardous, Toxic and Radioactive Waste (HTRW) contaminant on site; 2) also eliminated due to balustrades.

**Restoration Area 8**



**Figure 10: Restoration area 8 location is north of State Street and East of Liberty Street**

Detailed problem: 1) In 1993 an exceedance of contaminants was found in the proposed project area. Recent (2010/2011) Hazardous, Toxic and Radioactive Waste (HTRW) sampling verified HTRW contamination; 2) The land to the South is owned by the Florida Department of Transportation (FDOT) and it will be the City of Jacksonville's responsibility to acquire easement/lands before project implementation.

### Restoration Area 9



**Figure 11: Restoration area 9 location is East of Hogan's creek, bound to the north by Arlington Expressway, south by Duval Street, east by Catherine Street and west by Palmetto Street.**

Detailed problem: 1) Hazardous, Toxic and Radioactive Waste (HTRW) detected; 2) The permitted use of the wall needs to be determined, because it would require removal for restoration; 3) Expansion of the restoration area to the north of Hogan's Creek and west of restoration area 9 would require the City of Jacksonville to own the land/easement; the current property owners are listed as Union 700 Inc and Florida Department of Transportation (FDOT).

**Restoration Area 9N**



**Figure 12: Restoration area 9N is west of restoration area 10A and shown in yellow.**

Detailed Problem: The City of Jacksonville is not the land owner; Union 700 Inc (eastern portion) and FDOT (western portion) are land owners.

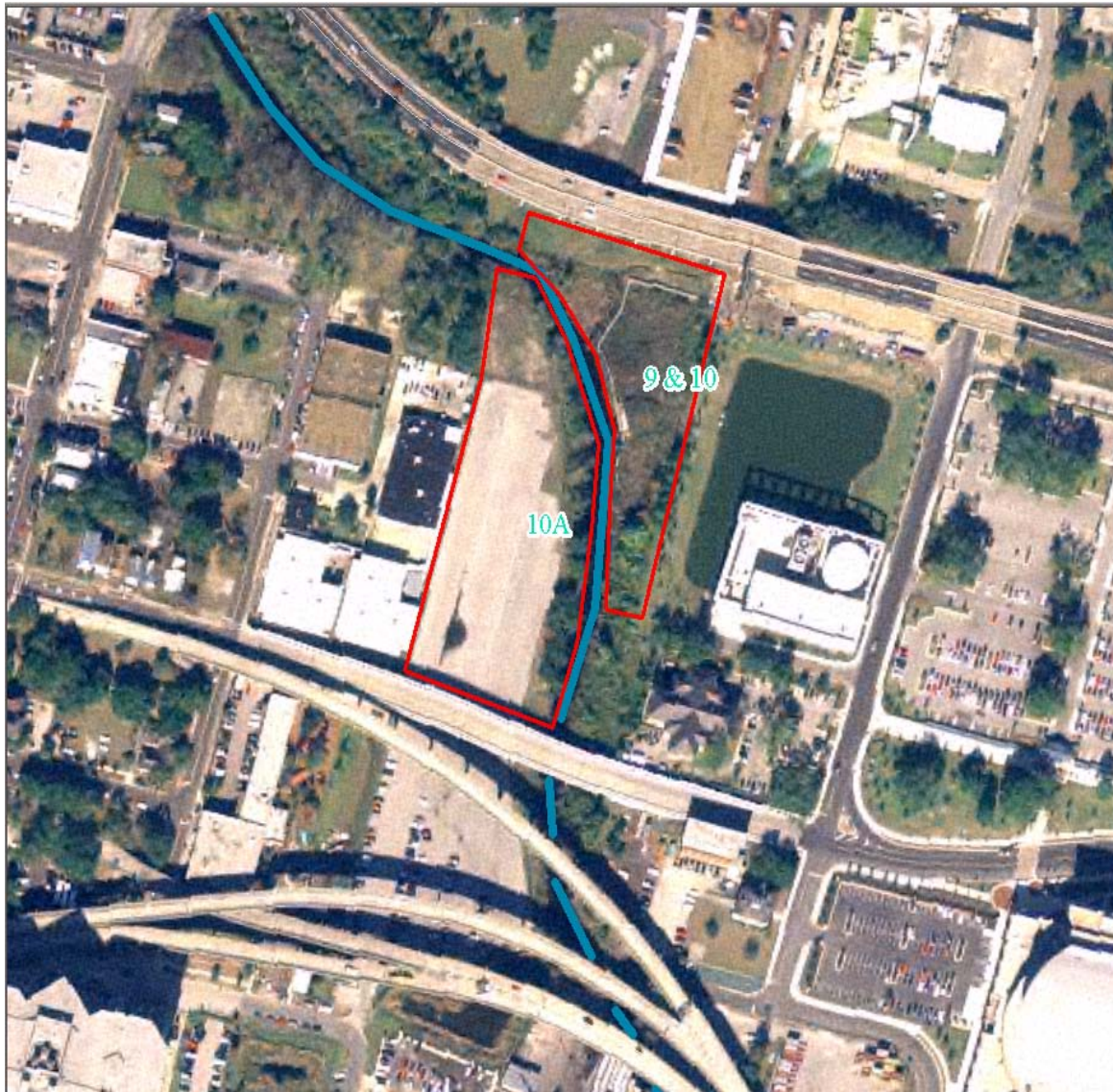
**Restoration Area 10**



**Figure 13: Restoration area 10 is located east of Hogan's creek, bound to north by Arlington Expressway, south by Duval Street, east by Catherine Street and west by Palmetto Street.**

Detailed problem: 1) Hazardous, Toxic and Radioactive Waste (HTRW) contamination found on site in 2010/2011.

**Restoration Area 10 A**



**Figure 14: Restoration area 10A is located west of Hogan's creek, bound to north by Arlington Expressway, south by Duval Street, east by Catherine Street and west by Palmetto Street.**

Detailed problem: 1) City of Jacksonville is not the landowner; 2) parking lot runoff; 3) loss of natural habitat.

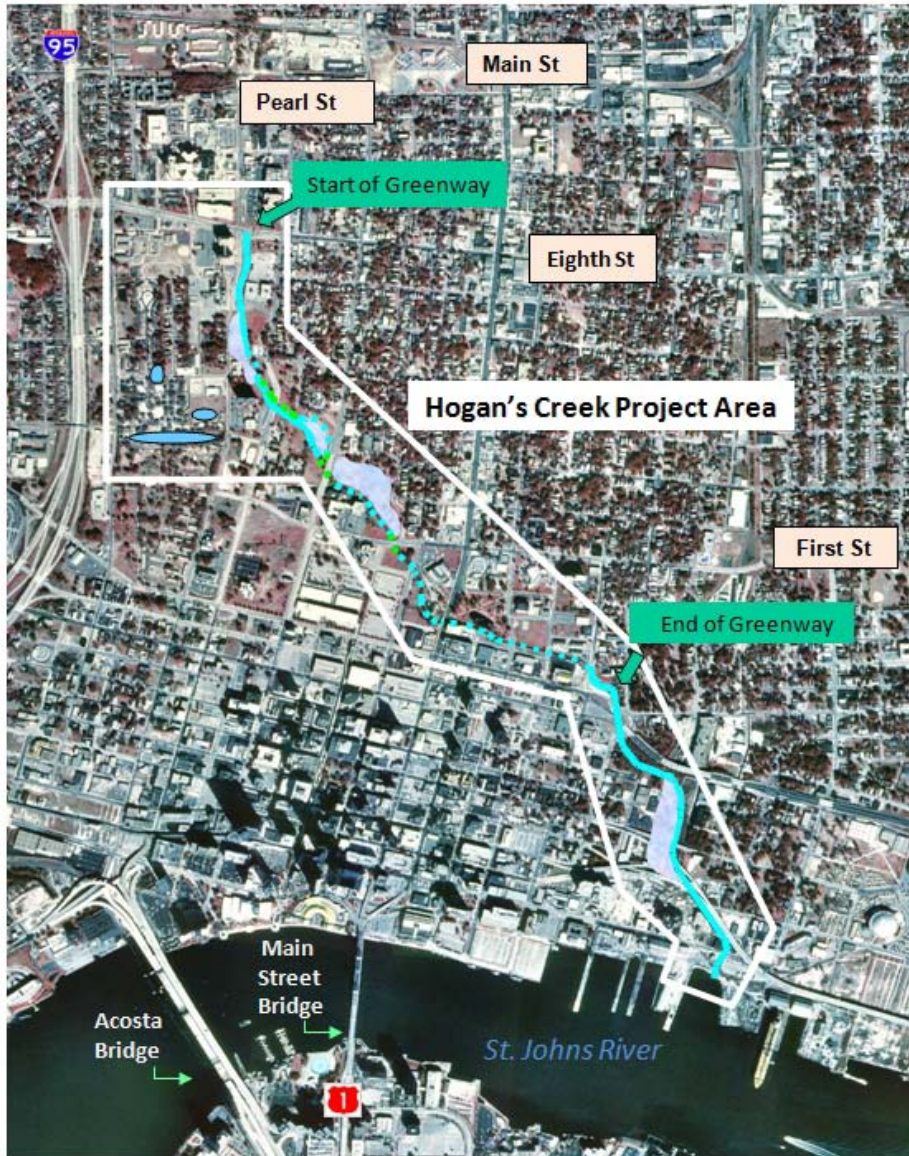
### **Restoration Area 11**



**Figure 15: Restoration area 11 is located north of Bay Street and west of Hart Expressway.**






Detailed problem: 1) City of Jacksonville is not the Landowner; 2) Adverse structural effects to existing infrastructure; 3) There are no available uplands to work in this area and any work within the creek is at risk of weakening the integrity of infrastructure in the project area.





**Environmental Restoration  
Duval County - Hogan's Creek**

Plate 1

-  Historic balustrade and bridge restoration (to be performed by Sponsor)
-  New balustrades (west of Pearl on north side of creek)
-  Creek would be widened, deepened and littoral marsh created
-  Open marsh areas would be created
-  Offline marsh area would be created

**Figure 16: Hogan's Creek Study Area**

## 1.5 WHAT PROCESS WAS USED FOR THIS REPORT?

This draft Detailed Project Report follows the U.S. Army Corps of Engineers (USACE) guidance relating to the planning process and the preparation of Section 206 Detailed Project Reports, found in *ER 1105-2-100, Planning Guidance Notebook*, dated 22 April 2000; policy guidance *ER-1105-2-100, Appendix F, Continuing Authorities Program*, 31 January 2007; and South Atlantic Division (SAD) *Draft Program Management Plan for Continuing Authorities Program* dated June 2010.

The following plan formulation process is typically used to build a range of alternatives that could meet the identified planning objectives and avoid the identified planning constraints.

The Corps' six step planning process provides a structured approach for problem solving through a rational framework that leads to sound decision making.

The six steps are:

- Identification of problems and opportunities
- Inventory of existing and forecasting of future conditions
- Formulation of alternative plans
- Evaluation of alternative plans
- Comparison of alternative plans
- Selection of a recommended plan

Alternative plans ("Alternatives") are typically developed from a combination of structural and/or non-structural measures that address the planning objectives. In addition to developed alternatives, a "Future without Project" alternative is included. This "Future without Project" plan is equivalent to the "No Action" plan required to be included in the decision making process by the National Environmental Policy Act (NEPA).

Alternatives are evaluated and compared using multiple criteria, followed by the selection of a recommended plan.

This six-step planning process is followed to ensure the recommended plan adequately addresses the problems identified and is cost effective.

## **2 IDENTIFICATION OF PROBLEMS AND OPPORTUNITIES**

### **2.1 PROBLEMS AND OPPORTUNITIES**

Over the years, environmentally damaging changes have occurred within Hogan's Creek stream corridor and ecosystem from urban development, stream channelization, enriched nutrient and contaminant input, and urban runoff. Storm waters often inundate the areas adjacent to the creek. The City of Jacksonville has also targeted the project site for redevelopment and flood conveyance improvements through channel clean out from the Springfield area to the St. Johns River.

In an attempt to identify the quantity and quality of water conveyed through the Hogan's Creek drainage basin, The City of Jacksonville initiated monitoring studies from 1984 to 1989. The City found that several locations showed high levels of iron and coliform bacteria with high biochemical oxygen demand and low dissolved oxygen. Additionally it was determined that a thick layer of sediments, primarily muck and silt, overlay the bottom substrate of Hogan's Creek. Sedimentation is largely received from bank erosion, culvert drainage, and overland flows. The creek's bottom elevation decreases by 7.5 feet from its origin in Springfield to its mouth at the St. Johns River.

Sedimentation accumulated through the years within Hogan's Creek has adversely affected water storage and conveyance capacity, effectively reduced fish and wildlife habitat, and decreased the creek's aesthetic components. This sedimentation further prevents light penetration to primary producers (i.e., plants), covers fish spawning areas, limits the sight line of predatory species, and buries benthic (bottom-dwelling) organisms.

This also reduces flood conveyance by shallowing of water depth after settling. Additionally, during high tide and storm/flood events, significant sediments as fine particulates and clay can become re-suspended and move down stream discharging to the St. Johns River.

## 2.2 PROBLEM STATEMENTS

- External sediment loads have been deposited on the bottom resulting in a shallower and more turbid creek, preventing light penetration to primary producers.
- Sediment has covered fish spawning sites  
Lack of water transparency limits sight of predatory species
- Benthic (bottom dwelling) organisms have been buried.
- Shallow depth has reduced flood conveyance.
- Sediment discharges into the St. Johns River.

### Opportunities:

- Increase wetland areas.
- Improve creek ecology and health
- Increase wading bird habitat.
- Improve flood conveyance

## **2.3 PLANNING OBJECTIVES AND CONSTRAINTS**

### **2.3.1 Objectives and Constraints**

The planning objectives and constraints identified below gave direction for the creation of management measures. These management measures were ultimately combined to form alternatives. Objectives are based on the problems and opportunities. Constraints are factors that limit what can be done.

Objectives:

- Restore Hogan's Creek aquatic ecosystem to promote conditions that existed prior to development and modification of its watershed;
- Remove sediments;
- Removal exotic plant species
- Improve flood conveyance

Constraints:

- Maximum total project cost not to exceed \$5,000,000 (federal share)
- No adverse impacts to listed threatened and endangered species or major habitats
- Obtaining environmental permits for sediment removal in Hogan's Creek. Need to identify disposal area, since sediments are contaminated.
- Avoid flood damage
- Avoid contaminated areas adjacent to the Creek.
- Avoid impacts to historic architectural features.

### **2.3.2 Significance**

Significance based on public recognition indicates some segment of the general public recognizes the importance of an environmental resource. This is evidenced by people engaged in activities that reflect an interest or concern for that particular resource. The Hogan's Creek project area resides within a high usage and visible urban community. The creek's location, among residences and businesses, helps to highlight its need for aquatic restoration. Revitalization of wildlife habitat would provide opportunities to enhance nature in an urban setting. Reversing the present degradation in the ecosystem of Hogan's Creek would stand as a progressive action for securing the future welfare of the surrounding community.

### **3 EXISTING CONDITIONS**

In order to better explain the existing conditions of Hogan’s Creek, a brief description of the historic conditions is necessary.

#### **3.1 HISTORIC CONDITIONS**

Hogan’s Creek is a freshwater and tidally influenced brackish water ecosystem. The creek’s discharge point on the St. Johns River is classified as an estuarine habitat. Structural features added to the creek in the 1920’s by architect Henry Klutho are considered historic resources and listed in the National Register of Historic Places.

#### **3.2 SOILS AND GEOLOGY**

A Custom Soil Resource Report for Duval County, Florida – Hogan’s Creek is on file at the Jacksonville District office of the US Army Corps of Engineers.

The purpose of the Soil Resource Report is to identify soil properties that are used in making various lands use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. Historically, sediment within Hogan’s Creek consisted of mainly fine to coarse grained sand.

#### **3.3 HAZARDOUS AND TOXIC MATERIAL**

A total of fourteen (14) sites were under consideration for ecosystem restoration. In 2003, ten (10) of the sites were sampled; six (6) were found to contain HTRW contamination. However, valid site chemical data can be no older than five (5) years. Another three (3) sites were not sampled, but are sited on or adjacent to known Ash remediation sites, which historically contain HTRW. As such, all sites considered for remediation either had contamination data that was too old or no sampling data at all. The team had narrowed down the number of possible remediation sites to four (4) based on project funding, and had the soil, sediment, and water at these sites re-sampled and analyzed in November 2010. The USACE contractor, AEROSTAR Environmental Services, Inc, conclusively showed that all five (5) sites do have HTRW contamination. The results are summarized in Section 3.3.1.

Over the years, the ecological conditions within Hogan’s Creek have deteriorated due to urban development and the filling in of low-lying areas with ash and “sanitary garbage”. Hogan’s Creek has been listed by the State of Florida as an impaired water body, in compliance with section 303(d) of the Clean Water Act.

### 3.3.1 Site History and Contaminants

#### 3.3.1.1 Restoration Area 3 West (RA3W)

RA3W is located in Springfield Park, on the west side of Hogan's Creek, north of the Pearl Street Bridge. In 2003, the sediment and soil in this area were analyzed for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), Chlorinated Pesticides, Herbicides, Poly-Chlorinated Biphenyls (PCBs), FL Petroleum range organics, and metals. There were many detections, including some that exceeded the Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Level (SCTL) for leachability based on freshwater surface criteria or residential soil. The exceedances also included SVOCs, PCBs, Chlorinated Pesticides, and metals. A site map showing the location of RA3W is included as **Figure 17**.

#### 3.3.1.2 Restoration Area 6 (RA6)

RA6 is located just north of the First Street Bridge crossing Hogan's Creek. RA6 is located on the west side of Hogan's Creek. In 2003, the sediment and soil in this area were analyzed for VOCs, SVOCs, Chlorinated Pesticides, Herbicides, Poly-Chlorinated Biphenyls (PCBs), FL Petroleum range organics, and metals. There were many detections, including some that exceeded the Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Level (SCTL) for leachability based on freshwater surface criteria or residential soil. The exceedances also included SVOCs, PCBs, Chlorinated Pesticides, and metals. A site map showing the location of RA6 is included as **Figure 17**.

#### 3.3.1.3 Restoration Area 8 (RA8)

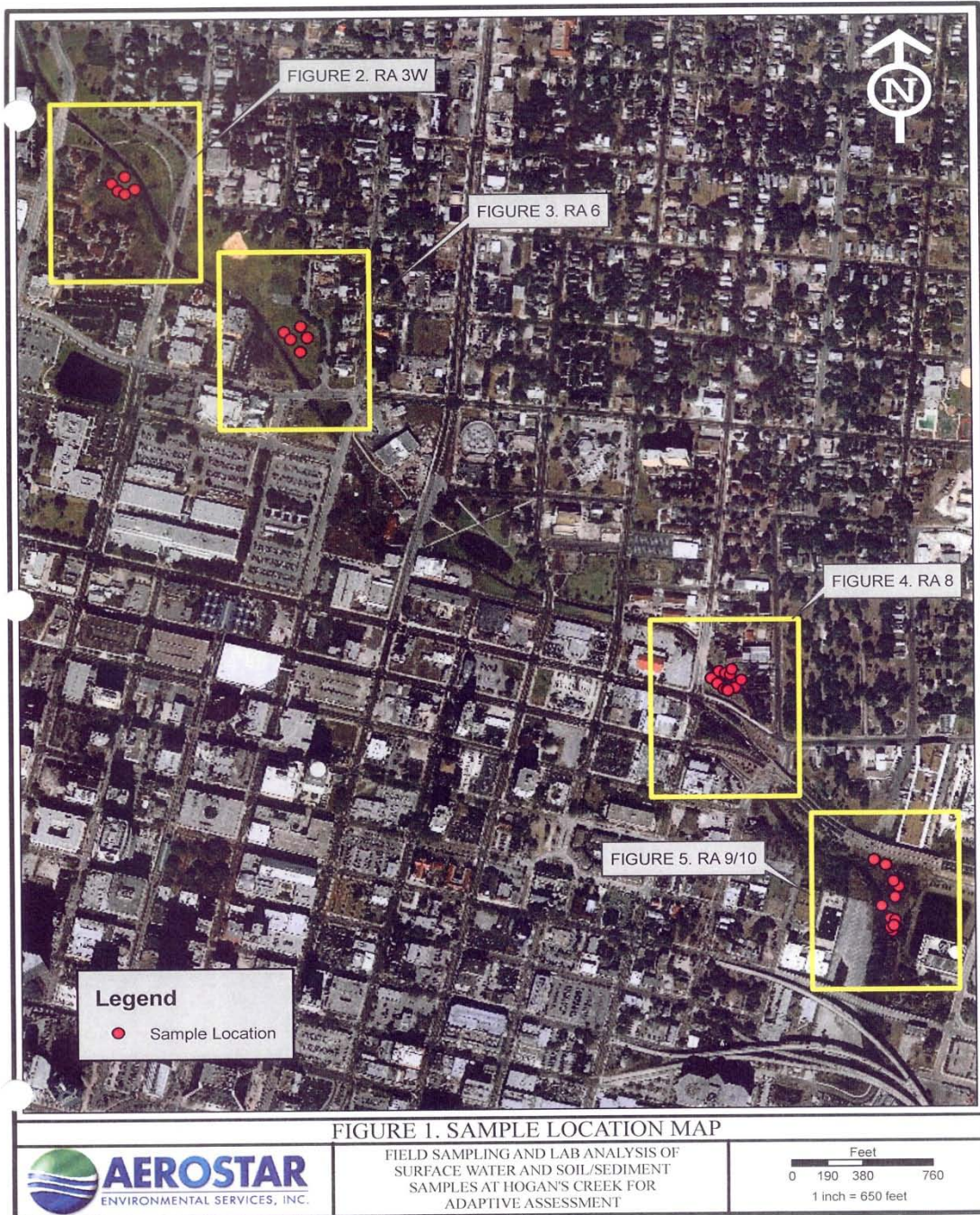
RA8 is located on the north side of Union Street, between Liberty Street and Washington Street. In 2003, the sediment in this area was were analyzed for VOCs, SVOCs, Chlorinated Pesticides, Herbicides, Poly-Chlorinated Biphenyls (PCBs), FL Petroleum range organics, and metals. There were many detections, including five SVOC parameters and one metal that exceeded the FDEP SCTL for leachability based on freshwater surface water criteria. A site map showing the location of RA8 is included as **Figure 17**.

#### 3.3.1.4 Restoration Areas 9 & 10 (RA9/10)

RA9/10 is located together along the northeastern bank of Hogan's Creek between the Mathews Expressway and East Duval Street. The locations are adjacent to a Jacksonville Electric Authority (JEA) pond. The current owner of this property is the City of Jacksonville, and the surrounding use of this property is commercial. In 2003, the sediment and soil in this area were analyzed for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), Chlorinated Pesticides, Herbicides, Poly-

Existing Conditions

Chlorinated Biphenyls (PCBs), FL Petroleum range organics, and metals. There were many detections, but none that exceeded the Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Level (SCTL) for leachability based on freshwater surface criteria or residential soil. A site map showing the location of RA9/10 is included as **Figure 17**.



**Figure 17: Hazardous, Toxic & Radiological Waste Sampling Locations in 2003.**



### 3.4 CLIMATE

The climate in Jacksonville, FL is hot during the summer when temperatures tend to be in the 80's and mild during the winter when temperatures tend to be in the 60's. The warmest month of the year is July with an average maximum temperature of 90 degrees Fahrenheit. The coldest month of the year is January with an average minimum temperature of 50 degrees Fahrenheit. Temperature variations between night and day tend to be fairly limited during summer. There is a difference that can reach 18 degrees Fahrenheit, and moderate during winter with an average difference of 22 degrees Fahrenheit. The annual average precipitation in Jacksonville is 48.3 inches. Summer months tend to be wetter than winter months. The wettest month of the year is September with an average rainfall of 7.2 inches.

### 3.5 SALINITY

Salinity within Hogan's Creek ranges from completely fresh to the ambient lagoon salinity.

### 3.6 VEGETATION

Vegetation in all the marginal areas along the Creek consists of upland exotic and native species, many of them invasive "weeds." In order to foster native wetlands or uplands it would be necessary to grade down the existing lands, and remove contaminated soils.

### 3.7 INVERTEBRATES

The major freshwater invertebrates found within the project area, which are important prey items for wading birds, fish and mammals are crayfish (*Procambarus alleni*), arthropods such as (*Grandidierella bonnieroides*) as well as various annelid worms. Benthic invertebrates are important forage species for fish, young alligators (*alligator mississippiensis*) and wading birds, particularly white ibis (*Eudocimus albus*), great egrets (*Ardea alba*), and herons. Crayfish are especially adapted to slow moving waters of marshes and the alternating wet and dry seasons found in Florida.

### 3.8 FISH

The EPA Region IV conducted an Environmental Justice Tissue Assessment Report in May 2011. All samples of top predator (largemouth bass) and bottom-dweller (striped mullet) for Hogan Creek exceeded Screening Values (SVs) for dieldrin, total PCBs, PAHs for total benzo(a)pyrene equivalence, and dioxins. Additionally, all bottom-dweller samples exceeded SVs for technical chlordane, heptachlor epoxide, and inorganic arsenic. Top predator sample H-LMB3 exceeded the SV value for technical chlordane and sample H-LMB1 exceeded the SV for heptachlor epoxide. Based on these results the

EPA issued a Fish Advisory for Hogan's Creek and Long Branch. This greatly lessens the potential recreational fishing value of Creek margins.

### 3.9 AMPHIBIANS & REPTILES

These are some of the amphibian and reptile species that can be found in Hogan's Creek and the surrounding area:

- Southern toad (*Bufo terrestris*)
- Squirrel tree frog (*Hyla squirella*)
- Green tree frog (*Hyla cinerea*)
- Southern leopard frog (*Rana sphenoccephalus*)
- Red rat snake (*Elaphe guttata*)
- Yellow rat snake (*Elaphe obsoleta*)
- Southern black racer (*Colubrid constrictor*)
- Green anole (*Anolis carolinensis*)
- Florida softshell turtle (*Apalone ferox*)
- Florida chicken turtle (*Deirochelys reticularia*)
- Gopher tortoise (*Gopherus polyphemus*)
- American alligator (*Alligator mississippiensis*)

### 3.10 MAMMALS

Some of the land mammals that maybe found in the Hogan's Creek area are:

- Grey squirrels (*Sciurus carolinensis*)
- Raccoons (*Procyon lotor*)
- Opossum (*Didelphis virginiana*)
- Armadillos (*Dasypus novemcinctus*)
- River otters (*Lontra canadensis*)

A variety of small rodents, insectivores and bats may also be found in the surrounding area.

### 3.11 BIRDS

The following wetland birds are commonly spotted along Hogan's Creek:

- Double-crested cormorant (*Phalacrocorax auritus*)
- Anhinga (*Anhinga anhinga*)
- Great blue heron (*Ardea herodias*)
- Little blue heron (*Egretta caerulea*)
- Cattle egret (*Bubulcus ibis*)
- Great egret (*Casmerodius albus*)
- Snowy egret (*Egretta thula*)
- Tri-colored heron (*Hydranassa tricolor*)
- Glossy ibis (*Plegadis falcinellus*)

- White ibis (*Eudocimus albus*)
- Wood stork (*Mycteria americana*)
- Brown pelican (*Pelecanus occidentalis*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Belted kingfisher (*Megaceryle alcyon*)
- Osprey (*Pandion haliaetus*)
- Canada Geese (*Grus Canadensis*)

There are also a variety of passerine birds found throughout the uplands of the surrounding area.

### 3.12 THREATENED AND ENDANGERED SPECIES

Federally listed threatened and endangered species are species of plants and animals that have been identified as being susceptible to extinction due to varying causes including natural causes, habitat destruction, and the introduction of exotic species. In Florida, native species such as the Wood stork (*Mycteria americana*), the West Indian (Florida) manatee (*Trichechus manatus latirostris*), the Burrowing owl (*Athene cunicularia*) and the Florida panther (*Puma concolor coryi*), have suffered serious population reductions.

**Table 1** lists some of Duval County's endangered, threatened, species of special concern, and commercially exploited species by primary habitat. However, no endangered species or endangered species habitat has/have been identified along the Study area.

**Table 1. Endangered and Threatened Species in Duval County**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Status</b>
<u>Mammals</u>		
<i>Trichechus manatus latirostris</i>	West Indian manatee	E/CH
<u>Birds</u>		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	T
<i>Aphelocoma coerulescens</i>	Florida Scrub Jay	T
<i>Mycteria americana</i>	Wood Stork	E
<i>Picoides borealis</i>	Red-cockaded Woodpecker	E
<u>Reptiles</u>		
<i>Nerodia clarkia taeniata</i>	Atlantic Salt Marsh Snake	T
<i>Drymarchon corais couperi</i>	Eastern Indigo Snake	T
<u>Plants</u>		
<i>Warea carteri</i>	Calier's Mustard	E
<i>Dicerandra cornutissima</i>	Longspurred Mint	E
E-Endangered	T-Threatened	CH-Critical Habitat

Source: Florida Natural Areas Inventory [www.fnai.org](http://www.fnai.org)

Only the Wood Stork from **Table 1** is believed to occur occasionally within the project boundaries. Wood Storks have been casually and occasionally sighted throughout different urbanized areas of Jacksonville, and a wood stork colony is established on the grounds of the Jacksonville Zoo, several miles to the north.

It is improbable that the West Indian Manatee can enter the Creek mouth during most seasons due to the shallowness of the water and existing concrete debris that blocks most of the confluence of Hogan's creek and the St. Johns River. Bald eagles could occasionally be sighted within the project boundaries, but very little suitable perching or fishing habitat for this species is there. There are no known Bald Eagle nesting sites within the urbanized areas of Jacksonville. Bald Eagles typically travel only a range of 2-3 miles from any nesting site to forage.

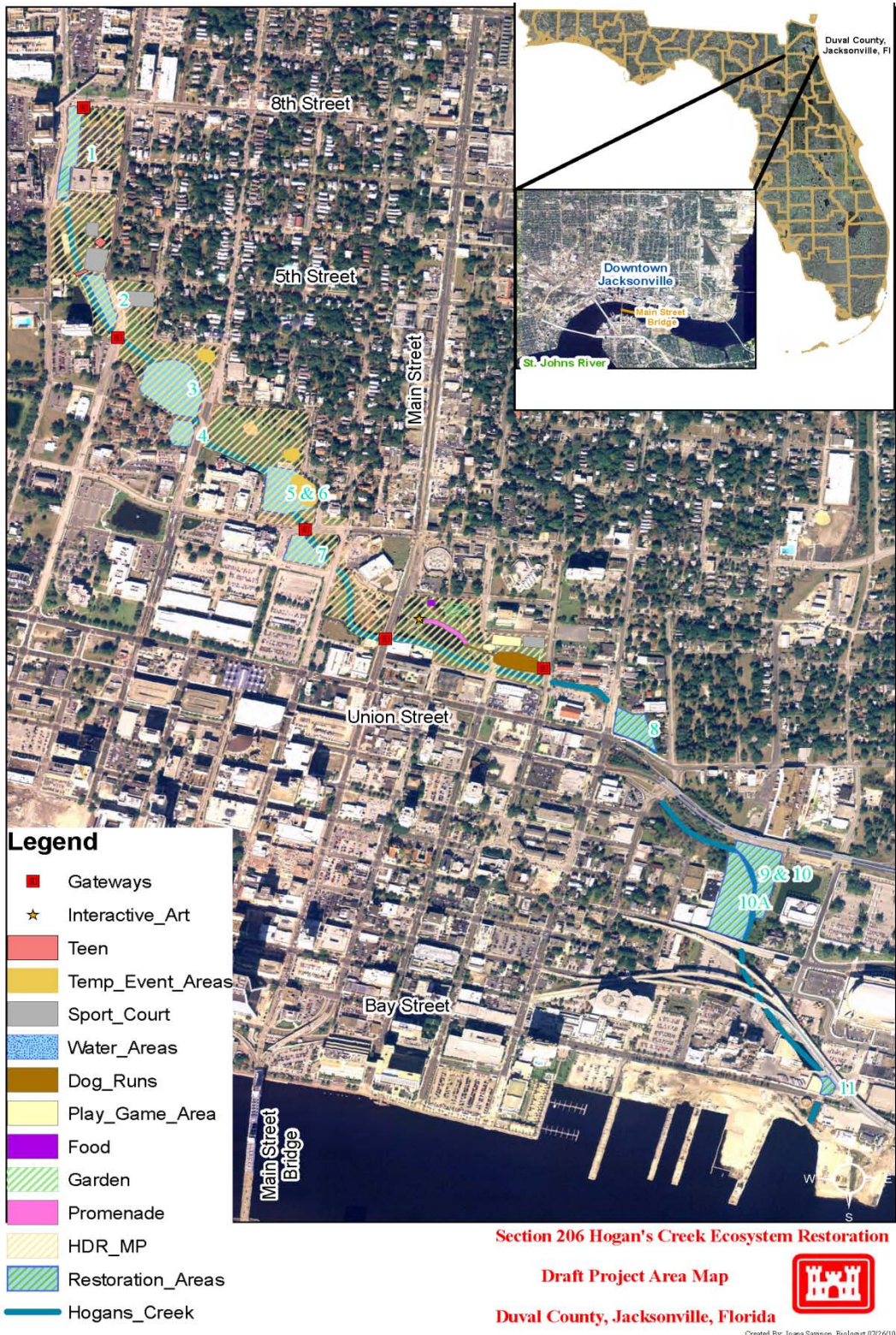
All the remaining species of birds, reptiles and plants listed in **Table 1** are not found within the project boundary.

### 3.12.1 Invasive Species

Nuisance and invasive species occur throughout the Hogan's Creek system along the creek shoreline. Typical invasive species located within project disturbed urban areas would be species such as: Hydrilla (*Hydrilla verticillata*), large leaf lantana (*Lantana Camara*), air potato vines (*Dioscora bulbifera*), and elephant ear (*Xanthosoma sagittifolium*).

### 3.12.2 Recreation/Navigation

Hogan's Creek is unfortunately a popular spot for fishing and wildlife viewing, in spite of the consumption advisories and sparse wildlife habitat. There are miles of trails along the banks of Hogan's Creek for hikers, joggers and bicyclists. Creek banks also serve as areas for temporary events, play/game areas, dog run areas and paved court areas for sports. Refer to **Figure 18**: recreational areas within the project boundaries.



**Figure 18: Recreational Areas within the Project Area.**

### 3.12.3 Aesthetics



**Figure 19: Historic Balustrades along Hogan’s Creek.**

Structural features, such as the balustrades shown in **Figure 19**, were added to the creek in the 1920’s by architect Henry Klutho and are considered historic resources and listed in the National Register of Historic Places. These historic resources are important to some in the community and any restoration efforts would need to avoid impacts to the extent possible.

### 3.13 SOCIOECONOMICS

The proposed restoration is somewhat unique among USACE projects because the project area is entirely contained within an urban space. The entire Hogan’s Creek study area is within the city limits of Jacksonville, Florida.

With an estimated population of 794,555, Jacksonville is the most populous city in Florida. Between 2000 and 2008, its population grew by 8.0% (Census 2008). On average, Jacksonville’s socioeconomic composition is comparable to the state of Florida. Jacksonville’s median household income is \$49,784, compared to \$47,802 for the state average (Census 2008). As of 2008, the percent of individuals living below the poverty line is 12.8%, compared to 12.6% for the state of Florida (Census 2008).

The city of Jacksonville has a diversified economy that includes: manufacturing, import/export operations (Jacksonville Port Authority), the construction industry, the transportation industry (including multiple airports and rail operations), and tourism. Three railway lines (CSX, Norfolk Southern and Florida East Coast) use Jacksonville as a

major hub, as do several trucking companies. With miles of beaches, several state parks, one National Preserve, and numerous freshwater and saltwater fishing opportunities, Jacksonville is a popular destination for tourists seeking recreation.

Henry J. Klutho Park (formerly known as Springfield Park) is located in the Springfield section of north Jacksonville. Most of the park and adjacent Boulevard were created along Hogan's Creek between 1899 and 1901, on land donated by a developer, the Springfield Company. The City's first zoo opened at the park in 1914, followed by the first municipal swimming pool in 1922. Founded in 1904, the Springfield Improvement Association & Woman's Club has steadfastly worked for the beautification of the park. The Hogan's Creek Improvement Project of 1929-30, designed by architect Henry Klutho (1873-1964) and engineered by Charles Imeson, turned much of the park grounds into a Venetian-style promenade. The City renamed a portion of Springfield Park in 1984 to honor Mr. Klutho, a Springfield resident whose high-rise buildings in downtown and Prairie School of architecture transformed Jacksonville after the Great Fire of 1901.

However, much of Hogan's Creek runs through low income areas of the city. The median household income in the project area is estimated to be between \$7,857 and \$9,551 per year (based on Census Tract data). This is substantially below the median for the city overall (\$49,784 per year), and well below Federal poverty guidelines. Much of the area around the creek is characterized by high rates of poverty and unemployment.

The creek is a major component of the Downtown Master Plan, an ambitious urban improvement plan. The plan was announced by the city of Jacksonville in 2000. Hogan's Creek was also the site of a previous urban improvement project. Between 1927 and 1929, the city completed a \$500,000 public works project that included bulkheads, bridges, sidewalks, and decorative balustrades (Ennis 2009). The effort was designed to transform Hogan's Creek into the city's "Grand Canal". But, by 2000, the structures had fallen into disrepair (Ennis 2009). Restoring Hogan's Creek therefore represents an opportunity for urban renewal as well as opportunity for ecosystem recreation.



#### 4 FUTURE WITHOUT PROJECT CONDITION

The “Future without Project” section forecasts anticipated conditions, consequences, and actions external to the project if the recommended alternative plans are not implemented. This condition is important to the evaluation and comparison of alternative plans and identifying the impact, both beneficial and adverse attributable to the proposed Federal actions. The “Future Without Project” condition is the same as the “No Action” alternative required by the Federal regulations implementing the *National Environmental Policy Act* of 1969 (*NEPA*). The No Action alternative for Hogan’s Creek is the selected alternative, until such time the project lands, creek banks and sediments have been decontaminated from the existing HTRW conditions by the non-Federal sponsor. The existence of early twentieth century ash deposit sites throughout the creek greatly limits its capacity for meaningful ecosystem restoration.

**Physical:** Continued urban pressures are expected in the project area. The Downtown Master Plan encourages redevelopment of under-utilized areas, so urban pressures may increase limiting future opportunities for ecosystem restoration. No changes are anticipated to the physical connection to the St Johns River. The stream flow will continue to be fed by urban storm water runoff and tidal influences.

**Environmental:** The environmental conditions of the study area will remain the same or slowly degrade. As future urban pressures influence the environment, remaining habitats could become further isolated from each other, limiting seed distribution and species migrations.

**Economic:** It is difficult to predict economic changes within the study area. While the City of Jacksonville is expected to increase in population, the study area may or may not increase in density. The Downtown Master Plan encourages redevelopment, so the area may benefit from the plan and more interest may be taken in caring for Hogan’s Creek. The whole Springfield area is undergoing something of a renaissance, with new residents coming in and many new and restored houses.

## **5 FORMULATION OF ALTERNATIVE PLANS**

### **5.1 PLAN FORMULATION RATIONALE**

This draft Detailed Project Report follows the guidelines of ER 1105-2-100, *Planning and Guidance Notebook*, dated 22 April 2000. As well as policy guidance ER 1105-2-100, Appendix F, *Continuing Authorities Program*, dated 31 January 2007 and South Atlantic Division (SAD) *Draft Program Management Plan for Continuing Authorities Program* dated June 2010. Alternative plans are a set of one or more management measures functioning together to address one or more planning objectives. The following sections describe the alternative plan formulation for this project.

Plan formulation approach: Each restoration area is a component, with a unique set of management measures to address the unique problems at that restoration area. All components are assumed to be separable elements.

### **5.2 MANAGEMENT MEASURES**

Management measures are the basis for alternative plan formulation. A management measure is a feature or activity that can be implemented at a specific location to address one or more of the planning objectives. These can be either structural or non-structural.

Using the combined efforts and expertise of both the USACE and sponsor interdisciplinary team, and input from environmental resource agencies such as the USFWS and the SJRWMD, five management measures were considered.

- Remove sediments from the streambed and dispose of them safely where they cannot continue to leach into the surrounding environment, including the Creek
- Remove exotic plant species
- Create wetlands
- Remove/remediate contaminated or HTRW materials within the study area

### **5.3 SEDIMENT REMOVAL MANAGEMENT MEASURE**

Sediment removal will ultimately benefit Hogan's Creek ecosystem by reducing turbidity, increasing water quality, and provide better fish and benthic habitat. This could be accomplished by mechanical removal, such as by excavator, of sediments to a depth or cross section similar to upstream portions of Hogan's Creek that are less impacted by sediments.

#### **5.4 EXOTIC SPECIES REMOVAL MANAGEMENT MEASURE**

Exotic plant species removal will benefit Hogan's Creek ecosystem by relieving resource competition for native and more desirable vegetation. It will increase plant community diversity and encourage wildlife usage through quality of habitat. Additionally, the overall aesthetic quality of the landscape will be improved by removal of "eye-sore" vegetation.

The presence of exotic and nuisance species are located within most areas of the project. The most prevalent nuisance species is cattail. It is estimated that a cumulative total of 40 acres throughout the entire project area will require professional treatment for successful eradication. Physical removal will be required for some areas, but chemical treatment may be needed in other areas or to prevent revegetation.

#### **5.5 CREATE WETLANDS MANAGEMENT MEASURE**

The creation of wetlands would benefit Hogan's Creek by establishing an ideal habitat for fish, wading birds and native wetland vegetation. The restoration areas identified would need grading, establishment of a hydrologic connection to Hogan's Creek and planting of wetland species. Creation of wetlands would also improve future sedimentation of the creek by providing a buffer from upland areas and may improve the water quality.

#### **5.6 REMOVE/REMEDiate CONTAMINATED OR HTRW MATERIALS MEASURE**

It has been determined from HTRW sampling and analysis of soil, sediment and surface water samples that a high level of HTRW contamination exists both on the lands adjacent to the creek and within the creek itself. Removal of the HTRW contamination would improve the habitat quality by preventing future leaching into the creek or intake by plants or animals. Removal can be quite extensive in nature, requiring a technical evaluation by a company experienced in this type of HTRW work. Possible removal of HTRW contamination to an offsite facility would require hauling, a dumping fee, and replacement with clean materials at the site. The work for this measure is the responsibility of the non-federal sponsor in accordance with USACE policy.

## **6 ALTERNATIVES DEVELOPMENT**

Typically this section would address the Project Alternatives and reflect both the benefits (Habitat Units (HU's)) and the monetary cost associated with each alternative, and the comparison of alternatives to each other and the Future without Alternative. However, due to the presence of HTRW contamination throughout the project area no alternatives were quantitatively analyzed. Based on Federal policy it is the responsibility of the non-federal sponsor (NFS) to perform HTRW remediation for the project area, prior to any further USACE quantitative Plan Formulation analysis for alternative benefits and costs.

## **7 EVALUATION AND EFFECTS OF ALTERNATIVES**

The following discussion highlights considerations for issues and benefits which may arise from construction and implementation of future alternatives, once HTRW remediation has occurred throughout the project area.

### **7.1 EVALUATION CONSIDERATIONS**

#### **7.1.1 Sustainability Considerations**

Sustainability is a significant consideration of this restoration project. If measures are not provided to ensure sustainability, benefits may be reduced or rendered ineffective.

#### **7.1.2 Vegetative Considerations**

Vegetative communities would be temporarily impacted by short-term exposure of soils and substrate. The use of mechanized equipment or manual laborers may cause unavoidable trampling of native vegetation and compacting of soils or substrate.

Removal of exotic vegetation may temporarily impact desirable native vegetation by equipment usage such as chainsaws and/or brush-cutters for removing woody invasive and undesirable species. Additionally, splash-over may occur from spray herbicide application to adjacent species. These temporary impacts would cease upon the completion of all restoration activities.

#### **7.1.3 Wildlife Considerations**

Wildlife and their activities may temporarily become displaced or disrupted during construction activities. An initial permanent impact to invertebrate benthic species may occur during dredging operations. Likewise, temporary disruption of fish activities may occur with dredging activities due to sediment suspension and removal of food sources.

Overall, the implementation of any future ecosystem improvements would benefit species of invertebrates, amphibians, reptiles, fish, birds, mammals. Restoration would provide additional food resources for foraging through increased diversity of native vegetation in the created wetlands. The upgraded water quality needed for benthic organisms to thrive would increase cover for protection from predators, as well as nesting and nurturing young.

Degraded water quality from sediment, nutrient and bacterial loading poses significant threat to the life processes of fish species and could further decline their population and usage of Hogan's Creek for spawning, breeding foraging, and growth. Restoration of

aquatic resources would promote and encourage increased fish productivity through improved habitat opportunities.

Restoration of existing and lost wetland systems would provide an opportunity to enhance suitable habitat for migratory birds including wading birds and water fowl. Restoring habitat would encourage more use and higher population expansion by these avian species.

Restoration of wetlands along Hogan's Creek would enhance habitat for mammals, thus creating additional opportunities for wildlife usage including nesting, foraging, cover, and nurturing young.

#### **7.1.4 Water Quality Considerations**

The implementation of any future ecosystem improvements would likely serve to enhance the pollution load abatement activities. Decreases in silt and other suspended solids in the water column would provide less substrate for the bacteria to adhere and spatial increase of all aquatic vegetation would likely improve nutrient uptake from the water column.

Correspondingly, the implementation of pollution load reduction activities would perhaps enhance the effectiveness of a future ecosystem restoration project. It would do so by reducing silt smothering of aquatic habitats and providing a more diverse aquatic fauna that can utilize the restored habitats.

#### **7.1.5 Aesthetics Considerations**

Construction activities, including dredging and creation of wetland habitat, would impose temporary impact to the aesthetic quality of the project site. The use of heavy machinery, vehicular access, and exposed soils and substrate during the restoration would impede the overall view of the creek and immediate adjacent lands. However, upon completion of the restoration, the aesthetic quality would be enhanced by the re-establishment of healthy, functioning wetland systems that contain native vegetation that is appropriate for the particular plant communities. As well as the removal of invasive, undesirable vegetation that currently is present in the area.

Furthermore, the created wetland system would encourage wildlife usage that will welcome more species, such as raptors, songbirds, waterfowl, shorebirds, and wading birds directly improving the aesthetic value of this area.

### **7.1.6 Noise Considerations**

Although an increase in noise may occur during construction activities associated with the project, these noise levels are anticipated to remain consistent with existing levels upon its completion.

### **7.1.7 Air Quality Considerations**

Project related temporary impact to ambient air quality may occur during construction activities. This would occur from the exhaust of heavy equipment, including a dredge boat and accompanying barges. This impact would cease upon completion of the activities and would not result in any long-term change to the ambient air quality as a result of this project.

## **8 COMPARISON OF ALTERNATIVE PLANS**

### **8.1 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE (HTRW) CONTAMINATION**

Per USACE policy, implementation of a project on lands known to contain HTRW materials cannot be recommended. Based on the following Federal Engineer Regulations (ER): ER1105-2-100, appendix “E”; ER1165-2-501; ER 1165-2-502 and ER 1165-2-132, it is the non-federal sponsor’s responsibility to complete removal or remediation of the lands.

A total of fourteen (14) sites were under consideration for ecosystem restoration. In 2003, ten (10) of the sites were sampled; six (6) were found to contain HTRW contamination. However, valid site chemical data can be no older than five (5) years. Another three (3) sites were not sampled, but are sited on or adjacent to known Ash remediation sites, which historically contain HTRW. As such, all sites considered for remediation either had contamination data that was too old or no sampling data at all. The team had narrowed down the number of possible remediation sites to four (4) based on project funding, and had the soil, sediment, and water at these sites re-sampled and analyzed in November 2010. The USACE contractor, AEROSTAR Environmental Services, Inc, conclusively showed that all five (5) sites do have HTRW contamination.

### **8.2 HABITAT EVALUATION METHOD TYPICALLY USED**

No quantitative benefit analysis was employed to assess the habitat value and function of Hogan’s Creek. Typically in a Section 206 project benefits are derived using habitat units based upon land use and plant communities collectively referred to as habitat types. Mapping of the stream system and surrounding land use was identified for the entire area within the project limits. Urbanized land use such as residential, commercial, industrial and roadways were eliminated from the process as these areas are not natural or native, and are excluded from any project-specific restoration activities. For each habitat type within the project limit, the spatial area (acreage) was determined using GIS (ESRI Arc View). The habitat types that would have been used for Hogan’s creek to estimate project benefits would have included:

- Streambed
- Wetland

The habitat quality rating (habitat value) of the individual habitat types targeted for restoration within the project area were evaluated on a scale of 0 to 1.0. With 1.0 being the highest potential for achieving the restoration objective evaluated. This evaluation is subjective and represents the best professional assessment provided by the expertise of Corps staff biologist/botanist. Habitat types found to be severely disturbed by urbanization, prior storm or fire events, minimal to no wildlife usage or fully encroached



by nuisance/invasive exotic vegetation typically found in the native plant community represent the lowest end of the scale with an assigned value of zero (0). Habitat areas of pristine native plant community consisting of no prior disturbance, absence of invasive/nuisance vegetation, high wildlife usage, and appropriate hydrology regime along with other performance factors, receive an assigned value index of one (1.0).

Realistically, a perfect score of 1.0 is unlikely to be found within an urban setting, and in fact, was not found to exist within this project area. Likewise, areas of extreme or recent disturbance were also not found within the project limits. Typically, habitat values fall within a moderate range from 0.3 to 0.8. This best represents recovery from prior disturbance of urban development, road fragmentation, storm or fire event damage, encroaching invasive exotic / nuisance vegetation, as well as limited wildlife usage and artificially adjusted hydrologic regime. Physical indications of these environmental factors were noted during site visits within the project area for each of the habitat types.

The habitat benefits are compared to the existing condition, the “no action” scenario, and the alternatives under consideration.

The focus of the habitat benefits are directed to the use of each habitat type by targeted wildlife. Such as manatee, fish, macro-invertebrate species, and migratory birds that could potentially occur in the project area. The purpose of the benefit analysis is to demonstrate that as restoration activities occur within each area of the project, measurable benefits will increase to the habitat types within the areas. The metric used to define the increase in benefits to each identified target is the habitat unit.

Habitat units are typically calculated within a Microsoft Excel spreadsheet by multiplying the habitat value by the spatial acreage of each habitat type within each alternative:

$$Hu = Hv * Ht$$

Where:

Hu = Habitat Unit

Hv = Habitat Quality Rating

Ht = Habitat Acres

For Hogan’s Creek two restoration activities were identified to provide benefit to those target species within the habitat types (i.e. fish, migratory birds, and macro-invertebrates). The restoration activities include removal of sediment via dredging, removal of exotic vegetation from an island, grading and planting with native plants. The assessment was based on observation of current streambed characteristics for this area, and the observed population density of exotic invasive vegetation on the island.

The product of each restoration activity within the project area demonstrates the lift to target benefits that will occur when compared to the existing condition or the “no-action” scenario. Incorporating the Habitat unit-based benefit analysis model into a cost analysis

or management measure matrix will identify “best value” alternatives to be considered for the project.

### 8.3 THE FINAL FOUR SCREENING CRITERIA

The final array of alternatives is compared using a variety of criteria. All alternatives would have been compared against one another for National Ecosystem Restoration, Environmental Quality, Regional Economic Development, and Other Social Effects. All alternatives would have been scored as to whether they solved, partially solved, or did not solve the problems, realized the opportunities, met project objectives, and avoided the constraints. Policy requires the use of four screening criteria in the screening and evaluation of alternative plans. The criteria are:

- *acceptability,*
- *completeness,*
- *effectiveness,*
- *efficiency*

**Acceptability** is the workability and viability of the alternative plan with respect to acceptance by State and local entities and the public and compatibility with existing laws, regulations, and public policies. One aspect of acceptability is whether the alternative is feasible or doable with regard to technical, environmental, economic, social, or similar reasons.

**Completeness** is the extent to which an alternative plan includes and accounts for all necessary investments or other actions to ensure the realization of the planned effects.

**Effectiveness** is the extent to which an alternative plan contributes to the attainment of the planning objectives (alleviates problems and achieves opportunities). The most effective alternatives make significant contributions to all of the planning objectives. Less effective alternatives make smaller contributions to one or more of the objectives. Effectiveness is a matter of degree rather than all or nothing.

**Efficiency** is the extent to which an alternative plan is the most cost-effective means of alleviating problems and realizing opportunities, consistent with protecting the Nation's environment. It is a measure of allocation of resources. Cost-effectiveness is one common measure of efficiency. Both monetary and non-monetary costs are considered. Opportunity costs are also considered.

In the case of Hogan’s Creek, no alternatives were formulated because this project has HTRW contamination through the project area and therefore does not meet the criteria of “Acceptability” based on its incompatibility with existing Federal policy regarding HTRW and the Section 206 program.

## **9 TENTATIVELY SELECTED PLAN**

Based on the screening criteria of “Acceptability”, the No Action Plan has been selected as the recommended plan. Based on the following Federal Engineer Regulations (ER): ER1105-2-100, appendix E; ER1165-2-501; ER 1165-2-502 and ER 1165-2-132, it is the non-federal sponsor’s responsibility to complete removal or remediation of HTRW from the sites. Therefore, USACE is not authorized to perform work under the Section 206 ecosystem restoration program until such time that the HTRW remediation has been accomplished by the non-federal sponsor.

## 10 RECOMMENDATION

The USACE, Jacksonville District recommends the No Action Plan. The Jacksonville District, has determined a lack of Federal interest in this project is the result of the presence of hazardous, toxic, and radioactive waste (HTRW) contamination throughout the project area. The City of Jacksonville may elect to obtain real estate ownership of certain parcels of lands within some of the identified project areas and conduct removal or remediation of the HTRW contamination. Further consideration could be given for a project at such time as all HTRW contamination remediation activities are completed.

Therefore, the Jacksonville District recommends “No further Federal Action”.

## 11 REFERENCES

AEROSTAR Environmental Services, Inc., Jacksonville, Florida. "Field Sampling and Laboratory Analysis of Surface Water and Soil/Sediment at Hogan's Creek for Adaptive Assessment," CTO Number:W912EP-08-D-0004; Delivery Order 12. Date of Final report: December 2010.

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Environmental Protection Agency. "Brownfield Assessment Pilot Project, Jacksonville Florida, Quick reference Fact Sheet," EPA-500-F-00265, December 2000.

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## 12 CONTRIBUTORS, PREPARERS, AND REVIEWERS

Barbara Cintron	USACE, Plan Formulation
Candida Bronson	USACE, Plan Formulation
Frank Fischer	USACE, Plan Formulation
Debbie Peterson	USACE, Plan Formulation
Mark Wolff	USACE, Plan Formulation
Alfred Walker	USACE, Plan Formulation
Joanna Savinon	USACE, Plan Formulation
Jessica McCaffrey	USACE, Plan Formulation
Robert M Dunne	USACE, Plan Formulation
Kathleen McConnell	USACE, Environmental
Patrick M. Griffin	USACE, Environmental
Colin Rawls	USACE, Economics
Kevin Wittmann	USACE, Economics
Max Millstein	USACE, Economics
Alex Hettinger	USACE, Economics (Formerly)
Nelson R Colon	USACE, Project Management
James Suggs	USACE, Project Management
Christyn Wiederholder	USACE, Engineering
Melissa Reynolds	USACE, Engineering
Stephen Dupries	USACE, Engineering
Ricardo P. Stallings	USACE, Engineering
Emmanuel J. Freeman	USACE, Real Estate

### 13 ACRONYMS

EPA	Environmental Protection Agency
ER	Engineer Regulation
FDEP	Florida Department of Environmental Protection
GIS	Geographic Information System
HTRW	Hazardous, Toxic and Radioactive Waste
HU	Habitat Unit
JEA	Jacksonville Electric Authority
NEPA	National Environmental Policy Act
NFS	Non-Federal Sponsor
PCB	Poly-Chlorinated Biphenyl
PL	Public Law
SAD	South Atlantic Division
SCTL	Soil Cleanup Target Level
SJRWMD	St. Johns River Water Management District
SVOC	Semi-Volatile Organic Compound
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compound
WRDA	Water Resource Development Act