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# PROJECT DEFINITION REPORT

## BIG CYPRESS BASIN - GOLDEN GATE 4 WEIR REPLACEMENT

PS ID 100894

JANUARY 9, 2015

REVISION #0



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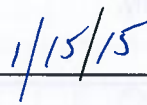
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## Approvals

The signatures in this section of the project definition report should be revised to represent the various areas providing significant resources to the project.



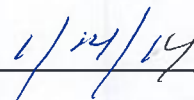
John P. Mitnik, P.E., Bureau Chief, Engineering and Construction



Date



Michael Gallagher, Bureau Chief, Field Operations South



Date

Document prepared by: Mauricio Lara, Extension: 6775

## Project Location

The Golden Gate Canal Weir No. 4 (GG4) structure is located in Collier County, Big Cypress Basin (BCB); 600 feet west of and approximately 1 mile north of the intersection of Golden Gate Boulevard and 10<sup>th</sup> Street NE in Golden Gate Estates. The structure can be accessed from two dirt roads/easements that connect the structure to 10<sup>th</sup> Street NE on the east side and to 8<sup>th</sup> Street NE on the west side; the dirt road access points are located about a mile north of Golden Gate Boulevard along 8<sup>th</sup> Street NE and 10<sup>th</sup> Street NE respectively.

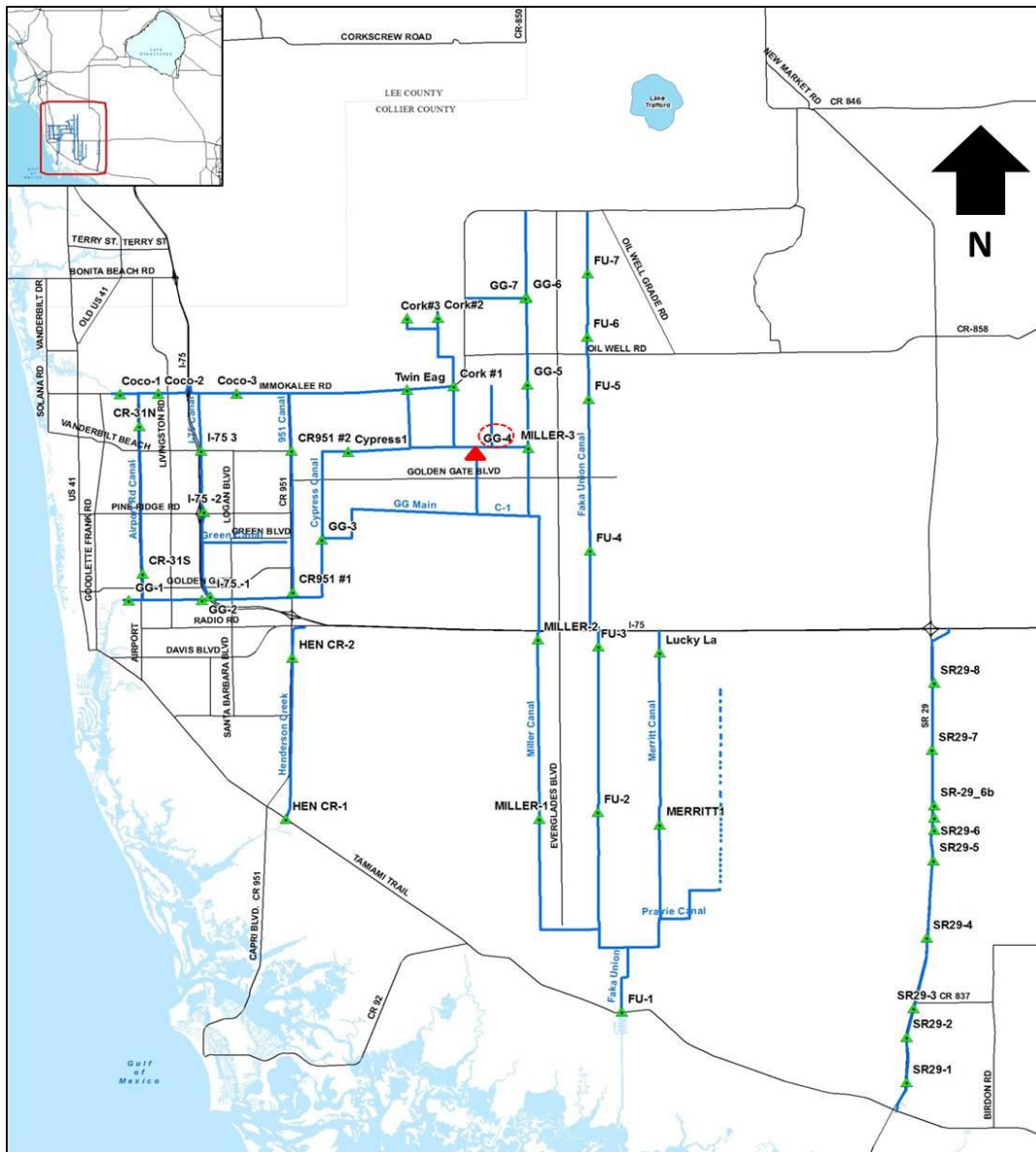


Figure 1 – GG4 Location



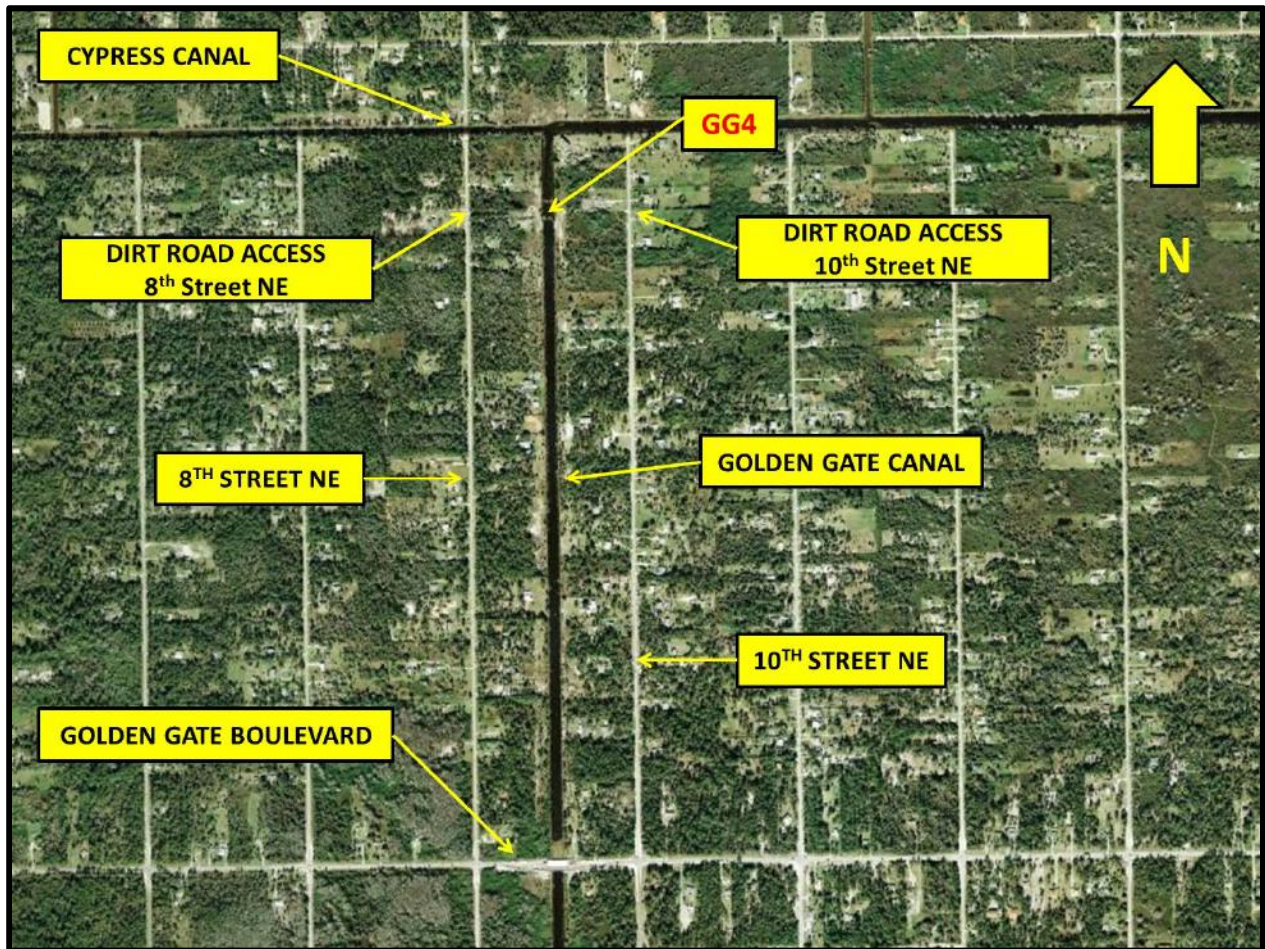


Figure 2 – GG4 Location

## Project Description

The GG4 structure is a fixed crest weir with two (2) manually operated, bottom opening sluice gates; the length of the weir is 100 feet and the design capacity is 980 cubic feet per second (cfs). The project encompasses the full replacement of the GG4 structure with a structure similar to Cocohatchee (COCO) 3. It is important to note, that the appropriate extent of project level hydrologic and hydraulic (H&H) modeling required for the new structure should be determined by the Hydrology & Hydraulics Bureau to verify capacity and control characteristics for the new structure. If no additional capacity is required, the replacement capacity should match or exceed the existing capacity with a goal of 105 to 115% to prevent an unintentional reduction in capacity. The new design will fundamentally shift structure function from that of a predominantly fixed crest weir to an operable gate system. This will improve operational flexibility under equivalent normal conditions. The new structure should be automated to reduce time demands on the BCB Field Station (FS) staff. The structure replacement shall be in the same location.

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The proposed work shall meet the South Florida Water Management District (SFWMD) design requirements and all applicable engineering standards. The new structure capacity, controls, and drainage patterns shall be fully supported by the project level H&H modeling and approved by the Operations Section. The proposed project is necessary to support the continued operation of the BCB System and Strategic Plan.

## Project Scope

The project includes the complete replacement of structure GG4 with a structure similar to COCO 3 at the same location.

### **The scope for GG4 Replacement will include but is not limited to:**

1. Installation of temporary sheetpile downstream of structure and an earthen ring cofferdam upstream of structure,
2. Excavate bottom and dewater,
3. Design of bypass pump system for potential heavy rain events during construction; suggested discharge capacity 200 – 300 cfs based on previous projects (subject to verification during design),
4. Existing structure demolition and proper disposal of existing structural elements,
5. Drive permanent sheetpiles,
6. Pour and form concrete bottom slab,
7. Pour concrete walls with necessary inserts and accessories,
8. Set gates with preliminary controls,
9. Drive wingwall sheetpiles and pour concrete caps,
10. Installation of rip-rap and embankment,
11. Set bridge deck slab,
12. Form and pour concrete approach slab,
13. Concrete building pad,
14. Precast control building,
15. Site electrical and automation components, PCL control with communication back to control room(s), etc.,
16. Generator,
17. Propane tanks and fuel system,
18. Stilling wells and staff gauges, and
19. General associated civil works.

The disciplines required for this project include but are not limited to: Survey, Geotechnical, Civil, Structural, Hydraulic, Electrical, and Mechanical. The project will entail survey, geotechnical investigation, design and preparation of the required bid documents to solicit bid proposals.

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The last topographic survey for this structure was completed in 1998. A survey will be required for the proposed design work. The Engineering Design Section shall supply the survey requirements.

In addition, the following should be noted:

1. Prior to the design phase of the project, it is necessary to perform a project level H&H modeling of the GG4 structure. The purpose of the project level H&H modeling is to determine/verify the type and characteristics of the new structure.
2. **A pre-design meeting between the Operations Section and the Design Section** is required to discuss the findings and implications of the project level H&H modeling. The results of the meeting shall dictate the design approach.
3. In order to keep the desired project implementation timeline, the new design needs to remain consistent with the State and Federal threshold permit criteria. See Permitting Section for more details.
4. Coordination with the BCB FS and input from the BCB Basin Engineer and Operations Section will be required in order to confirm the operational criteria needed for the new structure. Refer to the memorandum prepared by the BCB Basin Engineer, "GG-4 REPLACEMENT - Proposed Operational Criteria" dated December 31, 2014.
5. The design of the de-watering system to be used during construction should consider the following:
  - a. A bypass system for dry season construction should be designed for a 5-year design storm.
  - b. If construction is expected to extend into the wet season then the construction sequence and by-pass requirements will need to address the ability to hand the flow associated with a 5-year design storm. If space is available a temporary weir or gate could be installed with sufficient capacity to meet both the dry and wet season requirements. If space is a constraint, the construction could be sequenced so that the new gates are constructed on the opposite side of the existing gates during the dry season and available to use for wet season by-pass. A by-pass system for wet season construction will require additional analysis in order to guarantee adequate capacity if a heavy rain event takes place.
  - c. Blockage of upstream/contributing adjacent canals may be required to prevent over-drainage of adjacent areas during construction.
6. It is anticipated that the new GG4 structure will have a similar design as the COCO 1, 2 or 3 structures but with larger bottom opening weir gates and a fixed crest weir.
7. The new GG4 structure must prevent over-drainage of the watershed by maintaining an appropriate upstream control elevation during the dry season. The two existing sluice gates have limited capability to release floodwater during the wet season. When operating within normal ranges, total structure discharge will now include a larger flow component through operable gates. Coupled with an automated system, operational flexibility of the structure will be improved significantly.



The existing operational criteria of GG4 should be considered in the design and construction of this project. The operational criteria states: “Beginning May 15<sup>th</sup> each year the sluice gates should be opened after the first daily rainfall of 1 inch, weekly rainfall of 3 inches or when the headwater is 6 inches above the weir crest. During the dry season beginning October 15<sup>th</sup>, the gates should be closed when the headwater drops to within 3 inches of the weir crest. In the event of a major storm warning, the above criteria are to be overridden by manually keeping all gates fully open, and reverting to normal operations after the threat of the storm is over. The operation status can be found in the BCB Gate Operation Log prepared by BCB staff at the beginning of each month”. Refer to the “Water Control Structure Manual – Big Cypress Basin, 2011.”

8. For the structure automation, there is electric power service available in the area; power lines are located approximately 500 feet east and west of the structure. Existing power lines run along 8<sup>th</sup> St. NE and 10<sup>th</sup> St. NE.

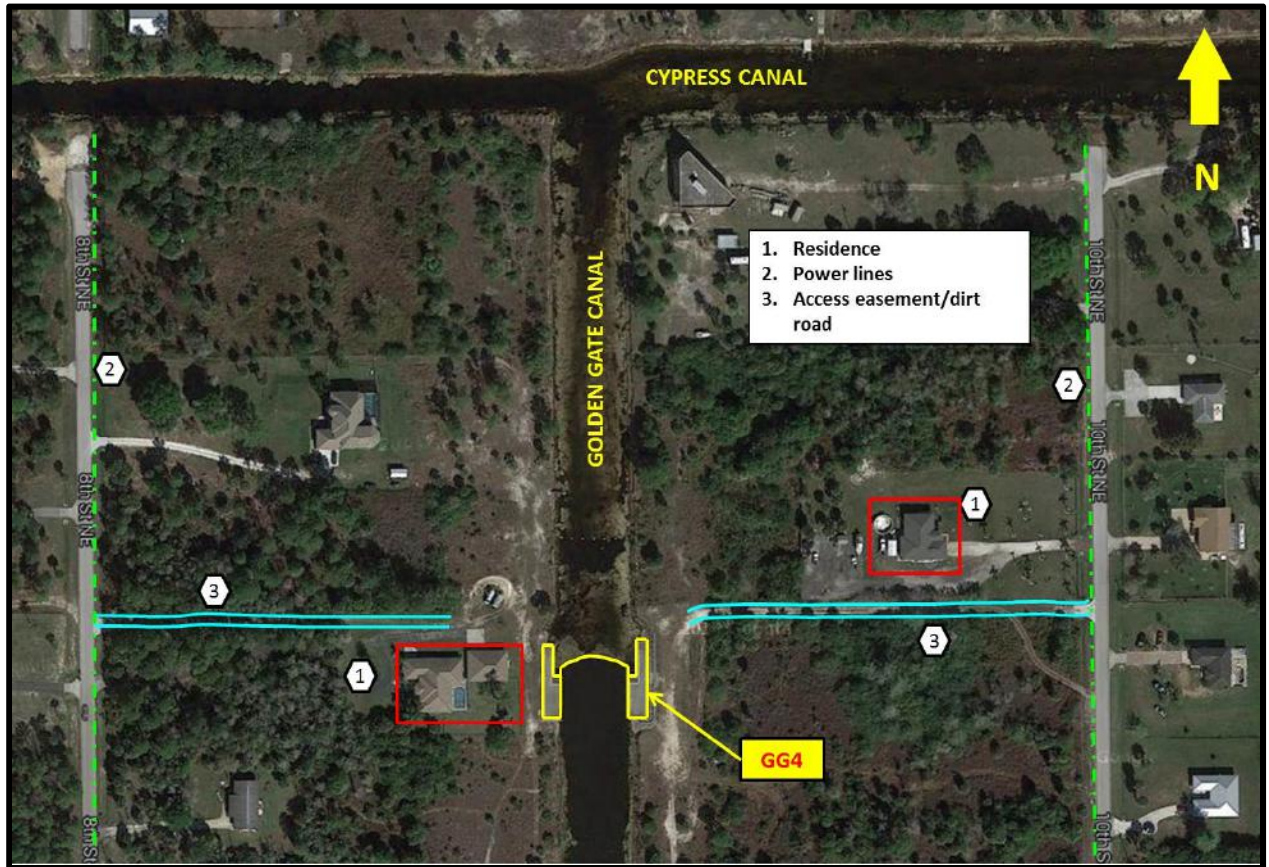


Figure 3 – GG4 Project Surrounding Utilities and Private Properties



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## Background

The GG4 Replacement project was originated as part of the BCB Capital Prioritization initiative that supports the BCB 2013 – 2018 Strategic Plan. The Strategic Plan establishes the overall policy direction and priorities set by the BCB Board, provides guidance in development of the annual budget and work plan, and identifies success indicators to be used for measuring progress. Implementing the priorities identified in this Strategic Plan will result in:

- Improved flood protection by an enhanced water management system,
- Improved local ecosystems, including improvements in the timing and quantity of water flows and restored habitats,
- Improved stormwater storage capacity and increased aquifer recharge,
- Improved water quality through improved timing and distribution of freshwater to coastal estuaries while supporting and implementing restoration projects,
- Increased alternative water supply use and reduced demand on potable water supplies, and
- Public and private partnerships that help stretch limited resources.

GG4 is a 26-year old structure that generally is in good condition. The main concern that the BCB FS has is the limited drawn-down and storage capacity of the structure. The need to retain/store fresh water is another operational issue at certain times of the year. Initially, a proposed solution to achieve the required draw-down capacity of this structure was to re-size/modify the two existing gates with bigger gates. Also, in order to improve the water storage capabilities, increasing the weir elevation was contemplated. As part of the retrofit, it was recommended to automate the structure in order to make its operation more cost effective and efficient. Due to the level of uncertainty that a retrofit of this magnitude brings, a full replacement has been identified as a more appropriate solution. An appropriate extent of the project level H&H modeling needs to be determined by the Hydrology & Hydraulics Bureau in order to provide preliminary engineering design information on the hydraulic performance of the existing and the proposed GG4 structure (similar to COCO 3), storm flows for improvement of flood protection if possible and for protection of the regional groundwater supplies.

The GG4 structure was inspected under the Structure Inspection Program (SIP). The above-water inspection of the structure was performed by the SFWMD's Infrastructure Management Section (Infrastructure) team on March 26, 2013. The underwater inspection was performed by Infrastructure Engineers, Inc., on February 26, 2013. The GG4 structure was designated an overall rating of C-3, requiring only minor repairs and monitoring during the next maintenance cycle. In addition, the United States Army Corps of Engineers (USACE) also performed an inspection on this structure and the results are recorded in the Routine Inspection Report (RIP) dated July, 2012. Only one minor deficiency was reported.

Subsequently, the BCB FS, Infrastructure, and Project Development (Project Development) Sections met to discuss the GG4 structure inspection findings and the overall prioritization process at the BCB. A field visit was performed by BCB FS and Project Development for verification purposes and to gather necessary information to produce an Issue ID that describes the current structure condition and proposed replacement approach. After the review of the information obtained from different parties

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and the field inspections, it was decided that complete replacement of the GG4 structure was the most viable approach and aligned with the current BCB strategic plan.

## Permitting

The project will require the review and approval of regulatory agencies at the federal, state and local levels. Although each agency's level of review will depend on the final design, total amount of work below ordinary high water, and existing site conditions, the following text represents the most likely level of review based on the current project scope.

From a State perspective, if the final design does not include changes in GG4's maximum discharge capacity, or control elevation, it is likely that the Florida Department of Environmental Protection (FDEP) can issue a General Permit to authorize a replacement structure. Rule 62-330.483 F.A.C. grants a General Permit to Water Management Districts to repair, replace, or alter existing water control structures with structures of comparable design.

In order to conduct work under the aforementioned General Permit, SFWMD must submit a "Notice of Intent to Use an Environmental Resource General Permit" using form 62-330.402(1). The notice must include the appropriate processing fee, which is currently \$250 per general permit (i.e. per location). Within thirty days of receiving the request, FDEP shall determine whether the activity qualifies for the General Permit or must undergo a higher level of review.

From a Federal perspective, the USACE will need to issue approval under Section 404 of the Clean Water Act which regulates the placement of fill (including replacement of water control structures) into Waters of the United States. Similar to state [FDEP] permitting, there are two possible permitting scenarios. If there are no changes to the discharge capacity or control elevation, it is likely that the proposed work will qualify under the USACE's Nationwide Permit #31. Changes to either discharge capacity or control elevation, would elevate the review to the level of an Individual Permit. Either way, the USACE should not need to conduct a Section 408 review, as the proposed work will not alter or change the Central & Southern Florida (C&SF) Flood Control Project.

For activities that require removal of surface or ground water as part of construction (e.g. dewatering), the contractor shall apply to SFWMD's Water Use Bureau and obtain all required permits.

The contractor will also be required to obtain any required local County permits. If the contractor intends to disturb one acre, or more, a completed Notice of Intent (NOI) to conduct work under the Generic NPDES Permit for stormwater discharge from large and small construction sites must be submitted. Independent of size of the disturbance, the contractor should also develop, and implement a stormwater pollution prevention plan (SWPPP) to ensure compliance with State Water Quality Standards.

A Right-of-Way permit will be required from the County for the staging area.

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## Right of Way

No existing right-of-way permits are associated with the project. Since the new GG4 structure will be automated, a right-of-way permit needs to be issued to Florida Power & Light (FPL), the power supplier in the project area. A Right-of-Way permit will be required from the County for the staging area.

## Real Estate

The Real Estate Section has provided information that certifies that the SFWMD has title sufficient for the replacement of the GG4 structure located in a portion of Section 2, Township 49 South, Range 27 East within the Golden Gate Canal, Collier County. There is no need for right-of-way drainage easements. A power utility easement will be required since the new GG4 structure will be automated and requires a power supply. In addition, temporary construction easements may be required to accommodate staging areas, enable access, and provide room to route the by-pass pump piping around the site. Therefore, close coordination and verification with the Real Estate Section and FPL during the design phase is required.

## Public Use/ Outreach

The project area is located within the SFWMD Golden Gate Canal right-of-way and the project area has not been identified for any public use. The public is able to access the GG4 structure and surrounding areas and enjoy passive recreational activities (fishing). Since the adjacent residential areas may be impacted during the construction of the project, it is recommended that a public outreach program be put in place prior to the execution of this project. The purpose is to inform the residents and other stakeholders about the project and its potential impacts. The project may require informational meetings, presentations, fact sheets, mailers or similar communications materials describing the duration and characteristics of the activities to be performed during construction. The Collier County Intergovernmental and Outreach Representative will support the outreach efforts in conjunction with the BCB FS. Public Outreach coordination efforts shall also include the stakeholders of this project.

## Stakeholder Considerations

The project lies within the BCB FS area of responsibility. Since FPL will be granted a right-of-way permit, this organization should be included in the list of stakeholders. The USACE should be included in the list of stakeholders since the Picayune Strand Restoration Project (PSRP) is located downstream of the GG4 Structure. Other stakeholders include Collier County, FDEP, and the public.

## Operations

The ability to maintain the flow conditions specified by the Operations Section during the period of construction will be required. Flood discharge characteristics must follow all the recommendations provided by Operations Section. New flow conditions based on the project level H&H modeling must be verified by the Operations Section. Impacts to the basin may be expected and additional modifications

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may be needed in the overall operation plan since the new GG4 structure discharge and storage capacity may be modified. The Operations Section has provided the following guidelines for the execution of this project:

- Enough checks and assurances need to be included in the design drawings, specifications, and/or contract documents in order to guarantee proper coordination with Operations Section when the construction work takes place.
- For all construction work, the contractor shall provide sufficient notice to Operations Section. A clear schedule of proposed activities shall be submitted to the Operations Section and the BCB FS for review and coordination before repair/construction work commences; at a minimum a 2-week notice shall be provided.
- The Operations Section has full autonomy to require that any repairs and/or construction activities cease should a heavy rain storm event be imminent or emergency and operational needs are identified.
- All work on project components that directly impact the structure operations shall be performed during the dry season only, generally the November to May timeframe.
- Liquidated damages language should be considered in developing contract documents to discourage project delays.

## **Operations and Maintenance**

This project lies within the BCB FS area of responsibility and has been coordinated with the FS personnel. The BCB FS has the resources, manpower and equipment to provide operations and maintenance once the project is online.

## **SCADA, Instrumentation, Telemetry**

SCADA instrumentation and telemetry are required for the project; full automation is required for the new GG4 structure. The project is within a 10-mile range of the PSRP Faka Union tower. Before the commencement of the project it will be necessary to verify if the tower has available capacity to monitor the new GG4 structure. Proper coordination and verification to determine the type of RTU to be installed in GG4 is required based on the timing of the GG4 replacement and the timing of Faka tower with base station on line. The RTU (likely ACE3640) will need to be able to run the site independently (local control) and by remote control.

## **Security and Safety**

Security and site safety shall be the responsibility of the contractor during construction. The contractor shall coordinate with the BCB FS. The security required inside SFWMD property will be passive. Barricades, temporary fencing, warning signs, and similar elements shall be used to alert/prevent non-authorized personnel and the public from unrestricted access to the construction area. The design plans should delineate the extent of the construction area limits with notation for installation of safety barricades and/or construction fences. In addition, it is the contractor's responsibility to provide any



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necessary security systems in the project area. A comprehensive Maintenance of Traffic (MOT) plan shall be implemented if construction is determined to have an impact on Golden Gate Blvd., 8<sup>th</sup> St. NE, or 10<sup>th</sup> St. NE. A suggested safety feature after the completion of the project is the use of safety railings on the structure; preferably picket railings, since the public frequents the site for fishing and passive recreational activities.

## Information Technology

No IT modifications are necessary for the project.

## Environmental

The project does not include or impact any existing wetlands or sensitive areas. No coordination with SHPPO or other archaeological agencies is anticipated for this project. The project does not lie in Tribal Lands. As per the C&SF Project Manatee Accessibility Map, dated September 2006, the project area is not accessed by manatees. No avian protection plan is required. The FDEP Total Maximum Daily Load (TMDL) program is not applicable for this project.

## Monitoring

Implementation of Best Management Practices (turbidity screens) in the areas impacted by construction to prevent turbidity plumes will be required. Silt screens to cordon off any spoil disposal areas along the canal bank to prevent sediment laden water runoff into the canal and along the access roads to the site area will be required.

## Commissioning

The GG4 Project will require commissioning and testing once the structure replacement has been completed.

## Lessons Learned

For the hydraulic modeling and overall information on the Golden Gate System it is recommended that the report “Big Cypress Basin Watershed Management Plan Hydrologic - Hydraulic Assessment for Retrofit of Golden Gate Canal Weir #6 and Weir #7, dated August 2010” be used as a reference.

Projects to be considered as examples of lessons learned for this project are:

- PS# 100718 – Miller Weir #3 Retrofit. Currently under construction. Flow by-pass pump systems are in place.
- PS# 100153 – Golden Gate 6 & 7 Replacement.
- PS# 100126 – Golden Gate Structure # 3 Replacement.

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## Conceptual Alternative Options

There are no conceptual alternative options for this project. The structure should be replaced as described in the project Description, Project Scope, and Background sections of this report. The new structure should be similar in design as structure COCO 3.

## Cost Estimates

The COCO 3 design should be used for cost estimating since this type of structure is likely to address the operational needs of the new structure GG4. The cost estimates should take into consideration that COCO 3 Structure has larger roller gates with an auxiliary fixed crest weir. The cost estimates should be adjusted for the relative size/weir length and inflation since COCO 3 construction took place in 1999.

The project cost estimate is: **\$3,454,906.**

Note that based on the final design, all quantities and cost estimates may vary.

## Recommendations

The new structure should be similar in design as structure COCO 3.

## Project Milestones

- Fiscal Year 2015 Design and Fiscal Year 2016 Construction. Construction shall be performed during the dry season. The following is an estimated project schedule.
  - Start Design: Second quarter of FY15
  - Complete Design: Third quarter of FY16
  - Construction Start: First quarter of FY17
  - Complete Construction: Fourth quarter of FY17
- There are no legal or regulatory mandates driving the project completion to a certain date.
- There are no key timeframes for design and construction for this project.

The project construction duration is subject to the contractor's performance, weather conditions, operational needs, and funding availability. It is anticipated that once the project starts, the project will be completed within the proposed timeframe.

## Resource Requirements

List Functions	Skill of Functional Employees	Identify Employees	Total FTEs/Hours Required for Complete Project
Engineering	Civil, Structural,	TBD	TBD

	Geotech, Mechanical, Electrical, CADD		
Permitting	Scientist	TBD	TBD
Project/Construction Manager	PM/CM, CI	TBD	TBD
Survey	Surveyor	TBD	TBD
<b>Total Resource Requirements</b>			<b>TBD</b>

## Project Deliverable and Schedule

Fiscal Year	Deliverable	Schedule
FY15	Survey	Second Quarter of FY15
FY15	Geotechnical	Second Quarter of FY15
FY15	Design	Second Quarter of FY15 to Third Quarter of FY16
FY15 to FY16	R/W Coordination	Second Quarter of FY15 to Third Quarter of FY16
N/A	Land Coordination	
FY16 to FY17	Public Outreach	First Quarter of FY16 to Fourth Quarter of FY17
FY15 to FY16	Permitting	Concurrent with design
FY16	Bid Process	GB Month: Third/Fourth Quarter of FY16
FY16	Notice to Proceed	First Quarter of FY17
FY16	Construction Start	First Quarter of FY17
FY16	Construction End	Fourth Quarter of FY17

## Project Funding Sources

It is anticipated that this project will be funded under the Operations, Maintenance, and Construction Capital Projects using Project Fund 403000 and Functional Area CA04. However, the assigned Project Manager for this project shall verify with SFWMD Accounting if some of the components of this project should be handled as expenses; in that case the Project Fund is 203000.

## References

- **SIP Reports:**
  - <http://jxapps.sfwmd.gov/siptool/viewevent.do?method=getEventDetails&eventID=10441&structureID=2306>
  - <http://jxapps.sfwmd.gov/siptool/viewevent.do?method=getEventDetails&eventID=9962&structureID=2306>
- **Engineering Plans:**
  - [\\ad.sfwmd.gov\dfsroot\data\survey\share\Structures\Weirs,Dams & Named structures\Gg4 \(Blvd Weir,Golden Gate Cnl Weir4, Goldw4,FC2NW9 7\)\Scanned Engineering Maps](\\ad.sfwmd.gov\dfsroot\data\survey\share\Structures\Weirs,Dams & Named structures\Gg4 (Blvd Weir,Golden Gate Cnl Weir4, Goldw4,FC2NW9 7)\Scanned Engineering Maps)
  - <http://jxapps.sfwmd.gov/siptool/viewevent.do?method=getEventDetails&eventID=7861&structureID=2306>
- **Issue ID:**

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[\\ad.sfwmd.gov\DFSRoot\data\om\Project\\_Development\Issue IDs\BCB Drafts\ID Drafts\](\\ad.sfwmd.gov\DFSRoot\data\om\Project_Development\Issue IDs\BCB Drafts\ID Drafts\)

- **Structure Information Site:**

[http://my.sfwmd.gov/portal/page/portal/pg\\_grp\\_sfwmd\\_sis/pg\\_sis\\_structure\\_screen\\_std?p\\_search=&p\\_structure\\_id=1152](http://my.sfwmd.gov/portal/page/portal/pg_grp_sfwmd_sis/pg_sis_structure_screen_std?p_search=&p_structure_id=1152)

- **Big Cypress Basin Watershed Management Plan Hydrologic - Hydraulic Assessment for Retrofit of Golden Gate Canal Weir #6 and Weir #7, August 2010:**

<https://webtop.cerpzone.org/webtop/drl/objectId/09009f57830be30d>

- **BCB Miscellaneous Information:**

<https://webtop.cerpzone.org/webtop/drl/objectId/0b009f57830bae87>

- **BCB - GG-4 REPLACEMENT - Proposed Operational Criteria:**

<https://webtop.cerpzone.org/webtop/drl/objectId/09009f57830cb6aa>



## Photographs



Photo 1 – GG4 and Canals Aerial View



**Photo 2 - GG4 Downstream View**



**Photo 3 - GG4 Upstream View**





**Photo 4 – Typical COCO Structures (COCO3 Upstream View)**

## Project Schematic Diagram

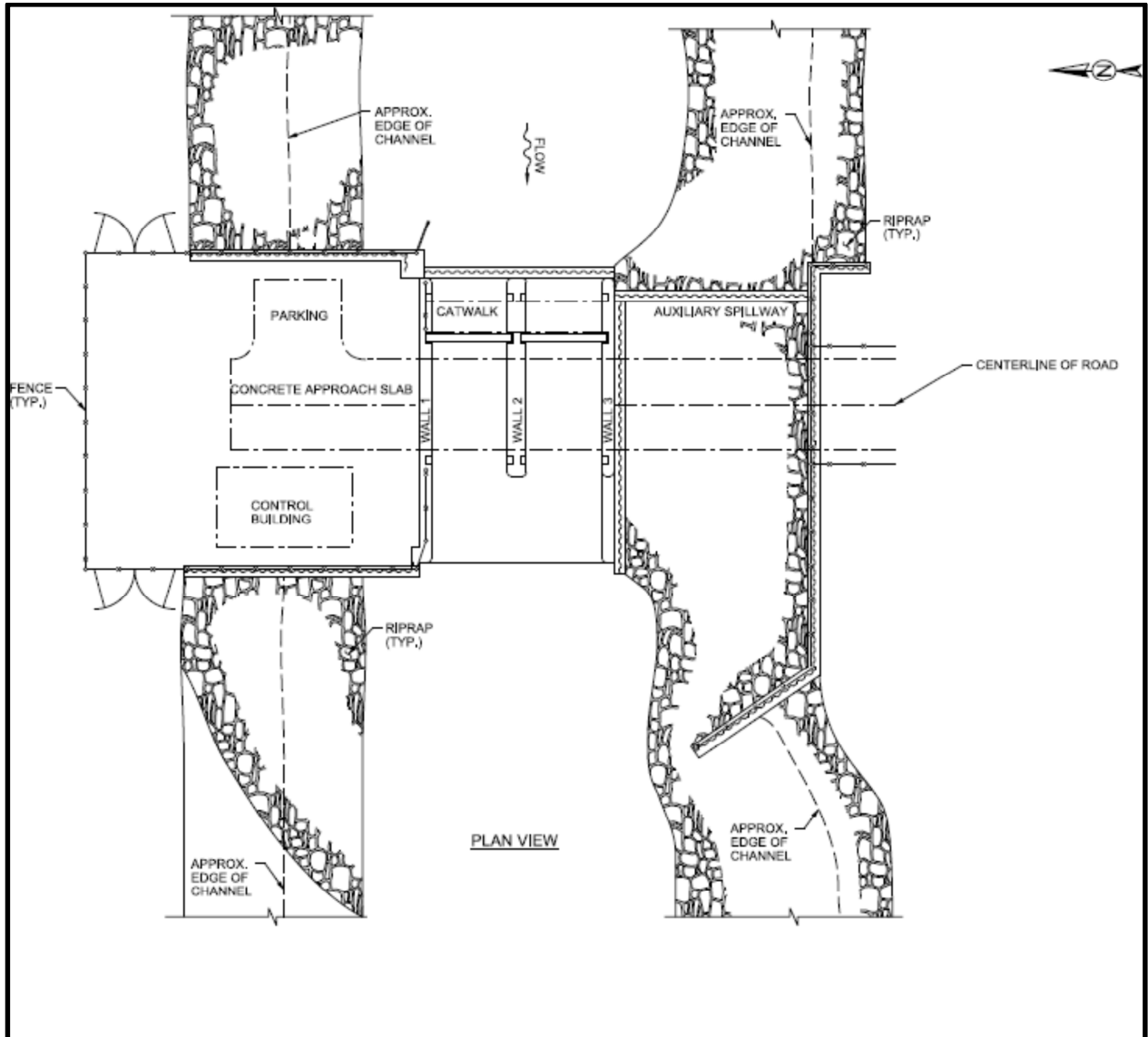


Figure 4 – Typical COCO Structures Layout (COCO3)



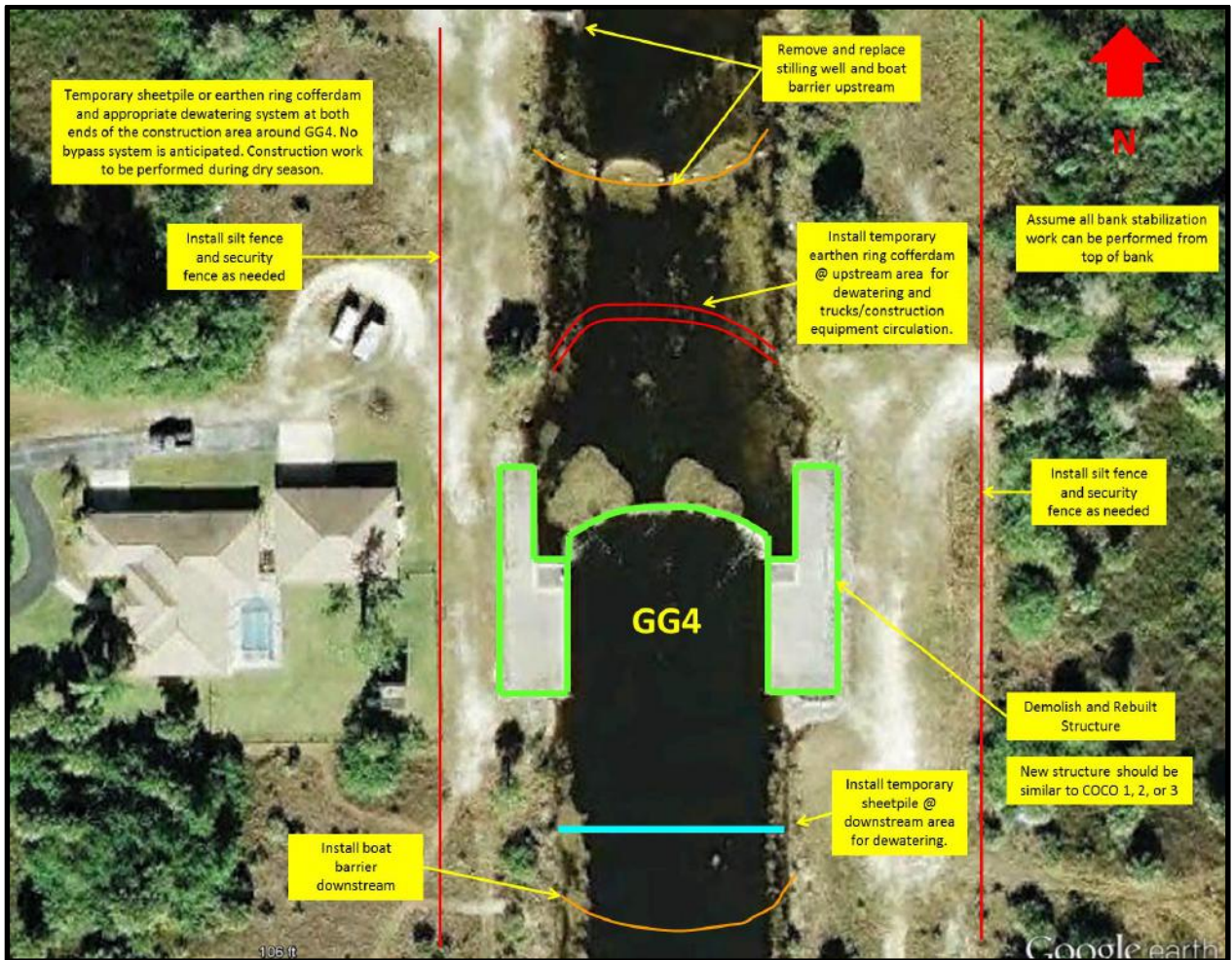


Figure 5 – GG4 Overall Scope Schematic

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## **Appendix A - Cost Estimate**

**Bid Item Cost only w/Markups by Subdivision**  
**Bid GG4: CONCEPTUAL ESTIMATE FOR STRUCTURE REPLACEMENT & AUTOMATION**

Item Code	Description	Quantity	Unit	Approx. Unit Cost	Total Cost
<b>Division 2: Sitework</b>					
<b>Subdivision 2.1: Site Preparation</b>					
2.1100	Install silt fence, adverse conditions, 3' high	1,200.00	LF	1.12	1,344.00
2.1200	Floating turbidity barrier on both sides of the structure	320.00	LF	15.00	4,800.00
2.1300	Temporary security fence	240.00	LF	24.00	5,760.00
2.1600	Install boat barrier on upstream & downstream of the structure	320.00	LF	25.00	8,000.00
<b>Site Preparation =</b>					<b>19,904.00</b>
<b>Subdivision 2.2: Earthwork/Stablize</b>					
2.2200	P&D material to place temporary earthen plug, up to 40 miles round trip	6,800.00	CY	22.00	149,600.00
2.22100	Temporary earthen plug for the existing weir demolition, cost includes removal	6,800.00	CY	10.00	68,000.00
2.2310	Backfill and compaction selected material for slab on grade foundation	240.00	CY	24.00	5,760.00
2.2410	Rip-rap works, on both sides of the structure	720.00	CY	90.00	64,799.98
2.2520	Final grading	1.00	DAY	5,000.00	5,000.00
<b>Earthwork/Stablize =</b>					<b>293,159.98</b>
<b>Subdivision 2.3: Piling</b>					
2.3200	Drive temporary sheet piling cofferdam, includes salvage	6,000.00	SF	24.00	143,997.96
2.3300	Demolish and remove existing weir structure	1.00	LS	120,000.00	120,000.00
2.3510	Sheet pile walls (184 LF X 30' L), includes wales & tie rods	8,400.00	SF	45.00	378,000.00
<b>Piling =</b>					<b>641,997.96</b>
<b>Subdivision 2.6: Water System</b>					
2.6100	Dewatering the cofferdam	120.00	DAY	1,250.00	150,000.00
2.6100	Install stilling wells	2.00	LF	30,000.00	60,000.00
2.6200	Install staff gauges	2.00	EA	2,000.00	4,000.00
<b>Water System =</b>					<b>214,000.00</b>
<b>Division 2: Sitework =</b>					<b>1,169,061.94</b>
<b>Division 3: Concrete</b>					
<b>Subdivision 3.3: Cast In Place</b>					
3.3200	Reinforced concrete structure floor (45' x 35' x 2.5')	215.00	CY	480.00	103,200.00
3.3300	Concrete floor, slab on grade (3500 psi), 12" thick, includes rebar	90.00	CY	410.00	36,999.96
3.3400	Concrete cap (3' w x 12" H)	390.00	LF	123.88	48,316.39

**Bid Item Cost only w/Markups by Subdivision**  
**Bid GG4: CONCEPTUAL ESTIMATE FOR STRUCTURE REPLACEMENT & AUTOMATION**

Item Code	Description	Quantity	Unit	Approx. Unit Cost	Total Cost
<b>Division 3: Concrete</b>					
<b>Subdivision 3.3: Cast In Place</b>					
3.3400	Concrete abutments and bay wall (120' L x 40 W x 2' thick)	210.00	CY	740.00	155,400.00
3.3500	Concrete bridge deck (140' x 12')	1,680.00	SF	91.96	154,495.62
3.3600	Install control building (12' x 24')	1.00	LS	90,000.00	90,000.00
				<b>Cast In Place =</b>	<b>588,311.97</b>
				<b>Division 3: Concrete =</b>	<b>588,311.97</b>
<b>Division 5: Metals</b>					
<b>Subdivision 5.5: Metal Fabrication</b>					
5.5030	Install two (2) multiple disc slide gates (10' W x 8' L), includes hoisting	2.00	Ea	32,000.00	64,000.00
5.5500	Platform (Walkway) grating	150.00	SF	52.00	7,800.00
5.5600	Install railing, stainless steel pipe, 3 rails	100.00	LF	84.00	8,400.00
				<b>Metal Fabrication =</b>	<b>80,200.00</b>
				<b>Division 5: Metals =</b>	<b>80,200.00</b>
<b>Division 11: Equipment</b>					
<b>Subdivision 11.1: (Used in Bid Items)</b>					
11.1200	Standby pumps up to 250 CFS, during the construction duration	6.00	Month	36,000.00	216,000.00
				<b>(Used in Bid Items) =</b>	<b>216,000.00</b>
				<b>Division 11: Equipment =</b>	<b>216,000.00</b>
<b>Division 16: Electrical</b>					
<b>Subdivision 16.0: Power Generation</b>					
16.0010	Install generator, includes fuel tank	1.00	LS	40,000.00	40,000.00
16.0040	Electrical works	1.00	LS	55,000.00	55,000.00
				<b>Power Generation =</b>	<b>95,000.00</b>
				<b>Division 16: Electrical =</b>	<b>95,000.00</b>



