



DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, JACKSONVILLE DISTRICT  
701 SAN MARCO BOULEVARD  
JACKSONVILLE, FLORIDA 32207-8915

JUNE 5, 2020

Regulatory Division  
West Permits Branch  
Fort Myers Permits Section

## ***PUBLIC NOTICE***

**DA Permit Application No. SAJ-2020-01626 (SP-KRD)**

**TO WHOM IT MAY CONCERN:** The Jacksonville District of the U.S. Army Corps of Engineers (Corps) has received an application for a Department of the Army (DA) permit pursuant to Section 404 of the Clean Water Act (33 U.S.C. §1344) as described below:

**APPLICANT:**

Gary McAlpin  
Collier County Government  
Coastal Zone Management Section  
Capital Project Planning, Impact Fees and Program Management Division  
2685 S. Horseshoe Drive, Unit 103  
Naples, Florida 34104

**WATERWAY AND LOCATION:** The project would affect waters of the United States associated with the Rookery Bay watershed. Activities will occur in the Picayune Strand State Forest. The water from the Golden Gate Canal will be discharged for rehydration purposes into the wetlands of the Picayune Strand State Forest. After passing through the forest and under US-41, the water will flow into the mangrove wetlands of upper Rookery Bay. The project site is a 25,000+/- acre area within the Picayune Strand State Forest and adjacent lands located immediately east of Naples, Collier County, Florida.

Directions to the site are as follows:

- To get to the North Belle Meade Flowway: Drive north on Collier Boulevard. Turn right onto City Gate Drive, just before the bridge over the Golden Gate Canal (GGC) and travel east about 1,000 ft. Turn left at the first opportunity onto a dirt road. Follow that road north to the canal and east along the canal for about 4,500 ft. The northern pump station for withdrawal of project water from GGC will be located at about this point. From the pump station, the proposed canal will be accessible either by a proposed road (by other developers) on the western side or by means of a continuous berm on the east side of the canal. To access the southern terminus of the North Belle Meade Flowway, head back down the dirt road to City Gate Drive, turn right, then take an immediate left onto White Lake Boulevard and continue for approximately 2 miles. The terminus of the flowway will be on the left.

- To get to the South Belle Meade Flowway: Drive south on Collier Boulevard past the I-75 interchange, turning right on Beck Boulevard. Travel east to the end of Beck Boulevard along a rough direct track along the south side of the I-75 stormwater ditch to reach the southern pump station. The South Belle Meade Flowway will be accessible by means of proposed berms constructed on either side of the flowway.
- To get to the Sanders Boulevard Property: Travel south on Collier Boulevard across the I-75 interchange about 4.5 miles to Sabal Palm Road. Turn right on Sabal Palm Road, continue for 3.7 miles, and then turn left onto Sanders Boulevard. Continue for approximately 0.5 mile to reach the southeast corner of the protection features.
- To get to the Pedestrian Path: Drive south on Collier Boulevard past the I-75 interchange and turn left onto Winding Cypress Boulevard. Continue approximately 0.6 miles and the southern end of the improved pedestrian path will be on the left side of the road.
- To get to the Southern Flowways: The Flowways around the Naples Reserve can be accessed via Naples Reserve Boulevard off of U.S. 41. The proposed flowways and proposed structures will be constructed within existing or proposed easements or right-of-way reservations, with sufficient travel ways available on one side for maintenance access. The southernmost point of the flowways, at intersection with US-41, can be accessed by traveling south of Collier Boulevard about 7 miles past the I-75 interchange to US-41. Turn left on US-41 and travel about 1.2 miles to reach the western edge of the southernmost project area.
- To get to the Flowway Extent: Travel south on Collier Boulevard across the I-75 interchange about 4.5 miles to Sabal Palm Road. Turn right on Sabal Palm Road. The general project rehydration area's western edge begins at least 1.5 miles east of the Collier Boulevard – Sabal Palm Road intersection.
- To get to the Receiving Waters: The receiving waters area may be reached by traveling South on Collier Boulevard about 3 miles past the intersection with US-41. Turn right on Fiddler's Creek Parkway or continue south on Collier Boulevard from that point to view the western side of the receiving waters area. The area may also be viewed from the Marco Island Executive airport development or by travelling about 5 miles southeast on US-41 from Collier Boulevard to Auto Ranch Road and following that road to its terminus.

#### **APPROXIMATE PROJECT COORDINATES:**

Project Area	Latitude (DD)	Longitude (DD)
North Belle Meade Flowway	26.1642780	-81.6638244
South Belle Meade Flowway	26.1453675	-81.6219517
Sanders Boulevard Property	26.1453675	-81.6219517
Pedestrian Path	26.0724406	-81.6834322
Southern Flowways	26.0493394	-81.6710719

## **PROJECT PURPOSE:**

Basic: Watershed restoration project.

Overall: Restoration of hydrologic conditions in the Picayune Strand State Forest and Rookery Bay watershed.

**EXISTING CONDITIONS:** The project evaluation area, about 22,000 acres, includes the western side of the Picayune Strand State Forest (PSSF) and other natural lands between the PSSF western boundary and the eastern edge of Naples, Florida. The main effects of the project will occur in approximately 9,000 acres identified as the Core Rehydration Area and Flowway Extent, dominated by four vegetation communities described by the Florida Land Use Cover and Classification Forms System (FLUCCS) as Cypress (FLUCCS 621), Cypress Pine Cabbage Palm (FLUCCS 624), Hydric Pine (FLUCCS 625), and Pine Flatwood (FLUCCS 411) (Table 1, Appendix 1: FLUCCS community acres by zone, percent FLUCCS communities by zone). Pine flatwoods are classified as uplands; all other dominant communities are wetlands. A similar community dominance occurs outside of the 9,000-acre main effects area.

The study area was once part of a much larger watershed extending well north of I-75. Development of the Golden Gate Estates subdivision and the associated network of canals, as well as the construction of I-75, cut off the northern third of the watershed. The runoff from that northern area was diverted into the Golden Gate Canal and other stormwater ditches and eventually drained to Naples Bay. The estuarine ecosystem within Naples Bay has been degraded by excessive freshwater inflows reducing salinities in the bay. The redirection of freshwater flows to the bay has dehydrated the area south of I-75, with attendant changes in vegetation communities and other ecosystem behaviors due to the changed hydrologic conditions.

**PROPOSED WORK:** The applicant seeks authorization to construct the Collier County Watershed Improvement Project (CWIP), which proposes restoration of hydrologic conditions of at least 9,000 acres of the wetland forest that was historically part of a much larger Rookery Bay Watershed draining from the north and will reduce freshwater flows to Naples Bay. The project will restore the hydrology of the natural area immediately east of Naples, between I-75 and US-41, by withdrawing water from the Golden Gate Canal (GGC) and diverting it to the Picayune Strand State Forest (PSSF). The project infrastructure will impact approximately 60 acres to construct the infrastructure necessary to move water from the GGC into the PSSF and to protect development adjacent to the general project area. Impacts will include approximately 35 acres of wetlands and surface waters associated with the excavation of new drainage canal systems, construction of weirs, underflow gates, culverts, spreader swales, and pump stations. Hydrologic enhancement of the freshwater wetlands within the core rehydration area and flowway extent resulting from the project will offset wetland impacts resulting from project construction. The project aims to restore some of the historic hydrology of the area without negatively affecting: on-site and off-site flood levels, landowners/private landowners within the project area, waters users of the GGC,



listed species and their habitat, water quality within the state forest, and other natural resources. See attached Project Overview and Permit Drawings for additional information.

See below for tabular accounting of fill volumes by project location and fill type:

Project Area	Excavated Native Sediments (CY)	Concrete (CY)
North Belle Meade Flowway	11,426.8	0.0
South Belle Meade Flowway	16,198.5	852.0
Sanders Boulevard Property	2,403.7	55.0
Pedestrian Path	0.0	0.0

Note: Native sediments will be excavated from the flowways and will supply the material for construction of berms, structure pads, roads, etc. Extra material (excavated but not used for other construction), will be disposed at offsite upland locations owned by Collier County. The concrete volumes represent the volume of fill in wetlands that result from the construction of the three pump stations (one each at the North Belle Meade Flowway, South Belle Meade Flowway, and the Sanders Boulevard Property), as well as the concrete weir structures that are part of the spreader swale at the southern end of the South Belle Meade Flowway.

The work in, on, or over wetlands associated with the project total is 34.992 acres (1,524,233 SF); below is a tabular breakdown of wetland impacts by project location. However, the project also anticipates the rehydration of approximately 9,000 acres of forested wetlands within the Picayune Strand State Forest that will mitigate the impacts.

Project Area	Acreage	Square Feet
North Belle Meade Flowway	5.748	250,388
South Belle Meade Flowway	16.477	717,749
Sanders Boulevard Property	2.541	110,674
Pedestrian Path	0.000	0
Southern Flowways	10.226	445,421
<i>TOTAL</i>	34.992	1,524,233

Intensive monitoring and an adaptive management plan using the monitoring data will allow the county to optimize the restoration over the long-term. Hydrologic restoration will not initially, or in the long-term, adversely affect the ecosystem, impinge on other water uses, or adversely affect developed properties bordering the project area.

Requests can be submitted to receive an electronic copy of the CWIP Supplemental Information Document (File Size: 28 MB) provided by the Applicant which includes:

- 1) Project Overview
- 2) Application Figures
- 3) Agency Coordination
- 4) Private Landowner Coordination
- 5) Hydrologic and Hydraulic Modeling Narrative
- 6) Vegetation Hydrology Effects Analysis
- 7) Natural Resources Assessment

- 8) Uniform Mitigation Assessment Method Summary
- 9) Florida Master Site File Search Results
- 10) Operations & Management Plan
- 11) Water Quality Analysis

**AVOIDANCE AND MINIMIZATION INFORMATION:** The applicant has provided the following information in support of efforts to avoid and/or minimize impacts to the aquatic environment: This project will enhance the hydrology of at least 9,000 acres of wetland forest that was historically part of a much larger Rookery Bay Watershed. Urban development and construction of I-75 cut off the northern third of the watershed, resulting in reduced freshwater flows to Rookery Bay and increased freshwater flows to Naples Bay (via the Golden Gate Canal). This project aims to restore some of the historic hydrology of the area without negatively affecting off-site flood levels, adjacent landowners/private landowners within the project area who wish to maintain control over their property, water users of the GGC, listed species and their habitats, water quality within the state forest, and other natural resources. The project will improve the quality of the wetlands of the Picayune Strand State Forest and adjacent areas and reduce the risk of damaging wildfires by slightly increasing wetland hydroperiods and dry season groundwater elevations. The county will avoid impacts to all non-public lands either by transfer of rights to the county, purchase, or protection. The necessary negotiations to ensure the welfare and property of others is underway and will be complete prior to construction.

**COMPENSATORY MITIGATION:** The applicant has provided the following explanation why compensatory mitigation should not be required: Project construction impacts a very small portion of the total project area of effect. Most species will avoid the construction area. Post-construction, the infrastructure will receive periodic, minimal maintenance. Habitat improvements to the total project effects area are expected to mitigate project impacts. Effects on uplands are minimal; most of the uplands in the general project evaluation area (22,000 acres) are outside the 9,000-acre main flowway extent, within which there are only small hydrologic changes. See Supplemental Information Attachment 5 and Supplemental Information Attachment 6 for discussion of proposed hydrologic changes.

**CULTURAL RESOURCES:** The Corps is aware of historic property/properties within or in close proximity of the permit area. The Corps will initiate consultation with the State Historic Preservation Office and those federally recognized tribes with concerns in Florida and the Permit Area, and the Advisory Council on Historic Preservation as applicable pursuant to 33 CFR 325, Appendix C and Section 106 of the National Historic Preservation Act, by separate letter.

**ENDANGERED SPECIES:** A report of listed species, consultation areas (CA), and/or designated critical habitat (DCH) for the project area was generated on May 12, 2020 via the Jacksonville District's Google Earth Resource at Risk (RAR) System layer.

Name of ESA listed species potentially present which are managed by the U.S. Fish and Wildlife Service (USFWS):

- American Crocodile (*Crocodylus acutus*) – CA
- Audubon's Crested Caracara (*Caracara cheriway*) - CA
- Eastern Indigo Snake (*Drymarchon corais couperi*)
- Everglade Snail Kite (*Rostrhamus sociabilis plumbeus*) - CA
- Florida bonneted bat (*Eumops floridanus*) – CA and Focal Areas
- Florida Panther (*Puma concolor coryi*) – Focus Area
- Florida Scrub Jay (*Aphelocoma coerulescens*) - CA
- Piping Plover (*Charadrius melodus*) - CA
- Red Cockaded Woodpecker (*Picoides borealis*) - CA
- Wood Stork (*Mycteria americana*) – CA, Core Foraging Area (CFA)

After a more in depth review of the application, the Corps will make the appropriate effect determinations for the listed species noted above and initiate the proper consultation requesting USFWS concurrence with our determination pursuant to Section 7 of the Endangered Species Act by separate letter.

**ESSENTIAL FISH HABITAT (EFH):** This notice initiates consultation with the National Marine Fisheries Service on EFH as required by the Magnuson-Stevens Fishery Conservation and Management Act 1996. The proposal would directly impact 35-acres of non-tidal wetlands and indirectly impact approximately 9,000+ acres of non-tidal forested wetlands, but with the intent of improved water quality to the Rookery Bay watershed from Golden Gate Canal south to Rookery Bay and surrounding mangrove wetlands. Our initial determination is that the proposed action would not have a substantial adverse impact on EFH or federally managed fisheries in the Rookery Bay watershed. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the National Marine Fisheries Service.

**NOTE:** This public notice is being issued based on information furnished by the applicant. This information has not been verified or evaluated to ensure compliance with laws and regulation governing the regulatory program. The jurisdictional line has not been verified by Corps personnel to date.

**AUTHORIZATION FROM OTHER AGENCIES:** Water Quality Certification may be required from the Florida Department of Environmental Protection and/or one of the state Water Management Districts.

**COMMENTS** regarding the potential authorization of the work proposed should be submitted in writing to the attention of the District Engineer through the Fort Myers Permits Section, 1520 Royal Palm Square Boulevard, Fort Myers, FL 33919 or preferably by email to [Katy.R.Damico@usace.army.mil](mailto:Katy.R.Damico@usace.army.mil) within 30 days from the date of this notice (i.e. July 6, 2020).

The decision whether to issue or deny this permit application will be based on the information received from this public notice and the evaluation of the probable impact to the associated wetlands. This is based on an analysis of the applicant's avoidance and minimization efforts for the project, as well as the compensatory mitigation proposed.

**QUESTIONS** concerning this application should be directed to the project manager, Katy Damico, in writing by U.S. Mail at the Fort Myers Permits Section, 1520 Royal Palm Square Blvd, Fort Myers, Florida 33919; or preferably by electronic mail at [Katy.R.Damico@usace.army.mil](mailto:Katy.R.Damico@usace.army.mil) or by telephone at (813) 769-7076 or (813) 467-6603.

**IMPACT ON NATURAL RESOURCES:** Coordination with U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (USEPA), the National Marine Fisheries Services (NMFS), and other Federal, State, and local agencies, environmental groups, and concerned citizens generally yields pertinent environmental information that is instrumental in determining the impact the proposed action will have on the natural resources of the area.

**EVALUATION:** The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including cumulative impacts thereof; among these are conservation, economics, aesthetics, general environmental concerns, wetlands, historical properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food, and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people. Evaluation of the impact of the activity on the public interest will also include application of the guidelines promulgated by the Administrator, EPA, under authority of Section 404(b) of the Clean Water Act or the criteria established under authority of Section 102(a) of the Marine Protection Research and Sanctuaries Act of 1972. A permit will be granted unless its issuance is found to be contrary to the public interest.

The US Army Corps of Engineers (Corps) is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other Interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this determination, comments are used to assess impacts to endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

**COASTAL ZONE MANAGEMENT CONSISTENCY:** In Florida, the State approval constitutes compliance with the approved Coastal Zone Management Plan. In Puerto

Rico, a Coastal Zone Management Consistency Concurrence is required from the Puerto Rico Planning Board. In the Virgin Islands, the Department of Planning and Natural Resources permit constitutes compliance with the Coastal Zone Management Plan.

**REQUEST FOR PUBLIC HEARING:** Any person may request a public hearing. The request must be submitted in writing to the District Engineer within the designated comment period of the notice and must state the specific reasons for requesting the public hearing.



**DEPARTMENT OF THE ARMY PERMIT APPLICATION**  
**APRIL 2020**

**COLLIER COUNTY**  
**COMPREHENSIVE WATERSHED IMPROVEMENT PLAN**  
**COLLIER COUNTY, FLORIDA**

**SUPPLEMENTAL INFORMATION**  
**ATTACHMENT 1**  
**PROJECT OVERVIEW**

## Supplemental Information Attachment 1 - CWIP Project Overview

### Project Purpose and Need

The Collier County Watershed Improvement Project (CWIP) proposes restoration of hydrologic conditions in the natural area immediately east of Naples, FL between I-75 and US-41 by withdrawing water from the Golden Gate Canal and diverting it to the Picayune Strand State forest (**Figure 1**). The study area was once part of a much larger watershed extending well north of I-75. Development of the Golden Gate Estates subdivision and the associated network of canals, as well as the construction of I-75, cut off the northern third of the watershed. The runoff from that northern area was diverted into the Golden Gate Canal (GGC) and other stormwater ditches and drained to Naples Bay. The estuarine ecosystem within Naples Bay has been degraded by excessive freshwater inflows reducing salinities in the bay. The redirection of freshwater flows to the bay has dehydrated of the area south of I-75, with attendant changes in vegetation communities and other ecosystem behaviors due to the changed hydrologic conditions.

Collier County now proposes to return a portion of that diverted water to the project area. Due to other permitted water uses of the GGC flows, development within the study area for recreational and some residential/commercial uses, bordering urbanization, and the importance the habitat area for listed species, especially the Red-Cockaded Woodpecker, Florida Panther and Bonneted Bat, Collier County proposes hydrologic restoration to the extent practicable, rather than restoration of any estimated or simulated pre-development hydrologic condition. Intensive monitoring and an adaptive management using the monitoring data will allow the county to optimize the restoration over the long-term. Hydrologic restoration will not initially or in the long-term adversely affect the ecosystem, impinge on other water uses, or adversely affect developed properties bordering the study area.

To develop the restoration project safely and appropriately over time, the project is designed with proposed rehydration schedules and volumes that will focus effects in approximately 9,000 acres of the western Picayune Strand State Forest (PSSF) east of Naples FL (**Figure 2: Core Rehydration Area and Flowway Extent**). Outside that area the project may increase hydroperiod, wet season average water elevation and dry season groundwater elevations to a much lesser extent or not at all.

Over time, analysis of data from the project monitoring system (now collecting baseline data) and formal adaptive management efforts with agency stakeholders will optimize the restoration. Landscape boundaries of the hydration area that limit the scope of the rehydration efforts include the I-75 corridor to the north, and city of Naples development to the west. To the south, the 6Ls Agricultural Area creates a boundary to project effects. To the east, the SFWMD CERP (Comprehensive Everglades Restoration Program) Picayune Strand Forest Restoration Project (PSRP) creates a hydrologic condition that the CWIP accounts for in evaluation of project effects in order to avoid negative hydrologic impacts. In addition, protection of private properties within the project area also provides a restraint on hydrologic restoration. The total assessment area within those boundaries includes about 22,000 acres.

## Project Description

Water will be diverted from the Golden Gate Canal through pumps located upstream of the GG-3 weir (**Figure 1**). Based on a GG-3 flow duration analysis and permitted water diversions from the canal, the project proposes to divert 100 CFS when the discharge through the structure exceeds 450 CFS (~55 days/year) and 50 CFS when the discharge is between 200 CFS and 450 CFS (~83 days/year). Diversions will occur most often during the wet season. However, sufficient water may also be available during the early dry season to allow for smaller (i.e. 50 CFS) diversions. The diverted water will flow southwards via a proposed ditch that discharges water directly into the I-75 north canal. An operable gate structure is proposed on the I-75 north canal to force water to move eastwards and hence restrict discharge into Henderson Creek. The water will continue to flow south into the I-75 south canal through existing culverts under I-75, where it will be pumped into a proposed flow-way located south of the canal, which will serve as an in-line water treatment facility providing sufficient settlement of solids to treat runoff from I-75. The spreader swale will have fixed weirs that both control water elevations within the entire flow-way system as well as release water into the Picayune Strand State Forest as sheet flow. Once released into the forest, the flow of water is driven by forest topography which slopes gradually from northeast to southwest. After infiltration and evapotranspiration losses, the remaining water will reach the southwest end of the forest where a collector ditch will receive the majority of the water near the eastern edge of Naples Reserve subdivision. The flow will be routed around the residential developments by means of proposed canals and will be discharged into the U.S. 41 north canal. A small portion of the forest water will continue to flow southwest as gravity sheet flow under Winding Cypress Drive and will also discharge into the U.S. 41 north canal. From here, the water will continue to flow south under Tamiami Trail (U.S. 41) through existing culverts into the U.S. 41 south canal. The water will then continue south and will be routed through the Fiddler's Creek residential developments using two existing canals, both of which discharge into a linear lake bordering the southern boundary of the Fiddler's Creek residential developments. The water will spill over the southern bank of the lake into wetlands fringing Rookery Bay as sheet flow. The sheet flow will continue to flow south and southwest towards Rookery Bay. A small fraction of the flow will make its way westwards towards Henderson Creek under existing S.R. 951 culverts. The reader is referred to **Supplemental Information Attachment 5 Hydrologic and Hydraulic Modeling** section 2.2.1.2 for details of the project drainage system and design details. The **Permit Drawings** detail all of the infrastructure components.

The project infrastructure will impact about 60 acres, including approximately 35 acres of wetlands and surface waters. Hydrologic enhancement of the freshwater wetlands within the core rehydration area and flowway extent resulting from the project will offset wetland impacts resulting from project construction.

### *On-site and Off-site Flooding Impacts*

Flooding impacts of the proposed project to on-site and off-site canals and residential developments have been evaluated for 100-year and 25-year design storms. Simulated water levels in current and with-project conditions were compared for each design storm. Maximum water levels were compared with bank elevations of canals and/or lowest designed pavement elevations in residential developments. The project does not cause any adverse impacts on water levels in the major canals

included in the drainage system, such as I-75, Henderson and Tamiami canals. A separate report on water level impacts in the canals maintained by FDOT has been submitted to FDOT for their concurrence. Similarly, the project will not cause adverse impacts on water levels in residential developments included in or adjacent to the drainage system, such as Naples Reserve, Fiddler's Creek, SixL's Agricultural Area and Winding Cypress. The reader is referred to **Supplemental Information Attachment 5 Hydrologic and Hydraulic Modeling** Section 3 for details on the design storm analysis.

#### *Picayune Strand State Forest Private Property Ownership*

A total of 95 private parcels have been identified in the Picayune Strand State Forest that are located inside the project effects area. The county is working to acquire the property rights necessary to rehydrate these areas, in the form of flowage easements or equivalent legal instruments. As an inducement for private property owners within the primary and secondary flowway to execute a flowage easement, a Transfer of Development Right (TDR) bonus credit has been conceptually approved by the Board of County Commissioners, in addition to any TDR credits already available on these "sending lands". A TDR credit is a credit that represents the ability to add one unit of density in an area identified by the County as appropriate for higher density. Such an area is called a Receiving Area. Owners of property in Receiving Areas will, over a period of time, make plans to develop their properties at higher densities. In order to do so, they will need TDR credits. TDR credits can be bought and sold, and so their value fluctuates with the market. The County is in the process of drafting a formal amendment to their Growth Management Plan to accommodate the proposed TDR incentives.

Within the project effects area at least three properties will remain in private ownership. These properties will be protected by means of a berm, ditch and pump system designed to maintain current levels of flood protection on these properties (**Permit Drawings: Figure 10 Sanders Blvd Protection Feature**).

#### Project Operations

Pumped diversion rates were established through hydrologic and hydraulic modeling of water availability in the Golden Gate Canal, in combination with an analysis of downstream effects on hydrology, vegetation, and infrastructure (Refer to **Supplemental Information Attachment 5 Hydrologic and Hydraulic Modeling**). The proposed pumped diversion rates are 100 cfs whenever flows in the GGC (in the vicinity of GG3 control structure) exceed 450 cfs, and 50 cfs whenever the flow is between 200 cfs and 450 cfs.

Pump operations will be tied to observations of headwater elevation (HW), tailwater elevation (TW), and gate position (GP) at the GG3 structure. The SFWMD has developed rating formulas that relate these three levels to discharge rates through the structure. When the combination of levels indicates that the discharge through GG3 exceeds 200 cfs, pumping from the GGC into the northern flowway will begin at a rate of 50 cfs. Because the pump station will be located upstream of GG3, the discharge through GG3 will be reduced by 50 cfs.

When the combination of levels indicates that discharges through the GG3 structure exceed 400 cfs (i.e., a total GGC flow of 450 cfs including the 50 cfs pumped diversion), the pumping rate will be increased by an additional 50 cfs, for a total pumped diversion of 100 cfs. When the discharge rate through



GG3 drops below 350 cfs, the pumping rate will fall back to 50 cfs. When the discharge through GG3 drops below 150 cfs, the pumps will be turned off.

Pumps will be shut off when any of the following occurs:

1. The 72-hour rainfall forecasts anywhere in the project area exceeds 5 inches of rainfall. Rainfall forecasts are published daily at: <https://www.wpc.ncep.noaa.gov/qpf/day1-3.shtml> and at <https://www.sfwmd.gov/weather-radar/sfwmd-forecast>. The 5-inch depth is approximately one-half of the 3-Day, 10-year rainfall per the SFWMD ERP Basis of Review.
2. High water levels in the CWIP effect area are observed that may result in negative impacts to infrastructure.
3. Flooding conditions are observed in any of the developed areas downstream of the I-75 pump station, including Sabal Palm Road (West of triple G Loop).

An operable underflow/sluice gate will be built in the I-75 North Canal just west of the junction between the North Belle Meade Flowway and the I-75 North Canal. The purpose of the gate is to keep pumped CWIP water from flowing westwards into the Henderson Creek Canal. The operable gate will be designed to close partially on days when CCWIP discharge is being pumped into I-75 North Canal and will ensure uninterrupted and unobstructed flows for the rest of the days when pumps are off. Approximately 30 minutes after the commencement of pumping into the northern flowway, the gate will be partially closed, to a level of approximately 0.6 feet above the sill elevation. When pumping stops, the gate will be fully opened (following a 30 minute lag) and will remain fully open until pumps are re-started.

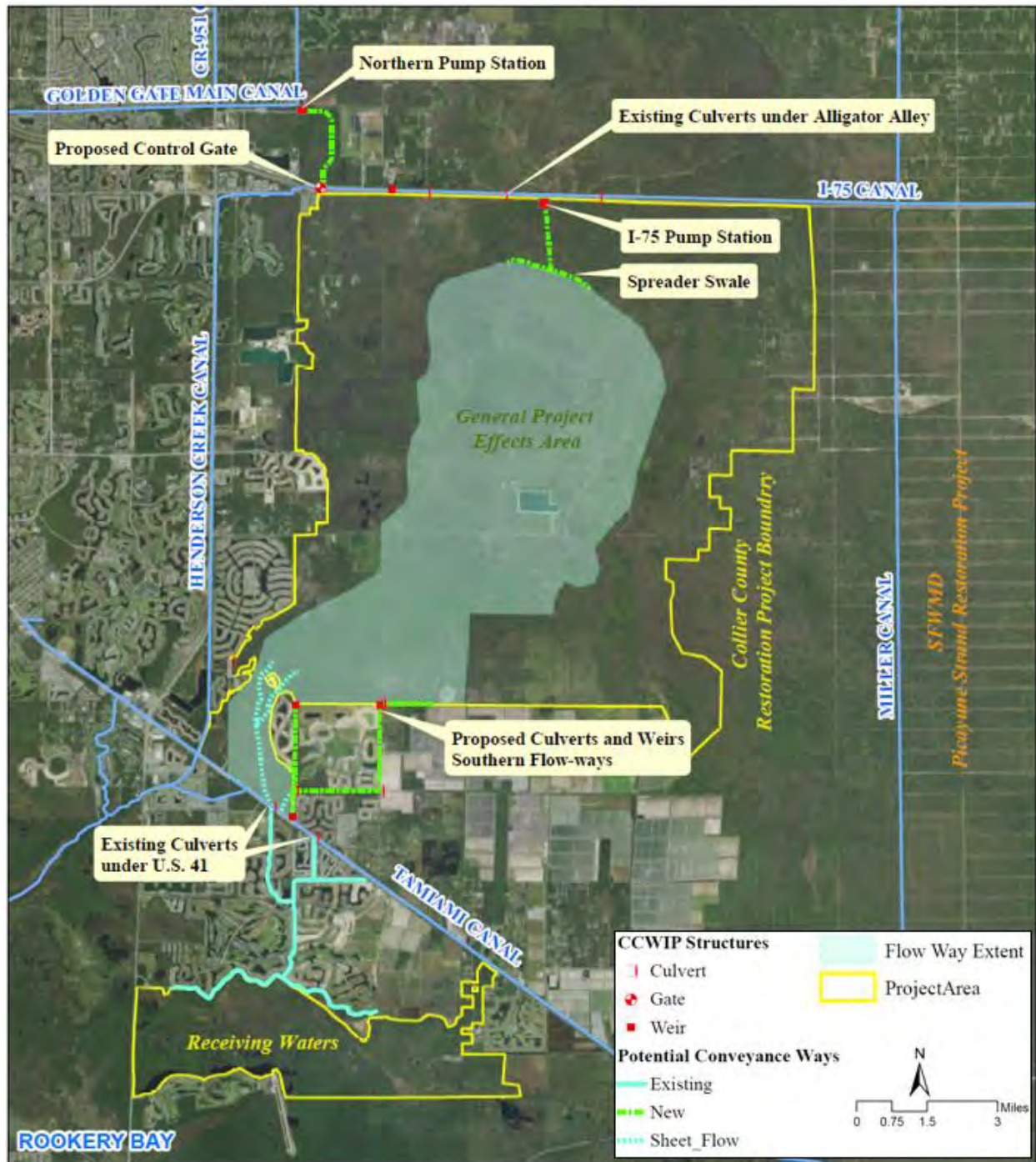
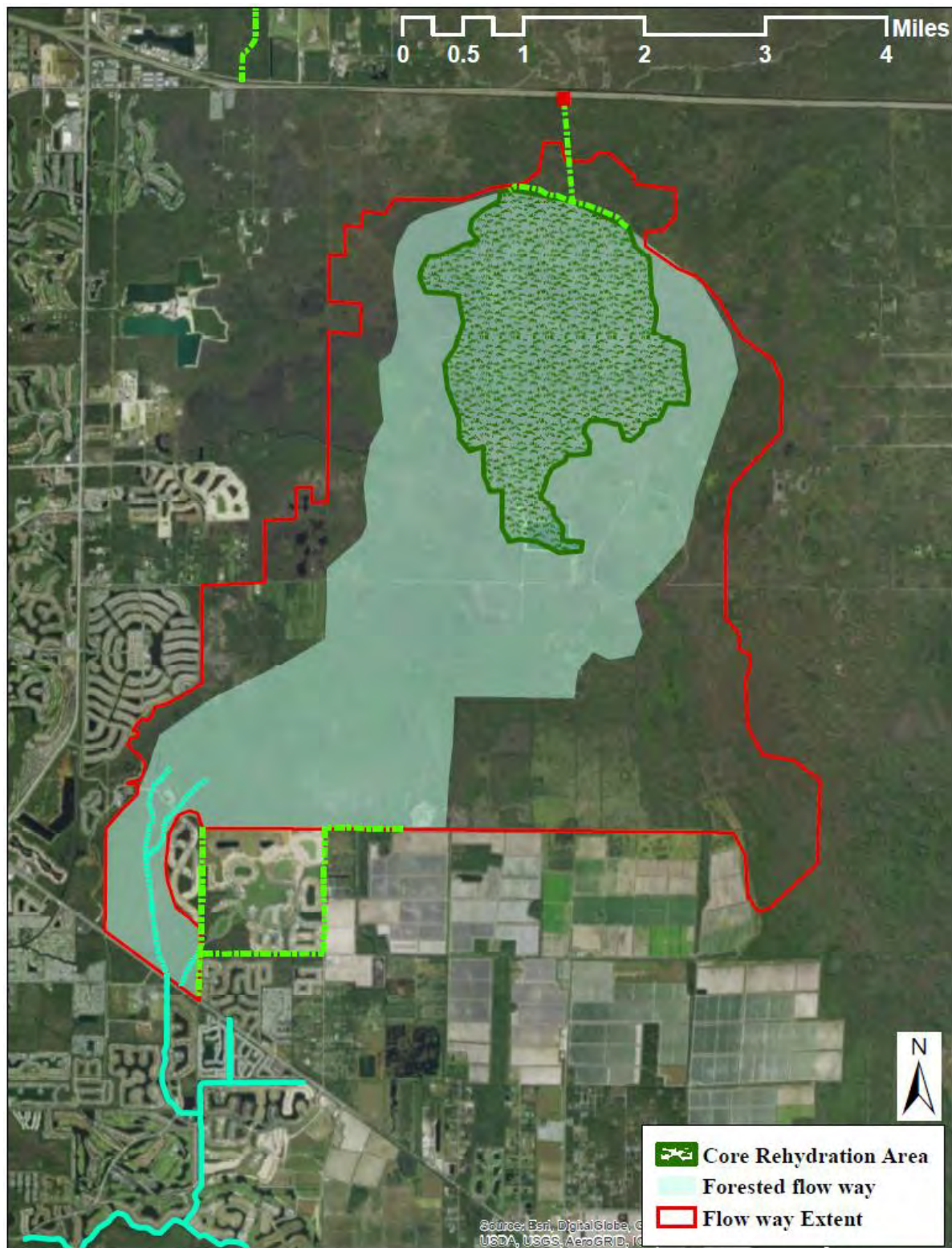


Figure 1. CWIP Restoration Project Overview





**Figure 2.** CWIP General Project Effects Area, about 9,000 acres.

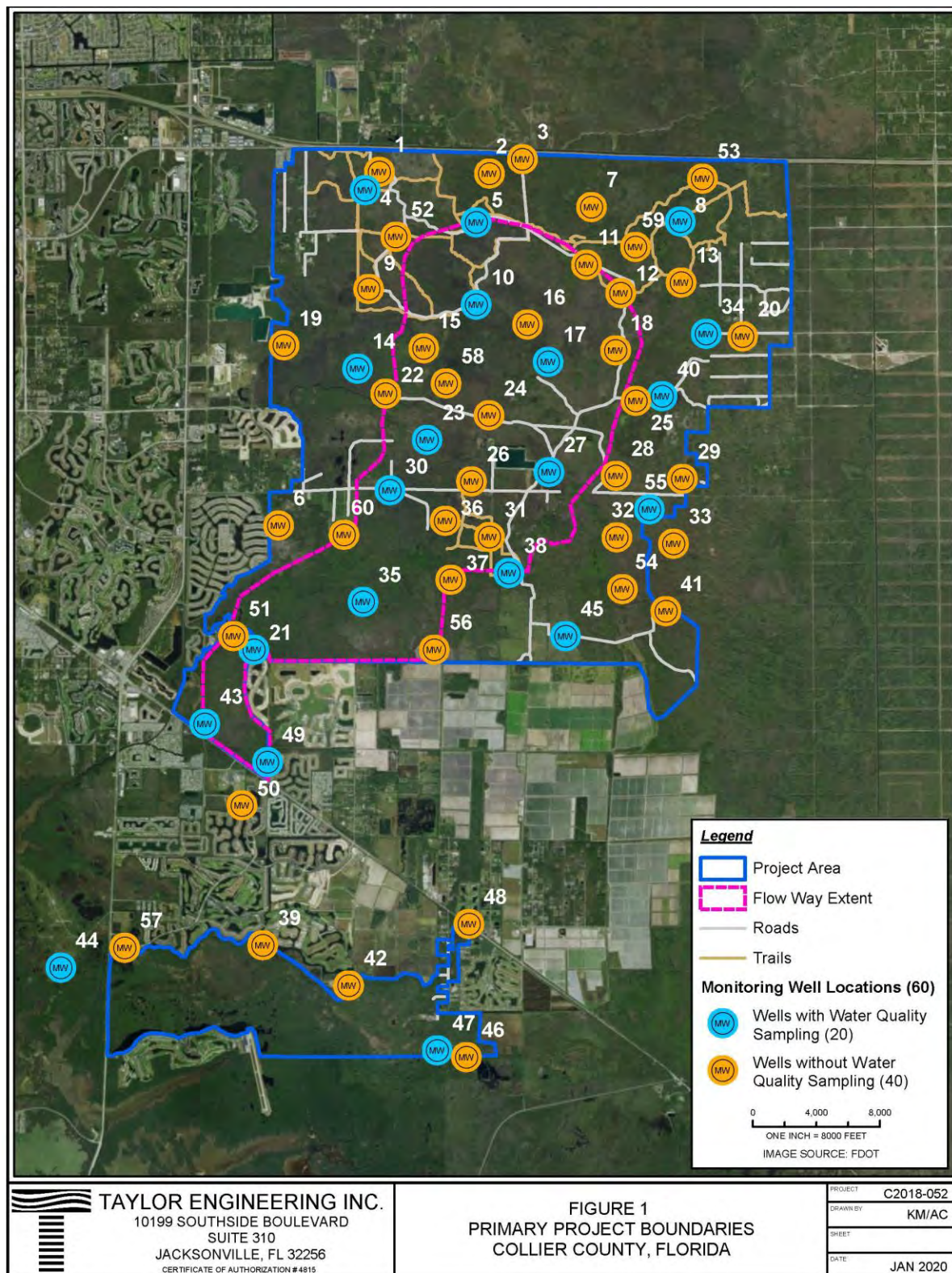
## Monitoring Plan

Collier County has defined a monitoring plan, installed a monitoring system (Figure 3), and is currently collecting background information from that system.

The basic monitoring system is described in **Supplemental Information Attachment 10** and shown in **Figure 3**. Sixty shallow wells (**Figure 3**) were installed to a target depth of approximately four (4) feet below grade surface or until refusal occurred. Hobo MX2001 water level loggers were installed to record water depths at four (4) hour intervals and is downloaded quarterly. Water quality data is collected during each download event at 20 of the wells (**Figure 3**). At each well location, beginning with well installation in the late spring and summer of 2019, transect and plot vegetation data, along with site photographs are recorded annually. The vegetation sampling plan includes groundcover, mid-story, and canopy species measurements to allow understanding of both short-term and long-term vegetation community responses and allow consideration of conditions important to key plant and animal species. The pre-construction data collection period will provide the baseline information that will allow validation of the hydrologic simulation model and if appropriate modification of the model parameters to best simulate the existing conditions. During project operation, the collected data will support validation of the model (with modifications if appropriate) and allow adaptive management to provide the long-term best project execution of the project.

While the hydrologic response is rapid, the vegetation response will occur over a period of years. The baseline and operation period annual data will be compared for change beginning after a full year of operation and collection of the first annual operating period vegetation data.





**Figure 3.** CWIP Hydrologic, Water Quality, and Vegetation Monitoring Stations (Stations with Water quality monitoring are in blue)

## Adaptive Management Plan

### Introduction

The CWIP project has the goals of enhancing hydrologic conditions in the PSSF project area and decreasing freshwater flows to Naples Bay, without creating significant environmental impacts. The operational plan for withdrawing water from Golden Gate Canal and discharging it into the PSSF provides the basis to achieve the project goals. However, the operational plans are based on model results; once the project begins operating and data from the monitoring system are collected and analyzed, those plans can be adjusted to refine the operations to better meet the goals. This approach is the heart of the adaptive management plan for the CWIP.

For the CWIP, adaptive management intends to improve project operations to better meet project goals: to improve habitats in general (Picayune Strand State Forest, Naples Bay, and Rookery Bay wetlands) and habitat for listed and managed species, to protect and enhance human activity (e.g., recreation in the state forest), and to protect existing infrastructure. While led by Collier County, other project stakeholders, with key roles in conceiving, developing, and implementing the project have a significant role in the adaptive management process. Those stakeholders include at least the following: Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, Florida Forestry Service, Rookery Bay National Estuarine Research Reserve, South Florida Water Management District, US Fish and Wildlife Service, and United States Army Corps of Engineers, and the citizens of the state of Florida.

### Short Term and Long-Term Adaptive Management Plan

Collier County has divided the adaptive management process into short-term and long-term actions. Using the monitoring data, Collier County will alter short-term and long-term operational plans to enhance the project performance. The current plans, based on hydrologic simulations, identify pump activation and pumping rates based on GGC flow rates. The plans also call for shutting down the pumps when high rainfall is forecast or high-water levels in the CWIP effect area are observed that may result in negative impacts to infrastructure (see Operational Plans summary above and **Supplemental Information Attachment 10**). The monitoring data will allow evaluation of the performance the project using the GGC flow values and allow the county to identify changes to those plans to maintain or enhance target hydrologic conditions without impacting development (roads, houses, private property, etc.). It may be possible to assess the effects of short-term operations as soon as one full quarter of data collection after the operational events occur. This will mainly involve storm-associated shutdown values; longer term datasets (at least a year period) will be necessary to begin to assess overall project performance and identify any long-term pumping changes.

The current plans will be provisionally revised as the environmental data that reflect the results of the operational plans are analyzed. Some decisions may be made quickly, for instance if the storm-related pump shutdown is assessed to have been planned to occur too close to the expected event. Longer-term, as annual operational data become available, Collier County will be able to assess and adjust the seasonal operations.

As soon as sufficient data are available to assess the effects of short-term events (e.g. hurricanes or droughts) Collier County will assess whether the operational plan was appropriate and effective. As

necessary, the county will identify necessary changes in the operation plans for better project performance and inform the project stakeholders of any recommended changes. As necessary, the county will hold workshops to present the data and change recommendations.

Once the project begins operating, Collier County will hold an annual Adaptive management Plan Review with key stakeholders to present analysis of project performance and obtain consensus for significant changes to the operational plans. The county will release an annual project report and hold annual technical workshops to present the prior year project performance, compare of predicted and actual project performance, and obtain consensus on desirable changes to the operational plan.

#### Red-Cockaded Woodpecker Habitat Adaptive Management Plan Component

The Red-Cockaded Woodpecker (RCW) population in the project area is a very important natural resource to which the project cannot cause adverse impacts. Benefits to the population by improving the habitat of that species is not a project goal but would certainly be appreciated by the county and all the project stakeholders. Beneficial vegetation changes would probably not be measurable for a number of years. However, hydrologic data can provide evidence of impact avoidance on an annual basis. Therefore, annual evaluation of hydroperiod and water elevations at monitoring locations already identified in the Red Cockaded Woodpecker analyses presented in **Supplemental Information Attachment 7**, Appendix 4, will provide a basis for assessment of project performance and allow development of recommendations to ensure continued avoidance of impacts to RCW. Changes to the monitoring plans based on the monitoring RCW area hydrologic monitoring results will be considered annually. The expert RCW stakeholders (Florida Forestry Service, Florida Fish and Wildlife Conservation Commission, and the US Fish and Wildlife Service) will form a subgroup focused on project performance considering the RCW. The analysis results may also support the goals and objectives of the agencies responsible for RCW recovery.

#### Adaptive Management Plan Summary

The Collier County CWIP Adaptive Management Plan includes the following components

- Intensive hydrologic, water quality, and vegetation community data collection and analysis.
- Ongoing review and analysis as needed to assess the performance of key short-term operational and identify immediately necessary plan changes.
- Annual assessment of project performance compared to predicted performance, project objectives, and project goals.
- Based on short-term and long-term performance, adjustment of the operation plans to provide best possible project performance.
- Ongoing informal and annual formal coordination with key stakeholders to maintain their understanding of the project performance and consensus for necessary and beneficial changes to project operations.
- The annual project performance evaluation will include a separate evaluation focus on the Red Cockaded Woodpecker habitat hydrology, based on the baseline RCW habitat hydrology assessment provided as part of the project permit package. A stakeholder expert group will work with Collier County on this evaluation and any recommendations for changes to better ensure RCW habitat impact avoidance.

**DEPARTMENT OF THE ARMY PERMIT APPLICATION**  
**APRIL 2020**

**COLLIER COUNTY**  
**COMPREHENSIVE WATERSHED IMPROVEMENT PLAN**  
**COLLIER COUNTY, FLORIDA**

**PERMIT DRAWINGS**



# CONCEPTUAL PLANS FOR THE COLLIER COUNTY COMPREHENSIVE WATERSHED IMPROVEMENT PLAN COLLIER COUNTY, FLORIDA



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FIG 2	PROJECT OVERVIEW
FIG 3	NORTH BELLE MEADE FLOW-WAY PLAN
FIG 4	NORTH BELLE MEADE FLOW-WAY PUMP STATION PLAN
FIG 5	NORTH BELLE MEADE FLOW-WAY DISCHARGE PLAN
FIG 6	NORTH BELLE MEAD FLOW-WAY TYPICAL CROSS-SECTIONS
FIG 7	INTERSTATE 75 CANALS IMPROVEMENT PLAN
FIG 8	SOUTH BELLE MEADE FLOW-WAY AND SPREADER PLAN AND TYPICAL SECTIONS
FIG 9	SOUTH BELLE MEADE FLOW-WAY PUMP STATION PLAN
FIG 10	SANDERS PROPERTY
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FIG 13	NAPLES RESERVE FLOW-WAY #1 CROSS-SECTIONS
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FIG 15	WEIR DETAILS



VICINITY MAP  
1"= 8 MILES

REFERENCE:  
ESRI STREET MAP

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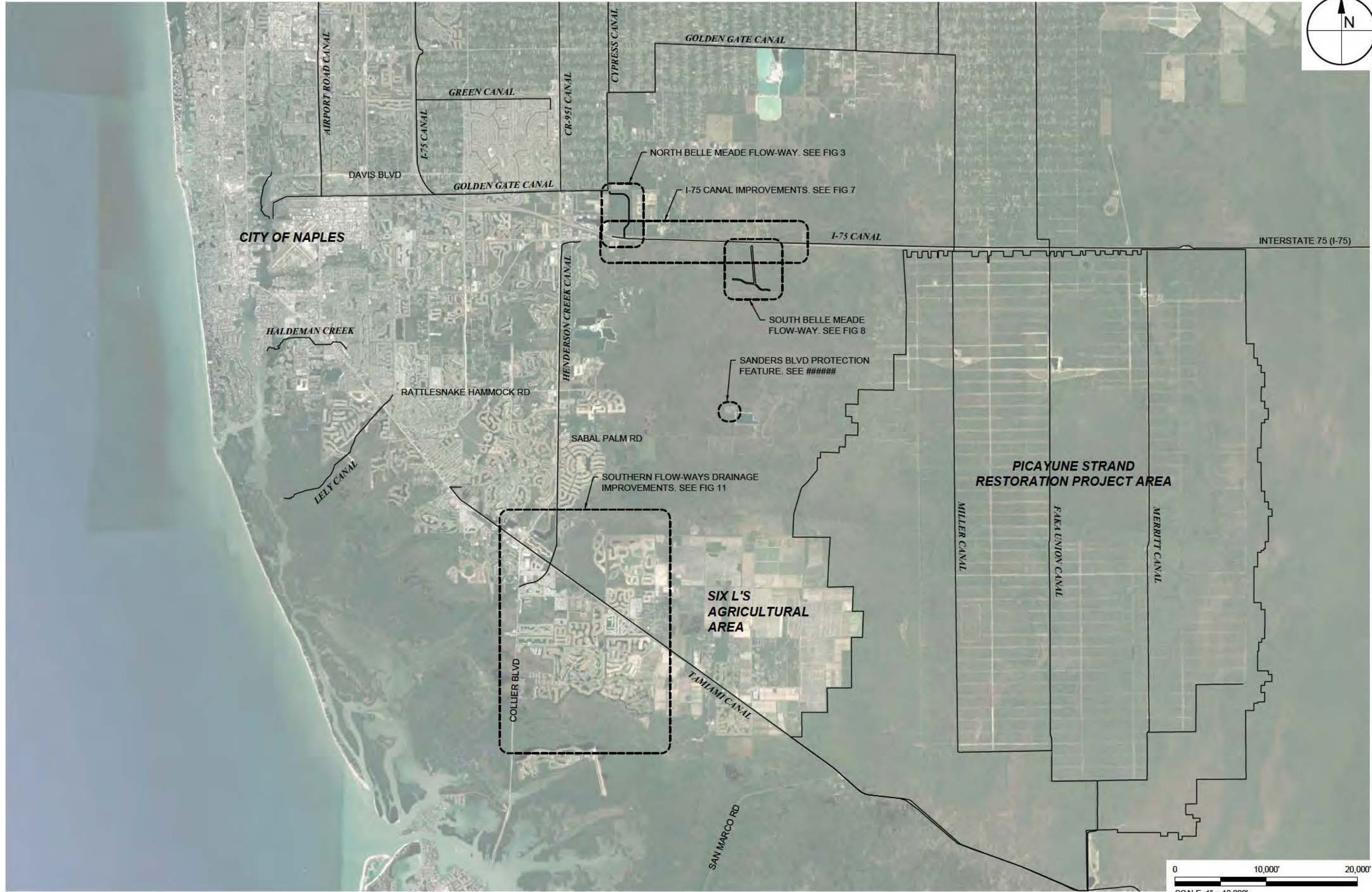
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**FIGURE 2**  
**PROJECT OVERVIEW**  
**COMPREHENSIVE WATERSHED IMPROVEMENT PLAN**  
**COLLIER COUNTY, FLORIDA**

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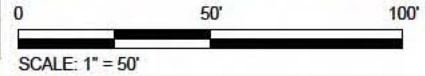
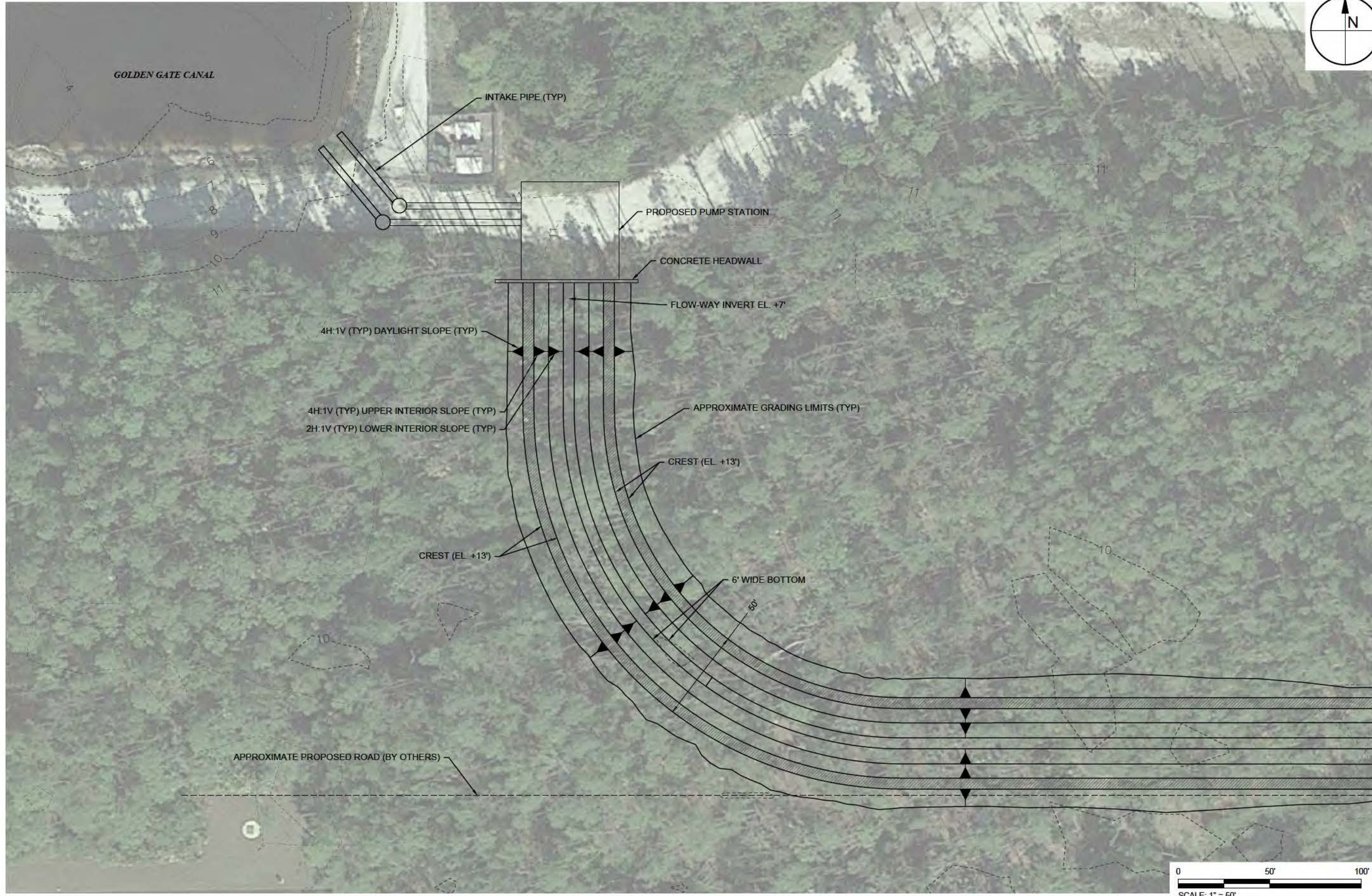


	<b>TAYLOR ENGINEERING INC.</b> 10199 SOUTHSIDE BLVD SUITE 310 JACKSONVILLE, FLORIDA 32256 REGISTRY # 4815			
	<b>FIGURE 3</b> NORTH BELLE MEADE FLOW-WAY PLAN COMPREHENSIVE WATERSHED IMPROVEMENT PLAN COLLIER COUNTY, FLORIDA			
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**FIGURE 4**  
NORTH BELLE MEADE FLOW-WAY PUMP STATION PLAN  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA

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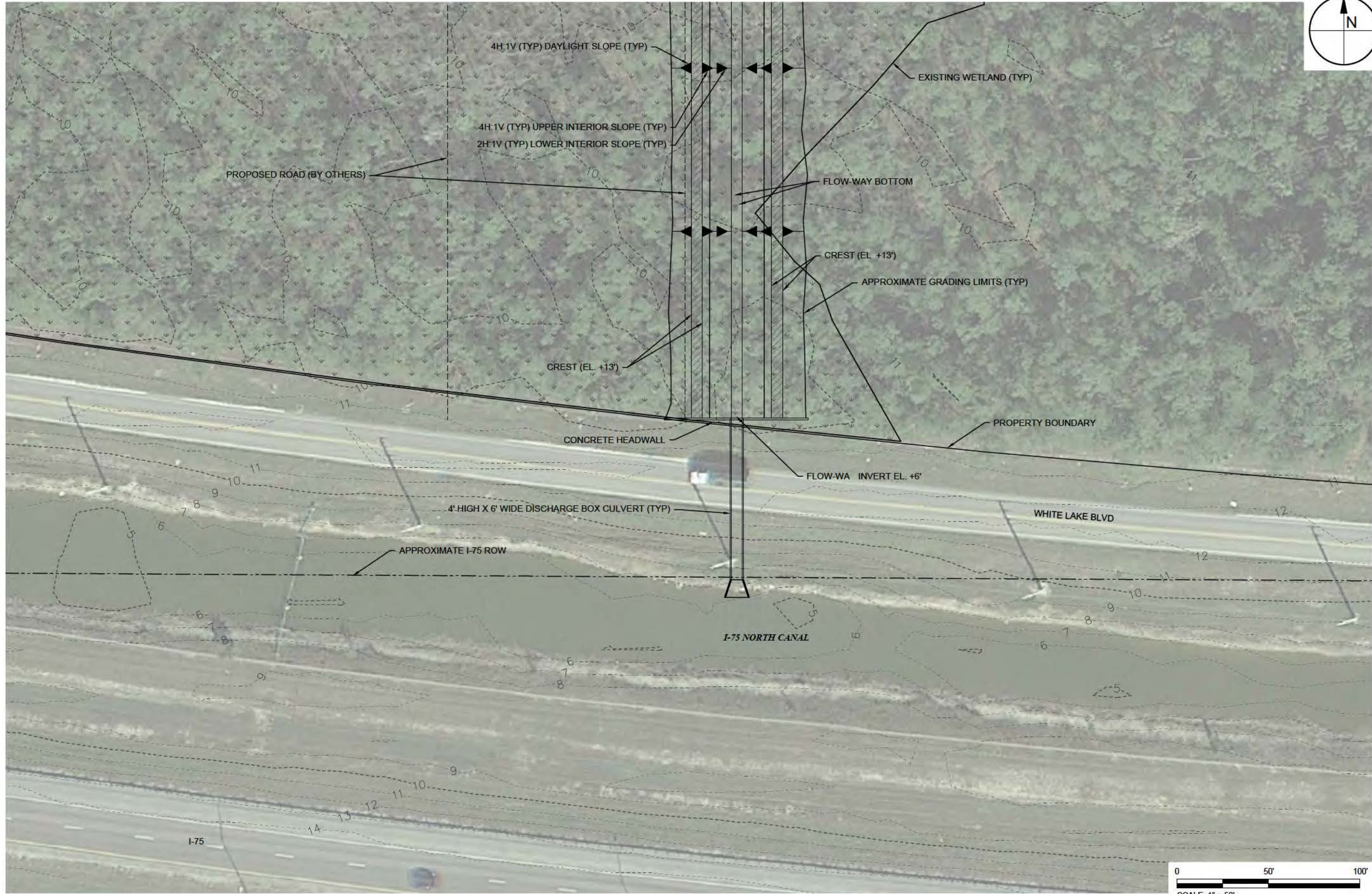
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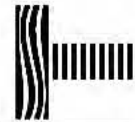
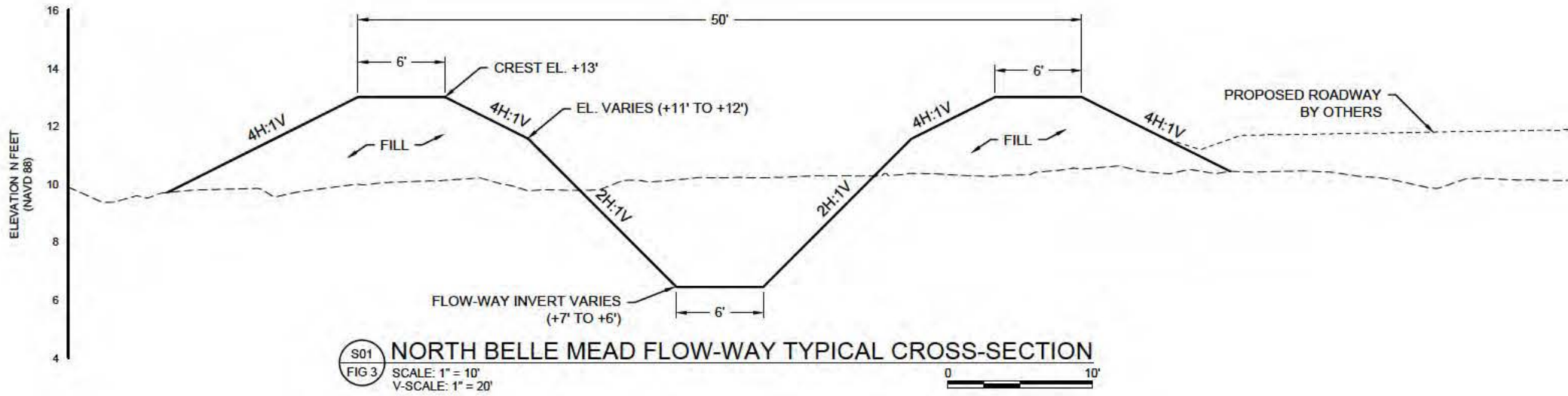
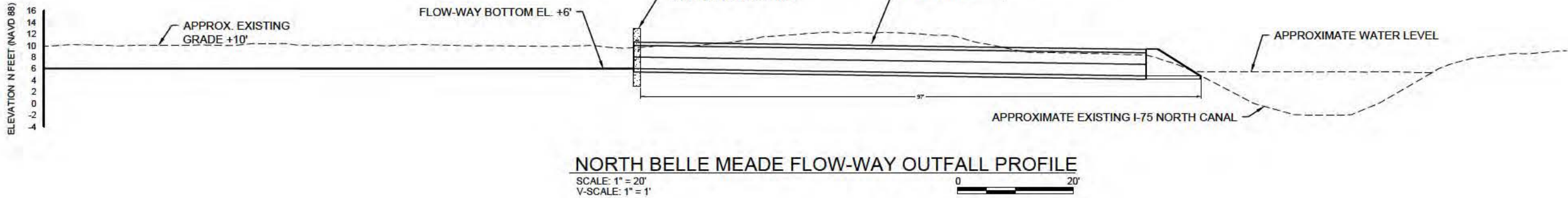
FIGURE 5  
NORTH BELLE MEADE FLOW-WAY DISCHARGE PLAN  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA

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ANTON FLEWELLING X:\SYS\PROJECTS\C2018-052\_COLLIERCORFIGURES\C2018-052-F-NBMFW TYPICAL SECTIONS.DWG 1/27/2020 10:38:01 PM



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FIGURE 6  
NORTH BELLE MEAD FLOW-WAY TYPICAL CROSS-SECTIONS  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA

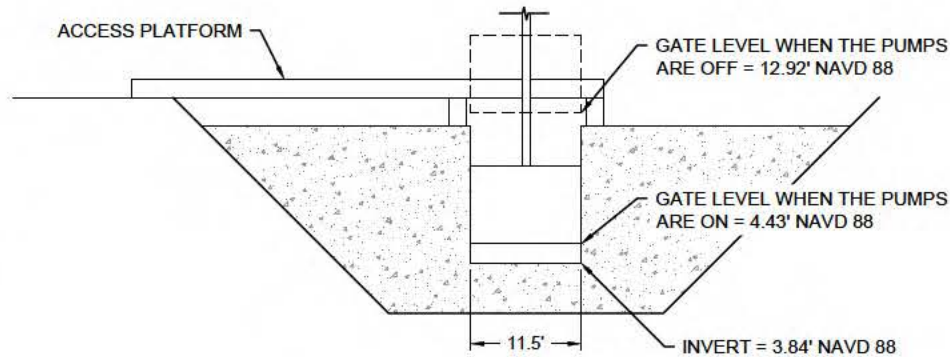
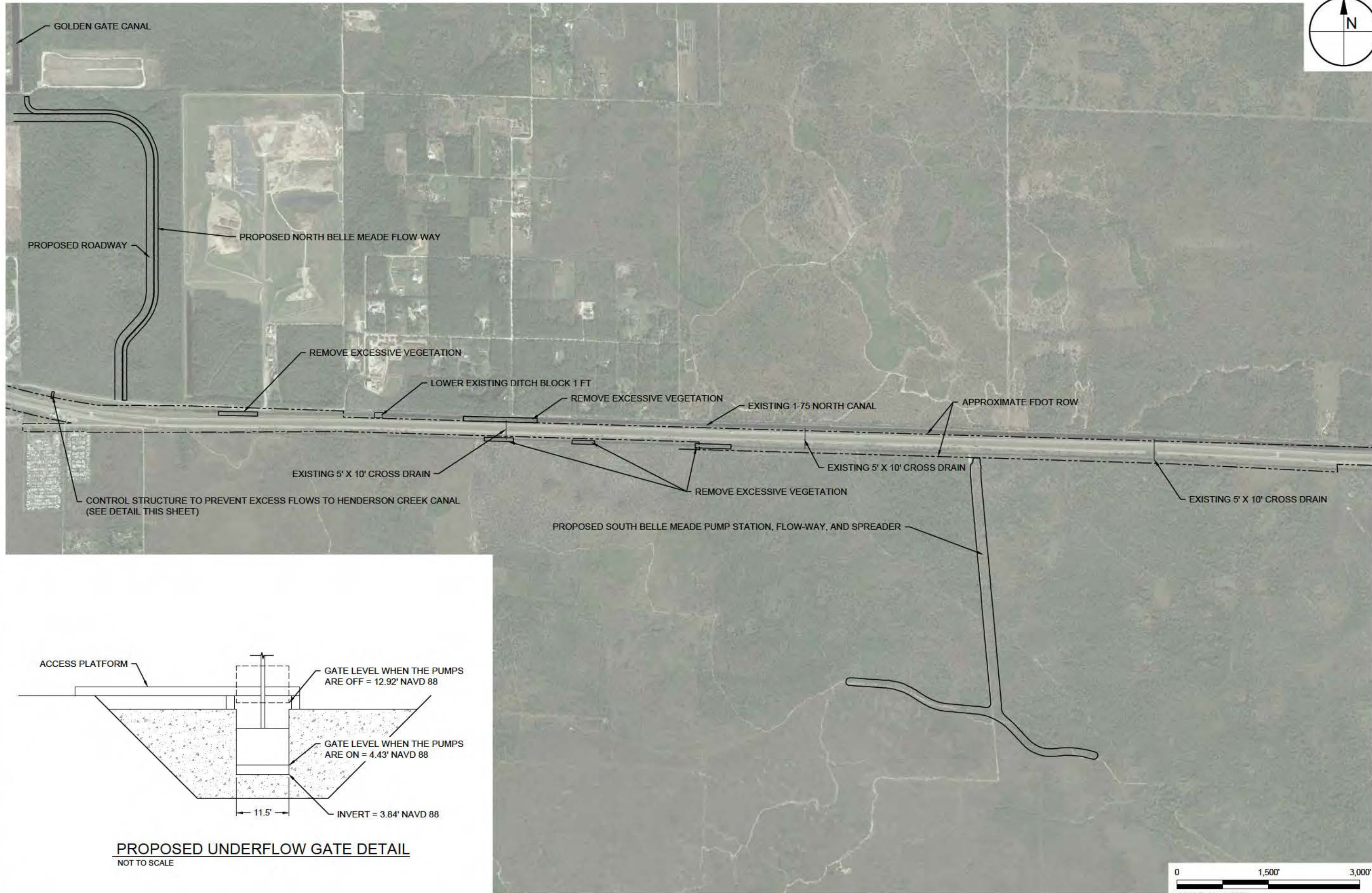
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**PROPOSED UNDERFLOW GATE DETAIL**  
NOT TO SCALE

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**FIGURE 7**  
**INTERSTATE 75 CANALS IMPROVEMENT PLAN**  
**COMPREHENSIVE WATERSHED IMPROVEMENT PLAN**  
**COLLIER COUNTY, FLORIDA**

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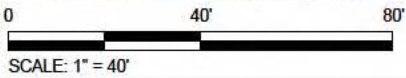
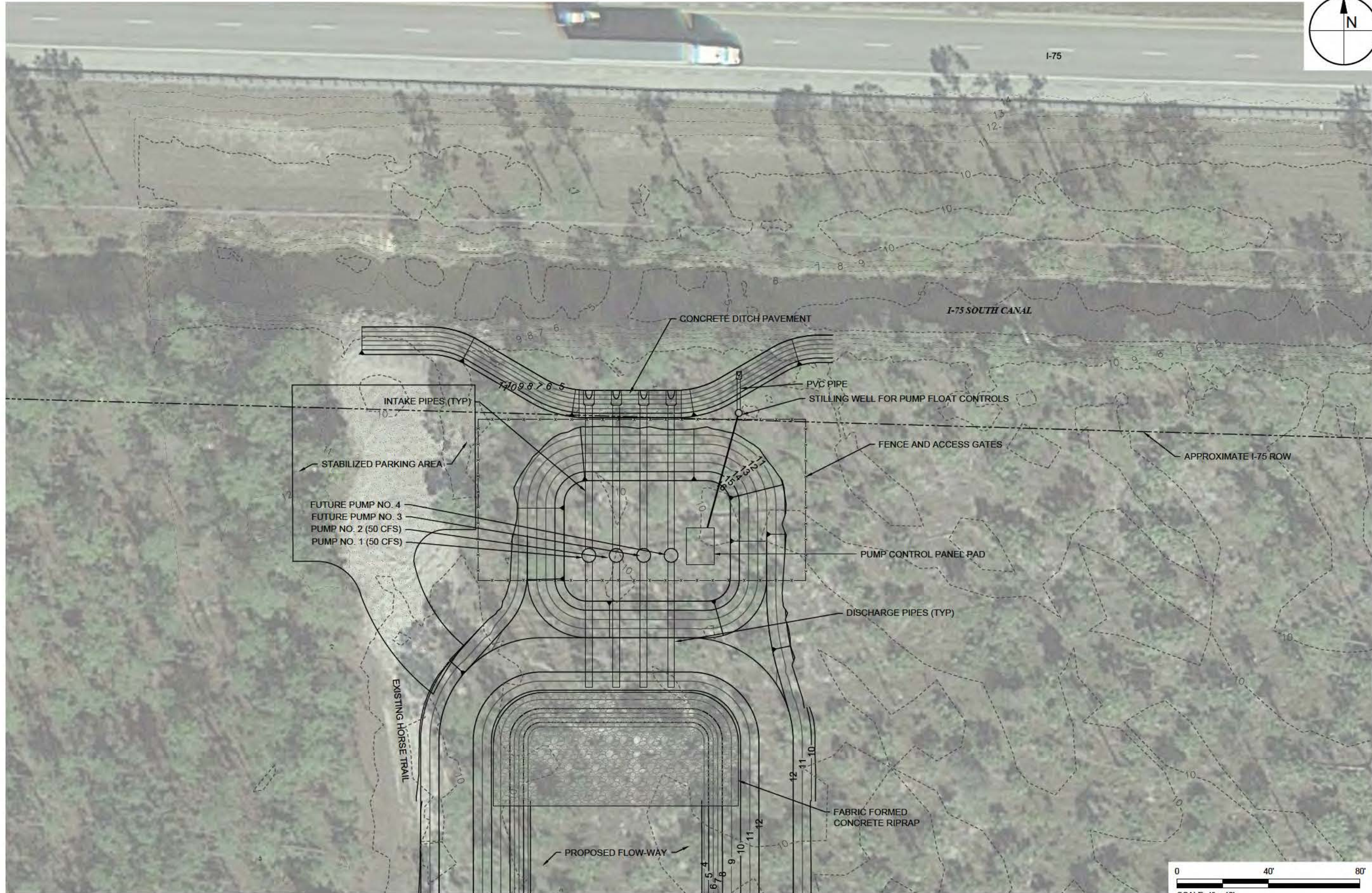
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**FIGURE 9**  
SOUTH BELLE MEADE FLOW-WAY PUMP STATION PLAN  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA

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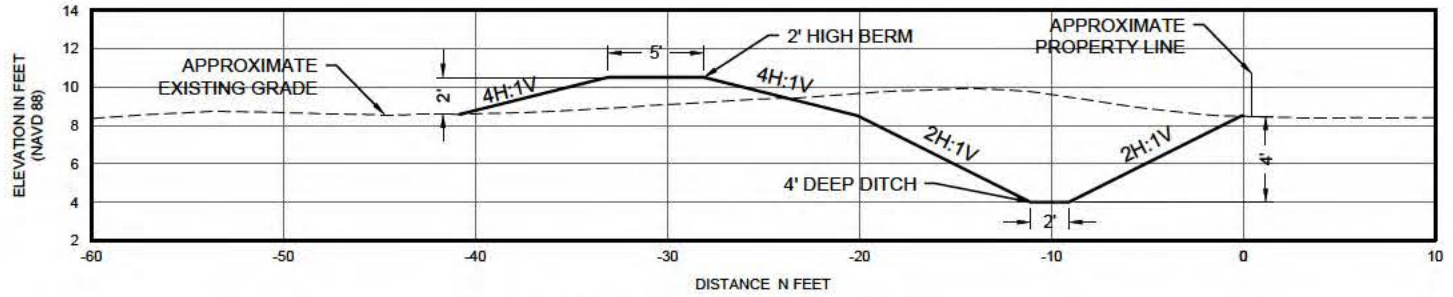
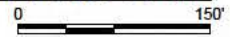
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SANDERS PROPERTY PLAN VIEW  
SCALE: 1" = 150'



TYPICAL CROSS-SECTION  
SCALE: 1" = 10'





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FIGURE 10  
SANDERS PROPERTY  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA

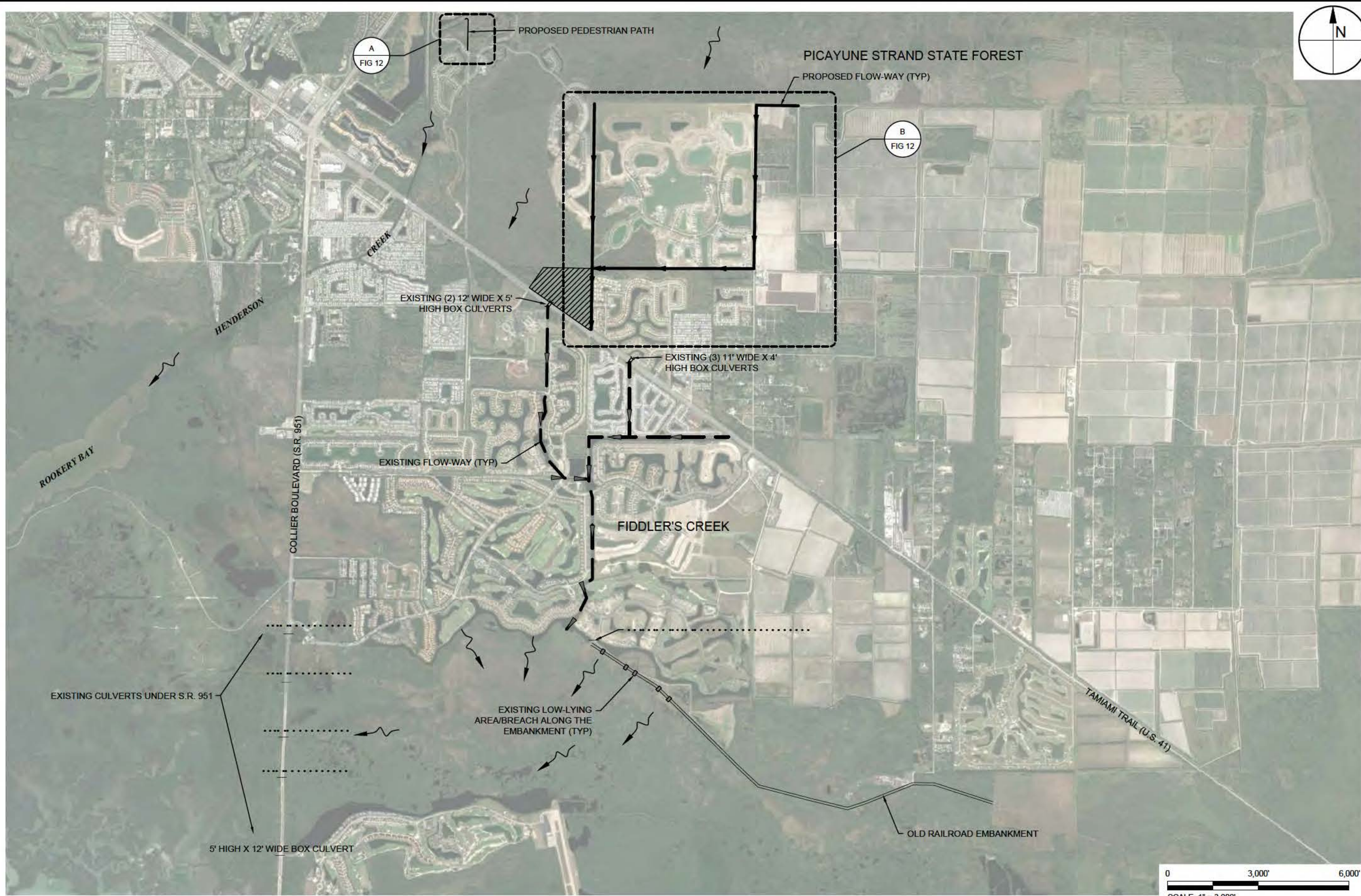
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FIGURE 11  
SIX L'S/U.S. 41 FLOW-WAYS AND CONVEYANCE IMPROVEMENTS  
PLAN  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA

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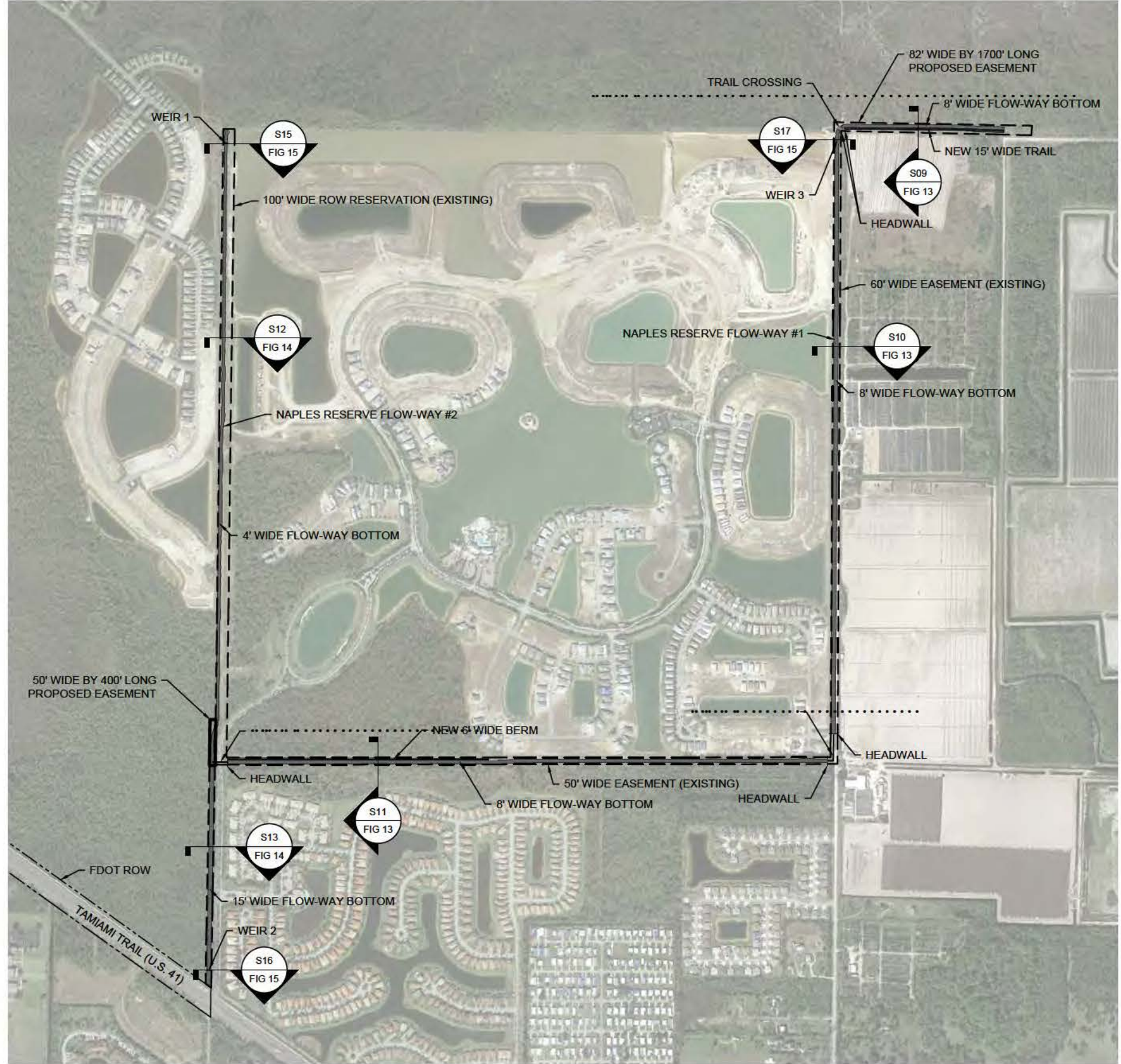
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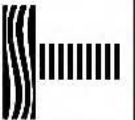
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**A** PROPOSED PEDESTRIAN PATH PLAN  
SCALE: 1" = 500'



**B** PROPOSED FLOW-WAY PLAN  
SCALE: 1" = 1,000'



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FIGURE 12  
NAPLES RESERVE FLOW-WAYS AND PEDESTRIAN PATH  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA

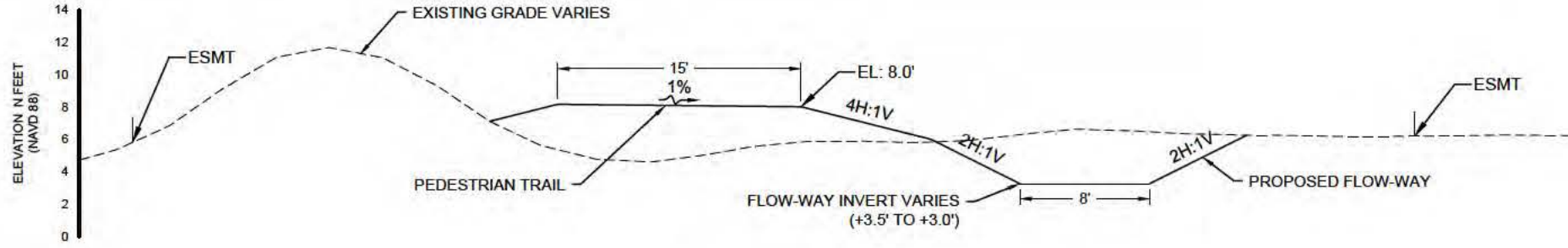
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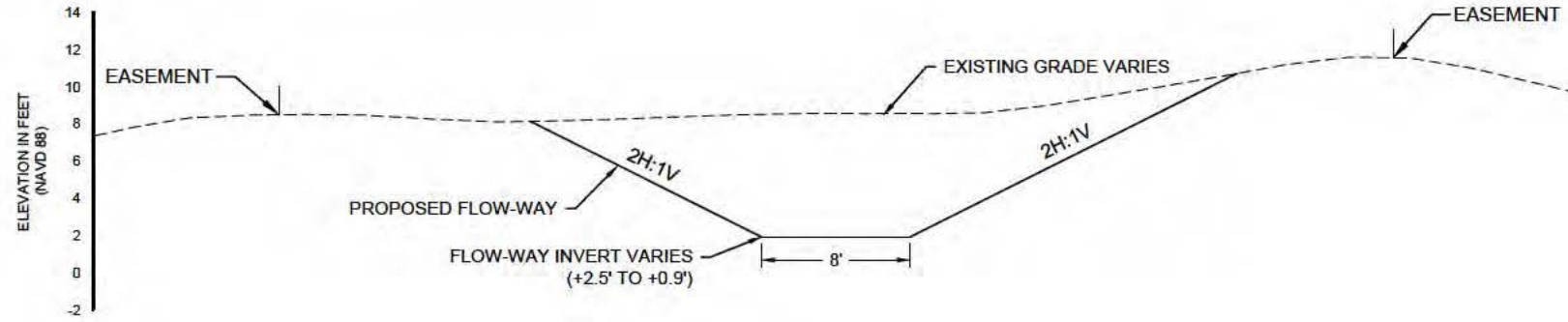
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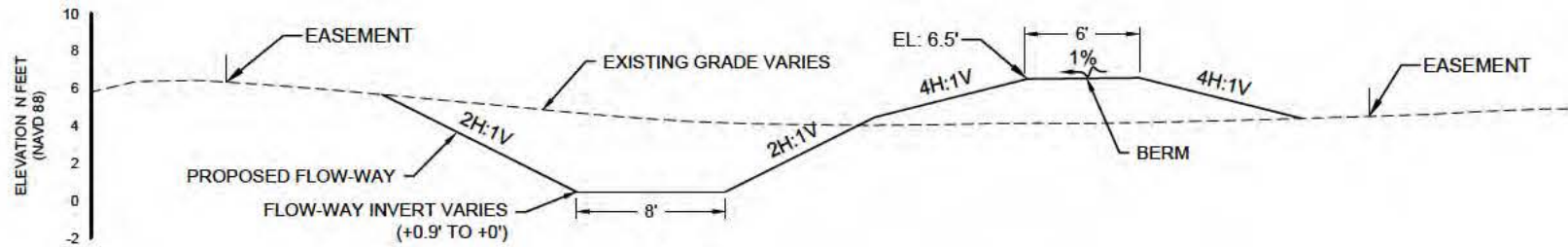
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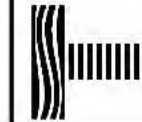
S09 SECTION 9  
FIG 12 SCALE: 1" = 10' 0 10'



S10 SECTION 10  
FIG 12 SCALE: 1" = 10' 0 10'



S11 SECTION 11  
FIG 12 SCALE: 1" = 10' 0 10'



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FIGURE 13  
NAPLES RESERVE FLOW-WAY #1 CROSS-SECTIONS  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA

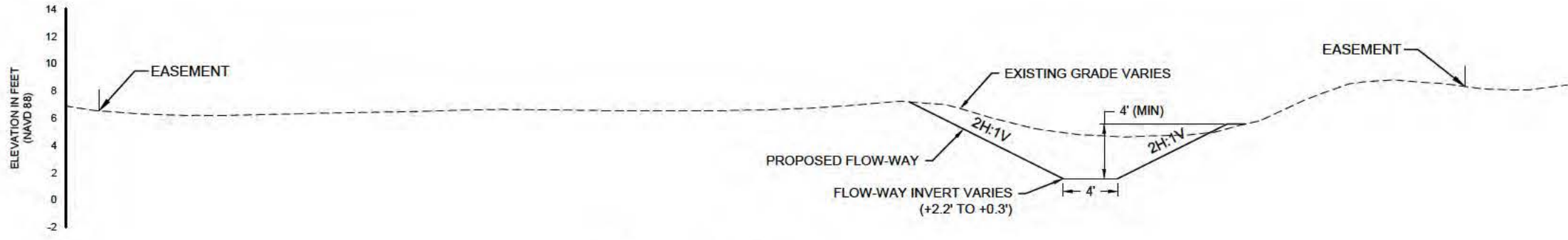
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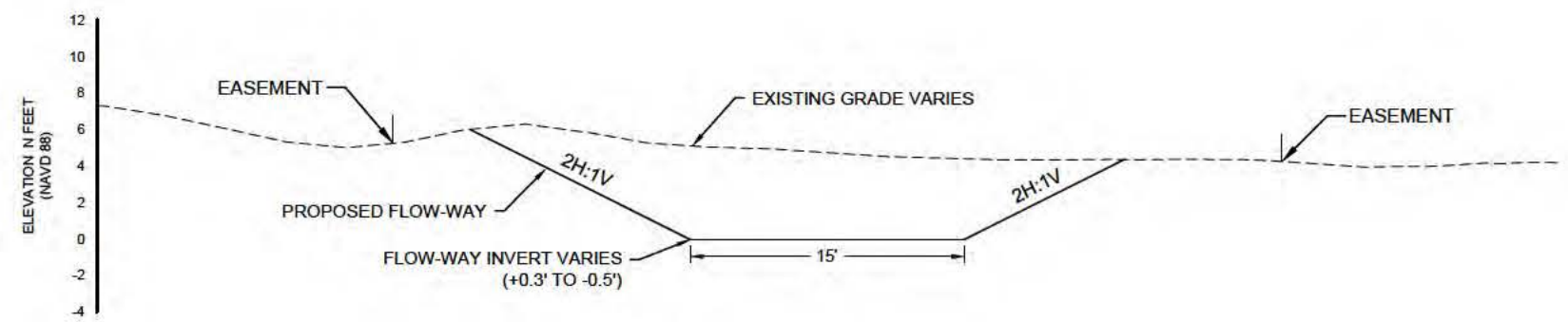
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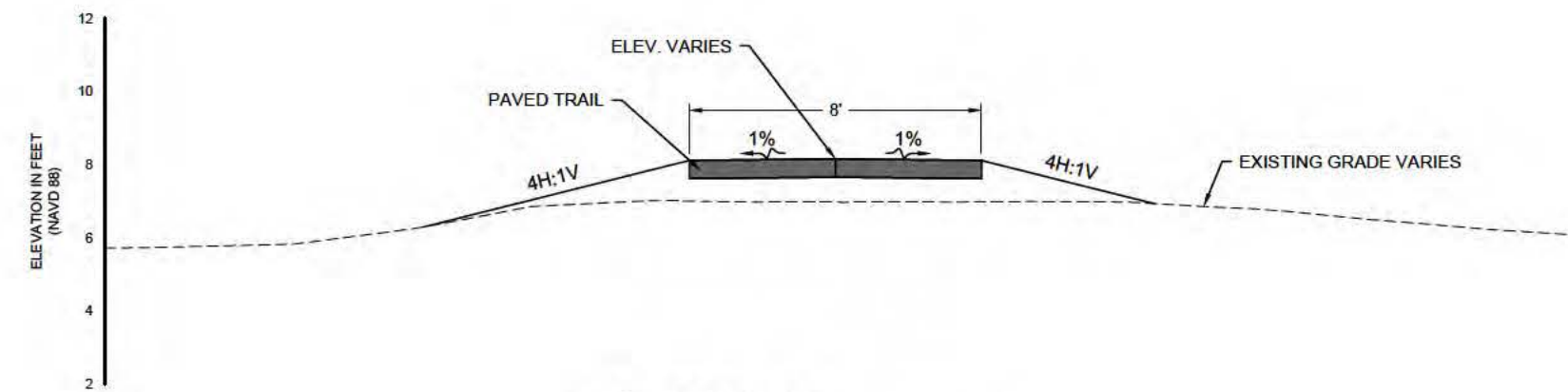
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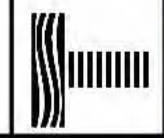
S12  
FIG 12 SECTION 12  
SCALE: 1" = 10'



S13  
FIG 12 SECTION 13  
SCALE: 1" = 10'



S14  
FIG 12 SECTION 14  
SCALE: 1" = 5'



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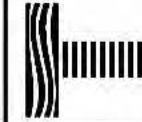
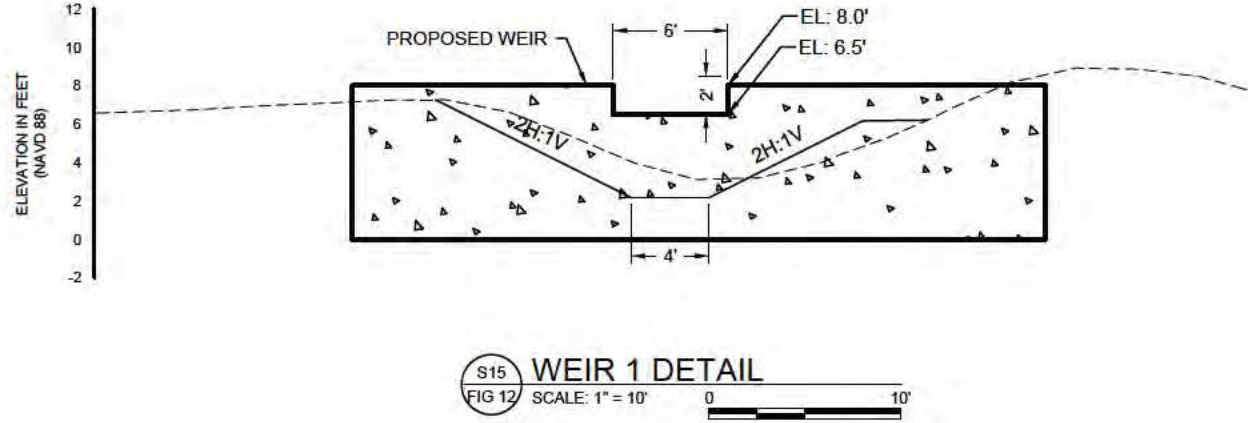
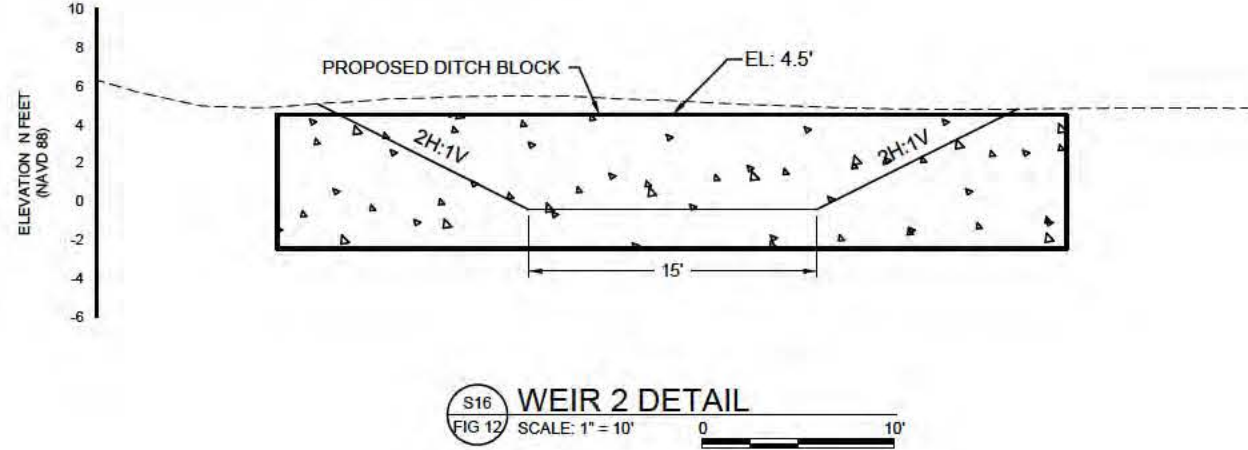
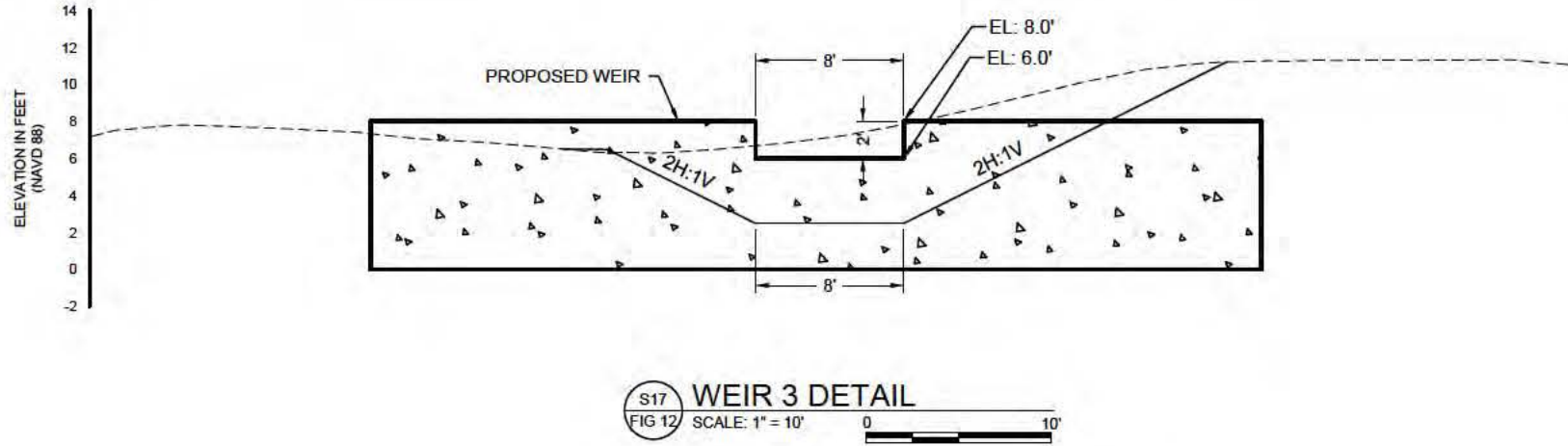
**FIGURE 14**  
NAPLES RESERVE FLOW-WAY #2 AND PEDESTRIAN PATH  
CROSS-SECTIONS  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA

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FIGURE 15  
WEIR DETAILS  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA

PROJECT C2018-052  
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**DEPARTMENT OF THE ARMY PERMIT APPLICATION  
MAY 2020**

**COLLIER COUNTY  
COMPREHENSIVE WATERSHED IMPROVEMENT PLAN  
COLLIER COUNTY, FLORIDA**

**SUPPLEMENTAL INFORMATION  
ATTACHMENT 8  
UNIFORM MITIGATION ASSESSMENT METHOD SUMMARIES**

***REVISED: MAY 2020***



### UNIFORM MITIGATION ASSESSMENT METHOD SUMMARY

Site/Project Name:	Application Number:	Date:
Collier County Comprehensive Watershed Improvement Plan	SFWMD: 200214-2805	May 2020

#### IMPACT SUMMARY

Assessment Area		Impact Type	L&L Support		Water Environment		Community Structure		Impact Delta	Acres	Functional Loss
			Current	w/Impact	Current	w/Impact	Current	w/Impact			
1	Impact 1 - 3	Direct	4	0	3	0	3	0	-0.333	5.748	-1.92
2	Impact 4 - 7	Direct	7	0	5	0	7	0	-0.633	10.939	-6.93
3	Impact 8 - 9	Direct	7	0	5	0	6	0	-0.600	4.585	-2.75
4	Impact 10 -11	Direct	7	0	5	0	4	0	-0.533	0.953	-0.51
5	Impact 12	Direct	6	0	3	0	2	0	-0.367	0.511	-0.19
6	Impact 13	Direct	6	0	3	0	2	0	-0.367	0.043	-0.02
7	Impact 14	Direct	6	0	3	0	2	0	-0.367	0.916	-0.34
8	Impact 15	Direct	6	0	3	0	2	0	-0.367	1.071	-0.39
9	Impact 16, 17, 19, 23	Direct	4	0	3	0	3	0	-0.333	7.552	-2.52
10	Impact 18	Direct	5	0	4	0	6	0	-0.500	1.882	-0.94
11	Impact 20 - 21	Direct	5	0	4	0	7	0	-0.533	0.452	-0.24
12	Impact 22	Direct	5	0	4	0	7	0	-0.533	0.340	-0.18
13	Impact 1 - 3	Secondary	4	3	3	3	3	3	-0.033	1.902	-0.06
14	Impact 4 - 7	Secondary	7	6	5	5	7	7	-0.033	2.458	-0.08
15	Impact 8 - 9	Secondary	7	6	5	5	6	6	-0.033	0.748	-0.02
16	Impact 10 -11	Secondary	7	6	5	5	4	4	-0.033	0.974	-0.03
17	Impact 12	Secondary	6	5	3	3	2	2	-0.033	0.319	-0.01
18	Impact 14	Secondary	6	5	3	3	2	2	-0.033	0.739	-0.02
19	Impact 15	Secondary	6	5	3	3	2	2	-0.033	0.444	-0.01
20	Impact 16, 17, 19, 23	Secondary	4	3	3	3	3	3	-0.033	8.895	-0.30
21	Impact 18	Secondary	5	4	4	4	6	6	-0.033	2.695	-0.09
22	Impact 20 - 21	Secondary	5	4	4	4	7	7	-0.033	0.619	-0.02
23	Impact 22	Secondary	5	4	4	4	7	7	-0.033	0.356	-0.01
TOTAL										55.141	-17.59

#### MITIGATION SUMMARY

Assessment Area		Mitigation Type	L&L Support		Water Environment		Community Structure		Mitigation Delta	Time Lag	Risk	Relative Functional Gain	Acres	Functional Gain
			Current	w/Mit	Current	w/Mit	Current	w/Mit						
1	Mitigation 1	Restoration	7	7	5	6	7	7	0.033	1.00	1.00	0.033	527.700	17.59
2														
3														
4														
5														
6														
7														
8														
9														
10														

Total Functional Loss	-17.59
Total Functional Gain	17.59
Net Functional Gain	0.00



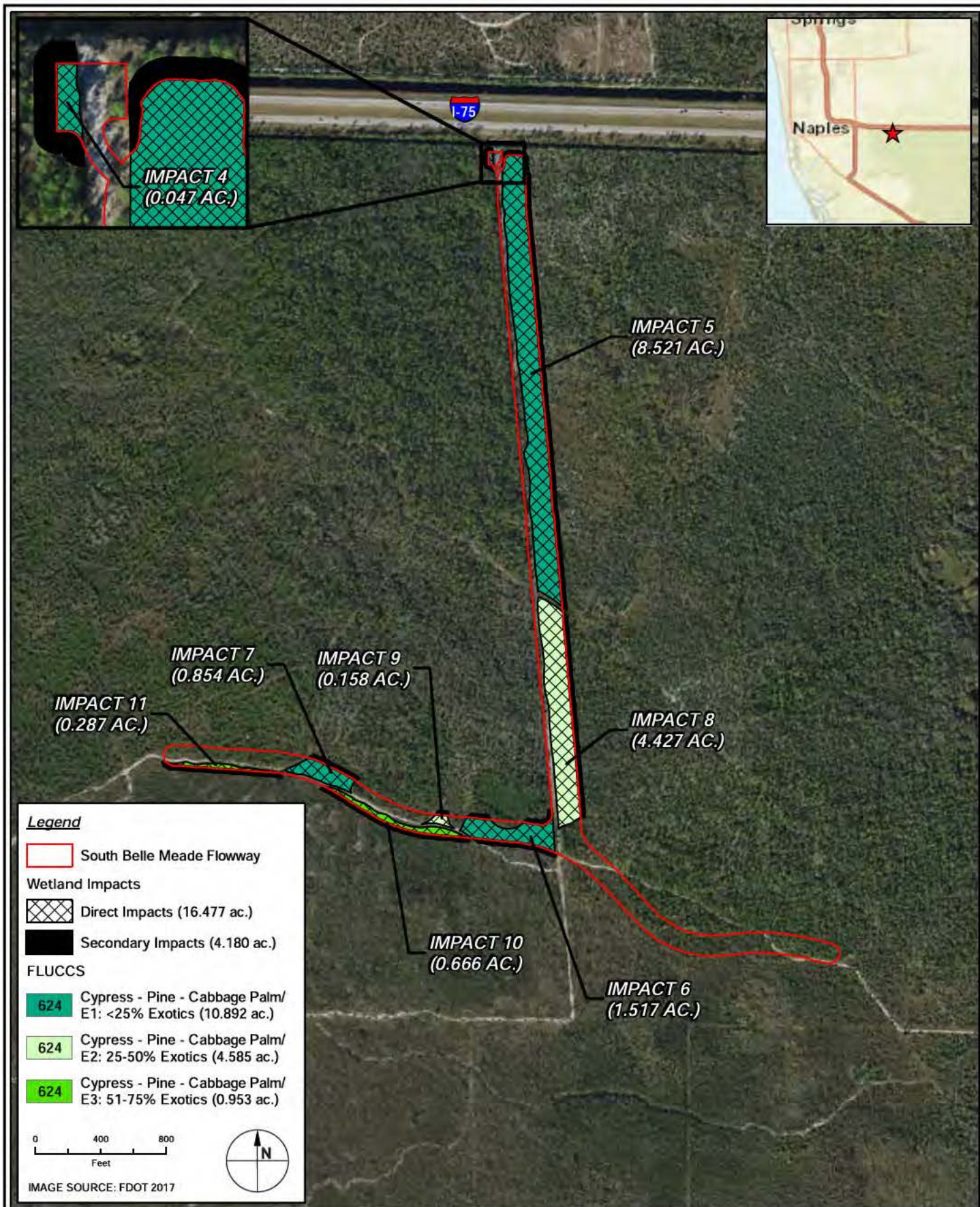


**TAYLOR ENGINEERING INC.**  
10199 SOUTHSIDE BOULEVARD  
SUITE 310  
JACKSONVILLE, FL 32256  
CERTIFICATE OF AUTHORIZATION # 4815

**WETLAND IMPACTS**  
**NORTH BELLE MEADE FLOWWAY**  
COLLIER COUNTY CWIP  
COLLIER COUNTY, FLORIDA

PROJECT C2018-052  
DRAWN BY KM  
SHEET  
DATE APR 2020



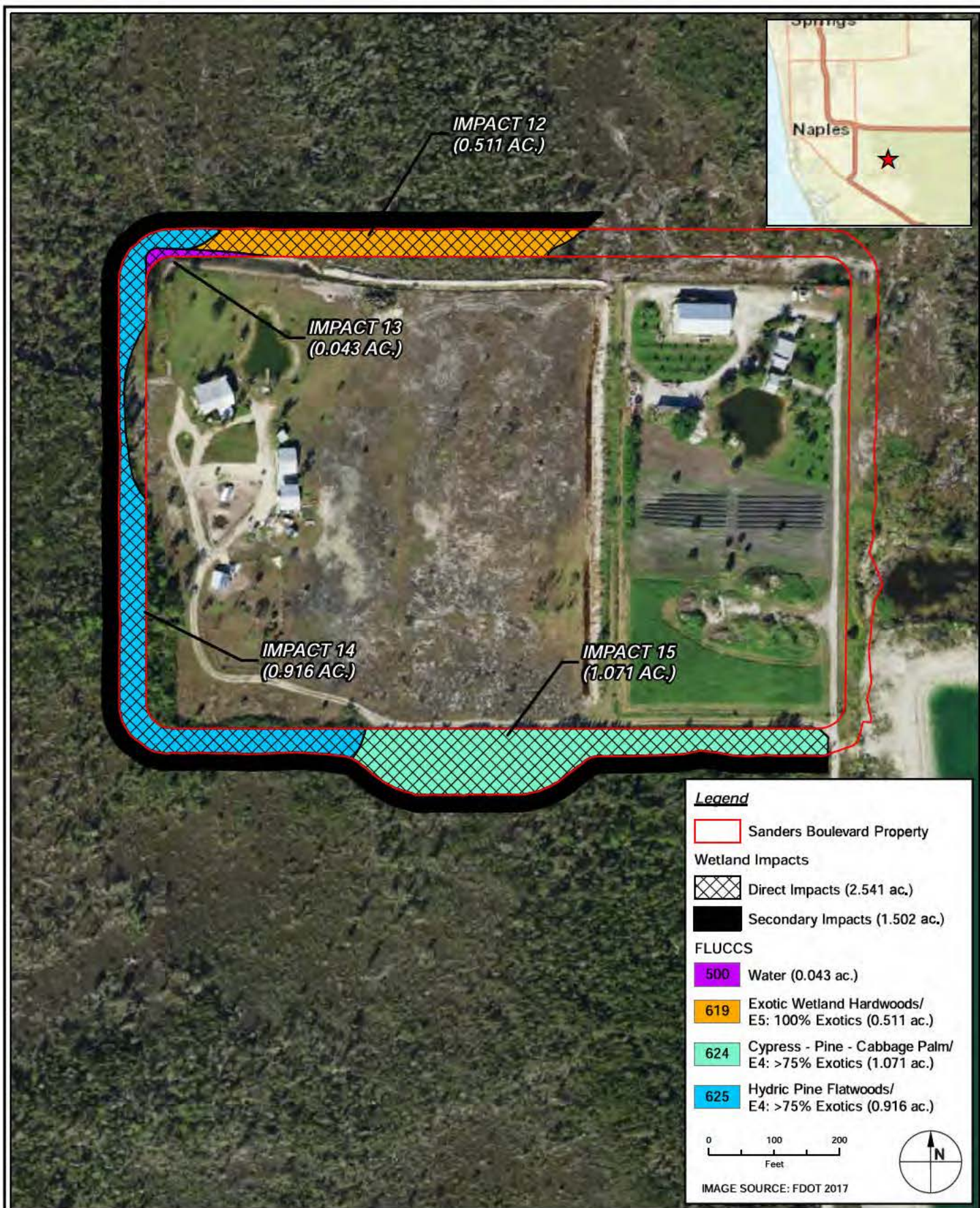


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**WETLAND IMPACTS**  
**SOUTH BELLE MEADE FLOWWAY**  
**COLLIER COUNTY CWIP**  
**COLLIER COUNTY, FLORIDA**

PROJECT	C2018-052
DRAWN BY	KM
SHEET	
DATE	APR 2020





**TAYLOR ENGINEERING INC.**  
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**WETLAND IMPACTS**  
**SANDERS BOULEVARD PROPERTY**  
**COLLIER COUNTY CWIP**  
**COLLIER COUNTY, FLORIDA**

PROJECT: C2018-052  
DRAWN BY: KM  
SHEET:  
DATE: APR 2020





**TAYLOR ENGINEERING INC.**  
 10199 SOUTHSIDE BOULEVARD  
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 JACKSONVILLE, FL 32256  
 CERTIFICATE OF AUTHORIZATION # 4815

**WETLAND IMPACTS  
 PEDESTRIAN PATHWAY  
 COLLIER COUNTY CWIP  
 COLLIER COUNTY, FLORIDA**

PROJECT	C2018-052
DRAWN BY	KM
SHEET	
DATE	APR 2020





**TAYLOR ENGINEERING INC.**  
10199 SOUTHSIDE BOULEVARD  
SUITE 310  
JACKSONVILLE, FL 32256  
CERTIFICATE OF AUTHORIZATION # 4815

**WETLAND IMPACTS**  
**SOUTHERN FLOWWAY #1**  
**COLLIER COUNTY CWIP**  
**COLLIER COUNTY, FLORIDA**

PROJECT	C2018-052
DRAWN BY	KM
SHEET	
DATE	APR 2020





**TAYLOR ENGINEERING INC.**  
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**WETLAND IMPACTS**  
**SOUTHERN FLOWWAY #2**  
**COLLIER COUNTY CWIP**  
**COLLIER COUNTY, FLORIDA**

PROJECT	C2018-052
DRAWN BY	KM
SHEET	
DATE	APR 2020



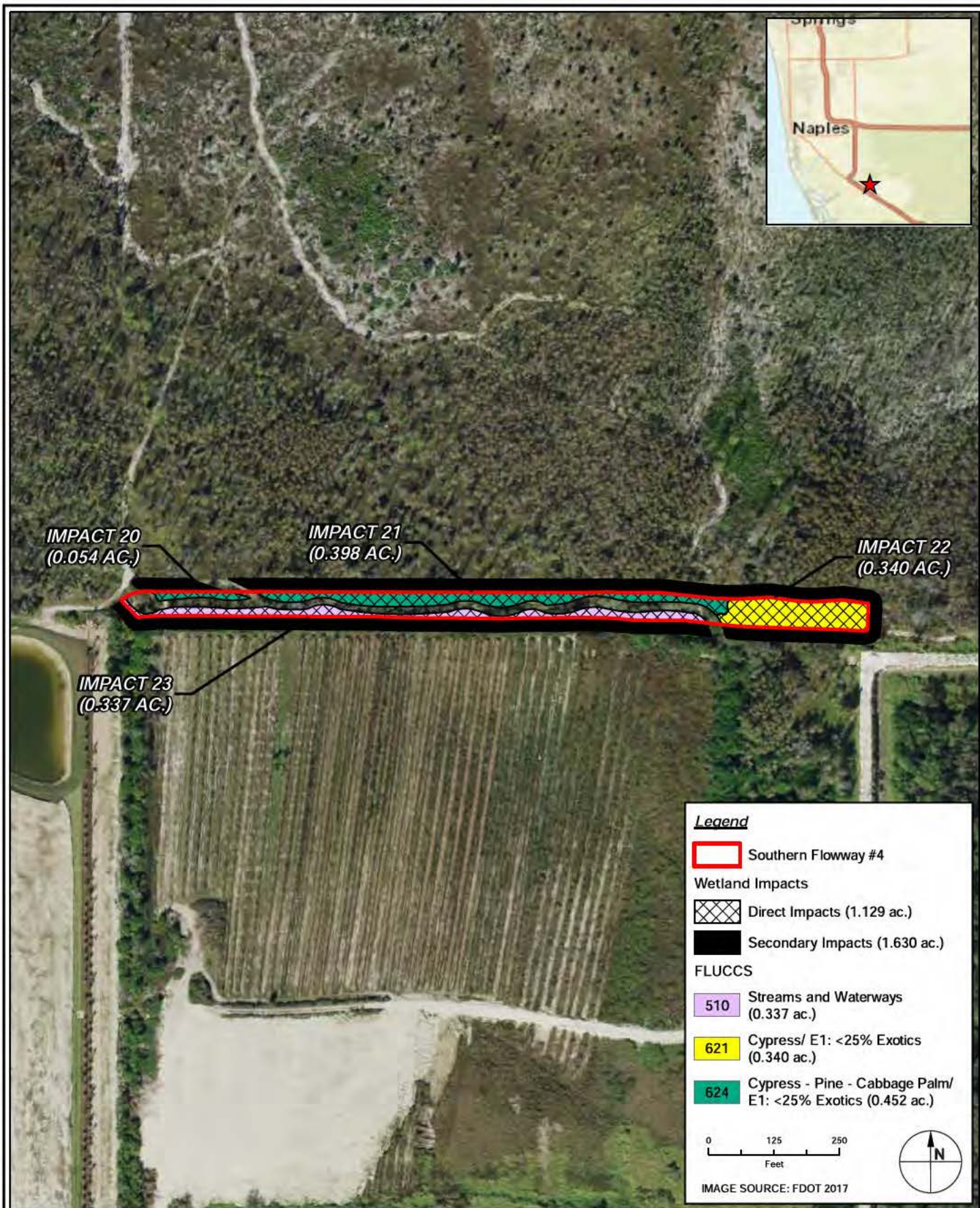


**TAYLOR ENGINEERING INC.**  
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**WETLAND IMPACTS  
 SOUTHERN FLOWWAY #3  
 COLLIER COUNTY CWIP  
 COLLIER COUNTY, FLORIDA**

PROJECT	C2018-052
DRAWN BY	KM
SHEET	
DATE	APR 2020



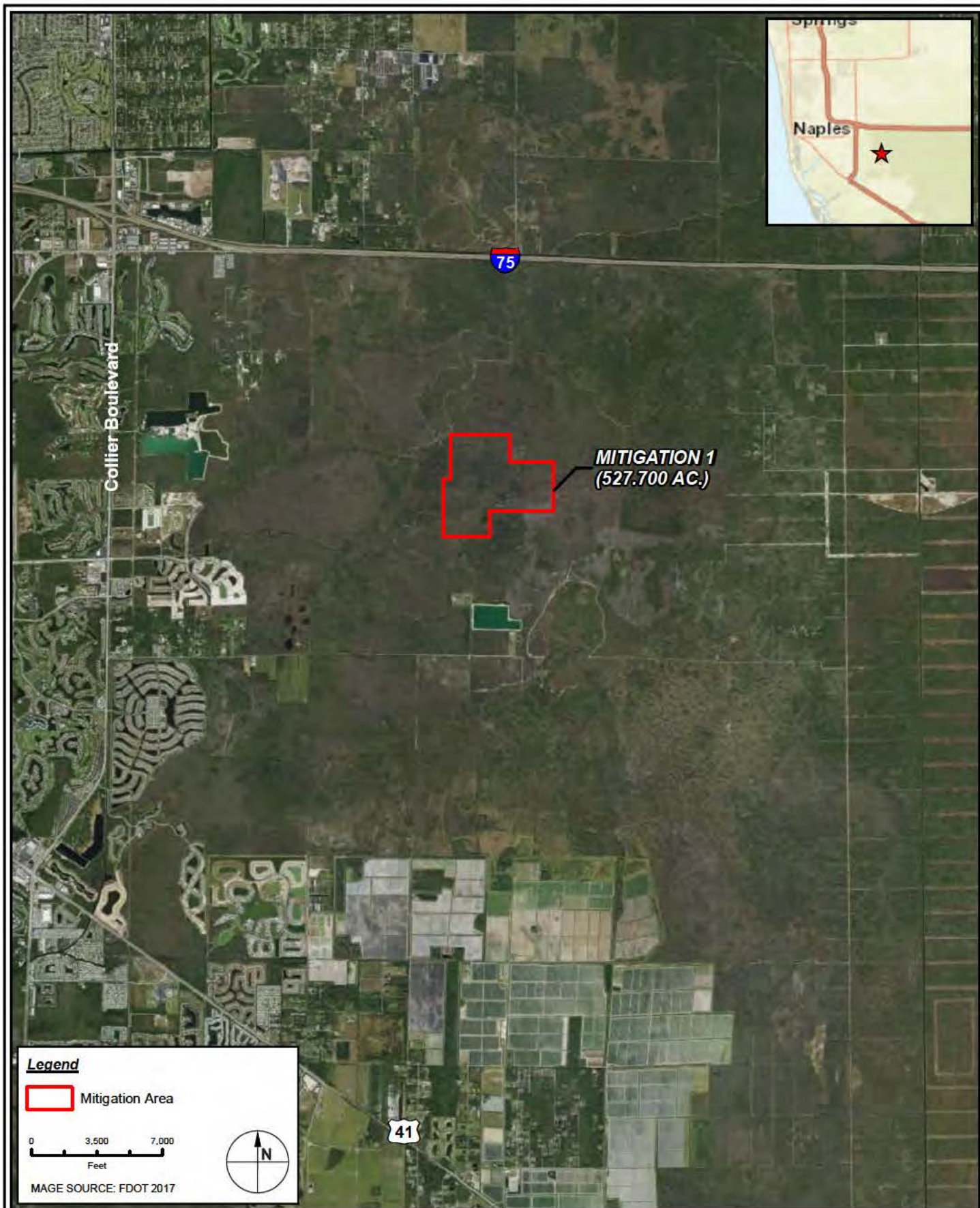


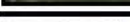
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**WETLAND IMPACTS**  
**SOUTHERN FLOWWAY #4**  
**COLLIER COUNTY CWIP**  
**COLLIER COUNTY, FLORIDA**

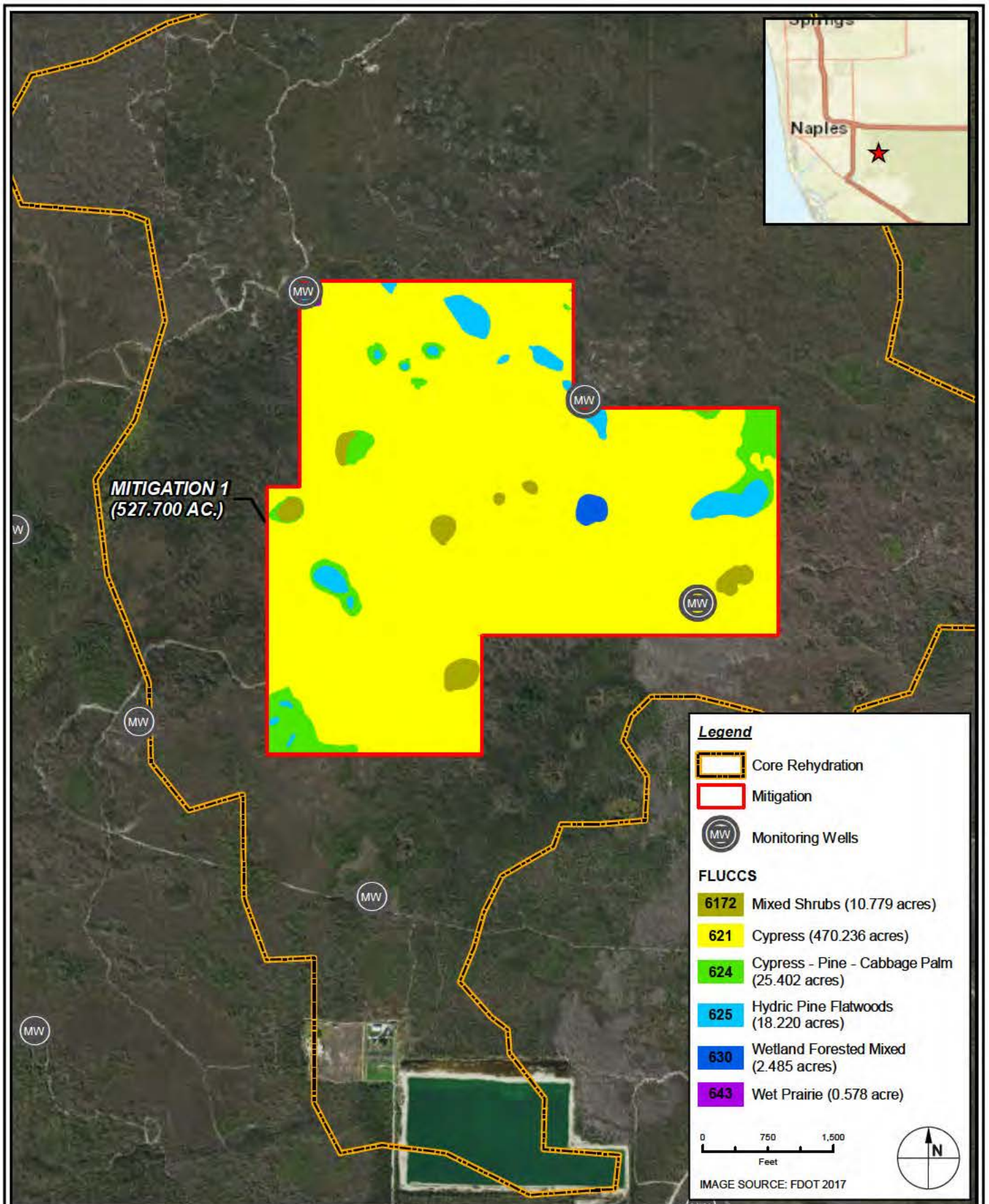
PROJECT	C2018-052
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SHEET	
DATE	APR 2020





	<p><b>TAYLOR ENGINEERING INC.</b> 10199 SOUTHSIDE BOULEVARD SUITE 310 JACKSONVILLE, FL 32256 CERTIFICATE OF AUTHORIZATION # 4815</p>	<p>LOCATION MAP WETLAND MITIGATION COLLIER COUNTY CWIP COLLIER COUNTY, FLORIDA</p>	<table><tr><td>PROJECT</td><td>C2018-052</td></tr><tr><td>DRAWN BY</td><td>KM</td></tr><tr><td>SHEET</td><td></td></tr><tr><td>DATE</td><td>JUN 2020</td></tr></table>	PROJECT	C2018-052	DRAWN BY	KM	SHEET		DATE	JUN 2020
PROJECT	C2018-052										
DRAWN BY	KM										
SHEET											
DATE	JUN 2020										





**TAYLOR ENGINEERING INC.**  
10199 SOUTHSIDE BOULEVARD  
SUITE 310  
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EXISTING LAND USE  
WETLAND MITIGATION  
COLLIER COUNTY CWIP  
COLLIER COUNTY, FLORIDA

PROJECT	C2018-052
DRAWN BY	KM
SHEET	
DATE	JUN 2020