CHAPTER 2

ALTERNATIVES

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2.0 ALTERNATIVES

This chapter outlines the process used to determine the range of reasonable alternatives to the proposed action and presents each alternative to be considered. Several alternatives to the Applicant's proposal were evaluated for their ability to meet the overall project purpose as presented in Chapter 1, including the feasibility, timeliness, and responsiveness to the issues and concerns identified during public scoping. This evaluation process concluded with a range of reasonable project alternatives, including:

- Alternative 1: No Action
- Alternative 2: Shallow Flow Equalization Basin (Applicant's Proposed Action)
- Alternative 3: Deep Flow Equalization Basin
- Alternative 4: Stormwater Treatment Area

2.1 REGULATORY SETTING FOR ALTERNATIVES ANALYSIS

Both the Council of Environmental Quality's (CEQ) National Environmental Policy Act (NEPA) Implementation Procedures [40 Code of Federal Regulations (CFR) §1502.14] and the United States Army Corps of Engineers' (USACE) NEPA Implementation Procedures (33 CFR Part 325, Appendix B) require consideration of a range of reasonable alternatives for a proposed action. Defining a range of reasonable alternatives is a key element for subsequent analyses in an Environmental Impact Statement (EIS). The CEQ (1981) describes the alternatives as being the "heart of the environmental impact statement," and alternatives that are considered *reasonable* under NEPA include those alternatives "that are practical or feasible from a technical and economic standpoint and using common sense." The USACE's NEPA Implementation Procedures define reasonable alternatives as "those that are feasible, and such feasibility must focus on the accomplishment of the underlying purpose and need (of the applicant or the public) that would be satisfied by the proposed Federal action (permit issuance)." The USACE's regulations further provide that only reasonable alternatives need to be considered in detail and that the reason for eliminating alternatives from detailed study should briefly be discussed in the EIS [33 CFR Part 325, Appendix B, sec. 9.a. (5) (a)]. NEPA regulations require that agencies consider a range of reasonable alternatives to the proposed action, including consideration of a "No Action" alternative; the regulations do not, however, require consideration of every conceivable variation of an alternative (40 CFR §1502.14). In addition, these regulations provide that, while the USACE shall not prepare a cost benefit analysis of the alternatives, the EIS should indicate any cost considerations that are likely to be relevant to a decision [33 CFR Part 325, Appendix B, sec. 9.a.(5)(d)].

The substantive criteria used by the USACE to evaluate a permit are the Section 404(b)(1) Guidelines (40 CFR Part 230) promulgated by the United States Environmental Protection Agency (USEPA). The guidelines require the evaluation of "practicable alternatives," and are used to identify the Least Environmentally Practicable Alternative (LEDPA) to ensure that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." The guidelines define an alternative as practicable "if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 CFR §230.10 [a][2]). The Section 404(b)(1) Guidelines indicate that the analysis of alternatives for NEPA environmental documents will in most cases provide the information required to evaluate the alternatives under the guidelines (40 CFR §230.10 [a][4]).

The USACE and cooperating agencies evaluated and screened the alternatives mindful of both the NEPA requirements and the 404(b)(1) Guideline requirements. As a result, the alternatives analysis in this EIS also satisfies the requirement under both NEPA and the Section 404(b)(1) Guidelines. Additional analysis required to comply with the Guidelines is included in Appendix A. As described below, the USACE and cooperating agencies examined the full scope of possible alternatives and components and systematically arrived at the range of reasonable and practicable alternatives. Through this process, the USACE believes that it has captured all of the alternatives and components necessary to determine whether the Applicant's proposed project is the LEDPA.

2.2 PRELIMINARY SCREENING OF ALTERNATIVES

The USACE implemented a structured process to develop and screen alternatives for the A-1 Shallow Flow Equalization Basin (FEB) project, with a goal to consider the broadest range of possible alternatives and identify the range of reasonable and practicable alternatives that would advance for comparative analysis. The intent of an iterative process is to eliminate impracticable and unreasonable alternatives as early in the process as practical to allow the USACE and the cooperating agencies to focus detailed evaluation on practicable and reasonable alternatives. For some proposals there may exist a very large or even an infinite number of reasonable alternatives if the proposed alternatives could vary from one another due to an infinite number of incremental changes (e.g., various water depths). Nevertheless, only a range of reasonable and practicable alternatives need be considered. The USACE and cooperating agencies worked together to consider the development and screening process. Although the USACE sought the consensus of the cooperating agencies in determining reasonable and practicable alternatives that would meet the water quality goals of the project, this analysis is independent of USEPA's prior analysis in the 2010 AD, and therefore, a STA alternative was not

initially identified as an alternative.

The initial step in the process was identification of possible alternative concepts for achieving the purpose and need of the project (see Chapter 1). Two alternatives that are always examined in an EIS are the No Action Alternative and the Applicant's Preferred Alternative. Because the USACE had originally evaluated a range of alternatives and issued a permit for the A-1 Reservoir on the project site, the USACE determined that the A-1 Reservoir was an alternative to the proposed project. The A-1 Reservoir was included in the Notice of Intent to draft an EIS published in the Federal Register prior to the Scoping meeting.

Alternative 1: No Action. As required by the CEQ, the EIS must consider as an alternative the possibility of not permitting the project. For this alternative, the activities that are considered would only be those that would not require a Department of the Army (DA) permit to discharge fill into waters of the United States (US) [33 CFR Part 325, Appendix B, Paragraph 9.b.5(b)].

Alternative 2: Shallow FEB (Applicant's Proposed Action). The Applicant is proposing to construct a shallow (approximate depth of four feet) FEB on the A-1 Project Site. The Shallow FEB is proposed to improve delivery rates to Stormwater Treatment Area (STA) 2 and STA 3/4 by attenuating and temporarily storing peak stormwater flows to assist in maintaining optimal water levels and minimizing the frequency of dryouts within STA 2 and STA 3/4. This alternative is described in greater detail in Section 2.4.2 below.

Alternative 3: Deep FEB. A deep reservoir, known as the A-1 Reservoir, was previously the subject of NEPA and Section 404 permit review for this site; therefore, the USACE determined that the construction of a deep FEB similar to the previously authorized A-1 Reservoir is a reasonable alternative to the construction of a shallow FEB for consideration. A deep reservoir was also was the subject of a detailed review by the USEPA as referenced in USEPA's 2010 Amended Determination (AD). The construction of the deep reservoir, or deep FEB, may also provide for flow attenuation, and the flow attenuation could provide water quality benefits to the STAs. Therefore, a Reservoir was considered as a reasonable alternative to the applicant's proposed project. This alternative is described in greater detail in Section 2.4.3 below.

During public scoping meeting, it was suggested that a deep Reservoir and the restoration of a pond apple slough south of Lake Okeechobee (offsite of the A-1 project site) should be considered as alternatives. During the public scoping comment period, the USEPA commented that a STA alternative was also included in the 2010 AD and should be incorporated into the

USACE's alternatives analysis. The scoping comments are documented in Chapter 7. At the conclusion of the scoping period, the USACE and the cooperating agencies considered the goals of the project to generate other potential project alternatives that were not previously considered to be evaluated along with the alternatives listed above. Additional alternatives evaluated at this point included:

- A Deep Reservoir - This alternative had already been identified and carried forward as Alternative 3, which was initially identified as the A-1 Reservoir. A reservoir has similar characteristics of a Deep FEB. However, as previously described, the previously permitted A-1 Reservoir has a different project purpose than would be served by the proposed project. To avoid confusion with the name and purpose of the previous A-1 Reservoir project, this alternative, which will be carried forward for further evaluatation, has been renamed as a Deep FEB (approximate depth of 12.5 feet).
- Utilizing other treatment technologies to treat and remove phosphorus from the Central Flowpath
- Utilizing other lands not currently owned by the Applicant as possible off-site Alternatives
- The restoration of a pond apple slough south of Lake Okeechobee
- Construction of a Stormwater Treatment Area on the Project Site. The construction of a STA also was the subject of a detailed review by the USEPA in the 2010 AD.

These alternatives were then assessed based on their practicability, which is assessed based on their ability to meet the USACE overall project purpose. The USACE coordinated with the cooperating agencies and the applicant to obtain additional details about the Applicant's proposed project as well as the other alternatives. Based on the review, the following alternatives were not considered practicable alternatives and were, therefore, eliminated from further analysis:

- *Utilizing other treatment technologies to treat and remove phosphorus from the Central Flowpath.* Various alternative treatment technologies, such as the Hybrid Wetland Treatment Technology pilot project and the Northern Everglades Chemical Treatment pilot project, are currently being conducted in the Northern Everglades watershed. The pilot projects are in various stages of testing. Similarly, other treatment technologies are unavailable to practicably meet the overall project purpose.

- *Utilizing other lands not currently owned by the Applicant as possible offsite*

Alternatives. The USACE evaluated the practicability of utilizing properties not currently owned by the Applicant for offsite alternatives to be carried forward for further analysis. Given the project purpose, an alternative project site would need to work in association with and be in close proximity to STA 2 and 3/4 to meet the WQBEL at the STA discharge points. The A-1 project site is ideally located adjacent to both STA 3/4 and STA 2, allowing it to provide benefits to both STAs. Noting that the A1 project site was contiguous to STA 2 and STA 3/4, USEPA stated in the 2010 AD that the A1 site was "strategically located for an expansion of the current STAs" and did not provide the SFWMD any scheduled time to aquire additional lands within the Central Flowpath.

Any project developed on another site must be acquired by the State, which requires time for land acquisition. In USEPA's 2010 AD, USEPA found acquisition times "were highly variable and has ranged from two to eight years." The USACE conducted a survey of eleven of the Applicant's restoration land acquisition experiences spanning between 1991 to 2009 and found that land acquisition has taken as little as three years and as long as 17 years to complete, with an average of 6-7 years. Acquisition time depends upon the number of willing sellers and increases due to the number of involved landowners. Other lands adjacent to STA 2 and STA 3/4 not owned by the Applicant are agricultural lands located north of STA 2, which are privately owned and utilized by three entities: Okeelanta Corporation, New Hope Sugar, and King Realty Company. None of these companies are known willing sellers. Due to the land acquisition time frames (up to 17 years) and the subsequent time for site development and construction, the USACE determined that utilizing lands not currently owned by the applicant would be an alternative that is not available to the applicant and is impracticable.

- *The restoration of a pond apple slough south of Lake Okeechobee (offsite alternative).* Although a pond apple slough restoration project could provide environmental benefits, there is no evidence that it would ensure achievement of the Water Quality Based Effluent Limits (WQBEL) at the STA discharge points. Therefore, this alternative does not satisfy the project purpose. Additionally, this alternative would be contingent upon the purchase of land currently unavailable to the applicant, which the USACE has determined is impracticable.

The alternative that was not eliminated during the practicability analysis (the construction of an STA on the project site) was advanced to the next step of the alternatives development process.

The USACE's independent alternatives development and USEPA's alternatives analysis results in the same suite of alternatives: a shallow FEB, a deep FEB, and a STA.

Alternative 4: A Stormwater Treatment Area. The construction of a STA may also ensure that the WQBEL is met at the discharge points of STA 2 and STA 3/4, and therefore an STA on the A1 project site is considered a practicable alternative to the applicant's proposed project. The USEPA had fully evaluated the STA alternative, found that it would attain the WQBEL at the discharge points for STA 2 and STA 3/4, and recommended this option during the development of the 2010 AD.

2.3 DIFFERENCES BETWEEN A STORMWATER TREATMENT AREA AND A FLOW EQUALIZATION BASIN

2.3.1 STORMWATER TREATMENT AREA

STAs are large-scale freshwater wetlands constructed to remove phosphorus from urban and agricultural runoff prior to discharge to the Everglades. Phosphorus is removed from the water column through physical, chemical, and biological processes such as sedimentation, precipitation, plant growth, microbial activity and the accumulation of dead plant material that is converted to a layer of soil. A typical STA has multiple cells that are divided into several parallel treatment paths or flow ways. Water flows through these systems via water control structures, such as pump stations, gates, or culverts. The plant communities in STAs are broadly classified as emergent aquatic vegetation (EAV) or submerged aquatic vegetation (SAV). Interspersed among this vegetation, where conditions are favorable, are floating aquatic vegetation and periphyton communities. In contrast to conventional chemical treatment technologies which are designed to allow real time active control of treatment processes to provide technically reliable performance, STAs are, biological systems which are more complex and reliant on multiple factors that are less controllable and subject to natural perturbations.

STAs are highly managed and maintained wetlands and typically require intensive monitoring networks to enable continuous evaluation of vegetation conditions and treatment performance. Proactive management of both desirable and undesirable vegetation within STAs is critical to achieving and sustaining treatment performance. In addition, STA dryout is a major concern due to potential spikes in phosphorus concentrations that can occur upon rehydration. Therefore, strategies to manage STAs during dry conditions include proactive measures to maintain minimum water levels in an effort to reduce vegetation stress and maintain treatment performance. Additional STA acreage increases the risk of STA dryout (and potential performance reduction) and requires additional water to maintain minimum STA water levels, often at times when regional water supplies are limited and demands are high.

2.3.2 FLOW EQUALIZATION BASIN

FEBs are impoundments constructed to temporarily detain excess surface water flows prior to release into STAs. The FEBs are not intended to treat the water, but to store it during high water events until the optimal time when STA needs additional water. The FEBs would then pump water into the STAs at an ideal rate once the peak runoff flows have subsided in the canals. The FEB would achieve normal full stage level only during peak runoff conditions and is not intended to store water for any extended length of time after pumping operations cease. However, during the rainy season and extreme wet years, the FEB site could experience staged water levels for significant durations. The vegetation within the FEB is expected to be herbaceous wetland plants that are likely to aid in the removal of additional phosphorus.

2.4 DESCRIPTION OF ALTERNATIVES

As well as providing the full range of reasonable alternatives for NEPA, the four alternatives also establish the range of practicable alternatives that will be evaluated to determine the LEDPA per USACE guidance related to Section 404(b)(1) of the Clean Water Act (40 CFR Part 230). The following sections provide detailed information on the four reasonable alternatives.

2.4.1 ALTERNATIVE 1: NO ACTION

NEPA regulations require consideration of the No Action Alternative, which can be used as a benchmark for comparison of the environmental effects of the various alternatives. The No Action Alternative would result from the USACE not issuing a DA permit for fill in waters of the US regulated by the USACE under Section 404 of the Clean Water Act. Without a DA permit, no additional fill could be discharged into waters of the US.

2.4.2 ALTERNATIVE 2: SHALLOW FLOW EQUALIZATION BASIN (SOUTH FLORIDA WATER MANAGEMENT DISTRICT'S PREFERRED ALTERNATIVE)

Alternative 2 is a 15,000-acre shallow FEB with a maximum operating depth of approximately 4 feet, and is South Florida Water Management District's (SFWMD) Preferred Alternative. In the 2010 AD, the USEPA proposed that a the A-1 project site be utilized as an STA to maximize phosphorus uptake. After issuance of the 2010 AD, the SFWMD updated and revised some of the hydrologic modeling upon which the USEPA had relied in developing the projects for the 2010 AD utilizing new data, information, and options that were unavailable at the time of the 2010 AD. In 2012, the SFWMD proposed that a Shallow FEB in place of the STA design would better manage and meter water flow and phosphorus load discharged into STA 2 and STA 3/4. After extensive technical discussions with the SFWMD and FDEP and thorough evaluation, the USEPA concluded that the modified plan was based on an appropriate set of assumptions and

could reasonably be expected to achieve the WQBEL (USEPA 2012). Both alternatives (a Shallow FEB and an STA) are being evaluated for this EIS. Construction of the Shallow FEB would result in impacts to 537 acres of waters of the US to include 296.5 acres of fill to construct the levee and 164.5 acres of fill to raise the elevation of canals and ditches, as well as the discharge of fill material associated with canal excavation into 75.8 acres of waters fo the US. Over 10,500 acres of waters of the US would be inundated.

Alternative 2 would include the following components:

- Perimeter Levees around the FEB (> 20 miles; 8-10 feet levee heights for 4 feet maximum operating depth)
- Interior levees to convey inflows to the north end of the FEB (8.7+/- miles)
- Internal collection canal to assist in conveying water out of the FEB
- Operable water control structures to control FEB water levels and flows into and out of the FEB
- Seepage canal and pump station(s) to collect FEB seepage and return to FEB/STA 3/4
- Degradation of portions of major agriculture roads
- Demolition of the existing test cells
- Demolition of the existing Talisman and Cabassa pump stations

The site contains 1,200 foot wide areas that have been scraped down to the cap rock along the perimeter of the site that would be incorporated as a flow path into the interior footprint of the Shallow FEB. By utilizing the available scraped down area as a flow path, it has been determined by the SFWMD, based on preliminary hydraulic analyses, that the existing pump stations G-370 and G-372 currently have the capability to deliver flows to the north end of the FEB.

Inflows will be conveyed to the Shallow FEB via two proposed operable water control structures by the existing STA 3/4 inflow pump stations G-370 and G-372. The Shallow FEB will receive runoff from the Miami Canal via existing pump station G-372, and from the North New River Canal via existing pump station G-370. After inflows are conveyed to the north end of the Shallow FEB, the water will be spread utilizing the northern scraped area to enable sheet flow from north to south. An internal collection canal will be constructed to assist in conveying water out of the Shallow FEB. Outflows will be conveyed by operable water control structures to the North New River Canal. Operable water control structures may also be constructed to allow discharges to be conveyed via gravity directly to the STA 3/4 inflow canal. The perimeter seepage canals constructed during the EAA A-1 Reservoir project will likely be improved to protect adjacent properties, including US Highway 27. The majority of the Shallow FEB outflows (approximately 80%) will be will be directed to STA 3/4 for treatment while the remaining flows

(approximately 20%) will be conveyed to STA 2 (including Compartment B) via the G-434 and G-435 pump stations.

2.4.3 ALTERNATIVE 3: DEEP FLOW EQUALIZATION BASIN

Alternative 3 is a 15,000-acre deep Flow Equalization Basin, with a maximum operating depth of approximately 12.5 feet. A deep FEB can attenuate flows to the STAs to improve STA performance. This differs from typical storage reservoirs, including the earlier design that was the subject of the 2006 EIS that often have multiple objectives such as water supply for the environment, urban, or agricultural uses. Similar to the Shallow FEB, construction of the Deep FEB would result in impacts to 626 acres of waters of the US to include 550 acres of fill to construct the levee and the discharge of fill material associated with canal excavation into 75.8 acres of waters fo the US. Over 10,500 acres of waters of the US would be inundated.

Alternative 3 was assumed to include the following components, at a minimum:

- Perimeter Levees around the FEB (> 20 miles; 20-30 feet levee heights for a maximum operating depth of 12.5 feet)
- Inflow Pump Station to direct North New River Canal flows into the FEB to the maximum operating depth of 12.5 feet
- Internal collection canal to assist in conveying water out of the FEB
- Operable water control structures to control FEB water levels and flows into and out of the FEB
- A cutoff wall to minimize or eliminate seepage impacts to adjacent areas
- Seepage canal and pump station(s) to collect FEB seepage and return to FEB/STA 3/4
- Degradation of portions of major agriculture roads
- Demolition of the existing test cells
- Demolition of the existing Talisman and Cabassa pump stations

Based on hydraulic analyses, the existing pump stations G-370 and G-372 currently do not have the capability to deliver flows to the Deep FEB up to the maximum operating depth of 12.5 feet. Therefore, a new inflow pump station located at the northeast corner of the Deep FEB would be required to deliver flows to the Deep FEB up to the maximum operating depth of 12.5 feet. Inflows will be conveyed to the Deep FEB via two proposed operable water control structures by the existing STA 3/4 inflow pump stations G-370 and G-372 and a new inflow pump station. The Deep FEB will receive stormwater runoff from the Miami Canal via existing pump station G-372, and from the North New River Canal via existing pump station G-370 and the new inflow pump station.

An internal collection canal may be constructed to assist in conveying water out of the Deep FEB. Outflows will be conveyed by operable water control structures to the North New River

Canal. Operable water control structures may also be constructed to allow FEB discharges to be conveyed via gravity directly to the STA 3/4 inflow canal. A new cutoff wall and the perimeter seepage canals constructed during the EAA A-1 Reservoir project will likely be improved to protect adjacent properties, including US Highway 27. The majority of the Deep FEB outflows (approximately 60%) will be will be directed to STA 3/4 for treatment while the remaining flows (approximately 40%) will be conveyed to STA 2 (including Compartment B) via the G-434 and G-435 pump stations.

2.4.4 ALTERNATIVE 4: STORMWATER TREATMENT AREA

Alternative 4 is a 15,000-acre STA, with a maximum operating depth of approximately 4 feet. As previously mentioned, the USEPA's AD proposed that a the A1 Site be utilized as an STA to maximize phosphorus uptake in association with STA 2 and STA3/4. After issuance of the 2010 AD, the SFWMD updated and revised some of the hydrologic modeling and proposed the Shallow FEB in place of the STA design. After extensive technical discussions with the SFWMD and FDEP and thorough evaluation, the USEPA concluded that the plan was based on an appropriate set of assumptions and could be reasonably be expected to achieve the WQBEL. Both alternatives are being evaluated for this EIS. The proposed STA would have a normal operating depth of approximately 1.25 – 1.5 feet and a maximum operating depth of approximately 4 feet. The proposed A-1 STA would operate in parallel with STA 2 and STA 3/4. Construction of the A-1 STA would result in impacts to 1,055 acres of waters of the US to include 370 acres of fill to construct the levee, 164.5 acres of fill to raise the elevation of canals and ditches, 270 acres of canal excavation, and 250 acres of excavation and fill within Holey Land Wildlife Management Area (Holey Land). Wetland impacts within the Holey Land are required to construct a new discharge canal to allow treated discharges from the A-1 STA to be conveyed to the L-5 Canal. The new discharge canal would be proposed west of STA 3/4 Cells 3A and 3B while the existing STA 3/4 discharge canal south of STA 3/4 Cell 3B would be expanded. Within the proposed A-1 STA, over 10,500 acres of waters of the US would be inundated.

Alternative 4 was assumed to include the following components, at a minimum:

- Perimeter Levees around the STA (> 20 miles; 8-10 feet levee height for 4 feet maximum operating depth)
- Interior levees dividing the STA into cells
- Inflow canals to direct inflows from the North New River and Miami Canals to the STA
- Discharge canal to direct outflows from the STA to the L-5 Canal
- Internal distribution canals to facilitate sheetflow through the cells
- Internal collection canals to assist in conveying water out of the cells
- Seepage canal and pump station(s) to collect STA seepage and return to STA

- Operable water control structures to control water levels and flows into and out of all STA cells

For this EIS, the A-1 STA represented in Alternative 4 was assumed to utilize the existing STA 3/4 inflow pump stations (G-370 and G-372) to convey stormwater runoff to the proposed A-1 STA. Inflows are then assumed to be conveyed via inflow canals to the north end of the project site. Flows would then be distributed to the A-1 STA cells via water control structures and conveyed north-to-south and collected in internal collection canals. In order to operate the A-1 STA, construction of conveyance features in addition to construction of the A-1 STA itself will be required. Specifically, a discharge canal would need to be constructed within the Holey Land to connect the A-1 STA discharge canal to the L-5 Canal. This would enable the delivery of discharges from the proposed A-1 STA to Water Conservation Area (WCA) 2A and/or WCA 3A via existing infrastructure, without interfering with the existing operations of STA 2, STA 3/4 and the North New River and Miami Canals.

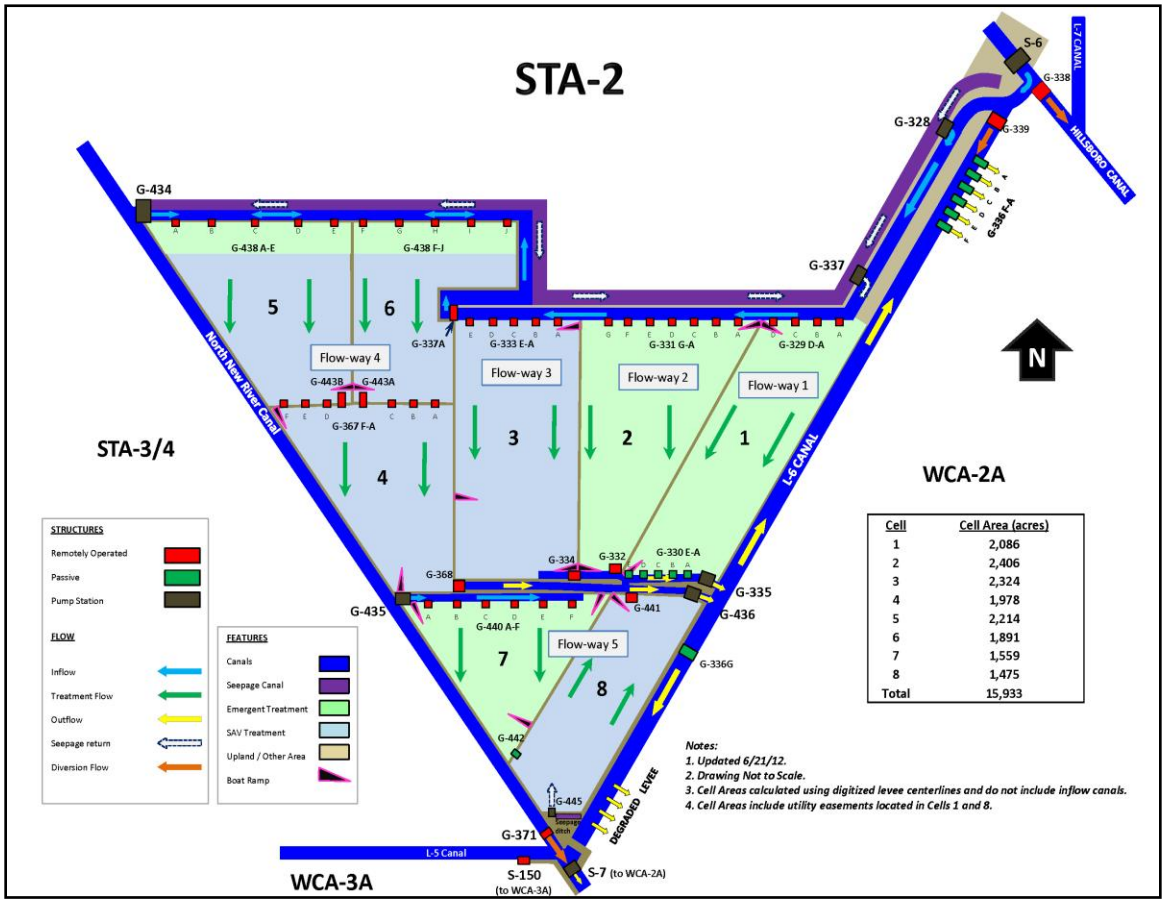
2.5 COMPONENTS COMMON TO ALL ACTION ALTERNATIVES

The following components of the Central Flowpath, including STA 2 (including Compartment B) and STA 3/4, WCA 2A and WCA 3A are common to all of the alternatives although the timing and volumes of inflow and outflow to the components would vary by alternative.

2.5.1 STORMWATER TREATMENT AREA 2

STA 2 is a 16,000-acre constructed wetland marsh system which was designed to reduce phosphorus concentrations in surface water. The facility is located within southern Palm Beach County and is immediately adjacent to the western boundary of WCA 2A. STA 2 consists of Flow-way 1 (Cell 1), Flow-way 2 (Cell 2), Flow-way 3 (Cell 3), Flow-way 4 (Cells 4, 5 and 6), and Flow-way 5 (Cells 7 and 8) (**Figure 2-1)**. STA 2 currently receives runoff from the S-2, S-5A, S-6 and S-7 Basins, East Shore Water Control District and 715 Farms (also known as Closter Farms). Runoff collected by the North New River Canal is pumped into STA 2 via the G-434 and G-435 pump stations. Runoff collected via the Hillsboro Canal is pumped into STA 2 via the S-6 pump station. In addition, stormwater runoff from agricultural lands adjacent to STA 2 is pumped into STA 2 via the G-328 pump station. Treated discharges from STA 2 are pumped into the L-6 Canal, and then conveyed to either northern WCA 2A through a set of box culverts or to western WCA 2A through a section of degraded L-6 Canal levee.

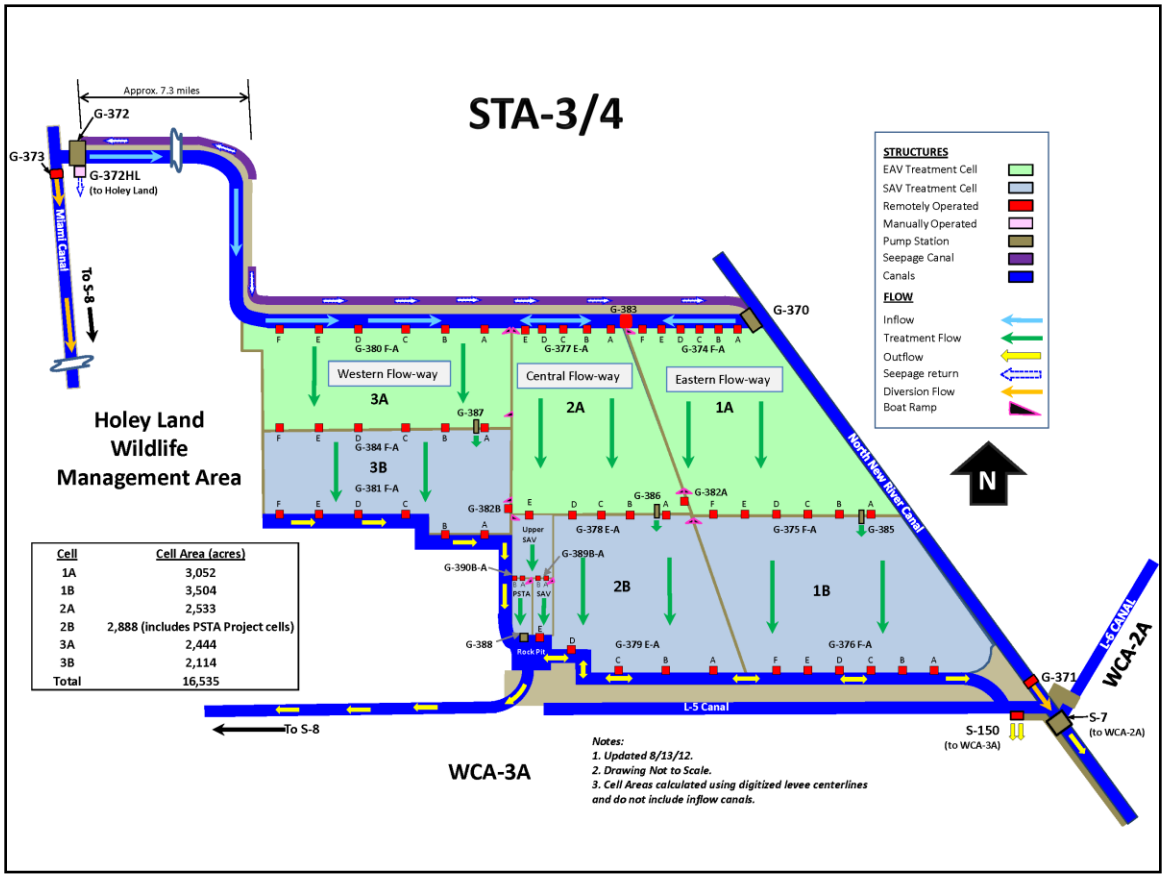
Figure 2-1. Schematic of STA 2



2.5.2 STORMWATER TREATMENT AREA 3/4

STA 3/4 is a 16,000-acre constructed wetland marsh system which was designed to reduce phosphorus concentrations in surface water. The facility is located in southern Palm Beach County between STA 2 and the Holey Land. STA 3/4 consists of the Eastern Flow-way (Cells 1A and 1B), the Central Flow-way (Cells 2A and 2B), the Western Flow-way (Cells 3A and 3B), and the Periphyton-based STA Implementation Project. STA 3/4 currently receives agricultural and/or urban runoff from the S-2, S-3, S-7, S-8, and C-139 Basins, the South Shore Drainage District and the South Florida Conservancy District. Runoff collected by the North New River Canal is pumped into STA 3/4 via the G-370 pump station. Water collected via the Miami Canal is pumped into STA 3/4 via the G-372 pump station. Treated discharges from STA 3/4 are conveyed to the STA 3/4 Discharge Canal and L-5 Canal, and then conveyed to either western WCA 2A via the S-7 pump station, to eastern WCA 3A via S-150, or western WCA 3A via the S-8 pump station. A schematic drawing of STA 3/4 is provided in **Figure 2-2**.

Figure 2-2. Schematic of STA 3/4



Cell	Cell Area (acres)
1A	3,052
1B	3,504
2A	2,533
2B	2,888 (includes PSTA Project cells)
3A	2,444
3B	2,114
Total	16,535

2.5.3 WATER CONSERVATION AREAS 2A AND 3A

WCA 2A operates under the current Central and Southern Florida (C&SF) Project regulation schedule. Operations of WCA 2A also include regulatory releases to the Atlantic Ocean through the Lower East Coast canals, as documented in the C&SF Project Water Control Plan for Lake Okeechobee and Everglades Agricultural Area (Water Control Plan), (USACE, June 2008). In addition, no net outflows from WCA 2A to maintain minimum stages in the Lower East Coast Service Area canals (salinity control) are assumed, if water levels in WCA 2A are less than the minimum operating criteria of 10.5 feet National Geodetic Vertical Datum of 1929 (NGVD29). Any water supply releases below the minimum operating criteria are matched by an equivalent volume of inflow, typically from Lake Okeechobee.

WCA 3A operates under the current Everglades Restoration Transition Plan (ERTP) regulation schedule. As discussed in Chapter 1, ERTP is the water management operating criteria for Central and Southern Florida Project features and the constructed features of the Modified Water Deliveries and Canal-111, which was recently adopted. Since this new operating regime

went into effect in October 2012, the ERTP regulation schedule for WCA 3A, as per South Florida Water Management Model alternative 9E1, was assumed for this EIS. Operations of WCA 3A also include regulatory releases to the Atlantic Ocean through the Lower East Coast Canals, as documented in the Water Control Plan (USACE, June 2008). In addition, no net outflows from WCA 3A to maintain minimum stages in the Lower East Coast Service Area canals (salinity control) are assumed, if water levels in WCA 3A are less than the minimum operating criteria of 7.5 feet NGVD29. Any water supply releases below the minimum operating criteria are matched by an equivalent volume of inflow, typically from Lake Okeechobee.