Charlotte County RESTORE Act Funding Application

General Project Information			
Applicant Name	Charlotte County Utilities		
Was the proposed activity included in any claim for compensation paid out by the Oil Spill Liability Trust Fund after July 6, 2012? If "Yes," the project is not eligible for funding		Yes	No
		☐	☑
Person to be contacted regarding application	Name: Ruta Vardys		
	Title: Engineer III		
	E-mail: ruta.vardys@charlottecountyfl.gov		
	Phone: 941-764-4302		
Proposal Title	Restoring the Impaired Waters of Charlotte Harbor		

Project Executive Summary: Provide a concise project summary or abstract in the space below (250 words max)

Charlotte County's Restoration of Water Quality in the Impaired Waters of Charlotte Harbor Project (the Project) is a large scale, multi-phased project that primarily addresses Goal number 2, Restore Water Quality, of the Initial Comprehensive Plan of the RESTORE Council by reducing the nutrients and bacteria entering the impaired waters of Charlotte Harbor from the densely urbanized and coastal areas of Charlotte County. The Project consists of 3 components; (1) the removal of OSTDS's and construction of a centralized wastewater systems, (2) stormwater improvements, and (3) a public education component. The total project construction cost is estimated in excess of $400 million. However, Charlotte County Utilities has divided the project into multiple phases and is requesting funding for the first three components: the Pilot Area, Phase 1A, and Phase 1B which are the areas directly impacting Charlotte Harbor. The total project cost of all 3 phases is $101,780,000. Charlotte County is requesting $17,310,000 from the Charlotte County Restore Act to cover 17% of the project cost in order to maintain affordability to property owners. Up to 7,700 properties are impacted by this project including 5,368 existing homes. These areas are directly on water bodies whose receiving waters are the Charlotte Harbor Estuary and Gulf of Mexico. The project implements Objective Water Quality(WQ) J of the Comprehensive Conservation and Management Plan (CCMP) of the Charlotte Harbor National Estuary Program by providing central sanitary sewers to developed areas within 900 feet of waters such as estuarine shorelines, rivers, creeks, canals and lakes.

Project Location			
	Street:		
	City:	State:	
	Zip Code:		
	If no street address is available, please provide longitude/latitude	26°59'18.32"N	82° 8'47.62"W

Project Eligibility

Select the one primary RESTORE Act eligible activity of the project in the first column and any others that apply in the second column by placing an X in the row corresponding to the qualifying eligible activity. Project must fulfill one eligible activity at a minimum to be eligibile for funding.

RESTORE Act Eligible Activity

Primary activity	All others that apply	Eligible Activity
☐	☑	Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region
☐	☑	Mitigation of damage to fish, wildlife, and natural resources
☑	☐	Implementation of a federally approved marine, coastal, or comprehensive conservation management plan, including fisheries monitoring
☐	☐	Workforce development and job creation
☐	☐	Improvements to or on State parks located in coastal areas affected by the Deepwater Horizon oil spill
☐	☑	Infrastructure projects benefitting the economy or ecological resources, including port infrastructure
☐	☑	Coastal flood protection and related infrastructure
☐	☐	Promotion of tourism in the Gulf Coast Region including recreational fishing
☐	☑	Promotion of the consumption of seafood harvested from the Gulf Coast Region

Project Eligibility

Select the one primary Charlotte County goal met by the project in the first column and any others that apply in the second column by placing an X in the row corresponding to the appropriate County goal. Project must meet a minimum of one County goal to be eligible for funding.

Charlotte County Goals

Primary Goal Met	All others that apply	Charlotte County Goal
☑	☐	Water Resource Protection: protects or restores water quality and quantity
☐	☐	Efficient and Effective Government: facilitates organization's capacity to govern and manage effectively
☐	☑	Quality of life: enhances community life through the conservation of wildlife, protection or restoration of natural resource and providing community amenties
☐	☐	Fiscal/ Financial Planning: increases effectiveness of local government and maintains strong financial condition
☐	☑	Growth Management: manages growth and change consistent with County's comprehensive plan
☐	☑	Public Safety: maintains a safe and healthy community
☐	☑	Economic Development: create a business climate that promotes a diversified, growing economy consistent with growth management plans and enhanced quality of life.
☐	☐	Human Services: pursue available funding sources to facilitate providing services to meet community needs.
☐	☑	Infrastructure: stabilize and maintain County-wide infrastructure.

Project Cost

Project Cost	Value	Percent of project cost
Total Cost	$ $101,780,000	100 %
RESTORE Request	$ $17,310,000	17 %
Secured Match (include documentation)	$ $3,170,000	3.1 %
In-kind match value	$ $5,090,000	5 %
Funding Gap	$	%
Anticipated Cash Match	$ 76,210,000	74.9 %

Project Timeline

Estimated Project Start Date	July 2015
Estimated Project Completion Date	July 2022

Range of Project Benefit		
Select the range of benefit project is anticipated to have	Select One	Range of Benefit
	☐	Local
	☐	County-wide
	☐	Regional
	☑	Gulf-wide

Provide brief description of project scale in the space below (100 words max)
The Project is a comprehensive large scale, multi-phased project conducted through a cooperative effort by a number of government and non-profit stakeholders impacting up to 29,000 total properties, 17,420 of which are existing homes. The total cost of this program is in excess of $400million with the first three areas, the Pilot Area, Phases 1A and 1B project cost estimate at $101,780,000 and impacting 7,700 properties, 5,368 of which are existing homes. The project will attack pollution on several fronts including pollution created from On-Site Treatment and Disposal Systems (OSTDS, aka septic systems), untreated stormwater runoff, and control of pollution of pesticides, herbicides, and fertilizers.

Does project provide added benefit when combined with	Yes/No	List projects in box below
Other **proposed** projects or programs?	yes	Road paving projects; stormwater projects; and other infrastructure projects. When combined with other county infrastructure projects, the project area is only impacted one time and there is an economic benefit to complete the work under one contract.
Other **completed** projects or programs?		

Project Feasibility

	Yes/No
Does the project require federal, state, or local permits?	yes

If yes, list permits required below

Permits required	Permit Type (federal, state, local)	Status (obtained, not obtained)
Construction (FDEP)	state	obtained for Pilot Area only

Existing Planning	Yes/No
Is the project part of an existing federally approved comprehensive conservation management plan?	Yes
Is the project part of a County or state plan?	Yes

If yes, list plan below

1. Charlotte Harbor National Estuary Program Comprehensive Conservation and Management Plan, Update 2013
Southwest Florida Regional Ecosystem Restoration Plan submitted by the Joint Florida Gulf National Estuary Programs adopted March 8, 2013. The project implements Objective Water Quality(WQ) J of the Comprehensive Conservation and Management Plan (CCMP) of the Charlotte Harbor National Estuary Program by providing central sanitary sewers to developed areas within 900 feet of waters such as estuarine shorelines, rivers, creeks, canals and lakes.

2. Charlotte County Comprehensive Plan, SmartCharlotte 2050, Infrastructure element, section 6.1.2 WSW Policy 6.1.2: Sewer Expansion Program
CCU shall develop a cost-effective sewer expansion program consistent with the Goals, Objectives, and Policies of this Plan with the intent of reducing the impact of pollutants on the natural environment and preserving groundwater quality.

Budget Justification				
Activity/Item	**Cost**	**Requested RESTORE Funds**	**Cash Match**	**In Kind Match**
Project Design, Permitting, Land Rights, & Bid Preparation	$ 5,550,000		$ 4,020,000	$ 1,530,000
Administration, Overhead and Indirect*	$ 7,970,000		$ 7,460,000	$ 510,000
Subtotal	**$ 13,520,000**	**$ -**	**$ 11,480,000**	**$ 2,040,000**
Project Permitting	incl. with design			
Subtotal				
Project Activity				
Construction Contracts**	$ 62,220,000	$ 17,310,000	$ 44,910,000	
Administration and Mobilization	$ 2,640,000		$ 2,350,000	$ 290,000
Construction Inspection	$ 2,790,000		$ 510,000	$ 2,280,000
Other***	$ 12,930,000		$ 12,930,000	
Less - Other-Grants Received (2)			$ 3,170,000	
Subtotal	**$ 80,580,000**	**$ 17,310,000**	**$ 57,530,000**	**$ 2,570,000**
Monitoring				
Contracts	$ 310,000		$ 310,000	
Data Collection	$ 470,000		$ 320,000	$ 150,000
Monitoring Administration	$ 390,000		$ 130,000	$ 260,000
Subtotal	**$ 1,170,000**	**$ -**	**$ 760,000**	**$ 410,000**
Program Administration(1)	$ 70,000		$ -	$ 70,000
Contingency	$ 6,440,000		$ 6,440,000	
TOTAL	**$ 101,780,000**	**$ 17,310,000**	**$ 76,210,000**	**$ 5,090,000**

Costs are in 2015 dollars and do not account for inflation

*includes land purchase, public hearing notices, legal services, interest, and internal charges

**includes waste collection lines, lift stations, vacuum station

***includes transmission, central lift station, treatment facilities

(1) Supervising project administation.

(2) The Pilot area has been awarded approximately $3.17million in grants included in Cash Match as follows:

Total Maximum Daily Load Water Quality Restoration Grant, $599,670

Total Maximum Daily Load Water Quality Restoration Grant, $2,071,324

Florida State Financial Assistance - Legislative Appropriation, $500,000

Charlotte County RESTORE Act Funding Application: Narrative: "Restoration of Water Quality in the Impaired Waters of Charlotte Harbor"

1. Project Narrative

- **Project need and compatibility:**

Charlotte County is proposing a large-scale project that will substantially contribute to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches and coastal wetlands of the Gulf Coast ecosystem and specifically improves the health of the estuary which improves the health of the Gulf and the wildlife of the gulf such as shellfish, sea turtles, Gulf sturgeon and many more. Charlotte County's Restoration of Water Quality in the Impaired Waters of Charlotte Harbor Project (hereinafter called the Project) is a large scale, multi-phased project that primarily addresses Goal number 2, Restore Water Quality, of the Initial Comprehensive Plan of the RESTORE Council by reducing the nutrients and bacteria entering the impaired waters of Charlotte Harbor from the densely urbanized and coastal areas of Charlotte County. Charlotte Harbor is the second largest estuary in the State of Florida. The project implements Objective Water Quality(WQ) J of the Comprehensive Conservation and Management Plan (CCMP) of the Charlotte Harbor National Estuary Program by providing central sanitary sewers to developed areas within 900 feet of waters such as estuarine shorelines, rivers, creeks, canals and lakes. The CCMP is a regional document that covers the 4,700 square miles of the Charlotte Harbor watershed within 12 Florida counties and contains 5 aquatic preserves. The project provides a comprehensive approach aimed at eliminating pollution from aging and non-conforming On-Site Treatment and Disposal Systems (OSTDS, aka septic tanks), constructing a central wastewater system and storm water improvements to reduce untreated storm water runoff, and reduce the improper use of pesticides, herbicides, and fertilizers through an educational program on Best Management Practices. These efforts will reduce the non-point source pollutant load and mitigate the resulting ecological impacts that are currently impairing the receiving water bodies of Charlotte Harbor.

Through this initial step of eliminating non-point source pollution, Charlotte County is laying the foundation to restore the long-term resiliency of the Charlotte Harbor Estuary and its tidal tributaries under which future activities to restore marine habitat can become effective and sustainable for the future.

A pilot project which provides the basis for this request is now underway and substantial financial assistance was required to maintain the affordability of the pilot project to the property owners affected. Funding for the initial pilot project came from multiple sources,

including EPA Section 319, TMDL State Grants and a state legislative appropriation. RESTORE funding is crucial to move forward with our next phase.

Charlotte County began developing the Restoration of Water Quality in the Impaired Waters of Charlotte Harbor project in 2009 with the prioritization of areas within Charlotte County that were not on central wastewater disposal. Prioritization was based on the following criteria; proximity to impaired water bodies, OSTDS failures, population density, frequency of beach closures due to bacteria, proximity of existing central wastewater disposal infrastructure, projected road paving projects and other county infrastructure projects. Four (4) large areas were identified with a total construction cost in excess of $400 million by project completion (see Exhibit A).

A preliminary engineering report dated March 2010, prepared by Charlotte County Utilities titled "Wastewater Service Program: Area 1 Preliminary Engineering Report" provides supporting information about the condition, age, and design concerns surrounding the existing OSTDS in the priority areas proposed for the Restore Act Project. (See Preliminary Engineering Report in Exhibit B) The report concludes that 53% of the OSTDS in the area were developed prior to 1984 and are no longer in conformance with existing design criteria as outlined in Florida Statutes and are beyond their useful life. As a result, these failing systems are contributing to pollution in Charlotte Harbor.

In order to tackle this problem, Area 1 was then sectioned into multiple phases in order to be feasible in both project cost and impact on existing wastewater treatment facilities. This funding request will address three of these phases, the East & West Spring Lakes Pilot Program Area (the Pilot) and Phases 1A and 1B. The Pilot area and Phases 1A and 1B are primarily located on canals **with direct access to Charlotte Harbor and the Gulf of Mexico** and therefore directly in alignment with RESTORE Act goals and objectives to improve water resources and water quality for the Gulf.

The overall project cost for these three phases, the Pilot, Phase 1A and Phase 1B is in excess of $90million. Charlotte County Utilities is requesting $17million from the RESTORE Act in order to offset the cost of the project for Charlotte County property owners and increase the affordability of the project. A detailed cost breakdown is provided in the budget narrative.

- ### No Duplication and Benefits of Combining with Current or Proposed Projects

  The project is not duplicative of existing efforts in that project prioritization includes timing projects with the road paving program as well as other infrastructure projects. For example, the paving rehabilitation program for the Pilot area is being coordinated with the central sewer improvements in order to reduce overall impacts and minimize disruption. This is also a turn-key project whereby OSTDS will be abandoned and homes connected during the same construction project as the central sewer facilities. Storm water improvements will be constructed simultaneously with restoration efforts required as a result of constructing the central sewer project. By combining the project

with other infrastructure projects a number of benefits are realized including maximizing economies of scale when constructing the project under one mobilization effort, increasing competitiveness when applying for funding due to funding agencies rewarding projects that address multiple issues, and minimizing disruption to residents when completing all infrastructure efforts under one project.

▪ Leveraging of Resources and Partnerships

Charlotte County is requesting $17,310,000 for the Pilot area and Phases 1A and 1B which has an estimated total project cost of $101,780,000. Leveraged funds will come from assessments and low interest loans through the State Revolving Fund. In-kind contributions are estimated at 5% of the total Project Cost, or $5,089,000. In-kind contributions consist of the use of in-house staff time and resources to alleviate project costs related to engineering design, construction inspection, monitoring, and program administration/supervision. The cooperative partners for the project include as follows:

- Charlotte County Public Works
- Charlotte County Health Department (DOH)
- Charlotte Harbor National Estuary Program (CHNEP)
- Charlotte Harbor Environmental Center, Inc. (CHEC)
- Charlotte County Extension Through The Florida Yards And Neighborhoods And Sea Grant Marine Extension Programs (EES)
- Charlotte Harbor Community Redevelopment Area Advisory Committee (CRAAC)
- Lemon Bay Conservancy
- Bonefish & Tarpon Association
- Peace River Valley Citrus
- Southwest Shellfish Association
- Charlotte County Chamber of Commerce

The project is in alignment with existing local, regional, and non-profit cooperating partner goals and objectives. More specifically, the project addresses goals and objectives outlined in the County's Comprehensive Plan and in Priority Actions that are outlined in the Charlotte Harbor National Estuary Program (CHNEP) Comprehensive Conservation and Management Plan (CCMP), the Joint Florida Gulf National Estuary Programs Southwest Florida Regional Ecosystem Restoration Plan, and Southwest Florida Water Management District (SWFWMD) Surface Water Improvement and Management (SWIM) Plan.

Opportunities for additional leveraging of past, present, or future restoration projects and monitoring efforts:

- Public Works MSBU contribution toward storm water improvements and storm water quality

- CHNEP monitoring results that provide for additional pre and post testing information on receiving waters
- Utilization of IFAS educational programs to inform the residents on Best Management Practices
- Project contributes towards reducing the pollutant loading to the receiving waters of Charlotte Harbor to allow for an increase in the success of proposed restoration projects.

• Project eligibility:

Through a comprehensive approach in alignment with goals and objectives outlined in the Charlotte Harbor National Estuary Program Comprehensive Conservation and Management Plan, the state approved Smart Charlotte 2050 Comprehensive plan, and through a cooperative effort by a number of government and non-profit stakeholders, the project will attack pollution on several fronts including pollution created from OSTDS, untreated storm water runoff, and pesticides, herbicides, and fertilizers produced by 29,000 total properties, 17,420 of which are existing homes. The overall impact of these efforts is to restore the water quality of the surrounding impaired water bodies and ultimately the Gulf receiving waters.

Based upon the proposed elements to be completed as part of this project, this project is eligible under the Restore Act in a number of ways as follows:

- The project meets the Direct Component eligibility criteria under the Treasury Rule Vol. 79, No. 158, Section 34.201(a) as a restoration of natural resources project by addressing the pollutants that contribute to water body impairments and Section 34.201 (f) as an infrastructure project which includes water and sewer systems.

- The project specifically implements Goal number 2 of the Final Initial Comprehensive Plan of the RESTORE Council, "**Restore Water Quality – Restore and protect water quality of the Gulf Coast region's fresh, estuarine, and marine waters."**

- This project also ranked very high for Restore Water Quality in the Southwest Florida Regional Ecosystem Restoration Plan submitted by the Joint Florida Gulf National Estuary Programs adopted March 8, 2013 (see Exhibit C).

• Project Benefits

o How Project will Benefit the Citizens and Natural Resources of Charlotte County

The citizens of Charlotte County and natural resources benefit a number of ways from this project. **With this project, Charlotte County is laying the foundation upon which habitat restoration and the replenishment of living coastal and marine resources can occur and be effective.** With pollutants still entering the water bodies, nutrient and bacteria loads will continue to degrade the water quality needed to revitalize and

sustain the Gulf economy. The project provides economic benefits through jobs created during implementation and reduces development impacts due to the availability of central water and sewer. Reducing pollutants entering the water bodies also translates into less beach closures thereby enhancing the quality of life for Charlotte County citizens and tourists when visiting the area's shorelines. The project provides the opportunity for citizens to take part in the stewardship of the environment through education on potential pollutants used in cleaning and landscaping and the means to counter these practices through rain gardens, organic fertilizing and other "Florida Friendly" practices that can help restore and sustain Charlotte County's natural resources for future generations.

o Scale of Project Benefits

The project takes on a comprehensive approach to attack pollution on several fronts including pollution created from OSTDS, untreated storm water runoff, and the control of pollution of pesticides, herbicides, and fertilizers. The overall project impacts 29,000 total properties located in mid and west counties, 17,420 of which are existing homes (see Exhibit A). The first three phases of this project that are part of this funding request address the following number of properties: 1) Pilot Area – East & West Spring Lakes impacts 2,455 properties, 1844 of which are existing homes; 2) Phase 1A impacts 2,040 properties of which 1,357 are existing homes; and 3) area 1B impacts 3,196 properties of which 2,169 are existing homes. The impaired waters that will be receiving a benefit by removing the pollution include those surrounding these areas as indicated in Exhibit D and ultimately the entire 270 square miles of Charlotte Harbor Estuary, and ultimately the Gulf receiving waters.

o Metric for Success

The anticipated success of the Pilot project has been estimated using an EPA-approved watershed model, the **StepL** program[1]. The modeling results showed the project provides an overall reduction of 33% in TSS, 94% reduction in TP, 86% reduction in TN, and an 88% reduction in BOD[2]. The same results are expected across the entire project area.

Additionally, the success of the project will be measured through a water quality monitoring program by analyzing ground water wells and surface water locations for nutrients and bacteria throughout the project boundary both pre and post construction of the project. A monitoring program inclusive of 68 ground water wells and 21 surface water (canal) locations was begun in 2012 in the Pilot area in order to establish a baseline for measuring project success. In the near future, additional monitoring will also be implemented to measure pollutant loading created from storm water run-off

[1] Spreadsheet Tool for Estimating Pollutant Load (STEPL) employs simple algorithms to calculate nutrient and sediment loads from different land uses and the load reductions that would result from the implementation of various best management practices (BMPs).

[2] TSS – Total Suspended Solids; TP – Total Phosphorous; TN – Total Nitrogen; BOD – Biochemical Oxygen Demand

during rain events. A Quality Assurance Project Plan (QAPP) will be developed for the Pilot area monitoring program that defines the processes to control the water quality sample collection, testing and reporting of data as required. The QAPP is a requirement of the Total Maximum Daily Load (TMDL) grant requirements of which the Pilot area is a recipient and will require Environmental Protection Agency (EPA) approval. Charlotte County has also consulted with the Charlotte Harbor National Estuary Program (CHNEP), who currently is involved in water quality monitoring of the estuary through various efforts, for assistance in developing protocols for sampling and is sharing data from monitoring sites as compiled.

Charlotte County's East Port Laboratory (EPL), NELAC Certification #E54436 conducts the majority of the analyses of the water samples in accordance with approved methods in compliance with the National Environmental Laboratory Accreditation Conference Institute (NELAC). Total nitrogen, total Kjeldahl nitrogen, nitrate + nitrite, ammonia nitrogen, total phosphorus total suspended solids, fecal coliform, and biochemical oxygen demand are analyzed by the laboratory for each sample. Temperature, pH, specific conductance, dissolved oxygen and turbidity are also monitored and recorded for each sample with properly calibrated, EPA approved meters. EPL will also be involved in developing the QAPP.

In June 2013, TetraTech, a leading provider of consulting and engineering services for environmental sustainability, published a report "Water Quality Review within East and West Spring Lake" summarizing the water quality monitoring data collected to date in the Pilot program area. (See Exhibit E). TetraTech did an extensive literature review of other studies performed in this area and concluded that "OSTDS's are a strong contributor of nutrient loadings and resulting decreased water quality within East and West Spring Lake area."

2. Describe Project Feasibility. Include Discussion of the following:

- **Personnel:**

Charlotte County Utilities staff will manage and complete the project and be responsible for the operation and maintenance of the central sewer system once it has been constructed. Charlotte County Utilities has licensed engineers on staff to coordinate the work and perform design. CCU will secure the assistance of engineering firms where it is determined to be more feasible to do so as well as to address areas outside of CCU engineering staff expertise. CCU inspection staff will conduct construction inspections to ensure federal, state, and county regulations are in compliance during construction of the central sewer facilities and to confirm satisfactory completion. CCU currently has licensed water and wastewater operators on staff to operate and maintain the central sewer system which currently serves over 34,000 customers in accordance with federal, state, and county regulations. CCU will coordinate with the University of Florida Institute of Food and Agricultural Sciences to complete the educational

component of the project and comply with the requirements of as well as coordinate with Charlotte County Public Works and the County Engineer on the storm water component.

• Project Timeline

Below summarizes the projects' key milestones and projected start and completion dates for the proposed project phases.

Phases	Approval by BOCC to Proceed	Design& Permitting	Bidding Complete	Construction Start	Construction Completion
Pilot Area – East & West Spg Lakes	May 2013	Completed	June 2015	July 2015	January 2017
1A	To be determined	12 months	4 months	24 months duration	
1B	To be determined	12 months	4 months	24 months duration	
Remaining Phases	To be determined	12 months	4 months	24 months duration	

• Progress to Date:

The East and West Spring Lake Pilot project area's design and permitting are complete and is currently in the bidding process. Construction is expected to be completed by January 2017. The preliminary design for Phases 1A and 1B has been completed, therefore once approved to proceed by the BOCC, design can commence immediately. Furthermore, if approved by the BOCC, the remaining subsequent phases for the remaining properties will be started during the construction period of the phase preceding it. It is proposed to complete 1,500 connections per year until all OSTDS are connected to central sewer over a 7 year timeframe.

• Cost Effectiveness

The Preliminary Engineering Report for the pilot project in Area 1 analyzed 7 options for the collection and transmission of domestic wastewater including the feasibility of repairing or replacing the existing onsite treatment and disposal systems (OSTDS) and central sewer options including gravity, hybrid gravity, low pressure sewer, and vacuum systems. A number of factors determine the suitability of the wastewater disposal: high seasonal water table, proximity to adjacent systems, degree of land elevation, soil types, proximity to water resources, cost to property owners, on-going maintenance, life cycle costs, and power requirements. The report also addresses plant capacity and expansion necessitated by the increase in sewer flows resulting from additional connections to the central sewer system. The results of this study identified the most cost effective sewer disposal options for Area 1 and confirmed that central sewer is the most feasible and cost effective option in place of OSTDS repair or replacement. The overall cost effectiveness of the project will be evidenced by improved water quality in the receiving waters of Charlotte Harbor and the Gulf where central sewer will provide long term protection from pollution created by OSTDS.

- ### Project Sustainability

Maintenance funding will be secured through utility rates charged to customers connected to the central sewer infrastructure. The project is a turn-key project whereby OSTDS will be abandoned and homes connected during project construction providing for a source of funding for system maintenance. CCU monitors its budget in relation to the rates charged within the existing fee structure and its capital improvement program on a bi-annual or more frequent basis to ensure sufficient resources are available to properly operate and maintain the system in accordance with federal, state, and county guidelines. All changes in rates are approved by the Charlotte County Board of County Commissioners by resolution. Therefore, there will be a long term source of revenue to address operation and maintenance of the proposed central sewer infrastructure. Additionally, storm water improvements are maintained through property owner assessments as managed by Charlotte County Public Works.

- ### Compliance with local, state, and federal regulations:

The project will be designed in accordance with local, state, and federal regulations and an application for a construction permit from the Florida Department of Environmental Protection (FDEP) for the construction of the central sewer system will be obtained in order to proceed with the work. FDEP permits also require a commitment from CCU to operate and maintain the sewer facilities in accordance with federal and state guidelines. Relevant county building permits will be submitted as well to ensure compliance with appropriate building codes. An environmental review will also be performed to ensure protected habitats and threatened and endangered species are not impacted by the project. However, the majority of the construction work will be performed in existing right-of-ways and in developed areas, therefore these types of impacts and related permitting are anticipated to be minimal.

- ### Achievable Permitting:

Upon completion of design, the FDEP permitting process for sewer collection systems is completed within 10 to 30 days. Local County permits also fall within the 10 to 30 day timeframe. As outlined in the project timeline, upon approval by the BOCC, CCU will commence design and permitting. No other special permitting requirements are anticipated for this project. Environmental permitting, if required, is estimated at 30 to 60 days.

3. Provide best available science as defined in the RESTORE Act if proposed activity is designed to protect or restore natural resources.

- ### Best Available Science

Daniel M. Byrd, III and C. Richard Cothern define risk as “the probability of a future loss” in their book titled “Introduction to Risk Analysis: A Systematic Approach to Science Based Decision Making.” Given that 80% of the properties in Area 1 were developed prior to 1990 and that 53% of them were developed prior to 1984 when regulations governing the installation of OSTDS’s became more stringent, Charlotte County believes there is a predictive risk of waste

from failing OSTDS's continuing to enter the water bodies of Charlotte Harbor. OSTDS's are estimated to have a useful life of up to 20 years.

In June 2013, TetraTech, a leading provider of consulting and engineering services for environmental sustainability, published a report titled "Water Quality Review Within East and West Spring Lake" to summarize water quality monitoring data collected to date from the pilot project area, East & West Spring Lakes. (See Exhibit E.) TetraTech did an extensive literature review of other studies performed on OSTDS impacts, along with an extensive review of the monitoring data, and concluded that "OSTDS's are a strong contributor of nutrient loadings and resulting decreased water quality within East and West Spring Lake area."

The age of the OSTDS's in Charlotte County, however, is not the only risk factor Charlotte County's OSTDS's present to water quality. Prior to 1984, OSTDS's were allowed to be installed in the existing soil; whereas more modern OSTDS drain fields are raised using a suitable soil that was imported to the site. Some developed areas within the Project have elevations as low as 3 feet above sea level. Rising sea levels, tidal influences and rainfall compound the issues surrounding the functionality of OSTDS's in coastal areas along the Gulf of Mexico.

The proposed activities under this Project, the construction of a centralized sewer disposal system, and storm water improvements and public education on Best Management Practices for landscaping and fertilizing, are not risk free. The cost is a heavy financial burden on both the County and the property owner. Financial assistance through grants from programs such as RESTORE is necessary in order to maintain affordability.

Charlotte County will share data from its Monitoring plan with funding agencies and other stakeholders as requested. The data will include sample analyses from ground water wells and surrounding surface waters prior to implementation of the Project and post construction. As described in the Project Narrative, Charlotte County will complete a battery of analyses utilizing a NELAC accredited laboratory on water samples to determine pre and post construction levels of total nitrogen, total Kjeldahl, nitrogen, nitrate + nitrite, ammonia nitrogen, total phosphorus, total suspended solids, fecal coliform, and biochemical oxygen demand. A Quality Assurance Project Plan (QAPP) will be developed, in accordance with EPA guidelines, to outline the monitoring protocols, sampling locations, and parameters for reporting. Information will be provided through electronic format upon request. EPA's StepL program will be utilized to estimate pollutant load reduction and provide a basis for comparison to evaluate the success of the project in the reduction of pollutants entering the currently impaired water bodies of Charlotte Harbor.

As mentioned previously, Charlotte County has consulted with the Charlotte Harbor National Estuary Program (CHNEP) in developing protocols for sampling and is sharing data from monitoring sites in order to leverage monitoring efforts that are in progress throughout the impaired waters of Charlotte Harbor.

- ## Summary of Peer-reviewed Information

The TetraTech report summarizes a number of peer-reviewed sources which provide supporting information regarding the impact of OSTDS on receiving water bodies as well as the useful life of OSTDS. TetraTech concluded that after analyzing numerous factors contributing to water pollution in the East & West Spring Lakes area that OSTDS are a "contributor to elevated nutrient levels within adjoining water bodies, and hence decreased water quality" and that based upon the results of their study, "the replacement of OSTDS's would be a strong positive step in improving water quality and diminishing the impairment to Charlotte Harbor. A review of the studies, listed under 'Sources' below, within the report led TetraTech to conclude that "the studies correlated high nutrient and/or bacteria indicators to densely populated areas which utilize OSTDS, such as East & West Spring Lake."

- ## Evaluate long-term uncertainties. Will the project be obsolete or not function as intended in the long-term?

The proposed project is to be constructed utilizing the most current accepted industry standards and in accordance with federal, state, and county regulations. The proposed sewer collection systems that were evaluated for cost feasibility have been in existence and in operation for over 40 years if not more. The estimated useful life of the pipelines being proposed is 100 years, while the structural components are estimated at 50 years, and mechanical components 20 years. The construction portion of the project will be monitored by experienced inspection staff to ensure compliance with federal, state, and county requirements during installation to ensure longevity. Upon construction completion, the system will be operated and maintained by experienced and licensed staff in accordance with federal, state, and county guidelines. Utility rates are adjusted to reflect the useful life of assets and prepare for future replacement. Therefore, based upon the proven long term effectiveness of central sewer technology, oversight to ensure construction methods are in compliance, and proper ongoing operation and maintenance, and budgeting processes the project is anticipated to address the centralized collection and transmission of wastewater in these areas for the foreseeable future.

- ## Sources

The sources that support the science for this project and the TetraTech report are cited within the following studies:

- Charlotte Harbor & Estero Bay Aquatic Preserves Water Quality Status & Trends for 1998-2005 (September 2007)
- Reducing the Impacts From On Site Sewage Disposal Systems. A Report by the Onsite Sewage Disposal Task Force. Maryland Task Force, An Initiative of Maryland's Tributary Teams. February-July, 1999. http://www.dnr.maryland.gov/waters/tribstrat/osds_report_1999.asp

- The Effects of Seasonal Variability and Weather on Microbial Fecal Pollution and Enteric Pathogens in a Subtropical Estuary, April 2001, Estuarine Research Federation
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- Contribution of On-Site Treatment and Disposal Systems on Coastal Pollutant Loading, 2005, D.E. Meeroff, F.J. Morin, Florida Atlantic University.
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- STEPL 4.1 Pollutant Tool, Region IV EPA
- Introduction to Risk Analysis: A Systematic Approach to Science-Based Decision Making, Government Institutes, 2000
- Charlotte Harbor National Estuary Program Comprehensive Conservation and Management Plan, Update 2013

4. List of Exhibits:

Exhibit A includes location maps

1. Overall Location Map identifying Wastewater Expansion areas
2. Prioritized Project Areas, 1 through 4 – including Pilot project location
3. Prioritized Project Area 1
4. RESTORE Act Project East & West Spring Lakes Pilot Area
5. RESTORE Act Project Area 1A location
6. RESTORE Act Project Area 1B location

Exhibit B: Area 1 Preliminary Engineering Report, March 2010, Charlotte County Utilities

Exhibit C: Southwest Florida Regional Ecosystem Restoration Plan submitted by the Joint Florida Gulf National Estuary Programs, adopted March 8, 2013.

Exhibit D: Impairments Map

Exhibit E: Water Quality Review within East & West Spring Lake, June 2013, Tetra Tech

Exhibit F: Grant Award Letters for Pilot Area

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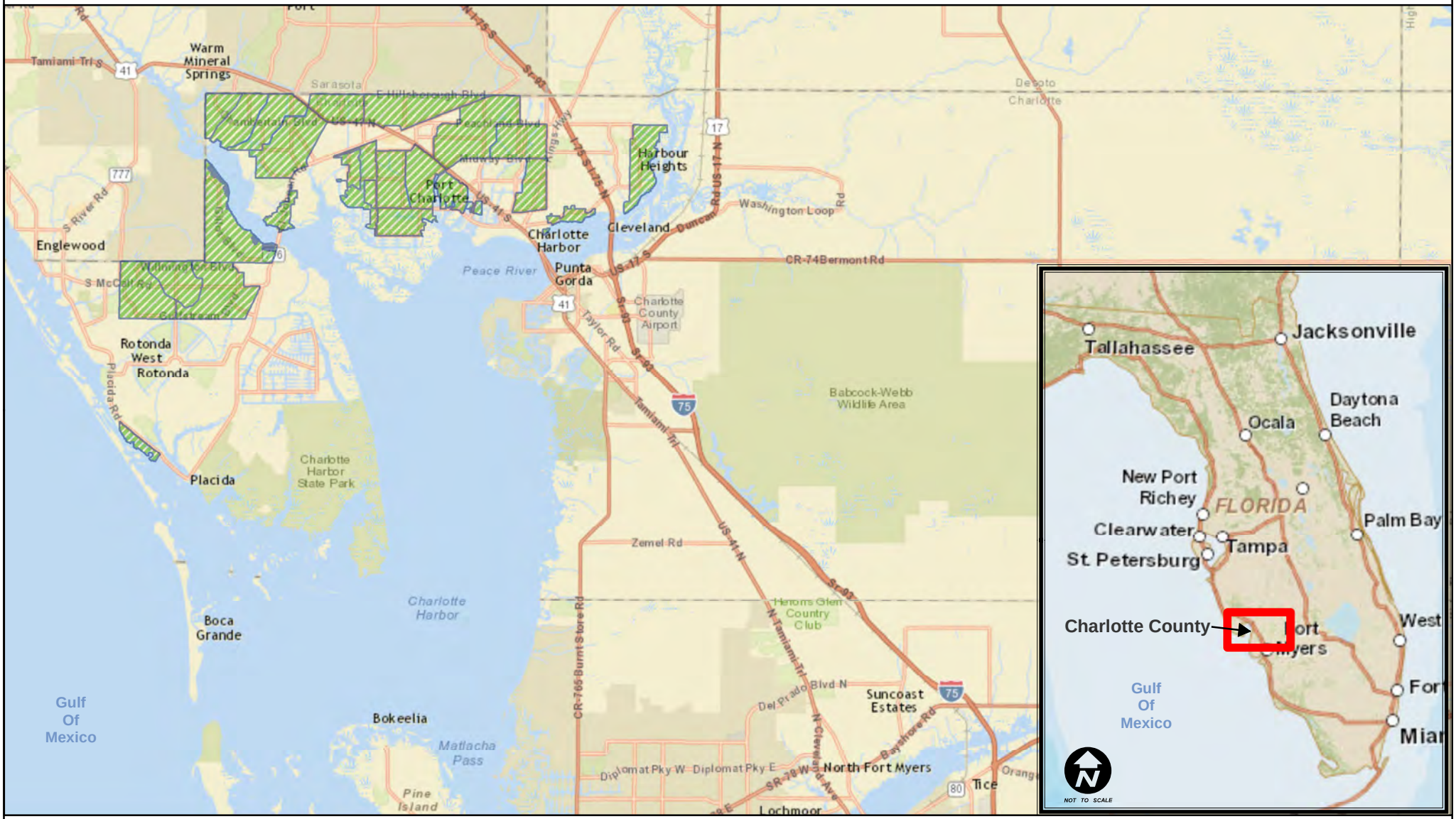
CHARLOTTE COUNTY EXHIBIT A
Restoration Of Water Quality In The Impaired Waters Of Charlotte Harbor
Charlotte County Wastewater Expansion Areas



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Legend

Wastewater Expansion Areas

0 2.5 5 10 Miles

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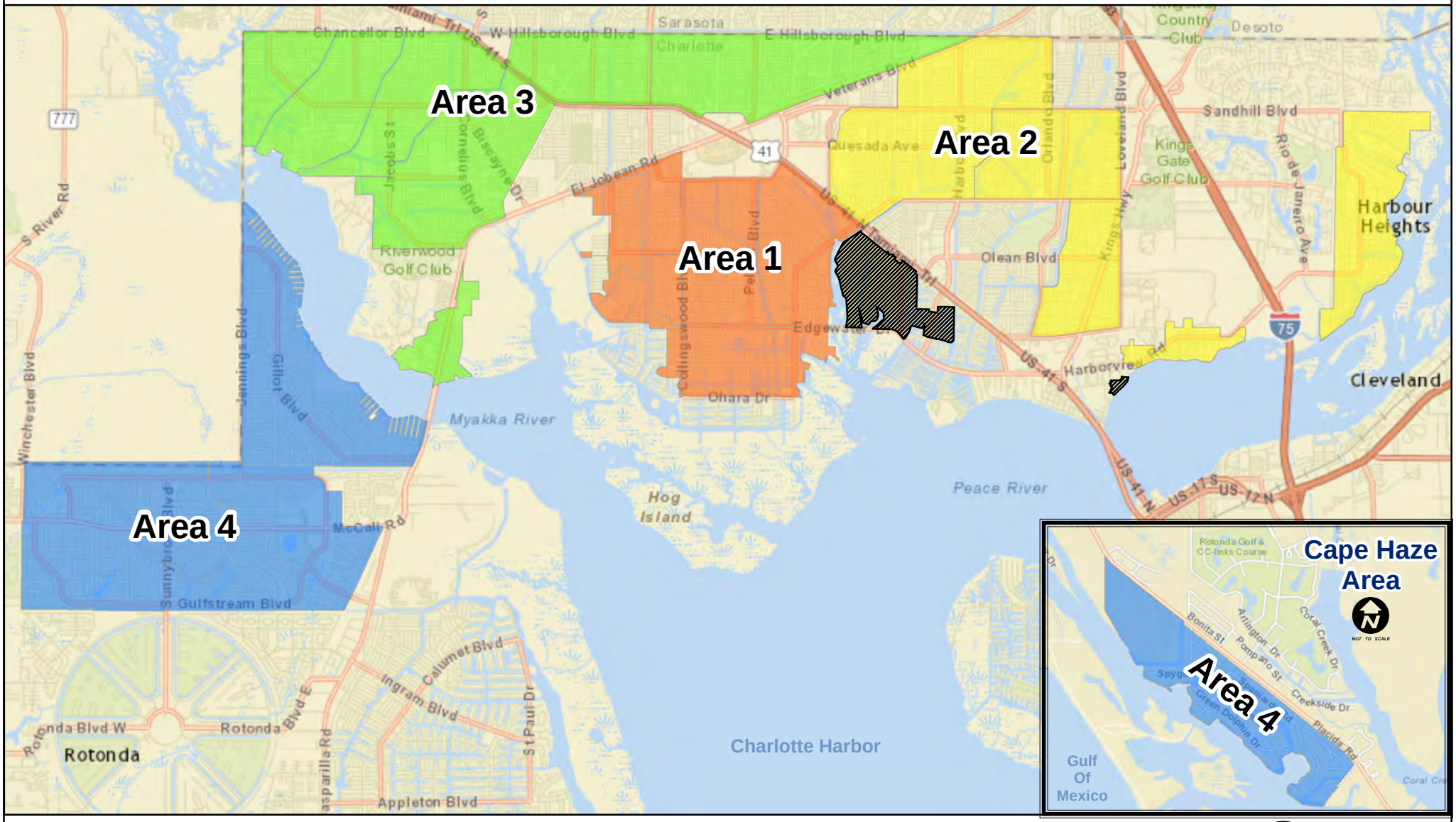
Restoration Of Water Quality In The Impaired Waters Of Charlotte Harbor
Area 1 - 4 Wastewater Expansion Areas



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- Projects In Progress
- Area 1
- Area 2
- Area 3
- Area 4

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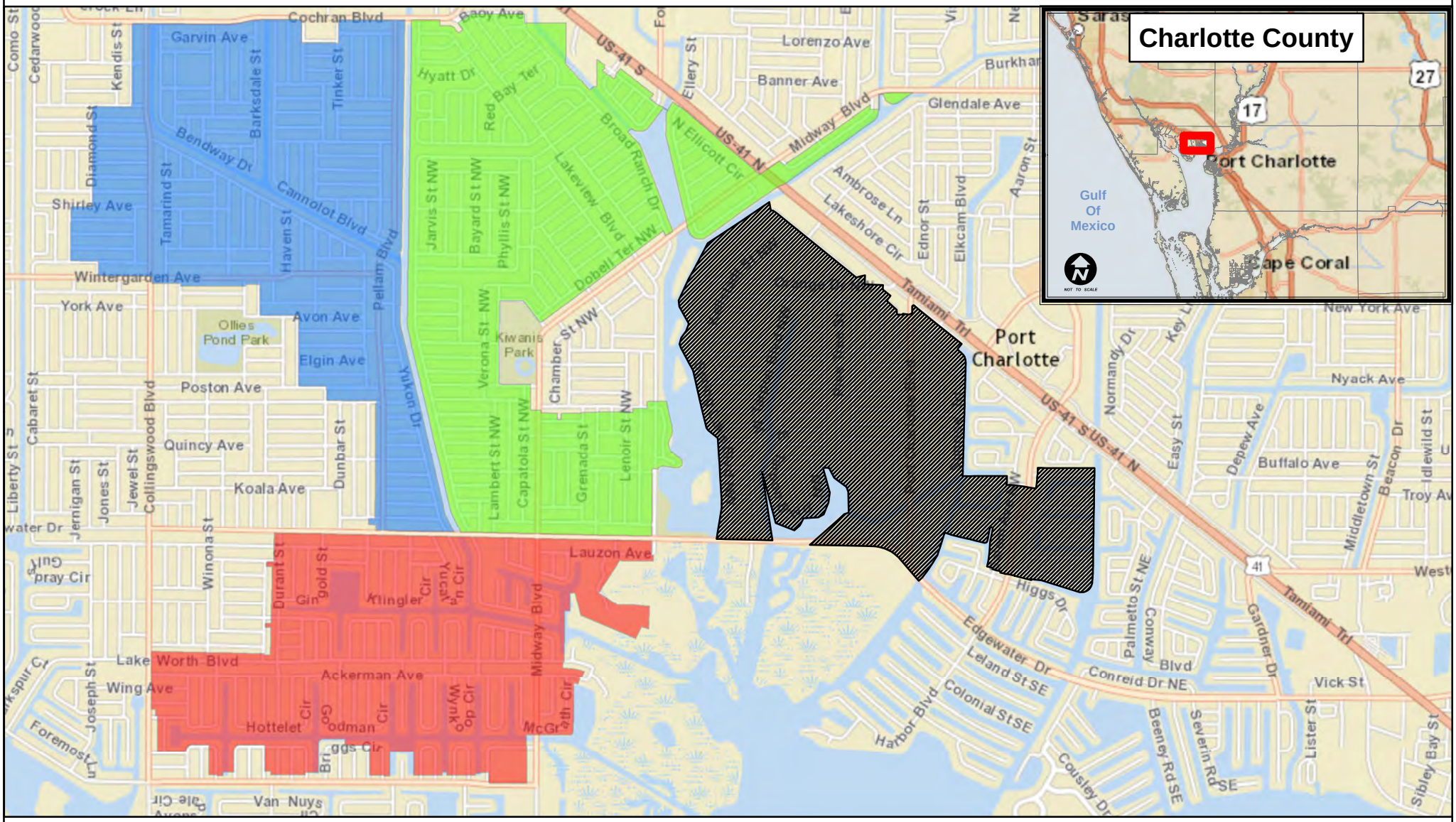
Restoration Of Water Quality In The Impaired Waters Of Charlotte Harbor
Area 1: Priority Wastewater Expansion Areas



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- Project In Progress
- Priority Area 1
- Priority Area 2
- Priority Area 3

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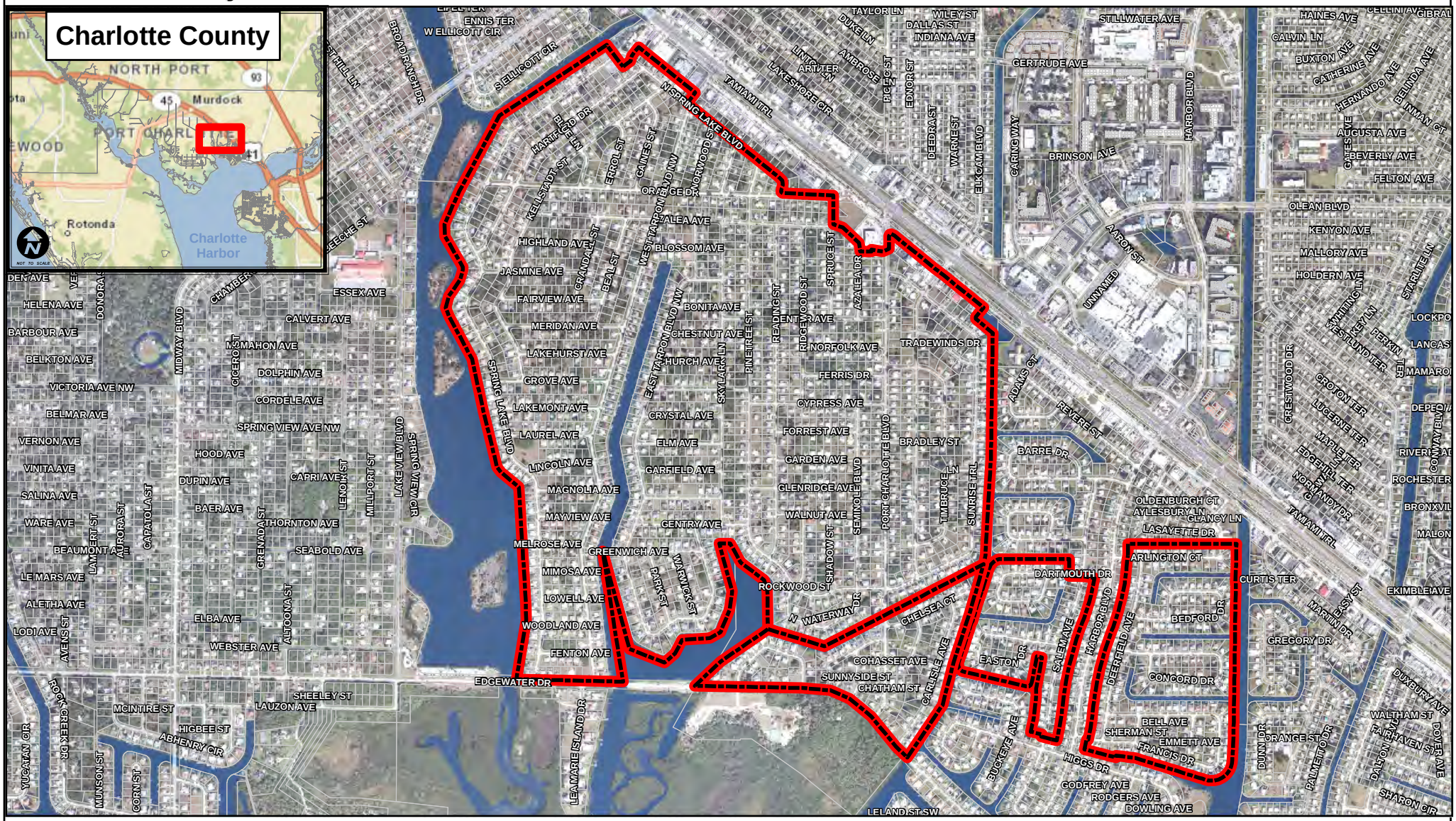
Pilot Project



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Pilot Project

0 750 1,500 3,000 Feet

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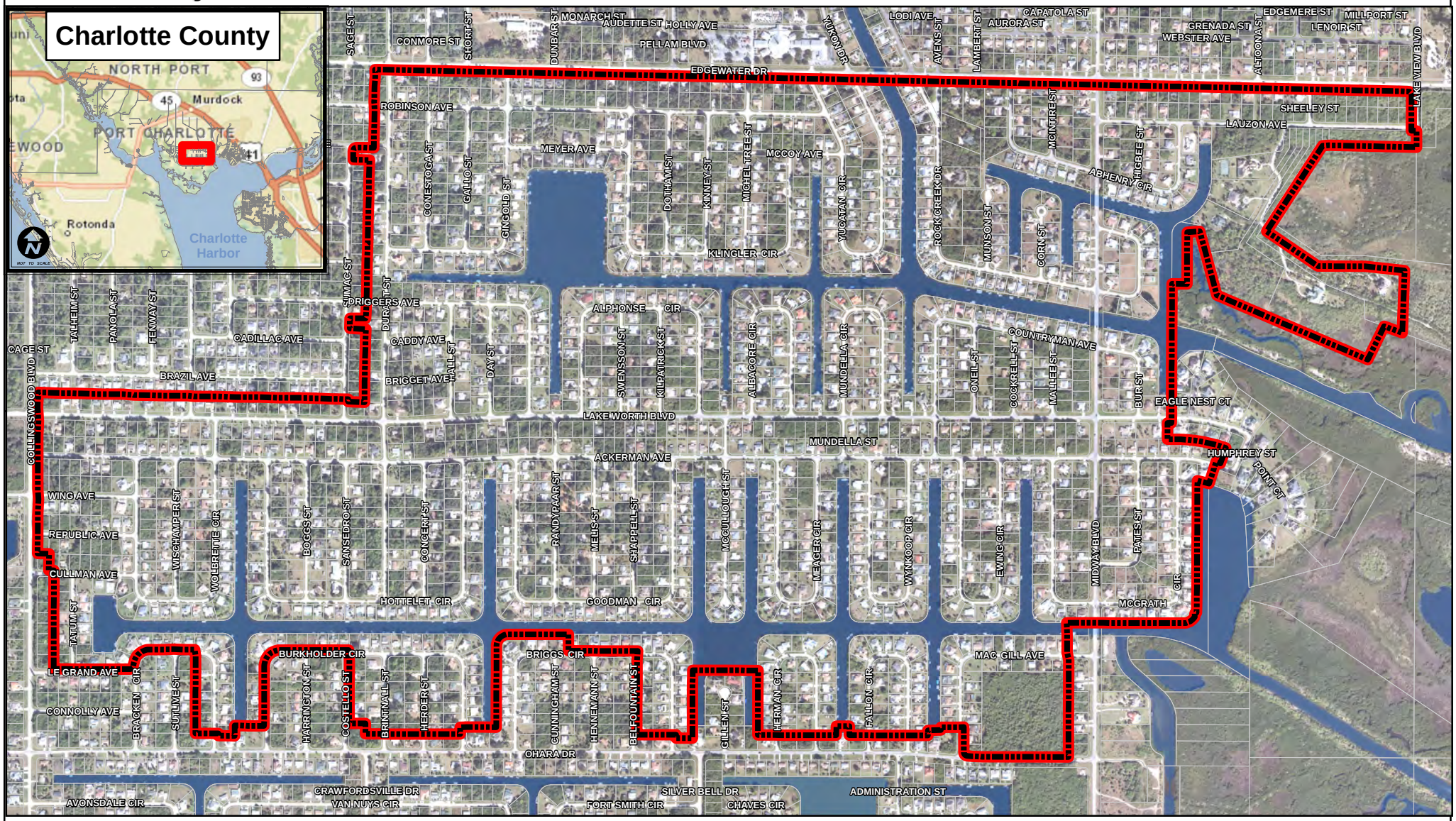
Restoration Of Water Quality In The Impaired Waters Of Charlotte Harbor
Priority Area 1-A



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Area 1A Boundary

0 500 1,000 2,000 Feet

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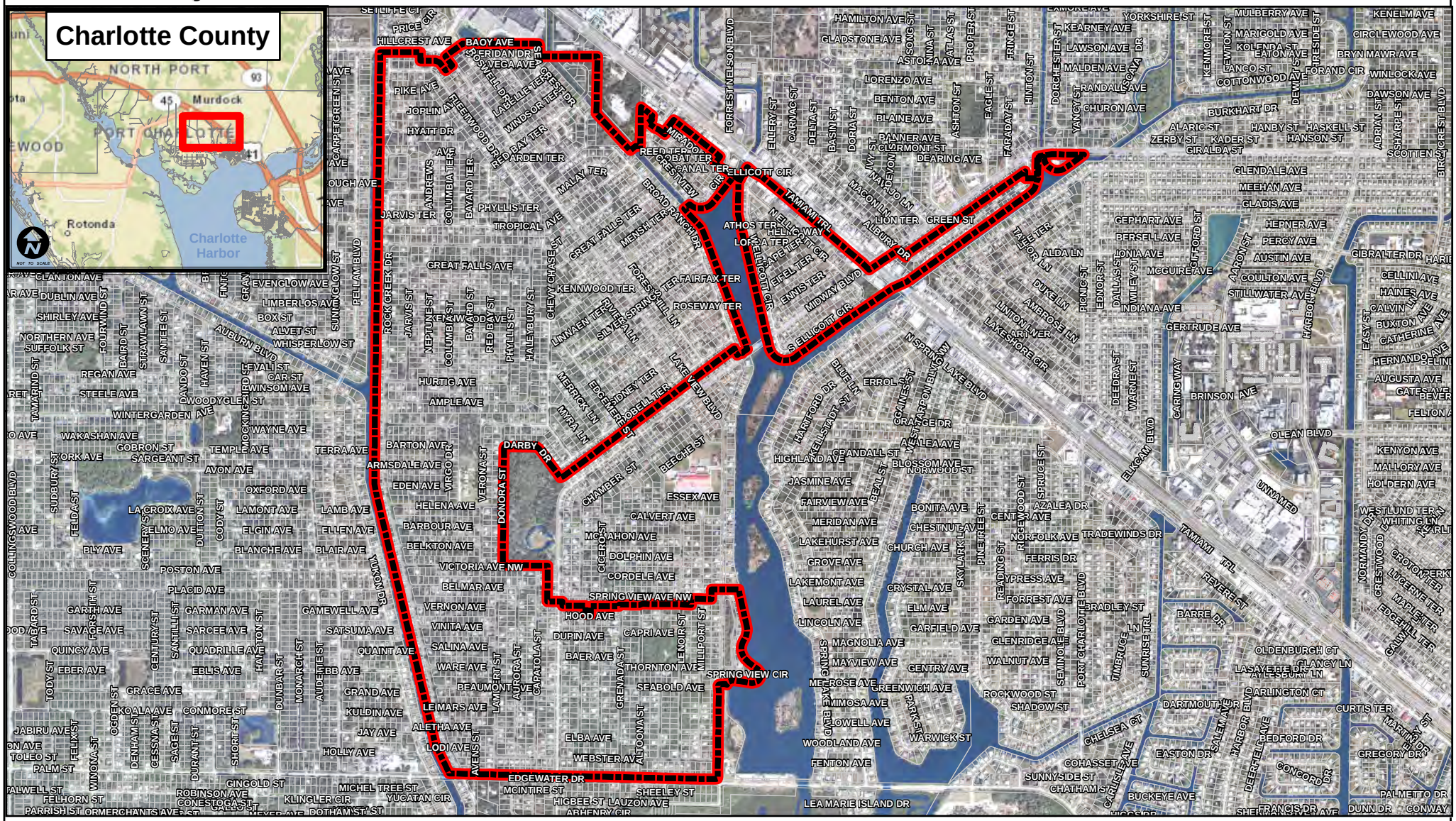
Priority Area 1-B



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Area 1-B Boundary

0 1,000 2,000 4,000 Feet

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EXHIBIT B

Charlotte County Utilities

Potable Water Service Program: Area 1 Preliminary Engineering Report

Prepared for:
The Charlotte County Board of Commissioners
18500 Murdock Circle
Port Charlotte, FL 33952

Prepared by:
Charlotte County Utilities
25550 Harborview Road
Port Charlotte, FL 33980

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Florida.

Terri Kesner, Interim Utilities Director
Charlotte County Utilities

Bruce R. Bullert P.E.
Date 3/17/10 /License # 68658

March, 2010

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CHAPTER 1 – INTRODUCTION

In June of 2009, Charlotte County Utilities (CCU) made a presentation to the Charlotte County Board of County Commissioners (BCC) providing an overview of a proposed centralized wastewater service program initiative. The BCC recommended that, to further evaluate the feasibility of some form of a centralized wastewater solution, a Preliminary Engineering Report (PER) be completed to analyze various collection and treatment alternatives that address existing Onsite Treatment and Disposal Systems (OSTDS), primarily serving residential properties within the service area identified as Area 1. See Exhibit I.1: Location Map and Exhibit I.2: Area 1 Wastewater Service Program map in Appendix I.

This PER represents a compilation of all the information gathered and analyzed since the BCC's authorization to proceed in June 2009. Upon review of this PER, CCU is requesting the BCC to consider approval in accordance with the report's recommendations. If approved, CCU is ready to proceed with this project and begin design immediately. Construction would then be anticipated to begin in 2012 and be completed by the end of 2022.

Area 1 was selected as the initial geographic region to evaluate the feasibility of a centralized wastewater solution due to the number of Onsite Treatment and Disposal Systems (OSTDS) currently in use in the area and the area's immediate close proximity to the Charlotte Harbor estuary and tributary water bodies. Given the current state of the existing OSTDS throughout Area 1, coupled with the impact these systems are having on the environment and water bodies, CCU has explored seven (7) alternatives from a cost benefit perspective to determine the best approach to addressing the long term ecological impact from inadequately treated wastewater. The seven (7) alternatives are briefly outlined below and more fully reviewed in this report.

- Leave Existing System In-Place (Do Nothing)
- Upgrade or Replace Existing Onsite Treatment and Disposal Systems
- Decentralized Systems
- Low Pressure Sewer
- Gravity Sewer
- Hybrid Gravity Sewer
- Vacuum Sewer

As part of this overall evaluation, research on the existing condition and location of other existing utilities and public works facilities was completed. The Comprehensive Plan's Goals and Objectives Policies (GOPs) require the simultaneous extension of potable water and wastewater services. This report endorses that concept and is being used as an opportunity to explore economies of scale as part of this expansion effort since the public perceives all of these facilities to be taken care of by the County.

CHAPTER 2 – Project Drivers

2.1 Health, Sanitation and Security

Area 1 wastewater treatment is comprised primarily of aging OSTDSs, which left as-is, allow the introduction of untreated wastewater pollutants into the groundwater. Water quality data from a variety of sources including CCU field testing, Health Department testing, The Charlotte Harbor National Estuary Program (CHNEP), The Charlotte Harbor Environmental Center (CHEC), and The South West Florida Water Management District (SWFWMD) all clearly indicate that pollutant levels exceed acceptable public health limits and Clean Water Act standards.

Evidence of this pollution is indicated by the number of Port Charlotte Beach Complex closings and by the fact that Charlotte Harbor, Myakka River and Peace River have been identified as 'impaired' water bodies by the EPA.

In summary, the OSTDS impacts are attributable to the following Area 1 OSTDS characteristics:

- High urban density, which limits the treatment zone, thereby reducing treatment effectiveness
- Non-Compliant OSTDS in Area 1; Half were installed prior to 1984 and do not meet current requirements
- OSTDS are not effectively treating nutrients (Total Nitrogen - TN, Total Phosphorus - TP) not to mention emerging pollutants (resulting in impaired water bodies)

The overall effect is that OSTDS are not effectively treating wastewater, resulting in pollutants directly entering the groundwater system and ultimately traversing to adjoining Charlotte County waterbodies at a rate causing deterioration of water quality in the receiving waters.

2.2 System Operations & Maintenance

Most homes and businesses are presently served by privately owned OSTDS where the property owners are individually responsible for all operation and maintenance. This PER explores other options that provide solutions to reduce reliance on individual property owners to maintain/rehabilitate/replace OSTDS and work toward a centralized/managed solution that reduces the overall pollutants into the environment. In numerous cases, the rehabilitation/replacement of the current OSTDS are more expensive than other alternatives and provide a shorter life cycle than centralized solutions. These alternatives range from doing nothing to a variety of fully centralized wastewater options that are much more effective in managing and minimizing the pollutants introduced into the environment than what is currently being done in Area 1.

2.3 Growth

The growth projections for the service area are detailed in Chapter 3, Section 3.2. The seasonal nature of Charlotte County is also addressed in relation to growth capacity. Area 1 is identified as a key in-fill area of the Urban Service Area (USA) in the Smart Charlotte 2050 program. It is well known that extending central water and wastewater service precedes and promotes development. Area 1 is designated primarily as a revitalizing area neighborhood in the neighborhoods framework identified in the Smart Charlotte 2050 program (See Exhibit I.4: Growth Management 2050 Neighborhoods Framework). The extension of centralized utilities services will aid in the growth and revitalization of Area 1.

The proposed Murdock Village development, designated as a future central downtown area, abuts Area 1. The population of Area 1 will directly feed Murdock Village and the future development of Murdock Village will promote the development of Area 1.

2.4 Economic Benefits

Based upon the U.S. Bureau of Labor and Statistics, Article, "Employment created by Construction Expenditures", it is anticipated that over 4,700 jobs over the life of the project will be created by the Wastewater Service Program both locally and overall. Furthermore, CCU anticipates that residential home construction in Area 1 will occur at a faster pace if central utility services are expanded to the entire Area versus no action at all. What this means is that 17,372 new homes will be built in Area 1 by 2050 versus 8,721 if no utilities expansion were to occur. Based upon the National Association of Home Builders, Article, "The Direct Impact of Home Building and Remodeling on the U.S. Economy", on average, 3.05 new jobs are created for every new home built in the U.S. The net additional 8,651 new homes, anticipated as a result of the infrastructure initiative, will generate 26,383 of the 31,086 jobs, as identified in Table 2.4.1 below. In addition to job growth, there are tax benefits to the County.

Table 2.4.1: Anticipated Employment Created by Wastewater Service Program	
Sewer Works	
Construction Industries *	**# Jobs**
Onsite	1,860
Offsite	100
Other Industries *	
Manufacturing	1,620
Trade, Transportation and Services	780
All Other	340
**Residential Homes Construction through 2050 (8651) ** **	26,386
- Based on 3.05 jobs created/home built	
Total New Jobs Created =>	**31,086**
* US Bureau of Labor and Statistics, Article, "Employment Created by Construction Expenditures"	
** National Association of Home Builders, Article, "The Direct Impact of Home Building and Remodeling on the U.S. Economy"	

CHAPTER 3 – PROJECT PLANNING AREA

3.1 Location

The project planning area is shown on Exhibit I.3: Area 1 Features map which includes topography, roads/street locations and other features of this area. The planning area is generally the homes and businesses in the center of Charlotte County south of 776, west of US 41, east of the Myakka River and most notably directly north of the Peace River and Charlotte Harbor Estuary. Some additional homes adjoining and/or between these areas are also in the project planning area.

3.2 Population Characteristics and Projections

Population characteristics and projections will be necessary to determine the growth impacts in Area 1 as related to treatment capacity and long term capital requirements.

In order to obtain existing Area 1 population and property counts and characteristics, CCU leveraged various resources including a full review of Area 1 properties via property appraiser data, CCU customer billing records, GIS data and Growth Management population projections as detailed in the Smart Charlotte 2050 plan.

Future population growth in Area 1 was determined by applying the growth rates used by Growth Management population projections for Mid-County to the existing Area 1 population, determined by CCU. Table 3.2.1 below shows the results of this analysis for Area 1.

It is anticipated that the population of Charlotte County will increase over the next 40 years overall. For planning purposes, it will be assumed that the number of dwelling units in Area 1 will grow at the same rate as Mid-County at an average rate approximately of 1.3% over the next 40 years assuming no growth impact from the construction of new infrastructure. However, growth may increase to an average of 2.5% per year over the next 40 years, assuming that new utilities infrastructure will stimulate growth in Area 1, which is shown on the bottom of Table 3.2.1.

Table 3.2.1: Charlotte County Utilities Service Area Seasonal Population Growth Projections

Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Area I:* (Normal Projections)	17,039	17,733	18,603	19,663	20,905	22,241	23,362	24,755	25,760
Mid-County*:	79,221	84,032	90,001	97,234	105,502	114,153	121,284	128,416	135,548
Service Area*:	110,615	119,622	130,895	144,638	160,559	177,495	191,994	206,493	220,992
Area 1 (New Infrastructure Impact):	17,039	18,462	20,202	22,843	24,804	27,478	29,720	32,506	34,516

* Charlotte County Growth Management population estimates.

For the purposes of this engineering report, it is assumed that wastewater facilities will be designed to accommodate the higher seasonal population component as though they were residents for the entire year.

3.3 Land Use/Zoning

Area 1 is comprised primarily of residential properties. However, commercial properties are located on the northern outer boundaries of the area. Table 3.3.1: Area 1 Land Use/Zoning Summary below provides a high level land use breakdown providing both the gross and net counts for each high level category. The Gross Lot Count includes all properties identified in the Area 1 boundaries. The Net Lot Count only includes properties that can be assessed for this MSBU:

Table 3.3.1: Area 1 Land Use Summary		
Land Use	**Gross Lot Count**	**Net Lot Count**
Single Family	7,985	7,448
Vacant Residential	8,684	8,219
Multi-family	35	31
Vacant Multi-family Residential	286	286
Miscellaneous Residential	87	85
Churches	43	11
Professional Services	12	8
Office Building	32	11
Retirement Homes	3	2
Vacant Commercial	680	523
County/Government	16	6
Roads	359	0
Total Lots =>	**18,222**	**16,630**

3.4 Growth Management Neighborhoods Framework

Charlotte County identifies a variety of neighborhoods in the Smart Charlotte 2050 plan. The neighborhoods framework attempts to describe/characterize parts of the Urban Service Area and thus protect and enhance existing neighborhoods, while targeting others for intensified, mixed-use redevelopment. Area 1 is identified as a Revitalizing Neighborhood. **As such, the concept of providing central wastewater and water services in Area 1 is consistent with the planning objective to promote new investment in the area. See Exhibit I.4: Growth Management's 2050 Neighborhoods Framework.**

3.5 Environmental Resources Present

The proposed project area in Exhibit I.2: Area 1 Wastewater Service Program has been shared with County environmental staff to determine future impacts to threatened and endangered species and natural habitat including wetlands. While the project will impact existing environmental conditions during construction, no negative long-term impacts are anticipated. Nearly all of the construction activity is expected to occur within previously disturbed areas and measures will be incorporated in the design and construction phases to minimize or avoid long-term environmental damage or harm.

Potential concerns identified by Charlotte County environmental staff include:

- Scrub jay
- Gopher tortoise
- Wetlands

- Heritage Trees

If any of the above would be impacted by construction, mitigation procedures will be implemented following regulatory guidelines. Potential cost impacts could include permit fees, specialized environmental expertise, relocation expenses, and mitigation fees. Once design begins and location specifics are determined, environmental expertise will be sought to finalize specific environmental impacts and related costs for mitigation. An allowance for these environmental impacts have been provided for in the project costs.

Upon approval of this preliminary report, the proposed project conceptual plans will be shared with interested/affected local, state and federal agencies and will be made available to the general public. Any concerns or questions expressed by these interested parties will be addressed at that time. Another environmental evaluation will be completed immediately prior to construction to confirm there is no change from the time the initial environmental evaluation was completed.

3.6 Historical Or Archeological Artifacts

A preliminary evaluation for significant historical and archaeological resources was completed for Area 1. Approximately 12 known historical structures, which are recorded in the Florida Master Site File, have been identified in western sections of the project area. Sections in the south and east may include burial mounds, habitation-campsites or shell middens. During the design phase, a detailed report will be prepared with the specific issues that could be encountered during construction.

Consistent with the County's Historic Preservation Ordinance, a historical review of projects within a 300-foot buffer of a known historical resource will be required and a professional archaeologist will be required to monitor excavations in areas where the Charlotte County Archaeological Predictive Model indicates a high or medium probability of archaeological sites.

3.7 Design Criteria

A strong consideration for the engineering design of this project is the current population and population growth as related to wastewater flows for both collection and treatment. The infrastructure component of the project must be designed and constructed to account for all properties in Area 1 upon full build-out. Proper sizing of the infrastructure in order to have sufficient capacity in the treatment and collection system is based upon the number of existing homes, the growth rate for the unoccupied lots, and the construction phasing schedule. Based upon these factors, table 3.7.1 below provides the projected wastewater flow increase over the next 25 years at the East Port Water Reclamation Facility (WRF).

Table 3.7.1: East Port WRF Wastewater Flow Projections	Year				
East Port WRF	Prior to 2010	2010-2015	2015-2020	2020-2025	2025-2035
A - # New Area 1 Connections (Existing Occupied at time of MSBU Assessment)	0	3,772	2,489	1,283	0
B - # New Connections - Mid-County (Population/2.18 pph) 1,2,5	28,560	2,207	2,738	3,318	7,761
C -# New Connections due to New Infrastructure Impact 10	0	653	798	1,211	2,126
D -Total Cumulative East Port WRF Connections	**28,560**	**35,192**	**41,217**	**47,029**	**56,916**
Future Plant Capacity Needs and Total Flow Based on AADF 7,9		* Re-Rate of WRF			* Plant Expansion
East Port Anticipated AADF Permitted Capacity 6	6,000,000	8,000,000	8,000,000	8,000,000	12,000,000
Cumulative East Port flows (previous Years Roll-up)	3,898,440	4,853,708	5,676,121	6,469,459	7,819,034
Other Committed and/or Unanticipated Capacity (gpd)	50,000	50,000	50,000	50,000	50,000
Remaining Capacity at Eastport	**2,051,560**	**3,096,292**	**2,273,880**	**1,480,542**	**4,130,966**
Future Plant Capacity Needs and Total Flow Based on MDF 8		* Re-Rate of WRF			* Plant Expansion
East Port Anticipated MDF Permitted Capacity	16,800,000	22,400,000	22,400,000	22,400,000	33,600,000
Cumulative East Port Anticipated 12-month MDF	14,200,000	6,826,480	7,971,230	9,075,510	10,954,040
Other Committed and/or Unanticipated Capacity	140,000	140,000	140,000	140,000	140,000
Remaining Capacity at Eastport	**2,460,000**	**15,433,520**	**14,288,770**	**13,184,490**	**22,505,960**
Notes					
1 - Mid-County population projections from Growth Management. Includes any projected new growth in Area 1					
2 - Mid-County Connections determined by using a divisor of 2.18 pph to total population projected for Mid-County					
3 - 136.5 gpd represent actual AADF flows compared to actual # of services					
4 - 190 gpd represents maximum daily flow per household including inflow and infiltration (I&I)					
5 - Assumes all new Mid-County development will connect to CCU wastewater system					
6 - East Port WRF AADF and MDF Re-rating anticipated by 2012; Plant Expansion will occur in 2025					
7 - AADF - Average Annual Daily Flow					
8 - MDF - Maximum Daily Flow (AADF increased by a design factor of 2.8)					
9 - The current AADF will continue to lower to some degree due to continue efforts to eliminate Infiltration/Inflow (I/I) from the system					
10-Accelerated additional growth as a direct result of new utilities infrastructure in Area 1 (see table 3.2.1					

Area 1 is mainly residential with some commercial businesses. There is no large scale or small scale industry within Area 1 that would impact wastewater constituent loads or flows. Area 1 is considered residential only for planning purposes.

The collection system design shall comply with the “Recommended Standards for Sewage Works” (Ten State Standards) and all Florida Department of Environmental Protection (FDEP) regulations. The treatment systems shall comply with all requirements of the current FDEP regulations pertinent to the treatment process and the discharge permit limitations.

CHAPTER 4 – EXISTING FACILITIES

4.1 Wastewater

An analysis of wastewater facilities includes all existing methods of collection and treatment used in the area.

4.1.1 OSTDS and Wastewater Location Map

Exhibit I.2: Area 1 Wastewater Service Program in Appendix I shows the areas that currently have central wastewater service available. Any developed properties outside of these centrally served wastewater areas are assumed to be using OSTDS for treatment.

4.1.2 OSTDS

4.1.2.1 OSTDS Historic Data and Statistics Summary

Table 4.1.2.1.1: Charlotte County OSTDS Permit Summary by Year below provides a comprehensive breakdown by year of OSTDS construction permits for all of Charlotte County. While not specific to Area 1, the table demonstrates that on a County-Wide basis the majority of OSTDS were installed during the '70s and '80s.

Table 4.1.2.1.1: Charlotte County OSTDS Permit Summary

Years	New Permits	Repairs
Pre-1971	9,330	0
1971-1980	12,521	0
1981-1990	14,201	0
1991-2000	5,090	973
2001-2008	4149	1544
Totals	45,291	2517

A breakdown of the properties that currently are served by central wastewater (as shown in Exhibit I.2) and OSTDS in Area 1 are shown below in Table 4.1.2.1.2: Wastewater Type Usage Summary in Area 1.

Table 4.1.2.1.2: Wastewater Type Usage Summary in Area 1

Total # Developed Properties	Properties on OSTDS	# Properties on Central WW
8056	7544	512

Reviewing the history of existing OSTDS installations in Area 1, most OSTDS were constructed pre-1995 as a standard OSTDS (not performance-based such as Aerobic Treatment Units (ATUs)). Exhibit I.5: Area 1 Aging of Structures map located in Appendix I, indicates the following:

- approximately 53% of properties developed occurred prior to 1984*
- approximately 80% of properties developed occurred prior to 1990
- approximately 87% of properties developed occurred prior to 1995

* 1984 was first year the Florida Statutes (FS64E-6.002, page 6, #51) required OSTDS 24-inch separation from Seasonal High Water Table

Based on the above percentiles as determined from Exhibit I.5: Area 1 Aging of Structures map; data provided by The Department of Health (DOH) on the managed septic system program and repair/replace reports; and the data summarized from the draft assessment roll for this effort, the summarized information in Table 4.1.2.3 below presents an approximate picture of the age, useful life and status of the existing OSTDS in operation in Area 1.

Table 4.1.2.1.3: Area 1 OSTDS Summary

Description	Count	Comment
# of OSTDS in Area 1	7544	
# of OSTDS Enrolled in Managed Septic Pgm	7220	
# of ATUs installed since 2000	322	
# of w/ no Proof of Pumpout in past 5 yrs	1973	
# of Repairs since 2000	1028	66% of all repairs County Wide
# of New Systems installed since 2000	466	
# of OSTDS built prior to 1984	3998	53% of OSTDS in Area 1
# of OSTDS built prior to 1990	6035	80% of OSTDS in Area 1
# of OSTDS built prior to 1995	6563	87% of OSTDS in Area 1

4.1.2.2 Design Factors

The proceeding sections summarize information gathered by CCU, specific to OSTDS and OSTDS conditions in Area 1. CCU staff performed research and data gathering from a number of regulatory and environmental organizations, as well as performed its own research, through an overall test site sampling program specific to soil conditions and water quality (see Exhibits I.6 through I.11). The main geophysical design factors which cause OSTDS to have a negative impact on Charlotte Harbor water bodies are:

- Inadequate setbacks from surface waters
- Inadequate separation from seasonal high water table
- The presence of rock within the required effective soil depth
- Soil types with low and high percolation rates
- Inadequate separation from adjacent systems

4.1.2.2.1 Inadequate setbacks from surface waters

The general location of an OSTDS in Area 1 is in the front of homes. The average drain field is a trench type of system with a concrete tank. Most drainfields prior to 1984 were installed in the existing (native/fill) soil; whereas more modern OSTDS drain fields were raised using a suitable soil that was imported to the site. The average OSTDS set back from a domestic well is 50 to 75 feet. Current regulations require 100 foot setbacks from surface waters, whereas previous regulations allowed for 50 foot setbacks. Many of OSTDs in Area 1 are pre-1990 and located too close to waterbodies. These OSTDS are not meeting current set back regulations.

4.1.2.2.2 Inadequate separation from seasonal high water table

Due to the age of many of the OSTDS in Area 1, the present groundwater separation requirements between the bottom of the drainfield and the Seasonal High Water Table are not being met. CCU made a determination as to where existing groundwater levels were occurring for a number of test sites in Area 1. Samples were taken during the dry season (Early November, 2009) and under drought conditions. Along with existing ground water levels as shown in Exhibit I.6 Ground Water Results, CCU investigated a sub-set of the groundwater level test sites and found that soil mottling was occurring. CCU recorded the level at which the mottling was identified for each of these sites. The mottling determinations showed that the seasonal high water table was higher than the level of the physical ground water observed by a range of 1” to 38” (see Exhibit I.7 Soil Mottling). These results indicate that drainfields are too close to the seasonal high water table in Area 1, since the bottoms of the drainfield trenches do not have the required 24” separation from the seasonal high water table.

4.1.2.2.3 The presence of rock within the required effective soil depth

Through CCU's test program, a number of test sites showed the presence of rock and/or shell in the bore holes. This rock is a limiting condition which may require that (1) a larger drainfield be installed; (2) the construction of a mound system; (3) or removal of this limiting rock barrier.

4.1.2.2.4 Soil types with low and high percolation rates

For soil beneath the drainfield to properly treat effluent, it must be suitably-textured, aerated, and deep enough to allow for the proper filtration and treatment processes to perform this function on the effluent before it is released into the ground water. The ideal soil condition under regulations is described as 'Slightly limited' where the percolation rate is less than 2 minutes per inch. Most of the soils in Area 1 are not virgin soils and have been modified with fill material due to development activities. Therefore, there is no way of reliably predicting the soil conditions that will be encountered. Many times, as CCU test results show, moderately limiting and severely limiting conditions (clay and rock) have been encountered. See Exhibit I.8, General Soil Textures, for sites where moderately limiting and severely limiting soil textures were found during CCU's test program. A review of Area 1 septic permits supports these statements. A standard septic system evaluated under current regulations is difficult to permit without modifications such as imported soil in Area 1.

4.1.2.2.5 Inadequate separation from adjacent systems

In Area 1 a standard OSTDS cannot be constructed on a lot less than 10,000 square feet (typical lot size in Area 1) because of something known as a "plume." A "plume" is the area of soil beneath and in the general vicinity of an OSTDS containing effluent/pollutants released from the said OSTDS. Effluent/pollutant "plumes" extend beyond the drainfield foot print to outside the lot itself in Area 1. Untreated combined effluent/pollutants plumes from adjacent OSTDS that overlap are saturating the soil with pollutants that will not be treated. CCU test results show that areas with high density also show presence of bacteria levels. Exhibits I.9 November 2009 Water Usage at Test Sites and I.10 November 2009 Water Usage at Test Sites Detail show the amount of water used by homes in close proximity to the CCU test sites. An analysis of the data shows that fecal coli form is present in the groupings of homes with medium to high water usage and is traveling through the ground water table.

County Code requires a 100-foot set back from water bodies, thus inferring that OSTDS' should be 200-feet apart to prevent the overlapping of treatment areas ("plumes") which prevents proper treatment. The FDEP permit for removing the Manchester Lock identified all OSTDS within 300 feet of the surface water to be part of the managed septic program, specifically addressing the "plume" influence. This setback requirement would restrict home construction to every other lot and possibly every two lots in Area 1 if it were enforced area-wide.

4.1.2.2.6 Design Factors Summary

Many of the existing OSTDS are not effectively treating wastewater, resulting in pollutants directly entering and loading the groundwater system and ultimately traversing to Charlotte County water bodies at a rate causing deterioration of the water quality in the receiving waters.

4.1.2.3 OSTDS Impacts

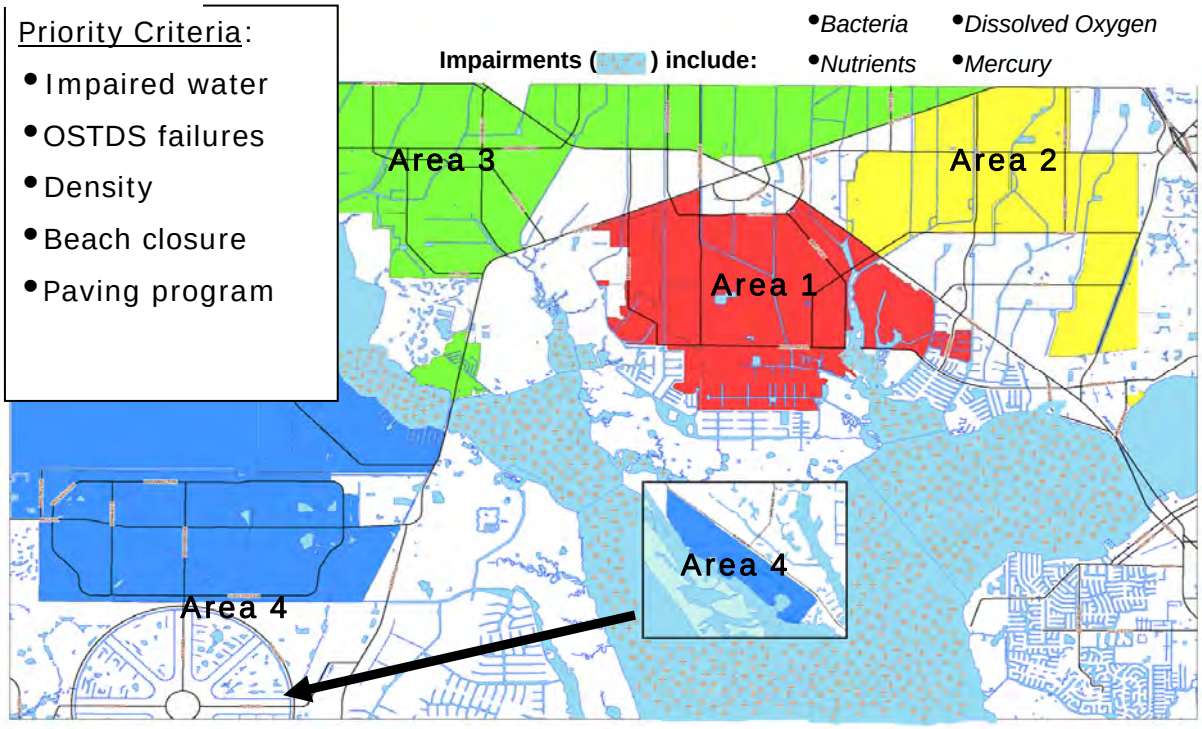
Based upon research and data gathered from a number of regulatory and environmental organizations, as well as CCU's own research, the OSTDS in Area 1 are having a negative impact on the ecology of Charlotte Harbor resulting in water body impairments. The permit to remove the Manchester Lock, located in Area 1, states specifically that the Alligator Bay drainage basin (located in Area 1) has 'been identified as having on-site disposal systems that do not treat wastewater to current standards (i.e. those on-site disposal systems built prior to 1983).' The permit further states that removal of OSTDS will 'provide an improvement to water quality by decreasing nutrient loading from removing the septic (OSTDS) systems.'

Sample results compiled by CCU show fecal coli form, nitrates and nitrites contamination within the groundwater of Area 1 attributable to failing OSTDS. Exhibit I.6 in Appendix I is a map of the Ground Water Results as performed by CCU in late 2009. In general, CCU found ground water levels within 48" of the surface 50% of the time. As well, fecal coli form was detected at over 40% of the water quality test sites (see Exhibit I.11 Fecal Coli Form). Some results were as extreme 290 col/100 ml and 2600 col/100 ml. These samples were collected in the dry season and during a period of prolonged drought. It is anticipated that if the samples were collected during the wet season test results would yield higher values at a higher frequency.

OSTDS do not treat household pollutants such as cleaners, beauty products, grease/fats/cooking oils, cat litter, cigarette butts, inorganic material and many other items. These materials should never be put into a septic system. They may disrupt bacterial digestion and pass from the tank and contaminate groundwater directly. We have reason to believe that these pollutants are entering the OSTDS and either impairing performance or entering the groundwater as untreated pollutants.

The beaches directly south of Area 1 have been closed many times due to high bacteria levels making it unsafe to swim. The EPA has identified Area 1's surrounding water bodies as impaired due to bacteria, low dissolved oxygen levels, mercury, and nutrients (TN, TP). Furthermore, due to a lawsuit by the Florida Wildlife Federation, the EPA has published stringent criteria for nutrients (TN, TP) for fresh water in January 2010 which will be followed soon by criteria for estuaries expected in January 2011. Figure 4.1.2.3.1 below depicts a map highlighting these impaired waters. It is likely that the Area 1 surrounding water bodies will not meet the new nutrient criteria and corrective action will need to be taken to address the polluting source of nutrients. With the water bodies surrounding Area 1 impaired for nutrients and the waters unsafe to swim, indicators are that OSTDS are causing serious ecological damage.

Fig. 4.1.2.3.1: **SURR0UNDING WATER BODIES WITH IMPAIRMENTS**



In summary, the OSTDS impacts are attributable to the following Area 1 OSTDS characteristics:

- High urban density, which limits the treatment zone, thereby reducing treatment effectiveness

- Non-Compliant OSTDS in Area 1; Half were installed prior to 1984 and do not meet current requirements
- OSTDS are not effectively treating nutrients (TN, TP) not to mention emerging pollutants (resulting in impaired water bodies)

4.1.3 Wastewater System

Of those properties within Area 1 connected to central sewer, the primary infrastructure servicing these properties is in good to fair condition requiring only normal maintenance. However, the capacity of existing trunk lines and lift stations is close to 100% used. Exhibit I.12 displays the existing infrastructure within Area 1 and, as well, identifies the East Port WRF.

The existing East Port WRF that serves Area 1 is at 65% of the permitted Average Annual Daily Flow (AADF) of 6 Million Gallons Per Day (MGD) and 38% of the permitted Maximum Daily Flow (MDF) of 16.8 MGD. However, re-rating of this capacity is being initiated, that will increase the AADF and MDF ratings of the plant to approximately 8 MGD AADF and 22.5 MDF. These needed incremental capacity improvements will be implemented over the next few years. There is sufficient capacity between existing flows and anticipated rerated capacity to handle Area 1 capacity requirements as shown in the section on Growth Projections. All of the alternatives requiring centralized treatment detailed in the subsequent chapters will be treated at the East Port WRF. Additionally, it is anticipated the East Port WRF will under go an expansion to 12 MGD AADF (33.6 MDF) in 2025.

4.1.4 Financial Status of Any Existing OSTDS and Wastewater Facilities

The existing OSTDS are privately owned. Existing centralized wastewater facilities serving Area 1 are owned by Charlotte County Utilities.

4.2 Stormwater

Area 1 stormwater is collected and treated via a system of grassy swales and canals retrofitted with control structures to provide preliminary stormwater treatment. The overall stormwater system was designed and installed more than 30 years ago and over the years, the system has deteriorated and is not working as effectively. An assessment of the existing stormwater system shows that improvements are required to restore the system to original design parameters. Additionally, current regulations and impaired water bodies are dictating that upgrades in stormwater treatment be implemented. The Public Works (PW) department is embarking on a detailed process to identify the pollutants and loading levels to determine how to improve water body impairments. CCU will cooperate with PW in their efforts to address these issues in conjunction with the wastewater improvements.

Any stormwater features impacted by this project will be restored in-kind. At the time of preparing construction plans, specific corrective upgrades will be incorporated as determined by CCU and PW. The methods to finance improvements will be allotted appropriately between PW and CCU assessments.

4.3 Paving

Public Works prepares a county-wide paving improvements and repair schedule on an annual basis. Priority is given to areas with the oldest roads on a 20-year cycle. Some of the roads in Area 1 have been resurfaced/repaved within the last 10 years while other Area 1 roads are on the priority list to be repaved, including the Spring Lakes area and an area immediately south of Cochran. CCU has been coordinating with PW to schedule wastewater improvements, based upon the paving improvement program to realize as much of the road life as possible.

Any paving features impacted by this project will be restored to PW standards. At the time of preparing construction plans, specific corrective upgrades will be incorporated. The method to finance improvements will be allocated proportionately between PW and CCU assessments.

CHAPTER 5 - GENERAL CONSIDERATIONS

5.1 Centralized Infrastructure

All of the centralized alternatives require a central collection and transmission 'backbone' system and wastewater treatment plant capacity. The proposed plans to address these needs are outlined below.

5.1.1 Central Transmission 'Backbone' System

A central gravity interceptor and force main transmission 'backbone' system is proposed to collect all of the wastewater in Area 1 and transport it to the East Port WRF. This system is comprised of a combination of large diameter gravity interceptors and two master lift stations with 24-inch force mains stretching across the mid section of Area 1 to collect wastewater from all the residences in the area. This transmission system is also sized to collect future flows from proposed future wastewater service areas.

The two (2) master lift stations will have telemetry systems for remote monitoring and control, more sophisticated electronics, higher electrical power requirements, and stand-by generators.

The construction of this backbone system will be phased to meet the increasing wastewater flows from Area 1 as residences are connected, or to meet coordination efforts with PW projects such as the Midway Blvd. expansion effort.

5.1.2 Water Reclamation Facility Capacity

The East Port Water Reclamation Facility (WRF) located east of Area 1, currently rated for 6 MGD AADF, and 16.8 MGD Maximum Daily Flow (MDF), is undergoing improvements to address major upgrade issues while also increasing capacity at its pre-treatment train/stage. The projected capacity is sufficient to serve all of the Area 1 existing residents and projected growth in the County. As wastewater service is provided to future wastewater service areas, the East Port WRF will require an expansion to achieve additional capacity. Once the improvements of the pre-treatment train/stage, collection system rehabilitation and other projects are finished, the re-rate of this plant capacity will be submitted for final FDEP approval. These improvements will increase the ability of the East Port WRF to treat higher volumes of wastewater on an average annual basis.

5.2 Construction Problems

5.2.1 High Water Table

Dewatering, a preparatory technique for eliminating ground water from a construction site, is a factor throughout the project area. The groundwater table is only a few feet below the surface in many areas which increases the amount of time and, therefore, cost to prepare for construction.

As described in Chapter 4, section 1, OSTDS require a certain vertical separation from the groundwater table. Due to the high ground water table, any OSTDS alternative will require a partial-fill or mound type system in Area 1.

Lift station facilities may need to be raised to be above the 25 year and 100 year flood level.

5.2.2 Seasonal High Water Table – Presence of Mottled Soil

Replacement OSTDS would need to be mound systems due to the close proximity of mottled soil (within 36-inches) below the surface indicating a high seasonal water table. As described in Chapter 4, Section 1, OSTDS require a certain vertical separation from the groundwater table. Due to the high ground water table, any OSTDS alternative will require a partial-fill or mound type system in Area 1.

5.2.3 Access

Many of the homes are located on minimal width roadways. Access for safety equipment and personnel still must be maintained to a reasonable level during construction. Furthermore, homeowners need a means of ingress and egress to their homes on a fairly regular basis even though temporary parking locations are provided. Therefore, some level of access needs to be restored and maintained by the Contractor in a timely manner at all times during the construction process.

5.2.4 County Road/ Highway Areas

A considerable portion of the wastewater facilities will be located within county road and state highway right of way. The construction activities along these roadways will require considerable signage to meet safety requirements as part of the permit process. It is anticipated that certain sections of the roadway system will be restored for local traffic only for a temporary period of time during the underground construction.

5.2.5 Wooded Areas

Many of the facilities are located in areas where protected trees may be located. A limited construction zone is proposed to minimize tree removal and preserve the natural features. A tree survey is required as part of the construction process.

5.2.6 Threatened and Endangered Species and Protected Habitats

Many of the facilities are located in areas where protected species and habitats are located. A limited construction zone is proposed to minimize tree removal and preserve the natural features and protected species. A detailed environmental survey is required during the design phase and immediately prior to construction to identify and address these issues. Issues could involve permit applications, permit fees, mitigation fees, and identifying relocation and/or mitigation sites.

5.2.7 Utility Replacement

Some portion of the water distribution and stormwater infrastructure will have to be replaced due to the construction process for wastewater. The degree of the replacement is based upon the type of material existing, the impact/conflict with the wastewater installation, cost efficiency of repair versus replacement, previous problems, maintenance experience, regulatory requirements, and other factors.

CHAPTER 6 – ALTERNATIVES CONSIDERED

The following alternatives on the following pages have been considered and evaluated to address the current situation and associated problems. A description of each alternative follows.

6.1 "DO NOTHING" ALTERNATIVE

6.1.1 Overview

This alternative would leave OSTDS systems in place as-is and allow future wastewater treatment to be handled only by OSTDS. Centralized wastewater service expansion will only continue on the basis of existing CCU policies.

6.1.2 Related Figures, Tables and Exhibits

NA

6.1.3 Land Requirements

There are no immediate land requirements for this option. In the future, if system repairs/replacements are required and the system must be brought into compliance with current regulations, additional land area may be required on a case-by-case basis. The responsibility of land acquisition would be the property owners'. Further, due to the effluent plume, OSTDS may not be able to built on every lot, but, rather, alternating lots, thereby impacting the build-ability of all vacant lots in Area 1.

6.1.4 Costs

See Chapter 8 for a cost comparison analysis of the alternatives.

6.1.5 Advantages/Disadvantages

The Health Department programs, policies, and procedures will dictate the on-going inspection program. CCU will continue its current policy for line extensions and maintain its current standards for operational performance of its existing systems. As clearly discussed in Chapter 4 of this report regarding OSTDS, there are serious environmental and ecological concerns relating to the status-quo of OSTDS within Area 1. The negative ecological impacts will continue to accumulate at the current rate.

The immediate cash outlay to most individual property owners will be minimized. However future repair and replacement cost will be born by the individual property owners. These costs include the actual repair or replacement costs and the applicable standard OSTDS or ATU operation permit fees and, for those with ATU's, the on-going maintenance contract fees. Future growth would be hindered by development orders limiting the density of OSTDSs in certain parts of Area 1. FDEP has the right to issue a consent order if the permit requirements for centralizing sewer are not met in the Manchester Lock removal permit. In addition, the Florida Department of Health is considering future discharge fees for OSTDS due to the pollutant loads introduced by these systems.

As discussed in section 4.1.2.3, the EPA is establishing stringent nutrient criteria to cleanup Florida waterways. The costs associated with meeting these new criteria and to clean up Charlotte County waterways will continue to increase if nothing is done about it. The EPA currently estimates that it will cost 102 Million dollars to 130 Million dollars per year to address the issues with all of Florida's waterways.

6.2 "UPGRADE OR REPLACE EXISTING INDIVIDUAL OSTDS"

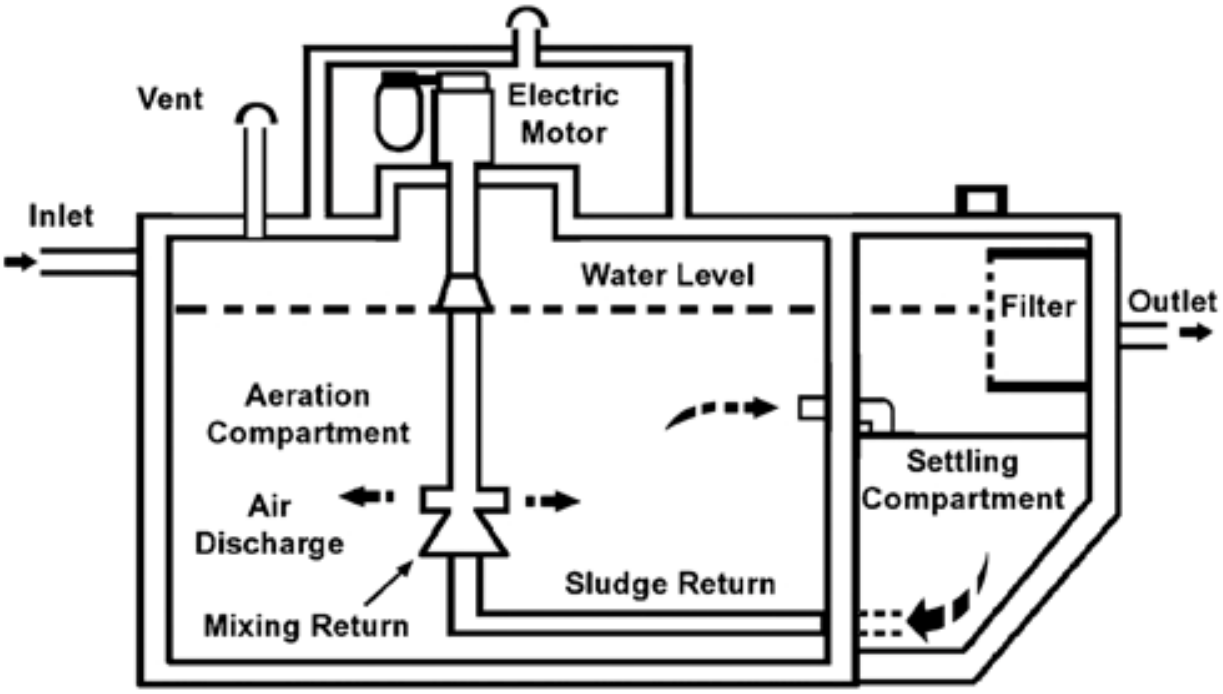
6.2.1 "AEROBIC TREATMENT UNITS (ATUs)" ALTERNATIVE

6.2.1.1 Overview

This alternative would replace all existing individual OSTDS to bring them in compliance with current codes and regulations (FAC 64e-6). Each property would continue to have its own OSTDS in the form of an Aerobic Treatment Unit (ATU) with a properly designed drainfield. As discussed in Chapter 4, Section 1, there are a number of challenges to meet current design criteria in Area 1 for a standard OSTDS. An ATU would be the alternative OSTDS approach to bring these properties into compliance. Once ATU systems are installed, inspection of these systems would be performed annually by a qualified Health Department inspector and a licensed maintenance contractor semi-annually.

6.2.1.2 Related Figures, Tables and Exhibits

Figure 6.2.2.1.1: *Conceptual Overview Aerobic Treatment Unit*



6.2.1.3 Land Requirements

Generally, there is sufficient land area for ATUs since drainfield land area requirements are approximately 25% less than for a standard OSTDS.

6.2.1.4 Costs

See Chapter 8 for a cost comparison analysis of the alternatives.

The immediate cash outlay to most individual property owners vary to some extent, but in most cases approach $14,000, the approximate cost of an ATU system. The repair and replacement cost will be born by the individual property owners. These costs include the actual repair or replacement costs and the applicable standard ATU operation permit fees and, the on-going maintenance contract fees. FDEP has the right to issue a consent order if the permit requirements for centralizing sewer are not met in the Manchester Lock removal permit. The Florida Department of Health is considering future discharge fees for OSTDS due to the pollutant loads introduced by these systems.

6.2.1.5 Advantages/Disadvantages

In addition to the arguments outlined above, ATU OSTDS systems have further drawbacks. While ATU land requirements are less than for standard systems, due to the introduction of mechanical and electrical components to the OSTDS, the initial construction/installation, maintenance and permit/inspection costs are higher for an ATU type system.

The cost of construction is increased in a majority of the locations due to the vertical and horizontal setbacks that must be maintained from existing buildings, surface, and ground water. The original soil at the property may not be suitable. Soil may need to be transported to the construction site at an additional cost. In addition, a dedicated electrical service must be installed.

Environmental impact costs contribute to the long term ownership costs of ATUs versus a municipal system. Furthermore, future discharge fees are being considered for ATUs due to the pollutant loads introduced by these systems to help meet Clean Water Act requirements. When incorporating a 'pollution tax' into the cost estimate, the cost for an ATU increases even more.

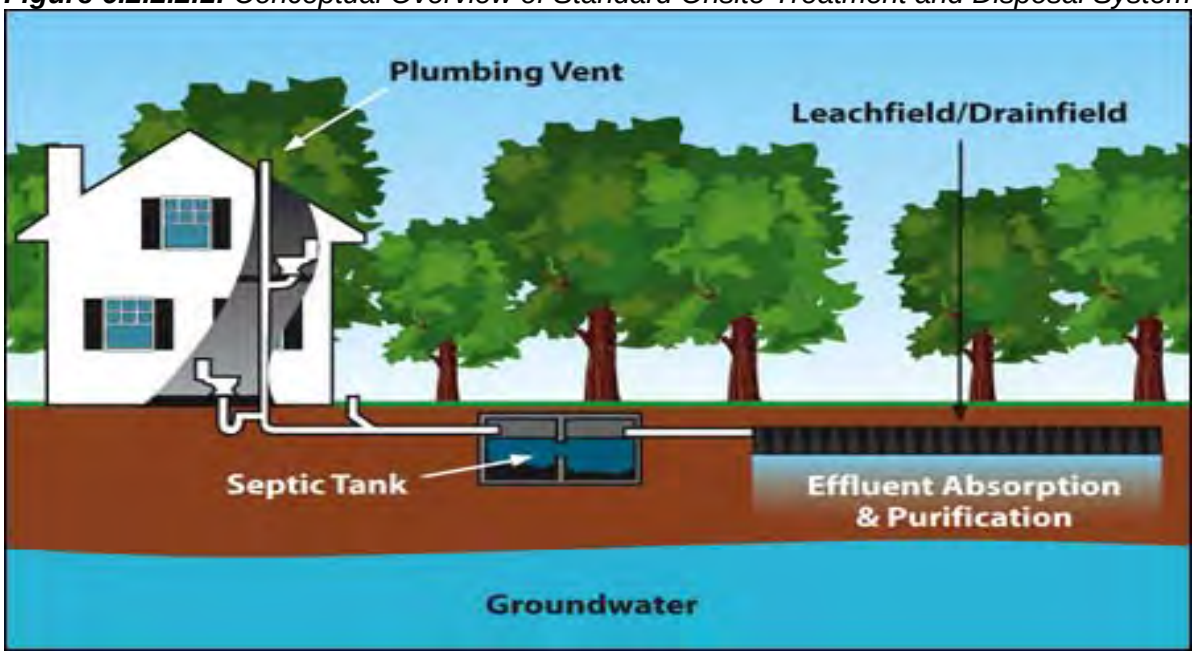
6.2.2 "STANDARD OSTDS SYSTEM" ALTERNATIVE

6.2.2.1 Overview

This alternative would replace all existing individual OSTDS to bring them in compliance with the current codes and regulations (FAC 64E-6). Each property would continue to have its own OSTDS in the form of a standard OSTDS with a properly designed drainfield. As discussed in Chapter 4, Section 1, there are a number of challenges to meet current design criteria in Area 1 for a standard OSTDS. Additional land area would need to be set aside for each property to decrease the density of OSTDS in the area. This land would need to be adjacent to or within proximity of the property.

6.2.2.2 Related Figures, Tables and Exhibits

Figure 6.2.2.2.1: *Conceptual Overview of Standard Onsite Treatment and Disposal System*



6.2.2.3 Land Requirements

To install compliant OSTDS, sufficient land area is needed to meet design and operational standards. In many instances in Area 1, the existing site area/lot area is insufficient and no assurances exist that suitable land area will be available to accommodate each OSTDS. The land area required must be evaluated on a case-by-case basis.

6.2.2.4 Costs

See Chapter 8 for a cost comparison analysis of the alternatives.

The immediate cash outlay to most individual property owners will vary somewhat, depending upon the existing condition of their OSTDS and the necessary repairs to meet current regulations. The repair and replacement cost will be born by the individual property owners. These costs include the actual repair or replacement costs and the applicable standard OSTDS operation permit fees. Future growth would be hindered by development orders limiting the density of OSTDSs in certain parts of Area 1. FDEP has the right to issue a consent order if the permit requirements for centralizing sewer are not met in the Manchester Lock removal permit. In addition, the Florida Department of Health is considering future discharge fees for OSTDS due to the pollutant loads introduced by these systems.

6.2.2.5 Advantages/Disadvantages

Many OSTDS in Area 1 do not meet the criteria for a properly functioning OSTDS. To rectify this problem, this option replaces all individual OSTDS with systems that meet current criteria. This OSTDS option has advantages and disadvantages. Overall, it is costly in the long term. See Table 6.2.2.4.2 for a cost comparison. As noted previously, it is questionable if the standard OSTDS systems can be installed for most lots in Area 1. More likely, the more expensive ATU-OSTDS systems will be required to meet current standards.

The Health Department programs, policies, and procedures will dictate the on-going inspection program required for the long term monitoring of these systems. CCU will continue its current policy for line extensions and maintain its current standards for operational performance of its existing systems. The option will always be available to properties within proximity of CCU services to voluntarily connect at a cost.

The cost of construction is increased in a majority of the locations due to the vertical and horizontal setbacks that must be maintained from existing buildings, surface, and ground water. The original soil at the property may not be suitable. Soil may need to be transported to the construction site at an additional cost.

Environmental impact costs contribute to the long term ownership costs of OSTDS versus a municipal system. Furthermore, future discharge fees are being considered for OSTDS due to the pollutant loads introduced by these systems to help meet Clean Water Act requirements. When incorporating a 'pollution tax' into the cost estimate, the cost for an OSTDS increases even more.

Standard OSTDS systems have further drawbacks. Given CCU findings described in Chapter 4 of this report coupled with the permit requirements for new on-site wastewater treatment systems, it will be very difficult, if not impossible, to realistically and economically construct some 7,544 new replacement standard OSTDSs. Upgrading each system to a standard system is cost prohibitive when taking into account the additional land required (lot size must be greater than 10,000 sq ft) and the larger drainfield requirement. The "standard" platted lot size in Area 1 measures 80' x 120' for a total area of 9,600 square feet. In many cases, for standard OSTDS, it may be necessary to locate additional land where sufficient separation will be required to meet Florida Statutes. By allocating this additional property for OSTDS, future growth corridors will be limited thereby eliminating additional lots for development and it is questionable whether acceptable vacant land is available adjacent to or near each home. Further, due to the seasonal high water table, many of the drainfields will be required to be mound systems. The elevated approach also is a consideration as to its effect on the property.

6.3 "GRAVITY" ALTERNATIVE

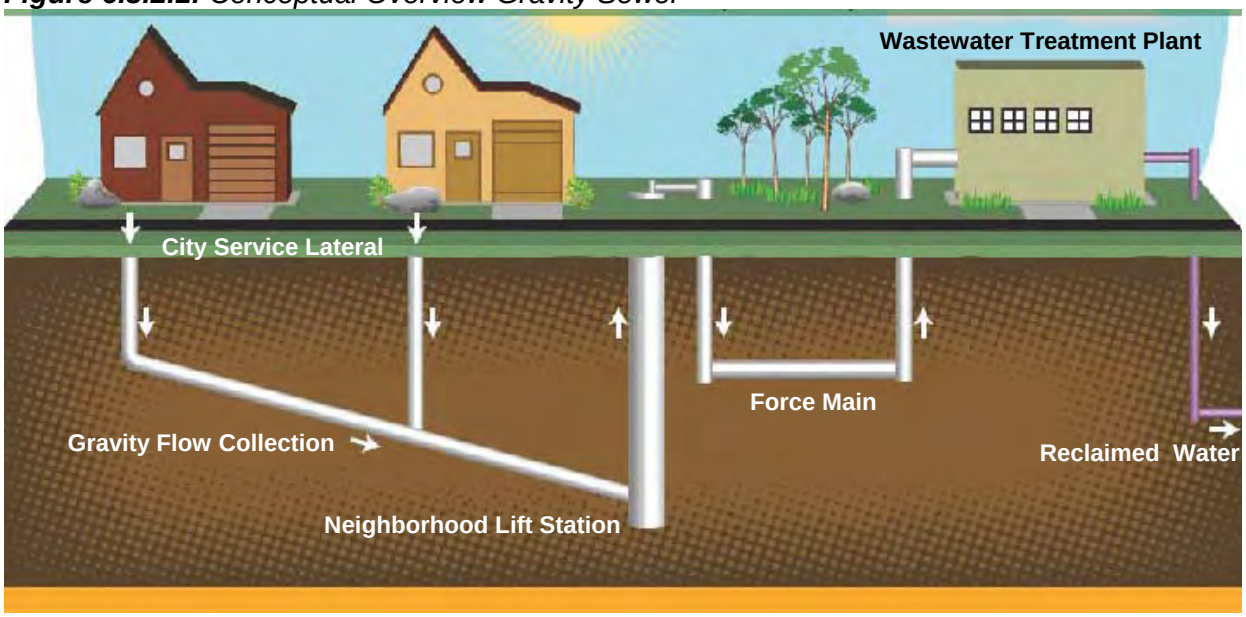
6.3.1 Overview

This alternative will provide central wastewater service using a conventional gravity collection system. Wastewater is collected from individual homes and transported by gravity through a series of 8-inch to 15-inch or larger collection lines made of PVC and pre-cast lined manholes to localized lift stations in the area. This system of lift stations and force mains are used to transport wastewater collected by gravity to the wastewater plant for treatment. In this alternative, all OSTDS would be properly abandoned per regulations. All existing homes would be connected to the gravity sewer system.

The gravity collection system will be constructed in the center of the existing roads, thus requiring the removal and replacement of all roads. Other existing utilities currently installed in the right-of-ways may or may not be affected depending upon location, depth, type of material and other factors specific to the impacted utility. The force mains are constructed in the existing County right-of-ways. Service stub-outs for unoccupied lots will be added.

6.3.2 Related Figures, Tables and Exhibits

Figure 6.3.2.1: *Conceptual Overview Gravity Sewer*



6.3.3 Land Requirements

Property for the lift stations would need to be acquired. In addition, various easements would be needed for the collection system (areas outside public right of ways) and the lift station facilities. The force main facilities are intended to be constructed in the county road and state highway right-of-ways through a permit process.

6.3.4 Costs

See Chapter 8 for a cost comparison analysis of the alternatives.

6.3.5 Advantages/Disadvantages

The gravity alternative has low maintenance and life cycle costs. The individual property owner no longer requires an electrical service to operate their wastewater system nor provide room for a tank. System components would be maintained by CCU. The gravity mains transport wastewater by use of gravity and minimize electricity.

While the long term maintenance and life cycle costs for gravity are lower, the construction costs are

higher and the logistics more complicated. Gravity construction requires the removal of the existing road system since gravity mains and manholes are in the center of the existing roads. Existing utilities located in the road such as water mains and storm sewer may need to be replaced as a result of removing the road. Major dewatering operations are required for the pipe installation.

The construction process is more disruptive to the existing residents due to the removal of the road system. However, the construction methods are well established and materials are readily available.

There are fewer odors with gravity systems since the whole wastewater effluent is exposed to the air and the bacteria have an opportunity to begin the treatment process prior to reaching the treatment plant. There is additional storage in the gravity system mains and manholes which allows more response time during power outages.

The original gravity system design completed as a part of the CDM Charlotte County 1990s sewer expansion study is available and can be leveraged for part of this effort.

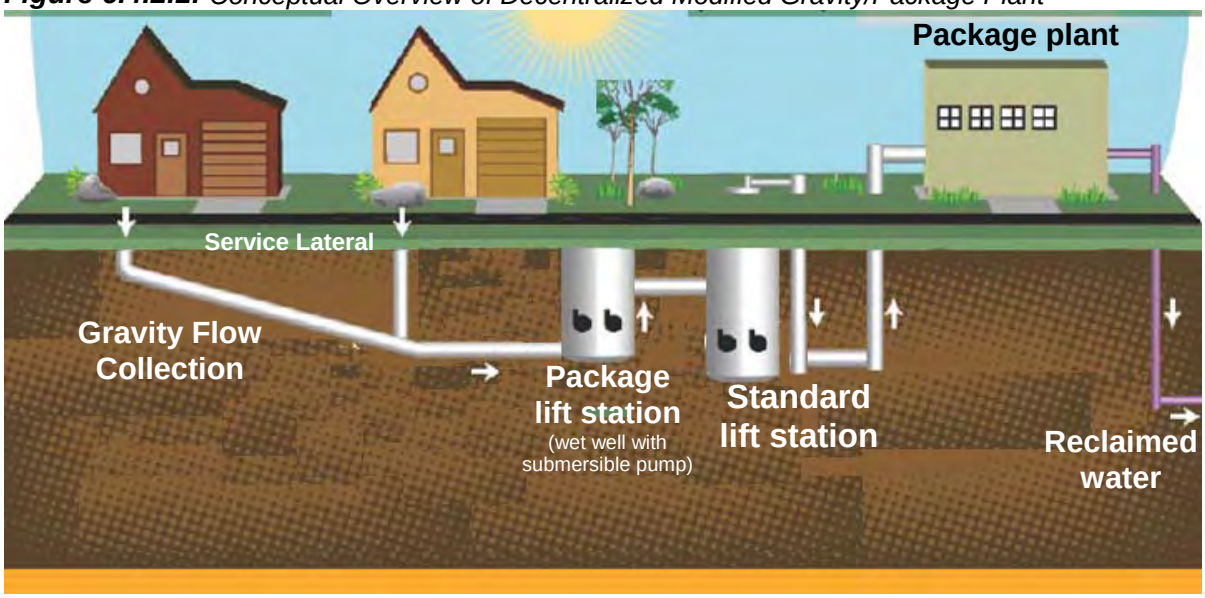
6.4 "DECENTRALIZED SYSTEMS – PACKAGE PLANT WITH HYBRID GRAVITY" ALTERNATIVE

6.4.1 Overview

This alternative would provide an interim option to neighborhoods that want to introduce central wastewater service, before the overall program would reach their own neighborhood. A neighborhood survey may reveal this alternative to be a desired option. The proposed solution would be to construct a package plant to serve approximately 2116 homes. Wastewater would be collected via a hybrid gravity system and grinder pump/force main system and delivered to the package treatment plant providing secondary level treatment. The gravity and pump/force main system will be designed and constructed in a manner to facilitate future connection to the central transmission system to the East Port WRF when central wastewater service becomes available to the neighborhood.

6.4.2 Related Figures, Tables and Exhibits

Figure 6.4.2.1: *Conceptual Overview of Decentralized Modified Gravity/Package Plant*



6.4.3 Land Requirements

Land acquisition is required to construct and operate a package plant. Various easements would be needed for the collection system (areas outside public right of ways) and the lift station facilities. The force main facilities are intended to be constructed in the county road and state highway through a permit process

6.4.4 Costs

For the purposes performing a cost comparison of the alternatives, the decentralized solution was expanded upon to incorporate all of Area 1 to evaluate its cost effectiveness. See Chapter 8 for a cost comparison analysis of the alternatives.

6.4.5 Advantages/Disadvantages

A package plant presents an opportunity to provide a centralized wastewater treatment service option to a geographically remote location in a more cost effective fashion where it is impractical and very expensive to extend central wastewater service to address the immediate needs of the community. Such an option would provide an equivalent level of treatment as a municipal permitted treatment plant. Furthermore, this option eliminates or extends start dates for major plant expansions and eliminates the need to extend lines through unpopulated areas where there is no customer base to support such

facilities. These facilities provide the county the flexibility to potentially, in the future, connect this remote neighborhood to a centralized transmission system and treatment plant provided that at this future time it is more cost effective to do so.

While CCU explored this option for Area 1, it became readily apparent that such a solution was not justified. There are no remote areas in Area 1 where it would be practical or cost effective to construct a package plant. Rather it is feasible to serve Area 1 with a major transmission line throughout the area because there is sufficient population density or customer base to serve along the entire transmission main alignment. The population density and distribution throughout Area 1 is optimal for connection to a major central transmission system.

The expense per ERU is higher for constructing and managing a package plant due to economies of scale. The cost to add the treatment component is more expensive than the cost to transmit the waste to East Port WRF. There is also the additional concern or perception regarding the future of the plant once the centralized transmission system becomes available to the area. After making such a large investment in a package plant to an area that will receive public wastewater service in the near term, in addition to demolition costs, there may be a perception that money was poorly spent.

6.5 "LOW PRESSURE SEWER (LPS)" ALTERNATIVE

6.5.1 Overview

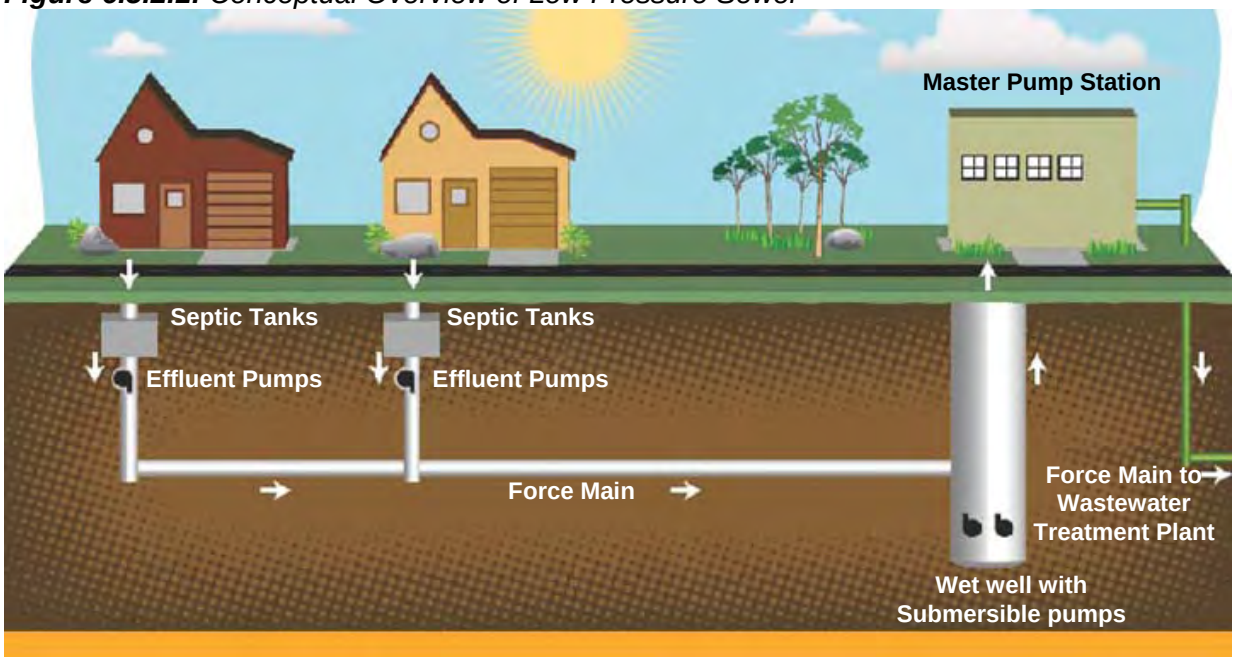
This alternative would provide central wastewater service by using a septic tank effluent pump (STEP) based low pressure sewer collection system. The Low Pressure Sewer System consists of an interceptor tank and a chamber unit, which houses a small, submersible electrical pump. The tank is installed below ground, much like a septic tank in the front yard of each individual property. Substantial organic waste collection is provided energy-free in the interceptor tank. The liquid in the tank, or effluent, is pumped automatically through a small pressure line (typically 2-inch minimum to 4 or 6-inches) that transports it through a system of low pressure force main collection lines, lift stations and transmission force mains ultimately reaching the wastewater plant for treatment.

Each intermediate or master lift station system is fed by a master manhole. The PVC low pressure force main and force main piping is installed approximately three feet below grade in the existing County rights-of-way. The existing roads do not have to be completely removed and replaced and will only be cut open a sufficient width to allow a pipe installation at pipe road crossings.

Services to the unoccupied lots will be added at the time of the request for sewer by the property owner. Each system requires a pump control panel and a dedicated electric service from the customer. The existing, more recently installed OSTDS tanks, meeting current standards, will be inspected and retrofitted or replaced at the property, along with the installation of a small submersible pump in a pump chamber. As noted previously, many, if not most, tanks are old and will require replacement. The tank solids are periodically removed from the low pressure tank in the same manner as with a septic tank.

6.5.2 Related Figures, Tables and Exhibits

Figure 6.5.2.1: *Conceptual Overview of Low Pressure Sewer*



6.5.3 Land Requirements

Property for the lift stations would need to be acquired. In addition, various easements would be needed for the collection system (areas outside public right of ways) and the lift station facilities. The force main facilities are intended to be constructed in the county road and state highway right-of-ways through a permit process.

6.5.4 Costs

See Chapter 8 for a cost comparison analysis of the alternatives.

6.5.5 Advantages/Disadvantages

There are many advantages to the Low Pressure Sewer option. The main benefits are related to less expensive construction costs and simplified logistics. LPS does not require the removal of the existing road system for construction since the collection sewer mains are in the County right-of-ways minimizing disruption to existing residents during construction. Furthermore, there are minimal maintenance responsibilities to the property owner. CCU maintains the onsite system throughout the life of the system. The property owner, however, must bear the cost of installing an electric service to power the individual low pressure sewer pump as well as ongoing electric power costs, which are minimal. CCU is accustomed to this design alternative by currently maintaining 6,000 existing low pressure connections, although additional resources will be required for on-going maintenance. Contractors in the area are also accustomed to installation of this type of design having created efficiencies and various techniques which have reduced the overall price per foot for installation.

While the capital costs for this option are lower than other options, the long term maintenance and ownership of a low pressure solution is much higher than other centralized alternatives outlined in this report. The long term maintenance of LPS is complicated by the requirement that CCU maintain all low pressure tanks and pumps installed on individual properties. The system relies heavily on the use of power to transport wastewater effluent and there is less storage in the system than a gravity system which reduces the amount of time available to react to a power outage. These higher O&M costs will effectively necessitate future CCU wastewater rate increases to offset the additional O&M costs.

The effluent from the low pressure sewer tanks quickly becomes anaerobic (“without oxygen”) creating hydrogen sulfide and other gases, which are more detrimental to the system components and increase O&M costs with a need to address unpleasant odors and the increased corrosion rate of lift station components made of metal, plastic, and concrete versus other central sewer options. This type of effluent also provides negative downstream effects on the central wastewater treatment plant when received in bulk, usually when the seasonal population returns for the winter season.

If zoning densities should increase, the low pressure system typically has less capacity for the additional flow and this system is not amenable to high density multi-family developments with respect to sizing tanks and handling peak flows or commercial properties where grease becomes an issue.

6.6 "VACUUM SEWER" ALTERNATIVE

6.6.1 Overview

This alternative would provide central wastewater service using a central vacuum system. A vacuum sewer system uses the differential pressure between atmospheric pressure and a partial vacuum maintained in the piping network and vacuum station collection vessel. This differential pressure allows a central vacuum station to collect the wastewater of several thousand individual homes, depending on terrain and the local situation.

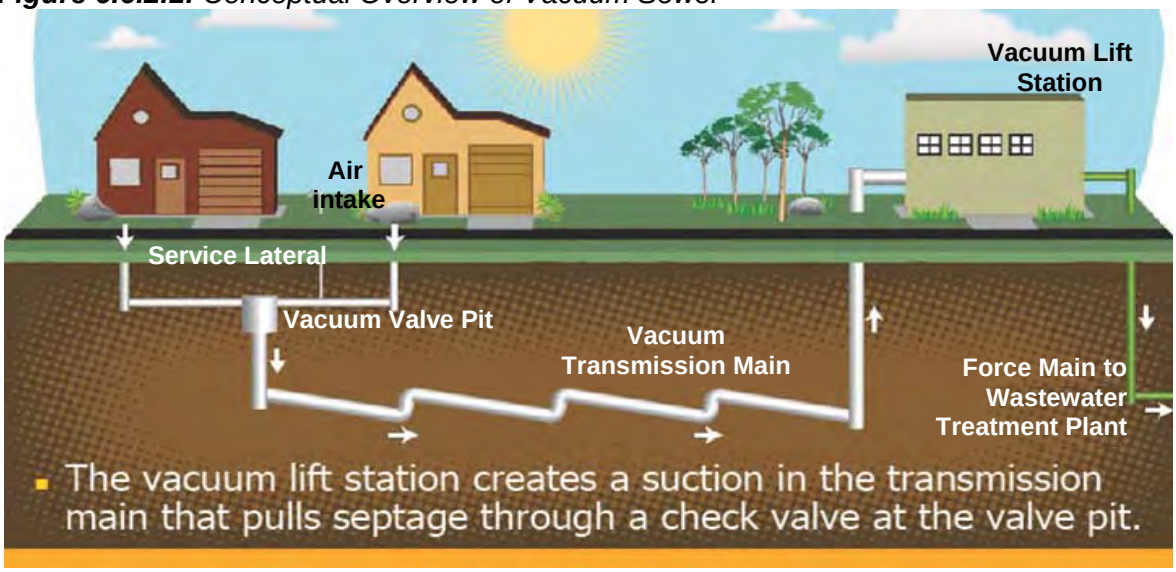
The vacuum system consists of a gravity service from each property to a nearby valve pit installed in the edge of the road right-of-way. The valve pits are activated by a pressure sensitive valve to determine when wastewater enters the collection system, which is under constant negative pressure or vacuum. The vacuum collection piping system is installed at a negative 0.2% grade and at a minimum of three feet below grade in Charlotte County right-of-ways. In order to maintain the negative 0.2% grade over long distances, up-lifts made of 45 degree PVC bends allow the force main to extend for longer distances. The wastewater is transported by vacuum until it ultimately discharges into the vacuum collection station. The vacuum collection station takes the place of a conventional pump station by collecting, storing, and discharging the sewage via pressure pumps thru a force main to an off-site treatment plant.

Buffer (storage) tanks are required for multiple customers in a single building which may be required in only a few instances for existing properties in Area 1. Service stub outs for the unoccupied lots will be added to the vacuum collection mains during construction to facilitate the addition of a new service at the time of the request for sewer by the property owner.

Road removal is on a limited basis for constructing the valve pits and pipe crossings. The existing roads will be open cut a sufficient width to allow installation of the vacuum pipe main and force main crossings. The vacuum collection station is enclosed in a permanent building housing the control electronics, storage tanks, vacuum pumps, an odor control system, and pressure pumps. The station has a standby generator.

6.6.2 Related Figures, Tables and Exhibits

Figure 6.6.2.1: *Conceptual Overview of Vacuum Sewer*



6.6.3 Land Requirements

Property for the Vacuum lift stations would need to be acquired. In addition, various easements would be needed for the collection system (areas outside public right of ways) and the lift station and vacuum pit facilities. The force main facilities are intended to be constructed in the county road and state highway right-of-ways through a permit process.

6.6.4 Costs

See Chapter 8 for a cost comparison analysis of the alternatives.

6.6.5 Advantages/Disadvantages

Vacuum sewers take advantage of available natural slope in the terrain and are most economical in flat to gently rolling terrains where groundwater is found several feet from the surface. This alternative requires little to no removal of the existing road system for construction, since the collection sewer mains are in the County right-of-ways minimizing disruption to existing residents. There are medium maintenance and life cycle costs of the vacuum collection mains and force mains. Construction costs are higher than low pressure sewer since it is critical that the collection mains be installed at a specific grade. Also driving up the construction costs is the fact that several of the components are proprietary and not interchangeable with other manufacturers. Additional plumbing is required to connect the property to the vacuum collection system.

CCU will maintain the vacuum system. However, CCU will initially require additional resources for training and possibly hiring experienced personnel to address the unique operational issues surrounding the vacuum system such as different trouble shooting techniques. CCU would also need to stock proprietary parts for replacement when and if required. Power requirements are higher since additional vacuum pumps are required in addition to the normal discharge lift station pumps.

The effluent from the vacuum sewer alternative has a lower concentration of hydrogen sulfide and as such odors will be minimized and the corrosion rate reduced. The entire effluent is transported very quickly throughout the system. Individual property owners are not required to install an additional electrical service to operate the system nor will CCU require access to individual properties to maintain the system.

6.7 "HYBRID GRAVITY" ALTERNATIVE

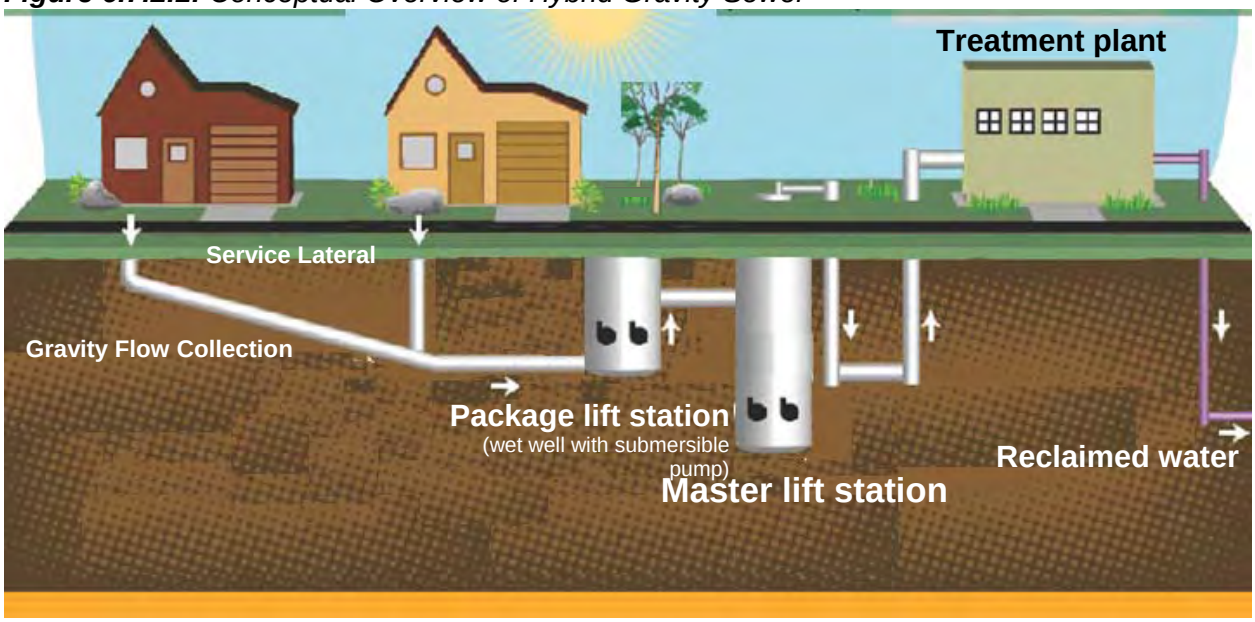
6.7.1 Overview

The Hybrid Gravity system replaces OSTDSs with a gravity collection system that is installed at shallower depths, versus a conventional gravity system. These shallower gravity collection service mains and manholes are connected by multiple small or package lift stations. The package lift stations transport waste using small diameter force mains to a master pump station which sends flow to the East Port WRF. The ability to construct at shallower depths addresses the high construction costs required to handle high groundwater tables that are found in Area 1. In this alternative all OSTDS would be properly abandoned per regulations.

The gravity collection system will be constructed in the center of the existing roads thus requiring the removal and replacement of all roads to a certain degree. The shallower depths will reduce the overall road and right-of-way restoration costs since the construction zone is decreased. Other existing utilities currently installed in the right-of-ways may or may not be affected depending upon location, depth, type of material and other factors specific to the impacted utility. The force mains are constructed in the existing County right-of-ways.

6.7.2 Related Figures, Tables and Exhibits

Figure 6.7.2.1: *Conceptual Overview of Hybrid Gravity Sewer*



6.7.3 Land Requirements

Property for the lift stations would need to be acquired. In addition, various easements would be needed for the collection system (areas outside public right of ways) and the lift station facilities. The force main facilities are intended to be constructed in the county road and state highway right-of-ways through a permit process.

6.7.4 Costs

See Chapter 8 for a cost comparison analysis of the alternatives.

6.7.5 Advantages/Disadvantages

The Hybrid Gravity alternative provides a modified approach to a traditional gravity alternative by minimizing depths. Further, the Hybrid Gravity system incorporates small package lift stations staged throughout Area1, versus the use of individual property low pressure pumps and storage as required for the LPS system. The construction costs will be slightly higher than the low pressure sewer alternative since there is a gravity collection system component that will require removal of the existing road system and some dewater operations. Existing utilities will be replaced as needed.

This process will be disruptive to existing residents while the roads and utilities are disturbed. However, construction costs are lower since the gravity collection system will not be as deep as the conventional gravity system. There will be small package pump stations at optimal intervals to assist with transporting the effluent from one elevation to another. Service stub-outs for unoccupied lots will be added.

CCU maintenance costs, in general, will be lower than the LPS alternative since the system is centralized and components will not be located at individual properties. However, since this alternative is comprised of a force main component connecting a series of small gravity collection systems via small package stations, the maintenance of this system is slightly more complex and costlier than for a conventional gravity system. Power requirements for this alternative are greater than for a conventional gravity system but less than an LPS system.

Odor and corrosion issues will be minimized since air is introduced into the wastewater while collecting via gravity to the package lift stations. The force main length will be much shorter, decreasing the transportation time impacting the wastewater quality and odor conditions.

CHAPTER 7 – OPERATIONS AND MAINTENANCE COST ANALYSIS

Due the fact that O&M and replacement costs are recovered through utility rates, fees and charges to its customers, all alternatives were examined for the long term financial consequences of operating and maintaining each of the alternative systems. The standard OSTDS and ATU OSTDS alternatives also have long term O&M and replacement costs which are incurred directly by the property owners responsible for making sure their systems are functioning properly at all times, as well as having them inspected and pumped out on are regular basis. Therefore a present worth analysis was completed to accomplish this evaluation.

The present worth analysis for each of the 7 alternatives was completed using the capital and operations and maintenance (O&M) costs previously discussed. The results are presented in Table 7.1 below. The present worth analysis was based on Federal Government procedures outlined in the USDA's finance proposal evaluation for comparison of alternatives. The assumptions were as follows:

- A 100 year analysis period was used.
- The real interest rate used was 3.0%. This is the rate, rounded up, and published in the Office of Management and Budget Circular No. A-94 for 30 or more year analyses.
- The useable life span for lift stations and vacuum pits was 50 years.
- The useable life span for piping and manholes was assumed to be 100 years.
- The life span for pumps varied by size and was assumed to be 10, 15, or 20 years.
- The life span for controls was assumed to be 5 years.
- The life span for low pressure systems was assumed to be 50 years.
- The life span of onsite systems was assumed to be 40 years.
- The costs associated with the purchase of land were 100% salvageable. Site work and land improvements had no salvage value.
- Wastewater treatment costs were incorporated in the centralized alternatives using variable treatment costs identified in CCU's current rate resolution dated October, 1 2009 ($3.86/1,000 gallons).

Table 7.1: Comparison of O&M and Replacements Costs
(all $ Amounts are in Millions)

Alternatives (In Ranked Order)	O&M	Replacement	Total O&M and Replacement Costs
Hybrid Gravity	$153.7	$4.5	**$158.2**
Vacuum	$198.0	$15.1	**$213.1**
OSTDS - Standard	$181.9	$84.4	**$266.3**
Low Pressure	$245.9	$18.4	**$264.3**
Standard Gravity	$182.2	$7.2	**$189.4**
Decentralized	$224.4	$32.9	**$257.3**
OSTDS - ATU	$367.0	$99.9	**$466.9**
Do Nothing *	NA	NA	**NA**

* This option does not address the problems and issues being encountered and therefore is not considerered a viable alternative.

CHAPTER 8 – SELECTION OF AN ALTERNATIVE

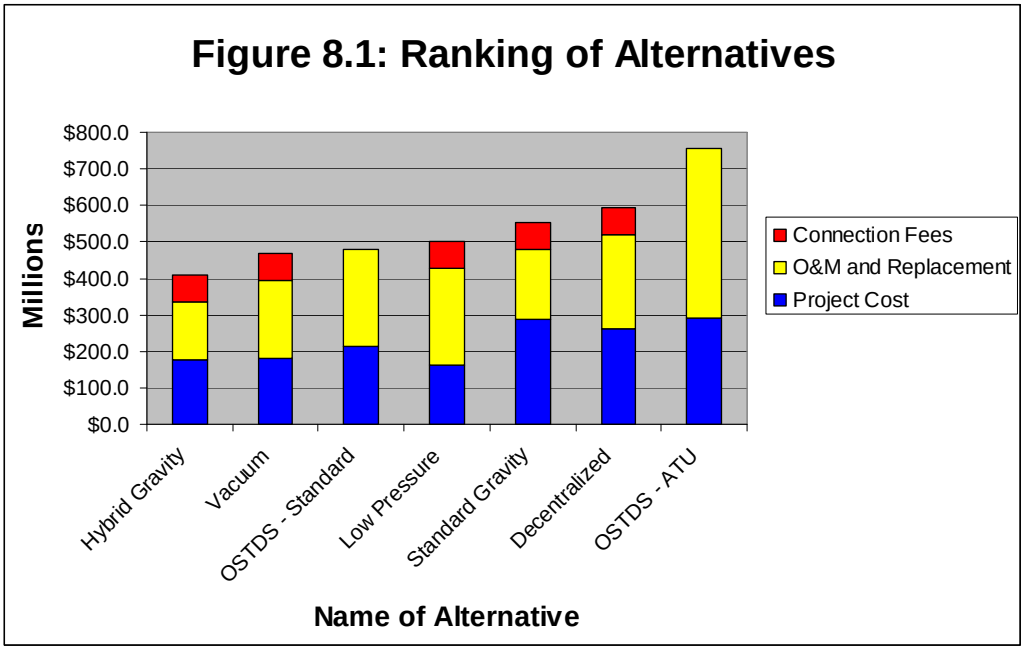
The alternatives were evaluated based upon the overall construction cost and present worth of the long term operations, maintenance, and replacement costs. In addition, connection fees are included for all centralized sewer alternatives.

Costs were determined by first performing a detailed design/cost estimate for the Spring Lake Area. This Area was considered a worst case scenario as to overall design complexity and cost. The results were then expanded to the remainder of Area 1 in order to finalize the overall costs. See Appendix II, Exhibit II.1 through Exhibit II.7, for detailed cost estimates. Table 8.1 and Figure 8.1 below summarize the costs and provide the overall ranking of the alternatives.

Table 8.1: Comparison of Alternatives by Cost and Other Factors
(In order of ranking with lowest priced option listed first)
(all $ Amounts are in Millions)

Alternatives (In Ranked Order)	Project Cost	O&M and Replacement	Connection Fees	Total Project Cost
Hybrid Gravity (Exhibit II.1)	$178.2	$158.2	$73.7	**$410.1**
Vacuum (Exhibit II.2)	$181.2	$213.1	$73.7	**$468.0**
OSTDS - Standard (Exhibit II.3)	$212.8	$266.3	$0.0	**$479.1**
Low Pressure (Exhibit II.4)	$163.0	$264.3	$73.7	**$501.0**
Standard Gravity (Exhibit II.5)	$288.3	$189.4	$73.7	**$551.4**
Decentralized (Exhibit II.6)	$262.8	$257.3	$73.7	**$593.8**
OSTDS - ATU (Exhibit II.7)	$289.8	$466.9	$0.0	**$756.7**
Do Nothing *	NA	NA	NA	**NA**

* This option does not address the problems and issues being encountered and therefore is not considered a viable alternative. It is an unranked alternative.



The project (construction) cost for each alternative ranged from approximately $163 million for the Low Pressure Sewer option to the most expensive project cost of $289.8 million for the OSTDS – ATU option. The cost for the 'Do Nothing' alternative was not considered since this does not address the serious problems and issues that are being encountered in the area in a timely fashion. The main distinction between the highest and lowest cost central wastewater systems is the amount of restoration that is required when installing the Low Pressure Sewer system, versus the Standard Gravity system. The Standard Gravity system requires full road replacement while the Low Pressure System lines are installed in the existing Right-of-Way.

Looking at present worth of the Operations and Maintenance (O&M) and Replacement Costs for the OSTDS alternatives, the lowest cost alternative was the Standard OSTDS system at $266.3 million with the most expensive alternative being the ATU OSTDS system at $466.9 million. However, as mentioned previously in the report, due to the physical constraints in the area, the Standard OSTDS system is not a feasible option. As such, the ATU system would be the most likely OSTDS system to be installed. The lowest O&M and replacement cost for a central wastewater alternative was Hybrid Gravity at $158.2 million and the highest was the Low Pressure Sewer option at $264.3 million, both of which are lower than the on-site ATU system at $466.9 million. The Low Pressure Sewer option requires additional maintenance to manage the on-site STEP tank and pump that are located on each individual property. This quickly drives up its O&M costs in relation to other alternatives which don't have to address issues at individual properties.

Overall, when coupling the total Project Cost with the total Present Worth cost for Operations and Maintenance and Replacement Cost of each alternative, the Hybrid Gravity alternative had the lowest overall cost at $410.1 million. The project with the highest overall expense was the ATU OSTDS system at $756.7 million. **Therefore, the Hybrid Gravity alternative provides the least overall cost for the Area 1 residents.**

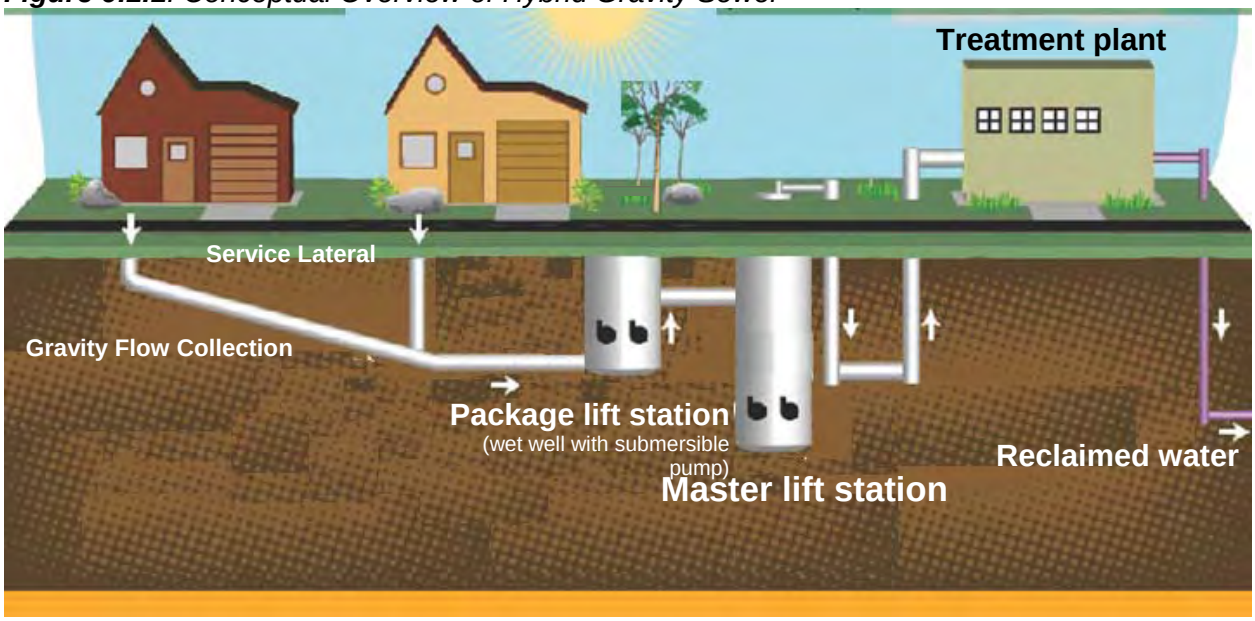
The Hybrid Gravity alternative has fewer lift stations to maintain than the Low Pressure Sewer option when taking into account the individual Low Pressure Sewer systems located at each property. The Hybrid Gravity system mains are shallower due to the number of package lift stations, so the estimated line inspection and cleaning costs will be lower than the Standard Gravity option. The overall project (construction) cost was lower than the Standard Gravity option due to the shallower depth of the gravity mains.

CHAPTER 9 – PREFERRED PROJECT – HYBRID GRAVITY

9.1 Overview

CCU is recommending to the BCC that the preferred wastewater service solution in terms of cost, long term operation and maintenance costs, and ecological benefits is the Hybrid Gravity alternative (see figure 9.1.1 below for conceptual overview of the recommended solution). This alternative is the lowest overall cost option when combining the construction cost coupled with the cost of operation and maintenance. This alternative also addresses the ecological concerns in a global centralized fashion thus providing a simple, structured approach to resolving the impairments affecting the Charlotte Harbor Estuary, Peace River and Myakka River water bodies.

***Figure 9.1.1**: Conceptual Overview of Hybrid Gravity Sewer*



9.2 Project Design

9.2.1 Collection System Layout

The collection system has 3000 manholes, approximately 890,000 linear feet of gravity mains, approximately 135,000 linear feet of force mains and160 package pump stations. The system collects wastewater from residences via gravity through 8-inch to 15-inch gravity sanitary sewer lines.

Homes will be served by either a four (4) inch service lateral where only a single service is required, or a six (6”) inch service lateral will be used for existing and future double service needs. See Exhibit II.1 for a detailed cost estimate and quantities of these components.

9.2.2 Pumping Stations and Transmission System

The pumping stations for this project are small package lift stations strategically located to elevate and transport the wastewater to the next gravity collection area or to a master lift station. The forcemain from each of these stations will be four (4) inches minimum in size. Either single or three phase power will be needed to serve these pumping stations. Each pumping station will include two (2) pumps for backup/duplication purposes.

The hybrid gravity collection system and package lift stations will pump or collect to one of two master lift stations or to the gravity interceptor that is to be constructed along the mid-section of Area 1.

9.2.3 Treatment

All the wastewater would ultimately collect and be treated at the East Port WRF

9.3 Project Finance Overview

As previously identified in chapters 7 and 8, the total project costs for the hybrid gravity solution including construction, operations, maintenance, replacement, and connection fees are **$410.1 million dollars**.

CCU's vision for the Area 1 wastewater service program initiative is to provide a turnkey, high quality solution to the residents of Area 1 with a low long term cost of ownership and no maintenance inconveniences typical of some wastewater treatment alternatives. No hidden costs, nor any action on the residents' part, other than paying the annual assessment fees and the eventual CCU monthly charges, will be required. Furthermore, property owners will not be financially burdened with lump-sum up-front capital outlays such as utility connection fees (to be paid via an annual assessment). Project costs will be distributed across the Area 1 property owners, subject to any cost savings identified via other funding sources (e.g. CCU Customer Environmental Benefit Charge, Area 1 wastewater usage charge). Approximately **16,500 properties** (7,600 developed, 8900 vacant) equating to approximately **17,000 Equivalent Residential Units (ERUs)** will be assessed**.**

9.3.1 Project Finance Highlights

9.3.1.1 OSTDS Rebates and Funding Source Options

The recommended scenario offers an OSTDS rebate program to provide some relief to customers with systems that were replaced or received major repairs within the last 7 years (See Table 9.3.1.1.1). Further, the program includes CCU funding of remedial repairs necessary to extend the life of the OSTDS until connection to the system is available. This rebate applies only to homes built prior to October 1, 2010. Rebates will be issued at the time of central wastewater service connection. The rebate will appear on the customer's first monthly bill and will be applied to the account charges until the available funds are exhausted.

Table 9.3.1.1.1: OSTDS 7 Year Rebate Program

Age at Time of Connection	Standard Credit Amt$	ATU Credit Amt$
1 years	5,000	7,000
2 years	5,000	7,000
3 years	5,000	7,000
4 years	5,000	7,000
5 years	3,750	5,250
6 years	2,500	3,500
7 years	1,250	1,750

CCU is reviewing several funding mechanisms that could eventually reduce the per ERU cost for property owners in Area 1 as follows:

- CCU is proposing a customer fee ("Environmental Benefit Charge") to contribute to the clean-up of the Charlotte Harbor Estuary and Peace and Myakka Rivers.
- Second, CCU and PW are currently working on the proportionate share that will be contributed to the project for road restoration.
- CCU collects monthly wastewater usage charges, a portion of which will be applied toward the cost of this project. Once these funding sources are applied to the project expenses the per ERU cost will be reduced accordingly.

9.3.1.2 Timeline/Phasing

The anticipated assessment window for the construction effort is 20 years which will begin with the FY 2011 property tax assessments and end with the 2031 assessments. The assessment window for connection fees begin in 2012 and will continue through 2032. Project activities will begin in 2011 and proceed in a phased fashion for 11 years through 2022. The overall wastewater service program is structured to provide service to the approximate 16,500 properties over an 11 year period in nine phases (phases will overlap in certain years). The first connections will occur in 2013. Each phase will cover a 3 year period to include design, permitting, and construction and service connections to approximately 7,600 occupied properties and service stub-outs to the remaining 8,900 vacant properties. Finalization of this approach is being reviewed and verified by financial model with CCU's rate consultant PRMG.

This phased initiative lends itself to a "self financing" approach. By structuring the construction program timelines in a phased fashion to optimally use collected assessment fees and, as well, by introducing alternative funding sources, a cash flow scenario has been devised that will reduce the overall need to seek outside financing and thereby reducing interest expenses attributable to the project.

Below is a summary timeline that identifies preliminary project milestones:

Table 9.3.1: Project Time line Summary

Event	Fiscal Year
Begin Construction Assessment	FY 2011
Begin Engineering and Design	FY 2011
Begin Connection Fee Assessment	FY 2012
Begin Construction	FY 2012
Begin Service Connections	FY 2013
Ongoing Project Activities	FY 2013-2022
Complete Project	FY 2022
Complete OSTDS Rebate Program	FY 2022
Complete Construction Assessment	FY 2031
Complete Connection Fee Assessment	FY 2032

9.3.1.3 MSBU

A Municipal Services Benefit Unit (MSBU) will be created to begin collecting the assessment revenue required to accomplish this project. A full assessment roll will be published via the Municipal Services Benefit Unit Department and a copy will be available for review upon request.

The MSBU Department, with participation from CCU will perform a thorough review of property appraiser records for the properties in Area 1. Items determined during the review process included:

- A thorough count of occupied and unoccupied properties
- Land-use compilations
- Services availability
- Services currently provided
- ERU counts
- Conservation areas

The final cost distribution or ERU assessment per property owner is being evaluated and there are a number of properties (approximately 5%) where a final determination is required. CCU staff will present these findings to the Board for evaluation and final policy determination on the most equitable method for distributing the costs of the project. The per ERU cost will adjust based upon the final ERU count determination. The ERU Cost Summary Table 9.3.1.3.1 for the Hybrid Gravity System was based upon only an estimated ERU count.

Table 9.3.1.3.1 ERU Cost Summary For Hybrid Gravity System		
Item	**Total $s**	**Per ERU Cost (16,500 ERUs) 2**
1 - Wastewater Service Program		
A - Gross Estimated Project (Construction) Cost: 1	**$178,220,700**	**$10,801**
Estimated Reductions		
i - Enviro. Benefit Charge $1 per month (for first 10 years) *3*	$7,700,000	$467
ii- PW Contributions $980 per ERU	$16,170,000	$980
B -Total Estimated Reductions (i+ii above):	**$23,870,000**	**$1,447**
Net Estimated Cost with Reductions (A - B above):	**$154,350,700**	**$9,355**
Connection Fees:	**$71,511,000**	**$4,334**
Total Estimated MSBU Assessments w/ Reductions:	**$225,861,700**	**$13,689**
Assessment (20 year collection window)		**$684**
Monthly Per/ERU cost Project and Connection Fe		**$57**
2 - Optional Reclaim Proposal		
Provide Reclaim Water Service 4	$32,340,000	$1,960
Reclaim Water Annual Assessment (20 Years)		**$98**
Reclaim Water Monthly Per/ERU Cost		**$8**
3 - Combine Assessment (1 & 2 Above)		
Assessment (20 year collection window)		***$782***
Monthly Per/ERU cost incl Project, Connection Fees and Reclaim Water:		***$65***

Notes:

1 - CCU will provide funds to offset finance costs

2 - Estimated 16,500 ERUs will be Assessed for this Project

3 - Environmental Benefit Charge will be applied to all Current and Future CCU Customer Accounts

4- Customer will realize payback within 6 years assuming 1" of irrigation/week on an average of 5,000 sq ft of pervious irrigatable land per 0.25 acre lot for the dry season. Based upon a simple comparison of potable water (tier 1 residential use only - $4.67/1000 gpd)) and reclaim water rates ($0.31/1000 gpd) customers can see at a minimum, a $52.50 per month savings in water usage for the 6 month dry season (potential $324 per year usage saving).

Based upon the assumptions outlined above, the projected monthly cost outlay for each CCU customer connection amounts to approximately $57 in addition to other normal CCU monthly usage charges. CCU anticipates that while the $57 will be a fixed goal, the allocations will vary throughout the life of the MSBU. If Reclaim Water is included in the project then the monthly cost to the customer is approximately $65.00 per month.

CHAPTER 10 – CONCLUSIONS AND RECOMMENDATIONS

It is CCU's conclusion that the Hybrid Gravity system is the preferred solution to centralize wastewater service to Area 1. This preferred alternative provides a long term solution to address the negative impact of OSTDS on the ecology of Charlotte Harbor, Myakka River and Peace River which are named in the EPA National Estuary Program. The preferred Hybrid Gravity system has the lowest overall long term cost of ownership compared to the other alternatives while minimizing operational and maintenance requirements. The program that CCU seeks to put in place is designed to minimize both the financial and logistical impacts to the Area 1 residents and, as well, to minimize the long term costs to the residents.

This project is feasible, cost effective and will benefit the area served. If the Charlotte County Board of Commissioners concurs with these findings regarding the preferred hybrid gravity solution then CCU is requesting approval to move forward with the critical tasks required to prepare for final approval of the MSBU in September, 2010. These tasks are as follows:

- Public outreach
- Apply for Financing
- Final report addendum based upon board and public comment
- Finalize any affected ordinances and resolutions
- Finalize MSBU assessments

REFERENCES

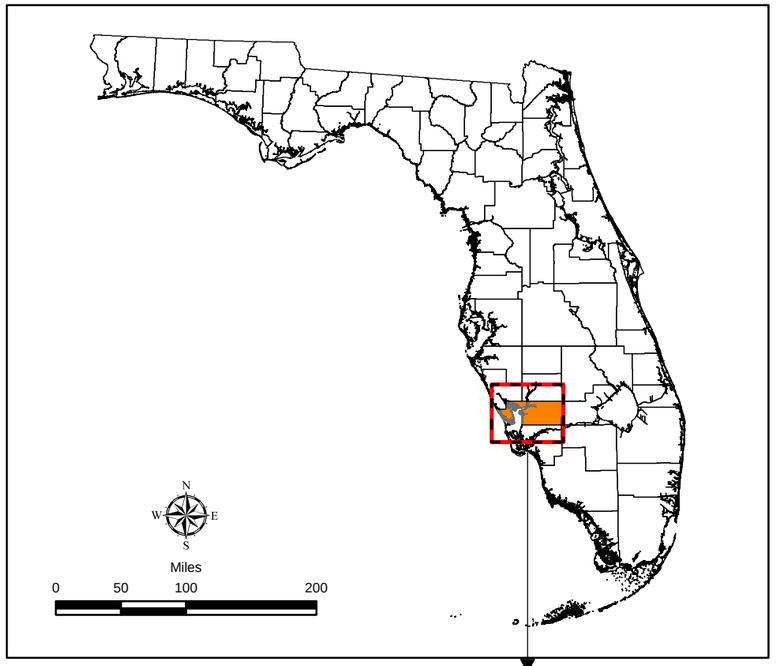
Ball, Robert (December 1981). Employment created by construction expenditures. *Monthly Labor Review* (pp. 38-44), Bureau of Labor and Statistics.

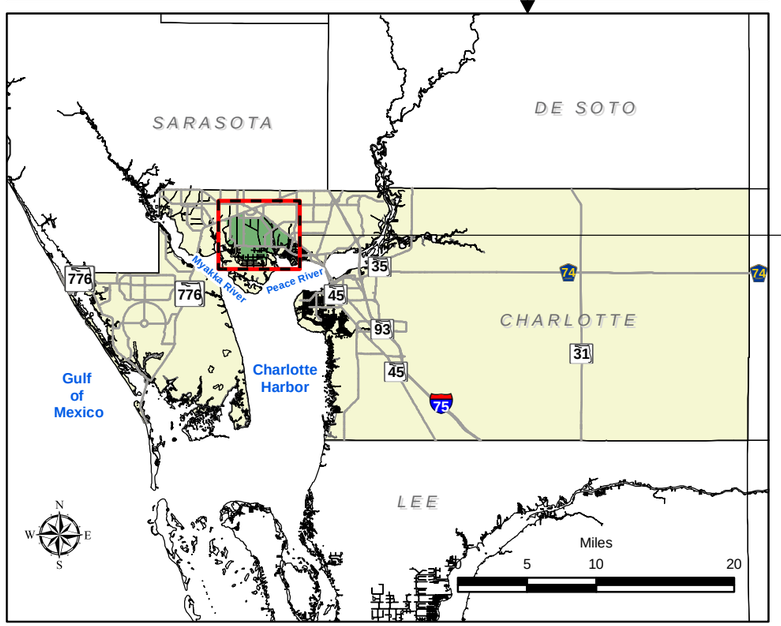
Florida Department of Environmental Protection Permit # 08-0210682-001, Project: to remove the Manchester Lock and implement various Net Environmental Benefits, Date of Issue June 29, 2007, County: Charlotte.

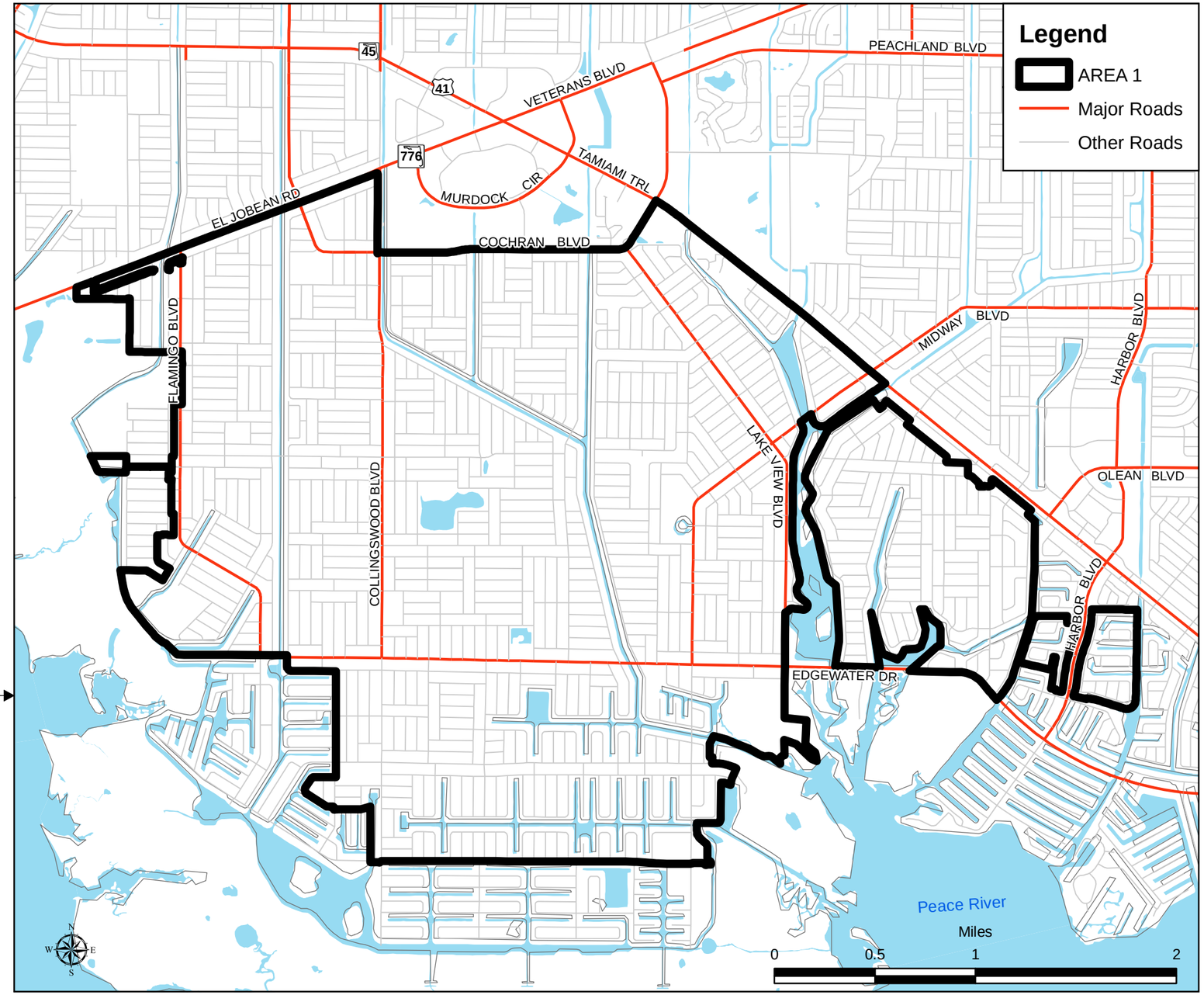
Liu, Helen Fei and Emrath, Paul (2008), *National Association of Home Builders Select Online Content Channels*, Retrieved March 10, 2010, "The Direct Impact of Home Building and Remodeling on the U.S. Economy", National Association of Home Builders website www.nahb.com.

APPENDIX I: MAPS AND LARGE PRINT EXHIBITS

Exhibit I.1: Location Map







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Printing Date: Monday, March 15, 2010
Title: LOCATION MAP AREA 1-FINAL
Prepared By: Cain, David
Coordinate System:
NAD 1983 StatePlane Florida West FIPS 0902
Operating System: Microsoft Windows XP Professional
ArcMap Build Number: 9.3.1770

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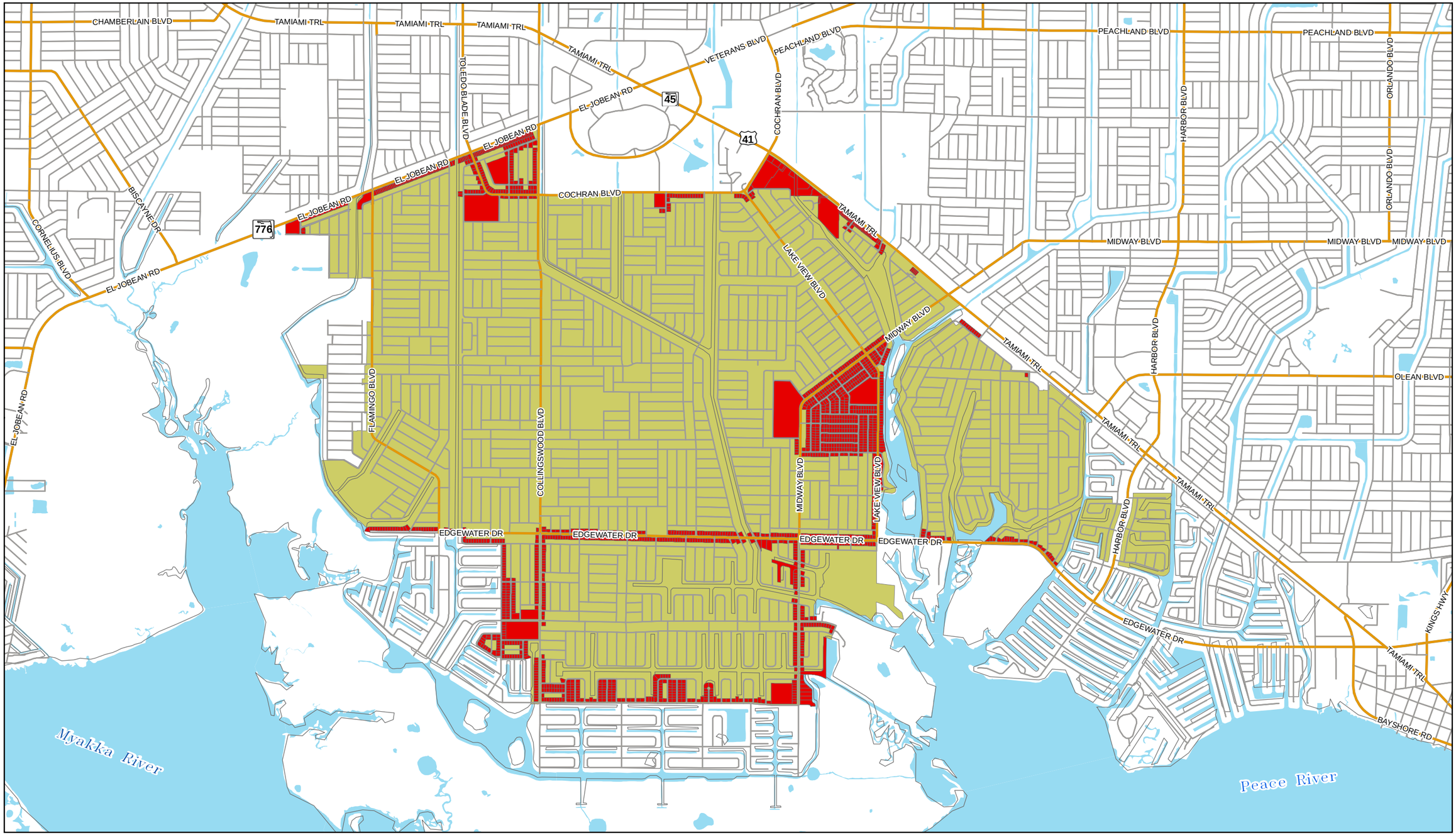
AREA 1

Location Map

Exhibit I.1

Exhibit I.2: Area 1 Wastewater Service Program

File Location: W:\Projects\MSBU Future Zones\AREA_1_PRESENTATION_MAPS\11X17\02-WASTEWATER_SERVICE_AREA_1.mxd) Designed by D. Cain. produced on 03/15/2010



Printing Date: Monday, March 15, 2010
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N W E S

Miles

0 0.25 0.5 1

Legend

- EXISTING SEWER AREAS
- AREA 1

AREA 1

Wastewater Service Program

Exhibit I.2

Exhibit I.3: Area 1 Features Map

File Location: W:\Projects\MSBU Future Zones\AREA_1_PRESENTATION_MAPS\11X17\03-FEATURES AREA 1.mxd) Designed by D. Cain. produced on 03/15/2010

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N W E S

Miles
0 0.25 0.5 1

Legend

- Fire/EMS
- Government
- Library
- Public Works
- Sheriff/EM
- AREA 1
- Parks & Recreation
- Preservation/Resource Conservation
- Private Recreation

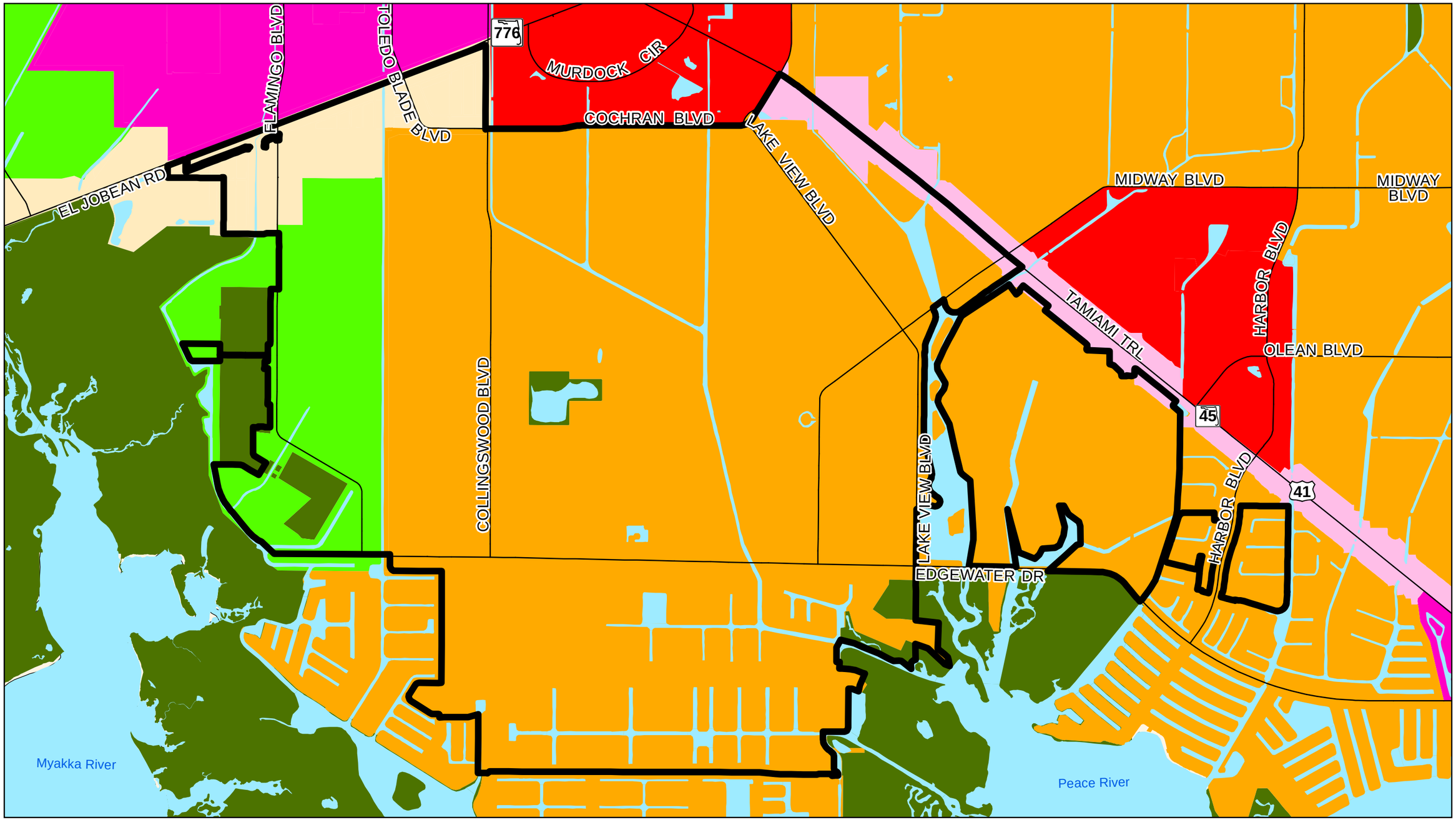
AREA 1

Features

Exhibit I.3

Exhibit I.4: Growth Management 2050 Neighborhoods Framework

File Location: W:\Projects\MSBU Future Zones\AREA_1_PRESENTATION_MAPS\2050Framework.mxd) Designed by D. Cain, produced on 03/15/2010



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Prepared By: Cain, David
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N W E S

Miles
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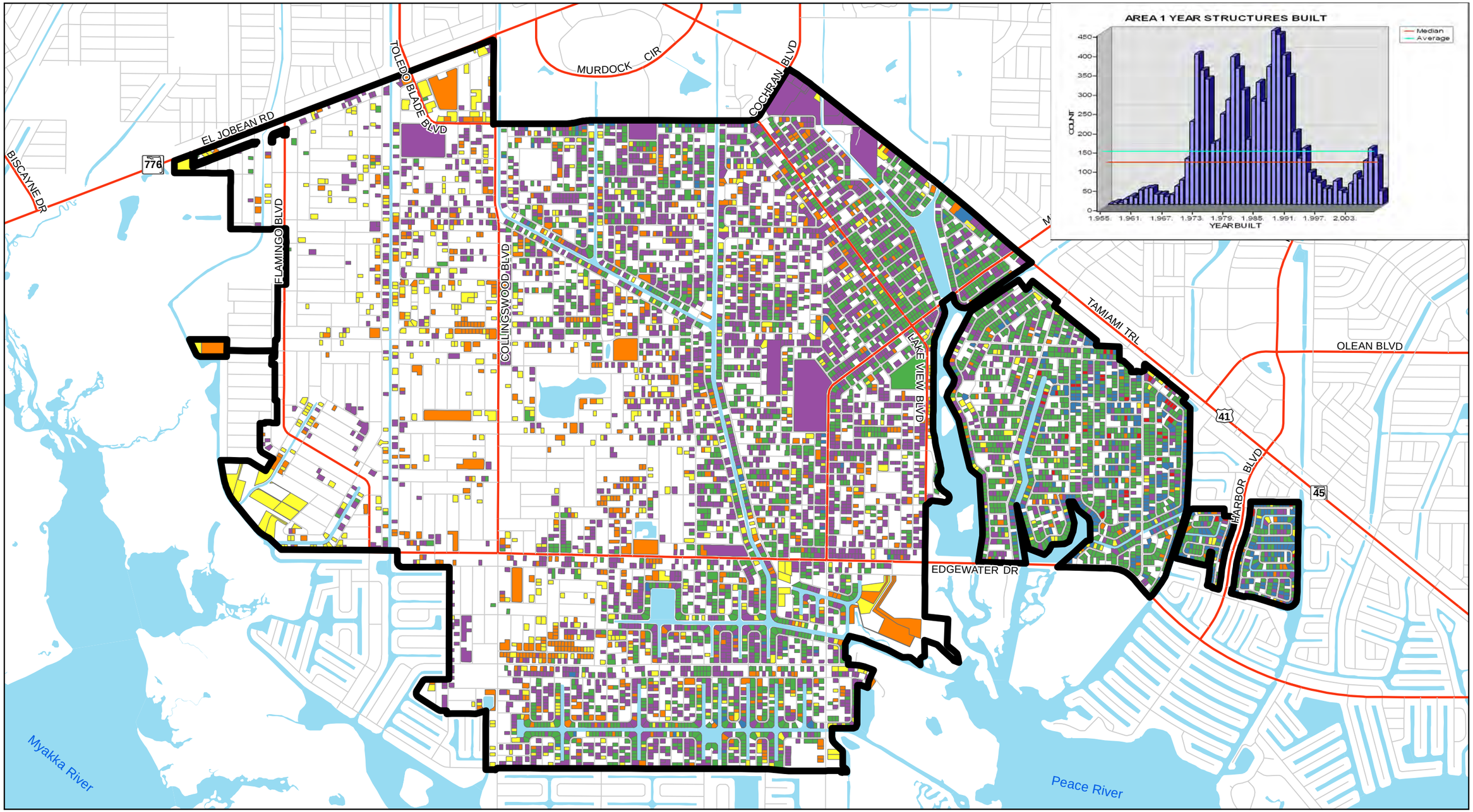
- CRA
- Economic Center
- Revitalizing Center
- Corridor
- Economic District
- Emerging/Targeted Neighborhood
- Managed Neighborhood
- Maturing Neighborhood
- Revitalizing Neighborhood
- Conservation
- Outside the USA
- City

AREA 1
FUTURE LAND USE
2050 Framework
Exhibit I.4

Exhibit I.5: Area 1 Aging of Structures Map

File Location: W:\Projects\MSBU Future Zones\AREA_1_PRESENTATION_MAPS\11X17\06-STRUCTURE_AGEING_AREA_1.mxd) Designed by D. Cain. produced on 03/15/2010



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Title: AREA 1 STRUCTURE AGEING-FINAL
Prepared By: Cain, David
Coordinate System:
NAD 1983 StatePlane Florida West FIPS 0902 Feet
Operating System: Microsoft Windows XP Professional
ArcMap Build Number: 9.3.1770
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N W E S

Miles

0 0.25 0.5 1

Legend

AREA 1

AREA 1 YEAR STRUCTURES BUILT

YEARBUILT

- 1955 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 - 2008

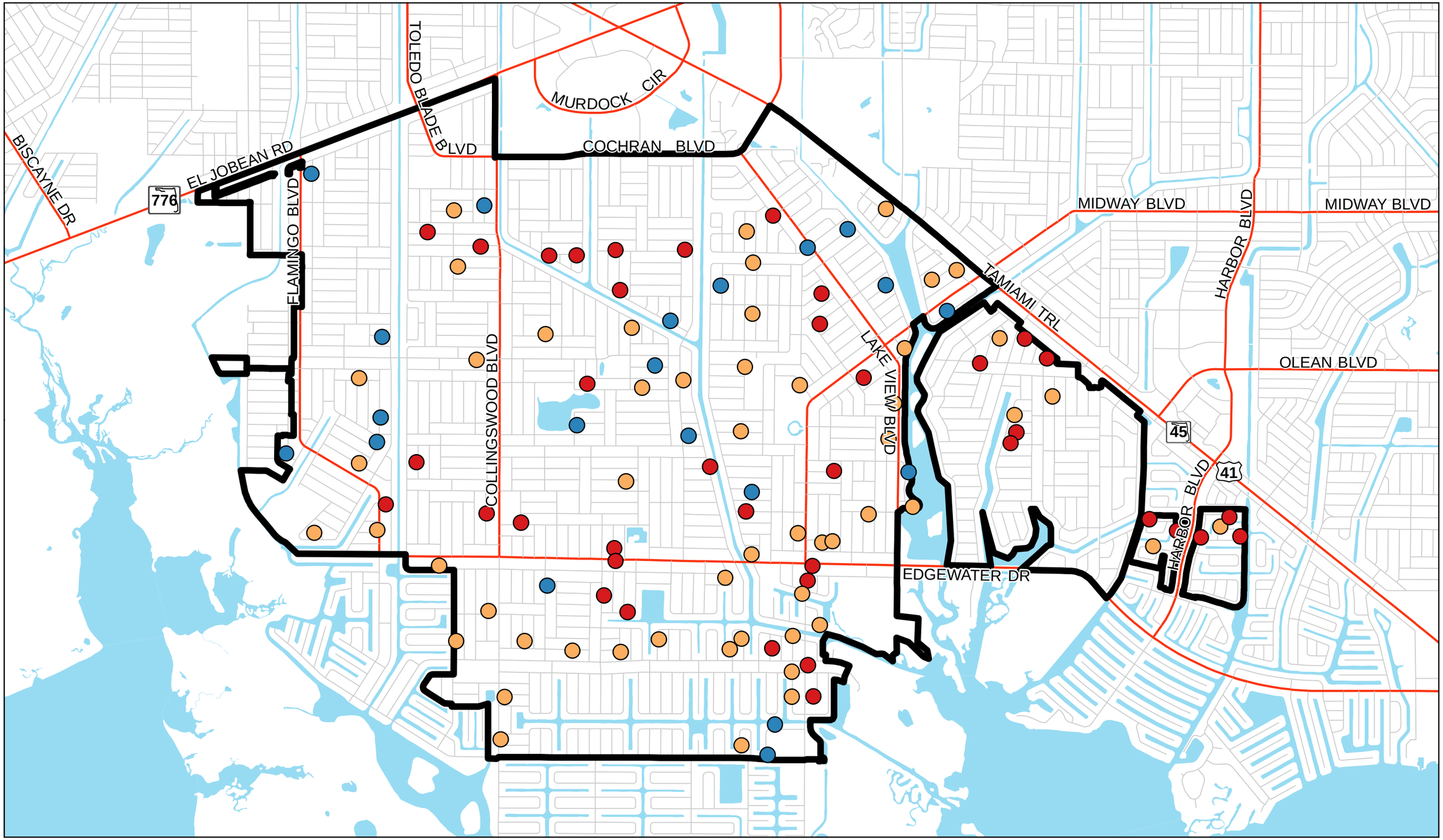
AREA 1

Aging of Structures

Exhibit I.5

Exhibit I.6: Ground Water Results

File Location: W:\Projects\MSBU Future Zones\AREA_1_PRESENTATION_MAPS\11X17\04_C_GROUND WATER RESULTS.mxd) Designed by D. Cain. produced on March 16, 2010



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Prepared By: Cain, David
Coordinate System:
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N
W E
S

Miles
0 0.25 0.5 1

AREA 1

WATER TABLE SITES

WATER DEPTH

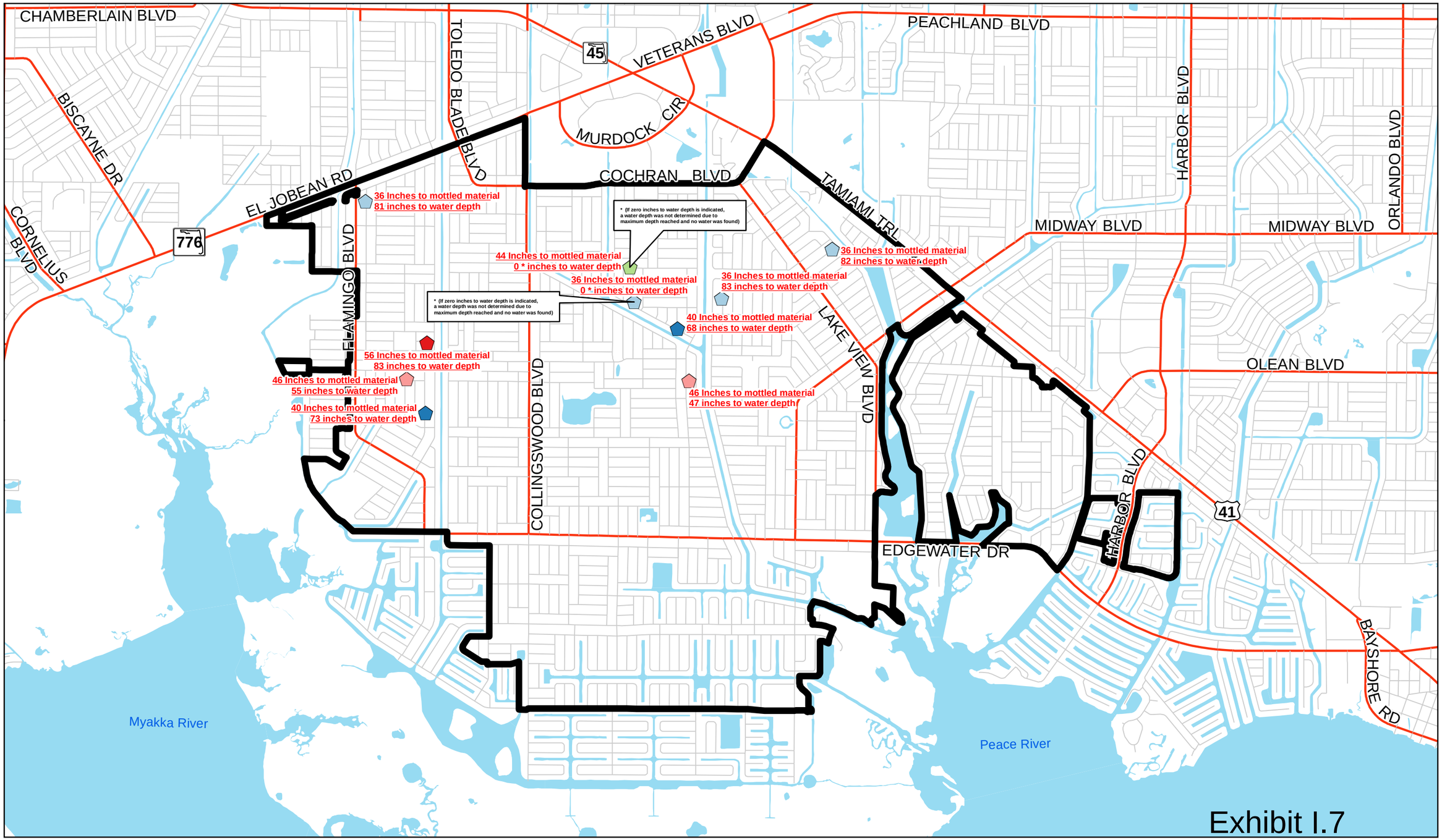
- 0 to 42 inches
- 43 to 67 inches
- 68 to 83 inches

AREA 1

Ground Water Results

Exhibit I.6

Exhibit I.7: Soil Mottling



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Printing Date: Monday, March 15, 2010
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Prepared By: Cain, David
Coordinate System:
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Operating System: Microsoft Windows XP Professional
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N
W E
S

Miles
0 0.3 0.6 1.2

SAMPLE POINT SOIL CHARACTERISTICS
DEPTH, CHARACTERISTIC
- 36, Mottled
- 40, Mottled
- 44, Mottled
- 46, Mottled
- 56, Mottled

AREA 1

** Soil Mottling

** (WHERE SPOTS OF COLOR INTERMINGLE WITH THE GRAY, USUALLY INDICATES SEASONALLY SATURATED SOILS)

Exhibit I.8: General Soil Textures

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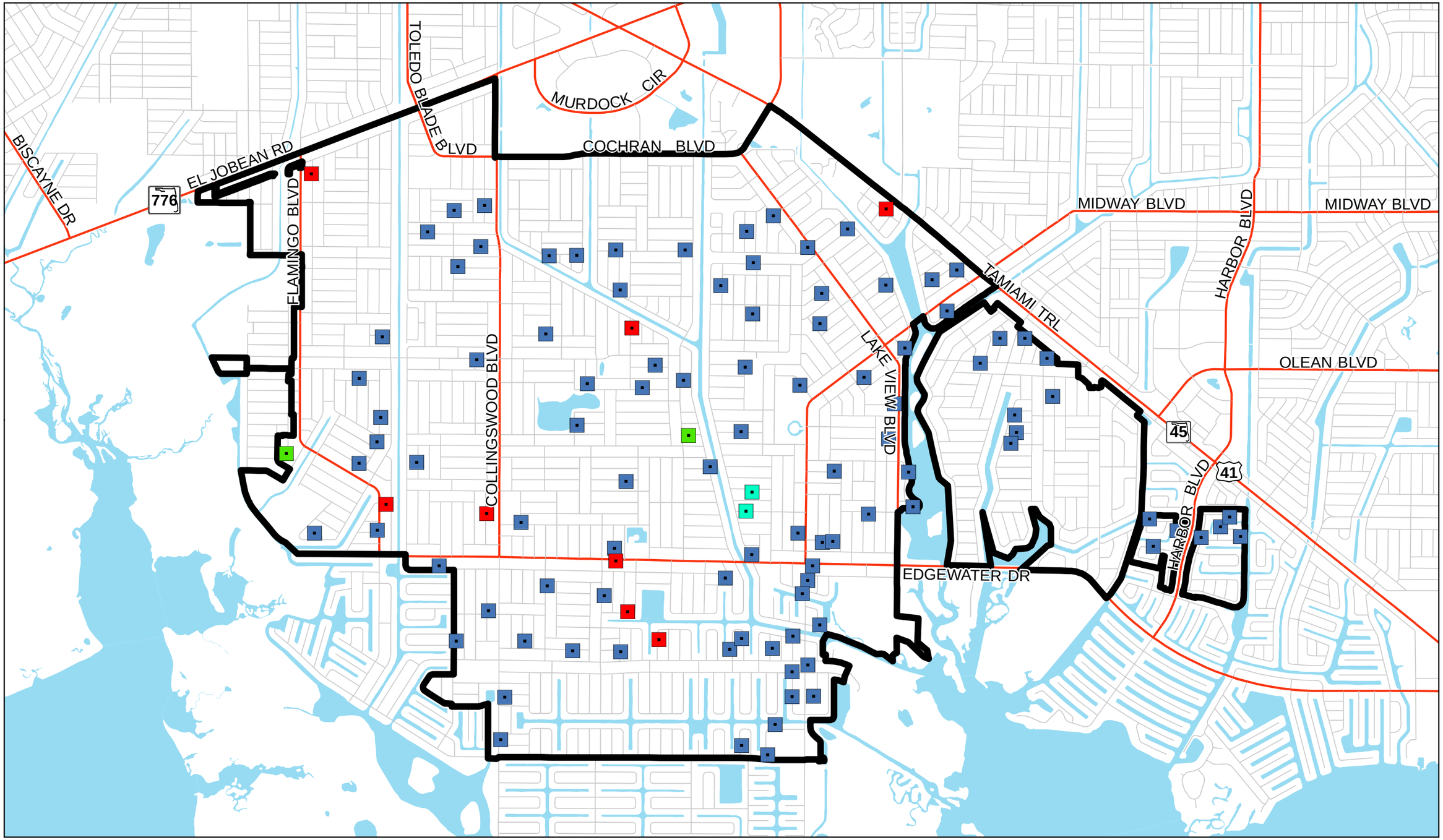

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Prepared By: Cain, David
Coordinate System:
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N
W E
S

Miles
0 0.25 0.5 1

WATER TABLE SOIL

Soil Texture

- Sand
- Rock-Shell
- Sand/Clay
- Snd/Cly/Shell

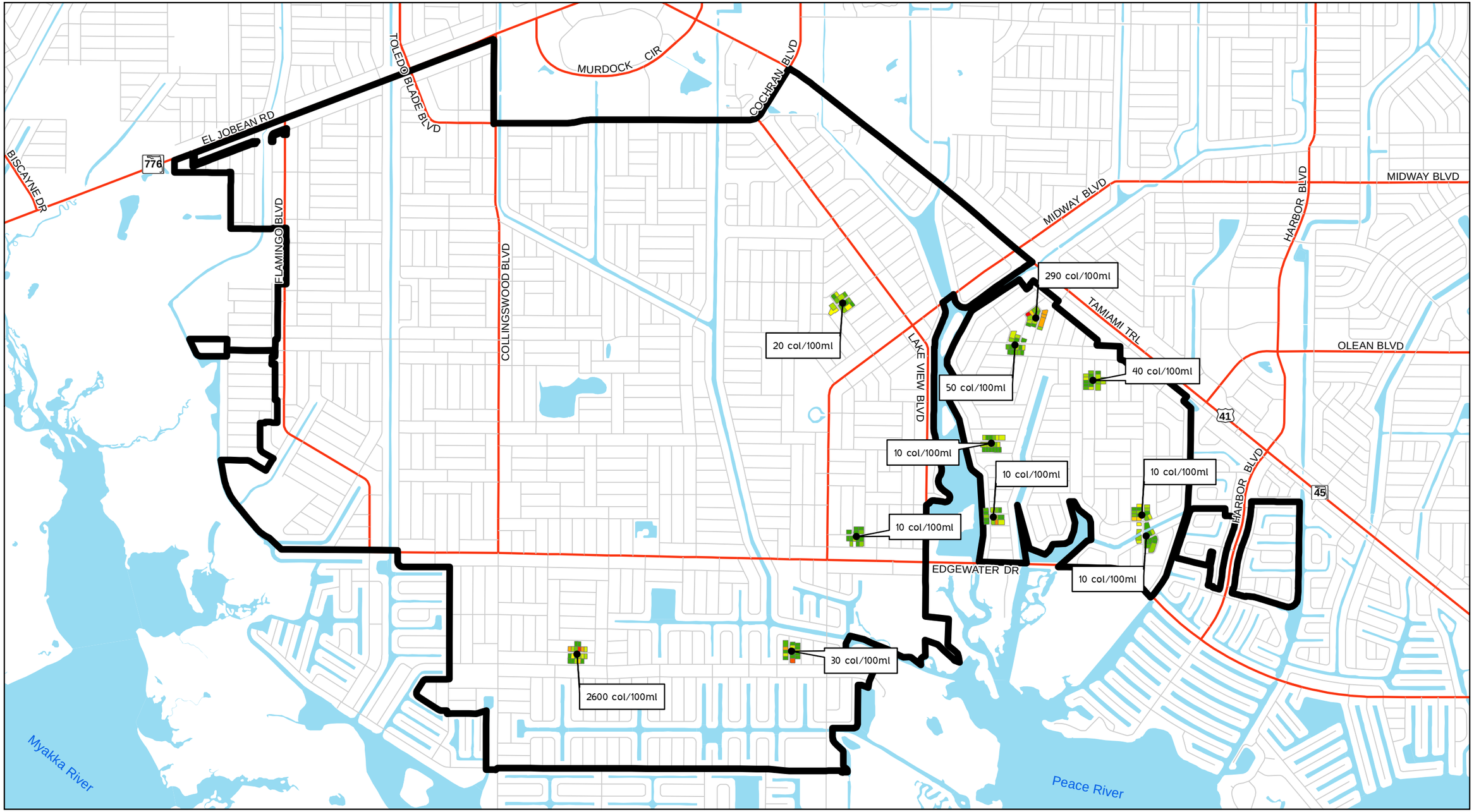
AREA 1

General Soil Textures

Exhibit I.8

Exhibit I.9: November 2009 Water Usage at Test Sites

File Location:W:\Projects\MSBU Future Zones\AREA_1_PRESENTATION_MAPS\11X17\20-C-NOVEMBER-WATER_USAGE_AREA_1.mxd)Designed by D. Cain.produced on 03/15/2010



Printing Date: Monday, March 15, 2010
Title: AREA 1 WATER USAGE NOVEMBER 09 200 FT BUFFER WATER SAMPLES
Prepared By: Cain, David
Coordinate System:
NAD 1983 StatePlane Florida West FIPS 0902 Feet
Operating System: Microsoft Windows XP Professional
ArcMap Build Number: 9.3.1770

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N
W E
S

Miles

0 0.25 0.5 1

Legend

AREA 1

WATER QUALITY SAMPLES

200FT BUFFER SURROUNDING LOTS

November-09, 1,000 Gal

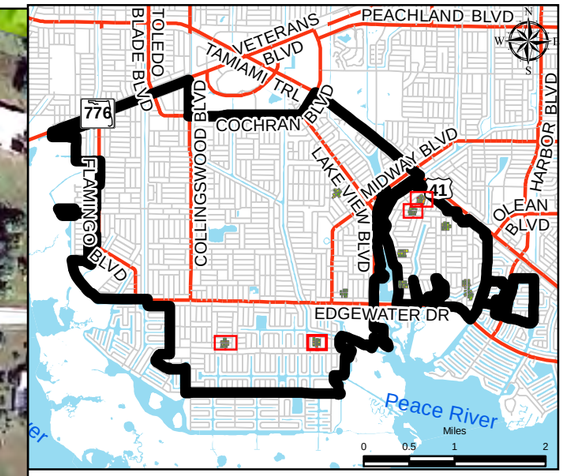
0
1
2
3
4
5
6
7
8
9
12
13
14

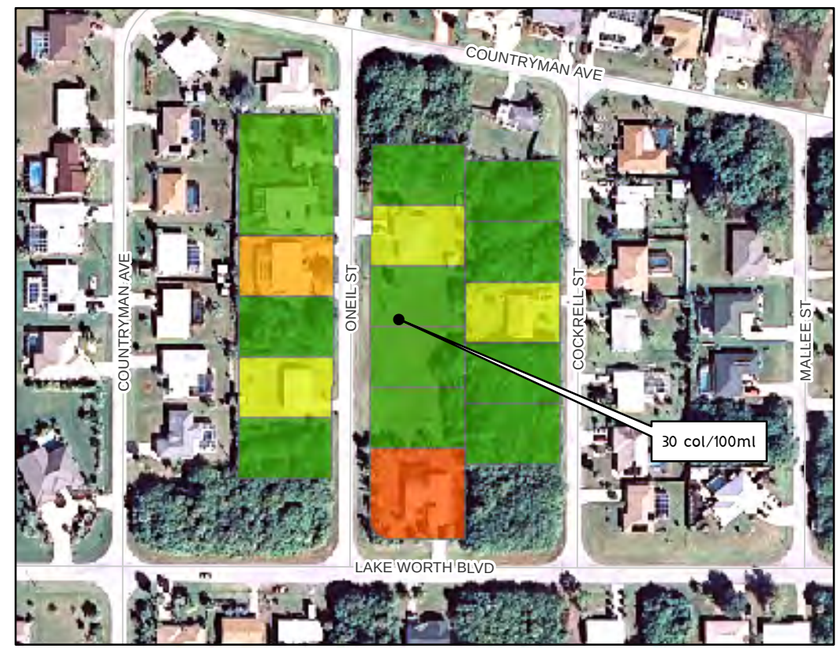
Exhibit I.9

AREA 1

November 2009
Water Usage

Exhibit I.10: November 2009 Water Usage at Test Sites – Detail





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Prepared By: Cain, David
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Legend

AREA 1

200FT BUFFER SURROUNDING LOTS

November-09, 1,000 Gal

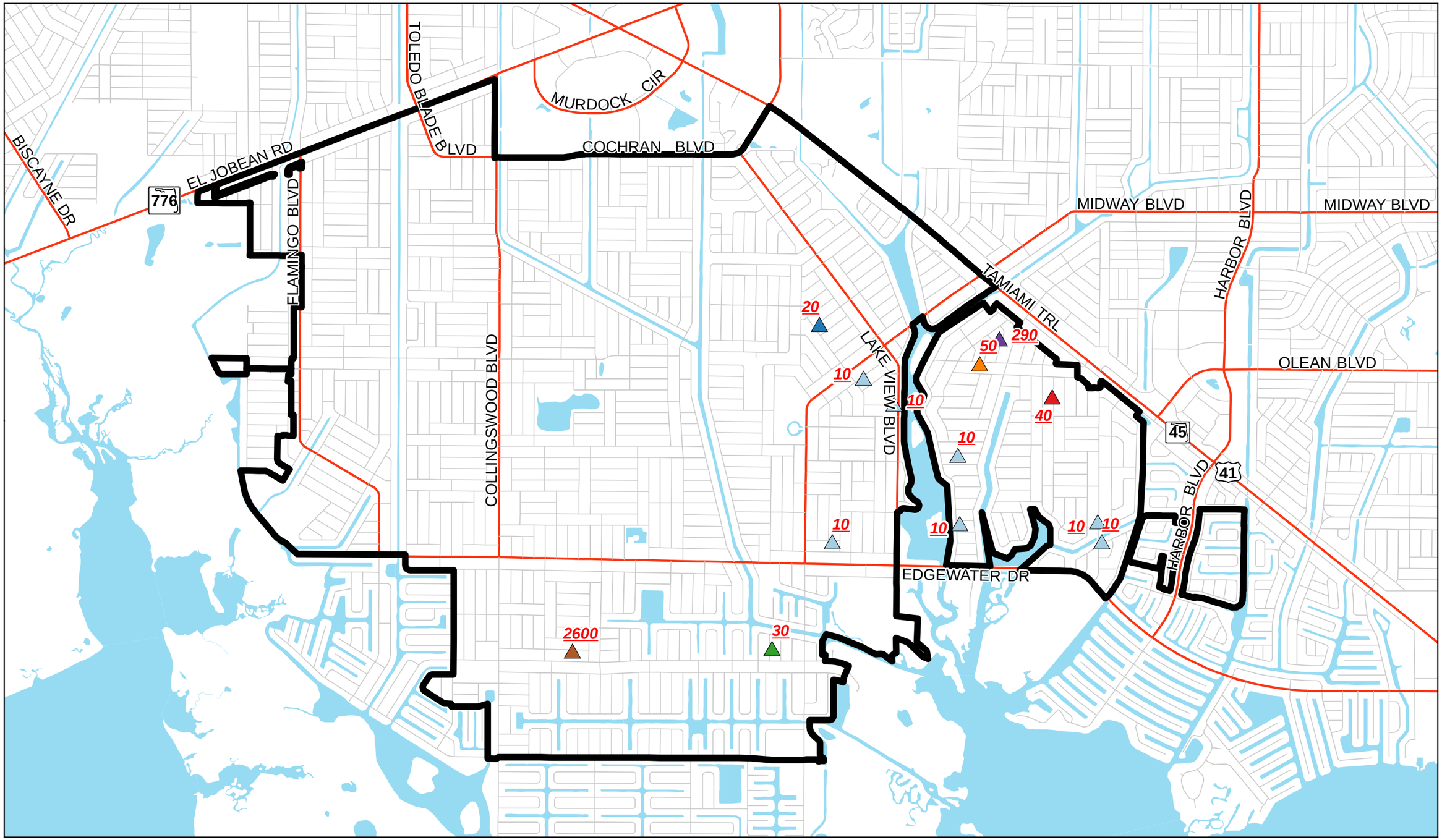
- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 12
- 13
- 14

AREA 1

November 2009
Water Usage
Exhibit I.10

Exhibit I.11: Fecal Coli Form

File Location: W:\Projects\MSBU Future Zones\AREA_1_PRESENTATION_MAPS\11X17\04_B_AREA 1 FECAL COLI FORM.mxd) Designed by D. Cain. produced on 03/15/2010



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Prepared By: Cain, David
Coordinate System:
NAD 1983 StatePlane Florida West FIPS 0902 Feet
Operating System: Microsoft Windows XP Professional
ArcMap Build Number: 9.3.1770
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N
W E
S

Miles
0 0.25 0.5 1

Legend

WATER QUALITY SAMPLES

Fecal Coliform - col/ 100ml

- 10
- 20
- 30
- 40
- 50
- 290
- 2600

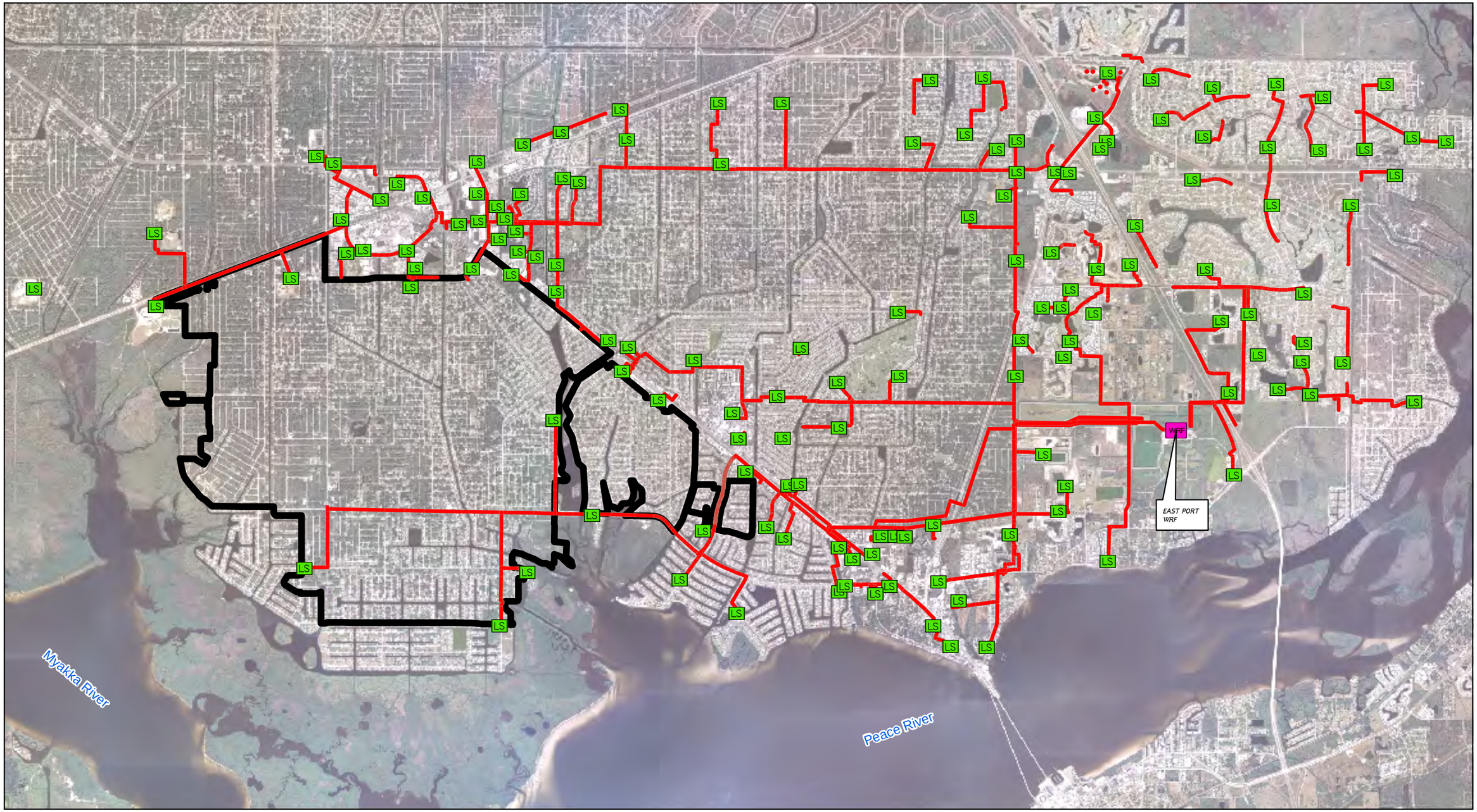
AREA 1

Fecal Coli Form

Exhibit I.11

Exhibit I.12: Wastewater Infrastructure Central County

File Location:W:\Projects\MSBU Future Zones\AREA_1_PRESENTATION_MAPS\11X17\08-WW_INFRASTRUCTURE_CENTRAL.mxd)Designed by D. Cain.produced on 03/15/2010



Printing Date: Monday, March 15, 2010
Title: WASTEWATER INFRASTUCTURE CENTRAL COUNTY-FINAL
Prepared By: Cain, David
Coordinate System:
NAD 1983 StatePlane Florida West FIPS 0902 Feet
Operating System: Microsoft Windows XP Professional
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N
W E
S

Miles

0 0.5 1 2

Legend

- AREA 1
- FORCE MAIN
- LS LIFT STATION
- WRF CCU WASTEWATER PLANT

CHARLOTTE COUNTY FLORIDA 1921

WASTEWATER INFRASTUCTURE

CENTRAL COUNTY

Exhibit I.12

APPENDIX II: DETAILED COST ESTIMATES

EXHIBIT II.1: "HYBRID GRAVITY" ALTERNATIVE

Hybrid Gravity				Spring Lakes		Area 1		
Item	Description	Unit	Qty	Unit Price	Total	Quantity	Factor Applied	Total
1A	8" SDR 26 Gravity Main @ 4' to 6'	LF	48788	$ 30.00	$ 1,463,640.00	390304	8.00	$ 11,709,120.00
1B	8" SDR 26 Gravity Main @ 6' to 8'	LF	48788	$ 40.00	$ 1,951,520.00	390304	8.00	$ 15,612,160.00
1C	10" SDR 26 Gravity Main @ 6' to 8'	LF	12400	$ 42.00	$ 520,800.00	99200	8.00	$ 4,166,400.00
1D	4' Manhole With 4 to 6' Invert	EA	186	$ 2,300.00	$ 427,800.00	1488	8.00	$ 3,422,400.00
1E	4' Manhole With 6' to 8' Invert	EA	186	$ 2,800.00	$ 520,800.00	1488	8.00	$ 4,166,400.00
1F	Manhole Outside Drop Assembly	EA	45	$ 1,600.00	$ 72,000.00	360	8.00	$ 576,000.00
1G	Open Cut 4" Low Pressure Force Main	LF	90	$ 7.50	$ 675.00	720	8.00	$ 5,400.00
1H	Set Manhole Riser	EA	524	$ 100.00	$ 52,400.00	4192	8.00	$ 419,200.00
1I	Low Pressure Systems	EA	1	$ 2,800.00	$ 2,800.00	8	8.00	$ 22,400.00
1J	Remove Existing Septic Tank	EA	1570	$ 600.00	$ 942,000.00	8478	5.40	$ 5,086,800.00
1K	On Site Sewer Connection	EA	1570	$ 700.00	$ 1,099,000.00	8478	5.40	$ 5,934,600.00
1L	Double Gravity Service	EA	1378	$ 500.00	$ 689,000.00	11024	8.00	$ 5,512,000.00
1M	Gravity Service Riser	EA	689	$ 100.00	$ 68,900.00	5512	8.00	$ 551,200.00
1N	Silt Fence	LF	128868	$ 1.50	$ 193,302.00	1030944	8.00	$ 1,546,415.00
1O	Maintenance of Traffic (MOT)	LS	1	$ 60,000.00	$ 60,000.00	8	8.00	$ 480,000.00
				Piping Total	**$ 8,064,637.00**		**Piping Total**	**$ 59,210,495.00**
2A	Package Pump Station	EA	19	$ 30,000.00	$ 570,000.00	152	8.00	$ 4,560,000.00
2B	Open Cut 4" DR-18 Force Main	LF	16550	$ 7.50	$ 124,125.00	132400	8.00	$ 993,000.00
2C	Directional Bore 4" Force Main	LF	200	$ 27.00	$ 5,400.00	1600	8.00	$ 43,200.00
2D	4" Force Main DI Fittings	LB	1686	$ 4.50	$ 7,587.00	13488	8.00	$ 60,695.00
2E	4" MJ Plug Valve Assembly	EA	38	$ 875.00	$ 33,250.00	304	8.00	$ 266,000.00
2F	4" Force Main Sewer Marker Balls	EA	110	$ 20.00	$ 2,200.00	880	8.00	$ 17,600.00
2G	FPL Power	EA	19	$ 4,000.00	$ 76,000.00	152	8.00	$ 608,000.00
2H	Package Pump Station Easement	EA	19	$ 3,000.00	$ 57,000.00	152	8.00	$ 456,000.00
				Pump Station Total	**$ 875,562.00**		**Pump Station Total**	**$ 7,004,495.00**
3A	Road Restoration	SY	0	$ 22.50	$ -	0	8.00	$ -
3B	Road Construction Base Preparation	SY	320000	$ 10.00	$ 3,200,000.00	2560000	8.00	$ 25,600,000.00
3C	Road Construction (Bituminous)	SY	290000	$ 7.00	$ 2,030,000.00	2320000	8.00	$ 16,240,000.00
3D	Road Demolition	SY	300810	$ 1.00	$ 300,810.00	2406480	8.00	$ 2,406,480.00
3E	ROW and Easement Restoration	SY	230022	$ 2.00	$ 460,044.00	1840176	8.00	$ 3,680,350.00
				Restoration Total	**$5,990,854.00**		**Restoration Total**	**$47,926,830.00**
4	Water System Crossings	EA	2300	$ 625.00	$ 1,437,500.00	14950	6.50	$ 9,343,750.00
5	Mobilization	5%			$ 818,427.65			$ 6,174,278.50
				Total Construction Cost	**$ 17,186,980.65**		**Total Construction Cost**	**$ 129,659,848.50**
6A	Engineering	15%			$ 2,363,115.00			$ 19,448,975.00
6B	Environmental and Mitigation	3%			$ 472,625.00			$ 3,889,795.00
6C	Contingencies	5%			$ 787,705.00			$ 6,482,990.00
6D	Collection Fees	2.5%			$ 393,855.00			$ 3,241,495.00
6E	Miscellaneous	1%			$ 157,540.00			$ 1,296,600.00
6F	Statutory Uncollectible	6.325%			$ 996,450.00			$ 8,200,985.00
6G	Other Costs							$6,000,000.00
				Total Cost	**$ 22,358,270.65**		**Total Cost**	**$ 178,220,688.50**

EXHIBIT II.2 "VACUUM SEWER" ALTERNATIVE

Vacuum				Spring Lakes		Area 1		
Item	Description	Unit	Qty	Unit Price	Total	Quantity	Factor Applied	Total
1A	Open Cut 4" PVC DR-18 Vacuum Main	LF	98830	$ 23.00	$ 2,273,090.00	790640	8.00	$ 18,184,720.00
1B	4" Saw Tooth Vacuum Main Lift	EA	146	$ 90.00	$ 13,140.00	1168	8.00	$ 105,120.00
1C	Open Cut 6" PVC DR-18 Vacuum Main	LF	15330	$ 25.00	$ 383,250.00	122640	8.00	$ 3,066,000.00
1D	6" Saw Tooth Vacuum Main Lift	EA	31	$ 100.00	$ 3,100.00	248	8.00	$ 24,800.00
1E	Installed Vacuum Pit Package	EA	919	$ 7,900.00	$ 7,260,100.00	7352	8.00	$ 58,080,800.00
1F	4' Vacuum Main Gate Valve Assembly	EA	20	$ 825.00	$ 16,500.00	160	8.00	$ 132,000.00
1G	6" Vacuum Main Gate Valve Assembly	EA	11	$ 1,100.00	$ 12,100.00	88	8.00	$ 96,800.00
1H	Vacuum Main Sewer Marker Ball	EA	588	$ 20.00	$ 11,760.00	4704	8.00	$ 94,080.00
1I	Remove Existing Septic Tank	EA	1570	$ 600.00	$ 942,000.00	8478	5.40	$ 5,086,800.00
1J	On Site Sewer Connection	EA	1570	$ 700.00	$ 1,099,000.00	8478	5.40	$ 5,934,600.00
1K	Silt Fence	LF	88160	$ 1.50	$ 132,240.00	705280	8.00	$ 1,057,920.00
1L	Maintenance of Traffic	LS	1	$ 60,000.00	$ 60,000.00	8	8.00	$ 480,000.00
				Piping Total	**$ 12,206,280.00**		**Piping Total**	**$ 92,343,640.00**
2A	Standard Vacuum Station	EA	1	$ 1,000,000.00	$ 1,000,000.00	8	8.00	$ 8,000,000.00
2B	Open Cut 6" PVC DR-18 Force Main	LF	5050	$ 12.00	$ 60,600.00	40400	8.00	$ 484,800.00
2C	6" Force Main DI Fittings	LB	312	$ 4.50	$ 1,404.00	2496	8.00	$ 11,230.00
2D	6" MJ Plug Valve Assembly	EA	3	$ 1,100.00	$ 3,300.00	24	8.00	$ 26,400.00
2E	6" Force Main Sewer Marker Balls	EA	34	$ 20.00	$ 680.00	272	8.00	$ 5,440.00
2F	FPL Power	EA	1	$ 50,000.00	$ 50,000.00	8	8.00	$ 400,000.00
2G	Vacuum Station Lot Purchase	EA	1	$ 30,000.00	$ 30,000.00	8	8.00	$ 240,000.00
				Pump Station Total	**$ 1,145,984.00**		**Pump Station Total**	**$ 9,167,870.00**
3A	Road Restoration	SY	3456	$ 22.50	$ 77,760.00	27648	8.00	$ 622,080.00
3B	Concrete Driveway Restoration	SY	25024	$ 24.00	$ 600,576.00	200192	8.00	$ 4,804,610.00
3C	Driveway Culvert Replacement	EA	785	$ 900.00	$ 706,500.00	6280	8.00	$ 5,652,000.00
3D	ROW and Easement Restoration	SY	230021	$ 2.00	$ 460,042.00	1840168	8.00	$ 3,680,335.00
				Restoration Total	**$1,844,878.00**		**Restoration Total**	**$14,759,025.00**
4	Water System Crossings	EA	2300	$ 625.00	$ 1,437,500.00	14950	6.50	$ 9,343,750.00
5	Mobilization	5%			$ 831,732.10			$ 6,280,715.00
				Total Construction Cost	**$ 17,466,374.10**		**Total Construction Cost**	**$ 131,895,000.00**
6A	Engineering	15%			$ 2,363,115.00			$ 19,784,250.00
6B	Environmental and Mitigation	3%			$ 472,625.00			$ 3,956,850.00
6C	Contingencies	5%			$ 787,705.00			$ 6,594,750.00
6D	Collection Fees	2.5%			$ 393,855.00			$ 3,297,375.00
6E	Miscellaneous	1%			$ 157,540.00			$ 1,318,950.00
6F	Statutory Uncollectible	6.325%			$ 996,450.00			$ 8,342,358.75
6G	Other Costs							$ 6,000,000.00
				Total Cost	**$ 22,637,664.10**		**Total Cost**	**$ 181,189,533.75**

EXHIBIT II.3 "STANDARD OSTDS SYSTEM" ALTERNATIVE

	OSTDS - Standard				
Item	**Description**	**Unit**	**Qty**	**Unit Price**	**Total**
1	Standard OSTDS System Installation*	EA	8,500	$ 10,000.00	$ 85,000,000.00
2	Remove Existing OSTDS	EA	8,500	$ 600.00	$ 5,100,000.00
3	Silt Fence	LF	1,020,500	$ 1.50	$ 1,530,750.00
4	Maintenance of Traffic	LS	5	$ 5,000.00	$ 27,000.00
5	Mobilization (5%)	5.000%			$ 4,582,887.50
				Total Construction Cost	**$ 96,240,637.50**
6	Engineering (15%)	15.000%			$ 14,436,095.63
7	Mitigation & Environmental (3.0%)	3.000%			$ 2,887,219.13
8	Contingencies (5%)	5.000%			$ 4,812,031.88
9	Collection Fees (2.5%)	2.500%			$ 2,406,015.94
10	Miscellaneous (1%)	1.000%			$ 962,406.38
11	Statutory Uncollectible (6.325%)	6.325%			$ 6,087,220.32
				Total Current Cost	**$ 127,831,626.76**
12	New Homes (growth)	EA	8,500	$ 10,000.00	$ 85,000,000.00
				Total Cost	**$ 212,831,626.76**

* Does not include costs due to modifications required to meet design criteria as is anticipated in Area 1.

EXHIBIT II.4 "LOW PRESSURE SEWER (LPS)" ALTERNATIVE

Low Pressure Sewer System				Spring Lakes		Area 1		
Item	Description	Unit	Qty	Unit Price	Total	Quantity	Factor Applied	Total
1A	Open Cut 3" HDPE SDR 11 LPFM	LF	50450	$ 17.50	$ 882,875.00	403600	8.00	$7,063,000.00
1B	3" MJ Plug Valve Assembly	EA	98	$ 825.00	$ 80,850.00	784	8.00	$646,800.00
1C	Open Cut 4" PVC DR-18 LPFM	LF	54700	$ 20.00	$ 1,094,000.00	437600	8.00	$8,752,000.00
1D	4" MJ Plug Valve Assembly	EA	82	$ 875.00	$ 71,750.00	656	8.00	$574,000.00
1E	Open Cut 6"PVC DR-18 LPFM	LF	9575	$ 22.00	$ 210,650.00	76600	8.00	$1,685,200.00
1F	6" MJ Plug Valve Assembly	EA	32	$ 1,100.00	$ 35,200.00	256	8.00	$281,600.00
1G	3" Low Pressure Clean-out	EA	38	$ 1,125.00	$ 42,750.00	304	8.00	$342,000.00
1H	Low Pressure Force Main Sewer Marker Ball	EA	745	$ 20.00	$ 14,900.00	5960	8.00	$119,200.00
1I	Low Pressure Systems	EA	2116	$ 2,800.00	$ 5,924,800.00	16928	8.00	$47,398,400.00
1J	Remove Existing Septic Tank	EA	1570	$ 600.00	$ 942,000.00	8478	5.40	$5,086,800.00
1K	On Site Sewer Connection	EA	1570	$ 700.00	$ 1,099,000.00	8478	5.40	$5,934,600.00
1L	Silt Fence	LF	114725	$ 1.50	$ 172,087.50	917800	8.00	$1,376,700.00
1M	Maintenance of Traffic	LS	1	$ 60,000.00	$ 60,000.00	8	8.00	$480,000.00
				Piping Total	**$ 10,630,862.50**		**Piping Total**	**$79,740,300.00**
2A	Standard Pump Station	EA	2	$ 367,500.00	$ 735,000.00	16	8.00	$5,880,000.00
2B	Open Cut 8" PVC DR-18 Force Main	LF	8175	$ 20.00	$ 163,500.00	65400	8.00	$1,308,000.00
2C	8" HDPE DR-11 FM Directional Bore	LF	200	$ 50.00	$ 10,000.00	1600	8.00	$80,000.00
2D	8" Force Main DI Fittings	LB	728	$ 4.50	$ 3,276.00	5824	8.00	$26,208.00
2E	8" MJ Plug Valve Assembly	EA	6	$ 1,700.00	$ 10,200.00	48	8.00	$81,600.00
2F	8" Force Main Sewer Marker Balls	EA	55	$ 20.00	$ 1,100.00	440	8.00	$8,800.00
2G	FPL Power	EA	2	$ 50,000.00	$ 100,000.00	16	8.00	$800,000.00
2H	Standard Pump Station Lot Purchase	EA	2	$ 30,000.00	$ 60,000.00	16	8.00	$480,000.00
2I	Automatic Air Release	EA	1	$ 2,000.00	$ 2,000.00	8	8.00	$16,000.00
2J	Master Manhole	EA	2	$ 2,800.00	$ 5,600.00	16	8.00	$44,800.00
				Pump Station Total	**$ 1,090,676.00**		**Pump Station Total**	**$8,725,408.00**
3A	Road Restoration	SY	3456	$ 22.50	$ 77,760.00	27648	8.00	$622,080.00
3B	Concrete Driveway Restoration	SY	25024	$ 24.00	$ 600,576.00	200192	8.00	$4,804,608.00
3C	Driveway Culvert Replacement	EA	785	$ 900.00	$ 706,500.00	6280	8.00	$5,652,000.00
3D	ROW and Easement Restoration	SY	230021	$ 2.00	$ 460,042.00	1840168	8.00	$3,680,336.00
				Restoration Total	**$ 1,844,878.00**		**Restoration Total**	**$14,759,024.00**
4	Water System Crossings	EA	2300	$ 625.00	$ 1,437,500.00	14950	6.50	$9,343,750.00
5	Mobilization	5%			$ 750,195.83			$5,628,424.10
				Total Construction Cost	$ 15,754,112.33		**Total Construction Cost**	**$118,196,906.10**
6A	Engineering	15%			$ 2,363,115.00			$17,729,535.00
6B	Environmental and Mitigation	3%			$ 472,625.00			$3,545,905.00
6C	Contingencies	5%			$ 787,705.00			$5,909,845.00
6D	Collection Fees	2.5%			$ 393,855.00			$2,954,925.00
6E	Miscellaneous	1%			$ 157,540.00			$1,181,970.00
6F	Statutory Uncollectible	6.325%			$ 996,450.00			$7,475,955.00
5G	Other Costs							$6,000,000.00
				Total Cost	**$ 20,925,402.33**		**Total Cost**	**$162,995,041.10**

EXHIBIT II.5 "GRAVITY" ALTERNATIVE

	Standard Gravity			Spring Lakes		Area 1		
Item	Description	Unit	Qty	Unit Price	Total	Quantity	Factor Applied	Total
1A	8" SDR 26 Gravity Main @ 4' to 6'	LF	10031	$ 41.00	$ 411,271.00	80248	8.00	$ 3,290,170.00
1B	8" SDR 26 Gravity Main @ 6' to 8'	LF	47833	$ 45.00	$ 2,152,485.00	382664	8.00	$ 17,219,880.00
1C	8" SDR 26 Gravity Main @ 8' to 10'	LF	25130	$ 51.00	$ 1,281,630.00	201040	8.00	$ 10,253,040.00
1D	8" SDR 26 Gravity Main @ 10' to 12'	LF	16967	$ 57.00	$ 967,119.00	135736	8.00	$ 7,736,950.00
1E	8" SDR 26 Gravity Main @ 12' to 14'	LF	5851	$ 63.00	$ 368,613.00	46808	8.00	$ 2,948,905.00
1F	8" SDR 26 Gravity Main @ 14' to 16'	LF	1464	$ 75.00	$ 109,800.00	11712	8.00	$ 878,400.00
1G	10" SDR 26 Gravity Main @ 6' to 8'	LF	171	$ 47.00	$ 8,037.00	1368	8.00	$ 64,295.00
1H	12" SDR 26 Gravity Main @ 6' to 8'	LF	2377	$ 51.00	$ 121,227.00	19016	8.00	$ 969,815.00
1I	12" SDR 26 Gravity Main @ 8' to 10'	LF	610	$ 61.00	$ 37,210.00	4880	8.00	$ 297,680.00
1J	12" SDR 26 Gravity Main @ 12' to 14'	LF	69	$ 75.00	$ 5,175.00	552	8.00	$ 41,400.00
1K	15" SDR 26 Gravity Main @ 10' to 12'	LF	300	$ 67.00	$ 20,100.00	2400	8.00	$ 160,800.00
1L	15" SDR 26 Gravity Main @ 12' to 14'	LF	217	$ 75.00	$ 16,275.00	1736	8.00	$ 130,200.00
1M	4' Manhole With 4' to 6' Invert	EA	173	$ 2,300.00	$ 397,900.00	1384	8.00	$ 3,183,200.00
1N	4' Manhole With 6' to 8' Invert	EA	151	$ 2,800.00	$ 422,800.00	1208	8.00	$ 3,382,400.00
1O	4' Manhole With 8' to 10' Invert	EA	113	$ 3,600.00	$ 406,800.00	904	8.00	$ 3,254,400.00
1P	4' Manhole With 10' to 12' Invert	EA	55	$ 4,600.00	$ 253,000.00	440	8.00	$ 2,024,000.00
1Q	4' Manhole With 12' to 15' Invert	EA	32	$ 5,800.00	$ 185,600.00	256	8.00	$ 1,484,800.00
1R	Manhole Outside Drop Assembly	EA	45	$ 1,600.00	$ 72,000.00	360	8.00	$ 576,000.00
1S	Open Cut 4" Low Pressure Force Main	LF	90	$ 7.80	$ 702.00	720	8.00	$ 5,615.00
1T	Set Manhole Riser	EA	524	$ 100.00	$ 52,400.00	4192	8.00	$ 419,200.00
1U	Low Pressure Systems	EA	1	$ 2,800.00	$ 2,800.00	8	8.00	$ 22,400.00
1V	Remove Existing Septic Tank	EA	1570	$ 600.00	$ 942,000.00	8478	5.40	$ 5,086,800.00
1W	On Site Sewer Connection	EA	1570	$ 700.00	$ 1,099,000.00	8478	5.40	$ 5,934,600.00
1X	Double Gravity Service	EA	1378	$ 500.00	$ 689,000.00	11024	8.00	$ 5,512,000.00
1Y	Gravity Service Riser	EA	689	$ 400.00	$ 275,600.00	5512	8.00	$ 2,204,800.00
1Z	Silt Fence	LF	157674	$ 1.50	$ 236,511.00	1261392	8.00	$ 1,892,090.00
1AA	Maintenance of Traffic (MOT)	LS	1	$ 60,000.00	$ 60,000.00	8	8.00	$ 480,000.00
				Piping Total	**$ 10,595,055.00**		**Piping Total**	**$ 79,453,840.00**
2A	Standard Pump Station	EA	6	$ 467,500.00	$ 2,805,000.00	48	8.00	$ 22,440,000.00
2B	Open Cut 6" DR-18 Force Main	LF	17675	$ 11.70	$ 206,797.50	141400	8.00	$ 1,654,380.00
2C	Directional Bore 6" Force Main	LF	200	$ 30.00	$ 6,000.00	1600	8.00	$ 48,000.00
2D	6" Force Main DI Fittings	LB	2336	$ 4.50	$ 10,512.00	18688	8.00	$ 84,095.00
2E	6" MJ Plug Valve Assembly	EA	25	$ 1,100.00	$ 27,500.00	200	8.00	$ 220,000.00
2F	6" Force Main Sewer Marker Balls	EA	118	$ 20.00	$ 2,360.00	944	8.00	$ 18,880.00
2G	FPL Power	EA	6	$ 50,000.00	$ 300,000.00	48	8.00	$ 2,400,000.00
2H	Standard Pump Station Lot Purchase	EA	6	$ 30,000.00	$ 180,000.00	48	8.00	$ 1,440,000.00
			Pump Station Total		**$ 3,538,169.50**		**Pump Station Total**	**$ 28,305,355.00**

EXHIBIT II.5 "GRAVITY" ALTERNATIVE, CONTINUED

3A	Road Construction Base Preparation	SY	320000	$ 15.00	$ 4,800,000.00	2560000	8.00	$ 38,400,000.00
3B	Road Construction (Bituminous)	SY	290000	$ 7.00	$ 2,030,000.00	2320000	8.00	$ 16,240,000.00
3C	Road Demolition	SY	300810	$ 1.00	$ 300,810.00	2406480	8.00	$ 2,406,480.00
3D	Concrete Driveway Restoration	SY	50048	$ 24.00	$ 1,201,152.00	400384	8.00	$ 9,609,215.00
3E	Driveway Culvert Replacement	EA	1570	$ 900.00	$ 1,413,000.00	12560	8.00	$ 11,304,000.00
3F	ROW and Easement Restoration	SY	460000	$ 2.00	$ 920,000.00	3680000	8.00	$ 7,360,000.00
				Restoration Total	**$10,664,962.00**		**Restoration Total**	**$85,319,695.00**
4	Water System Crossings	EA	2300	$ 625.00	$ 1,437,500.00	14950	6.50	$ 9,343,750.00
5	Mobilization	0.05			$ 1,311,784.33			$ 10,121,132.00
		Total Construction Cost			**$ 27,547,470.83**	**Total Construction Cost**		**$ 212,543,772.00**
6A	Engineering	15%			$ 2,363,115.00			$ 31,881,565.80
6B	Environmental and Mitigation	3%			$ 472,625.00			$ 6,376,313.16
6C	Contingencies	5%			$ 787,705.00			$ 10,627,188.60
6D	Collection Fees	2.5%			$ 393,855.00			$ 5,313,594.30
6E	Miscellaneous	1%			$ 157,540.00			$ 2,125,437.72
6F	Statutory Uncollectible	6.325%			$ 996,450.00			$ 13,443,393.58
6G	Other Costs							$6,000,000.00
				Total Cost	**$ 32,718,760.83**		**Total Cost**	**$ 288,311,265.16**

EXHIBIT II.6 "DECENTRALIZED – PACKAGE PLANT WITH HYBRID GRAVITY" ALTERNATIVE

Decentralized				Spring Lakes		Area 1		
Item	Description	Unit	Qty	Unit Price	Total	Quantity	Factor Applied	Total
0A	Pkg Wastewater Plant 0.532 MGD AADF*	EA	1	$ 10,453,040.00	$ 10,453,040.00	8	8.00	$ 83,624,320.00
0B	Land Acquisition	AC	1	$ 120,000.00	$ 120,000.00	8	8.00	$ 960,000.00
							Plant Total	**$ 84,584,320.00**
1A	8" SDR 26 Gravity Main @ 4' to 6'	LF	48788	$ 30.00	$ 1,463,640.00	390304	8.00	$ 11,709,120.00
1B	8" SDR 26 Gravity Main @ 6' to 8'	LF	48788	$ 40.00	$ 1,951,520.00	390304	8.00	$ 15,612,160.00
1C	10" SDR 26 Gravity Main @ 6' to 8'	LF	12400	$ 42.00	$ 520,800.00	99200	8.00	$ 4,166,400.00
1D	4' Manhole With 4 to 6' Invert	EA	186	$ 2,300.00	$ 427,800.00	1488	8.00	$ 3,422,400.00
1E	4' Manhole With 6' to 8' Invert	EA	186	$ 2,800.00	$ 520,800.00	1488	8.00	$ 4,166,400.00
1F	Manhole Outside Drop Assembly	EA	45	$ 1,600.00	$ 72,000.00	360	8.00	$ 576,000.00
1G	Open Cut 4" Low Pressure Force Main	LF	90	$ 7.50	$ 675.00	720	8.00	$ 5,400.00
1H	Set Manhole Riser	EA	524	$ 100.00	$ 52,400.00	4192	8.00	$ 419,200.00
1I	Low Pressure Systems	EA	1	$ 2,800.00	$ 2,800.00	8	8.00	$ 22,400.00
1J	Remove Existing Septic Tank	EA	1570	$ 600.00	$ 942,000.00	8478	5.40	$ 5,086,800.00
1K	On Site Sewer Connection	EA	1570	$ 700.00	$ 1,099,000.00	8478	5.40	$ 5,934,600.00
1L	Double Gravity Service	EA	1378	$ 500.00	$ 689,000.00	11024	8.00	$ 5,512,000.00
1M	Gravity Service Riser	EA	689	$ 100.00	$ 68,900.00	5512	8.00	$ 551,200.00
1N	Silt Fence	LF	128868	$ 1.50	$ 193,302.00	1030944	8.00	$ 1,546,415.00
1O	Maintenance of Traffic (MOT)	LS	1	$ 60,000.00	$ 60,000.00	8	8.00	$ 480,000.00
				Piping Total	**$ 8,064,637.00**		**Piping Total**	**$ 59,210,495.00**
2A	Package Pump Station	EA	19	$ 30,000.00	$ 570,000.00	152	8.00	$ 4,560,000.00
2B	Open Cut 4" DR-18 Force Main	LF	16550	$ 7.50	$ 124,125.00	132400	8.00	$ 993,000.00
2C	Directional Bore 4" Force Main	LF	200	$ 27.00	$ 5,400.00	1600	8.00	$ 43,200.00
2D	4" Force Main DI Fittings	LB	1686	$ 4.50	$ 7,587.00	13488	8.00	$ 60,695.00
2E	4" MJ Plug Valve Assembly	EA	38	$ 875.00	$ 33,250.00	304	8.00	$ 266,000.00
2F	4" Force Main Sewer Marker Balls	EA	110	$ 20.00	$ 2,200.00	880	8.00	$ 17,600.00
2G	FPL Power	EA	19	$ 4,000.00	$ 76,000.00	152	8.00	$ 608,000.00
2H	Package Pump Station Easement Purchase	EA	19	$ 3,000.00	$ 57,000.00	152	8.00	$ 456,000.00
				Pump Station Total	**$ 875,562.00**		**Pump Station Total**	**$ 7,004,495.00**
3A	Road Restoration	SY	0	$ 22.50	$ -	0	8.00	$ -
3B	Road Construction Base Preparation	SY	320000	$ 10.00	$ 3,200,000.00	2560000	8.00	$ 25,600,000.00
3C	Road Construction (Bituminous)	SY	290000	$ 7.00	$ 2,030,000.00	2320000	8.00	$ 16,240,000.00
3D	Road Demolition	SY	300810	$ 1.00	$ 300,810.00	2406480	8.00	$ 2,406,480.00
3E	ROW and Easement Restoration	SY	230022	$ 2.00	$ 460,044.00	1840176	8.00	$ 3,680,350.00
				Restoration Total	**$ 5,990,854**		**Restoration Total**	**$ 47,926,830.00**
4	Water System Crossings	EA	2300	$ 625.00	$ 1,437,500.00	14950	6.50	$ 9,343,750.00
5	Mobilization	5%	0%	$ -	$ 818,427.65	0		$ 6,174,278.50
				Total Construction Cost	**$ 17,186,981**		**Total Construction Cost**	**$ 214,244,168.50**
6A	Engineering	15%			$ 2,363,115.00			$ 19,448,975.00
6B	Environmental and Mitigation	3%			$ 472,625.00			$ 3,889,795.00
6C	Contingencies	5%			$ 787,705.00			$ 6,482,990.00
6D	Collection Fees	2.5%			$ 393,855.00			$ 3,241,495.00
6E	Miscellaneous	1%			$ 157,540.00			$ 1,296,600.00
6F	Statutory Uncollectible	6.325%			$ 996,450.00			$ 8,200,985.00
6G	Other Costs							$ 6,000,000.00
				Total Cost	**$ 22,358,270.65**		**Total Cost**	**$ 262,805,008.50**

EXHIBIT II.7 "AEROBIC TREATMENT UNITS (ATUs)" ALTERNATIVE

	OSTDS - ATU				
Item	**Description**	**Unit**	**Qty**	**Unit Price**	**Total**
1	Aerobic OSTDS System Installation	EA	8500	$ 14,000.00	$ 119,000,000.00
2	Remove Existing OSTDS	EA	8500	$ 600.00	$ 5,100,000.00
3	Silt Fence	LF	894900	$ 1.50	$ 1,342,350.00
4	Maintenance of Traffic	LS	9	$ 5,000.00	$ 42,500.00
5	Mobilization (5%)	5.000%			$ 6,274,242.50
				Total Construction Cost	**$ 131,759,092.50**
6	Engineering (15%)	15.000%			$ 17,850,000.00
7	Mitigation & Environmental (3.0%)	3.000%			$ 3,570,000.00
8	Contingencies (5%)	5.000%			$ 5,950,000.00
9	Collection Fees (2.5%)	2.500%			$ 2,975,000.00
10	Miscellaneous (1%)	1.000%			$ 1,190,000.00
11	Statutory Uncollectible (6.325%)	6.325%			$ 7,526,750.00
				Total Current Cost	**$ 170,820,842.50**
12	New Homes (growth)	EA	8500	$ 14,000.00	$ 119,000,000.00
				Total Cost	**$ 289,820,842.50**

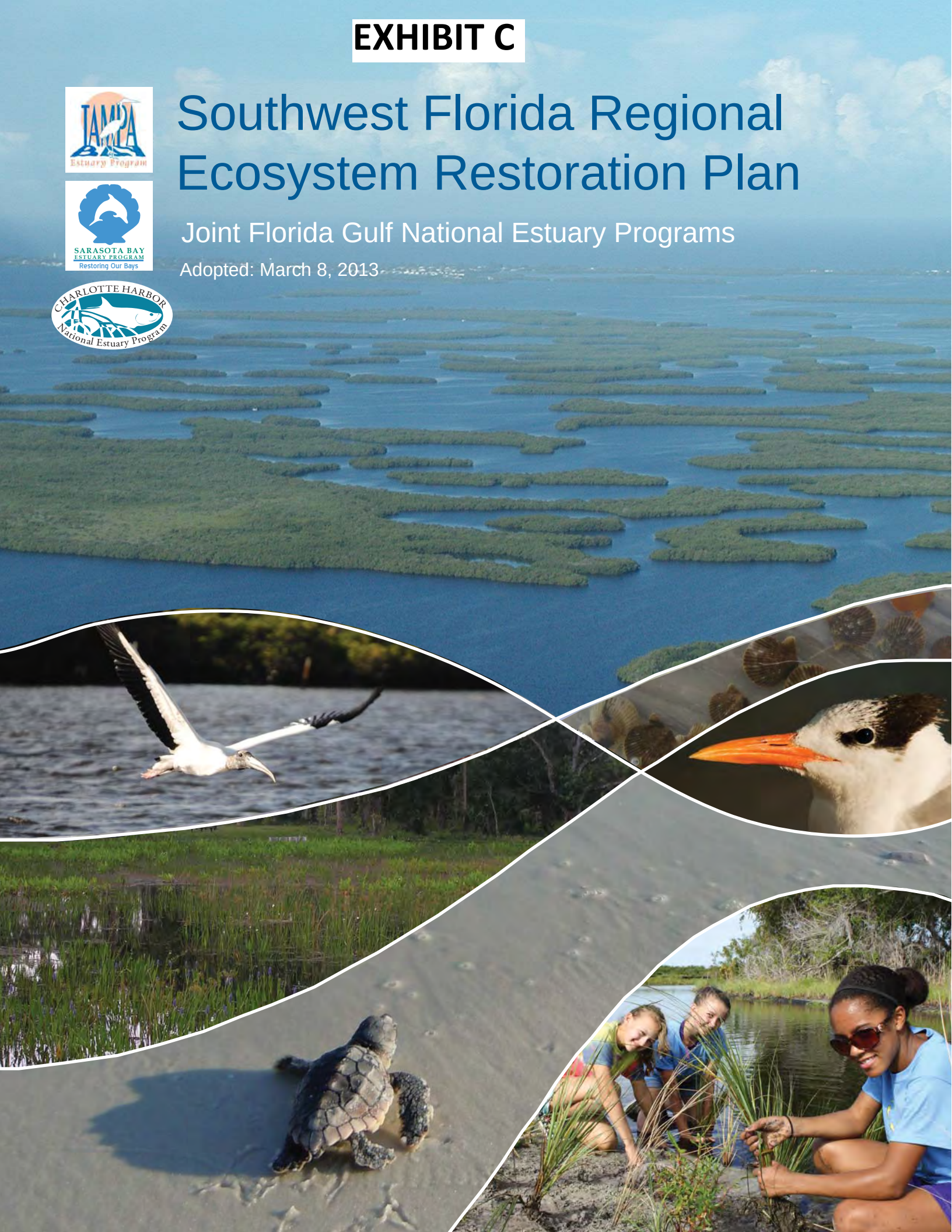
* Does not include costs due to modifications required to meet design criteria as is anticipated in Area 1.

EXHIBIT C

Southwest Florida Regional Ecosystem Restoration Plan

Joint Florida Gulf National Estuary Programs

Adopted: March 8, 2013



Cover Photo Credits:

Mangrove Islands:	Lisa Beever, Charlotte Harbor National Estuary Program
Wood stork in flight:	Whitney Gray, Southwest Florida Regional Planning Council
Juvenile scallops:	Judy Ott, Charlotte Harbor National Estuary Program
Billy Creek Filter Marsh:	Lisa Beever, Charlotte Harbor National Estuary Program
Royal tern:	Bryon Chamberlin, Tampa Bay Estuary Program volunteer
Loggerhead turtle hatching:	Eve Haverfield, Turtle Time, Inc.
Young people restoring a salt marsh:	Stephanie Sherman, Sarasota Bay Estuary Program

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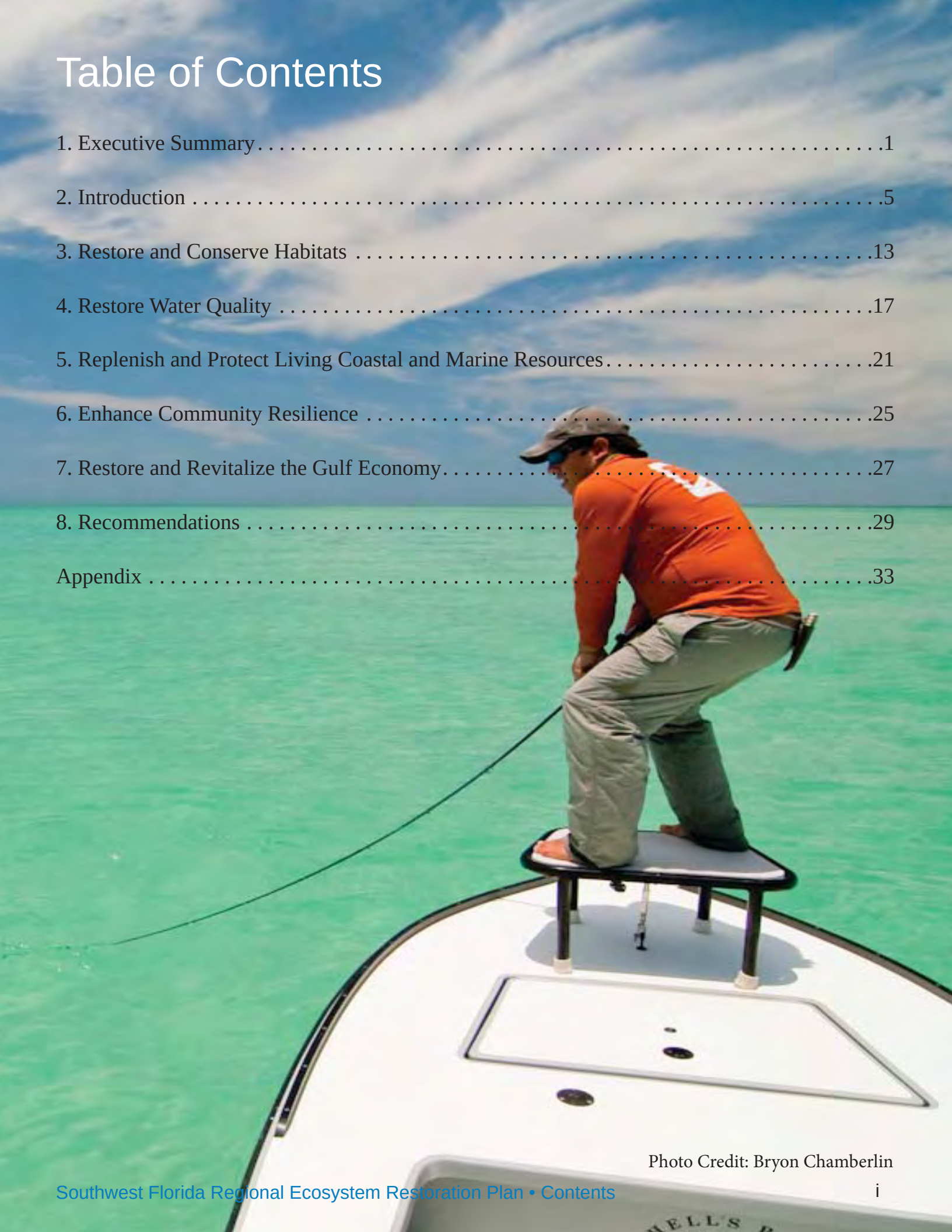


Photo Credit: Bryon Chamberlin

March 8, 2013

Dear Members of the Gulf Coast Ecosystem Restoration Council:

The National Estuary Programs (NEPs) were authorized by Congress in the Water Quality Act of 1987 with the purpose of developing and implementing science-based Comprehensive Conservation and Management Plans (CCMPs) for estuaries of national significance. In Southwest Florida, three contiguous estuaries of national prominence (Tampa Bay, Sarasota Bay and Charlotte Harbor) are vital to providing resiliency to Gulf of Mexico marine resources.

Last August, the three Southwest Florida National Estuary Programs agreed to develop one list of priority environmental projects for consideration by the Gulf Coast Ecosystem Restoration Council and the State of Florida. Cities, counties, non-profit organizations, universities and other institutions were invited to submit project information. The 280 proposals received were rigorously reviewed, vetted and ranked by technical and science advisers, using criteria defined by the Gulf of Mexico Ecosystem Restoration Strategy and the RESTORE Act. The final regional ranked list was approved on March 8, 2013 by the elected officials and agency representatives comprising our Policy Boards.

The projects proposed herein expand on work identified in the CCMPs, which are specifically outlined in the RESTORE Act as funding mechanisms for implementation. The Southwest Florida NEPs have a proven track record of success in protecting and restoring Southwest Florida ecosystems and Gulf of Mexico resources.

Our Boards found that putting forward one list of environmental projects will provide a unified vision that presents the priority environmental restoration and research needs of more than half of Florida's Gulf Coast (stretching from the Big Bend region to the Everglades) and approximately 20% of the total US Gulf coast.

We are pleased to provide the attached *Southwest Florida Regional Ecosystem Restoration Plan*, for your consideration for inclusion in the Council's Comprehensive Plan. Activities in the Regional Plan include large-scale coastal habitat restoration, land acquisition, and water quality enhancement, as well as environmental monitoring, assessment and education programs. More than 100 projects, submitted by 50 entities, are included in the highly ranked projects recommended for the first 3 years of funding. Also included is a link to the searchable electronic database of all the projects and submitted project summary forms.

The three Southwest Florida NEPs offer our continued assistance to your teams. Our federally authorized programs and CCMPs provide a means of enhancing coordination and implementation of the Gulf Council's Comprehensive Plan in our areas. We look forward to working with you and your teams in continuing the restoration and recovery of the vibrant and abundant natural resources of our coasts and Gulf.

Holly Greening, Director
Tampa Bay Estuary Program
hgreening@tbep.org

Mark Alderson, Director
Sarasota Bay Estuary Program
mark@sbep.org

Lisa B. Beever, Director
Charlotte Harbor National Estuary Program
lbeever@swfrpc.org

Photo by Stephanie Sherman, Sarasota Bay Estuary Program

1. Executive Summary

The *Southwest Florida Regional Ecosystem Restoration Plan* (Regional Plan) was prepared by the three National Estuary Program (NEPs) on Florida's Gulf Coast: Tampa Bay Estuary Program (TBEP), Sarasota Bay Estuary Program (SBEP) and the Charlotte Harbor National Estuary Program (CHNEP). The Regional Plan was developed to advise the Gulf Coast Ecosystem Restoration Council (Council) and the State of Florida regarding restoration needs in Southwest Florida as they make Gulf-wide decisions under the 2012 RESTORE Act. Furthermore, the plan provides a regional vision for restoration needs for any partnership interested in the health of Southwest Florida's natural resources.

The Regional Plan is based on the December 2011 *Gulf of Mexico Regional Ecosystem Restoration Strategy* (Restoration Strategy) and the January 2013 document, *The Path Forward to Restoring the Gulf Coast* (Path Forward). The Path Forward describes how the Council will develop a Comprehensive Plan for Gulf Coast Restoration, required under the RESTORE Act to oversee the spending of the Clean Water Act fine from the BP Deepwater Horizon oil spill. This Regional Plan implements the Restoration Strategy precisely as envisioned.

Florida Gulf Coast NEPs used their broad community-based partnerships with citizens, scientists, resource managers, businesses, industries and elected officials to formulate the Regional Plan. Fifty-three (53) organizations submitted 280 restoration and related projects, totaling three billion dollars. Projects were organized according to Restoration Strategy goals and major actions. Projects were ranked according to RESTORE Act prescribed criteria, quality of the applications and a small adjustment for the submitting organizations' top two projects to provide for geographic distribution. The ranking resulted in a 3-year priority plan, a 10-year plan and list of project recommended for other funding sources.

The five overarching goals for Gulf Coast restoration are to:

- Restore and Conserve Habitat
- Restore Water Quality
- Replenish and Protect Living Coastal and Marine Resources
- Enhance Community Resilience
- Restore and Revitalize the Gulf Economy

The Florida Gulf Coast NEPs are required by Section 320 of the Clean Water Act to adopt Comprehensive Conservation and Management Plans (CCMPs). The CCMP are federally approved, authorized and required by Congress. The Regional Plan implements the CCMPs utilizing partnerships as specified in the Clean Water Act.

Table 1: 3-Year Plan Summary, $10 Million per Project Cap Applied						
Goal	**Major Action**	**Number of Projects**	**Year 1**	**Year 2**	**Year 3**	**3-Year Total capped**
Restore and Conserve Habitat	Land Acquisition	7	30,450,000	15,465,000	946,450	46,861,450
Restore and Conserve Habitat	Coastal Habitat Restoration	30	4,625,000	17,468,000	14,069,555	36,162,555
Restore Water Quality	Nutrients/ Dissolved Oxygen	13	20,850,000	21,196,904	38,838,100	80,885,004
Restore Water Quality	Stormwater	16	5,231,918	6,788,306	8,656,180	20,676,404
Restore Water Quality	Freshwater Flows	13	14,198,000	11,073,000	11,200,000	36,471,000
Restore Water Quality	Water Quality Monitoring	12	12,964,397	3,233,003	2,877,229	19,074,629
Replenish and Protect Living Coastal and Marine Resources	Replenish Animal Population	2	5,860,277	211,350	216,801	6,288,428
Replenish and Protect Living Coastal and Marine Resources	Reefs and Other Coastal Environments	13	5,830,376	15,377,400	5,010,263	26,218,039
Replenish and Protect Living Coastal and Marine Resources	Monitoring and Assessment of Sentinel Species	11	784,860	1,686,806	1,082,208	3,553,874
Enhance Community Resilience	Comprehensive Coastal Programs	1	100,000	200,000	200,000	500,000
Enhance Community Resilience	Analytical Tools for Planning	1	200,000	200,000	100,000	500,000
Enhance Community Resilience	Environmental Education	9	1,242,876	1,419,912	2,072,010	4,734,798
	Total	**128**	**102,337,704**	**94,319,681**	**85,268,796**	**281,926,181**

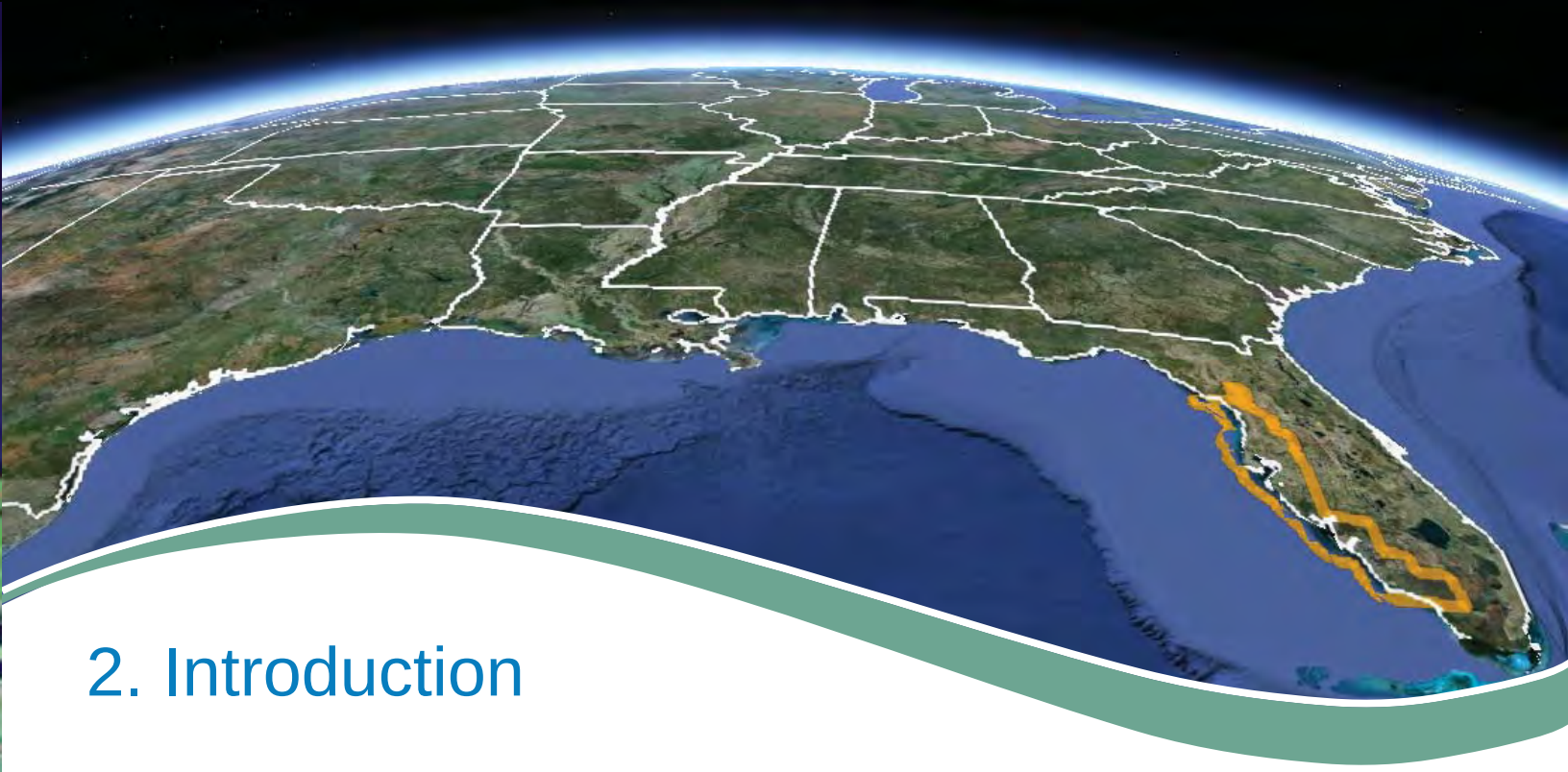
The 3-Year Regional Plan recommends a ten million dollar cap on requested funds for each individual project submitted. In doing so, geographic distribution of projects are enhanced without overwhelming anticipated funding. At the time of this writing, rules from the Treasury Department concerning RESTORE Act funds have not been issued, the Clean Water Act fine amounts have not been identified and additional guidance from the Council concerning funding is not available. Therefore, we present both requested amounts and capped amounts within the Regional Plan.

Table 1 summarizes the Regional Plan, with a ten million dollar cap on projects. One-hundred and twenty eight of the 280 restoration and related projects were recommended for the 3-year plan. Projects are distributed among each of the Restoration Strategy four goals and supports the fifth goal, “Restore and Revitalize the Gulf Economy” adopted by the Council.

Table 2: 3-Year Plan Summary, based on original requested funding						
Goal	**Major Action**	**Number of Projects**	**Year 1**	**Year 2**	**Year 3**	**3-Year Total uncapped**
Restore and Conserve Habitat	Land Acquisition	7	58,750,000	44,203,280	20,946,450	123,899,730
Restore and Conserve Habitat	Coastal Habitat Restoration	30	5,325,000	18,268,000	15,569,555	39,162,555
Restore Water Quality	Nutrients/ Dissolved Oxygen	13	33,850,000	229,596,904	313,838,100	577,285,004
Restore Water Quality	Stormwater	16	5,231,918	6,788,306	8,656,180	20,676,404
Restore Water Quality	Freshwater Flows	13	23,198,000	211,073,000	206,670,000	440,941,000
Restore Water Quality	Water Quality Monitoring	12	12,964,397	13,233,003	2,877,229	29,074,629
Replenish and Protect Living Coastal and Marine Resources	Replenish Animal Population	2	5,860,277	211,350	216,801	6,288,428
Replenish and Protect Living Coastal and Marine Resources	Reefs and Other Coastal Environments	13	5,830,376	9,127,400	30,010,263	44,968,039
Replenish and Protect Living Coastal and Marine Resources	Monitoring and Assessment of Sentinel Species	11	784,860	1,686,806	1,082,208	3,553,874
Enhance Community Resilience	Comprehensive Coastal Programs	1	100,000	200,000	200,000	500,000
Enhance Community Resilience	Analytical Tools for Planning	1	200,000	200,000	100,000	500,000
Enhance Community Resilience	Environmental Education	9	1,242,876	1,419,912	2,072,010	4,734,798
	Total	**128**	**153,337,704**	**536,007,961**	**602,238,796**	**1,291,584,461**

Table 2 summarizes the 3-Year Regional Plan, with projects receiving full requested funding. Full funding is 4.5 times the cost with the cap in place. Three projects account for $846,400,000 (84%) of the difference between Table 1 and Table 2: C43 Reservoir ($395,000,000), Pasco County Reclaimed Water ($328,400,000),and Lee County Conversion of Septic to Central Sewer ($123,000,000).

Map 1



2. Introduction

Southwest Florida is approximately 20% of the Gulf of Mexico coast. It is an important and diverse location on the Gulf, extending from temperate, springfed systems near the Big Bend and south to the subtropics and the Everglades. This area includes three estuaries of national significance as well as a National Estuarine Research Reserve. The Clean Water Act Amendments of 1987, section 320, created the National Estuary Program (NEP) which are based on designated estuaries of national significant. The Rookery Bay National Estuarine Research Reserve (RBNERR) is one of 28 reserves established through the Coastal Zone Management Act of 1972, as amended, as a partnership program between the National Oceanic and Atmospheric Administration and the coastal states. All are authorized federal programs. Furthermore, NEPs are required by the Clean Water Act to adopt Comprehensive Conservation and Management Plans (CCMPs). The CCMP are federally approved, authorized and required by Congress. The three NEPs on Florida's Gulf Coast include Tampa Bay Estuary Program (TBEP), Sarasota Bay Estuary Program (SBEP) and the Charlotte Harbor National Estuary Program (CHNEP). NEPs are partnership programs which work with citizens, scientists, resource managers, agency heads and elected officials to develop local solutions to complex environmental problems. They are both consensus-based and science-driven.

Through their partnerships, which include the Southwest Florida Water Management District and Everglades Restoration, the NEPs coordinated and prepared a Regional Plan for southwest Florida, from Levy County south to include Collier County. This area is shown with an orange boundary in the maps to the left and above.

The five overarching goals for Gulf Coast restoration are to:

- Restore and Conserve Habitat
- Restore Water Quality
- Replenish and Protect Living Coastal and Marine Resources
- Enhance Community Resilience
- Restore and Revitalize the Gulf Economy

The *Southwest Florida Regional Ecosystem Restoration Plan* (Regional Plan) is based on the *Gulf of Mexico Regional Ecosystem Restoration Strategy* (Restoration Strategy). The Restoration Strategy was prepared by the Gulf Coast Ecosystem Restoration Task Force in accordance with Executive Order 13554. The executive order was issued on October 5, 2010, in the wake of the Deepwater Horizon disaster and oil spill earlier that year. The strategy states "The next and most important step is to prioritize projects that put the strategy into action and generate substantive results." This Regional Plan implements the restoration strategy precisely as envisioned. The Florida Gulf NEPs have evoked their partnership of people, communities, businesses, industries and other stakeholders invested in the Gulf of Mexico to identify and prioritize restoration needs. The Regional Plan implements the CCMPs utilizing partnerships as specified in the Clean Water Act.

Background

The National Estuary Program (NEP) was authorized by Congress in the Water Quality Act of 1987 with the purpose of developing and implementing science based Comprehensive Conservation and Management Plans (CCMPs) for estuaries of national significance. In southwest Florida, three contiguous estuaries of national prominence (Tampa Bay, Sarasota Bay and Charlotte Harbor) are vital to the providing resiliency to Gulf of Mexico marine resources. The projects proposed herein expand on work in implementing CCMPs as specifically outlined in the Restore Act as funding mechanisms for implementation. The southwest Florida NEPs have a proven track record of success in protecting and restoring southwest Florida ecosystems and Gulf of Mexico.

Geography

The Regional Plan was developed for southwest Florida (see map 1) extending from Levy through Collier County. The area includes three estuaries of national significance, the Springs Coast to north and portions of the Everglades system to the south. Eleven of the twenty three coastal counties in Florida are represented in this plan. The coastline approximates 20% of the US Gulf of Mexico shoreline. Scientists have suggested this coastline to be of substantial importance with respect to Gulf of Mexico fishery for spawning and juvenile fish habitat, as well as for coastal resiliency.

There are two major estuaries (Charlotte Harbor and Tampa Bay) with necklaces of barrier islands forming lagoon systems (Sarasota, Lemon and Naples Bay) throughout the region. There are seven inlets between Tampa Bay and Charlotte Harbor alone providing valuable spawning grounds for recreational and commercial fishery. Sport fishing in these lagoons and estuaries is among the best in the United States. The barrier islands and coastal mainland are mostly developed from north Tampa to Charlotte Harbor and south. Land acquisition programs in Florida have preserved fairly large tracks with remaining open lands at a premium.

Key Ecological Problems and Issues

Priority problems from the Southwest Florida NEP CCMPs include water quality degradation, hydrologic alteration and habitat degradation. All three NEP have based water quality initiatives on living resources such as seagrass. Hydrology and saltwater habitats represent strategic components of the CCMPs.

Nutrients/Seagrass:
Nutrient enrichment resulting in loss of seagrass habitat is a persisting problem throughout the region that is being addressed through the CCMPs. In response, the three NEPs have developed numeric nutrient criteria (NNC) and pollutant loading goals to meet established seagrass targets regionally; these NNC have been approved by Florida Department of Environmental Protection (FDEP) and U. S. Environmental Protection Administration (EPA) during the last calendar year. Projects proposed in this plan continue efforts to manage and reduce nitrogen to meet the NNC and established seagrass targets. Since the establishment of the NEPs, there have been major increases in seagrass and wetland habitats regionally due to nutrient management and wetland restoration initiatives.

Hydrology: In the 1920s, drainage districts were established throughout southwest Florida to effectively drain freshwater marsh. In the Sarasota area for example, ditches approximating 10 foot deep were dug to the center of extensive sawgrass marshes and ponds to eliminate the marsh for agricultural uses; and later development. Similar drainage networks were created throughout the region changing natural watersheds and water flow. As development occurred, these networks were used to transport stormwater. Reestablishing natural water flow is a priority for improving Gulf resiliency.

Saltwater Wetlands: Coastal developments (canal communities) were constructed throughout the region during the 1950s and 1960s eliminating valuable mangrove habitats. Many of the mangrove wetlands were mosquito

Southwest Florida NEPs have linked water quality improvements to seagrass restoration.

ditched and fragmented reducing ecological function. Protecting existing natural wetland systems and restoring the ecological function of altered wetlands is a priority in the CCMPs. Establishing the ecological balance of available habitats throughout the Bay's is also a feature of the CCMPs – maintaining the balance – to maximize productivity.

Goals

The Gulf Coast Ecosystem Restoration Council (Council) was set up by the RESTORE Act to oversee the spending of the Clean Water Act fine from the BP Deepwater Horizon oil spill. The Council is required by the Act to develop a Comprehensive Plan for Gulf Coast Restoration by July 6, 2013. On January 29, 2013, the Council released *The Path Forward to Restoring the Gulf Coast* (Path Forward) as an initial step in developing a more detailed Comprehensive Plan. The initial Comprehensive Plan aims to provide an integrated approach to Gulf restoration by setting out high-level guidance focused on restoration of natural resources and the jobs, communities, and economies those resources support. To provide this guidance, the initial Comprehensive Plan will adopt and expand on the four overarching Task Force Strategy goals:

- Restore and Conserve Habitat;
- Restore Water Quality;
- Replenish and Protect Living Coastal and Marine Resources; and
- Enhance Community Resilience.

In addition to these four goals, the initial Comprehensive Plan will include a fifth goal:

- Restore and Revitalize the Gulf Economy.

This fifth goal will focus on reviving and supporting a sustainable Gulf economy to ensure that those expenditures by the States authorized in the Act under the State allocation and the oil spill restoration impact allocation can be considered in the context of comprehensive restoration. Together, these five goals provide the overarching framework for an integrated approach for Gulf region-wide restoration.

The goals are consistent with the Florida Gulf NEP's CCMPs, required under the Clean Water Act.

Process to Develop the Regional Plan

In December 2012, a joint meeting of the decision-making bodies of the three Florida Gulf NEPs (Policy Board or Policy Committee) approved a process to develop a S*outhwest Florida Regional Ecosystem Restoration Plan* (Regional Plan), for consideration by the State, Counties and Federal Council as an element of the Council's Comprehensive Plan. Key elements of the Joint Policy Board process included:

- The geographic scope of the Regional Plan stretches from the coastal counties from Levy through Collier County
- Ranking and prioritizing projects submitted for consideration should utilize the RESTORE Council's criteria and the Florida state priorities identified in the Gulf of Mexico Regional Ecosystem Restoration Strategy
- Prioritizing projects should also take into consideration geographic distribution of projects and requested funds
- A seven-member Work Group, consisting of the three NEP Directors, a member of each of the Management Boards (of resource managers) and a Southwest Florida Water Management District (SWFWMD) representative, was charged with developing recommendations on priorities and ranks, and assigning preliminary scores (High, Medium, Low, or Recommended for other funding sources) for consideration by the Joint Management Boards.
- Joint Management Board recommendations were provided to the Joint Policy Board, for their final decision.

Publicly-noticed meetings of the Work Group were held on January 28 and 29, and February 11, 2013 to initiate and complete the selection process. The Joint Management Board recommended approval of the process on February 20, 2013. The Joint Policy Board approved the process and resulting plan on March 8, 2013. All meetings were noticed (1) in the Florida Administrative Register, (2) through direct notice to the three National Estuary Program Board members and all applicants and (3) on websites of the three NEPs.

Southwest Florida National Estuary Program Policy Board Members	
Tampa Bay Estuary Program	
Hon. Steve Kornell, City of St. Petersburg	Hon. Betsy Benac, Manatee County
Hon. Paul Gibson, City of Clearwater	Hon. Kevin Beckner, Hillsborough County
Hon. Mary Mulhern, City of Tampa	Ms. Wendy Griffin, Southwest Florida Water Management District
Hon. Charlie Justice, Pinellas County	Mr. Tom McGill, U. S. Environmental Protection Agency, Region 4
Sarasota Bay Estuary Program	
Hon. Michael Gallen, Manatee County	Hon. Lynn Larsen, Town of Longboat Key
Hon. Charles Hines, Sarasota County	Mr. Jeff Greenwell, Florida Dept of Environmental Protection
Hon. Patrick Roth, City of Bradenton	Mr. Albert Joerger, Southwest Florida Water Management District
Hon. Suzanne Atwell, City of Sarasota	Ms. Becky Allenbach, US EPA, Region 4
Charlotte Harbor National Estuary Program	
Mr. Doug Mundrick, US EPA, Region 4	Mr. Jon Iglehart, Florida Department of Environmental Protection
Hon. Joseph Fink, City of Arcadia	Hon. Bill Truex. Charlotte County
Hon. Adrian Jackson, City of Bartow	Hon Grady Johnson, Hardee County Hon. Larry Kiker, Lee County
Hon. Stephen McIntosh, City of Bonita Springs	Hon. Michael Gallen, Manatee County
Ms. Connie Jarvis. City of Cape Coral	Mr. Jeff Spence, Polk County
Hon. Joseph Kosinski, Town of Fort Myers Beach	Hon. Charles Hines, Sarasota County
Hon. Cheryl Cook, City of North Port	Ms. Patricia M. Steed, Central Florida Regional Planning Council
Hon. Kim Devine, City of Punta Gorda	Dr. Philip Stevens, Florida Fish & Wildlife Conservation Commission
Hon. Mick Denham, City of Sanibel	Mr. Phil Flood, South Florida Water Management District
Hon. David Sherman, City of Venice	Mr. Don McCormick, Southwest Florida Regional Planning Council
Mr. Mike Britt, City of Winter Haven	Mr. Bryan Beswick, Southwest Florida Water Management District

A step-wise process was implemented, with the goal of selecting projects with the highest degree of meeting RESTORE Act criteria and improving the quality of Southwest Florida coastal and Gulf natural resources.
Step 1. Submitted projects were sorted by Restoration Strategy goals and major actions.

Step 2. Projects not directly addressing RESTORE Act criteria were recommended for other sources of funding. Project types recommended for other sources of funding included:

- Recreational amenities, boat ramps, navigational canal dredging
- Compressed gas station, biosolids to energy
- Public safety initiatives
- Research: Funding research institutes, climate change threats, sediment baseline or contamination studies (NRDA); creating research institutes; C-43 research element;
- Flooding relief, drainage
- Operating/maintenance costs for: lake management; stormwater facilities; street sweeping materials management; septic system maintenance; upgrade wastewater treatment plant equipment or collection systems; fleet vehicle wash
- Submitted by private firm or private citizen
- Already fully funded
- Is fine-based fund.

Step 3. Following sorting of the projects into categories and setting aside the projects recommended for other sources of funding, the Work Group defined Selection Criteria and a scoring process which selects for projects with the highest degree of meeting criteria and improving quality of the Southwest Florida coasts and Gulf natural resources, taking into account potential funding sources, quality of the proposal and applicant ranking.

(1) Value added- the quality of the project, in particular the degree that the project meets the approved criteria and improves the quality or quantity of the coast and Gulf natural resources (1 is highest, 5 is lowest.)
(2) Are there existing funding programs that could likely support this project? (1 is no, 2 is yes)
(3) Quality/completion of proposal (1 is high, 2 is not as complete)
(4) Applicants ranking (1 for highest applicant rank, 2 for second highest applicant rank, 3 for third or greater applicant rank). If a project is not ranked because it was included in the previously-permitted project list, the rank given was 1.

Step 4. A score for each of the four Selection Criteria for each project was assigned by the Work Group, working collectively on each individual project proposal . Individual project Selection Criteria scores were summed, providing a cumulative Raw Group Score for each project. Potential Raw Group Scores range from 4 (highest ranked) to 12 (lowest ranked).

Step 5. Several groups of local projects were bundled into regional projects which received a higher raw score. These individual projects were rescored as elements of a regional project. By bundling smaller projects into regional projects, the distribution of highly-ranked projects was increased.

Step 6. To be consistent with the RESTORE Act criteria, projects were grouped into two categories:

- Highly-ranked projects (scores of 8 or lower) which can be initiated within the first 3 years.
- The remainder of the projects of eligible projects were identified for a 10 year planning horizon.

Step 7. The Joint NEP Policy Committee members recommended a cap for each individual project's requested need at $10 million dollars. Enactment of the $10 million dollar cap allows limited funds to be used in a larger number of projects and locations, thus increasing distribution of projects. At the time the Regional Plan was approved, the rules from the Treasury Department were unavailable. Given the uncertainty of possible funding limits, members recommended that the project funding as submitted by the organization be displayed.

Regional Plan Approval

Pursuant to resolutions adopted by each of the three NEP Policy Boards, an executive committee was empowered to approve the Regional Plan projects and ranking. The seven-member committee was comprised of two County Commissioners from each of the three NEP Policy Boards and one Governing Board member of the Southwest Florida Water Management District. The resolutions allowed alternates.

On March 8, 2013, membership of each of the three NEP Policy Boards met at the Sarasota County Technical Institute Conference Center. Twenty-five elected officials and top agency heads each representing at least one Policy Board attended the meeting. The seven-member Executive Committee voted unanimously to:

- Approve Joint Management Board recommendations for 3-year and 10-year projects in the Southwest Florida Regional Ecosystem Restoration Plan, with revisions by the City of Bradenton.

The entire membership in attendance provided additional guidance includeing:

- Recommend that NEP Directors submit the list of ranked projects with a $10 million cap on total project need in order to maximize geographic distribution.
- Recommend that the database be submitted to the FDEP with the original total project costs. The document submitted to FDEP and the Council should include the original total project costs, with the $10 million cap on needed project cost as an alternative/recommendation.
- Incorporate revisions as directed by Joint Policy Board
- Identify 'previously authorized' projects in a separate table, if Treasury Guidelines are available.
- If Treasury Guidelines are not available by April 1st, identify projects which were permitted by July 2012 but not yet fully funded in a separate table.
- Finalize Regional Plan, including 3-year and 10-year plan elements. The plan was approved March 8, 2013.
- Submission will go to the Council. Directors will also submit to the Regional Plan to FDEP to work collaboratively with the State of Florida and to the National Fish and Wildlife Foundation.

Policy Board members and NEP Directors after adoption of the Regional Plan on March 8, 2013

Photo by James W. Beever III
Southwest Florida Regional Planning Council

A Vision of Regional Ecosystem Restoration

The Southwest Florida NEPs have developed a regional vision for ecosystem restoration with several striking components:

- Landscape connections. Southwest Florida NEPs work with partners to develop continuous greenways and corridors to allow movement of people, animals and water.
- Restore the balance. Southwest Florida NEPs recognize that losses of some habitat types, such as low-salinity tidal marshes, have been disproportionately greater than for others, such as mangrove forests. While seeking to maximize recovery of those habitats hardest hit by development activities, "restoring the balance" also calls for preserving and enhancing existing mangrove and marsh communities through land acquisition, invasive species eradication and regulatory protections.
- Water quality that is protective of living resources. Southwest Florida NEPs established targets to restore seagrass acreage. Seagrass is a critical habitat within southwest Florida estuaries. Nutrient pollution resulted in phytoplankton (e.g. algae) growth which reduced light reaching seagrass. The deep-edge of the seagrass beds began to die without the required light. Each NEP established seagrass targets and identified maximum chlorophyll, nitrogen and phosphorus levels needed to restore and protect seagrass.
- Restore natural freshwater inflow to our estuaries and coasts: Alteration in the amount and timing of fresh water delivered to the estuaries and coasts has resulted in some Southwest Florida estuaries receiving too much water and others not enough, and to changes in the natural pulses of freshwater inflow. The changes in total freshwater flows and more extreme high or low flows can impact oyster, seagrass and juvenile fish populations. Restoration of a more natural delivery of freshwater, both amount and timing, is critical to maintain healthy coastal and estuarine waterways.
- Involve the public in estuarine and coastal restoration and protection: The southwest Florida NEPs emphasize the importance of environmental education and stewardship to the long-term health of our coastal waters and watersheds by creating a constituency of informed, involved citizens.
- Build partnerships to achieve significant restoration. Southwest Florida NEPs work with citizens, scientists resource managers and elected officials to achieve region-wide ecosystem improvements. Just one example is adoption of Urban Fertilizer Ordinances. Each coastal City and County in the NEPs' jurisdiction adopted Urban Fertilizer Ordinances, tailored to the wet and dry season climate of southwest Florida. This has resulted in removal of hundreds of tons of nitrogen and phosphorus annually from southwest Florida waterways annually.

These components follow the goals of the Restoration Strategy and the objectives of the NEP CCMPs.

Gulf of Mexico
Priority Projects
Goals
Habitat
Water Quality
Living Resources
Resilience

Map 2

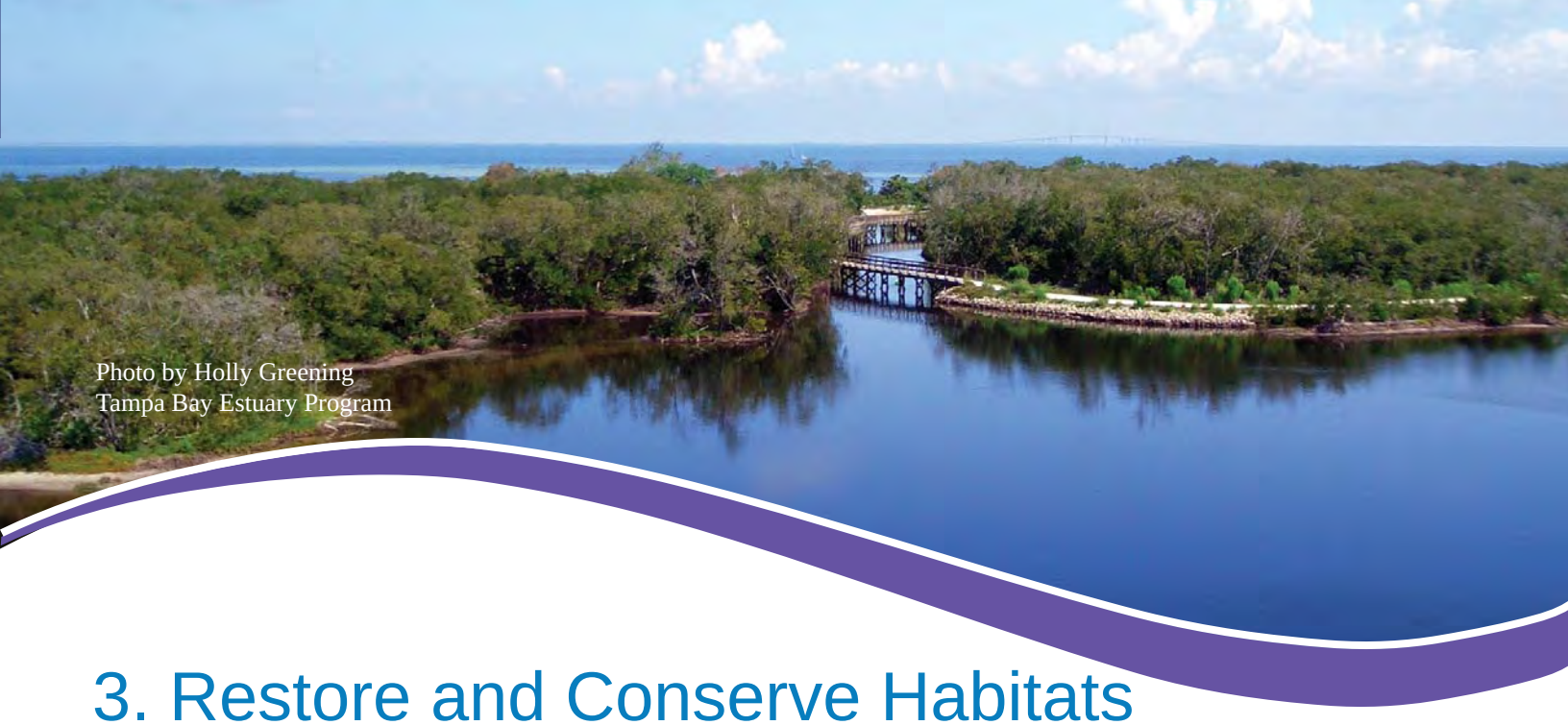


Photo by Holly Greening
Tampa Bay Estuary Program

3. Restore and Conserve Habitats

The Gulf Coast has endured extensive damage to key coastal habitats such as wetlands, coastal prairies and forests, estuaries, seagrass beds, natural beaches and dunes, and barrier islands. Within this goal, a major focus is to work with Gulf Coast stakeholders to expedite implementation and improve the effectiveness of state and federal programs related to landscape-scale resource management, habitat conservation and restoration strategies.

The Restoration Strategy identified significant habitat restoration and conservation challenges for the Gulf of Mexico. For southwest Florida, these challenges include habitat loss from increased development, resource management, alterations to hydrology, sea-level rise, hurricanes and tropical storms. Healthy ecosystems provide functions that improve coastal resilience. NEPs provide a comprehensive watershed-based approach to the management of tapestry of habitats connected by the thread of water.

Major actions identified in the Restoration Strategy include:

- Prioritize ecosystem restoration in the Gulf of Mexico by ensuring that social, environmental and economic outcomes are fully considered in all river management decisions, and by placing it on equal footing with other priorities such as navigation and flood damage risk reduction.
- Improve current sediment management practices to maximize to the extent practicable and ecologically acceptable the quantity and effective use of sediments by taking a “strategic use” approach to sediment management.
- Restore and preserve more natural river processes of sediment and freshwater distribution.
- Expand the network of state, federal and private conservation areas to ensure healthy landscapes that support the environment and culture of the region and the diverse services provided by the Gulf of Mexico ecosystem.
- Restore and conserve coastal and near-shore habitats, with a focus on marshes, mangroves, seagrasses, barrier islands, natural beaches and dunes, and coastal forests and prairies.

Southwest Florida organizations submitted nine projects to expand the network of land conservation areas (Land Acquisition) and 55 projects to restore and conserve coastal and near-shore habitats (Coastal Habitat Restoration). The joint Florida NEPs recommended seven priority land acquisition and 30 priority coastal habitat restoration projects. Tables 3 and 4 display the specific projects. Note that some projects were bundled for presentation within this document and to recognize increased regional value of like projects reviewed as a group.

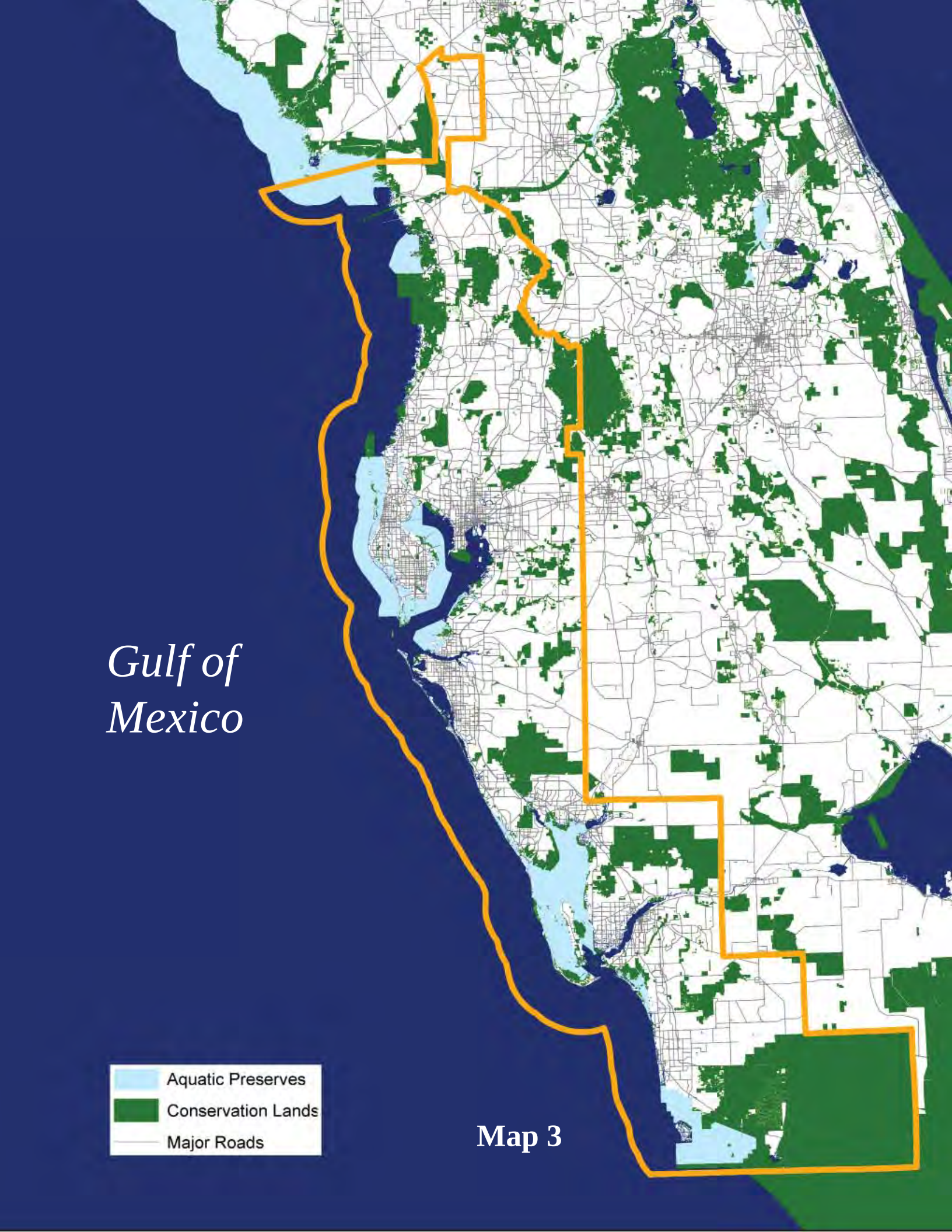
Table 3: Land Acquisition Projects									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Edison Farms Trust	10,000,000			10,000,000	33,300,000			33,300,000	33,300,000
Lemon Bay Watershed	1,950,000			1,950,000	1,950,000			1,950,000	1,950,000
Little Sarasota Bay Watershed		10,000,000		10,000,000		23,738,280		23,738,280	23,738,280
Manatee County Natural Resource Program	5,000,000	5,000,000		10,000,000	5,000,000	5,000,000	5,000,000	15,000,000	50,000,000
Manatee-Hillsborough Conservation Corridor		465,000	946,450	1,411,450		465,000	946,450	1,411,450	1,581,000
Strategic Coastal Land Acquisition Project	10,000,000			10,000,000	15,000,000	15,000,000	15,000,000	45,000,000	90,000,000
Whitaker Bayou Greenway	3,500,000			3,500,000	3,500,000			3,500,000	3,500,000
Total	**30,450,000**	**15,465,000**	**946,450**	**46,861,450**	**58,750,000**	**44,203,280**	**20,946,450**	**123,899,730**	**204,069,280**

Large, landscape scale connections improve wildlife and habitat diversity, foster natural freshwater distribution and assist with management. The photo of Babcock Ranch State Preserve below shows cypress sloughs, cypress domes and open water as components within a pine flatwood that has recently been managed with fire. Strategically placed land conservation through acquisition of title or conservation easement coupled with restoration yield big rewards in water quality, wildlife diversity and tourism benefits.

Map 3 displays designated Aquatic Preserves, managed by the State of Florida and existing conservation lands managed by governments and non-profit organizations.

Photo by Lisa Beever
Charlotte Harbor National Estuary Program

Table 4: Coastal Habitat Restoration Projects									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Childs Park Wetland Creation & Education	50,000	200,000	0	250,000	50,000	200,000		250,000	400,000
Cooper's Point Restoration	0	0	100,000	100,000			100,000	100,000	500,000
Duette Preserve Longleaf Pine Restoration	0	843,894	285,450	1,129,344		843,894	285,450	1,129,344	1,375,869
Fruit Farm Creek Mangrorve Restoration	500,000	500,000	400,000	1,400,000	500,000	500,000	400,000	1,400,000	1,400,000
Hatchett Creek Shoreline and Waterway	0	480,000	0	480,000		480,000		480,000	480,000
Hillsborough Co. Exotic Plant Removal	2,500,000	4,000,000	3,500,000	10,000,000	2,500,000	4,000,000	6,000,000	12,500,000	20,000,000
Lemon Bay Habitat Restoration	200,000	1,050,000	0	1,250,000	200,000	1,050,000		1,250,000	500,000
Long-term enhancement of mangrove wetlands	50,000	700,000	1,500,000	2,250,000	500,000	700,000	1,500,000	2,700,000	50,000
New St. Petersburg Pier Underwater Feature	60,000	250,000	250,000	560,000	60,000	250,000	250,000	560,000	900,000
Newman Branch Creek Phase III Fisheries	100,000	145,000	0	245,000	100,000	145,000		245,000	245,000
Robinson Preserve II Restoration - MC List 2	550,000	3,700,000	50,000	4,300,000	550,000	3,700,000	50,000	4,300,000	4,450,000
Rock Ponds Ecosystem Restoration Project	0	3,579,106	3,579,105	7,158,211		3,579,106	3,579,105	7,158,211	7,158,211
Sarasota Bay Wetland and Coastal Habitat	150,000	150,000	150,000	450,000	150,000	150,000	150,000	450,000	750,000
Sarasota County Coastal Barrier Island Program	70,000	1,195,000	1,380,000	2,645,000	70,000	1,195,000	1,380,000	2,645,000	3,480,000
Six Mile Cypress Slough Preserve North	100,000	500,000	500,000	1,100,000	100,000	500,000	500,000	1,100,000	1,200,000
Smokehouse Bay Preserve mosquito ditch	90,000	0	0	90,000	90,000			90,000	90,000
Tampa Port Authority–McKay Bay Parcel	70,000	100,000	0	170,000	70,000	100,000		170,000	100,000
Tampa Port Authority – Tampa Bypass Canal	100,000	75,000	0	175,000	100,000	75,000		175,000	150,000
Terra Ceia Ecosystem Restoration – Phase 2	0	0	2,375,000	2,375,000			2,375,000	2,375,000	4,750,000
Ulele Springs Restoration Project	35,000	0	0	35,000	35,000			35,000	35,000
Total	**4,625,000**	**17,468,000**	**14,069,555**	**36,162,555**	**5,075,000**	**17,468,000**	**16,569,555**	**39,112,555**	**48,014,080**


Gulf of Mexico
Aquatic Preserves
Conservation Lands
Major Roads

Map 3

Photo by Maran Hilgendorf
Charlotte Harbor National Estuary Program

4. Restore Water Quality

The Gulf of Mexico experiences numerous water quality problems, including excess nutrients, altered sediment inputs, pathogens, and mercury and other pollutants. One of the most prevalent signs of such problems in the Gulf of Mexico is hypoxia—low oxygen levels in the water—which can result from excess nutrients in the water and other factors. Within this goal, a major focus is to reduce the amount of nutrients flowing into the Gulf and to undertake other measures to enhance water quality.

Major actions identified in the Restoration Strategy include:

- Decrease and manage excess nutrient levels in the Gulf through the development and implementation of state nutrient reduction frameworks.
- Focus restoration actions in priority watersheds to address excess nutrients in coastal waters and reduce hypoxic conditions.
- Reduce pollutants and pathogens from stormwater flows and other sources.
- Improve the quality and quantity of freshwater flow into priority estuaries to protect their health and resiliency.
- Coordinate and expand existing water quality monitoring efforts supporting adaptive management of programs and projects designed to improve water quality.
- Collaborate with Mexico to assess and reduce emissions from oceangoing vessels in the Gulf that degrade water quality.

Southwest Florida organizations submitted 22 projects to address excess nutrients in coastal waters and reduce hypoxic conditions (Nutrients and Dissolved Oxygen Reduction), 56 projects to reduce pollutants and pathogens from stormwater flows (Stormwater), 26 projects to improve the quality and quantity of freshwater flow (Freshwater Flow) and 14 projects to coordinate and expand existing water quality monitoring efforts (Water Quality Monitoring). The joint Florida NEPs recommended 13 priority nutrient and dissolved oxygen projects, 16 priority stormwater projects, 13 priority freshwater flow projects and 12 priority water quality monitoring projects.

Tables 5, 6, 7 and 8 display the specific priority projects. Note that some projects were bundled for presentation within this document and to recognize increased regional value of like projects reviewed as a group.

Table 5: Nutrients and Dissolved Oxygen Reduction Projects									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Longboat Key Wastewater Forcemain	1,000,000	1,000,000	8,000,000	10,000,000	1,000,000	1,000,000	14,000,000	16,000,000	16,000,000
Pine Island Water & Sewer Service		700,000	2,238,100	2,938,100		700,000	2,238,100	2,938,100	2,938,100
Reclaimed Water System Expansion	250,000	1,725,000	1,225,000	3,200,000	250,000	1,725,000	1,225,000	3,200,000	5,150,000
Regional Reclaimed Water Interconnection	8,400,000	1,600,000		10,000,000	8,400,000	160,000,000	160,000,000	328,400,000	800,000,000
Charlotte County Central Sewer Expansion	500,000	3,400,000	4,900,000	8,800,000	500,000	3,400,000	4,900,000	8,800,000	16,070,000
Septic Tank replacement	10,000,000		20,000,000	30,000,000	23,000,000	50,000,000	129,000,000	202,000,000	379,900,000
Sugarmill Woods Wastewater Treatment		7,696,904		7,696,904		7,696,904		7,696,904	7,696,904
SWWRF Process for Nitrogen Removal		2,950,000		2,950,000		2,950,000		2,950,000	2,950,000
City, Sarasota Reclaimed Water Recharge	200,000	275,000	725,000	1,200,000	200,000	275,000	725,000	1,200,000	8,300,000
City of Sarasota Deep Injection Well & Pump	500,000	1,850,000	1,750,000	4,100,000	500,000	1,850,000	1,750,000	4,100,000	4,100,000
Total	**20,850,000**	**21,196,904**	**38,838,100**	**80,885,004**	**33,850,000**	**229,596,904**	**313,838,100**	**577,285,004**	**1,243,105,004**

The Celery Fields Regional Stormwater Treatment Park provides world renown recreation and birding opportunities

Table 6: Stormwater Projects									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
City of Bonita Springs Stormwater Plan	633,562	315,000	345,000	1,293,562	633,562	315,000	345,000	1,293,562	2,213,562
City of Bradenton Stormwater Plan	0	250,000	500,000	750,000		250,000	500,000	750,000	3,000,000
Deertown Gully Outfall Improvements	0	1,225,000	0	1,225,000		1,225,000		1,225,000	1,225,000
Delaney Creek LID Improvements	0	0	100,000	100,000			100,000	100,000	750,000
Gulfport - 49th Street Stormwater Retrofit	0	1,356,000	340,000	1,696,000		1,356,000	340,000	1,696,000	1,696,000
Pollutant Reduction by Sanibel Island Partners	680,000	500,000	500,000	1,680,000	680,000	500,000	500,000	1,680,000	1,680,000
Martin Luther King Park Project	0	250,000	0	250,000		250,000		250,000	250,000
Prospect Lake Expansion	900,000	0	0	900,000	900,000			900,000	450,000
Springs Stormwater Improvement	368,356	442,306	206,180	1,016,842	368,356	442,306	206,180	1,016,842	1,673,607
Stormwater Retrofit Feasibility Study	250,000	250,000	250,000	750,000	250,000	250,000	250,000	750,000	1,250,000
Urban LID Implementation	0	200,000	800,000	1,000,000		200,000	800,000	1,000,000	1,000,000
West Marsh Project	300,000	0	5,115,000	5,415,000	300,000		5,115,000	5,415,000	5,415,000
Westshore Waterways Improvement, phase 2	2,100,000	2,000,000	500,000	4,600,000	2,100,000	2,000,000	500,000	4,600,000	5,000,000
Total	**5,231,918**	**6,788,306**	**8,656,180**	**20,676,404**	**5,231,918**	**6,788,306**	**8,656,180**	**20,676,404**	**25,603,169**

Water management districts, counties and cities throughout southwest Florida have committed to providing high quality stormwater projects, such as the Celery Fields Regional Stormwater Treatment Park shown to the left. These projects are designed to provide highly cost effective nutrient removal. However, they also provide quality habitat for wildlife including migrating birds. These organization have found that they have the opportunity to provide treated stormwater, recreational opportunities, acclaim from tourists (including positive reviews on Internet sites) and recreation opportunities for their residents. Stormwater treatment parks, such as Billy's Creek filter marsh in Fort Myers, can also provide environmental justice components.

Table 7: Freshwater Flow Projects									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Alligator Creek Habitat Restoration Project	0	500,000	0	500,000		500,000		500,000	500,000
Babcock Ranch Park Hydrologic Restoration	250,000	425,000	425,000	1,100,000	250,000	425,000	425,000	1,100,000	1,100,000
C-43 West Basin Storage Reservoir	10,000,000	0	0	10,000,000	19,000,000	200,000,000	195,000,000	414,000,000	395,000,000
Charlotte Harbor Flatwoods Initiative	970,000	5,000,000	4,030,000	10,000,000	970,000	5,000,000	4,500,000	10,470,000	15,000,000
Coral Creek Ecosystem Restoration	230,000	250,000	620,000	1,100,000	230,000	250,000	620,000	1,100,000	900,000
Dona Bay Environmental Restoration	1,000,000	1,000,000	1,000,000	3,000,000	1,000,000	1,000,000	1,000,000	3,000,000	3,750,000
Manatee River Minimum Flow	550,000	550,000	0	1,100,000	550,000	550,000		1,100,000	1,100,000
Moving Water South	100,000	800,000	2,500,000	3,400,000	100,000	800,000	2,500,000	3,400,000	2,100,000
North Belle Meade Spreader Swale	0	500,000	500,000	1,000,000		500,000	500,000	1,000,000	7,000,000
North Golden Gate Estates Flowway	0	900,000	1,000,000	1,900,000		900,000	1,000,000	1,900,000	4,900,000
Six Mile Cypress Slough hydrologic restoration	0	40,000	25,000	65,000		40,000	25,000	65,000	65,000
Southwest Lehigh Weirs Project	1,028,000	1,028,000	0	2,056,000	1,028,000	1,028,000		2,056,000	2,056,000
Sweetwater Creek Improvement Project	70,000	80,000	1,100,000	1,250,000	70,000	80,000	1,100,000	1,250,000	1,100,000
Total	**14,198,000**	**11,073,000**	**11,200,000**	**36,471,000**	**23,198,000**	**211,073,000**	**206,670,000**	**440,941,000**	**434,571,000**

Table 8: Water Quality Monitoring									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Regional Ambient Monitoring Program	12,964,397	3,183,003	2,877,229	19,024,629	12,964,397	13,183,003	2,877,229	29,024,629	31,231,884
Warm Mineral Springs Data Summary	0	50,000	0	50,000		50,000		50,000	50,000
Total	**12,964,397**	**3,233,003**	**2,877,229**	**19,074,629**	**12,964,397**	**13,233,003**	**2,877,229**	**29,074,629**	**31,281,884**

5. Replenish and Protect Living Coastal and Marine Resources

Living coastal and marine resources are showing visible signs of distress, such as depleted species populations and degraded habitats. Within this goal, a major focus is to promote sustainable resource management that focuses on actions to conserve and restore viable populations of living coastal and marine resources and their coastal and offshore environments.

Major actions identified in the Restoration Strategy include:

- Restore depleted populations of living coastal and marine resources.
- Conserve and protect offshore environments.
- Restore and protect oyster and coral reefs, and other coastal environments.
- Coordinate and expand existing Gulf monitoring efforts to track sentinel species and sites.
- Minimize, and eliminate where possible, invasive species that impact the Gulf of Mexico.

Southwest Florida organizations submitted eight projects to restore depleted populations of living coastal and marine resources (Animal Populations), 19 projects to restore and protect oyster and coral reefs, and other coastal environments (Reefs and Other Coastal Environments) and 13 projects to track sentinel species and sites (Monitoring and Assessment of Sentinel Species). The joint Florida NEPs recommended 2 priority animal populations projects, 13 priority reefs and other coastal environment projects and 13 priority monitoring and assessment of sentinel species projects.

Tables 9, 10 and 11 display the specific priority projects. Note that some projects were bundled for presentation within this document and to recognize increased regional value of like projects reviewed as a group.

Table 9: Animal Populations									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Cross Florida Barge Canal Boat Ramp (Manatee avoidance)	5,700,000	0	0	5,700,000	5,700,000			5,700,000	5,700,000
Southwest Florida Bay Scallop Stabilization	160,277	211,350	216,801	588,428	160,277	211,350	216,801	588,428	2,409,881
Total	**5,860,277**	**211,350**	**216,801**	**6,288,428**	**5,860,277**	**211,350**	**216,801**	**6,288,428**	**8,109,881**

Table 10: Reefs and Other Coastal Environments									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Alafia Bank Bird Sanctuary Living Shoreline	900,000	900,000	0	1,800,000	900,000	900,000		1,800,000	1,800,000
Bayshore Boulevard Seawall Oyster Domes	233,663	233,662	233,663	700,988	233,663	233,662	233,663	700,988	894,650
Chassahowitzka Spring Dredging Restoration	439,600	395,000	0	834,600	439,600	395,000		834,600	1,247,800
Coastal island bird monitoring & protection	40,000	0	0	40,000	40,000			40,000	40,000
Crystal River – Kings Bay Sediment Removal	250,000	9,750,000	0	10,000,000	250,000	3,500,000	25,000,000	28,750,000	28,750,000
Ft Desoto Recirculation Phase II	55,000	345,000	0	400,000	55,000	345,000		400,000	400,000
Greater Tampa Bay Bird Islands Restoration	250,000	250,000	250,000	750,000	250,000	250,000	250,000	750,000	750,000
Oyster Reef Restoration	3,662,113	3,503,738	4,526,600	11,692,451	3,662,113	3,503,738	4,526,600	11,692,451	28,502,819
Total	**5,830,376**	**15,377,400**	**5,010,263**	**26,218,039**	**5,830,376**	**9,127,400**	**30,010,263**	**44,968,039**	**62,385,269**

Table 11: Monitoring and Assessment of Sentinel Species									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Applied Seagrass Assessment	76,000	393,500	300,000	769,500	76,000	393,500	300,000	769,500	1,594,500
Benthic Habitat Mapping of Coastal Ecosystem	330,000	330,000	330,000	990,000	330,000	330,000	330,000	990,000	1,980,000
Snook & Redfish Water Structure Remediation	0	15,000	20,000	35,000		15,000	20,000	35,000	180,000
Seagrass Monitoring	107,220	626,666	110,568	844,454	107,220	626,666	110,568	844,454	2,034,806
Tampa Bay Benthic Monitoring Program	121,640	121,640	121,640	364,920	121,640	121,640	121,640	364,920	1,216,407
Tampa Bay Coastal Habitat Assessment	150,000	200,000	200,000	550,000	150,000	200,000	200,000	550,000	1,150,000
Total	**784,860**	**1,686,806**	**1,082,208**	**3,553,874**	**784,860**	**1,686,806**	**1,082,208**	**3,553,874**	**8,155,713**

Map 3, on the next page, displays seagrass coverage map completed in 2008 by the Southwest Florida Water Management District (SWFWMD) and the South Florida Water Management District (SFWMD) for the NEP areas. Seagrasses are vital to manatees, scallops and other coastal animal populations. Seagrass is a defined habitat with unique qualities. Year 2008 was the latest map for the SFWMD area. Since that date, SWFWMD maintained its commitment for biennial seagrass mapping within the NEP areas. Updates to the SFWMD area map and north of the TBEP study area are needed.

The photograph below demonstrates volunteer oyster restoration.

Photo by Catherine Corbett
Charlotte Harbor National Estuary Program

Map 4

Photo by Tampa BayWatch

6. Enhance Community Resilience

Gulf Coast communities face a number of pressing challenges, such as storm risk, sea-level rise, land loss, depletion of natural resources, and compromised water quality. Within this goal, a major focus is to integrate the creation of resilient communities with ecosystem restoration through the development of comprehensive coastal planning programs.

Major actions identified in the Restoration Strategy include:

- Develop and implement comprehensive, scientifically based, and stakeholder-informed coastal improvement programs.
- Provide analytical support tools to enhance community planning, risk assessment and smart growth implementation.
- Enhance environmental education and outreach.

Southwest Florida organizations submitted one project to implement stakeholder-informed coastal improvement programs (Comprehensive Coastal Programs), one project to provide analytical support tools (Comprehensive Analytical Tools) and 11 projects to enhance environmental education and outreach (Environmental Education). The joint Florida NEPs recommended the priority comprehensive coastal program project, the priority comprehensive analytical tool project and nine priority environmental education projects.

Tables 12, 13 and 14 display the specific projects. Note that some projects were bundled for presentation within this document and to recognize increased regional value of like projects reviewed as a group.

Table 12: Comprehensive Coastal Programs									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Resilient and Consistent Florida Coastal Elements	100,000	200,000	200,000	500,000	100,000	200,000	200,000	500,000	500,000
Total	**100,000**	**200,000**	**200,000**	**500,000**	**100,000**	**200,000**	**200,000**	**500,000**	**500,000**

Table 13: Comprehensive Analytical Tools									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Environmental Services Provided by the Gulf	200,000	200,000	100,000	500,000	200,000	200,000	100,000	500,000	500,000
Total	**200,000**	**200,000**	**100,000**	**500,000**	**200,000**	**200,000**	**100,000**	**500,000**	**500,000**

Table 14: Environmental Education									
Projects	**Year 1 capped**	**Year 2 capped**	**Year 3 capped**	**Total 3-yr capped**	**Year 1 uncapped**	**Year 2 uncapped**	**Year 3 uncapped**	**Total 3-yr uncapped**	**Total Request**
Be Floridian Fertilizer Education Campaign	0	150,000	150,000	300,000		150,000	150,000	300,000	750,000
Pollutant reduction by on-site inspections	67,876	69,912	72,010	209,798	67,876	69,912	72,010	209,798	439,050
FISH Preserve Interpretation Plan	0	0	675,000	675,000			675,000	675,000	675,000
Regional NEP Education Program	900,000	900,000	900,000	2,700,000	900,000	900,000	900,000	2,700,000	11,800,000
Stormwater Pond Education	275,000	300,000	275,000	850,000	275,000	300,000	275,000	850,000	1,275,000
	1,242,876	**1,419,912**	**2,072,010**	**4,734,798**	**1,242,876**	**1,419,912**	**2,072,010**	**4,734,798**	**14,939,050**

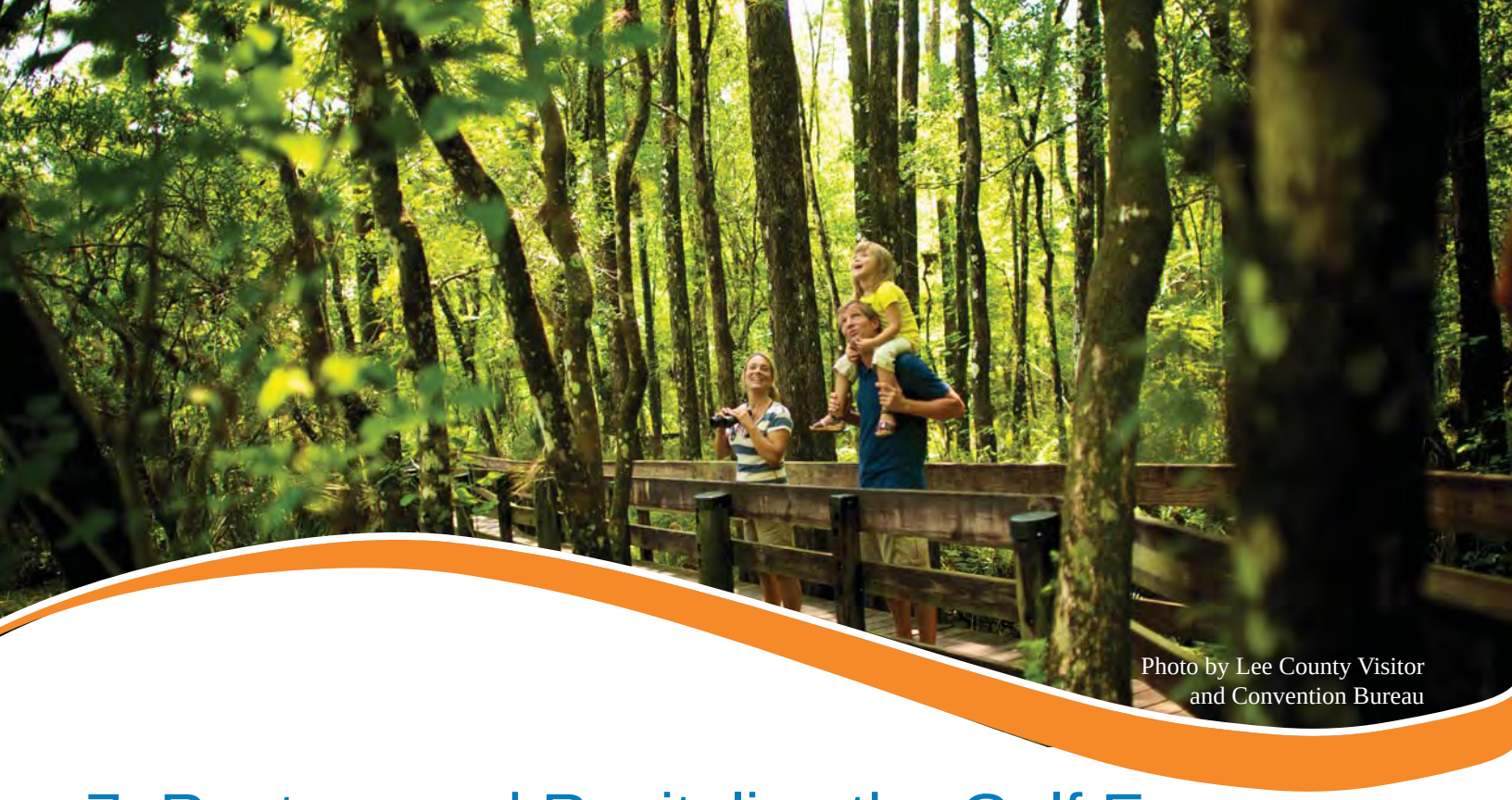


Photo by Lee County Visitor and Convention Bureau

7. Restore and Revitalize the Gulf Economy

The Council identified a fifth goal for inclusion in their Comprehensive Plan: Restore and Revitalize the Gulf Economy. This fifth goal focuses on reviving and supporting a sustainable Gulf economy to ensure that those expenditures by the States authorized in the Act under the State allocation and the oil spill restoration impact allocation can be considered in the context of comprehensive restoration.

Southwest Florida has developed with a sustainable economic foundation of agriculture, fisheries and tourism. This "three legged stool" was successful for much of the 20th century. This foundation was made precarious by an over-dependence upon rapid non-sustainable construction speculation in this century. Since the turn of the century, the people and businesses of our region are reeling from the consequences of suburban sprawl, housing market volatility and economic downturn, coupled with increasing climate change and storm hazard vulnerability.

Currently, Southwest Florida is dependent on tourism, the healthcare industry, agriculture and constructure for the majority of its employment. Although the housing bubble, financial crisis and global agricultural markets created severe hardships for this region, tourism expenditures have increased annually over the last several years. The Southwest Florida economy is interdependent with a healthy environment, especially with clean water.

The annual survey conducted by the Lee County Visitor and Convention Bureau reveals that a "clean, unspoiled environment" is consistently a greater influence to travel decisions to Southwest Florida than "convenient location," "good value for the money," "upscale accommodations" and many other factors. Since tourism is the number one employer in many southwest Florida communities, accounting for 1 of every 5 jobs, a healthy environment is economically critical. Many new southwest Florida residents became acquainted to the area as tourists, ultimately supporting construction and healthcare activity.

The Federal government uses a standard of one job per $100,000 to estimate job creation from funded projects. At that rate, the implemented Regional Plan represents approximately 1,000 jobs annually for the first three

years. Upon implementation of most Regional Plan projects, additional longterm jobs are inherent for operations and maintenance of the projects, as well as for improved tourism and ecosystem services.

Ecosystem Services are the multitude of resources and processes that are supplied by natural ecosystems. "Ecosystems Services" refers to a wide range of natural processes that help sustain and fulfill human life, such as:

- Purification of air and water
- Detoxification and decomposition of wastes
- Pollination of crops and natural vegetation
- Cycling and movement of nutrients
- Protection of coastal shores from erosion by waves
- Moderation of weather extremes and their impacts
- Provision of aesthetic beauty and intellectual stimulation that lift the human spirit.

The United Nations 2004 Millennium Ecosystem Assessment grouped ecosystem services into four broad categories:

- Provisioning, such as the production of food and water
- Regulating, such as the control of climate and disease
- Supporting (Habitat), such as nutrient cycles and crop pollination
- Cultural (Socio-economic), such as spiritual and recreational benefits

In a study prepared by the Sanibel-Captiva Conservation Foundation and the Southwest Florida Regional Planning Council for the Dunn Foundation (in press), total ecosystem services values ranged from $53 per acre for fallow cropland to $443,898 per acre for a swimming beach (in 2012 dollars). Common restored and created habitats within the Regional Plan include total ecosystem service values of $255,495 per acre for mangrove swamps, $93,829 per acre for continuous seagrass, $46,914 per acre for patchy seagrass and $39,623 per acre for oyster bars. Total increase in projected total ecosystem service values is estimated in the tens of billions of dollars.

Furthermore, a recent study completed by Sarasota Bay Estuary Program demonstrated that area home values (Sarasota and Manatee County) estimated at $100 billion have value added due to proximity to the Bay and Gulf at $3.6 billion. The region supports a wide diversity of industry including the Ports of Tampa and Manatee as well as one of the largest commercial fishing fleets (with international trade) in the Gulf (at Cortez) in Sarasota Bay.

Photo by Lee County Visitor and Convention Bureau

Swimming beaches provide total ecosystem service values of over $400,000 per acre.

Photo by Lee County Visitor and Convention Bureau

8. Recommendations

The Southwest Florida National Estuary Programs (NEPs) are uniquely qualified to assist the Council and State of Florida in coordinating and implementing the Council's Comprehensive Plan. Our long history (20+ years) has fostered strong and broad community partnerships comprised of citizens, local and state governments, regulators, non-governmental organizations (NGOs), academics and Federal agencies focused on science-based solutions to address impacts to estuarine and coastal natural resources. The non-regulatory regional collaborative approach developed by the Southwest Florida NEPs has a proven track record of successfully implementing Comprehensive Conservation and Management Plans (CCMPs), developing regional nutrient criteria recommendations (subsequently adopted by the State and EPA), and conducting watershed-scale habitat and water quality restoration programs. We are recognized as honest brokers in developing and facilitating complex multi-entity processes to address common restoration goals.

The NEPs have scientific/technical expertise and facilitation capabilities to assist in implementing the Gulf Restoration Plans, including stakeholder partnership, scientific expertise, community education and outreach, monitoring, and regulatory support at the regional level. In addition, the NEPs provide:

- Efficient regional implementation of federal and state programs through CCMPs
- Facilitation and leveraging multiple entities to improve regional water quality, implement habitat restoration and improve aquatic life
- Community-supported, federally authorized Comprehensive Conservation Plans to build upon
- Strong regional constituents (public and private)
- Effective outreach strategies
- Solid program management structures in place
- Long histories of facilitating solutions to improve and protect our estuaries
- Proven track record of successful water quality and habitat restoration and protection
- Experienced grant and program administrators.

This section summarized our recommendations for the long-term program of restoration. The first three years are summarized in the executive summary (Table 1 and 2) The appendix provide additional information regarding all recommended projects.

Previously Authorized Projects

The RESTORE Act requires the Council to prepare a list of "previously authorized projects" that have not yet commenced. The Southwest Florida NEPs have opted to define previously authorized projects as those that had permits prior to July 6, 2012. Of the 236 recommended projects, submitting organizations reported that 15 had received permits by that date.

Table 15: Previously Authorized Projects

Submitting Organization	Title	Action Title	Requested Funding
Coastal Resources Group, Inc. (CRG)	Fruit Farm Creek Mangrove Restoration Project	Coastal Habitat Restoration	$1,400,000
Southwest Florida Water Management District	Rock Ponds Ecosystem Restoration Project	Coastal Habitat Restoration	$7,158,211
Lee County	Smokehouse Bay Preserve mosquito ditch backfilling	Coastal Habitat Restoration	$90,000
Manatee County	SWWRF Process Modification for Nitrogen Removal	Nutrients/DO	$2,950,000
City of North Port	Major canal dredging	Stormwater	$3,841,680
City of Clearwater	Prospect Lake Expansion	Stormwater	$450,000
Lee County	Ten Mile Canal Filter Marsh Phase II	Stormwater	$2,000,000
East County Water Control District	Southwest Lehigh Weirs Project	Freshwater Flows	$2,056,000
Lee County	Fichter's Creek Restoration	Freshwater Flows	$1,000,000
Lee County, South Florida Water Management District	C-43 West Basin Storage Reservoir	Freshwater Flows	$395,000,000
Lee County, Division of Natural Resources	Tarpon Reef	Replenish Animal Population	$590,519
Charlotte County	Capt. Jeff Steele Memorial Artificial Reef Habitat Enhancement	Replenish Animal Population	$500,000
Southwest Florida Water Management District	Chassahowitzka Spring Dredging Restoration Phases I and II	Reefs and Other Coastal Environments	$1,247,800
Tampa Bay Watch, Inc.	MacDill AFB Oyster Reef Creation Project	Reefs and Other Coastal Environments	$167,000
Florida Gulf Coast University	Tidal Caloosahatchee River: Submerged Aquatic Vegetation Restoration, Enhancement and Monitoring	Reefs and Other Coastal Environments	$2,313,536
		Total	$420,764,746

After rules are provided by the Treasury Department regarding RESTORE Act funding, more will probably be understood regarding definitions of "previously authorized projects." At that point, the southwest Florida NEPs can assist the Council in identifying such projects for southwest Florida.

Table 16: 10-Year Plan Summary				
Goal	**Major Action**	**Number of Projects**	**Capped at $10 million/project**	**As Requested**
Restore and Conserve Habitat	Land Acquisition	9	$54,797,840	$211,836,120
Restore and Conserve Habitat	Coastal Habitat Restoration	55	$84,161,711	$85,360,554
Restore Water Quality	Nutrients/ Dissolved Oxygen	22	$143,580,194	$1,341,775,254
Restore Water Quality	Stormwater	56	$146,395,344	$160,632,109
Restore Water Quality	Freshwater Flows	26	$93,203,250	$507,926,250
Restore Water Quality	Water Quality Monitoring	14	$29,982,953	$33,376,828
Replenish and Protect Living Coastal and Marine Resources	Replenish Animal Population	8	$9,313,773	$10,450,400
Replenish and Protect Living Coastal and Marine Resources	Reefs and Other Coastal Environments	19	$43,778,827	$78,354,474
Replenish and Protect Living Coastal and Marine Resources	Monitoring and Assessment of Sentinel Species	13	$8,243,676	$8,513,243
Enhance Community Resilience	Comprehensive Coastal Programs	2	$1,000,000	$1,000,000
Enhance Community Resilience	Analytical Tools for Planning	1	$500,000	$500,000
Enhance Community Resilience	Environmental Education	11	$9,514,050	$15,539,050
	Total	**236**	**$624,471,618**	**$2,455,264,282**

The Regional Plan recommends a ten million dollar cap on requested funds for each individual project submitted. In doing so, geographic distribution of projects are enhanced without overwhelming anticipated funding. At the time of this writing, rules from the Treasury Department concerning RESTORE Act funds have not been issued, the Clean Water Act fine amounts have not been identified and additional guidance from the Council concerning funding is not available. Therefore, we present both requested amounts and capped amounts within the Regional Plan.

Table 16 summarizes the 10-year Regional Plan, with a ten million dollar cap on projects and without the cap (as requested). Two-hundred and thirty six (236) of the 279 restoration and related projects were recommended for the 10-year plan. Projects are distributed among each of the Restoration Strategy four goals and supports the fifth goal, “Restore and Revitalize the Gulf Economy” adopted by the Council.

Table 17: 3-Year Plan Summary				
Goal	**Major Action**	**Number of Projects**	**Capped at $10 million/project**	**As Requested**
Restore and Conserve Habitat	Land Acquisition	7	$46,861,450	$123,899,730
Restore and Conserve Habitat	Coastal Habitat Restoration	30	$36,162,555	$39,112,555
Restore Water Quality	Nutrients/ Dissolved Oxygen	13	$80,885,004	$577,285,004
Restore Water Quality	Stormwater	16	$20,676,404	$20,676,404
Restore Water Quality	Freshwater Flows	13	$36,471,000	$440,941,000
Restore Water Quality	Water Quality Monitoring	12	$19,074,629	$29,074,629
Replenish and Protect Living Coastal and Marine Resources	Replenish Animal Population	2	$6,288,428	$6,288,428
Replenish and Protect Living Coastal and Marine Resources	Reefs and Other Coastal Environments	13	$26,218,039	$44,968,039
Replenish and Protect Living Coastal and Marine Resources	Monitoring and Assessment of Sentinel Species	11	$3,553,874	$3,553,874
Enhance Community Resilience	Comprehensive Coastal Programs	1	$500,000	$500,000
Enhance Community Resilience	Analytical Tools for Planning	1	$500,000	$500,000
Enhance Community Resilience	Environmental Education	9	$4,734,798	$4,734,798
	Total	**128**	**$281,926,181**	**$1,291,534,461**

Table 17 summarizes the 3-year Regional Plan, with a ten million dollar cap on projects and without the cap (as requested). One-hundred and twenty eight (128) of the 279 restoration and related projects were recommended for the 3-year plan. Projects are distributed among each of the Restoration Strategy four goals and supports the fifth goal, “Restore and Revitalize the Gulf Economy” adopted by the Council.

Appendix

The Appendix is the table of projects that are approved for the *Southwest Florida Regional Ecosystem Restoration Plan* (Regional Plan). The Regional Plan projects are organized by Goals and Major Actions approved in the *Gulf of Mexico Regional Ecosystem Restoration Strategy* (Restoration Strategy). The Restoration Strategy was prepared by the Gulf Coast Ecosystem Restoration Task Force in accordance with Executive Order 13554.

The table includes the project title, submitting organizations, funding needed, whether the project is recommended for the 3-year plan or a 10-year plan and a raw group score. The group score provides some sense of priority, with the lower score representing higher priority.

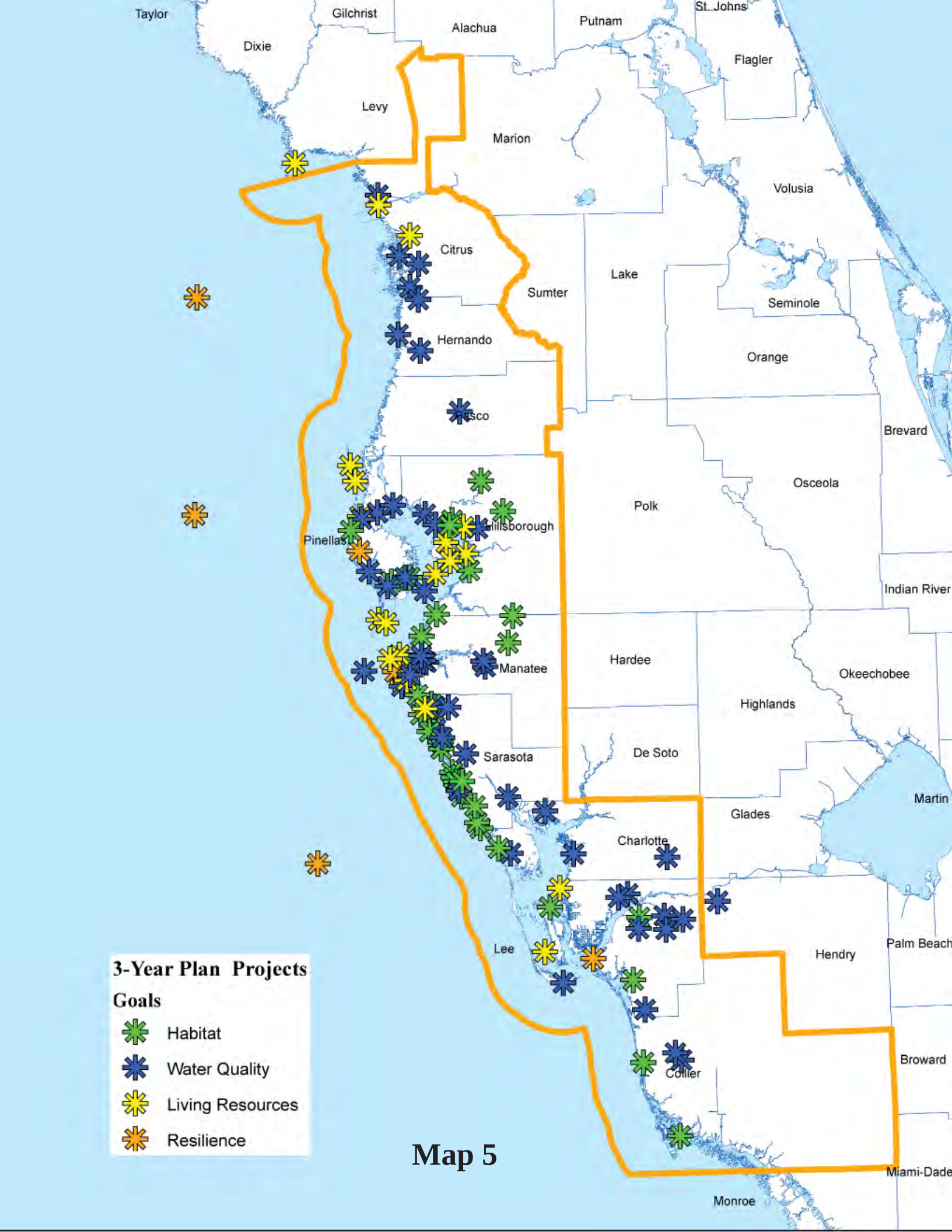
The Southwest Florida National Estuary Programs (NEPs) offer these projects for consideration by the Gulf Coast Ecosystem Restoration Council (Council) and the State of Florida regarding restoration needs in Southwest Florida as they make Gulf-wide decisions under the 2012 RESTORE Act. However, we encourage the use of this plan and the projects herein for consideration by any funding source.

The database with project details, including tables, queries and reports prepared to generate the Regional Plan, can be downloaded at:

www.tbeptech.org/DATA/RESTORE_ACT/SWFRER_Plan_3-8-2013.accdb

or

www.chnep.wateratlas.usf.edu/upload/documents/SWFRER_Plan,%203-8-2013.accdb


Taylor
Gilchrist
Alachua
Putnam
St. Johns
Dixie
Flagler
Levy
Marion
Volusia
Citrus
Lake
Sumter
Seminole
Hernando
Orange
Pasco
Brevard
Osceola
Polk
Hillsborough
Pinellas
Indian River
Hardee
Manatee
Okeechobee
Highlands
Sarasota
De Soto
Martin
Glades
Charlotte
Lee
Hendry
Palm Beach
Broward
Collier
Miami-Dade
Monroe
3-Year Plan Projects
Goals
Habitat
Water Quality
Living Resources
Resilience

Map 5

Final 3-Year and 10-Year Plans by Action
Approved March 8, 2013

Appendix

* Raw Group Score = The summed project criteria scores. Potential raw group scores range from 4 (highest ranked) to 12 (lowest ranked). See text for definition.

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
Coastal Habitat Restoration					
	3Yr	Manatee County	Robinson Preserve II Restoration - MC List 2	5	$4,450,000.00
	3Yr	SWFWMD	Rock Ponds Ecosystem Restoration Project	5	$7,158,211.00
	3Yr	City of Venice	Hatchett Creek Shoreline and Waterway Restoration	6	$480,000.00
	3Yr	Coastal Resources Group, Inc. (CRG)	Fruit Farm Creek Mangrove Restoration Project	6	$1,400,000.00
	3Yr	Ecosphere	Newman Branch Creek Phase III Fisheries Habitat Restoration	6	$245,000.00
	3Yr	SBEP	Sarasota Bay Wetland and Coastal Habitat Restoration	6	$750,000.00
	3Yr	City of Clearwater	Cooper's Point Restoration and Access Improvement Project	7	$500,000.00
	3Yr	Ecosphere	Ulele Springs Restoration Project	7	$35,000.00
	3Yr	Hillsborough County	Hillsborough County Parks, Recreation and Conservation's Re	7	$20,000,000.00
	3Yr	Lee County Conservation 20/20 Program	Smokehouse Bay Preserve mosquito ditch backfilling	7	$90,000.00
	3Yr	Sarasota County	North Jetty Beach	7	$40,000.00
	3Yr	Sarasota County	Manasota Beach	7	$40,000.00
	3Yr	Sarasota County	Blind Pass Beach	7	$30,000.00
	3Yr	Sarasota County	Brohard Beach	7	$40,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	3Yr	Sarasota County	Turtle Beach	7	$150,000.00
	3Yr	Sarasota County	Siesta Beach	7	$2,500,000.00
	3Yr	Sarasota County	Nokomis Beach	7	$40,000.00
	3Yr	Sarasota County	Palmer Point Park	7	$20,000.00
	3Yr	Sarasota County	Venice Beach	7	$20,000.00
	3Yr	Sarasota County	Caspersen Beach	7	$100,000.00
	3Yr	Sarasota County	North Lido Beach	7	$500,000.00
	3Yr	Tampa Port Authority	Tampa Port Authority – McKay Bay Parcel Habitat Restoratio	7	$100,000.00
	3Yr	City of St. Petersburg	Childs Park Wetland Creation & Education Project,	8	$400,000.00
	3Yr	City of St. Petersburg	New St. Petersburg Pier Underwater Feature	8	$900,000.00
	3Yr	Florida Gulf Coast University	Long-term enhancement of tropical mangrove wetland ecosys	8	$50,000.00
	3Yr	Lee County Conservation 20/20 Program	Six Mile Cypress Slough Preserve North wetland enhancemen	8	$1,200,000.00
	3Yr	Manatee County	Duette Preserve Longleaf Pine Restoration though Silviculture	8	$1,375,869.00
	3Yr	Southwest Florida Water Management District	Lemon Bay Habitat Restoration Project	8	$500,000.00
	3Yr	SWFWMD	Terra Ceia Ecosystem Restoration – Phase 2	8	$4,750,000.00
	3Yr	Tampa Port Authority	Tampa Port Authority – Tampa Bypass Canal Habitat Restorat	8	$150,000.00
	10yr	City of Clearwater	Stevenson Creek Estuary Mangrove Planting Project	9	$200,000.00
	10yr	City of St. Petersburg	Bay Vista Park Beach Restoration	9	$300,000.00
	10yr	City of St. Petersburg	Boyd Hill Nature Preserve Wetlands Restoration	9	$170,000.00
	10yr	City of St. Petersburg	Grandview Restoration Project	9	$600,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	10yr	City of Tampa	Beachfront Parks Restoration Improvements	9	$10,800,000.00
	10yr	City of Tampa, DPW-Stormwater Engineering	Watrous Canal Rehabilitation and Enhancement	9	$1,500,000.00
	10yr	New College of Florida	New College Estuarine Beach Restoration	9	$20,000.00
	10yr	Pinellas County Parks & Conservation Resources	Ft. De Soto Park North Beach Dune Habitat Restoration	9	$8,000,000.00
	10yr	Sarasota County	Ted Sperling Park at South Lido Beach	9	$750,000.00
	10yr	SWFWMD	Palm River Restoration Project Phase II, East McKay Bay in Ta	9	$500,000.00
	10yr	Tampa Bay Estuary Program	Tampa Bay Environmental Fund Program	9	$1,750,000.00
	10yr	Town of Longboat Key	Longboat Pass Inlet and Surrounding Shoreline Improvements	9	$5,000,000.00
	10yr	City of Clearwater	Clearwater Beach Dune Restoration and Relocation	10	$150,000.00
	10yr	City of St. Petersburg	North Shore Park Beach Restoration	10	$1,900,000.00
	10yr	City of St. Petersburg	Maximo Park Shoreline Restoration	10	$250,000.00
	10yr	City of St. Petersburg	Maximo Park Intertidal Restoration	10	$350,000.00
	10yr	City of St. Petersburg	Lassing Park Beach Restoration	10	$300,000.00
	10yr	Conservation Foundation of the Gulf Coast	Restoration of Essential Habitats for Juvenile Tarpon and Sno	10	$148,474.00
	10yr	Hernando County BOCC	Pine Island Park and shoreline improvements	10	$270,000.00
	10yr	Hillsborough County	Feasibility Study and Design to Rehabilitate Mined Lands withi	10	$2,000,000.00
	10yr	Lee County Conservation 20/20 Program	Buttonwood Preserve wetland enhancement	10	$63,000.00
	10yr	Lee County Conservation 20/20 Program	Galt Preserve mangrove reconnection	10	$75,000.00
	10yr	Lee County Conservation 20/20 Program	Charlotte Harbor Buffer Preserve coastal wetland enhanceme	11	$250,000.00
	10yr	Lee County Conservation 20/20 Program	Deep Lagoon Preserve Restoration including drainage canals	11	$500,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	10yr	Manatee County	Manatee County Ecosystem Restoration Task Force	11	$1,500,000.00
Comprehensive Analytical Tools for Planning					
	3Yr	SWFRPC	Environmental Services Provided by the Gulf of Mexico	8	$500,000.00
Comprehensive Coastal Programs					
	3Yr	SWFRPC	Resilient and Consistent Coastal Elements for Florida's Gulf C	6	$500,000.00
	10yr	Pinellas County Parks & Conservation Resources	Comprehensive Management & Resiliency Plans for Pinellas C	10	$5,000,000.00
Environmental Education					
	3Yr	Tampa Bay Estuary Program	Be Floridian Fertilizer Education Campaign	5	$750,000.00
	3Yr	Florida west Coast NEPs	Regional NEP Education Program	7	$10,000,000.00
	3Yr	FISH Preserve - Manatee County - Historical Records Libr	FISH Preserve Interpretation Plan	8	$675,000.00
	3Yr	Lee County Natural Resources	Neighborhood Environmental Stewardship Training	8	$375,000.00
	3Yr	Manatee County	Enhance Community Resilience – Pollutant reduction from bu	8	$439,050.00
	3Yr	Pinellas County, Florida	Pinellas County Adopt-A-Pond Program	8	$900,000.00
	3Yr	SBEP	PIER/Bay Guardians Watershed Education	8	$900,000.00
	3Yr	SBEP	Virtual Watershed Tours	8	$450,000.00
	3Yr	SBEP	Bay Roamer's Guide	8	$450,000.00
	10yr	Tampa Bay Estuary Program	Regional Volunteer Restoration Program	9	$450,000.00
	10yr	New College	Sea Level Rise in Southwest Florida: Raising Minds about Risin	10	$150,000.00
Freshwater Flows					
	3Yr	Collier County	North Golden Gate Estates (NGGE) Flowway Restoration Pr	5	$4,900,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	3Yr	Lee County Natural Resources, SFWMD	C-43 West Basin Storage Reservoir	5	$395,000,000.00
	3Yr	SFWMD, Lee County	Charlotte Harbor Flatwoods Initiative/NW Lee County Surfac	5	$15,000,000.00
	3Yr	Sarasota County	Dona Bay Environmental Restoration	6	$3,750,000.00
	3Yr	Babcock Ranch Inc. (BRI) Board (501.c.3)	Babcock Ranch State Preserve Hydrologic Restoration – Tidal	8	$1,100,000.00
	3Yr	Collier County	North Belle Meade Spreader Swale	8	$7,000,000.00
	3Yr	East County Water Control District	Southwest Lehigh Weirs Project	8	$2,056,000.00
	3Yr	East County Water Control District	Moving Water South	8	$2,100,000.00
	3Yr	Hillsborough County	Sweetwater Creek Improvement Project	8	$1,100,000.00
	3Yr	Lee County Parks and Recreation	Six Mile Cypress Slough Preserve hydrological restoration	8	$65,000.00
	3Yr	Manatee County	Manatee River Minimum Flow	8	$1,100,000.00
	3Yr	Southwest Florida Water Management District	Coral Creek Ecosystem Restoration on the Cape Haze Penins	8	$900,000.00
	3Yr	Southwest Florida Water Management District	Alligator Creek Habitat Restoration Project Phase III in Punta	8	$500,000.00
	10yr	City of Tampa, DPW-Stormwater Engineering	Poinsetta Stormwater Pump Station Improvements	9	$1,000,000.00
	10yr	Collier County	Henderson Creek Diversion Pump Station	9	$5,700,000.00
	10yr	Collier County	South I-75 Canal Spreader Swale	9	$3,100,000.00
	10yr	Lee County Conservation 20/20 Program	Telegraph Creek Drainage Repairs	9	$400,000.00
	10yr	Lee County Conservation 20/20 Program	Caloosahatchee Creeks Preserve creek and wetland restorati	9	$500,000.00
	10yr	Lee County Natural Resources	Stumper Jumper Ranch Land Acquisition	9	$1,482,250.00
	10yr	Lee County Natural Resources	Four Corners/Florida Citrus Land Acquisition	9	$7,500,000.00
	10yr	Lee County Natural Resources	North Fort Myers Surface Water Master Plan	9	$26,000,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	10yr	Lee County Natural Resources	Fichter's Creek Restoration	9	$1,000,000.00
	10yr	Sarasota County	Removal of Agricultural Dam from Phillippi Creek	9	$5,000,000.00
	10yr	Lee County Natural Resources	Buckingham FGCU Watershed Restoration	10	$1,000,000.00
	10yr	Lee County Natural Resources	South Lee County Surface Water Plan	10	$20,373,000.00
	10yr	Lee County Conservation 20/20 Program	Bob Janes Preserve wetland restoration	11	$300,000.00
Land Acquisition					
	3Yr	Conservation Foundation of the Gulf Coast	Strategic Coastal Land Acquisition Project: Facilitating Coastal	6	$90,000,000.00
	3Yr	Manatee County	Manatee-Hillsborough Conservation Land Corridor	6	$1,581,000.00
	3Yr	Lee County Natural Resources	Edison Farms Trust Land Acquisition	7	$33,300,000.00
	3Yr	Sarasota County	Land Acquisition – Lemon Bay Watershed	7	$1,950,000.00
	3Yr	City of Sarasota Public Works	Whitaker Bayou Greenway Park and Watershed Restoration	8	$3,500,000.00
	3Yr	Manatee County	Manatee County Natural Resouorces Department Acquisition	8	$50,000,000.00
	3Yr	Sarasota County	Land Acquisition – Little Sarasota Bay Watershed	8	$23,738,280.00
	10yr	Caloosahatchee River Citizen Association	Beautiful Island acquisition	9	$6,500,000.00
	10yr	Sarasota County	Land Acquisition - Myakka River Watershed Restoration	11	$1,266,840.00
Monitoring and Assessment of Sentinal Species					
	3Yr	University of South Florida	Benthic Habitat Mapping of the Southwest Florida Coastal Eco	6	$1,980,000.00
	3Yr	Department of Integrative Biology, USF , Tampa	Enhanced monitoring of seagrass in Tampa Bay and Sarasota B	7	$1,425,000.00
	3Yr	Tampa Bay Estuary Program	Tampa Bay Critical Coastal Habitat Assessment	7	$1,150,000.00
	3Yr	EPC	Tampa Bay Benthic Monitoring Program	8	$1,216,407.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	3Yr	Florida Fish & Wildlife Research Institute, Florida Fish &	Effects of Water Control Structures on Juvenile Snook and Re	8	$180,000.00
	3Yr	Manatee County	Restore and Conserve Habitat - Sarasota Bay Seagrass Monito	8	$107,182.00
	3Yr	Mote Marine Laboratory	Predicting and Monitoring Seagrass Restoration Success – The	8	$169,500.00
	3Yr	Pinellas County	Random stratified seagrass sampling of Boca Ciega Bay and Fe	8	$166,000.00
	3Yr	Pinellas County	Clearwater Harbor and St. Joseph Sound Seagrass Monitoring	8	$166,000.00
	3Yr	SWFMWD	District Seagrass Mapping Project	8	$1,250,000.00
	3Yr	Tampa Bay Estuary Program	Tampa Bay Interagency Seagrass Monitoring Program	8	$345,624.00
	10yr	EPC	Hardbottom Inventory and Analysis to Improve Essential Fish	9	$93,530.00
	10yr	Pinellas County	Northern Pinellas County Baseline Benthic Survey	9	$264,000.00
Nutrients/DO					
	3Yr	Manatee County	SWWRF Process Modification for Nitrogen Removal	5	$2,950,000.00
	3Yr	Charlotte County Utilities	Restoration of Water Quality in the Impaired Waters of Char	7	$16,070,000.00
	3Yr	Pasco County Utilities	Regional Reclaimed Water System Interconnection and Ecosys	7	$800,000,000.00
	3Yr	Town of Longboat Key	Longboat Key Wastewater Subaqueous Forcemain Replaceme	7	$16,000,000.00
	3Yr	Citrus County Board of County Commissioners	Sugarmill Woods Wastewater Treatment Facility Expansion a	8	$7,696,904.00
	3Yr	City of Clearwater	Sewer System Expansion	8	$27,500,000.00
	3Yr	City of Safety Harbor	DeSoto Estates Sanitary Sewer Project	8	$1,000,000.00
	3Yr	City of Sarasota	The City of Sarasota's Comprehensive Environmental Protecti	8	$8,300,000.00
	3Yr	City of Sarasota Public Work/Utilities	The City of Sarasota's Comprehensive Environmental Protecti	8	$4,100,000.00
	3Yr	City of St. Petersburg	Reclaimed Water System Expansion	8	$5,150,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	3Yr	Hernando County BOCC	Pine Island Water & Sewer Service	8	$2,938,100.00
	3Yr	Lee County Natural Resources	Conversion of Septic Systems to Sewer	8	$323,000,000.00
	3Yr	Sarasota County	Sarasota Bay Restoration Project/Phillippi Creek Septic Syste	8	$28,400,000.00
	10yr	Citrus County Board of County Commissioners	Homosassa Wastewater Collection System – Phase 5	9	$3,000,000.00
	10yr	City of Clearwater	Groundwater Replenishment Project	9	$9,000,000.00
	10yr	City of Tampa	Reclaimed Water Main Extension to N/W Hillsborough Coun	9	$22,410,000.00
	10yr	City of Tampa	Reclaimed Water Main Extension to S/C Hillsborough County	9	$22,410,000.00
	10yr	Sarasota County	Siesta Key Master Pump Station and Force Main	9	$5,400,000.00
	10yr	City of St. Petersburg	Albert Whitted Wastewater Pump Station and Force Main	10	$33,662,000.00
	10yr	Hernando County BOCC	Oakley Island Waste Water Infrastructure Installation	10	$338,250.00
	10yr	Lee County Natural Resources	Palmona Park Water Quality Improvement	10	$450,000.00
	10yr	Lee County Natural Resources	Hendry Creek West Branch Water Quality Improvement Proj	10	$2,000,000.00
Reefs and Other Coastal Environments					
	3Yr	Audubon Florida	ALAFIA BANK BIRD SANCTUARY LIVING SHORELINE RES	6	$1,800,000.00
	3Yr	SWFWMD	Chassahowitzka Spring Dredging Restoration Phases I and II	6	$1,247,800.00
	3Yr	The Nature Conservancy	Restoration and Mapping of Oyster Reef Habitat in Southwest	6	$24,700,000.00
	3Yr	FDEP/TBAP	Ft Desoto Recirculation Phase II	7	$400,000.00
	3Yr	Tampa Bay Watch, Inc.	MacDill AFB Oyster Reef Creation Project	7	$167,000.00
	3Yr	University of Florida	Restoration of Florida's Big Bend Oyster Reefs	7	$1,360,819.00
	3Yr	Audubon Florida	Greater Tampa Bay Bird Islands Shoreline Restorations	8	$750,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	3Yr	Citrus County Board of County Commissioners	Crystal River – Kings Bay Sediment Removal	8	$28,750,000.00
	3Yr	Clearwater Audubon Society	Coastal island bird monitoring and protection	8	$40,000.00
	3Yr	Manatee County	Robinson Preserve Oyster Bars and Nesting Areas	8	$285,000.00
	3Yr	SBEP	Oyster Reef Restoration and Enhancement in Sarasota Bay	8	$250,000.00
	3Yr	Tampa Bay Watch, Inc	McKay Bay Oyster Reef Creation Project	8	$1,740,000.00
	3Yr	Tampa Bay Watch, Inc	Bayshore Boulevard Seawall Oyster Dome Fields	8	$894,650.00
	10yr	DEP Charlotte Harbor Aquatic Preserves	Charlotte Harbor Aquatic Preserves' Restoration of Mollusca	9	$1,952,420.00
	10yr	Audubon Florida	Coastal Bird Perpetual Management Fund	10	$10,000,000.00
	10yr	Florida Gulf Coast University, Coastal Watershed Institute	Tidal Caloosahatchee River: Submerged Aquatic Vegetation (	10	$2,313,536.00
	10yr	SCCF	Submersed vascular macrophyte restoration and monitoring i	10	$515,802.00
	10yr	Florida Fish and Wildlife Conservation Commission/FWRI	Seagrass Restoration and Forage Resource Enhancement for	11	$325,000.00
	10yr	SWFWMD	Homosassa Springs Aquatic Ecosystem Restoration	11	$862,447.00
Replenish Animal Population					
	3Yr	Citrus County Board of County Commissioners	Cross Florida Barge Canal Boat Ramp	6	$5,700,000.00
	3Yr	Florida Fish & Wildlife Conservation Commission - FWRI	Southwest Florida Bay Scallop Stabilization	7	$2,409,881.00
	10yr	Charlotte County	Capt. Jeff Steele Memorial Artificial Reef Habitat Enhancement	10	$500,000.00
	10yr	EPC	Artificial Reef Community Monitoring Program	10	$50,000.00
	10yr	Lee County, Division of Natural Resources	Tarpon Reef	10	$590,519.00
	10yr	Manatee County	Larry Bordon Artificial Reef Habitat Enhancement	10	$500,000.00
	10yr	Pinellas County, Division of Solid Waste	Pinellas County Near Shore Artificial Reef Construction Proje	10	$450,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	10yr	SBEP	Sarasota Bay Inshore Artificial Reef Enhancement	10	$250,000.00
Stormwater					
	3Yr	City of Palmetto	Martin Luther King Park Project	6	$250,000.00
	3Yr	City of Bonita Springs	City of Bonita Springs Storm Water Plan Implementation	7	$2,213,562.00
	3Yr	City of Clearwater	Prospect Lake Expansion	7	$450,000.00
	3Yr	City of Gulfport	Gulfport - 49th Street Stormwater Retrofit	7	$1,696,000.00
	3Yr	East County Water Control District	West Marsh Project	7	$5,415,000.00
	3Yr	SCCF Marine Lab	Habitat Restoration for Wildlife and Pollutant Reduction by th	7	$1,680,000.00
	3Yr	City of Bradenton	City of Bradenton Stormwater Facility Plan Water Quality Im	8	$3,000,000.00
	3Yr	City of Tampa, DPW-Stormwater Engineering	Westshore Waterways Improvement - Phase II	8	$5,000,000.00
	3Yr	City of Venice	Deertown Gully Outfall Improvements	8	$1,225,000.00
	3Yr	Hillsborough County	Delaney Creek LID Improvements	8	$750,000.00
	3Yr	Manatee County	Stormwater Basin Master Plan - Stormwater Retrofit Feasibilit	8	$1,250,000.00
	3Yr	Sarasota County	Urban LID Implement	8	$1,000,000.00
	3Yr	SWFWMD	Hunter Springs Water Quality Improvement Project	8	$354,803.00
	3Yr	SWFWMD	Weeki Wachee Springs Stormwater Catchment and Capture	8	$81,180.00
	3Yr	SWFWMD	Homosassa Springs-Pepper Creek Restoration	8	$375,000.00
	3Yr	SWFWMD	Three Sisters Springs Wetland Treatment Project	8	$862,624.00
	10yr	Citrus County Board of County Commissioners	Homosassa Southfork Water Quality Improvement Project –	9	$7,180,000.00
	10yr	City of St. Petersburg	Mile Creek Watershed Study	9	$200,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	10yr	City of St. Petersburg	Clam Bayou Watershed Study	9	$300,000.00
	10yr	City of St. Petersburg	8th S/S, 44th S/S & Vicinity Stormwater Drainage Improvemen	9	$3,780,000.00
	10yr	City of St. Petersburg	Jungle Lake Stormwater Drainage Improvements R-1-1	9	$6,700,000.00
	10yr	City of St. Petersburg	Salt Creek Restoration Phase I	9	$1,170,000.00
	10yr	City of St. Petersburg	Salt Creek Restoration Phase II	9	$1,170,000.00
	10yr	City of St. Petersburg	Snell Isle Blvd & Rafael Blvd. NE SDI	9	$1,500,000.00
	10yr	City of St. Petersburg	Tinney Creek Sediment Sump	9	$227,500.00
	10yr	City of St. Petersburg	20th Street District SDI	9	$23,000,000.00
	10yr	City of St. Petersburg	Booker Creek Watershed Study	9	$200,000.00
	10yr	City of Tampa	43rd Street Stormwater Outfall Regional Improvements	9	$20,000,000.00
	10yr	City of Tampa	Park/Stormwater Pond Restoration Projects	9	$2,550,000.00
	10yr	City of Tampa	Hillsborough River Shoreline Restoration Projects	9	$9,700,000.00
	10yr	City of Tampa, DPW-Stormwater Engineering	Conley Box Culvert Rehabilitation	9	$750,000.00
	10yr	City of Tampa, DPW-Stormwater Engineering	Whatley Ditch Rehabilitation	9	$500,000.00
	10yr	Hillsborough County	Delaney Creek Lateral B Improvements	9	$1,100,000.00
	10yr	Lee County Natural Resources	Ten Mile Canal Filter Marsh Phase II	9	$2,000,000.00
	10yr	Sarasota County	Sarasota Bayfront Water Quality Improvements	9	$8,000,000.00
	10yr	Sarasota County	Lemon Bay Watershed Waterway Restoration	9	$1,000,000.00
	10yr	Sarasota County	Hudson Bayou Restoration	9	$1,000,000.00
	10yr	Sarasota County	Sarasota Bayfront Sediment Removal	9	$10,000,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	10yr	SWFWMD	Robles Park Water Quality Improvement Project	9	$1,250,000.00
	10yr	SWFWMD	Weeki Wachee Springs State Park Canoe Launch Road stabiliz	9	$165,760.00
	10yr	SWFWMD	Hillsborough River Water Quality Improvement Project in Ta	9	$1,000,000.00
	10yr	City of Clearwater	Golf Course Pond Expansion	10	$150,000.00
	10yr	City of Clearwater	Old Gateway Neighborhood Stormwater Improvements	10	$750,000.00
	10yr	City of Clearwater	Smallwood Circle Stormwater Improvements	10	$750,000.00
	10yr	City of Clearwater	Druid Road Stormwater Improvements	10	$250,000.00
	10yr	Hernando County BOCC	Rogers park parking lot improvements	10	$350,000.00
	10yr	Lee County Natural Resources	Nalle Grade Stormwater Park	10	$1,500,000.00
	10yr	Lee County Parks and Recreation	Sanibel Causeway Drainage Repairs	10	$2,000,000.00
	10yr	Pinellas County	Pinellas County Cross Bayou Watershed Flood Control, Wat	10	$5,000,000.00
	10yr	Pinellas County	Pinellas County Roosevelt Creek Watershed Best Managemen	10	$8,794,000.00
	10yr	Sarasota County	Whitaker Bayou Restoration	10	$3,900,000.00
	10yr	Sarasota County	Little Sarasota Bay Watershed Waterways Restoration	10	$1,000,000.00
	10yr	Sarasota County	10th Street Outfall Stormwater Treatment	10	$2,000,000.00
	10yr	City of Bradenton	New Street Sweeper	11	$250,000.00
	10yr	City of Clearwater	Annexation and Improvement of County Ponds (Lake Carol a	11	$50,000.00
	10yr	City of North Port	Major canal dredging	11	$3,841,680.00
Water Quality Monitoring					
	3Yr	NEPs-RAMP	Regional Trust Fund for Biological and Water Resource Monit	5	$20,000,000.00

Action	Funding Category	Submitting Organization	Title	* Raw Group Score	Needed
	3Yr	EPC	Water Quality Monitoring: Supporting Adaptive Management	6	$1,700,000.00
	3Yr	Pinellas County	Pinellas County Surface Water Quality Monitoring Program wi	6	$2,345,510.00
	3Yr	Manatee County	Restore Water Quality - Hydrologic Monitoring Network	7	$304,986.00
	3Yr	Manatee County	Restore Water Quality - Stream Condition Index Program	7	$359,988.00
	3Yr	Manatee County	Restore Water Quality: Monitoring Regional Trends in Atmos	7	$300,181.00
	3Yr	Manatee County	Restore Water Quality - Regional Water Quality Monitoring	7	$2,138,607.00
	3Yr	Pinellas County	Pinellas County Surface Water Quality Monitoring Program in	7	$623,490.00
	3Yr	City of North Port	Warm Mineral Springs, Sarasota County, Florida:	8	$50,000.00
	3Yr	Pinellas County	Installation, Data Collection, and Maintenance of flow Stations	8	$348,130.00
	3Yr	Pinellas County	Pinellas County Biological Monitoring	8	$843,000.00
	3Yr	SWFWMD	Project COAST-Water Quality Monitoring (Hernando, Citrus	8	$2,267,992.00
	10yr	Tampa Bay Estuary Program	Improving Tidal Creek Management & Restoration Options th	9	$1,219,944.00
	10yr	SBEP	Regional Tidal Creek Water Quality Supplemental Monitoring	10	$875,000.00

Tampa Bay Estuary Program
263 13th Ave South, Suite 350
St. Petersburg, FL 33701
727-893-2765
www.tbep.org

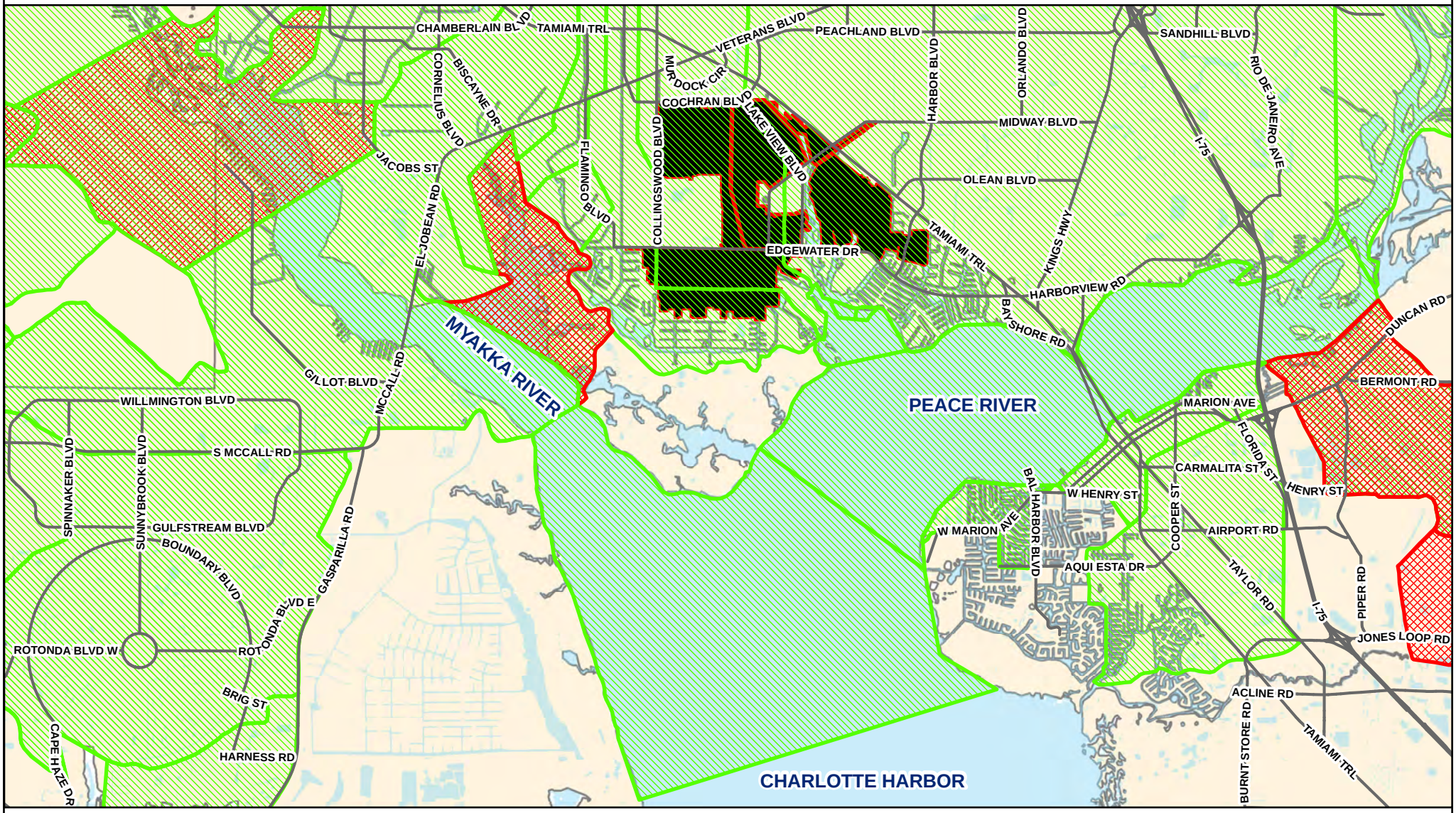
Sarasota Bay Estuary Program
111 South Orange Avenue, Suite 200W
Sarasota, Florida 34236
941-955-8085
www. sarasotabay.org

Charlotte Harbor National Estuary Program
1926 Victoria Avenue
Fort Myers, FL 33901
239-338-2556
Toll-free 866-835-5785
www.CHNEP.org

Photo by Lee County Visitor and Convention Bureau

EXHIBIT D
CHARLOTTE COUNTY
Restoration Of Water Quality In The Impaired Waters Of Charlotte Harbor

Charlotte County Government
"To exceed expectations in the delivery of public services."
www.CharlotteCountyFL.com



Stateplane Projection
Datum: NAD83
Units: Feet
Data Sources: Charlotte County Utilities / FDEP

Legend

Sewer Priority Areas

PARAMETERS

Fecal Coliform

Impaired by one or more of the following: Dissolved Oxygen, Nutrients, Bacteria

0 5,000 10,000 20,000 Feet

This map is a representation of compiled public information. It is believed to be an accurate and true depiction for the stated purpose, but Charlotte County and its employees make no guaranties, implied or otherwise, to the accuracy, or completeness. We therefore do not accept any responsibilities as to its use.

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Updated: 10/16/2012 10:48:11 AM by: AndersonD

W:\Projects\MSBU Future Zones\2012 Mid County Sewer Expansion Area 1 and 2\Central County\Restore Funding Application Aerial Map Letter.mxd

EXHIBIT E

THE EAST & WEST SPRING LAKE WASTEWATER PILOT PROGRAM

Charlotte County, Florida

Water Quality Review Within East & West Spring Lake

June 2013
TT Project # 200-67850-11001

TETRA TECH

10600 Chevrolet Way, Suite 300
Estero, FL 33928

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EAST & WEST SPRING LAKE
WASTEWATER PILOT PROGRAM
WATER QUALITY REVIEW WITHIN EAST & WEST SPRING LAKE
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EAST & WEST SPRING LAKE WATER QUALITY CONSIDERATIONS

1.0 PURPOSE

The purpose of this report is to provide a summary of water quality data collected within the East & West Spring Lake area of Charlotte County. In addition, this report provides a summary of relative studies performed within the area. Data for this report preparation has been collected and tested from both groundwater wells and canals for nitrogen, phosphorous and fecal coliform. As will be displayed within this document, nutrient levels within the East & West Spring Lake area are not only above regulatory standards for surface water, but indicated a correlation with onsite sewage treatment and disposal systems (OSTDS) within the area. This correlation is demonstrated through nutrient levels within the East & West Spring Lake area being higher than levels within other portions of Charlotte Harbor and through the comparison of nutrient levels within different seasonal conditions.

1.1 BACKGROUND

In the early to mid-1990's, Charlotte County initiated a centralized wastewater service expansion program that was proposed to provide wastewater collection and transmission for both new residences as well as existing residences which utilize onsite sewage treatment and disposal systems (OSTDS). The program proceeded through design, however, prior to implementation, the program, was halted. In June of 2009, the Charlotte County Utilities (CCU) made a presentation to the Charlotte County Board of County Commissioners (BCC) which provided an overview for initiation of a similar centralized wastewater service expansion program. At that time, the BCC recommended that a Preliminary Engineering Report (PER) be prepared to evaluate alternative systems and related costs for installation. For this effort, Area 1 (Figure 1) was selected as the initial area to be evaluated due to the number of existing OSTDS's currently in use in the area, and given Area 1's proximity to the Charlotte Harbor estuary and tributary water bodies. In addition, this area is part of the Alligator Bay drainage basin, which was specifically required by the Florida Department of Environmental Protection (FDEP) to be included in a "phased sewer expansion" (see Manchester Locks below).

Following completion of the PER and subsequent presentation to the BCC, the BCC ultimately requested that CCU proceed with a pilot study area, consisting of a portion of Area 1, East &

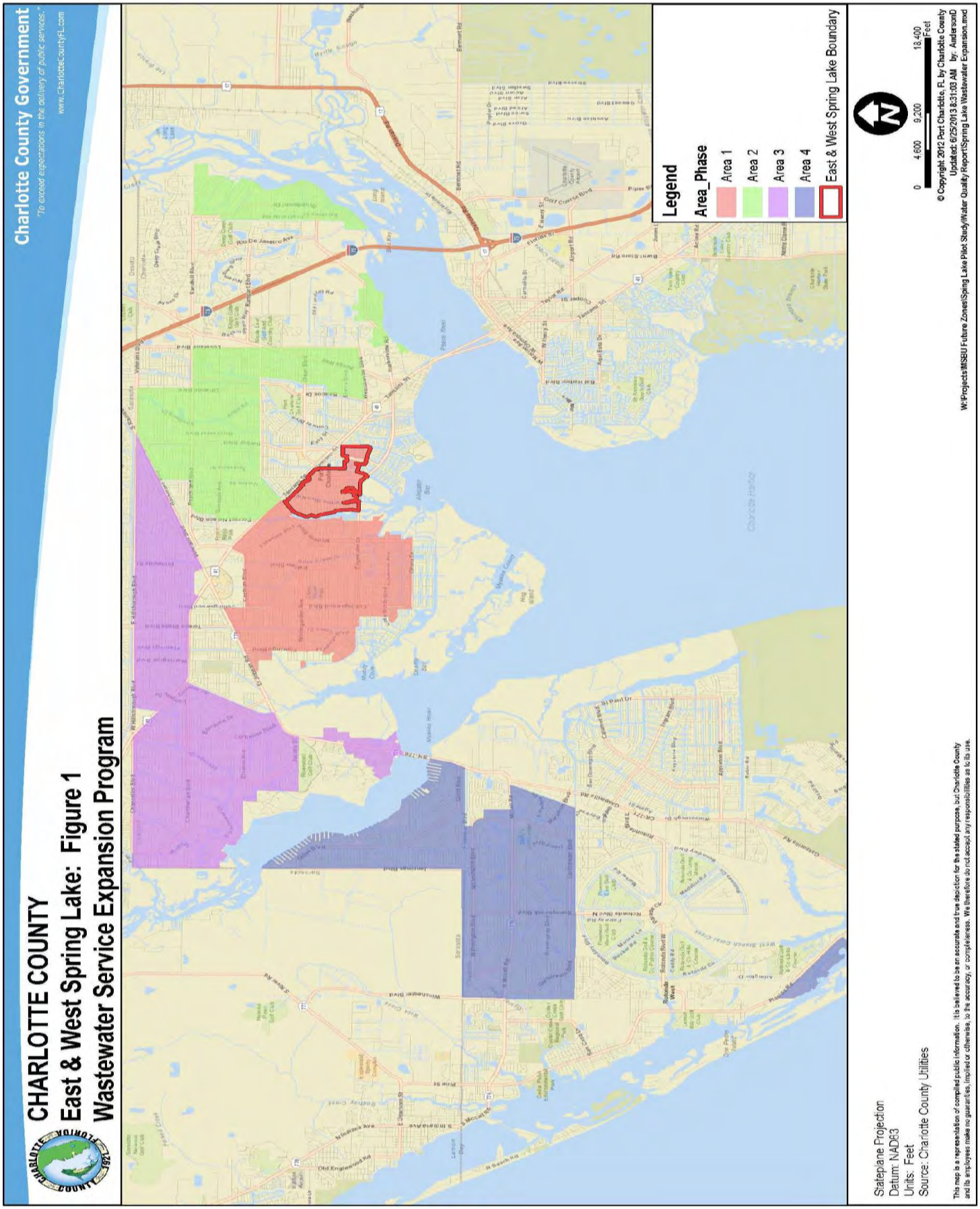


Figure 1 courtesy of Charlotte County Utilities

West Spring Lake. In 2010, CCU selected Banks Engineering to assist with alternative evaluations, preliminary design and opinion of cost development for implementation of a centralized wastewater system for the East & West Spring Lake area. In general, the East & west Spring Lake area lies east of Spring Lake, southwest of US No. 41, north of Edgewater Drive and west of Elkcam Waterway (Figure 2). As part of this process, the BCC asked that the water quality within the pilot area be analyzed and reported on. The analysis performed along with a summary of the findings, is the focus of this report.

1.2 REGULATIORY REQUIREMENTS

1.2.1 OSTDS Regulations

Chapter 62E-6 of the Florida Administrative Code (F.A.C.) provides regulatory requirements for OSTDS's in Florida. This rule sets the sizing requirement for the septic tank and drainfield; outlines acceptable soil permeability and types; OSTDS siting requirements; separation requirements (from wells, property boundaries, water table, surface water, etc.) and related parameters. Of particular importance, the current rule has increased requirements over past rules, as it related to sizing, setbacks and separation from the water table. For instance, the current rule requires that the drainfield be set such that the bottom of the drainfield is a minimum of 24-inches above the seasonal high water table. In comparison, the rule(s) in effect while the majority of the OSTDS's were constructed within the East & West Spring Lake area either required no separation (prior to 1962) or 12-inches of separation from the water table (from 1962 until 1983). As the majority of the systems were installed prior to 1983, it is likely that the majority of these systems do not meet current standards. Similarly, the setback from a surface water body is currently set at 75-feet. (Please note the Charlotte County has a more stringent requirement of 150-feet from tidal water bodies as would apply to the East & West Spring Lake area, Ordinance 3-7-56.) This rule has also been in effect since 1983. Prior to 1983, the separation was either not regulated (prior to 1962), or was 50-feet or less (25-feet from 1962 to 1972 and 50-feet from 1972 to 1983). Other changes to regulations have focused on the size requirement of the septic tank as well as the size of the drainfield. Sizes have been adjusted over the years to provide for longer residence/treatment time in the septic tank portion and to provide more surface area for more efficient nutrient removal (with less potential for overloading) in the drainfield. The actual changes to the regulations associated with sizing are too numerous to summarize, having been modified over 15 times since 1921.

Figure 2 courtesy of Charlotte County Utilities

1.2.2 Nutrient Reduction Regulations

Passed in 1972, the Clean Water Act (CWA) is the primary federal law in the United States governing water pollution. The Environmental Protection Agency (EPA) continually develops new regulations associated with the CWA, the most recent of which is the Numeric Nutrient Criteria (NNC) rule which was developed by the EPA and incorporated as part of the Florida Administrative Code (F.A.C.) under Rule 62-302.531 and 62-302.532 for implementation by the Florida Department of Environmental Protection (FDEP). The intent of NNC rule is to ensure that "in no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna".

Rule 62-302.532 outlines requirements for Estuary-Specific Numeric Interpretations of Narrative Nutrient Criteria. This rule provides estuary specific numeric interpretations for total phosphorous, total nitrogen, and chlorophyll *a*. The rule as implemented will require entities who release surface water into State and Federal inland water bodies and estuaries to meet predetermined water quality levels for these nutrients. Although the implementation phase has not been set, the values for total nitrogen, total phosphorous and chlorophyll *a* have.

The East and West Spring Lake area falls within Charlotte Harbor, Tidal Peace (4.j) as shown on the map in Figure 3. Any release of nutrients must fall within the parameters set for this area. Levels set for numeric nutrients for this area are as follows:

Region	Total Phosphorous	Total Nitrogen	Chlorophyll *a*
4. Charlotte Harbor Proper	0.19 mg/L	0.67 mg/L	6.1 µg/L

It should be noted that the values in the table above represent the annual arithmetic mean values for nutrients and annual arithmetic means for chlorophyll *a*, not to be exceeded more than once in a three year period. These values were determined after detailed analysis of specific water bodies over many years of monitoring and reporting utilizing data collection from numerous agencies to ensure that accurate an impartial data was used. Nutrient data from

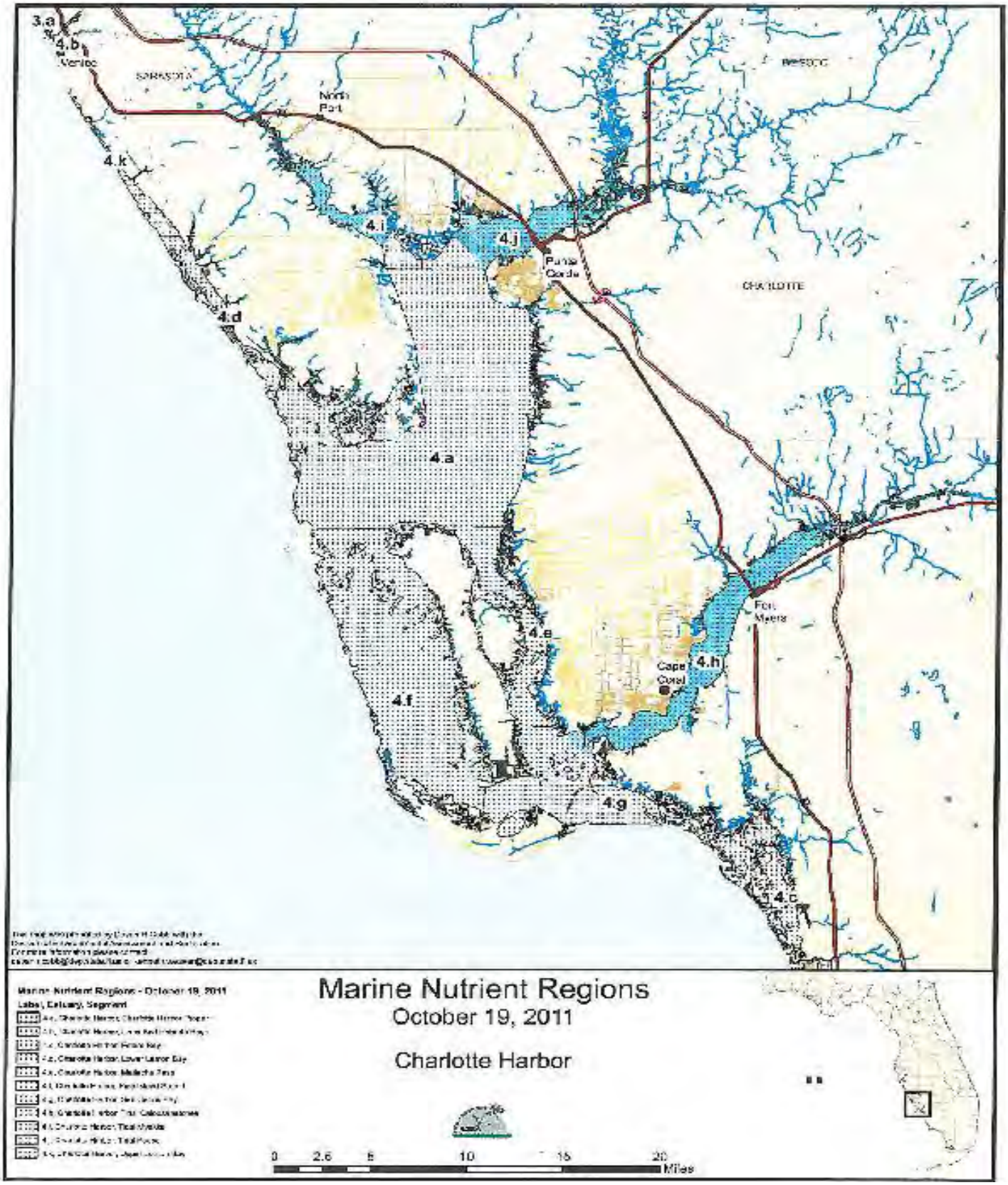


Figure 3 – Marine Nutrient Regions (courtesy FDEP)

benchmark sites were queried from Florida STORET, FDEP's Status and Trend dataset, and site verifications datasets.

Another important item to note is that the numeric criteria defined for Charlotte Harbor Proper (and all other regions) are considered to be arithmetic means, not instantaneous "point" readings. This is primarily due to the fact that elevated nutrient levels are not acutely toxic in the aquatic environment; instead, their effects are chronic and cumulative over time and become acutely toxic when oxygen levels drop as a by-product of eutrophication resulting from excess nutrients in the waters. Nutrient concentrations are typically variable over time and exhibit a log-normal distribution in the aquatic environment. Therefore, instantaneous criteria are not generally considered practical or appropriate for nutrients, and are better expressed as an average over a longer period of time.

According to a 2009 report prepared by the FDEP, Charlotte Harbor Proper's annual average of Chlorophyll *a* was 13.2 µg/L in 2003 and 14.93 µg/L in 2006. Both of these values exceed double the numeric criteria defined in the NNC rule. According to the same 2009 report, the median value of total nitrogen was 0.729 mg/L (based on 354 observations) and the median value of total phosphorus was 0.185 mg/L (based on 302 observations).

Region	Median Total Phosphorous	Median Total Nitrogen	Annual Average Chlorophyll *a*
4. Charlotte Harbor Proper	0.185 mg/L	0.729 mg/L	13.2 / 14.93 µg/L

This median value of total nitrogen exceeds the numeric criteria defined in the NNC rule by .059 mg/L and the median value of total phosphorus meets the numeric criteria defined in the NNC rule by a narrow difference of only 0.005 mg/L. Based on this report, the primary nutrient impairment of Charlotte Harbor Proper appears to be Chlorophyll *a* by an overwhelming margin. Also it should be noted that the same report identified non-nutrient impairments of Charlotte Harbor Proper, primarily mercury; however these impairments are not related to the NNC rule and are therefore not discussed in this section.

1.2.3 Manchester Lock Permit

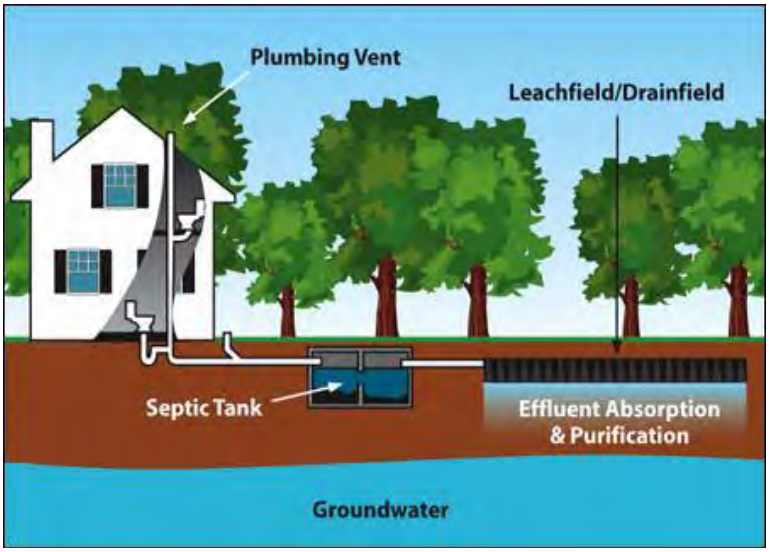
In the mid-70's, the Army Corps of Engineers (ACOE) placed permit conditions on certain sections of the Manchester Basin area, limiting the number of septic systems that would be allowed before a centralized sewer system would be required to be installed. In 2007, Charlotte County sought and was granted approval by both the Florida Department of Environmental Protection (FDEP) and ACOE to remove the Manchester Locks. As a condition of the FDEP permit (file 08-0210682-001, issued June 2007), and as Alligator Bay (located within the Manchester Basin) is the receiving waters for the Manchester Waterway and most other residential canals in Port Charlotte, the FDEP required the following to be performed:

- "A phased sewer expansion – include in the Charlotte County Sewer Expansion Plan those portions of the Alligator Bay drainage basin that have been shown to contribute to declining water quality (pre-1983 septic tanks)."

This condition has been made a requirement of the Manchester Lock removal, which was accepted through approval, along with the permit conditions by the BCC in 2007. The Alligator Bay drainage basin includes the East and West Spring Lake area. Due to its residential density, this area was selected as the initial point of focus. Alligator Bay Drainage Basin and the proximity of East & West Spring Lake within the Drainage Basin is displayed in Figure 4.

1.3 DESCRIPTION OF OSTDS

Onsite Sewage Treatment and Disposal Systems (OSTDS) typically consist of a septic tank followed by a soil absorption field (drainfield). Septic tanks are watertight treatment units which are buried below ground and located outside of the residence. The majority of the septic tanks installed in Southwest Florida are constructed of concrete, although



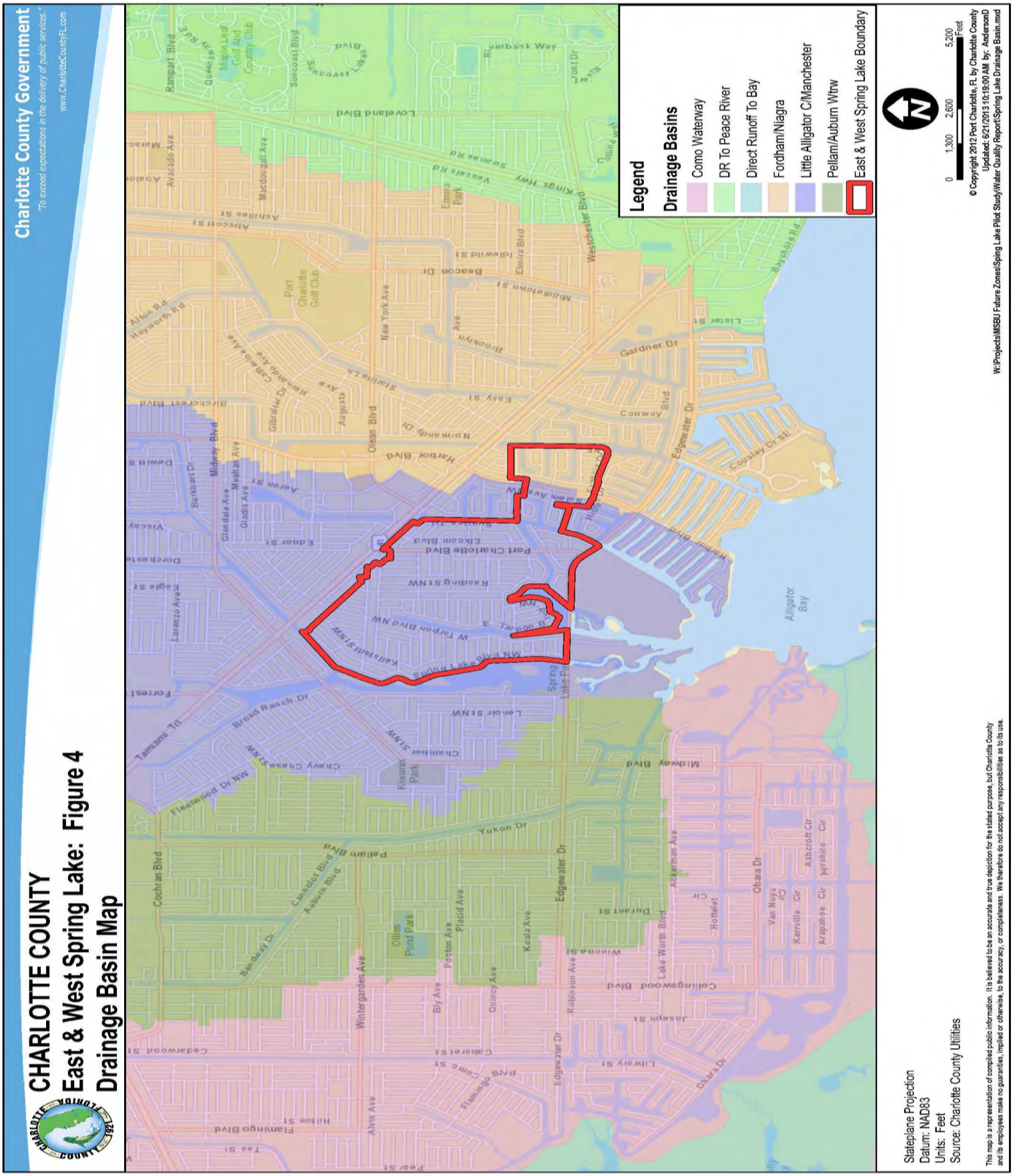
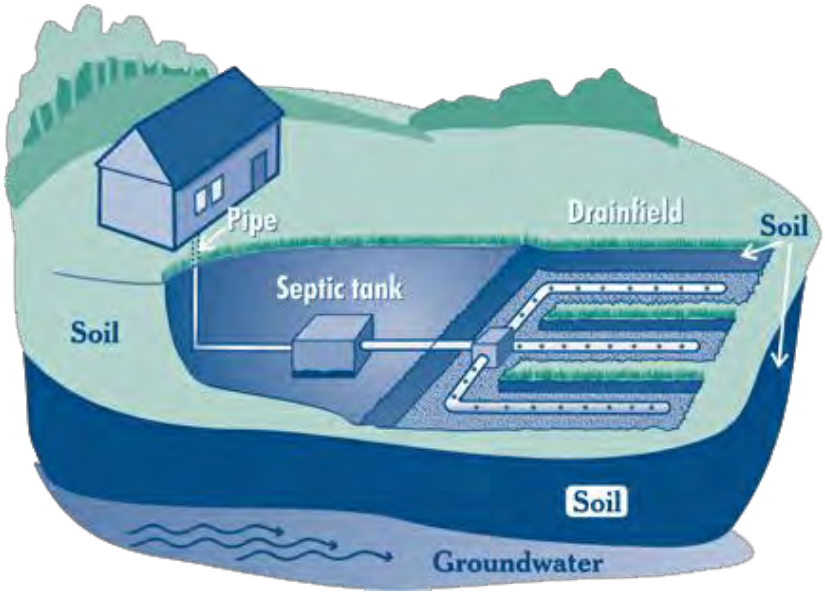


Figure 4 courtesy of Charlotte County Utilities

fiberglass units have also been installed in some areas. Wastewater from the home enters the treatment unit by gravity. Treatment provided by the septic tank is limited to digestion of organic matter, and settling of solids to the bottom of the tank. Over time, solids accumulated will buildup and eventually, require removal and offsite disposal by a professional. As the wastewater flows into the septic tank, the volume in the tank increases; the organic matter is biologically digested; and remaining solids settle to the tank bottom. As the level in the tank rises, the partially clarified effluent reaches a point where it overflows into a pipe and into the second portion of the process, the drainfield. The image above displays a typical OSTDS, complete with septic tank and drainfield.



Effluent from the septic tank enters the drainfield, or the disposal portion of the OSTDS process. The partially treated wastewater is discharged to the drainfield through a series of pipes which allow for an even distribution into the absorption area below.

The effectiveness of the drainfield is dependent on the soil profile characteristics, the soil depth above the water table, the slope of the drainfield and the application area. Of particular note are the soil types and separation from the groundwater table. Porous, sandy soils and soils with positively charged particles (such as aluminum, iron and manganese oxides) have demonstrated to be more effective in removal of phosphorous than clayey or organic soils. The reason is that the positive charge of the soil binds to the negative charge of the phosphorous, retaining a portion of the phosphorous in the soil (adsorption). With proper soil conditions, approximately 85-95 percent of phosphorous can be removed from the effluent. That being said, soils can become oversaturated with phosphorous and create plumes which grow as more phosphorous is accumulated in the soil. Depending on the separation from the groundwater, it is just a matter of time before the plume reaches the groundwater, which is a more critical reason for groundwater separation. Unlike phosphorous, nitrogen is not as

effectively removed by the soils, with a removal efficiency of approximately 10-40 percent. The reason is that nitrogen derived from septic systems is converted to nitrate by the process of nitrification. The nitrate is in an aerobic condition and does not interact with the soil components, and therefore, can travel through unsaturated soil to groundwater. Similar to phosphorous, the removal efficiency of fecal coliform can also be effective, with removal efficiency near 100-percent, given the proper soil conditions and separation from the groundwater.

Key factors in the removal efficiency as mentioned include the soil conditions and the separation from the groundwater. The less separation from the water table, the more likely negative constituents are to enter the water table prior to being filtered out by the soils. Similarly, if unfavorable soils exist below (or within) the drainfield, the more likely these constituents will enter the groundwater as well. An example of a poor soil type is a clayey material, which has a very low porosity and limited filter capability. Instead, clayey material allows water from above to simply transport directly into the water table. For that reason, clay is considered unsatisfactory according to current regulations.

Initial use of OSTDS's was in rural areas where centralized systems were not available. As development continued with denser housing in unsewered areas, the number of OSTDS's increased as well. In areas where soils are suitable, OSTDS's provide an adequate means of treatment and effluent disposal. However, it has been estimated the only 32% of the total land area in the United States has soils suitable for onsite systems (EPA Design Manual – Onsite Wastewater Treatment and Disposal Systems).

1.3.1 OSTDS Evaluation in East/West Spring Lake

The East & West Spring Lake area is zoned RSF 3.5, which allows a residential density of 3.5 units per acre, with a minimum lot area of 10,000 square feet (sf) and minimum width of 80 feet. Within the East & West Spring Lake area, approximately 80-percent of the lots have been built on. The age of the residential structures in the study area ranges from 4 years to approximately 60 years, with homes being constructed from the mid-1950's to the mid-2000's. Based on construction information provided by the County, it appears that the majority of the residential structures were constructed in the 1970's. Figure 5 displays the distribution of lot development by age, with the majority of the construction shown to be between 1971 & 1980 (in green). The

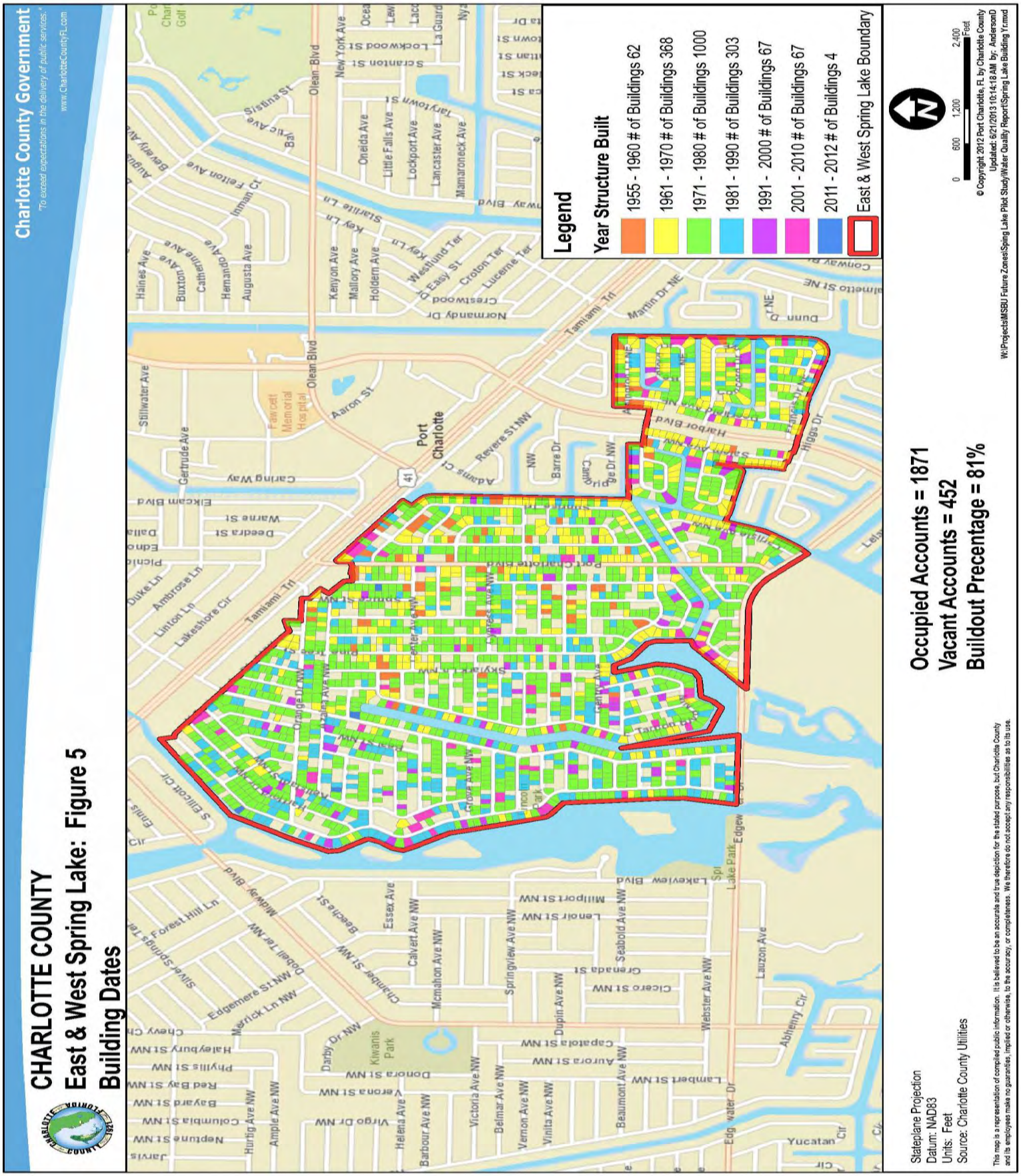


Figure 5 courtesy of Charlotte County Utilities

data is also shown graphically below in Charts 1, 2 and 3. It is noted that the data in Figure 5 was provided by Charlotte County Utilities (CCU) and was based on construction information. Data in the charts was obtained from the Charlotte County Health Department (CCHD) through records retained for OSTDS construction and may vary slightly from the data provided by the County. As shown, there are 1,708 recorded OSTDS's in the East & West Spring Lake area. Of these, 1286, or 75.3-percent, are at least 30-years old (i.e. installed prior to the 1983 rule change for drainfield/water table separation).

The age of the structures within the East & West Spring Lake area is important for two (2) reasons. First, 1983 was a critical year in the history of rule development for OSTDS systems as it resulted in the increased separation between the bottom of the drainfield and the seasonal

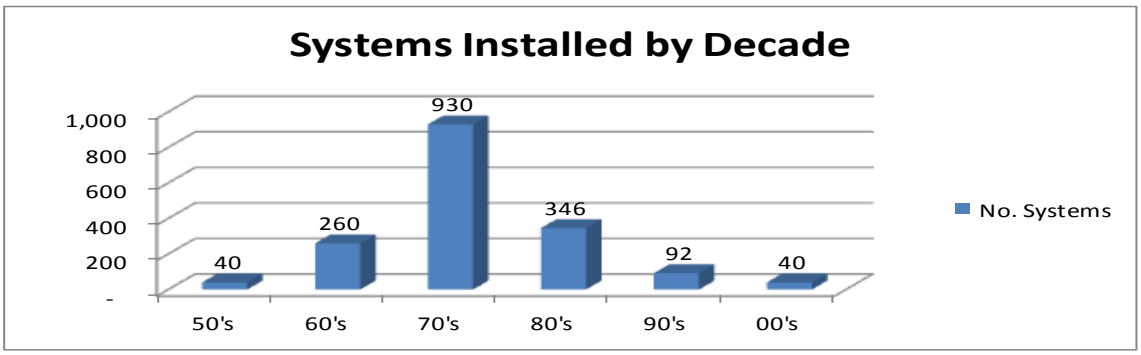


Chart 1

Systems Installed by Decade in East/West Spring Lake Area

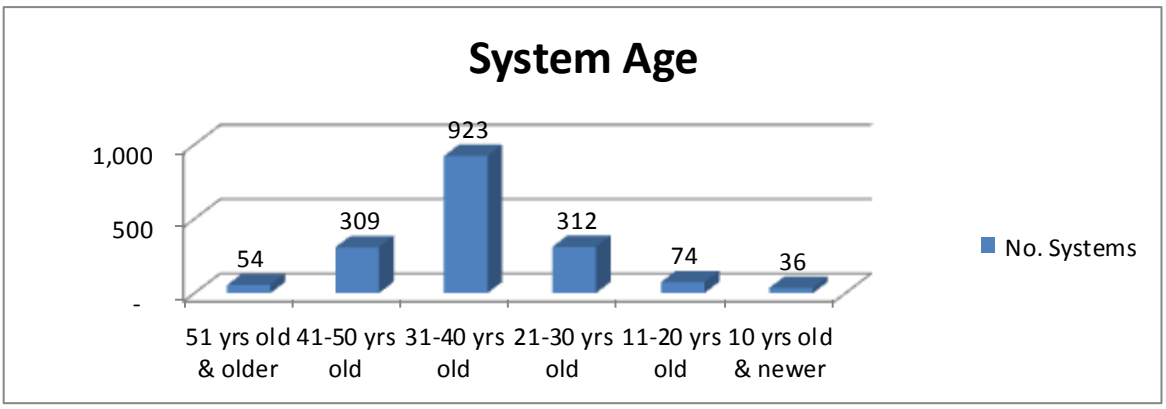


Chart 2

Age of Systems in East/West Spring Lake Area

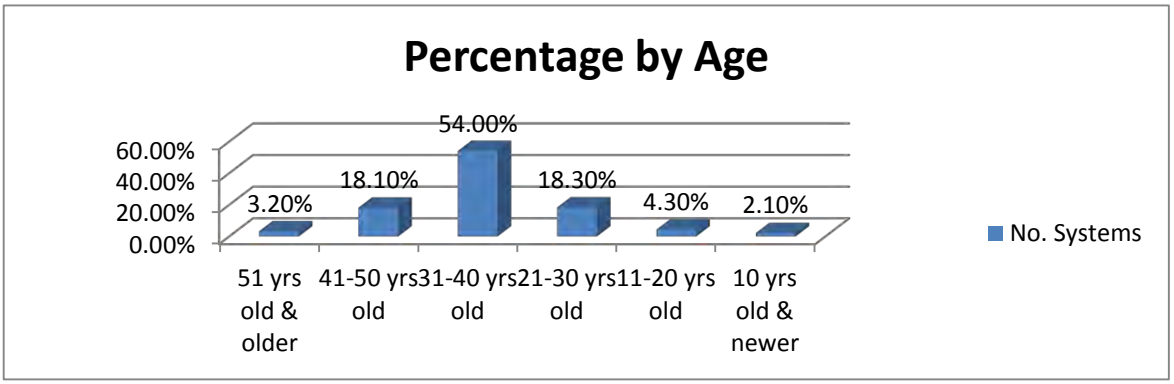


Chart 3

Percentage by Age in East/West Spring Lake Area

high water table elevation from 12-inches minimum to 24-inches minimum. Given the high water table and proximity to Charlotte Harbor, this is extremely important as the increased separation provide more attenuation of effluent in the soils and therefore more potential for nutrient uptake prior to reaching the groundwater table. The second important factor is that the OSTDS's have a life expectancy before septic tank and pipes begin to deteriorate and likely require repair or replacement. The life expectancy of the OSTDS is dependent on several variables, including but not limited to age and related exposure to harsh wastewater conditions; the loading of wastewater (number of residents, use of garbage disposal); proximity to trees which can result in root intrusion; existing native soil types and conditions below the drainfield and related factors. In addition, short term versus long term use can also impact the life expectancy. Those systems which have been dormant for an extended period of time can have issues with regenerating the biological treatment process. As each system is different, it is difficult to state a certain life expectancy or to state that each system will have the same life expectancy. Industry data suggests the structural life expectancy of a typical septic tank is on the order of 12-20 years (Maryland Task Force, 1999).

1.3.1.a. Drainfield Water Table Separation Review

As mentioned above, the current regulations require a minimum separation of 24-inches from the bottom of the drainfield to the seasonal high water table. In addition, 62E-6, F.A.C. limits the maximum depth from ground surface to the bottom of a drainfield as 30 inches, with a minimum cover of 6-inches. Therefore, the seasonal high water table should be 42-inches (3.5-feet)

below ground surface for a typical installation in order to meet the current regulatory requirements.

Utilizing water table data collected over the past year, it is likely that the majority of the residences in the East & West Spring Lake area do not meet this requirement. Water table elevations were taken in June, September, November and January from 50 locations throughout East & West Spring Lake. The water table elevations were taken at the same locations where groundwater samples were collected (refer to Section 1.4, below). Based on the data collected, the seasonal high water table average was approximately 2.1 feet below land surface (BLS). This seasonal high average occurred in both the June and September sampling. The averages for November and January were 3.1 feet BLS and 3.9 feet BLS, respectively. In fact, in June and September when the seasonal high water table was observed, many of the existing drainfield are estimated to be located partially within the water table. Only during January is the water table greater than 3.5 feet BLS. Provided below in Table 1 are the average water levels per sampling period along with percentages of levels which were under the 3.5 feet BLS threshold for compliance with current regulations.

Table 1 – Water Table Data – East & West Spring Lake

Parameter	June	September	November	January
Average Water Level (BLS)	2.1 ft	2.1 ft	3.1 ft	3.9 ft
Number of samples < 3.5 ft BLS	39	35	29	16
Percentage < 3.5ft BLS	80%	80%	64%	42%

During the wet season, 80-percent of the water table readings were within 3.5 feet BLS. In addition, in reviewing each individual well, 42 of 50 wells (84-percent) showed the water table being within 3.5 feet of ground surface at some point during the year (Figure 6). It is noted that 2012 from which the majority of the samples were taken was a below average rainfall year, and it is estimated that during a normal rainfall year, the water table would be even higher.

As the East & West Spring Lake area is relatively flat, the ground elevation is estimated to be similar to that of the top of drainfield, which would further indicate that the majority of the drainfields and potentially over 80-percent in this area do not meet the current regulatory standards. This finding is consistent with the data provided above on the system age.

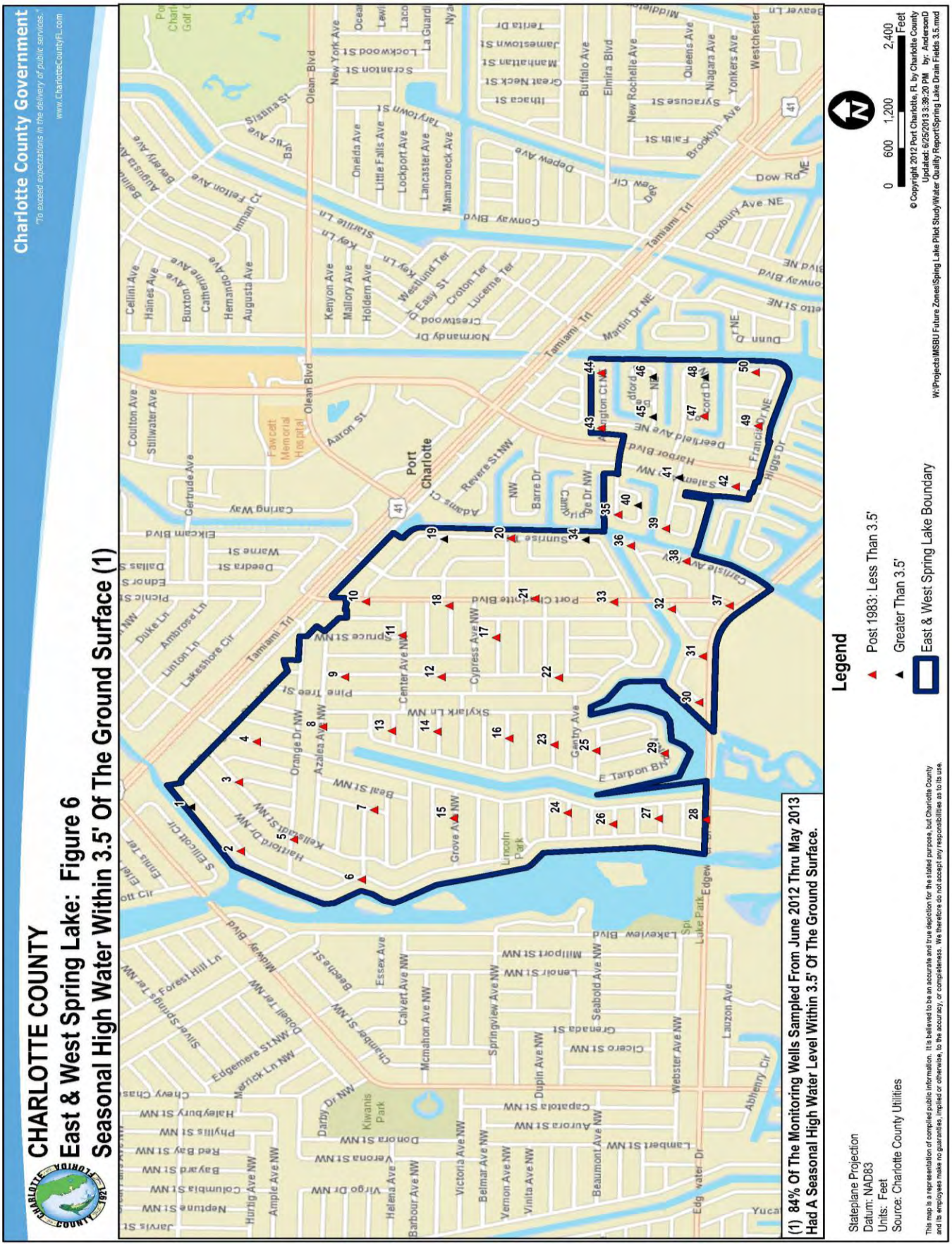


Figure 6 courtesy of Charlotte County Utilities

To take the water table a step further, the regulatory requirements prior to 1983 required 12-inches of separation from the water table. Using the same criteria for cover and depth to the bottom of the drainfield, pre 1983 requirements would result in a minimum allowable depth to the water table of 2.5 feet. As mentioned, the seasonal high water table (as displayed in June and September) was 2.1 feet, or less than this required separation. In comparing the number of readings that were within 2.5 feet, for the highest water table periods (June and September), both June and September had 27 readings (over 55-percent) in which the water table was within 2.5 feet of ground surface. In review of the individual wells, 36 of the 50 wells (72-percent) recorded readings within 2.5-feet BLS at some point during the year (Figure 7). This means that potentially, over 70-percent of the existing drainfields not only do not meet the current regulations in existing since 1983, but potentially do not meet the pre-1983 requirements either.

1.3.1.b East & West Spring Lake Repair OSTDS Repair Review

Specifically for the East & West Spring Lake area, repair data was obtained from the CCHD (Banks, March 2013). Data collected indicated 382 permitted repairs within the study area, of which, the majority of the repairs did not indicate the type, nature, or severity of the repair. From the data, it can be observed the current age of systems repaired as well as the systems repaired as a percentage of the number of systems installed during that era. Of the 382 permitted repairs, all but seven (7) were for systems that were 20-years in age, or older at the time of repair, which is consistent with the Maryland Task Force reference above. In addition, of the 1,286 systems installed prior to 1983, 333 or 25.9% have been repaired. Based on this information and considering the age, the number/percentage of repairs already made, it has been estimated that over the next ten (10) years, approximately 300 additional systems will likely need repair. This information is solely based on the data provided and the age of systems that have been repaired to date. It is noted that one positive step that County has made towards reducing the repairs was the adoption of ordinance 2007-061. This ordinance requires septic systems to be inspected and pumped out every five years in an effort to ensure that the onsite system is adequately maintained. A benefit of the ordinance is that it results in inspections by professionals in the OSTDS field who can determine if a failure has occurred, or even if a minor repair is required. Of these 382 repairs, over 250 were made after the ordinance was adopted in 2007. The positive side to that is the ability to have professionals recognize a repair need and work towards the corrective measures. The negative side, however, is the likelihood that

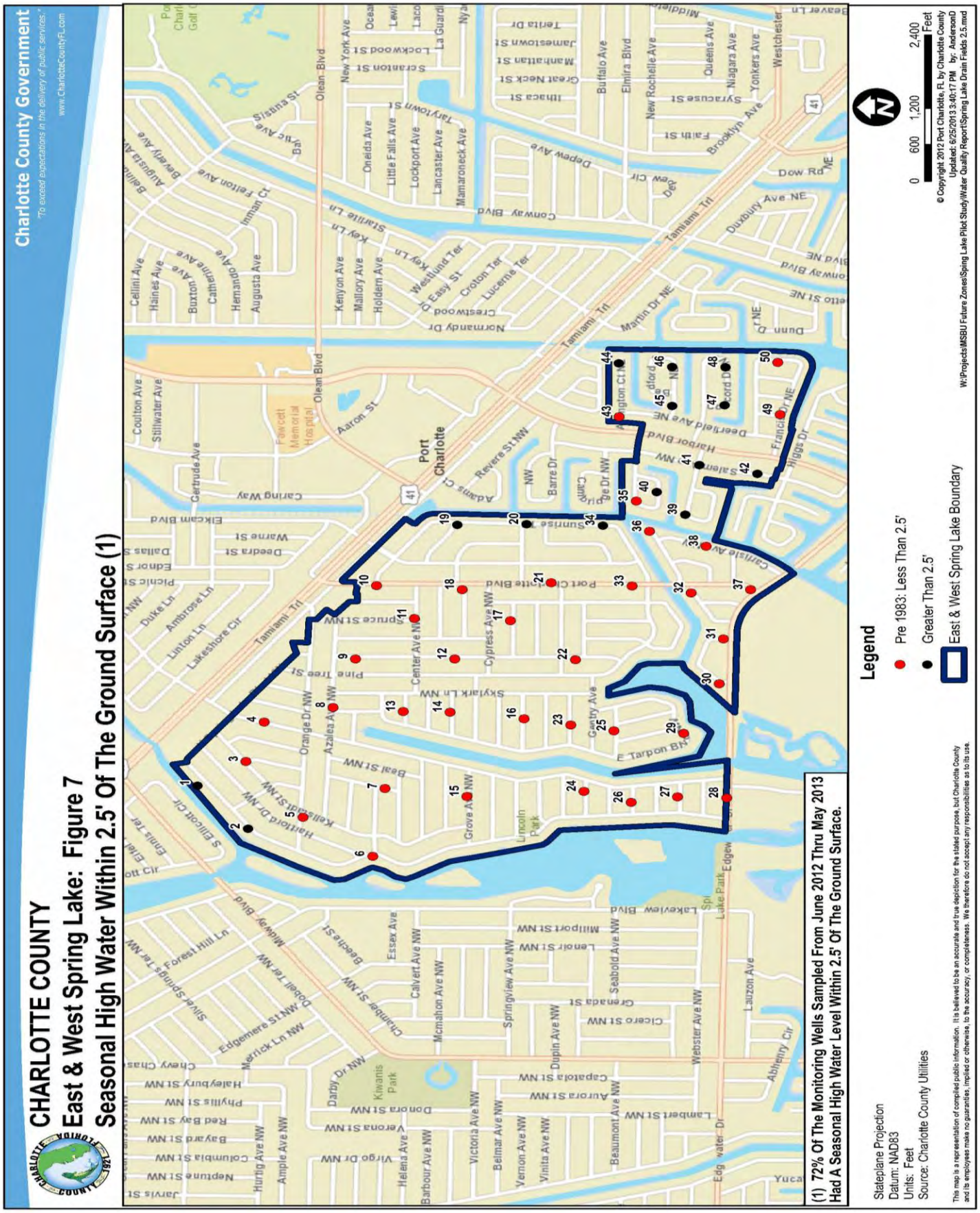
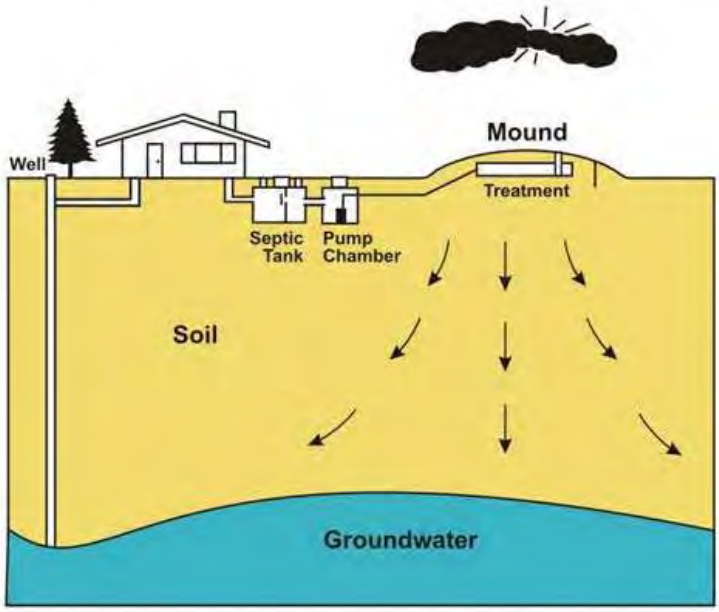


Figure 7 courtesy of Charlotte County Utilities

these 250+ failures occurred in the timeframe of the inspections is low, which means, many of the repair needs could have gone on for years without notice, or outright neglect.

As over 75-percent of the existing OSTDS's within East & West Spring Lake were installed prior to 1983, it is likely that none or very few at most, would meet current regulatory requirements for separation from the groundwater, as demonstrated above. This is important not only for the nutrient removal assistance, but also from a repair or replacement standpoint moving forward. At such point that repairs are required to the drainfield, it is likely that the current system would have to be replaced with a mounded system, in order to meet the 24-inch separation requirement from the seasonal high water table. A mounded system as displayed to the right, requires a mechanical means to lift the effluent from the septic tank to the drainfield. Because the mounded system is elevated, gravity flow to the drainfield is no longer feasible, and therefore requires a second chamber which utilizes a float and pump system to transfer the effluent to the higher drainfield. Not only does the mounded OSTDS add costs to a traditional replacement (with the addition of pump chamber, electrical costs and additional fill for the drainfield) the mounded system are unsightly, with a mound sitting out of place as a small hill in the front, side or year yard.



1.4 SAMPLING AND TESTING PROCEDURES

To complete the water quality evaluation, fifty (50) piezometers were initially set to a depth of approximately 8 to 10-feet below land surface (BLS) at random locations within the East & West Spring Lake area. The goal was to install the wells within easily accessible locations, approximately equidistant from one another. To select the random locations, the East & West Spring Lake area was set on a grid and the well locations were then generated utilizing that grid. Final locations were adjusted to assure wells were located in rights-of-ways or easements. In addition to the fifty (50) monitoring wells, twenty one (21) canal locations (consisting of

upstream and downstream sample points) were established for gathering surface water quality information. During the sampling process, which began in June 2012 and has continued through the time of this report preparation, twelve (12) additional groundwater well locations were recommended within the study area. The location of the sixty two (62) total groundwater wells and the twenty one (21) canal sample locations are displayed in Figure 8.

1.4.1 Well Installation

The CCU installer used a hand auger along with a split spoon sampler to install the groundwater sample wells. The split spoon sampler was first used to install a pilot hole and to assist in collecting soil samples. Undisturbed soil samples were taken for future evaluation at 1-foot intervals using the split spoon sampler. A 3-inch hand auger was then used to complete the bore. Once the bore was complete to the required depth (into the water table), the installer used 1.5" schedule 40 PVC well point tips for the perforated section of the well, and installed perforated pipe to a foot from top of ground. Clean well graded sand was applied around the exterior of the PVC well pipe (to 1-foot below-grade) to stabilize the pipe once installed. The top 1-foot was stabilized using soil that came from the excavated hole to help "seal" the surface. Once the wells were set, they were pumped to purge the wells of contaminants and to remove any lose material (soils, etc.).

1.4.2 Sampling

Well sampling has been performed by Benchmark, contracted by CCU. Sampling procedures have been in accordance with FDEP's standard operating procedures (SOP), in particular, DEP-SOP-001/01 FS 2200 Groundwater Sampling. A summary of the sampling procedures is provided below.

A peristaltic hose pump is used to perform the sampling. At each well, the sample collector cuts tubing to install down the monitoring wells and connect to the suction side of the pump. Similarly, tubing is cut and installed into the discharge side of the pump. Next, the pump is used to purge the well, utilizing the procedures outlined in FS 2000. Following purging, the peristaltic pump is then utilized to collect a representative groundwater sample. Sample procedures are also outlined in FS 2000. Samples are collected in bottles, labeled and delivered to the CCU's

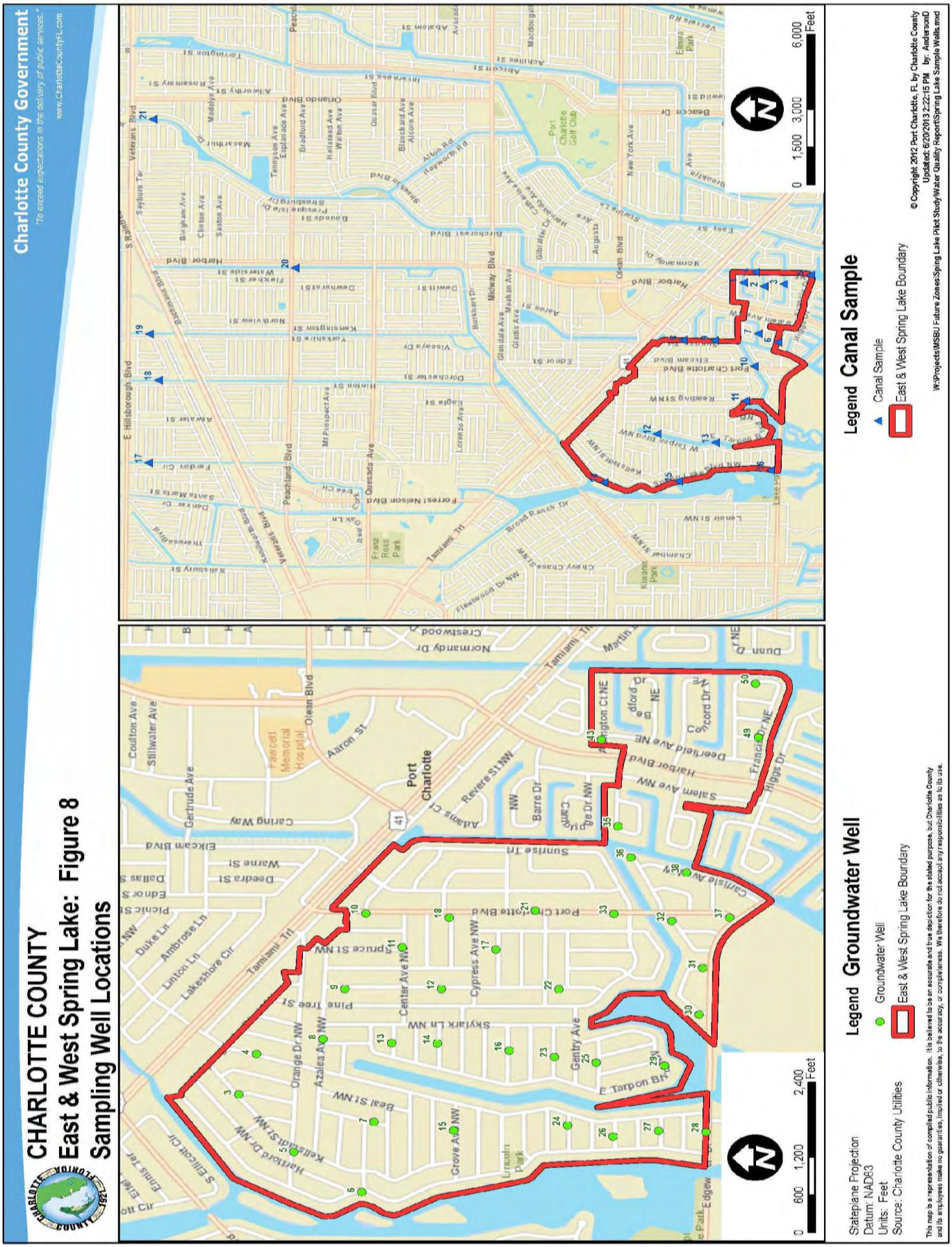


Figure 8 courtesy of Charlotte County Utilities

laboratory located at the East Port Water Reclamation Facility for testing. Water levels measurements are taken at the same time that samples are taken using a sounding probe.

1.4.3 Testing

Once the samples are gathered and labeled, they are delivered to CCU's laboratory, located at the East Port Water Reclamation Facility. The East Port Laboratory (ID #E54436) is certified by the Florida Department of Health Bureau of Laboratories Water as a Basic Environmental Laboratory.

Samples have been tested for nitrogen (N) (Nitrate (NO_3) and Nitrite (NO_2) as well as for combined Nitrate + Nitrite (NO_3 + NO_2)), phosphorous (P) and fecal coliform. Although other parameters could be tested, these were selected based on potential connectivity to OSTDS's and the fact that these parameters are more common environmental concerns for water quality. In addition, and as mentioned above, the septic tank portion of the OSTDS is recognized as being inefficient in removal of each of these parameters, and instead rely upon the drainfield and soils below the drainfield and separation from the water table.

1.4.4 Nitrogen Characterization

As the OSTDS is inefficient in removing nitrogen, it is a concern for groundwater and surface water pollution. The potential for entering groundwater and surface water is increased depending on the soil conditions and separation of the drainfield to the water table. The U.S. Environmental Protection Agency (EPA) (1992) has estimated that approximately 11.2 grams of total nitrogen is released per individual as wastewater, each day. Sources include toilets, baths, sinks and appliances (Toor et al 2011). This loading results in nitrogen concentrations in excess of 60 milligrams per liter (mg/L) based on previous studies performed in Florida. In comparison, the drinking water standard for total nitrogen is 10 mg/L. With an estimated removal efficiency of 10-40-percent within the OSTDS process, it is difficult to achieve removal to the point of compliance with drinking water standards. In addition to concerns with impact to drinking water, nitrate, nitrogen-enriched groundwater can contribute to eutrophication, which is a process that increases algae growth and can lead to inhibited aquatic life due to excess oxygen demand.

1.4.5 Phosphorous Characterization

As mentioned above, the septic tank portion of the OSTDS is limited in its ability to remove phosphorous, with limited amounts removed and primarily occurring in settling of solids into the bottom of the tank. With proper soils within the drainfield and soils below and beyond the drainfield (and with proper separation from the groundwater table), removal efficiencies up to 95-percent can be achieved. Phosphorous which is not removed and makes its way into the groundwater and even surface water can cause concerns and impair water quality at much lower levels than similar concentrations of nitrogen. In fact, studies have demonstrated eutrophic conditions (which promote algae growth) when phosphorous concentrations exceed just 0.02 mg/L. A recent study performed in 2010 (Tjandraatmadja et al) found that phosphorous was present in 97-percent of 156 tested household products (e.g. soaps, cleaners and personal care products). Recognizing the impacts of phosphorous at elevated levels, significant changes have been made over the years in reducing the amount of phosphorous used in products such as dishwater detergents. In fact, in 2010, 16 states instituted bans on the sale of dishwater detergents which contain more than 0.5-percent phosphorous. Florida was not one of these states, however. As a result of the progression in lowering the concentration of phosphorous in household products, wastewater concentrations are typically less than 10 mg/L. Although proper soils are expected to be effective in removing or reducing the phosphorous from effluent, research has shown that phosphorous plumes can develop in groundwater even where systems appear to be working properly. The recommended means of reducing this phosphorous transport to surface water is by increasing the separation from water bodies and thereby increasing the potential for adsorption by the soil (Lusk et al, 2011)

1.4.6 Fecal Coliform Characterization

There are numerous microorganisms which can be present in wastewater and hence wastewater effluent from a septic tank. The majority of these are not harmful, but certain types are. For example, cholera, dysentery, shigellosis, and typhoid fever are all waterborne diseases caused by bacteria. As the number microorganisms that could be present are numerous, detecting and testing for all types would be cost-prohibitive. As such, indicator bacteria such as fecal coliform are typically tested for instead. As fecal coliform is a survivor of the intestinal flora, its presence can be used to reflect the possible presence of all human pathogens in wastewater. As mentioned above, given proper soil types and conditions, fecal coliform removal

efficiencies can reach near 100-percent. However, with improper soil types and/or a lack of separation from the water table, the removal efficiency can be greatly compromised. Bacteria present in the effluent can be removed through filtration or straining as well as through adsorption. Where the soil pores are smaller than the bacteria, the pores are able to block the bacteria from passing, and hence are strained from the effluent. If the soils are too course or porous, the straining is less effective. Where the soil pores are larger than the bacteria, then bacterial removal can also be accomplished through adsorption. Adsorption occurs when the electrically charged bacteria adheres to the surface of the soil particle. In addition to straining and adsorption, it is noted that some bacteria which exits in the effluent may not survive well outside of the human body. Several Florida studies have demonstrated increased bacterial concentrations to groundwater in coastal areas with high housing densities. In these cases, the bacteria transport to groundwater was attributed to saturated soils (i.e. limited separation from the groundwater. Although current regulations prohibit release to saturated soils (with a minimum separation from the seasonal high water table of 24-inches), older systems may not meet this requirement (Lusk et al, 2011).

1.5 WATER QUALITY RESULTS

As mentioned above, sampling and testing began in June of 2012 and has continued through the date that this report was prepared. Thus far, sampling has been performed in June/July of 2012; September/October of 2012; January/February of 2013 and March/April of 2013. The goal has been to collect samples during different periods of the year in order to view water quality results at different times of year where the water table is varied. As such, performing the sampling and testing approximately every 2 months allows us to see if there is a variation in the results at specific locations and/or at different times of the year and with varying water tables.

1.5.1 Nitrogen Results

For nitrogen testing, it was decided to test for nitrates and nitrites. Alternately, testing could be performed for total nitrogen (which would include the addition of total kjeldahl nitrogen (TKN) to the nitrates and nitrites). However, as the organic nitrogen and ammonia which comprise TKN are typically removed through nitrification process within the soils, a decision was made to just test for those parameters likely to be present, nitrates and nitrites.

Nitrogen has been tested for in accordance with EPA method 353.2. More specifically, the samples were tested for nitrate (NO_3) and nitrite (NO_2) and for combined nitrate + nitrite (NO_3+NO_2). The minimum detection limit for each of these parameters is 0.004 mg/L. For those results which indicate a result of 0.004 mg/L in the test report, it is likely that the parameter was non-detectable or at least below the minimum limit.

For NO_2 + NO_3 the groundwater sample results ranged from non-detectable to 39.17 mg/L with an average of 0.637 mg/L. Of the 50+ samples taken during each sample period, it is noted that the majority of the wells demonstrated little to no significant impact at the time of sampling. However, four (4) wells in particular demonstrated elevated levels during multiple sampling periods. Groundwater well (GW) 9 tested at 19.439 mg/L and 4.692 mg/L during the first two (2) sampling periods. (Due to low water table, this well was not able to be sampled during the last two (2) sampling periods.) Similarly, wells GW-19 and GW-40 had multiple sampling periods where the levels were above 2 mg/L and with high test results of 17.33 mg/L and 15.171 mg/L, respectively. The low, high and average nitrate + nitrite levels for the groundwater samples are provided in Table 2 below for each sampling period. In addition, the average depth of the water table below land surface (BLS) is also displayed. Results for all sampling data are provided graphically in Charts 4 and 5. Chart 4 displays the data for results less than 1 mg/L (as the majority of the results were in this range), while Chart 5 displays the data for all results, including those above 1 mg/L.

Table 2

Nitrate + Nitrite Concentrations in Groundwater Well Samples

	Jun/Jul 2012	Sep/Oct 2012	Jan/Feb 2013	Mar/Apr 2013
Low	0.004 mg/L	0.004 mg/L	0.004 mg/L	0.004 mg/L
High	19.439 mg/L	4.692 mg/L	17.33 mg/L	39.17 mg/L
Water Table	2.1 ft BLS	2.1 ft BLS	3.1 ft BLS	3.9 ft BLS
Average	.605 mg/L	0.184 mg/L	0.743 mg/L	1.02 mg/L

In comparing the test results to the groundwater elevation, it is noted that in general, the highest individual samples as well the highest average samples occurred during the period where the groundwater table is at its lowest. However, these results correspond with the period of year when water usage is typically at its highest. As a portion of the East & West Spring Lake residents are seasonal, it is estimated that the nitrogen levels are at their highest when the OSTDS contribution is also at its highest.

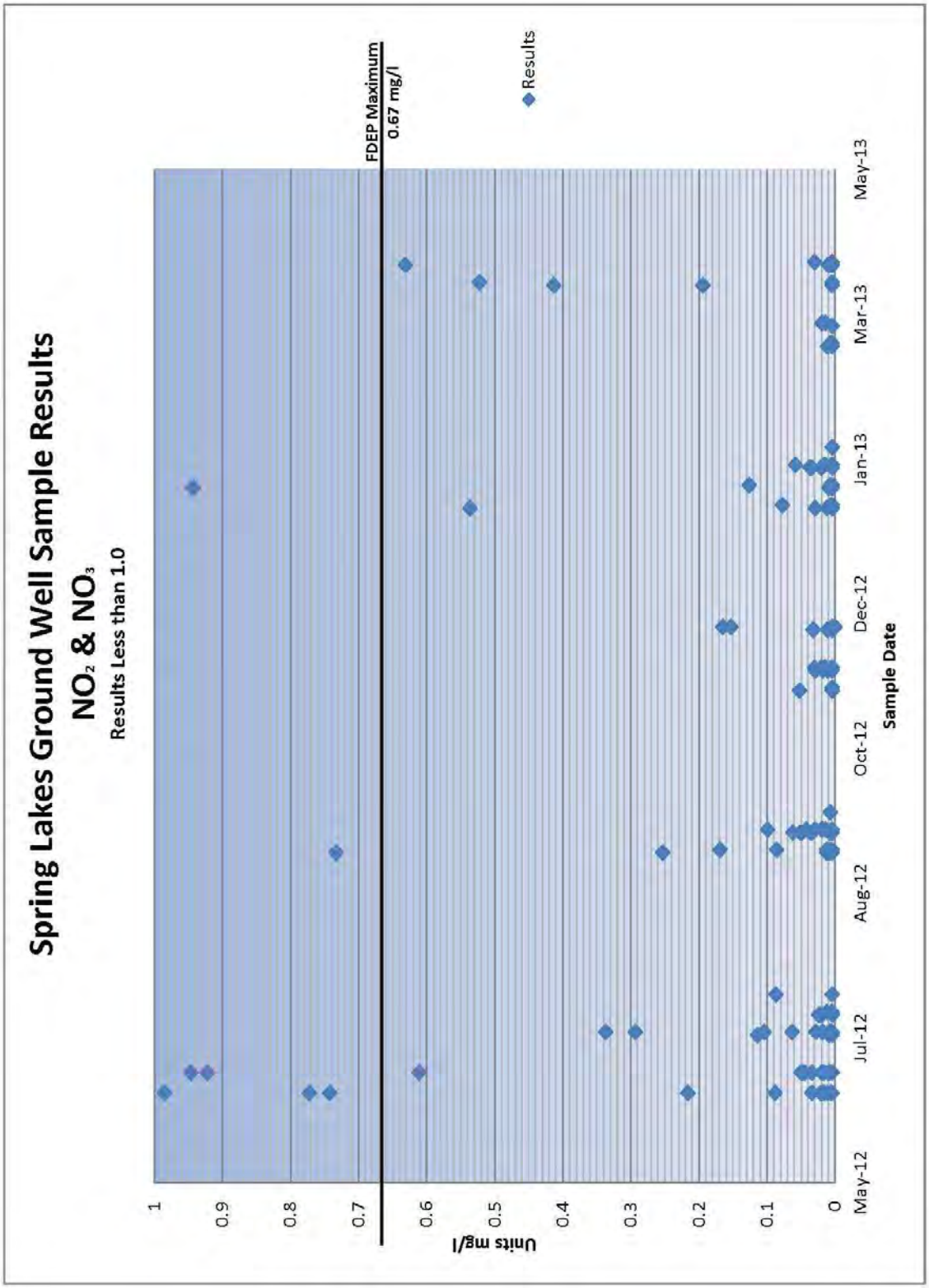

Spring Lakes Ground Well Sample Results
NO_2 & NO_3
Results Less than 1.0
FDEP Maximum
0.67 mg/l
Results
Units mg/l
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
May-12
Jul-12
Aug-12
Oct-12
Dec-12
Jan-13
Mar-13
May-13
Sample Date

Chart 4

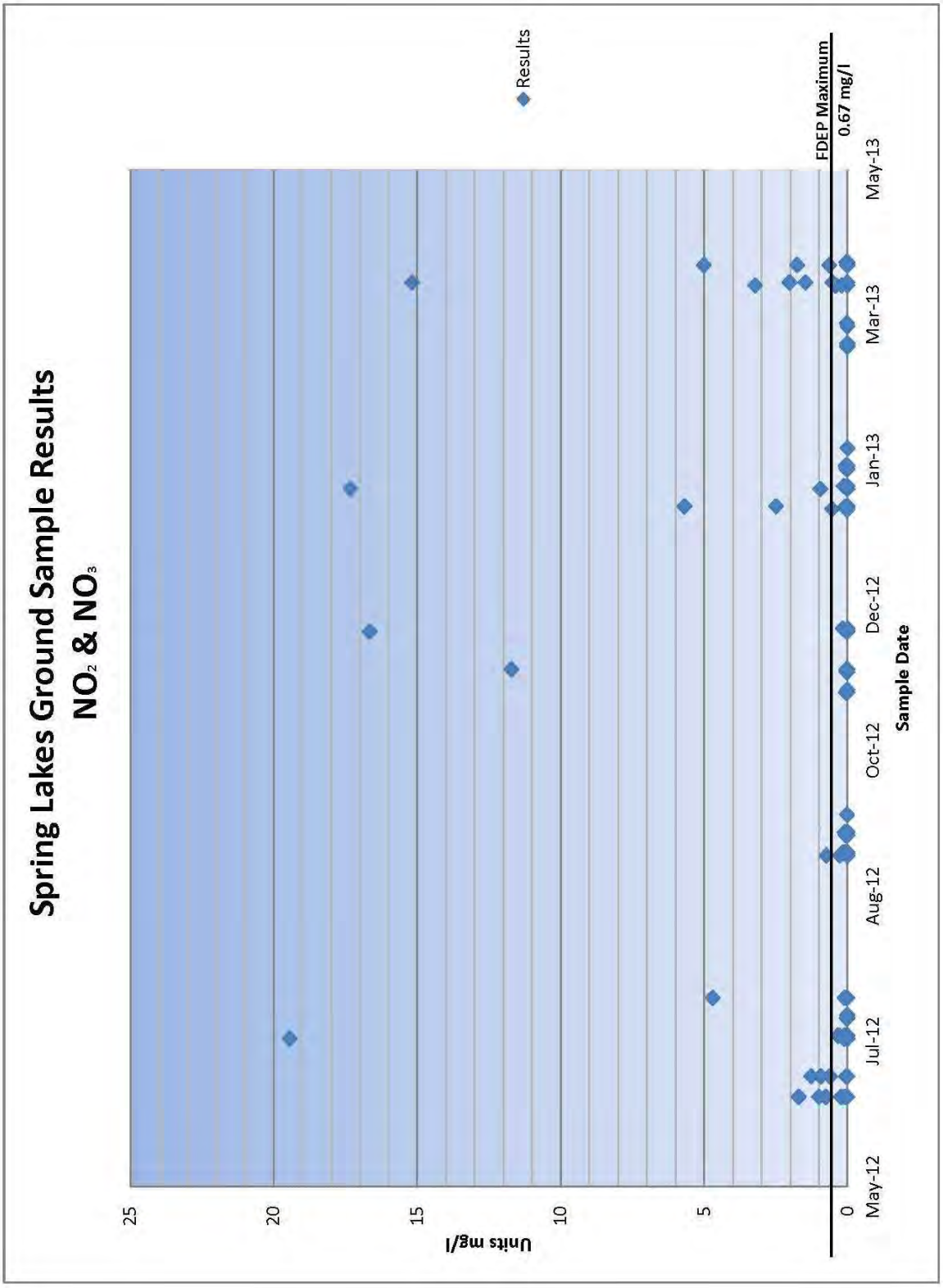

Spring Lakes Ground Sample Results
NO2 & NO3
Units mg/l
25
20
15
10
5
0
May-12
Jul-12
Aug-12
Oct-12
Dec-12
Jan-13
Mar-13
May-13
Sample Date
Results
FDEP Maximum
0.67 mg/l

Chart 5

As mentioned above, the NNC rule has set a maximum discharge concentration of 0.667 mg/L for total nitrogen for Charlotte Proper, based on a 3-year period. Although the sampling period is for less than 1-year it is noted that the groundwater levels on a near 1-year average (for just nitrates and nitrites) are above these levels. (Keep in mind that the testing performed to date has just been for nitrates and nitrites and does not include the potential for the addition of TKN, which would only increase the concentrate.) Please note that the NNC rule **does not** apply to groundwater but rather only to surface water. However, once nitrogen concentrations have made it into the groundwater, little if any of the nutrients are removed. In addition, and as will be explained later in this report, once effluent, rainwater, etc., makes its way into the groundwater, it does not necessarily make its way to surface water. A portion will be released to surface water, but a portion will also be retained as groundwater and will migrate within the groundwater zones, and possibly to points where water is removed from wells downstream for potable or other uses. As such, it is critical to recognize the impact to the groundwater as well as the potential impact to surface water (as will be discussed below in section 1.9 - Surface Water Vs Groundwater). It is estimated that 11-22% of the total nitrogen load to the Charlotte Harbor is contributed by septic systems (Staugler, 2013).

In addition to the groundwater well samples, 21 sample locations were set within the adjacent canals to determine background levels upstream and downstream of the East & West Spring Lake area. As expected, the nitrogen levels within the canal samples were much lower than the levels within groundwater samples, ranging from 0.004 mg/L (non-detectable) to 0.062 mg/L. Table 3 provides the low, high and average nitrate + nitrite levels for the canal samples taken. Charts 6 and 7 graphically display the results for all sample taken, with Chart 6 displaying the results within Spring Lake and Chart 7 displaying the results from the upstream canals. As displayed, the levels within Spring Lake are higher than the upstream levels.

Table 3

Nitrate + Nitrite Concentrations in Canal Samples

	Jun/Jul 2012	Sep/Oct 2012	Jan/Feb 2013	Mar/Apr 2013
Low	.004 mg/L	0.004 mg/L	0.004 mg/L	0.004 mg/L
High	0.033 mg/L	0.062 mg/L	0.033 mg/L	0.038 mg/L
Average	0.021 mg/L	0.03 mg/L	0.013 mg/L	0.012 mg/L

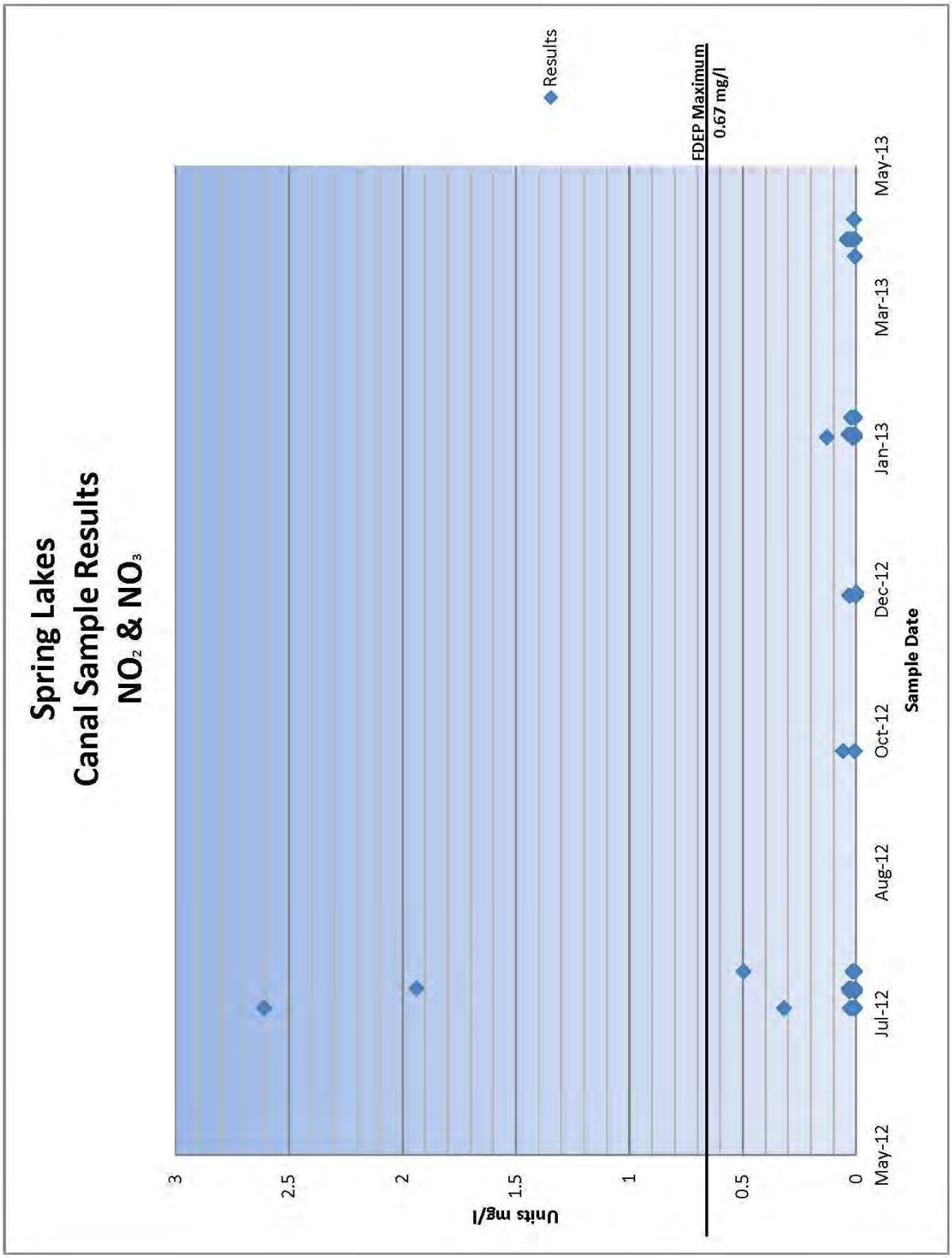

Spring Lakes
Canal Sample Results
NO2 & NO3
Units mg/l
3
2.5
2
1.5
1
0.5
0
May-12
Jul-12
Aug-12
Oct-12
Dec-12
Jan-13
Mar-13
May-13
Sample Date
Results
FDEP Maximum
0.67 mg/l

Chart 6

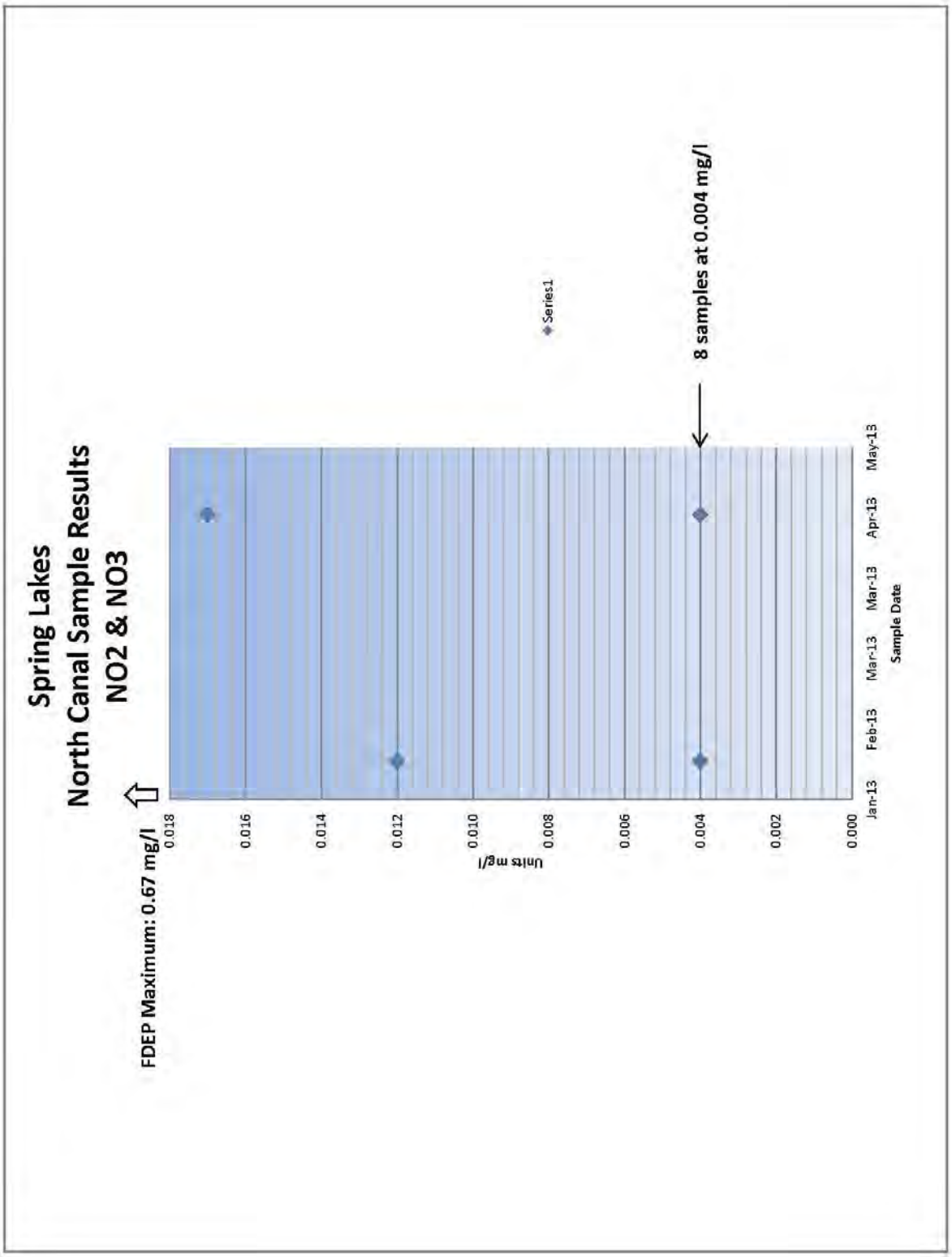

Spring Lakes
North Canal Sample Results
NO2 & NO3
FDEP Maximum: 0.67 mg/l
8 samples at 0.004 mg/l
Series1
Units mg/l
0.018
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
Jan-13
Feb-13
Mar-13
Mar-13
Apr-13
May-13
Sample Date

Chart 7

As displayed, these levels are significantly below the NNC level set for this area (0.67 mg/L). However, as mentioned above, the levels tested were solely for nitrates and nitrites and did not include the TKN portion of total nitrogen. Please note the significance of sampling within the canals was to establish and understand what the current downstream and upstream nutrient concentrations are within the canal system. These results are not meant to represent an impact of the East & West Spring Lake area from either OSTDS's or other parameters (fertilizers etc.) released from within the study area.

1.5.2 Phosphorous Results

Phosphorous has been tested in accordance with EPA method 365.4. The minimum detection level for phosphorous (P) is 0.02 mg/L. For those results which indicate a result of 0.02 mg/L in the test report, it is likely that the parameter was non-detectable or at least below the minimum limit.

For phosphorous, the groundwater sample results ranged from non-detectable to 13.53 mg/L with an average of 1.43 mg/L for all samples taken. The majority of the samples tested positive for phosphorous and were significantly above the NNC limit of 0.19 mg/L. The low, high and average phosphorous levels for the groundwater samples are provided in Table 4 below for each sampling period. In addition, the average depth of the water table below land surface (BLS) is also displayed. Results for all sampling data are provided graphically in Charts 8 and 9. Chart 8 displays the data for all results while Chart 9 displays the data for results less than 5 mg/L (as the majority of the results were in this range).

Table 4

Phosphorous Concentrations in Groundwater Well Samples

	Jun/Jul 2012	Sep/Oct 2012	Jan/Feb 2013	Mar/Apr 2013
Low	.02 mg/L	0.02 mg/L	0.11 mg/L	0.15 mg/L
High	4.05 mg/L	13.53 mg/L	5.62 mg/L	31.69 mg/L
Water Table	2.1 ft BLS	2.1 ft BLS	3.1 ft BLS	3.9 ft BLS
Average	1.05 mg/L	1.36 mg/L	1.12 mg/L	2.39 mg/L

In comparing the test results to the groundwater elevation, it is noted that in general, the highest individual sample as well the highest average for samples occurred during the period where the

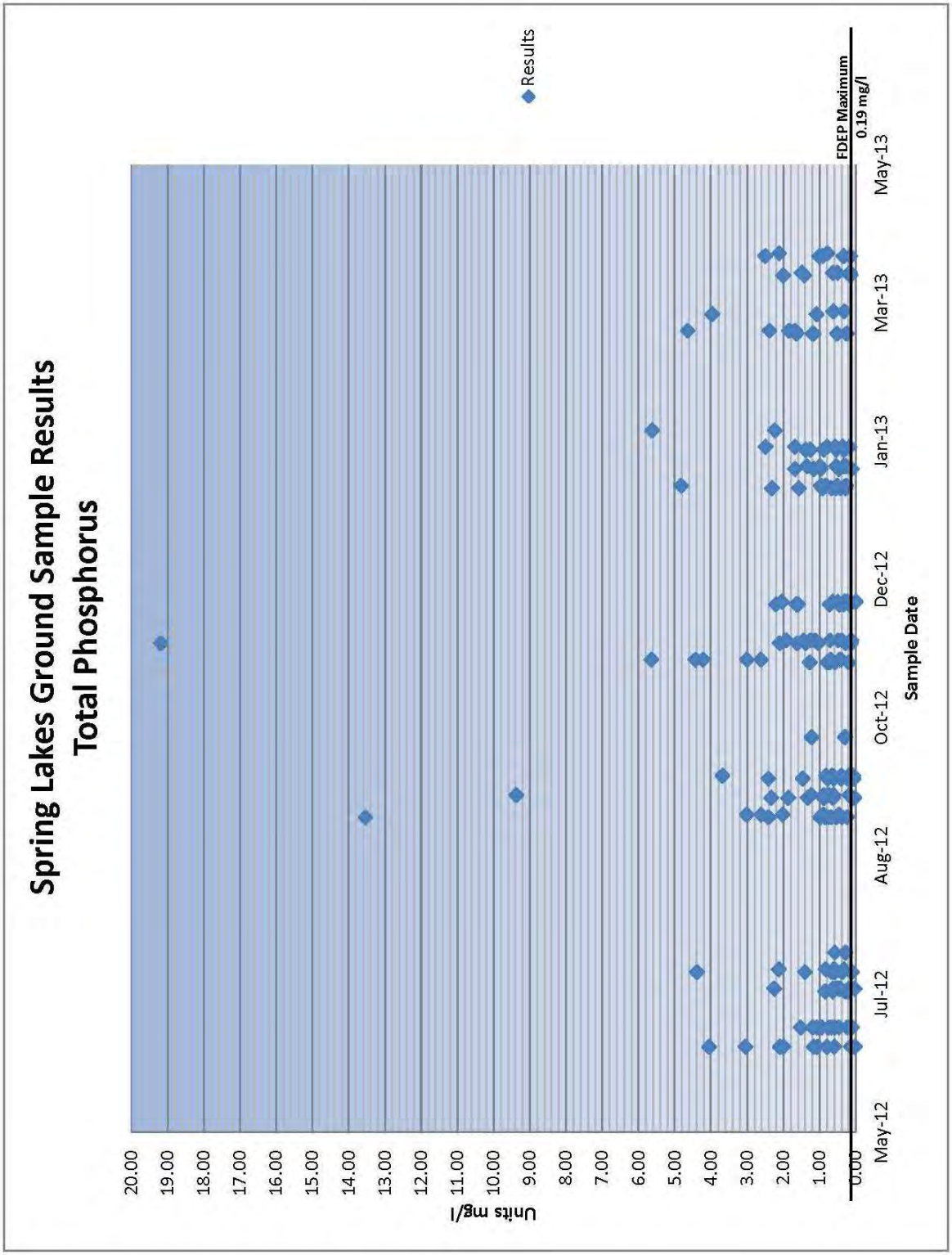

Spring Lakes Ground Sample Results
Total Phosphorus
Units mg/l
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
May-12
Jul-12
Aug-12
Oct-12
Dec-12
Jan-13
Mar-13
May-13
Sample Date
Results
FDEP Maximum
0.19 mg/l

Chart 8

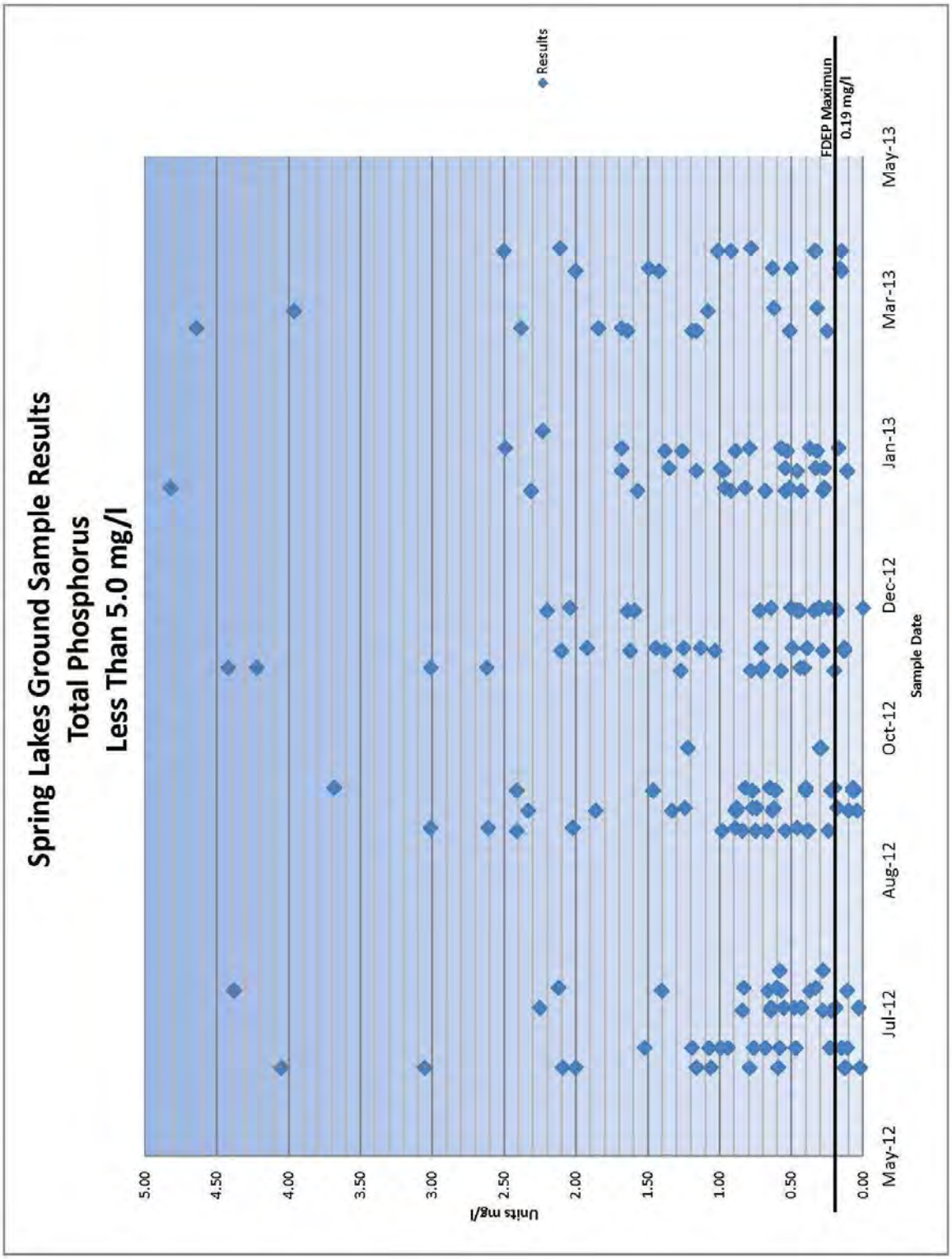

Spring Lakes Ground Sample Results
Total Phosphorus
Less Than 5.0 mg/l
Units mg/l
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
May-12
Jul-12
Aug-12
Oct-12
Dec-12
Jan-13
Mar-13
May-13
Sample Date
Results
FDEP Maximun
0.19 mg/l

Chart 9

groundwater table is at its lowest. However, these results correspond with the period of year when water usage is typically at its highest. As a portion of the East & West Spring Lake residents are seasonal, it is estimated that the phosphorous levels are at their highest when the OSTDS contribution is also at its highest.

Unlike nitrogen, only two (2) test samples resulted in phosphorous levels at the non-detection limit of 0.02 mg/L. All other samples were above the non-detection limit, with many of these being above the state established NNC level of 0.19 mg/L for Charlotte Proper. In fact, and as displayed, the average during each sample period was more than five (5) times the state allowed NNC level for phosphorous released to surface water for the first testing period and more than 12 times for the most recent testing period. As with Nitrogen, the NNC requirements for phosphorous are for surface water, and **do not** apply to groundwater. However, similarly with nitrogen, once phosphorous is released into the groundwater, little if any is removed.

As mentioned above, high levels of phosphorous can be more significant than high levels of nitrogen due to the potential for eutrophic conditions at a very low level (as low as 0.02 mg/L).

In addition to the groundwater samples, samples were also taken from the 21 canal testing locations. Results of testing from the canals showed phosphorous levels ranging from 0.1 mg/L to 0.66 mg/L. Although these levels are much lower than the groundwater levels, they are above the levels set for numeric nutrient criteria. Within the canals, 55 of 69 samples tested higher than the NNC established limit of 0.19 mg/L. As mentioned above, phosphorous can be eutrophic and promote algae growth at a much lower level than nitrogen, with eutrophic conditions reported as low as 0.02 mg/L. It is noted that in general, the phosphorous levels within the canals are higher during the wet and warmer periods of the year than the dry and cooler periods of the year, being nearly double during the wet and warmer periods. However, even during the cooler periods, the average levels are near or above the NNC limit.

Table 5 provides the low, high and average phosphorous levels for the canal samples taken. Charts 10 and 11 graphically display the results for all samples taken, with Chart 10 displaying the results within Spring Lake and Chart 11 displaying the results from the upstream canals. As displayed, the levels within Spring Lake are higher than the upstream levels.

Table 5

Phosphorous Concentrations in Canal Samples

	Jun/Jul 2012	Sep/Oct 2012	Jan/Feb 2013	Mar/Apr 2013
Low	0.22 mg/L	0.29 mg/L	0.02 mg/L	0.04 mg/L
High	0.66 mg/L	0.52 mg/L	0.32 mg/L	0.42 mg/L
Average	0.42 mg/L	0.41 mg/L	0.18 mg/L	0.23 mg/L

1.5.3 Fecal Coliform Results

Fecal coliform has been tested for in accordance with method SM9222D. Minimum detection limits for fecal coliform are 10 colonies per 100 ml. Many of the samples collected indicate a result of 10 col/100 ml. In those cases, it is likely that the result was less than the reported result as the minimum detection limit is reported, even if the result was less, as there is no way to distinguish if the result is less than the minimum detection limit. Of particular note, samples from GW-29 tested high during two (2) sample periods, June/July of 2012 and September/October 2012. The samples tested at 440 and 1720 col/100 ml, respectively. The low, high and average fecal coliform levels for the groundwater samples are provided in Table 6 below for each sampling period. In addition, the average depth of the water table below land surface (BLS) is also displayed. Results for sampling data are provided graphically in Chart 12.

Table 6

Fecal Coliform Concentrations in Groundwater Samples

	Jun/Jul 2012	Sep/Oct 2012	Jan/Feb 2013	Mar/Apr 2013
Low	10 col/100 ml	10 col/100 ml	10 col/100 ml	10 col/100 ml
High	2940 col/100 ml	1720 col/100 ml	10 col/100 ml	10 col/100 ml
Water Table	2.1 ft BLS	2.1 ft BLS	3.1 ft BLS	3.9 ft BLS
Average	123.5 col/100 ml	44.9 col/100 ml	10 col/100 ml	10 col/100 ml

Unlike nitrogen and phosphorous, the fecal coliform readings corresponded to the wet season when the water table is at its highest. This result is expected as bacteria, such as fecal coliform, do not survive well outside of the human body. As such, when the water table is at its lowest, during the dry period, it is more difficult for colonies to survive through the soil and make it into the water table. Conversely, nitrogen and phosphorous are nutrients and are not effected by time outside of an organism, but rather depend on the soil for filtering and adsorption.

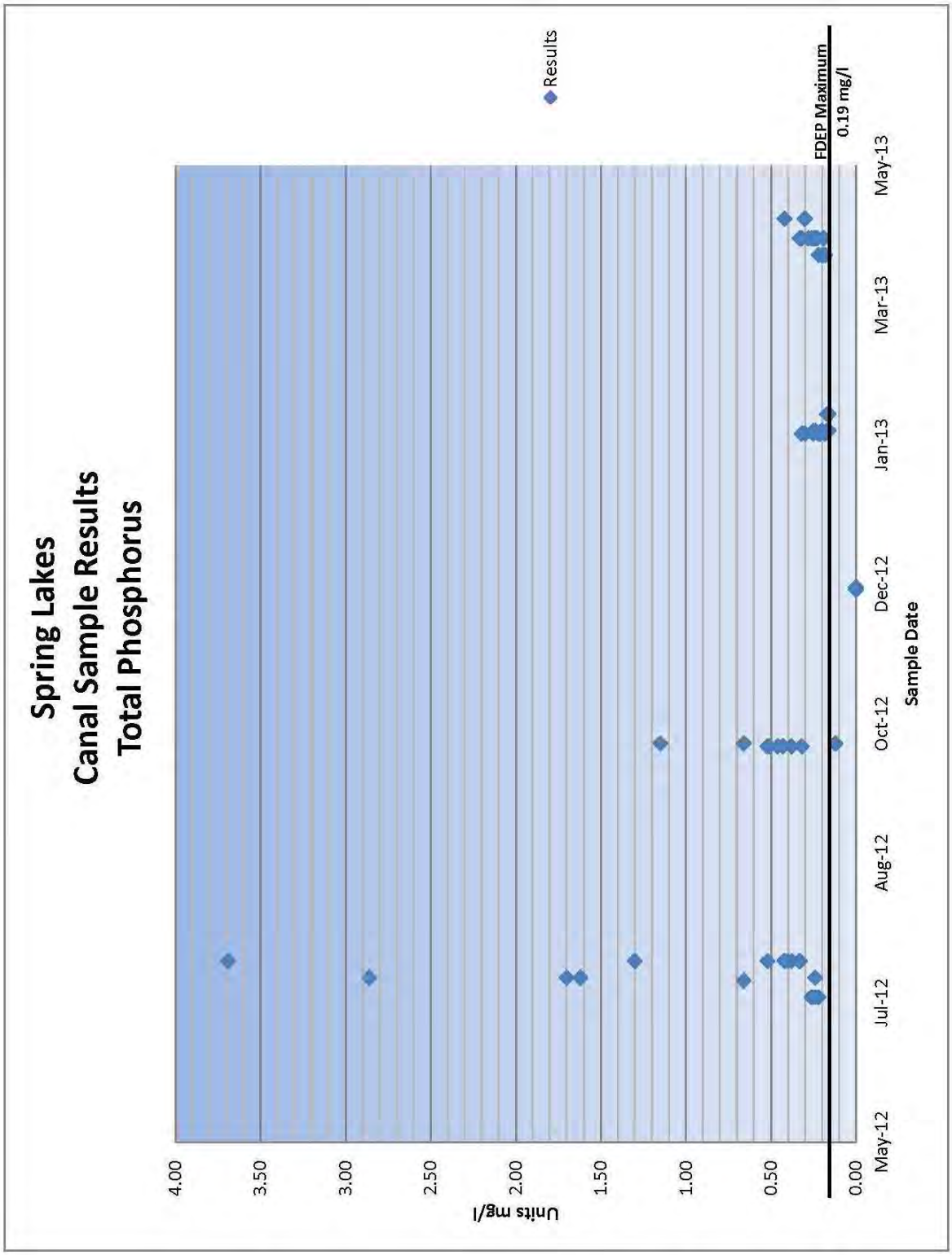

Spring Lakes
Canal Sample Results
Total Phosphorus
Results
FDEP Maximum
0.19 mg/l
Units mg/l
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
May-12
Jul-12
Aug-12
Oct-12
Dec-12
Jan-13
Mar-13
May-13
Sample Date

Chart 10

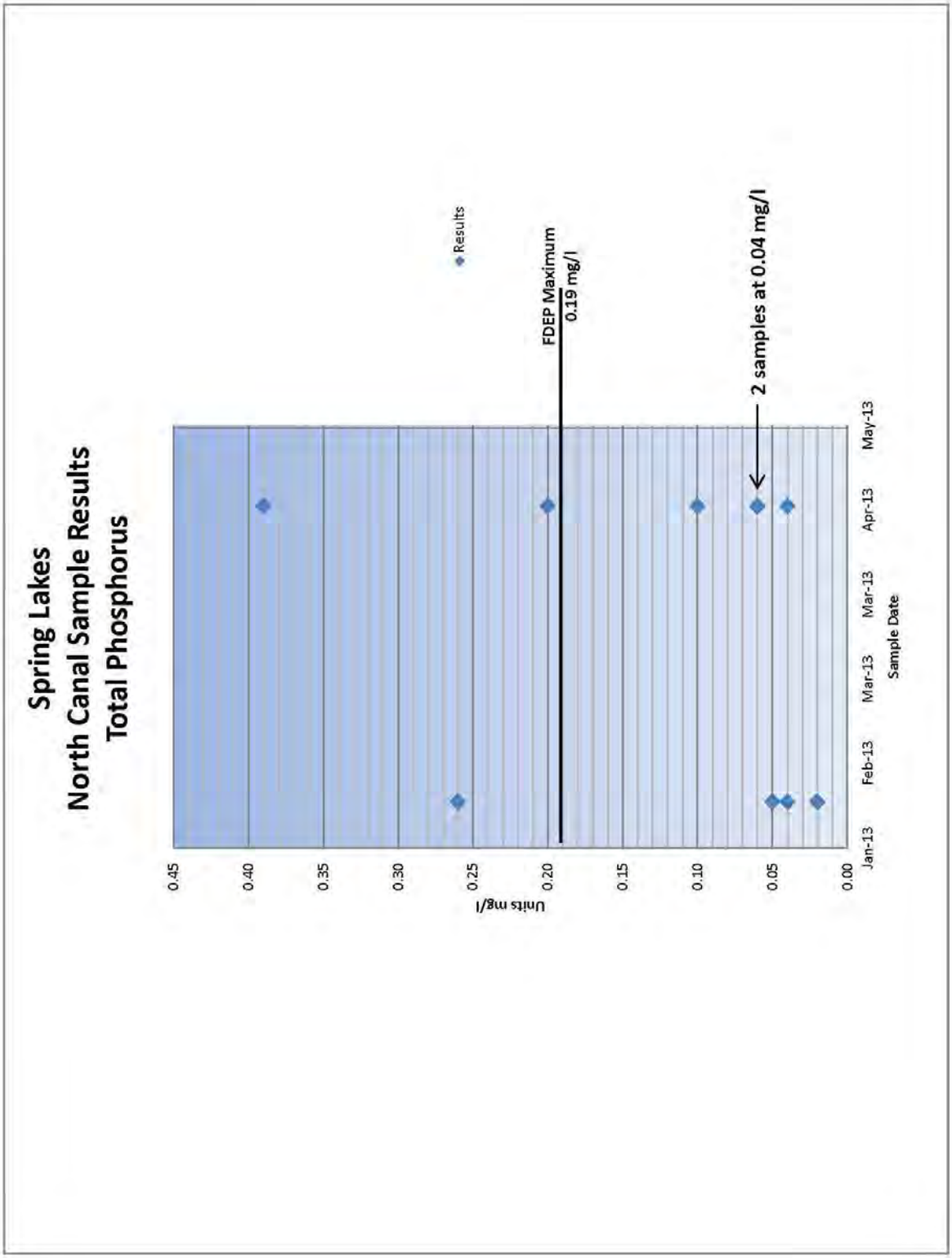

Spring Lakes
North Canal Sample Results
Total Phosphorus
Results
FDEP Maximum
0.19 mg/l
2 samples at 0.04 mg/l
Units mg/l
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Jan-13
Feb-13
Mar-13
Mar-13
Apr-13
May-13
Sample Date

Chart 11

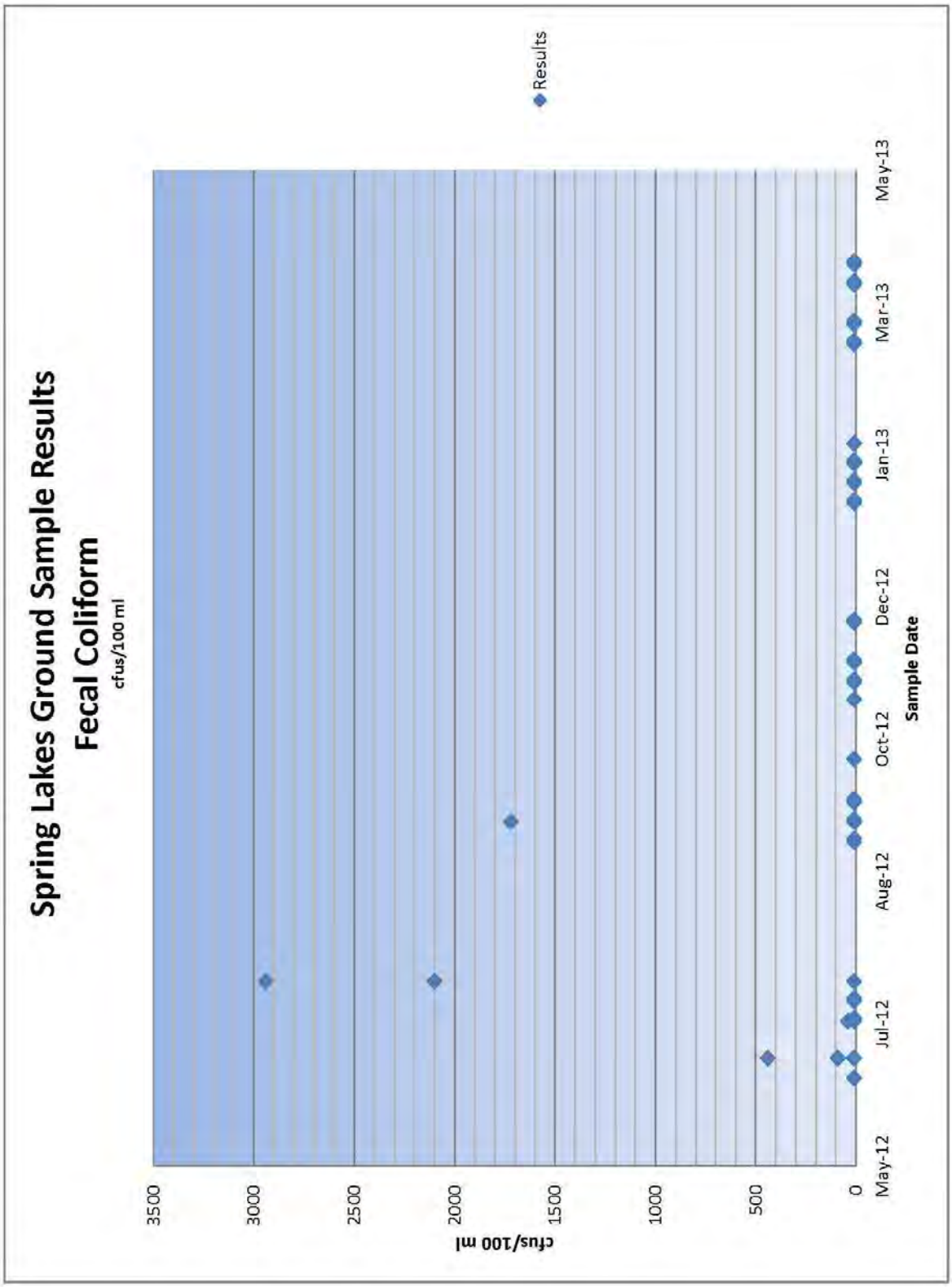

Spring Lakes Ground Sample Results
Fecal Coliform
cfus/100 ml
3500
3000
2500
2000
1500
1000
500
0
cfus/100 ml
May-12
Jul-12
Aug-12
Oct-12
Dec-12
Jan-13
Mar-13
May-13
Sample Date
Results

Chart 12

In addition to the groundwater wells, the 21 canal sample points have also been sampled for fecal coliform. The samples ranged from a low of 10 col/100 ml to a high of 200 col/100 ml. Although the highest concentrations of fecal coliform from the canal testing was much lower than the high value taken from the groundwater wells, the canals had more hits above the non-detection limit (10 col/100 ml). As mentioned, the canal samples were taken to give an upstream and downstream indication of the background surface water levels and are not meant to indicate a direct correlation or contribution from OSTDS's within East & West Spring Lake. Of more concern are those hits of fecal coliform within the groundwater samples within Spring Lake. As fecal coliform is not naturally occurring in the groundwater the source is projected be from an outside influence, such as an OSTDS.

Table 7 provides the low, high and average fecal coliform levels for the canal samples taken. Charts 13 and 14 graphically display the results for all sample taken, with Chart 13 displaying the results within Spring Lake and Chart 14 displaying the results from the upstream canals. As displayed, on average, the levels within Spring Lake are higher than the upstream levels.

Table 7

Fecal Coliform Concentrations in Canal Samples

	Jun/Jul 2012	Sep/Oct 2012	Jan/Feb 2013	Mar/Apr 2013
Low	10 col/100 ml	10 col/100 ml	10 col/100 ml	10 col/100 ml
High	90 col/100 ml	80 col/100 ml	200 col/100 ml	70 col/100 ml
Average	41.3 col/100 ml	29.1 col/100 ml	31.9 col/100 ml	18.1 col/100 ml

1.6 SIGNIFICANCE OF TEST RESULTS

As mentioned above, initial groundwater wells were randomly placed throughout East & West Spring Lake area. This random placement provides an overview of the general study area, but is not directly indicative of an issue with a failing OSTDS. However, it is noted that with this random sampling, it is difficult to achieve a true indication of the impact on the groundwater. The reason is that as effluent is released from a septic tank and migrates downward through the soil within the drainfield, once it makes it into the water table, it immediately begins to move in the direction of groundwater flow. As effluent is not released 24-hours per day, but rather sporadically throughout the day (and dependent on clothes washing, dish washing, showers, etc.), it is very difficult to capture a sample at a specific point in the water table at the specific

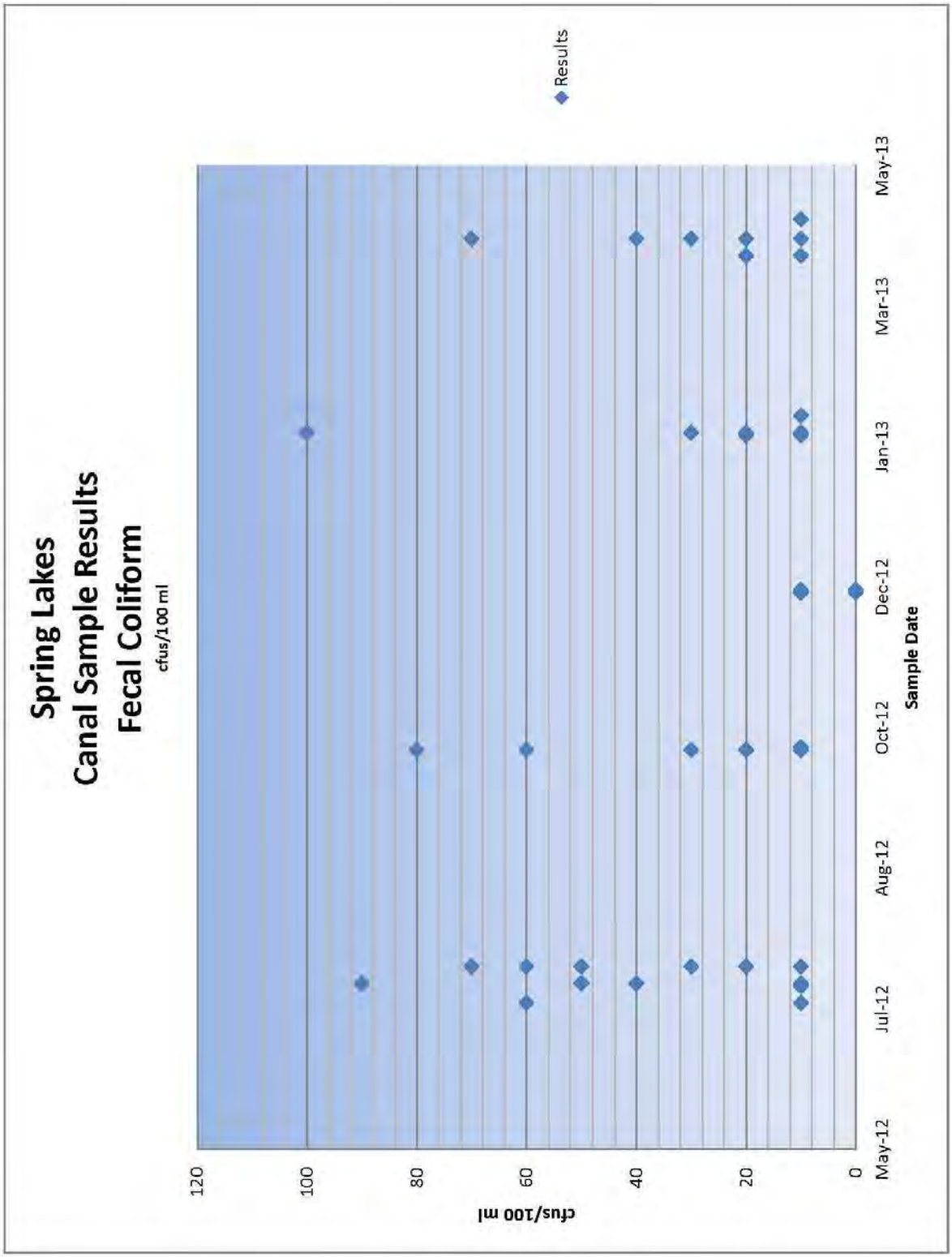

Spring Lakes
Canal Sample Results
Fecal Coliform
cfus/100 ml
cfus/100 ml
120
100
80
60
40
20
0
May-12
Jul-12
Aug-12
Oct-12
Dec-12
Jan-13
Mar-13
May-13
Sample Date
Results

Chart 13

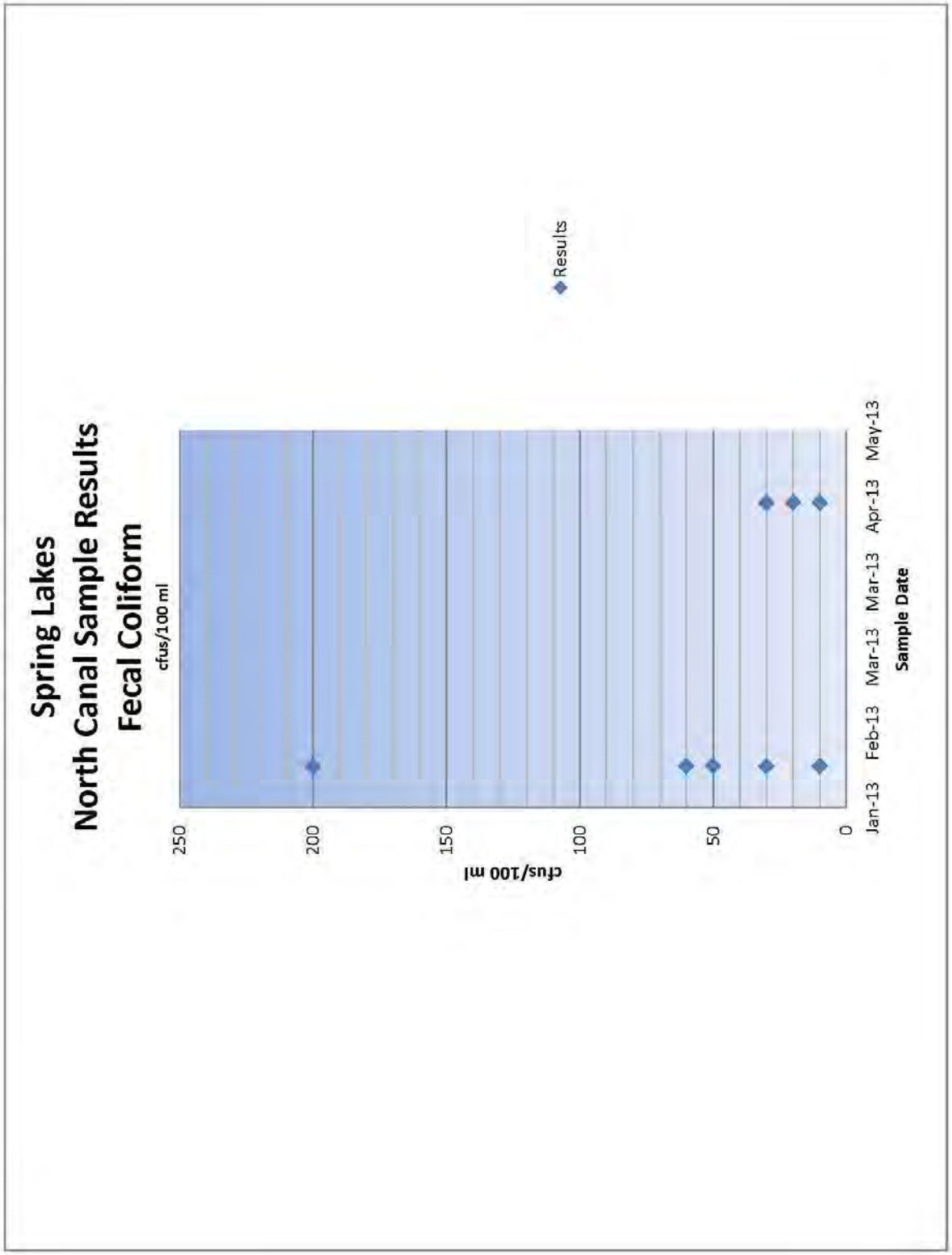

Spring Lakes
North Canal Sample Results
Fecal Coliform
cfus/100 ml
250
200
150
100
50
0
cfus/100 ml
Jan-13
Feb-13
Mar-13
Mar-13
Apr-13
May-13
Sample Date
Results

Chart 14

time that the effluent makes its way past a sample well. That being said, when a positive sample is obtained in a random location within the water table, such as where the initial 50 groundwater wells were set, it raises more concern that a point source such as an OSTDS likely was the cause of the “spike”. As fecal coliform is an indicator of bacteria present in human waste, to have samples testing in the range 1720 and 2940 col/100 ml within the groundwater away from OSTDS’s, questions must be raised as to how the bacteria (which is not naturally occurring in the groundwater), was introduced. Having multiple samples testing with high levels raises more concern. It has been suggested that fecal coliform could be from animals and not from human waste released from OSTDS’s. For the surface water samples, which actually had more hits above the non-detection limit than the groundwater samples, this is a reasonable conclusion. However, as animal feces (bird, dog, cat, etc.) would be introduced externally, above-ground, the likelihood that fecal content would make it into the water table, is less than fecal content released directly into the soil system, such as from a failing or inefficient OSTDS. Similarly, concentrations of nitrogen and phosphorous to the levels tested are more likely to be attributed to an internal release such as from an OSTDS than external release as well.

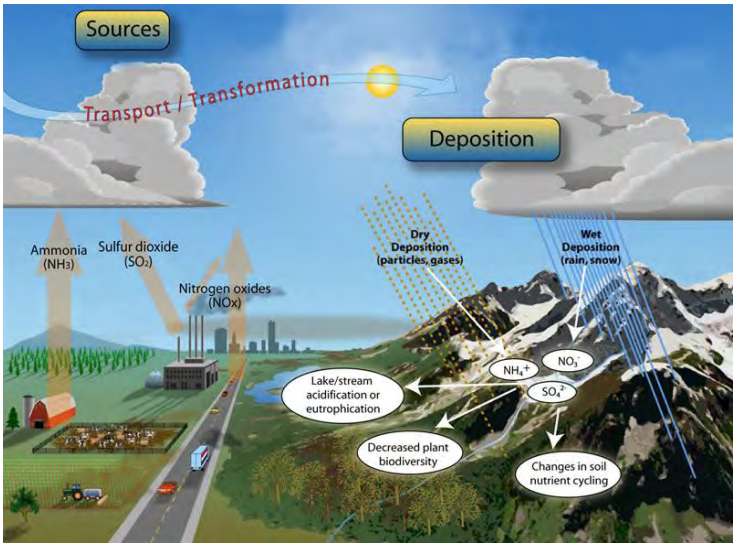
In order to take a more direct approach in sampling, the Charlotte County Health Department (CCHD) was contacted to determine locations of recent reported septic tank complaints. The CCHD logs nuisance complaints and shared the location of twelve (12) complaints within the East & West Spring Lake area. Nuisance complaints can be minor in nature such as a cleanout lid missing, or they can be related to a more major system failure. In each of the cases specific information about the complaint was not provided by the CCHD. Following receipt of the addresses for the complaint areas, new groundwater monitoring wells were installed adjacent to the OSTDS system, with permission by the home owner. At the time that this report was prepared, four (4) of the twelve (12) wells had been completed with initial samples taken. Two (2) of the four (4) wells tested positive for both nitrogen and phosphorous. In fact, the highest sample for Nitrogen taken to date was at one (1) of these locations. That level, as indicated above was 39.17 mg/L, a level that is nearly triple the allowable drinking water average.

1.7 OTHER CONTRIBUTORS

In addition to wastewater released from homes into OSTDS’s, other nutrient contributors should be considered. In residential areas such as the East & West Spring Lake area, these contributors primarily consist of atmospheric deposition and fertilizers. The difference with both

atmospheric deposition and fertilizer application from wastewater/effluent from an OSTDS is that the effluent is released below ground and, into the soil whereas fertilizers and atmospheric deposition are released above-ground, where the majority of the nitrogen and phosphorous deposited from external application is taken in by the vegetation.

1.7.1 Atmospheric Deposition



Atmospheric deposition refers to the transfer of particles from the atmosphere to the ground through air movement and precipitation. Specific information related to the atmospheric deposition of nitrogen and/or phosphorous within Charlotte County and specifically within East & West Spring Lake was unavailable for this study. However, studies performed in various areas of Florida have suggested atmospheric deposition can contribute up to 30-percent of the total contribution to a given area. As the atmospheric deposition is simply that, deposits made from the atmosphere to the ground, the majority of the nutrient loadings are expected to be utilized by plant life prior to reaching the groundwater tables. The atmospheric loadings could result in increased concentrations within the canals but the contribution to the groundwater is estimated to be limited due to nutrient uptake by the vegetation.

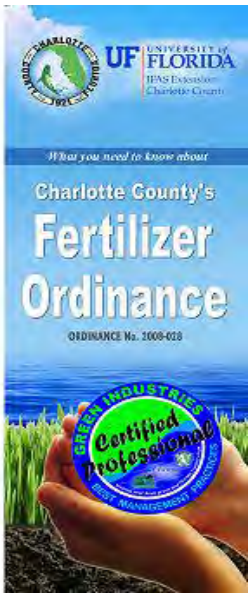
1.7.2 Fertilizer Restrictions

Charlotte County Fertilizer Ordinance was written in 2008 to allow for maintaining healthy landscapes while minimizing the potential impact to groundwater and surface water. The Ordinance was amended in 2011 (No. 2011-017) to further restrict the period when fertilizer can be applied and to further restrict the application of nitrogen. Highlights of the ordinance include:

1. No fertilizer containing nitrogen or phosphorus may be applied from June 1st to September 30th to turf or landscape plants.

2. No more than 4 pounds of nitrogen per 1,000 square feet total per year can be applied to St. Augustine grass.

3. No more than 0.5 pounds of Phosphorous per 1,000 square feet total per year can be applied to any turf type.



With restrictions in place, the County has taken steps in the right direction of significantly reducing the potential for nitrogen or phosphorous to make its way into either the groundwater or surface water. By eliminating the ability to apply fertilizer during the rainy season, the potential for the rain to either wash the fertilizer into nearby swales, streams or canals is virtually eliminated. Likewise, the potential for the saturation to push the nitrogen or phosphorous into the groundwater is also virtually eliminated. Finally, restricting the nitrogen and phosphorous to 4 pounds and 0.5 pounds per 1,000 square feet, per year, respectively, nearly guarantees that the nutrients will be taken in by the plants with little if any excess nutrients remaining to make their way into the groundwater or nearby surface waters. Within the East & West Spring Lake area, the typical lot size is 80-feet wide by 125 feet deep, or 10,000 square feet. This equates to an annual loading of 40 pounds for nitrogen per residence and 5 pounds of phosphorous. With 1,708 current residences within East & West Spring Lake, this further equates to a maximum of 68,320 pounds (34.16 tons) of nitrogen and 8,540 pounds (4.27 tons) of phosphorous applied annually to the area.

In comparison, an estimated 11.2 grams per day per capita of nitrogen (Toor et al, 2011) and 2.7 grams per day per capita of phosphorous (Lusk et al, 2011) are released into residential wastewater. CCU has estimated that daily flow per residence is approximately 120 gallons per day. It is therefore estimated that 18 pounds of nitrogen and 4.34 pounds of phosphorous are generated and released within 43,800 gallons of wastewater per residence on an annual basis. With 1,708 current residences within East & West Spring Lake, this equates to 30,744 pounds (15.4 tons) of nitrogen, 7,413 pounds (3.7 tons) of phosphorous and 74.8 million gallons per year released to OSTDS's and potentially to groundwater. Please note the difference that nitrogen and phosphorous from OSTDS's are applied under the ground surface as to atmospherically. Atmospheric application is to a large extent, utilized by plant life, as is its purpose in application.

1.8 SOILS

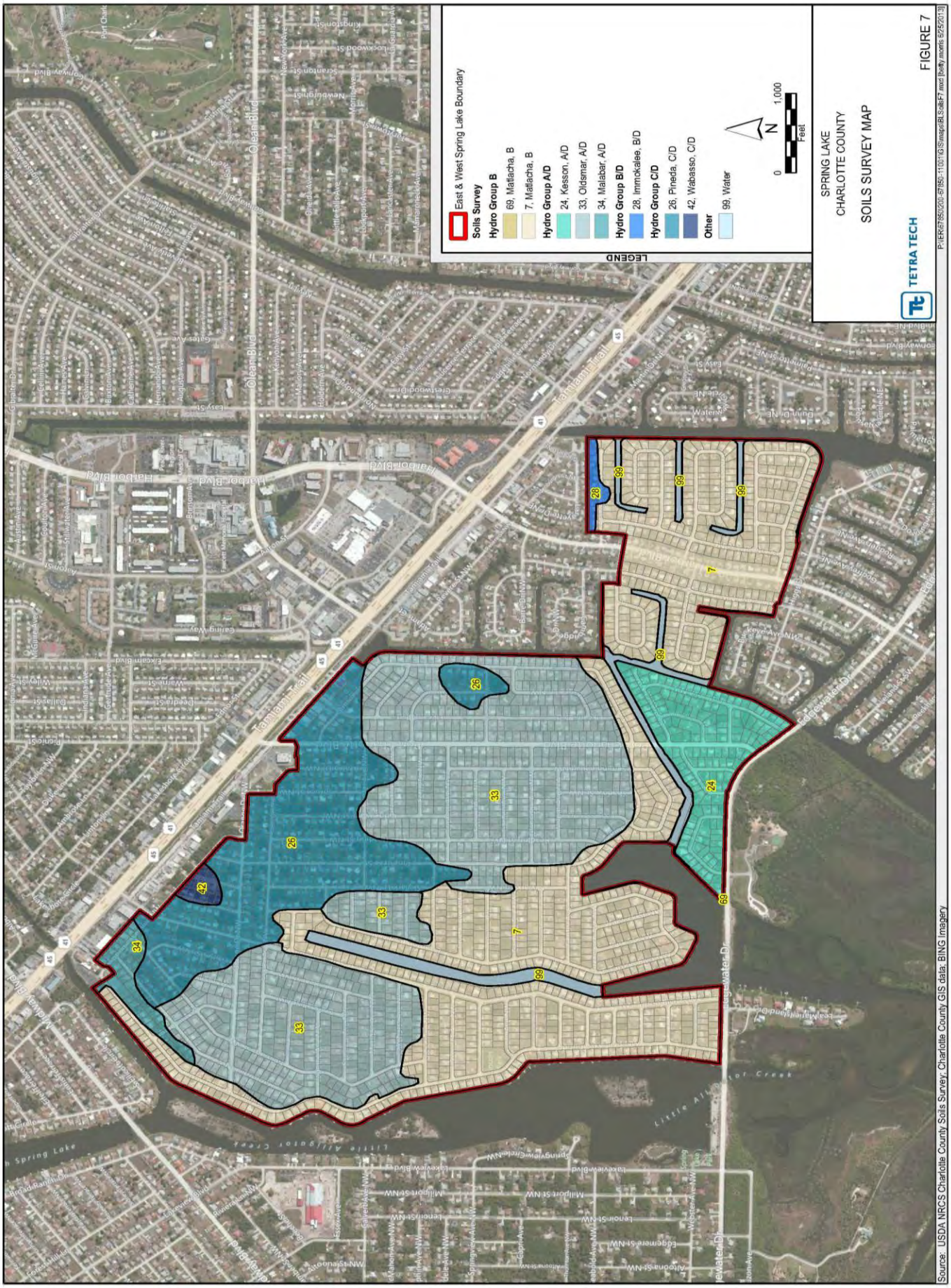
According to the Soil Survey of Charlotte County, the primary soils within the East and West Spring Lake area primarily consist of Matlacha Sands, Kesson Fine Sand, Oldsmar Sand and Pineda Fine Sand. As shown in Figure 7 below, the soil distribution is fairly even amongst the East and West Spring Lake area. A general description of each soil type is provided below:

- Matlacha Sands: The upper sands within this complex (approximately 40-inches) consist of gravelly fine sand and sandy material with fragments of limestone and shell. The next layer of soils to a depth of 80-inches includes primarily fine sand, Permeability within this soil complex is moderately rapid to rapid. Some areas of this soil type contain boulders or compacted material which can impede proper functioning of septic tank absorption fields.

- Kesson Fine Sand – this is a nearly level poorly drained soil in broad tidal swamps and subject to tidal flooding. Soils within this complex (approximately 80-inches) consist of gravelly fine sand and sandy material with fragments of limestone and shell. Permeability within this soil is considered to be moderately rapid to rapid and unsuitable for OSTDS.

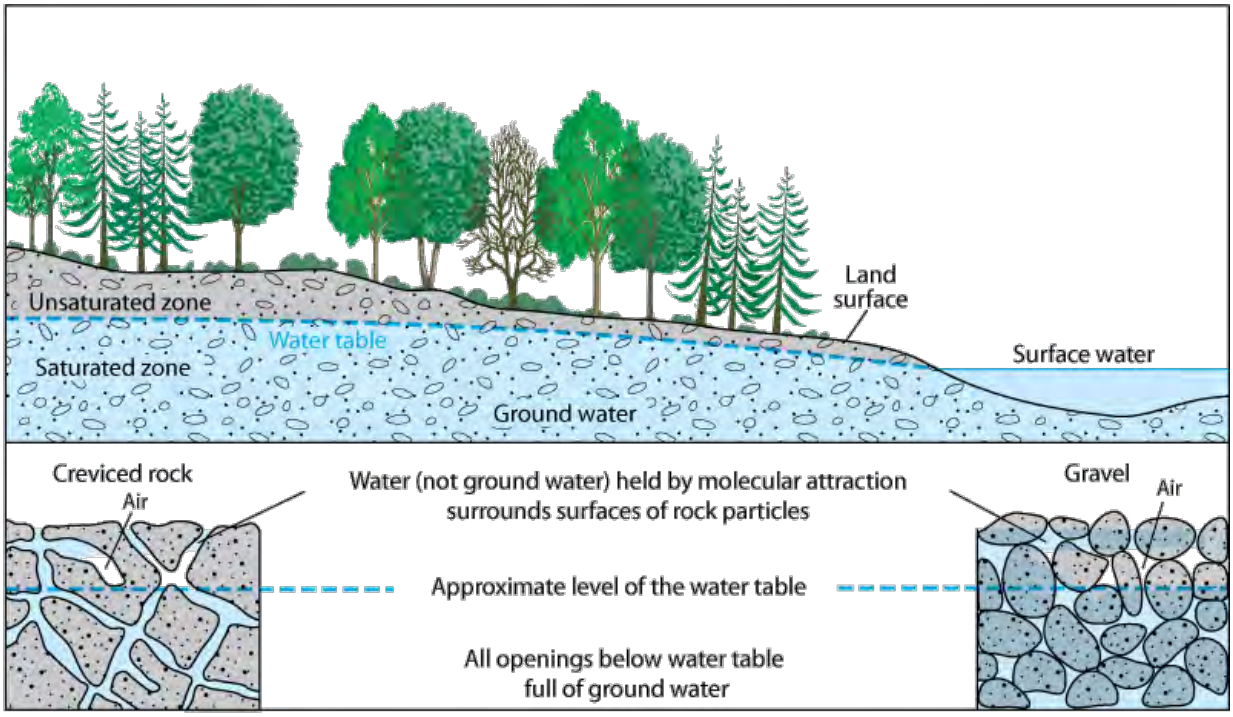
- Pineda Fine Sand – this soil type consists primarily of poorly drained fine sand to nearly 40 inches. Beneath the fine sand is a layer of sandy loam with a thickness of approximately 18-inches. Limestone or shell fragments are known to exist within these soil types at a depth of approximately 60-inches below land surface. In most years, the water table is within 10-inches of land surface for 2-4 months. Rapid permeability and close proximity to the water table makes this soil type unfavorable for OSTDS installations, without proper soils utilized above the native material for the drainfield and proper elevating of the drainfield as required under current regulations (post 1983).

- Oldsmar Sand – this soil type consists of gray to black, poorly drained sand to a depth of approximately 40 to 45 inches. Below the poorly drained sand is an approximate 11-inch layer of fine sandy loam, followed by a pale brown sand to a depth of approximately 80-inches. In most years, the water table is within 10-inches of land surface for 2-4 months. Rapid permeability and close proximity to the water table makes this soil type unfavorable for OSTDS installations, without proper soils utilized above the native material for the drainfield and proper elevating of the drainfield as required under current regulations (post 1983).


LEGEND
East & West Spring Lake Boundary
Soils Survey
Hydro Group B
69, Matlacha, B
7, Matlacha, B
Hydro Group A/D
24, Kesson, A/D
33, Oldsmar, A/D
34, Malabar, A/D
Hydro Group B/D
28, Immokalee, B/D
Hydro Group C/D
26, Pineda, C/D
42, Wabasso, C/D
Other
99, Water
0
1,000
Feet
N
SPRING LAKE
CHARLOTTE COUNTY
SOILS SURVEY MAP
TETRA TECH
FIGURE 7
P:\ER67850\200-67850-11001\GIS\maps\BLSalleF7.mxd [betty.morris 6/25/2013]
Source: USDA NRCS Charlotte County Soils Survey; Charlotte County GIS data; BING Imagery

1.9 SURFACE WATER VS GROUNDWATER

It is important to note the purpose of the sampling points and the difference between groundwater well samples and canal samples, especially as it related to the Charlotte Harbor estuary. Various studies have been performed in the past for different purposes on the water quality in Charlotte Harbor. The FDEP has even used data to determine water quality related impairments. Most recently, the FDEP has developed rule 62-302, the NNC rule described above for surface water impairment. Similarly, it is noted that studies performed have been within the harbor, or within the surrounding surface waters, some of which will be summarized later in this report. Although surface water, both within Charlotte Harbor and upstream of the Harbor, is very important to consider, equally important in the consideration of contaminants is



the groundwater. As the project is associated with the potential for replacement of the OSTDS's, we must consider the fact that effluent released from an OSTDS is released into the ground and ultimately into the groundwater. From that point, a portion of the groundwater ultimately makes its way into the surface water (Charlotte Harbor) but a portion is also retained in the aquifer system and intermixed with existing groundwater. In the process of treatment and post treatment (treatment from the soils beyond the drainfield, but prior to entering the groundwater), nutrients remaining from the OSTDS process can be further reduced. The

effectiveness of reduction is dependent on the soil type and the nutrient, both of which were discussed in sections of this report, above.

1.10 OTHER RELEVANT STUDIES

Numerous water quality studies have been performed throughout the State of Florida, including several relevant studies within Charlotte Harbor. Although the majority of these studies are related to the water quality of the estuary itself, and not specific to East & West Spring Lake, nor to the groundwater within the area, the reports have value in understanding water quality over an extended period of time. Provided below is a summary of some the relevant reports prepared:

1.10.1 Charlotte Harbor & Estero Bay Aquatic Preserves Water Quality Status & Trends for 1998-2005 (September 2007)

This study was prepared for the Florida Department of Environmental Protection (FDEP) Charlotte Harbor National Estuary Program in part to provide an understanding of water quality trends for the study period within the Charlotte Harbor and Estero Bay areas. Data from within the study area was collected at various locations and compared to other areas in the region as well as to other areas of the State of Florida and to regulatory requirements. The East & West Spring Lake area is included within Upper Charlotte portion of the Gasparilla-Charlotte Harbor Aquatic Preserve. This area extends from the Myakka and Peace River mouths, southwest to Boca Grande Pass. Charlotte Harbor Proper is located within the Gasparilla-Charlotte Harbor Aquatic Preserve.

The study considered several water quality parameters, including but not limited to: Secchi depth (used to provide an estimate of water clarity); temperature; dissolved oxygen; pH; salinity; nitrogen; phosphorous; chlorophyll a; fecal coliform; turbidity; and color. Water quality in Upper Charlotte Harbor (where East & West Spring Lake are located) was generally below average in comparison to other estuaries within the study area as well as throughout Florida. In particular, this region recorded the highest single total phosphorous recording (1.5 mg/L) and had the highest median phosphorous levels (0.24 mg/L). Similarly, this northern region of Charlotte Harbor recorded the highest single total nitrogen recording (4.6 mg/L) and second highest median nitrogen levels (0.975 mg/L). In comparison to other Florida estuaries, nitrogen levels

within Upper Charlotte Harbor rank in the 80th percentile of Florida estuaries. This means that Upper Charlotte Harbor, where the East & West Spring Lake study area is located, has higher total nitrogen levels than 80 percent of other estuaries throughout the State of Florida. Similarly, the median total phosphorous levels for the region are in the 90th percentile of State estuaries, and for each of the seven (7) study years, the median value within Upper Charlotte Harbor ranked in the 70th percentile or above for total phosphorous. In other words, in all seven (7) years, the total phosphorous within Upper Charlotte Harbor (where the East and West Spring Lake study area is located) was higher than at least 70-percent of Florida estuaries. Finally, fecal coliform readings in the Upper Charlotte Harbor estuary were the second highest in the region and in the 80th percentile of Florida estuaries.

1.10.2 The Effects of Seasonal Variability and Weather on Microbial Fecal Pollution and Enteric Pathogens in a Subtropical Estuary (April 2001)

This study was performed on the Charlotte Harbor estuary in an effort to address the seasonal variations in microbial indicators and human pathogen levels in Charlotte Harbor shellfish and recreational waters. Twelve (12) sample stations were established and sampled monthly over a 1-year period (March 1997 – February 1998). The samples were tested for fecal coliform bacteria, enterococci, *Clostridium perfringens* and coliphage. In general, the study showed that fecal indicators were concentrated in areas of low salinity and high densities of septic tank systems. Overall, the Charlotte Harbor estuary demonstrated lower contamination levels than other watersheds in Southwest Florida. However, sites of greater freshwater influence and sites with high OSTDS density, tended to be more contaminated within the study area. Specifically, within the general East & West Spring Lake area, samples were taken at East Spring Lake, West Spring Lake, Sunrise Waterway and Countryman Waterway. Of the twelve (12) sample locations, the samples tested within these four (4) locations tested in both the water column and sediment tested amongst the highest of all areas. In fact, the samples in East and West Spring Lakes had the highest and second highest single fecal coliform counts respectively of all water samples. Conversely, the lowest risk area was furthest offshore and away from influences such as OSTDS's. In addition to the concentration of higher contaminants to those freshwater and urbanized areas, it was noted that the concentrations were seasonal, with the highest levels occurring during the wet season periods when wet weather storm events are more likely to transport indicators and human viruses further into the estuary.

1.10.3 Assessing the Densities and Potential Water Quality Impacts of Septic Tank Systems in the Peace and Myakka River Basins (September 2003)

The Charlotte Environmental Center, Inc. was contracted by the Charlotte National Estuary Program to assess the densities and potential water quality impacts within the Peace and Myakka River basins. The study utilized statistical data on residential densities, GIS data, land use data, centralized waste system data, soil characteristics, number of septic systems, etc. and estimated nutrient loads using the MANAGE model. In addition to loading projections, increased loadings based on soil types and potential for failure were also considered within the model. Soil types were input into the model with standard failure rates based on soil types. Based on input data for densities, land use, etc., potential hot spots were identified. For this area, hot spots were estimated to include all of the Port Charlotte area, with more than 58-percent of urban soils within the study area estimated to be unsuitable for OSTDS use due to the shallow water table. As a result, it is estimated that 15-percent of established OSTDS's are believed to be showing signs of failure for all or part of the year.

1.10.4 Groundwater System Water Quality Data Port Charlotte Area (August 1995)

This study was performed for Charlotte County for the purpose of characterizing the surface and groundwater quality in Port Charlotte. With this study, eight (8) sites were selected for monitoring based on the results of a survey that was sent to over 400 home owners located on canals within the study area who utilize OSTDS for wastewater treatment. Monitoring wells were placed at rear lot lines (as OSTDS's were typically installed in the front lawns in this area). In addition, samples were taken adjacent to and upstream of the drainfield at each location in order to estimate background nutrient levels and the water table (for gradient flow verification). The study indicated that the individual results varied from site to site, as well as within each individual site. In general, the average total nitrogen levels were 21.62 mg/L at the drainfield and 7.92 mg/L at the rear lot line. Similarly, the total phosphorous levels averaged 26.43 mg/L at the drainfield and 14.80 mg/L at the rear lot line. In comparison, the Southwest Florida Water Management District (SWFWMD) indicated background phosphorous levels >0.5 mg/L in Polk and Hardee Counties (in the phosphate mining areas), but noted that the belt near the coast had levels in the >0.1 mg/L range. The phosphorous levels measured in this study were significantly higher than both of these background levels. Similarly, the SWFWMD reported background levels for ammonia nitrogen of 0.4 mg/L and total kjeldahl nitrogen (TKN) of 0.8

mg/L. Of the samples taken within the study area, nearly 100-percent of the samples exceeded the TKN background levels.

1.10.5 Multiple Nitrogen Loading Assessments from Onsite Waste Treatment and Disposal Systems Within the Wekiva River Basin (May 2007)

The Florida Legislature tasked the Florida Department of Health to perform this study for the Wekiva study area, which encompasses over 300,000 acres and is located within portions of Lake, Orange and Seminole Counties and includes a population of 485,000. One task of the study was an assessment of whether OSTDS's are a significant source of nitrogen. Although this study was not prepared for a study within the Charlotte Harbor area, it was a relevant study as one of the tasks was specifically related to the impact of OSTDS's as it relates to nutrients.

For this study, a sample of sites were made for testing, based on the following criteria: selection of one (1) site from each county; depth to water within reach of direct push drilling method; selected sites to have varying groundwater depths; septic tank systems to have been installed post 1982, but with no repairs after 1999; properties large enough to capture nitrogen plume on-site, without interference from up-gradient drainfields; properties using minimal fertilizer and no reclaimed water; and properties with homes on public water with year-round residents. Once the sample sites were selected, the system sizes were determined along with the condition, separation from water table, etc. Initial sampling was performed to determine the concentrations of nitrogen within the effluent between the septic tank and drainfield. In order to determine the nitrogen plume surrounding the drainfield, push probes were installed downgradient of the drainfield and tested at varying depths. The results of the study showed that once released, the total nitrogen plume can extend well beyond the limits of the drainfield, and in one (1) of the three (3) sample sites demonstrated a total nitrogen plume of 10 mg/L over 80 feet from the perimeter of the drainfield. In review of the total nitrogen concentration in the drainfield and using an estimated loading per person, based on EPA guidelines and estimated nitrification/denitrification percentage, mass loadings to the shallow aquifer system were determined to be in the range of 2.61 pounds per person per year to 12.07 pounds per person per year. It is noted that the study was for a limited time period for just three (3) of nearly 55,000 total OSTDS sites in the study area.

In a similar study performed by the University of Florida's Institute of Food and Agricultural Services (IFAS) for the Wekiva area, it was estimated that 482 tons of nitrogen per year are released to the groundwater, accounting for nearly 40-percent of the total nitrogen loading on groundwater within the study area. By comparison, 4-percent is attributed to background (atmospheric) and 8-percent is attributed to residential fertilizer.

1.10.6 Contribution of On-Site Treatment and Disposal System on Coastal Pollutant Loading (2005)

This study was performed on the east coast of Florida and compared two (2) different residential canal areas, one (1) with a centralized wastewater collection system and one (1) which utilizes OSTDS's. After sampling sites were located, samples were taken at the height of the wet season (October/November) and at the height of the dry season (February/March). Samples collected were tested for pH, temperature, conductivity, salinity, dissolved oxygen, total dissolved solids, secchi depth, nitrates, total coliform and *enterococcus*. In general, the samples associated with OSTDS displayed higher levels for pH, conductivity and total dissolved solids. In addition, the dissolved oxygen levels at these sites were also lower, indicating a potential contamination due to sewage inputs. As for nutrients, nitrate-nitrogen levels measured in the OSTDS sample sites were approximately twice the levels from within the centralized sewered areas. When wet and dry season comparisons were made, the wet season levels were significantly higher, to the point where wet season data within the OSTDS tested areas potentially constituted a public health threat.

1.11 SUMMARY AND CONCLUSIONS

As displayed within this document, numerous factors have been analyzed which have led to the conclusion that OSTDS's within the East & West Spring Lake area are a contributor to elevated nutrient levels within adjoining water bodies, and hence, decreased water quality. Based on these factors and findings within this report, it is evident that replacement of the OSTDS's would be a strong positive step in improving water quality and diminishing the impairment to Charlotte Harbor.

Several historical studies have been performed, both within and outside of the Charlotte Harbor area. Some of these studies have used models to predict septic tank loadings and failures,

while others have taken a hands-on approach to specifically measuring water quality at the source. Each of these approaches has merit and the one commonality amongst all of these studies as well as the findings of this report is that OSTDS systems are a source for elevated nutrient loadings, primarily nitrogen and phosphorous. In particular, the study consensus for Charlotte Harbor indicated that the health of Charlotte Harbor is well below average in comparison to other estuaries within the State. In fact, The East & West Spring Lake area of Charlotte Harbor ranked in the 80th and 70th percentiles respectively for the worst nitrogen and phosphorous loadings in the entire State. The studies correlated high nutrient and/or bacteria indicators to densely populated areas which utilize OSTDS, such as East & West Spring Lake.

The approach taken with this study was to develop random groundwater monitoring locations based on a grid of the East & West Spring Lake area. By overlaying a grid onto the boundaries of the East & West Spring Lake area, 50 equidistant locations were selected, with final field adjustments made to assure the locations were within right-of-ways. The 50 groundwater wells were installed and sampled every 2 months over the past year. In addition to the groundwater wells, 21 canal sample points were selected in order to understand the water quality within the adjacent and upstream canals.

The samples were tested for nitrate + nitrite, total phosphorous and fecal coliform. Based on the results of testing, it is evident from significant positive samples of each parameter within multiple wells, that a point source, is the cause of not only spikes, but also of the high average levels for both nitrogen and phosphorous. During testing, nitrate + nitrate levels from multiple wells recorded levels as high as nearly 40 mg/L during multiple sampling periods. Similarly, phosphorous levels from multiple wells tested as high as 31.69 mg/L. Concentrations this high raises concern as to the potential source. As background levels have demonstrated to be significantly lower (in the range of 0.18 mg/L for phosphorous and 0.729 mg/L for nitrogen), it is doubtful that the cause is atmospheric. Likewise, as fertilizer use is restricted in quantity and time of year, and as plant uptake accounts for a large percentage of nutrient loadings applied by fertilizer, the reasonable source is OSTDS contribution.

To assist in providing further confirmation of potential OSTDS contributions, following the initial testing of the 50 random wells, the County installed additional wells adjacent to OSTDS's which were reported by the CCHD as having nuisance complaints. Additional wells have been installed and tested near these complaint areas. As mentioned, the nature of the nuisance

complaint is unknown. To date, four (4) wells have been installed and one (1) testing cycle has been performed. Of the samples tested, the nitrogen levels tested higher than any other samples tested in any other sampling period for the initial 50 wells. Similarly, the second highest phosphorous recording was also recorded in one of these wells. This data provide further correlation between nutrients and OSTDS's within East & West Spring Lake.

In review of the soils composition within the East & West Spring Lake area, there are three (3) primary soil types which include: Matlacha Sands, Kesson Fine Sand, Pineda Fine Sand and Oldsmar Fine Sand. In general, these soils are consistent, each being poorly drained, with the water table within 10-inches of the ground surface during the wet season. For these reasons, all of these soil types are considered unfavorable for OSTDS installations.

In review of the East & West Spring Lake area, it has been determined that of the 1,708 known systems, 1286 (over 75-percent) are at least 30 years old. The significance of the age is two-fold. First, the estimated life of an OSTDS is approximately 12 - 20 years (Maryland Task Force, 1999). Second, 1983 (30 years ago) is when a major regulatory change was made to require a minimum separation of 24-inches between the bottom of the drainfield and the seasonal high water table. In review of water table data collected by the County, over 80-percent of the well locations, where water samples were collected were within 3.5-feet of ground surface (depth required to meet the 24-inch separation) during part of the year. In addition, 72-percent of the locations were within 2.5 feet of ground surface (depth required to meet the pre-1983 separation requirement of 12-inches). This water table data is based upon a year in which the total rainfall was less than average thereby reflecting a lower seasonal high water level for this area then required by Florida Statues for OSTDS designs. As the East & West Spring Lake area is relatively flat, the projection can therefore be made that as the majority of the systems were built prior to 1983, it is probable that the majority of the existing OSTDS's do not meet the current regulatory standards for groundwater separation, and many of the systems probably do not meet the pre-1983 standards. This lack of separation prevents the soils from properly being able to remove nutrients, and hence, one reason why the average nutrient levels are consistently high throughout the year.

As for system age and life expectancy, of the 1,286 units over 30 years old, 333 or 25.9-percent of these had been reported as having been repaired, following implementation of the County's OSTDS Management Ordinance (2007-061). Given that these repairs were made following

adoption of this ordinance, there is concern as to how long these repair needs went unnoticed or ignored until the home owner was required to make the repair. This concern is not only with the potential groundwater contamination that may have occurred prior to the repairs, but also with the fact that as nearly 74-percent of these older systems have not been repaired or replaced, it is only a matter of time before repair, or more likely replacement, is required. Given the high water table and unsuitable native soils, the logical options to meet current regulatory requirements for a failing OSTDS is full replacement with an elevated, mounded system, or connection to a centralized sewer system.

In conclusion, several factors have been reviewed and determined to link OSTDS to decreased water quality within the East & West Spring Lake area. These factors include:

- Soils unsuitable for OSTDS installation, operation and maintenance
- A seasonal High Water Table which does not provide required regulatory separation from drainfields for proper treatment and disposal
- A high residential density within East & West Spring Lake unfavorable for OSTDS type of sewer systems
- Close proximity to the canals (Charlotte County Ordinance 3-7-56 prohibits OSTDS installation within 150 feet of a tidal water body)
- Limitation of the treatment capability of an OSTDS
- Test Results indicating positive correlation with nutrients and bacteria loadings

Based on these factors and the efforts of this study as well as other studies performed in this region, it is concluded that OSTDS's are a strong contributor of nutrient loadings and resulting decreased water quality within East & West Spring Lake area. Previous studies have demonstrated higher nutrient loadings within the Upper Charlotte Harbor area in comparison to other areas in the Charlotte estuary which do not contain OSTDS's. Given the age, number of past repairs, separation from the groundwater table, and related factors, the majority of the existing OSTDS's within the East & West Spring Lake area are projected to be of continual concern without replacement or elimination. It is therefore recommended that Charlotte County consider the installation of a centralized wastewater sewer system for this area. Centralized sewer would eliminate further potential pollution and be a positive step in cleaning up groundwater and surface water and in helping to diminish the impairment of Charlotte Harbor, which is of great importance in supporting recreation and tourism industries.

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APPENDIX A
(WATER QUALITY TEST RESULTS)

September 13, 2012

Report ID: Spring Lake 06&07-12

East Port Laboratory

Bruce Bullert
Charlotte County Utility
Engineering Department
25550 Harbor View Rd
Port Charlotte, FL 33980

June and July 2012 Lab Results

Lab ID # E54436

The East Port Laboratory is certified by the Florida Department of Health Bureau of Laboratories Environmental Water as a Basic Environmental Laboratory. The East Port Laboratory has a Florida Department of Health approved Comprehensive Quality Assurance/Quality Control Plan which specifies the procedures used in the analysis of the referenced samples. The East Port Laboratory certifies that results meet all requirements of NELAC Standards. The Lab ID number above should be referenced when attesting to regulatory agencies regarding the analytical procedures used.

Attached please find the results from the samples collected by you and sent to the East Port Laboratory for analysis. There are custody numbers assigned to each sample for quality control purposes; please refer to these custody numbers when requesting information regarding these samples. Results relate to samples only.

The East Port Laboratory is pleased to have served you. If you require any further assistance, please feel free to contact me directly.

Sincerely,

Sandra Lavoie

Sandra Lavoie
Laboratory Manager
Tel.: 941-764-4593

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-2783	MW-26	6/21/2012	0938	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2784	MW-26	6/21/2012	0938	Total Phosphorus	2.00	mg/l		EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2784	MW-26	6/21/2012	0938	NO_2+NO_3	0.216	mg/l		EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2784	MW-26	6/21/2012	0938	NO_3	0.206	mg/l	C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2785	MW-26	6/21/2012	0938	NO_2	0.010	mg/l	I	EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2786	MW-27	6/21/2012	0957	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2787	MW-27	6/21/2012	0957	Total Phosphorus	3.05	mg/l		EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2787	MW-27	6/21/2012	0957	NO_2+NO_3	0.034	mg/l		EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2787	MW-27	6/21/2012	0957	NO_3	0.034	mg/l	C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2788	MW-27	6/21/2012	0957	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2789	MW-28	6/21/2012	1013	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2790	MW-28	6/21/2012	1013	Total Phosphorus	4.05	mg/l		EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2790	MW-28	6/21/2012	1013	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2790	MW-28	6/21/2012	1013	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2791	MW-28	6/21/2012	1013	NO_2	0.005	mg/l	I	EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2792	MW-30	6/21/2012	1034	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2793	MW-30	6/21/2012	1034	Total Phosphorus	1.06	mg/l		EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2793	MW-30	6/21/2012	1034	NO_2+NO_3	0.006	mg/l	I	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2793	MW-30	6/21/2012	1034	NO_3	0.006	mg/l	I C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2794	MW-30	6/21/2012	1034	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2795	MW-31	6/21/2012	1055	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2796	MW-31	6/21/2012	1055	Total Phosphorus	0.02	mg/l	U	EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2796	MW-31	6/21/2012	1055	NO_2+NO_3	0.021	mg/l		EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2796	MW-31	6/21/2012	1055	NO_3	0.016	mg/l	C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2797	MW-31	6/21/2012	1055	NO_2	0.005	mg/l	I	EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2798	MW-37	6/21/2012	1117	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2799	MW-37	6/21/2012	1117	Total Phosphorus	0.02	mg/l	I	EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2799	MW-37	6/21/2012	1117	NO_2+NO_3	1.696	mg/l		EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2799	MW-37	6/21/2012	1117	NO_3	1.544	mg/l	C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2800	MW-37	6/21/2012	1117	NO_2	0.152	mg/l		EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2765	#1	6/21/2012	0945	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2766	#1	6/21/2012	0945	Total Phosphorus	2.09	mg/l		EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2766	#1	6/21/2012	0945	NO_2+NO_3	0.985	mg/l		EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2766	#1	6/21/2012	0945	NO_3	0.922	mg/l	C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2767	#1	6/21/2012	0945	NO_2	0.063	mg/l		EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-2768	#2	6/21/2012	1012	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2769	#2	6/21/2012	1012	Total Phosphorus	1.62	mg/l		EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2769	#2	6/21/2012	1012	NO_2+NO_3	0.104	mg/l		EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2769	#2	6/21/2012	1012	NO_3	0.095	mg/l	C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2770	#2	6/21/2012	1012	NO_2	0.009	mg/l	I	EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2771	#3	6/21/2012	1145	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2772	#3	6/21/2012	1145	Total Phosphorus	0.33	mg/l		EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2772	#3	6/21/2012	1145	NO_2+NO_3	0.063	mg/l		EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2772	#3	6/21/2012	1145	NO_3	0.047	mg/l	C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2773	#3	6/21/2012	1145	NO_2	0.016	mg/l		EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2774	#5	6/21/2012	1124	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2775	#5	6/21/2012	1124	Total Phosphorus	1.40	mg/l		EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2775	#5	6/21/2012	1124	NO_2+NO_3	0.293	mg/l		EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2775	#5	6/21/2012	1124	NO_3	0.283	mg/l	C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2776	#5	6/21/2012	1124	NO_2	0.010	mg/l	I	EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2777	#6	6/21/2012	1037	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2778	#6	6/21/2012	1037	Total Phosphorus	0.13	mg/l		EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2778	#6	6/21/2012	1037	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2778	#6	6/21/2012	1037	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2779	#6	6/21/2012	1037	NO_2	0.004	mg/l	I	EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2780	#7	6/21/2012	1101	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/21/2012	1250	6/21/2012	1507	WH
12-2781	#7	6/21/2012	1101	Total Phosphorus	0.55	mg/l		EPA 365.4	0.02 mg/L	6/21/2012	1250	7/14/2012	1358	EMR
12-2781	#7	6/21/2012	1101	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	WH
12-2781	#7	6/21/2012	1101	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	6/21/2012	1250	6/22/2012	1406	SL
12-2782	#7	6/21/2012	1101	NO_2	0.012	mg/l		EPA 353.2	0.003 mg/l	6/21/2012	1250	6/22/2012	0913	WH
12-2885	MW-4	6/28/2012	0935	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2886	MW-4	6/28/2012	0935	Total Phosphorus	0.03	mg/l	I	EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2886	MW-4	6/28/2012	0935	NO_2+NO_3	2.609	mg/l		EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2886	MW-4	6/28/2012	0935	NO_3	2.582	mg/l	C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2887	MW-4	6/28/2012	0935	NO_2	0.027	mg/l		EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR
12-2888	MW-8	6/28/2012	1004	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2889	MW-8	6/28/2012	1004	Total Phosphorus	0.24	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2889	MW-8	6/28/2012	1004	NO_2+NO_3	0.008	mg/l	I	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2889	MW-8	6/28/2012	1004	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2890	MW-8	6/28/2012	1004	NO_2	0.010	mg/l	I	EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR
12-2891	MW-13	6/28/2012	1020	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2892	MW-13	6/28/2012	1020	Total Phosphorus	0.79	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2892	MW-13	6/28/2012	1020	NO_2+NO_3	0.742	mg/l		EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2892	MW-13	6/28/2012	1020	NO_3	0.717	mg/l	C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2893	MW-13	6/28/2012	1020	NO_2	0.025	mg/l		EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-2894	MW-14	6/28/2012	1038	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2895	MW-14	6/28/2012	1038	Total Phosphorus	0.94	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2895	MW-14	6/28/2012	1038	NO_2+NO_3	0.047	mg/l		EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2895	MW-14	6/28/2012	1038	NO_3	0.031	mg/l	C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2896	MW-14	6/28/2012	1038	NO_2	0.016	mg/l		EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR
12-2897	MW-16	6/28/2012	1054	Fecal Coliform	90	col/100ml		SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2898	MW-16	6/28/2012	1054	Total Phosphorus	1.52	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2898	MW-16	6/28/2012	1054	NO_2+NO_3	0.922	mg/l		EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2898	MW-16	6/28/2012	1054	NO_3	0.910	mg/l	C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2899	MW-16	6/28/2012	1054	NO_2	0.012	mg/l		EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR
12-2900	MW-23	6/28/2012	1110	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2901	MW-23	6/28/2012	1110	Total Phosphorus	0.15	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2901	MW-23	6/28/2012	1110	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2901	MW-23	6/28/2012	1110	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2902	MW-23	6/28/2012	1110	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR
12-2903	MW-25	6/28/2012	1134	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2904	MW-25	6/28/2012	1134	Total Phosphorus	1.19	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2904	MW-25	6/28/2012	1134	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2904	MW-25	6/28/2012	1134	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2905	MW-25	6/28/2012	1134	NO_2	0.007	mg/l	I	EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR
12-2906	MW-29	6/28/2012	1148	Fecal Coliform	440	col/100ml	B	SM9222D	20 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2907	MW-29	6/28/2012	1148	Total Phosphorus	0.84	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2907	MW-29	6/28/2012	1148	NO_2+NO_3	1.261	mg/l		EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2907	MW-29	6/28/2012	1148	NO_3	1.234	mg/l	C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2908	MW-29	6/28/2012	1148	NO_2	0.027	mg/l		EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR
12-2909	MW-9	6/28/2012	1205	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2910	MW-9	6/28/2012	1205	Total Phosphorus	0.43	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2910	MW-9	6/28/2012	1205	NO_2+NO_3	19.439	mg/l		EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2910	MW-9	6/28/2012	1205	NO_3	19.245	mg/l	C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2911	MW-9	6/28/2012	1205	NO_2	0.194	mg/l		EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR
12-2912	MW-12	6/28/2012	1219	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2913	MW-12	6/28/2012	1219	Total Phosphorus	0.37	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2913	MW-12	6/28/2012	1219	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2913	MW-12	6/28/2012	1219	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2914	MW-12	6/28/2012	1219	NO_2	0.009	mg/l	I	EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR
12-2915	MW-22	6/28/2012	1236	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2916	MW-22	6/28/2012	1236	Total Phosphorus	0.12	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2916	MW-22	6/28/2012	1236	NO_2+NO_3	0.088	mg/l		EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2916	MW-22	6/28/2012	1236	NO_3	0.081	mg/l	C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2917	MW-22	6/28/2012	1236	NO_2	0.007	mg/l	I	EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-2918	MW-17	6/28/2012	1254	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	6/28/2012	1410	6/28/2012	1527	EMR
12-2919	MW-17	6/28/2012	1254	Total Phosphorus	0.68	mg/l		EPA 365.4	0.02 mg/L	6/28/2012	1410	7/14/2012	1358	EMR
12-2919	MW-17	6/28/2012	1254	NO_2+NO_3	0.015	mg/l	I	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	EMR
12-2919	MW-17	6/28/2012	1254	NO_3	0.015	mg/l	I C	EPA 353.2	0.004 mg/l	6/28/2012	1410	6/29/2012	1042	SL
12-2920	MW-17	6/28/2012	1254	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	6/28/2012	1410	6/29/2012	0846	EMR
12-3137	MW-15	7/11/2012	1002	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/11/2012	1450	7/11/2012	1540	WH
12-3138	MW-15	7/11/2012	1002	Total Phosphorus	0.47	mg/l		EPA 365.4	0.02 mg/L	7/11/2012	1450	7/30/2012	1415	EMR
12-3138	MW-15	7/11/2012	1002	NO_2+NO_3	0.020	mg/l		EPA 353.2	0.004 mg/l	7/11/2012	1450	7/13/2012	1425	EMR
12-3138	MW-15	7/11/2012	1002	NO_3	0.020	mg/l	C	EPA 353.2	0.004 mg/l	7/11/2012	1450	7/13/2012	1425	SL
12-3139	MW-15	7/11/2012	1002	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/11/2012	1450	7/13/2012	1138	EMR
12-3140	MW-24	7/11/2012	1030	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/11/2012	1450	7/11/2012	1540	WH
12-3141	MW-24	7/11/2012	1030	Total Phosphorus	0.57	mg/l		EPA 365.4	0.02 mg/L	7/11/2012	1450	7/30/2012	1415	EMR
12-3141	MW-24	7/11/2012	1030	NO_2+NO_3	0.318	mg/l		EPA 353.2	0.004 mg/l	7/11/2012	1450	7/13/2012	1425	EMR
12-3141	MW-24	7/11/2012	1030	NO_3	0.296	mg/l	C	EPA 353.2	0.004 mg/l	7/11/2012	1450	7/13/2012	1425	SL
12-3142	MW-24	7/11/2012	1030	NO_2	0.022	mg/l		EPA 353.2	0.003 mg/l	7/11/2012	1450	7/13/2012	1138	EMR
12-3143	MW-36	7/11/2012	1107	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/11/2012	1450	7/11/2012	1540	WH
12-3144	MW-36	7/11/2012	1107	Total Phosphorus	0.11	mg/l		EPA 365.4	0.02 mg/L	7/11/2012	1450	7/30/2012	1415	EMR
12-3144	MW-36	7/11/2012	1107	NO_2+NO_3	0.337	mg/l		EPA 353.2	0.004 mg/l	7/11/2012	1450	7/13/2012	1425	EMR
12-3144	MW-36	7/11/2012	1107	NO_3	0.321	mg/l	C	EPA 353.2	0.004 mg/l	7/11/2012	1450	7/13/2012	1425	SL
12-3145	MW-36	7/11/2012	1107	NO_2	0.016	mg/l		EPA 353.2	0.003 mg/l	7/11/2012	1450	7/13/2012	1138	EMR
12-3146	MW-38	7/11/2012	1142	Fecal Coliform	40	col/100ml	B	SM9222D	10 col/100ml	7/11/2012	1450	7/11/2012	1540	WH
12-3147	MW-38	7/11/2012	1142	Total Phosphorus	2.86	mg/l		EPA 365.4	0.02 mg/L	7/11/2012	1450	7/30/2012	1415	EMR
12-3147	MW-38	7/11/2012	1142	NO_2+NO_3	0.018	mg/l		EPA 353.2	0.004 mg/l	7/11/2012	1450	7/13/2012	1425	EMR
12-3147	MW-38	7/11/2012	1142	NO_3	0.018	mg/l	C	EPA 353.2	0.004 mg/l	7/11/2012	1450	7/13/2012	1425	SL
12-3148	MW-38	7/11/2012	1142	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/11/2012	1450	7/13/2012	1138	EMR
12-3178	MW-10	7/12/2012	0955	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/12/2012	1449	7/12/2012	1558	EMR
12-3179	MW-10	7/12/2012	0955	Total Phosphorus	2.12	mg/l		EPA 365.4	0.02 mg/L	7/12/2012	1449	7/30/2012	1415	EMR
12-3179	MW-10	7/12/2012	0955	NO_2+NO_3	0.028	mg/l		EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	EMR
12-3179	MW-10	7/12/2012	0955	NO_3	0.028	mg/l	C	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	SL
12-3180	MW-10	7/12/2012	0955	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/12/2012	1449	7/13/2012	1138	EMR
12-3181	MW-11	7/12/2012	1033	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/12/2012	1449	7/12/2012	1558	EMR
12-3182	MW-11	7/12/2012	1033	Total Phosphorus	0.60	mg/l		EPA 365.4	0.02 mg/L	7/12/2012	1449	7/30/2012	1415	EMR
12-3182	MW-11	7/12/2012	1033	NO_2+NO_3	0.018	mg/l		EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	EMR
12-3182	MW-11	7/12/2012	1033	NO_3	0.015	mg/l	C	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	SL
12-3183	MW-11	7/12/2012	1033	NO_2	0.003	mg/l	I	EPA 353.2	0.003 mg/l	7/12/2012	1449	7/13/2012	1138	EMR
12-3184	MW-21	7/12/2012	1106	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/12/2012	1449	7/12/2012	1558	EMR
12-3185	MW-21	7/12/2012	1106	Total Phosphorus	0.99	mg/l		EPA 365.4	0.02 mg/L	7/12/2012	1449	7/30/2012	1415	EMR
12-3185	MW-21	7/12/2012	1106	NO_2+NO_3	0.044	mg/l		EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	EMR
12-3185	MW-21	7/12/2012	1106	NO_3	0.041	mg/l	C	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	SL
12-3186	MW-21	7/12/2012	1106	NO_2	0.003	mg/l	I	EPA 353.2	0.003 mg/l	7/12/2012	1449	7/13/2012	1138	EMR

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Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-3190	MW-33	7/12/2012	1129	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/12/2012	1449	7/12/2012	1558	EMR
12-3191	MW-33	7/12/2012	1129	Total Phosphorus	0.76	mg/l		EPA 365.4	0.02 mg/L	7/12/2012	1449	8/2/2012	1301	EMR
12-3191	MW-33	7/12/2012	1129	NO_2+NO_3	0.034	mg/l		EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	EMR
12-3191	MW-33	7/12/2012	1129	NO_3	0.023	mg/l	C	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	SL
12-3192	MW-33	7/12/2012	1129	NO_2	0.011	mg/l	I	EPA 353.2	0.003 mg/l	7/12/2012	1449	7/13/2012	1138	EMR
12-3187	MW-34	7/12/2012	1204	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/12/2012	1449	7/12/2012	1558	EMR
12-3188	MW-34	7/12/2012	1204	Total Phosphorus	0.64	mg/l		EPA 365.4	0.02 mg/L	7/12/2012	1449	7/30/2012	1415	EMR
12-3188	MW-34	7/12/2012	1204	NO_2+NO_3	0.010	mg/l	I	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	EMR
12-3188	MW-34	7/12/2012	1204	NO_3	0.010	mg/l	I C	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	SL
12-3189	MW-34	7/12/2012	1204	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/12/2012	1449	7/13/2012	1138	EMR
12-3193	MW-20	7/12/2012	1231	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/12/2012	1449	7/12/2012	1558	EMR
12-3194	MW-20	7/12/2012	1231	Total Phosphorus	1.16	mg/l		EPA 365.4	0.02 mg/L	7/12/2012	1449	7/30/2012	1415	EMR
12-3194	MW-20	7/12/2012	1231	NO_2+NO_3	0.772	mg/l		EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	EMR
12-3194	MW-20	7/12/2012	1231	NO_3	0.683	mg/l	C	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	SL
12-3195	MW-20	7/12/2012	1231	NO_2	0.089	mg/l		EPA 353.2	0.003 mg/l	7/12/2012	1449	7/13/2012	1138	EMR
12-3196	MW-19	7/12/2012	1303	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/12/2012	1449	7/12/2012	1558	EMR
12-3197	MW-19	7/12/2012	1303	Total Phosphorus	0.48	mg/l		EPA 365.4	0.02 mg/L	7/12/2012	1449	7/30/2012	1415	EMR
12-3197	MW-19	7/12/2012	1303	NO_2+NO_3	0.114	mg/l		EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	EMR
12-3197	MW-19	7/12/2012	1303	NO_3	0.101	mg/l	C	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	SL
12-3198	MW-19	7/12/2012	1303	NO_2	0.013	mg/l		EPA 353.2	0.003 mg/l	7/12/2012	1449	7/13/2012	1138	EMR
12-3199	C-8	7/12/2012	1323	Fecal Coliform	60	col/100ml	B	SM9222D	10 col/100ml	7/12/2012	1449	7/12/2012	1558	EMR
12-3200	C-8	7/12/2012	1323	Total Phosphorus	0.64	mg/l		EPA 365.4	0.02 mg/L	7/12/2012	1449	8/2/2012	1301	EMR
12-3200	C-8	7/12/2012	1323	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	EMR
12-3200	C-8	7/12/2012	1323	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	SL
12-3201	C-8	7/12/2012	1323	NO_2	0.009	mg/l	I	EPA 353.2	0.003 mg/l	7/12/2012	1449	7/13/2012	1138	EMR
12-3202	C-9	7/12/2012	1338	Fecal Coliform	60	col/100ml	B	SM9222D	10 col/100ml	7/12/2012	1449	7/12/2012	1558	EMR
12-3203	C-9	7/12/2012	1338	Total Phosphorus	0.66	mg/l		EPA 365.4	0.02 mg/L	7/12/2012	1449	7/30/2012	1415	EMR
12-3203	C-9	7/12/2012	1338	NO_2+NO_3	0.026	mg/l		EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	EMR
12-3203	C-9	7/12/2012	1338	NO_3	0.026	mg/l	C	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	SL
12-3204	C-9	7/12/2012	1338	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/12/2012	1449	7/13/2012	1138	EMR
12-3205	C-10	7/12/2012	1354	Fecal Coliform	10	col/100ml		SM9222D	10 col/100ml	7/12/2012	1449	7/12/2012	1558	EMR
12-3206	C-10	7/12/2012	1354	Total Phosphorus	0.66	mg/l		EPA 365.4	0.02 mg/L	7/12/2012	1449	7/30/2012	1415	EMR
12-3206	C-10	7/12/2012	1354	NO_2+NO_3	0.014	mg/l	I	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	EMR
12-3206	C-10	7/12/2012	1354	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/12/2012	1449	7/13/2012	1425	SL
12-3207	C-10	7/12/2012	1354	NO_2	0.011	mg/l	I	EPA 353.2	0.003 mg/l	7/12/2012	1449	7/13/2012	1138	EMR
12-3288	MW-18	7/18/2012	1013	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/18/2012	1335	7/18/2012	1424	EMR
12-3289	MW-18	7/18/2012	1013	Total Phosphorus	4.38	mg/l		EPA 365.4	0.02 mg/L	7/18/2012	1335	8/2/2012	1301	EMR
12-3289	MW-18	7/18/2012	1013	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	WH
12-3289	MW-18	7/18/2012	1013	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	SL
12-3290	MW-18	7/18/2012	1013	NO_2	0.012	mg/l		EPA 353.2	0.003 mg/l	7/18/2012	1335	7/20/2012	1109	WH

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Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-3291	MW-42	7/18/2012	1043	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/18/2012	1335	7/18/2012	1424	EMR
12-3292	MW-42	7/18/2012	1043	Total Phosphorus	1.70	mg/l		EPA 365.4	0.02 mg/L	7/18/2012	1335	8/2/2012	1301	EMR
12-3292	MW-42	7/18/2012	1043	NO_2+NO_3	0.006	mg/l	I	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	WH
12-3292	MW-42	7/18/2012	1043	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	SL
12-3293	MW-42	7/18/2012	1043	NO_2	0.004	mg/l	I	EPA 353.2	0.003 mg/l	7/18/2012	1335	7/20/2012	1109	WH
12-3294	MW-41	7/18/2012	1107	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/18/2012	1335	7/18/2012	1424	EMR
12-3295	MW-41	7/18/2012	1107	Total Phosphorus	0.83	mg/l		EPA 365.4	0.02 mg/L	7/18/2012	1335	8/2/2012	1301	EMR
12-3295	MW-41	7/18/2012	1107	NO_2+NO_3	0.008	mg/l	I	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	WH
12-3295	MW-41	7/18/2012	1107	NO_3	0.005	mg/l	I C	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	SL
12-3296	MW-41	7/18/2012	1107	NO_2	0.003	mg/l	I	EPA 353.2	0.003 mg/l	7/18/2012	1335	7/20/2012	1109	WH
12-3297	MW-39	7/18/2012	1132	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/18/2012	1335	7/18/2012	1424	EMR
12-3297	MW-39	7/18/2012	1132	Total Phosphorus	0.59	mg/l		EPA 365.4	0.02 mg/L	7/18/2012	1335	8/2/2012	1301	EMR
12-3298	MW-39	7/18/2012	1132	NO_2+NO_3	0.011	mg/l	I	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	WH
12-3298	MW-39	7/18/2012	1132	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	SL
12-3299	MW-39	7/18/2012	1132	NO_2	0.016	mg/l		EPA 353.2	0.003 mg/l	7/18/2012	1335	7/20/2012	1109	WH
12-3300	C-6	7/18/2012	1154	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/18/2012	1335	7/18/2012	1424	EMR
12-3301	C-6	7/18/2012	1154	Total Phosphorus	0.58	mg/l		EPA 365.4	0.02 mg/L	7/18/2012	1335	8/2/2012	1301	EMR
12-3301	C-6	7/18/2012	1154	NO_2+NO_3	0.018	mg/l		EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	WH
12-3301	C-6	7/18/2012	1154	NO_3	0.018	mg/l	C	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	SL
12-3302	C-6	7/18/2012	1154	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/18/2012	1335	7/20/2012	1109	WH
12-3303	MW-35	7/18/2012	1227	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/18/2012	1335	7/18/2012	1424	EMR
12-3304	MW-35	7/18/2012	1227	Total Phosphorus	1.07	mg/l		EPA 365.4	0.02 mg/L	7/18/2012	1335	8/2/2012	1301	EMR
12-3304	MW-35	7/18/2012	1227	NO_2+NO_3	0.611	mg/l		EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	WH
12-3304	MW-35	7/18/2012	1227	NO_3	0.548	mg/l	C	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	SL
12-3305	MW-35	7/18/2012	1227	NO_2	0.063	mg/l		EPA 353.2	0.003 mg/l	7/18/2012	1335	7/20/2012	1109	WH
12-3306	MW-40	7/18/2012	1253	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/18/2012	1335	7/18/2012	1424	EMR
12-3307	MW-40	7/18/2012	1253	Total Phosphorus	0.23	mg/l		EPA 365.4	0.02 mg/L	7/18/2012	1335	8/2/2012	1301	EMR
12-3307	MW-40	7/18/2012	1253	NO_2+NO_3	0.946	mg/l		EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	WH
12-3307	MW-40	7/18/2012	1253	NO_3	0.931	mg/l	C	EPA 353.2	0.004 mg/l	7/18/2012	1335	7/20/2012	1523	SL
12-3308	MW-40	7/18/2012	1253	NO_2	0.015	mg/l		EPA 353.2	0.003 mg/l	7/18/2012	1335	7/20/2012	1109	WH
12-3325	C-7	7/19/2012	0946	Fecal Coliform	50	col/100ml	B	SM9222D	10 col/100ml	7/19/2012	1250	7/19/2012	1430	WH
12-3326	C-7	7/19/2012	0946	Total Phosphorus	0.52	mg/l		EPA 365.4	0.02 mg/L	7/19/2012	1250	8/2/2012	1301	EMR
12-3326	C-7	7/19/2012	0946	NO_2+NO_3	0.028	mg/l		EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	WH
12-3326	C-7	7/19/2012	0946	NO_3	0.020	mg/l	C	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	SL
12-3327	C-7	7/19/2012	0946	NO_2	0.008	mg/l	I	EPA 353.2	0.003 mg/l	7/19/2012	1250	7/20/2012	1109	WH
12-3328	MW-43	7/19/2012	1010	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/19/2012	1250	7/19/2012	1430	WH
12-3329	MW-43	7/19/2012	1010	Total Phosphorus	0.11	mg/l		EPA 365.4	0.02 mg/L	7/19/2012	1250	8/2/2012	1301	EMR
12-3329	MW-43	7/19/2012	1010	NO_2+NO_3	0.050	mg/l		EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	WH
12-3329	MW-43	7/19/2012	1010	NO_3	0.050	mg/l	C	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	SL
12-3330	MW-43	7/19/2012	1010	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/19/2012	1250	7/20/2012	1109	WH

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-3331	C-1	7/19/2012	1022	Fecal Coliform	90	col/100ml	B	SM9222D	10 col/100ml	7/19/2012	1250	7/19/2012	1430	WH
12-3332	C-1	7/19/2012	1022	Total Phosphorus	0.22	mg/l		EPA 365.4	0.02 mg/L	7/19/2012	1250	8/2/2012	1301	EMR
12-3332	C-1	7/19/2012	1022	NO_2+NO_3	0.017	mg/l		EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	WH
12-3332	C-1	7/19/2012	1022	NO_3	0.017	mg/l	C	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	SL
12-3333	C-1	7/19/2012	1022	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/19/2012	1250	7/20/2012	1109	WH
12-3334	MW-45	7/19/2012	1111	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/19/2012	1250	7/19/2012	1430	WH
12-3335	MW-45	7/19/2012	1111	Total Phosphorus	0.28	mg/l		EPA 365.4	0.02 mg/L	7/19/2012	1250	8/2/2012	1301	EMR
12-3335	MW-45	7/19/2012	1111	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	WH
12-3335	MW-45	7/19/2012	1111	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	SL
12-3336	MW-45	7/19/2012	1111	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/19/2012	1250	7/20/2012	1109	WH
12-3337	C-2	7/19/2012	1120	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	7/19/2012	1250	7/19/2012	1430	WH
12-3338	C-2	7/19/2012	1120	Total Phosphorus	0.22	mg/l		EPA 365.4	0.02 mg/L	7/19/2012	1250	8/2/2012	1301	EMR
12-3338	C-2	7/19/2012	1120	NO_2+NO_3	0.007	mg/l	I	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	WH
12-3338	C-2	7/19/2012	1120	NO_3	0.007	mg/l	U C	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	SL
12-3339	C-2	7/19/2012	1120	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/19/2012	1250	7/20/2012	1109	WH
12-3340	MW-46	7/19/2012	1140	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/19/2012	1250	7/19/2012	1430	WH
12-3341	MW-46	7/19/2012	1140	Total Phosphorus	0.26	mg/l		EPA 365.4	0.02 mg/L	7/19/2012	1250	8/2/2012	1301	EMR
12-3341	MW-46	7/19/2012	1140	NO_2+NO_3	0.016	mg/l		EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	WH
12-3341	MW-46	7/19/2012	1140	NO_3	0.009	mg/l	I C	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	SL
12-3342	MW-46	7/19/2012	1140	NO_2	0.007	mg/l	I	EPA 353.2	0.003 mg/l	7/19/2012	1250	7/20/2012	1109	WH
12-3343	C-4	7/19/2012	1148	Fecal Coliform	40	col/100ml	B	SM9222D	10 col/100ml	7/19/2012	1250	7/19/2012	1430	WH
12-3344	C-4	7/19/2012	1148	Total Phosphorus	0.24	mg/l		EPA 365.4	0.02 mg/L	7/19/2012	1250	8/2/2012	1301	EMR
12-3344	C-4	7/19/2012	1148	NO_2+NO_3	0.009	mg/l	I	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	WH
12-3344	C-4	7/19/2012	1148	NO_3	0.005	mg/l	I C	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	SL
12-3345	C-4	7/19/2012	1148	NO_2	0.004	mg/l	I	EPA 353.2	0.003 mg/l	7/19/2012	1250	7/20/2012	1109	WH
12-3346	MW-44	7/19/2012	1211	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/19/2012	1250	7/19/2012	1430	WH
12-3347	MW-44	7/19/2012	1211	Total Phosphorus	2.25	mg/l		EPA 365.4	0.02 mg/L	7/19/2012	1250	8/2/2012	1301	EMR
12-3347	MW-44	7/19/2012	1211	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	WH
12-3347	MW-44	7/19/2012	1211	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/19/2012	1250	7/20/2012	1523	SL
12-3348	MW-44	7/19/2012	1211	NO_2	0.006	mg/l	I	EPA 353.2	0.003 mg/l	7/19/2012	1250	7/20/2012	1109	WH
12-3417	MW-47	7/25/2012	1144	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3418	MW-47	7/25/2012	1144	Total Phosphorus	0.19	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3418	MW-47	7/25/2012	1144	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3418	MW-47	7/25/2012	1144	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3419	MW-47	7/25/2012	1144	NO_2	0.003	mg/l	I V	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH
12-3420	MW-48	7/25/2012	1211	Fecal Coliform	2940	col/100ml	B	SM9222D	20 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3421	MW-48	7/25/2012	1211	Total Phosphorus	0.38	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3421	MW-48	7/25/2012	1211	NO_2+NO_3	0.004	mg/l	I	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3421	MW-48	7/25/2012	1211	NO_3	0.004	mg/l	I C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3422	MW-48	7/25/2012	1211	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-3423	MW-50	7/25/2012	1243	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3424	MW-50	7/25/2012	1243	Total Phosphorus	1.30	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3424	MW-50	7/25/2012	1243	NO_2+NO_3	0.022	mg/l		EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3424	MW-50	7/25/2012	1243	NO_3	0.022	mg/l	C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3425	MW-50	7/25/2012	1243	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH
12-3426	C-5	7/25/2012	1258	Fecal Coliform	30	col/100ml	B	SM9222D	10 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3427	C-5	7/25/2012	1258	Total Phosphorus	0.33	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3427	C-5	7/25/2012	1258	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3427	C-5	7/25/2012	1258	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3428	C-5	7/25/2012	1258	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH
12-3429	MW-49	7/25/2012	1322	Fecal Coliform	2100	col/100ml	B	SM9222D	20 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3430	MW-49	7/25/2012	1322	Total Phosphorus	3.69	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3430	MW-49	7/25/2012	1322	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3430	MW-49	7/25/2012	1322	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3431	MW-49	7/25/2012	1322	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH
12-3432	C-3	7/25/2012	1338	Fecal Coliform	30	col/100ml	B	SM9222D	10 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3433	C-3	7/25/2012	1338	Total Phosphorus	0.38	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3433	C-3	7/25/2012	1338	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3433	C-3	7/25/2012	1338	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3434	C-3	7/25/2012	1338	NO_2	0.016	mg/l	V	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH
12-3435	C-11	7/25/2012	1408	Fecal Coliform	50	col/100ml	B	SM9222D	10 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3436	C-11	7/25/2012	1408	Total Phosphorus	0.40	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3436	C-11	7/25/2012	1408	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3436	C-11	7/25/2012	1408	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3437	C-11	7/25/2012	1408	NO_2	0.006	mg/l	I V	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH
12-3438	C-13	7/25/2012	1425	Fecal Coliform	20	col/100ml	B	SM9222D	10 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3439	C-13	7/25/2012	1425	Total Phosphorus	0.42	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3439	C-13	7/25/2012	1425	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3439	C-13	7/25/2012	1425	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3440	C-13	7/25/2012	1425	NO_2	0.007	mg/l	I V	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH
12-3441	C-12	7/25/2012	1438	Fecal Coliform	60	col/100ml	B	SM9222D	10 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3442	C-12	7/25/2012	1438	Total Phosphorus	0.58	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3442	C-12	7/25/2012	1438	NO_2+NO_3	0.019	mg/l		EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3442	C-12	7/25/2012	1438	NO_3	0.014	mg/l	I C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3443	C-12	7/25/2012	1438	NO_2	0.005	mg/l	I	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH
12-3444	C-14	7/25/2012	1504	Fecal Coliform	70	col/100ml	B	SM9222D	10 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3445	C-14	7/25/2012	1504	Total Phosphorus	0.28	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3445	C-14	7/25/2012	1504	NO_2+NO_3	0.024	mg/l		EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3445	C-14	7/25/2012	1504	NO_3	0.008	mg/l	I C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3446	C-14	7/25/2012	1504	NO_2	0.016	mg/l		EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-3447	C-15	7/25/2012	1519	Fecal Coliform	60	col/100ml	B	SM9222D	10 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3448	C-15	7/25/2012	1519	Total Phosphorus	0.28	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3448	C-15	7/25/2012	1519	NO_2+NO_3	0.033	mg/l		EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3448	C-15	7/25/2012	1519	NO_3	0.023	mg/l	C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3449	C-15	7/25/2012	1519	NO_2	0.010	mg/l	I	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH
12-3450	C-16	7/25/2012	1537	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	7/25/2012	1613	7/25/2012	1725	WH
12-3451	C-16	7/25/2012	1537	Total Phosphorus	0.28	mg/l		EPA 365.4	0.02 mg/L	7/25/2012	1613	8/13/2012	0959	EMR
12-3451	C-16	7/25/2012	1537	NO_2+NO_3	0.023	mg/l		EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	WH
12-3451	C-16	7/25/2012	1537	NO_3	0.017	mg/l	C	EPA 353.2	0.004 mg/l	7/25/2012	1613	7/27/2012	1023	SL
12-3452	C-16	7/25/2012	1537	NO_2	0.006	mg/l	I	EPA 353.2	0.003 mg/l	7/25/2012	1613	7/27/2012	0806	WH

East Port Laboratory

Charlotte County Utilities

EAST PORT WRF

3100 Loveland blvd.

PORT CHARLOTTE, FL. 33980

DATA QUALIFIER DEFINITIONS

A = Value reported is an average of two or more determinations.
B = Results based upon colony counts outside the acceptable range.
C = Calculated value
F = Tested in the field
I = Reported value is between the laboratory MDL and PQL.
J1 = Est. value quality control criteria for precision or accuracy not met. (Spike Recovery)
J2 = Est. value quality control criteria for precision or accuracy not met.(Duplicate RPD)
J3 = Est. value quality control criteria for precision or accuracy not met.(Glucose/Glutamic Acid)
J4 = Est. value quality control criteria for precision or accuracy not met.(analyte detected in blank)
J5 = Est. value quality control criteria for precision or accuracy not met.(DO Depletion <2.00 mg/L)
J6 = Est. value quality control criteria for precision or accuracy not met.(Test Replicate Difference)
K-1 = Off-scale low. The value is less than the lowest calibration standard.
O = Sampled, but analysis lost or not performed.
Q = Sample held beyond accepted hold time.
T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.
U = Analyte analyzed but not detected at the value indicated.
V = Analyte detected in sample and method blank.
Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.
Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.
! = Data deviate from historically established concentration ranges.
? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the Presence or absence of the analyte cannot be determined from the data.
* = Not reported due to interference.

NOTES:
PQL = 4 x MDL
Ammonia PQL = 0.10 mg/L
TKN PQL = 0.50 mg/L

November 5, 2012

Report ID: Spring Lake 09&10-12

East Port Laboratory

Bruce Bullert
Charlotte County Utility
Engineering Department
25550 Harbor View Rd
Port Charlotte, FL 33980

September & October 2012 Lab Results

Lab ID # E54436

The East Port Laboratory is certified by the Florida Department of Health Bureau of Laboratories Environmental Water as a Basic Environmental Laboratory. The East Port Laboratory has a Florida Department of Health approved Comprehensive Quality Assurance/Quality Control Plan which specifies the procedures used in the analysis of the referenced samples. The East Port Laboratory certifies that results meet all requirements of NELAC Standards. The Lab ID number above should be referenced when attesting to regulatory agencies regarding the analytical procedures used.

Attached please find the results from the samples collected by you and sent to the East Port Laboratory for analysis. There are custody numbers assigned to each sample for quality control purposes; please refer to these custody numbers when requesting information regarding these samples. Results relate to samples only.

The East Port Laboratory is pleased to have served you. If you require any further assistance, please feel free to contact me directly.

Sincerely,

Sandra Lavoie

Sandra Lavoie
Laboratory Manager
Tel.: 941-764-4593

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-4216	MW-1	09/12/2012	0920	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/12/2012	1327	09/12/2012	1502	SOK
12-4217	MW-1	09/12/2012	0920	Total Phosphorus	13.53	mg/l		EPA 365.4	0.02 mg/L	09/12/2012	1327	10/01/2012	1220	SOK
12-4217	MW-1	09/12/2012	0920	NO_2+NO_3	1.937	mg/l		EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	WH
12-4217	MW-1	09/12/2012	0920	NO_3	1.937	mg/l	C	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	SL
12-4218	MW-1	09/12/2012	0920	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/12/2012	1327	09/14/2012	0749	WH
12-4219	MW-2	09/12/2012	0951	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/12/2012	1327	09/12/2012	1502	SOK
12-4220	MW-2	09/12/2012	0951	Total Phosphorus	0.38	mg/l		EPA 365.4	0.02 mg/L	09/12/2012	1327	10/01/2012	1220	SOK
12-4220	MW-2	09/12/2012	0951	NO_2+NO_3	0.128	mg/l		EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	WH
12-4220	MW-2	09/12/2012	0951	NO_3	0.128	mg/l	C	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	SL
12-4221	MW-2	09/12/2012	0951	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/12/2012	1327	09/14/2012	0749	WH
12-4222	MW-5	09/12/2012	1009	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/12/2012	1327	09/12/2012	1502	SOK
12-4223	MW-5	09/12/2012	1009	Total Phosphorus	0.98	mg/l		EPA 365.4	0.02 mg/L	09/12/2012	1327	10/01/2012	1220	SOK
12-4223	MW-5	09/12/2012	1009	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	WH
12-4223	MW-5	09/12/2012	1009	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	SL
12-4224	MW-5	09/12/2012	1009	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/12/2012	1327	09/14/2012	0749	WH
12-4225	MW-3	09/12/2012	1031	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/12/2012	1327	09/12/2012	1502	SOK
12-4226	MW-3	09/12/2012	1031	Total Phosphorus	0.75	mg/l		EPA 365.4	0.02 mg/L	09/12/2012	1327	10/01/2012	1220	SOK
12-4226	MW-3	09/12/2012	1031	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	WH
12-4226	MW-3	09/12/2012	1031	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	SL
12-4227	MW-3	09/12/2012	1031	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/12/2012	1327	09/14/2012	0749	WH
12-4228	MW-4	09/12/2012	1052	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/12/2012	1327	09/12/2012	1502	SOK
12-4229	MW-4	09/12/2012	1052	Total Phosphorus	0.39	mg/l		EPA 365.4	0.02 mg/L	09/12/2012	1327	10/01/2012	1220	SOK
12-4229	MW-4	09/12/2012	1052	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	WH
12-4229	MW-4	09/12/2012	1052	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	SL
12-4230	MW-4	09/12/2012	1052	NO_2	0.007	mg/l	I	EPA 353.2	0.003 mg/l	09/12/2012	1327	09/14/2012	0749	WH
12-4231	MW-7	09/12/2012	1113	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/12/2012	1327	09/12/2012	1502	SOK
12-4232	MW-7	09/12/2012	1113	Total Phosphorus	0.54	mg/l		EPA 365.4	0.02 mg/L	09/12/2012	1327	10/01/2012	1220	SOK
12-4232	MW-7	09/12/2012	1113	NO_2+NO_3	0.012	mg/l	I	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	WH
12-4232	MW-7	09/12/2012	1113	NO_3	0.012	mg/l	I C	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	SL
12-4233	MW-7	09/12/2012	1113	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/12/2012	1327	09/14/2012	0749	WH
12-4234	MW-6	09/12/2012	1137	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/12/2012	1327	09/12/2012	1502	SOK
12-4235	MW-6	09/12/2012	1137	Total Phosphorus	0.24	mg/l		EPA 365.4	0.02 mg/L	09/12/2012	1327	10/01/2012	1220	SOK
12-4235	MW-6	09/12/2012	1137	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	WH
12-4235	MW-6	09/12/2012	1137	NO_3	0.004	Units	U C	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	SL
12-4236	MW-6	09/12/2012	1137	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/12/2012	1327	09/14/2012	0749	WH

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-4237	MW-15	09/12/2012	1200	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/12/2012	1327	09/12/2012	1502	SOK
12-4238	MW-15	09/12/2012	1200	Total Phosphorus	0.67	mg/l		EPA 365.4	0.02 mg/L	09/12/2012	1327	10/01/2012	1220	SOK
12-4238	MW-15	09/12/2012	1200	NO_2+NO_3	0.005	mg/l	I	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	WH
12-4238	MW-15	09/12/2012	1200	NO_3	0.005	mg/l	I C	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	SL
12-4239	MW-15	09/12/2012	1200	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/12/2012	1327	09/14/2012	0749	WH
12-4240	MW-24	09/12/2012	1220	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/12/2012	1327	09/12/2012	1502	SOK
12-4241	MW-24	09/12/2012	1220	Total Phosphorus	0.84	mg/l		EPA 365.4	0.02 mg/L	09/12/2012	1327	10/01/2012	1220	SOK
12-4241	MW-24	09/12/2012	1220	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	WH
12-4241	MW-24	09/12/2012	1220	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	SL
12-4242	MW-24	09/12/2012	1220	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/12/2012	1327	09/14/2012	0749	WH
12-4243	MW-26	09/12/2012	1242	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/12/2012	1327	09/12/2012	1502	SOK
12-4244	MW-26	09/12/2012	1242	Total Phosphorus	2.41	mg/l		EPA 365.4	0.02 mg/L	09/12/2012	1327	10/01/2012	1220	SOK
12-4244	MW-26	09/12/2012	1242	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	WH
12-4244	MW-26	09/12/2012	1242	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/12/2012	1327	09/14/2012	0938	SL
12-4245	MW-26	09/12/2012	1242	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/12/2012	1327	09/14/2012	0749	WH
12-4262	MW-27	09/13/2012	0929	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/13/2012	1200	09/13/2012	1315	WH
12-4263	MW-27	09/13/2012	0929	Total Phosphorus	2.61	mg/l		EPA 365.4	0.02 mg/L	09/13/2012	1200	10/01/2012	1220	SOK
12-4263	MW-27	09/13/2012	0929	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/13/2012	1200	09/14/2012	0938	WH
12-4263	MW-27	09/13/2012	0929	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/13/2012	1200	09/14/2012	0938	SL
12-4264	MW-27	09/13/2012	0929	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/13/2012	1200	09/14/2012	0749	WH
12-4265	MW-28	09/13/2012	0955	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/13/2012	1200	09/13/2012	1315	WH
12-4266	MW-28	09/13/2012	0955	Total Phosphorus	3.01	mg/l		EPA 365.4	0.02 mg/L	09/13/2012	1200	10/01/2012	1220	SOK
12-4266	MW-28	09/13/2012	0955	NO_2+NO_3	0.004	mg/l	I	EPA 353.2	0.004 mg/l	09/13/2012	1200	09/14/2012	0938	WH
12-4266	MW-28	09/13/2012	0955	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/13/2012	1200	09/14/2012	0938	SL
12-4267	MW-28	09/13/2012	0955	NO_2	0.004	mg/l	I	EPA 353.2	0.003 mg/l	09/13/2012	1200	09/14/2012	0749	WH
12-4268	MW-8	09/13/2012	1023	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/13/2012	1200	09/13/2012	1315	WH
12-4269	MW-8	09/13/2012	1023	Total Phosphorus	0.46	mg/l		EPA 365.4	0.02 mg/L	09/13/2012	1200	10/01/2012	1220	SOK
12-4269	MW-8	09/13/2012	1023	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/13/2012	1200	09/14/2012	0938	WH
12-4269	MW-8	09/13/2012	1023	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/13/2012	1200	09/14/2012	0938	SL
12-4270	MW-8	09/13/2012	1023	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/13/2012	1200	09/14/2012	0749	WH
12-4271	MW-13	09/13/2012	1047	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/13/2012	1200	09/13/2012	1315	WH
12-4272	MW-13	09/13/2012	1047	Total Phosphorus	0.89	mg/l		EPA 365.4	0.02 mg/L	09/13/2012	1200	10/01/2012	1220	SOK
12-4272	MW-13	09/13/2012	1047	NO_2+NO_3	0.005	mg/l	I	EPA 353.2	0.004 mg/l	09/13/2012	1200	09/14/2012	0938	WH
12-4272	MW-13	09/13/2012	1047	NO_3	0.005	mg/l	I C	EPA 353.2	0.004 mg/l	09/13/2012	1200	09/14/2012	0938	SL
12-4273	MW-13	09/13/2012	1047	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/13/2012	1200	09/14/2012	0749	WH
12-4274	MW-14	09/13/2012	1112	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/13/2012	1200	09/13/2012	1315	WH
12-4275	MW-14	09/13/2012	1112	Total Phosphorus	2.02	mg/l		EPA 365.4	0.02 mg/L	09/13/2012	1200	10/01/2012	1220	SOK
12-4275	MW-14	09/13/2012	1112	NO_2+NO_3	0.496	mg/l		EPA 353.2	0.004 mg/l	09/13/2012	1200	09/14/2012	0938	WH
12-4275	MW-14	09/13/2012	1112	NO_3	0.452	mg/l	C	EPA 353.2	0.004 mg/l	09/13/2012	1200	09/14/2012	0938	SL
12-4276	MW-14	09/13/2012	1112	NO_2	0.044	mg/l		EPA 353.2	0.003 mg/l	09/13/2012	1200	09/14/2012	0749	WH

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-4345	MW-16	09/19/2012	1016	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/19/2012	1350	09/19/2012	1443	EMR
12-4346	MW-16	09/19/2012	1016	Total Phosphorus	1.86	mg/l		EPA 365.4	0.02 mg/L	09/19/2012	1350	10/01/2012	1220	SOK
12-4346	MW-16	09/19/2012	1016	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/19/2012	1350	09/21/2012	1111	EMR
12-4346	MW-16	09/19/2012	1016	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/19/2012	1350	09/21/2012	1111	SL
12-4347	MW-16	09/19/2012	1016	NO_2	0.003	mg/l	I	EPA 353.2	0.003 mg/l	09/19/2012	1350	09/21/2012	0922	EMR
12-4348	MW-25	09/19/2012	1049	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/19/2012	1350	09/19/2012	1443	EMR
12-4349	MW-25	09/19/2012	1049	Total Phosphorus	1.33	mg/l		EPA 365.4	0.02 mg/L	09/19/2012	1350	10/01/2012	1220	SOK
12-4349	MW-25	09/19/2012	1049	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/19/2012	1350	09/21/2012	1111	EMR
12-4349	MW-25	09/19/2012	1049	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/19/2012	1350	09/21/2012	1111	SL
12-4350	MW-25	09/19/2012	1049	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/19/2012	1350	09/21/2012	0922	EMR
12-4351	MW-29	09/19/2012	1112	Fecal Coliform	1720	col/100ml		SM9222D	20 col/100ml	09/19/2012	1350	09/19/2012	1443	EMR
12-4352	MW-29	09/19/2012	1112	Total Phosphorus	0.89	mg/l		EPA 365.4	0.02 mg/L	09/19/2012	1350	10/01/2012	1220	SOK
12-4352	MW-29	09/19/2012	1112	NO_2+NO_3	0.042	mg/l		EPA 353.2	0.004 mg/l	09/19/2012	1350	09/21/2012	1111	EMR
12-4352	MW-29	09/19/2012	1112	NO_3	0.042	mg/l	C	EPA 353.2	0.004 mg/l	09/19/2012	1350	09/21/2012	1111	SL
12-4353	MW-29	09/19/2012	1112	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/19/2012	1350	09/21/2012	0922	EMR
12-4354	MW-22	09/19/2012	1136	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/19/2012	1350	09/19/2012	1443	EMR
12-4355	MW-22	09/19/2012	1136	Total Phosphorus	0.04	mg/l	I	EPA 365.4	0.02 mg/L	09/19/2012	1350	10/01/2012	1220	SOK
12-4355	MW-22	09/19/2012	1136	NO_2+NO_3	0.015	mg/l	I	EPA 353.2	0.004 mg/l	09/19/2012	1350	09/21/2012	1111	EMR
12-4355	MW-22	09/19/2012	1136	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/19/2012	1350	09/21/2012	1111	SL
12-4356	MW-22	09/19/2012	1136	NO_2	0.016	mg/l		EPA 353.2	0.003 mg/l	09/19/2012	1350	09/21/2012	0922	EMR
12-4357	MW-12	09/19/2012	1201	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/19/2012	1351	09/19/2012	1443	EMR
12-4358	MW-12	09/19/2012	1201	Total Phosphorus	0.10	mg/l		EPA 365.4	0.02 mg/L	09/19/2012	1351	10/01/2012	1220	SOK
12-4358	MW-12	09/19/2012	1201	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/19/2012	1351	09/21/2012	1111	EMR
12-4358	MW-12	09/19/2012	1201	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/19/2012	1351	09/21/2012	1111	SL
12-4359	MW-12	09/19/2012	1201	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/19/2012	1351	09/21/2012	0922	EMR
12-4360	MW-9	09/19/2012	1221	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/19/2012	1351	09/19/2012	1443	EMR
12-4361	MW-9	09/19/2012	1221	Total Phosphorus	0.63	mg/l		EPA 365.4	0.02 mg/L	09/19/2012	1351	10/01/2012	1220	SOK
12-4361	MW-9	09/19/2012	1221	NO_2+NO_3	4.692	mg/l		EPA 353.2	0.004 mg/l	09/19/2012	1351	09/21/2012	1111	EMR
12-4361	MW-9	09/19/2012	1221	NO_3	4.496	mg/l	C	EPA 353.2	0.004 mg/l	09/19/2012	1351	09/21/2012	1111	SL
12-4362	MW-9	09/19/2012	1221	NO_2	0.196	mg/l		EPA 353.2	0.003 mg/l	09/19/2012	1351	09/21/2012	0922	EMR
12-4363	MW-11	09/19/2012	1252	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/19/2012	1351	09/19/2012	1443	EMR
12-4364	MW-11	09/19/2012	1252	Total Phosphorus	0.88	mg/l		EPA 365.4	0.02 mg/L	09/19/2012	1351	10/01/2012	1220	SOK
12-4364	MW-11	09/19/2012	1252	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/19/2012	1351	09/21/2012	1111	EMR
12-4364	MW-11	09/19/2012	1252	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/19/2012	1351	09/21/2012	1111	SL
12-4365	MW-11	09/19/2012	1252	NO_2	0.006	mg/l	I	EPA 353.2	0.003 mg/l	09/19/2012	1351	09/21/2012	0922	EMR
12-4366	MW-10	09/19/2012	1322	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/19/2012	1351	09/19/2012	1443	EMR
12-4367	MW-10	09/19/2012	1322	Total Phosphorus	2.33	mg/l		EPA 365.4	0.02 mg/L	09/19/2012	1351	10/01/2012	1220	SOK
12-4367	MW-10	09/19/2012	1322	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/19/2012	1351	09/21/2012	1111	EMR
12-4367	MW-10	09/19/2012	1322	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/19/2012	1351	09/21/2012	1111	SL
12-4368	MW-10	09/19/2012	1322	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/19/2012	1351	09/21/2012	0922	EMR

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-4385	MW-18	09/20/2012	0934	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/20/2012	1350	09/20/2012	1500	WH
12-4386	MW-18	09/20/2012	0934	Total Phosphorus	0.74	mg/l		EPA 365.4	0.02 mg/L	09/20/2012	1350	10/01/2012	1220	SOK
12-4386	MW-18	09/20/2012	0934	NO_2+NO_3	0.087	mg/l		EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	EMR
12-4386	MW-18	09/20/2012	0934	NO_3	0.066	mg/l	C	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	SL
12-4387	MW-18	09/20/2012	0934	NO_2	0.021	mg/l		EPA 353.2	0.003 mg/l	09/20/2012	1350	09/21/2012	0922	EMR
12-4388	MW-17	09/20/2012	1005	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/20/2012	1350	09/20/2012	1500	WH
12-4389	MW-17	09/20/2012	1005	Total Phosphorus	9.37	mg/l		EPA 365.4	0.02 mg/L	09/20/2012	1350	10/01/2012	1220	SOK
12-4389	MW-17	09/20/2012	1005	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	EMR
12-4389	MW-17	09/20/2012	1005	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	SL
12-4390	MW-17	09/20/2012	1005	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/20/2012	1350	09/21/2012	0922	EMR
12-4391	MW-21	09/20/2012	1031	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/20/2012	1350	09/20/2012	1500	WH
12-4392	MW-21	09/20/2012	1031	Total Phosphorus	0.62	mg/l		EPA 365.4	0.02 mg/L	09/20/2012	1350	10/02/2012	1408	EMR
12-4392	MW-21	09/20/2012	1031	NO_2+NO_3	0.008	mg/l	I	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	EMR
12-4392	MW-21	09/20/2012	1031	NO_3	0.008	mg/l	I C	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	SL
12-4393	MW-21	09/20/2012	1031	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/20/2012	1350	09/21/2012	0922	EMR
12-4394	MW-33	09/20/2012	1059	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/20/2012	1350	09/20/2012	1500	WH
12-4395	MW-33	09/20/2012	1059	Total Phosphorus	0.77	mg/l		EPA 365.4	0.02 mg/L	09/20/2012	1350	10/02/2012	1408	EMR
12-4395	MW-33	09/20/2012	1059	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	EMR
12-4395	MW-33	09/20/2012	1059	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	SL
12-4396	MW-33	09/20/2012	1059	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/20/2012	1350	09/21/2012	0922	EMR
12-4397	MW-34	09/20/2012	1134	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/20/2012	1350	09/20/2012	1500	WH
12-4398	MW-34	09/20/2012	1134	Total Phosphorus	0.88	mg/l		EPA 365.4	0.02 mg/L	09/20/2012	1350	10/02/2012	1408	EMR
12-4398	MW-34	09/20/2012	1134	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	EMR
12-4398	MW-34	09/20/2012	1134	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	SL
12-4399	MW-34	09/20/2012	1134	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/20/2012	1350	09/21/2012	0922	EMR
12-4400	MW-20	09/20/2012	1209	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/20/2012	1350	09/20/2012	1500	WH
12-4401	MW-20	09/20/2012	1209	Total Phosphorus	1.24	mg/l		EPA 365.4	0.02 mg/L	09/20/2012	1350	10/02/2012	1408	EMR
12-4401	MW-20	09/20/2012	1209	NO_2+NO_3	0.253	mg/l		EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	EMR
12-4401	MW-20	09/20/2012	1209	NO_3	0.233	mg/l	C	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	SL
12-4402	MW-20	09/20/2012	1209	NO_2	0.020	mg/l		EPA 353.2	0.003 mg/l	09/20/2012	1350	09/21/2012	0922	EMR
12-4403	MW-19	09/20/2012	1247	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/20/2012	1350	09/20/2012	1500	WH
12-4404	MW-19	09/20/2012	1247	Total Phosphorus	0.18	mg/l		EPA 365.4	0.02 mg/L	09/20/2012	1350	10/02/2012	1408	EMR
12-4404	MW-19	09/20/2012	1247	NO_2+NO_3	0.733	mg/l		EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	EMR
12-4404	MW-19	09/20/2012	1247	NO_3	0.677	mg/l	C	EPA 353.2	0.004 mg/l	09/20/2012	1350	09/21/2012	1111	SL
12-4405	MW-19	09/20/2012	1247	NO_2	0.056	mg/l		EPA 353.2	0.003 mg/l	09/20/2012	1350	09/21/2012	0922	EMR
12-4474	MW-30	09/26/2012	0941	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/26/2012	1333	09/26/2012	1431	SOK
12-4475	MW-30	09/26/2012	0941	Total Phosphorus	2.41	mg/l		EPA 365.4	0.02 mg/L	09/26/2012	1333	10/02/2012	1408	EMR
12-4475	MW-30	09/26/2012	0941	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	WH
12-4475	MW-30	09/26/2012	0941	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	EMR
12-4476	MW-30	09/26/2012	0941	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/26/2012	1333	09/28/2012	0818	WH

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-4477	MW-31	09/26/2012	1011	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/26/2012	1333	09/26/2012	1431	SOK
12-4478	MW-31	09/26/2012	1011	Total Phosphorus	0.40	mg/l		EPA 365.4	0.02 mg/L	09/26/2012	1333	10/02/2012	1408	EMR
12-4478	MW-31	09/26/2012	1011	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	WH
12-4478	MW-31	09/26/2012	1011	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	EMR
12-4479	MW-31	09/26/2012	1011	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/26/2012	1333	09/28/2012	0818	WH
12-4480	MW-37	09/26/2012	1038	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/26/2012	1333	09/26/2012	1431	SOK
12-4481	MW-37	09/26/2012	1038	Total Phosphorus	0.22	mg/l		EPA 365.4	0.02 mg/L	09/26/2012	1333	10/02/2012	1408	EMR
12-4481	MW-37	09/26/2012	1038	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	WH
12-4481	MW-37	09/26/2012	1038	NO_3	0.004	Units	U C	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	EMR
12-4482	MW-37	09/26/2012	1038	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/26/2012	1333	09/28/2012	0818	WH
12-4483	MW-38	09/26/2012	1059	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/26/2012	1333	09/26/2012	1431	SOK
12-4484	MW-38	09/26/2012	1059	Total Phosphorus	0.61	mg/l		EPA 365.4	0.02 mg/L	09/26/2012	1333	10/02/2012	1408	EMR
12-4484	MW-38	09/26/2012	1059	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	WH
12-4484	MW-38	09/26/2012	1059	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	EMR
12-4485	MW-38	09/26/2012	1059	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/26/2012	1333	09/28/2012	0818	WH
12-4486	MW-36	09/26/2012	1120	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/26/2012	1333	09/26/2012	1431	SOK
12-4487	MW-36	09/26/2012	1120	Total Phosphorus	0.06	mg/l	I	EPA 365.4	0.02 mg/L	09/26/2012	1333	10/02/2012	1408	EMR
12-4487	MW-36	09/26/2012	1120	NO_2+NO_3	0.012	mg/l	I	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	WH
12-4487	MW-36	09/26/2012	1120	NO_3	0.012	mg/l	I C	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	EMR
12-4488	MW-36	09/26/2012	1120	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/26/2012	1333	09/28/2012	0818	WH
12-4489	MW-32	09/26/2012	1146	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/26/2012	1333	09/26/2012	1431	SOK
12-4490	MW-32	09/26/2012	1146	Total Phosphorus	1.46	mg/l		EPA 365.4	0.02 mg/L	09/26/2012	1333	10/02/2012	1408	EMR
12-4490	MW-32	09/26/2012	1146	NO_2+NO_3	0.007	mg/l	I	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	WH
12-4490	MW-32	09/26/2012	1146	NO_3	0.007	mg/l	I C	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	EMR
12-4491	MW-32	09/26/2012	1146	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/26/2012	1333	09/28/2012	0818	WH
12-4492	MW-42	09/26/2012	1211	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/26/2012	1333	09/26/2012	1431	SOK
12-4493	MW-42	09/26/2012	1211	Total Phosphorus	0.22	mg/l		EPA 365.4	0.02 mg/L	09/26/2012	1333	10/02/2012	1408	EMR
12-4493	MW-42	09/26/2012	1211	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	WH
12-4493	MW-42	09/26/2012	1211	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	EMR
12-4494	MW-42	09/26/2012	1211	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/26/2012	1333	09/28/2012	0818	WH
12-4495	MW-39	09/26/2012	1233	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/26/2012	1333	09/26/2012	1431	SOK
12-4496	MW-39	09/26/2012	1233	Total Phosphorus	0.07	mg/l	I	EPA 365.4	0.02 mg/L	09/26/2012	1333	10/02/2012	1408	EMR
12-4496	MW-39	09/26/2012	1233	NO_2+NO_3	0.169	mg/l		EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	WH
12-4496	MW-39	09/26/2012	1233	NO_3	0.156	mg/l	C	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	EMR
12-4497	MW-39	09/26/2012	1233	NO_2	0.013	mg/l		EPA 353.2	0.003 mg/l	09/26/2012	1333	09/28/2012	0818	WH
12-4498	MW-41	09/26/2012	1305	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/26/2012	1333	09/26/2012	1431	SOK
12-4499	MW-41	09/26/2012	1305	Total Phosphorus	0.77	mg/l		EPA 365.4	0.02 mg/L	09/26/2012	1333	10/02/2012	1408	EMR
12-4499	MW-41	09/26/2012	1305	NO_2+NO_3	0.007	mg/l	I	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	WH
12-4499	MW-41	09/26/2012	1305	NO_3	0.007	mg/l	I C	EPA 353.2	0.004 mg/l	09/26/2012	1333	09/28/2012	0958	EMR
12-4500	MW-41	09/26/2012	1305	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/26/2012	1333	09/28/2012	0818	WH

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-4517	MW-35	09/27/2012	0927	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/27/2012	1233	09/27/2012	1309	EMR
12-4518	MW-35	09/27/2012	0927	Total Phosphorus	0.65	mg/l		EPA 365.4	0.02 mg/L	09/27/2012	1233	10/02/2012	1408	EMR
12-4518	MW-35	09/27/2012	0927	NO_2+NO_3	0.012	mg/l	I	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	WH
12-4518	MW-35	09/27/2012	0927	NO_3	0.012	mg/l	I C	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	EMR
12-4519	MW-35	09/27/2012	0927	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/27/2012	1233	09/28/2012	0818	WH
12-4520	MW-40	09/27/2012	0956	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/27/2012	1233	09/27/2012	1309	EMR
12-4521	MW-40	09/27/2012	0956	Total Phosphorus	0.82	mg/l		EPA 365.4	0.02 mg/L	09/27/2012	1233	10/02/2012	1408	EMR
12-4521	MW-40	09/27/2012	0956	NO_2+NO_3	0.086	mg/l		EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	WH
12-4521	MW-40	09/27/2012	0956	NO_3	0.086	mg/l	C	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	EMR
12-4522	MW-40	09/27/2012	0956	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/27/2012	1233	09/28/2012	0818	WH
12-4523	MW-43	09/27/2012	1026	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/27/2012	1233	09/27/2012	1309	EMR
12-4524	MW-43	09/27/2012	1026	Total Phosphorus	0.07	mg/l	I	EPA 365.4	0.02 mg/L	09/27/2012	1233	10/02/2012	1408	EMR
12-4524	MW-43	09/27/2012	1026	NO_2+NO_3	0.011	mg/l	I	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	WH
12-4524	MW-43	09/27/2012	1026	NO_3	0.004	mg/l	I C	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	EMR
12-4525	MW-43	09/27/2012	1026	NO_2	0.007	mg/l	I	EPA 353.2	0.003 mg/l	09/27/2012	1233	09/28/2012	0818	WH
12-4526	MW-44	09/27/2012	1053	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/27/2012	1233	09/27/2012	1309	EMR
12-4527	MW-44	09/27/2012	1053	Total Phosphorus	3.68	mg/l		EPA 365.4	0.02 mg/L	09/27/2012	1233	10/02/2012	1408	EMR
12-4527	MW-44	09/27/2012	1053	NO_2+NO_3	0.007	mg/l	I	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	WH
12-4527	MW-44	09/27/2012	1053	NO_3	0.007	mg/l	I C	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	EMR
12-4528	MW-44	09/27/2012	1053	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/27/2012	1233	09/28/2012	0818	WH
12-4529	MW-45	09/27/2012	1132	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/27/2012	1233	09/27/2012	1309	EMR
12-4530	MW-45	09/27/2012	1132	Total Phosphorus	0.20	mg/l		EPA 365.4	0.02 mg/L	09/27/2012	1233	10/02/2012	1408	EMR
12-4530	MW-45	09/27/2012	1132	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	WH
12-4530	MW-45	09/27/2012	1132	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	EMR
12-4531	MW-45	09/27/2012	1132	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/27/2012	1233	09/28/2012	0818	WH
12-4532	MW-46	09/27/2012	1205	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	09/27/2012	1233	09/27/2012	1309	EMR
12-4533	MW-46	09/27/2012	1205	Total Phosphorus	0.40	mg/l		EPA 365.4	0.02 mg/L	09/27/2012	1233	10/02/2012	1408	EMR
12-4533	MW-46	09/27/2012	1205	NO_2+NO_3	0.008	mg/l	I	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	WH
12-4533	MW-46	09/27/2012	1205	NO_3	0.008	mg/l	I C	EPA 353.2	0.004 mg/l	09/27/2012	1233	09/28/2012	0958	EMR
12-4534	MW-46	09/27/2012	1205	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	09/27/2012	1233	09/28/2012	0818	WH
12-4778	C-5	10/10/2012	0940	Fecal Coliform	80	col/100ml	B	SM9222D	10 col/100ml	10/10/2012	1248	10/10/2012	1347	SOK
12-4779	C-5	10/10/2012	0940	Total Phosphorus	0.32	mg/l		EPA 365.4	0.02 mg/L	10/10/2012	1248	10/17/2012	1338	EMR
12-4779	C-5	10/10/2012	0940	NO_2+NO_3	0.030	mg/l		EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	WH
12-4779	C-5	10/10/2012	0940	NO_3	0.030	mg/l	C	EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	EMR
12-4780	C-5	10/10/2012	0940	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	10/10/2012	1248	10/12/2012	0745	WH
12-4781	C-6	10/10/2012	0958	Fecal Coliform	20	col/100ml	B	SM9222D	10 col/100ml	10/10/2012	1248	10/10/2012	1347	SOK
12-4782	C-6	10/10/2012	0958	Total Phosphorus	0.52	mg/l		EPA 365.4	0.02 mg/L	10/10/2012	1248	10/17/2012	1338	EMR
12-4782	C-6	10/10/2012	0958	NO_2+NO_3	0.049	mg/l		EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	WH
12-4782	C-6	10/10/2012	0958	NO_3	0.049	mg/l	C	EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	EMR
12-4783	C-6	10/10/2012	0958	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	10/10/2012	1248	10/12/2012	0745	WH

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-4784	C-7	10/10/2012	1016	Fecal Coliform	60	col/100ml	B	SM9222D	10 col/100ml	10/10/2012	1248	10/10/2012	1347	SOK
12-4785	C-7	10/10/2012	1016	Total Phosphorus	0.51	mg/l		EPA 365.4	0.02 mg/L	10/10/2012	1248	10/17/2012	1338	EMR
12-4785	C-7	10/10/2012	1016	NO_2+NO_3	0.051	mg/l		EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	WH
12-4785	C-7	10/10/2012	1016	NO_3	0.042	mg/l	C	EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	EMR
12-4786	C-7	10/10/2012	1016	NO_2	0.009	mg/l	I	EPA 353.2	0.003 mg/l	10/10/2012	1248	10/12/2012	0745	WH
12-4787	C-8	10/10/2012	1042	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	10/10/2012	1248	10/10/2012	1347	SOK
12-4788	C-8	10/10/2012	1042	Total Phosphorus	0.46	mg/l		EPA 365.4	0.02 mg/L	10/10/2012	1248	10/17/2012	1338	EMR
12-4788	C-8	10/10/2012	1042	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	WH
12-4788	C-8	10/10/2012	1042	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	EMR
12-4789	C-8	10/10/2012	1042	NO_2	0.014	mg/l		EPA 353.2	0.003 mg/l	10/10/2012	1248	10/12/2012	0745	WH
12-4790	C-9	10/10/2012	1057	Fecal Coliform	20	col/100ml	B	SM9222D	10 col/100ml	10/10/2012	1248	10/10/2012	1347	SOK
12-4791	C-9	10/10/2012	1057	Total Phosphorus	0.43	mg/l		EPA 365.4	0.02 mg/L	10/10/2012	1248	10/17/2012	1338	EMR
12-4791	C-9	10/10/2012	1057	NO_2+NO_3	0.036	mg/l		EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	WH
12-4791	C-9	10/10/2012	1057	NO_3	0.022	mg/l	C	EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	EMR
12-4792	C-9	10/10/2012	1057	NO_2	0.014	mg/l		EPA 353.2	0.003 mg/l	10/10/2012	1248	10/12/2012	0745	WH
12-4793	C-10	10/10/2012	1113	Fecal Coliform	60	col/100ml	B	SM9222D	10 col/100ml	10/10/2012	1248	10/10/2012	1347	SOK
12-4794	C-10	10/10/2012	1113	Total Phosphorus	0.43	mg/l		EPA 365.4	0.02 mg/L	10/10/2012	1248	10/17/2012	1338	EMR
12-4794	C-10	10/10/2012	1113	NO_2+NO_3	0.062	mg/l		EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	WH
12-4794	C-10	10/10/2012	1113	NO_3	0.048	mg/l	C	EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	EMR
12-4795	C-10	10/10/2012	1113	NO_2	0.014	mg/l		EPA 353.2	0.003 mg/l	10/10/2012	1248	10/12/2012	0745	WH
12-4796	C-11	10/10/2012	1130	Fecal Coliform	30	col/100ml	B	SM9222D	10 col/100ml	10/10/2012	1248	10/10/2012	1347	SOK
12-4797	C-11	10/10/2012	1130	Total Phosphorus	0.38	mg/l		EPA 365.4	0.02 mg/L	10/10/2012	1248	10/17/2012	1338	EMR
12-4797	C-11	10/10/2012	1130	NO_2+NO_3	0.034	mg/l		EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	WH
12-4797	C-11	10/10/2012	1130	NO_3	0.027	mg/l	C	EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	EMR
12-4798	C-11	10/10/2012	1130	NO_2	0.007	mg/l	I	EPA 353.2	0.003 mg/l	10/10/2012	1248	10/12/2012	0745	WH
12-4799	C-12	10/10/2012	1147	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	10/10/2012	1248	10/10/2012	1347	SOK
12-4800	C-12	10/10/2012	1147	Total Phosphorus	0.52	mg/l		EPA 365.4	0.02 mg/L	10/10/2012	1248	10/17/2012	1338	EMR
12-4800	C-12	10/10/2012	1147	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	WH
12-4800	C-12	10/10/2012	1147	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	10/10/2012	1248	10/12/2012	1232	EMR
12-4801	C-12	10/10/2012	1147	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	10/10/2012	1248	10/12/2012	0745	WH
12-4818	MW-47	10/11/2012	0951	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	10/11/2012	1316	10/11/2012	1356	EMR
12-4819	MW-47	10/11/2012	0951	Total Phosphorus	0.12	mg/l		EPA 365.4	0.02 mg/L	10/11/2012	1316	10/17/2012	1338	EMR
12-4819	MW-47	10/11/2012	0951	NO_2+NO_3	0.020	mg/l		EPA 353.2	0.004 mg/l	10/11/2012	1316	10/12/2012	1232	WH
12-4819	MW-47	10/11/2012	0951	NO_3	0.020	mg/l	C	EPA 353.2	0.004 mg/l	10/11/2012	1316	10/12/2012	1232	EMR
12-4820	MW-47	10/11/2012	0951	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	10/11/2012	1316	10/12/2012	0745	WH
12-4821	MW-48	10/11/2012	1025	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	10/11/2012	1316	10/11/2012	1356	EMR
12-4822	MW-48	10/11/2012	1025	Total Phosphorus	1.15	mg/l		EPA 365.4	0.02 mg/L	10/11/2012	1316	10/17/2012	1338	EMR
12-4822	MW-48	10/11/2012	1025	NO_2+NO_3	0.006	mg/l	I	EPA 353.2	0.004 mg/l	10/11/2012	1316	10/12/2012	1232	WH
12-4822	MW-48	10/11/2012	1025	NO_3	0.006	mg/l	I C	EPA 353.2	0.004 mg/l	10/11/2012	1316	10/12/2012	1232	EMR
12-4823	MW-48	10/11/2012	1025	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	10/11/2012	1316	10/12/2012	0745	WH

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
12-4824	MW-49	10/11/2012	1101	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	10/11/2012	1316	10/11/2012	1356	EMR
12-4825	MW-49	10/11/2012	1101	Total Phosphorus	0.66	mg/l		EPA 365.4	0.02 mg/L	10/11/2012	1316	10/17/2012	1338	EMR
12-4825	MW-49	10/11/2012	1101	NO_2+NO_3	0.058	mg/l		EPA 353.2	0.004 mg/l	10/11/2012	1316	10/12/2012	1232	WH
12-4825	MW-49	10/11/2012	1101	NO_3	0.027	mg/l	C	EPA 353.2	0.004 mg/l	10/11/2012	1316	10/12/2012	1232	EMR
12-4826	MW-49	10/11/2012	1101	NO_2	0.031	mg/l		EPA 353.2	0.003 mg/l	10/11/2012	1316	10/12/2012	0745	WH
12-4827	MW-50	10/11/2012	1131	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	10/11/2012	1316	10/11/2012	1356	EMR
12-4828	MW-50	10/11/2012	1131	Total Phosphorus	1.22	mg/l		EPA 365.4	0.02 mg/L	10/11/2012	1316	10/17/2012	1328	EMR
12-4828	MW-50	10/11/2012	1131	NO_2+NO_3	0.099	mg/l		EPA 353.2	0.004 mg/l	10/11/2012	1316	10/12/2012	1232	WH
12-4828	MW-50	10/11/2012	1131	NO_3	0.081	mg/l	C	EPA 353.2	0.004 mg/l	10/11/2012	1316	10/12/2012	1232	EMR
12-4829	MW-50	10/11/2012	1131	NO_2	0.018	mg/l		EPA 353.2	0.003 mg/l	10/11/2012	1316	10/12/2012	0745	WH
12-4830	C-16	10/11/2012	1157	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	10/11/2012	1315	10/11/2012	1356	EMR
12-4831	C-16	10/11/2012	1157	Total Phosphorus	0.30	mg/l		EPA 365.4	0.02 mg/L	10/11/2012	1315	10/17/2012	1338	EMR
12-4831	C-16	10/11/2012	1157	NO_2+NO_3	0.018	mg/l		EPA 353.2	0.004 mg/l	10/11/2012	1315	10/12/2012	1232	WH
12-4831	C-16	10/11/2012	1157	NO_3	0.009	mg/l	I C	EPA 353.2	0.004 mg/l	10/11/2012	1315	10/12/2012	1232	EMR
12-4832	C-16	10/11/2012	1157	NO_2	0.009	mg/l	I	EPA 353.2	0.003 mg/l	10/11/2012	1315	10/12/2012	0745	WH
12-4833	C-15	10/11/2012	1215	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	10/11/2012	1315	10/11/2012	1356	EMR
12-4834	C-15	10/11/2012	1215	Total Phosphorus	0.29	mg/l		EPA 365.4	0.02 mg/L	10/11/2012	1315	10/17/2012	1338	EMR
12-4834	C-15	10/11/2012	1215	NO_2+NO_3	0.014	mg/l	I	EPA 353.2	0.004 mg/l	10/11/2012	1315	10/12/2012	1232	WH
12-4834	C-15	10/11/2012	1215	NO_3	0.014	mg/l	I C	EPA 353.2	0.004 mg/l	10/11/2012	1315	10/12/2012	1232	EMR
12-4835	C-15	10/11/2012	1215	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	10/11/2012	1315	10/12/2012	0745	WH
12-4836	C-14	10/11/2012	1234	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	10/11/2012	1315	10/11/2012	1356	EMR
12-4837	C-14	10/11/2012	1234	Total Phosphorus	0.30	mg/l		EPA 365.4	0.02 mg/L	10/11/2012	1315	10/17/2012	1338	EMR
12-4837	C-14	10/11/2012	1234	NO_2+NO_3	0.029	mg/l		EPA 353.2	0.004 mg/l	10/11/2012	1315	10/12/2012	1232	WH
12-4837	C-14	10/11/2012	1234	NO_3	0.024	mg/l	C	EPA 353.2	0.004 mg/l	10/11/2012	1315	10/12/2012	1232	EMR
12-4838	C-14	10/11/2012	1234	NO_2	0.005	mg/l	I	EPA 353.2	0.003 mg/l	10/11/2012	1315	10/12/2012	0745	WH

East Port Laboratory

Charlotte County Utilities

EAST PORT WRF

3100 Loveland blvd.

PORT CHARLOTTE, FL. 33980

DATA QUALIFIER DEFINITIONS

A = Value reported is an average of two or more determinations.
B = Results based upon colony counts outside the acceptable range.
C = Calculated value
F = Tested in the field
I = Reported value is between the laboratory MDL and PQL.
J1 = Est. value quality control criteria for precision or accuracy not met. (Spike Recovery)
J2 = Est. value quality control criteria for precision or accuracy not met.(Duplicate RPD)
J3 = Est. value quality control criteria for precision or accuracy not met.(Glucose/Glutamic Acid)
J4 = Est. value quality control criteria for precision or accuracy not met.(analyte detected in blank)
J5 = Est. value quality control criteria for precision or accuracy not met.(DO Depletion <2.00 mg/L)
J6 = Est. value quality control criteria for precision or accuracy not met.(Test Replicate Difference)
K-1 = Off-scale low. The value is less than the lowest calibration standard.
O = Sampled, but analysis lost or not performed.
Q = Sample held beyond accepted hold time.
T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.
U = Analyte analyzed but not detected at the value indicated.
V = Analyte detected in sample and method blank.
Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.
Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.
! = Data deviate from historically established concentration ranges.
? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the Presence or absence of the analyte cannot be determined from the data.
* = Not reported due to interference.

NOTES:

PQL = 4 x MDL
Ammonia PQL = 0.10 mg/L
TKN PQL = 0.50 mg/L

February 21, 2013

Report ID: Spring Lake 01&02-13

Bruce Bullert
Charlotte County Utility
Engineering Department
25550 Harbor View Rd
Port Charlotte, FL 33980

January & February 2013 Lab Results

East Port Laboratory

Lab ID # E54436

The East Port Laboratory is certified by the Florida Department of Health Bureau of Laboratories Environmental Water as a Basic Environmental Laboratory. The East Port Laboratory has a Florida Department of Health approved Comprehensive Quality Assurance/Quality Control Plan which specifies the procedures used in the analysis of the referenced samples. The East Port Laboratory certifies that results meet all requirements of NELAC Standards. The Lab ID number above should be referenced when attesting to regulatory agencies regarding the analytical procedures used.

Attached please find the results from the samples collected by you and sent to the East Port Laboratory for analysis. There are custody numbers assigned to each sample for quality control purposes; please refer to these custody numbers when requesting information regarding these samples. Results relate to samples only.

The East Port Laboratory is pleased to have served you. If you require any further assistance, please feel free to contact me directly.

Sincerely,

Sandra Lavoie

Sandra Lavoie
Laboratory Manager
Tel.: 941-764-4593

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-0168	MW-50	1/9/2013	0834	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/9/2013	1239	1/9/2013	1355	WH
13-0169	MW-50	1/9/2013	0834	Total Phosphorus	0.54	mg/l		EPA 365.4	0.02 mg/L	1/9/2013	1239	1/26/2013	1126	EMR
13-0169	MW-50	1/9/2013	0834	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	EMR
13-0169	MW-50	1/9/2013	0834	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	SL
13-0170	MW-50	1/9/2013	0834	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/9/2013	1239	1/11/2013	1116	EMR
13-0171	MW-49	1/9/2013	0902	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/9/2013	1239	1/9/2013	1355	WH
13-0172	MW-49	1/9/2013	0902	Total Phosphorus	0.92	mg/l		EPA 365.4	0.02 mg/L	1/9/2013	1239	1/26/2013	1126	EMR
13-0172	MW-49	1/9/2013	0902	NO_2+NO_3	0.029	mg/l		EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	EMR
13-0172	MW-49	1/9/2013	0902	NO_3	0.029	mg/l	C	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	SL
13-0173	MW-49	1/9/2013	0902	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/9/2013	1239	1/11/2013	1116	EMR
13-0174	MW-48	1/9/2013	0935	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/9/2013	1239	1/9/2013	1355	WH
13-0175	MW-48	1/9/2013	0935	Total Phosphorus	2.31	mg/l		EPA 365.4	0.02 mg/L	1/9/2013	1239	1/26/2013	1126	EMR
13-0175	MW-48	1/9/2013	0935	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	EMR
13-0175	MW-48	1/9/2013	0935	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	SL
13-0176	MW-48	1/9/2013	0935	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/9/2013	1239	1/11/2013	1116	EMR
13-0177	MW-47	1/9/2013	1010	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/9/2013	1239	1/9/2013	1355	WH
13-0178	MW-47	1/9/2013	1010	Total Phosphorus	0.43	mg/l		EPA 365.4	0.02 mg/L	1/9/2013	1239	1/26/2013	1126	EMR
13-0178	MW-47	1/9/2013	1010	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	EMR
13-0178	MW-47	1/9/2013	1010	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	SL
13-0179	MW-47	1/9/2013	1010	NO_2	0.005	mg/l	I	EPA 353.2	0.003 mg/l	1/9/2013	1239	1/11/2013	1116	EMR
13-0180	MW-45	1/9/2013	1040	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/9/2013	1239	1/9/2013	1355	WH
13-0181	MW-45	1/9/2013	1040	Total Phosphorus	0.68	mg/l		EPA 365.4	0.02 mg/L	1/9/2013	1239	1/26/2013	1126	EMR
13-0181	MW-45	1/9/2013	1040	NO_2+NO_3	0.536	mg/l		EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	EMR
13-0181	MW-45	1/9/2013	1040	NO_3	0.527	mg/l	C	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	SL
13-0182	MW-45	1/9/2013	1040	NO_2	0.009	mg/l	I	EPA 353.2	0.003 mg/l	1/9/2013	1239	1/11/2013	1116	EMR
13-0183	MW-46	1/9/2013	1105	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/9/2013	1239	1/9/2013	1355	WH
13-0184	MW-46	1/9/2013	1105	Total Phosphorus	0.28	mg/l		EPA 365.4	0.02 mg/L	1/9/2013	1239	1/26/2013	1126	EMR
13-0184	MW-46	1/9/2013	1105	NO_2+NO_3	0.012	mg/l	I	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	EMR
13-0184	MW-46	1/9/2013	1105	NO_3	0.012	mg/l	I C	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	SL
13-0185	MW-46	1/9/2013	1105	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/9/2013	1239	1/11/2013	1116	EMR
13-0186	MW-44	1/9/2013	1137	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/9/2013	1239	1/9/2013	1355	WH
13-0187	MW-44	1/9/2013	1137	Total Phosphorus	1.57	mg/l		EPA 365.4	0.02 mg/L	1/9/2013	1239	1/26/2013	1126	EMR
13-0187	MW-44	1/9/2013	1137	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	EMR
13-0187	MW-44	1/9/2013	1137	NO_3	0.004	Units	U C	EPA 353.2	0.004 mg/l	1/9/2013	1239	1/11/2013	1344	SL
13-0188	MW-44	1/9/2013	1137	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/9/2013	1239	1/11/2013	1116	EMR

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-0205	MW-43	1/10/2013	0946	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/10/2013	1412	1/10/2013	1450	EMR
13-0206	MW-43	1/10/2013	0946	Total Phosphorus	0.96	mg/l		EPA 365.4	0.02 mg/L	1/10/2013	1412	1/26/2013	1136	EMR
13-0206	MW-43	1/10/2013	0946	NO_2+NO_3	0.077	mg/l		EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	EMR
13-0206	MW-43	1/10/2013	0946	NO_3	0.077	mg/l	C	EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	SL
13-0207	MW-43	1/10/2013	0946	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/10/2013	1412	1/11/2013	1116	EMR
13-0208	MW-42	1/10/2013	1023	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/10/2013	1412	1/10/2013	1450	EMR
13-0209	MW-42	1/10/2013	1023	Total Phosphorus	4.82	mg/l		EPA 365.4	0.02 mg/L	1/10/2013	1412	1/26/2013	1136	EMR
13-0209	MW-42	1/10/2013	1023	NO_2+NO_3	5.684	mg/l		EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	EMR
13-0209	MW-42	1/10/2013	1023	NO_3	5.552	mg/l	C	EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	SL
13-0210	MW-42	1/10/2013	1023	NO_2	0.132	mg/l		EPA 353.2	0.003 mg/l	1/10/2013	1412	1/11/2013	1116	EMR
13-0211	MW-41	1/10/2013	1053	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/10/2013	1412	1/10/2013	1450	EMR
13-0212	MW-41	1/10/2013	1053	Total Phosphorus	0.82	mg/l		EPA 365.4	0.02 mg/L	1/10/2013	1412	1/26/2013	1136	EMR
13-0212	MW-41	1/10/2013	1053	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	EMR
13-0212	MW-41	1/10/2013	1053	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	SL
13-0213	MW-41	1/10/2013	1053	NO_2	0.009	mg/l	I	EPA 353.2	0.003 mg/l	1/10/2013	1412	1/11/2013	1116	EMR
13-0214	MW-35	1/10/2013	1145	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/10/2013	1412	1/10/2013	1450	EMR
13-0215	MW-35	1/10/2013	1145	Total Phosphorus	0.27	mg/l		EPA 365.4	0.02 mg/L	1/10/2013	1412	1/26/2013	1136	EMR
13-0215	MW-35	1/10/2013	1145	NO_2+NO_3	0.006	mg/l	I	EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	EMR
13-0215	MW-35	1/10/2013	1145	NO_3	0.006	mg/l	I C	EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	SL
13-0216	MW-35	1/10/2013	1145	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/10/2013	1412	1/11/2013	1116	EMR
13-0217	MW-40	1/10/2013	1213	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/10/2013	1412	1/10/2013	1450	EMR
13-0218	MW-40	1/10/2013	1213	Total Phosphorus	0.82	mg/l		EPA 365.4	0.02 mg/L	1/10/2013	1412	1/26/2013	1136	EMR
13-0218	MW-40	1/10/2013	1213	NO_2+NO_3	2.491	mg/l		EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	EMR
13-0218	MW-40	1/10/2013	1213	NO_3	2.452	mg/l	C	EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	SL
13-0219	MW-40	1/10/2013	1213	NO_2	0.039	mg/l		EPA 353.2	0.003 mg/l	1/10/2013	1412	1/11/2013	1116	EMR
13-0220	MW-38	1/10/2013	1300	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/10/2013	1412	1/10/2013	1450	EMR
13-0221	MW-38	1/10/2013	1300	Total Phosphorus	0.51	mg/l		EPA 365.4	0.02 mg/L	1/10/2013	1412	1/26/2013	1136	EMR
13-0221	MW-38	1/10/2013	1300	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	EMR
13-0221	MW-38	1/10/2013	1300	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/10/2013	1412	1/11/2013	1344	SL
13-0222	MW-38	1/10/2013	1300	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/10/2013	1412	1/11/2013	1116	EMR
13-0290	MW-30	1/16/2013	0910	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/16/2013	1220	1/16/2013	1306	EMR
13-0291	MW-30	1/16/2013	0910	Total Phosphorus	1.68	mg/l		EPA 365.4	0.02 mg/L	1/16/2013	1220	2/12/2013	1509	SOK
13-0291	MW-30	1/16/2013	0910	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/16/2013	1220	1/19/2013	1353	WH
13-0291	MW-30	1/16/2013	0910	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/16/2013	1220	1/19/2013	1353	SL
13-0292	MW-30	1/16/2013	0910	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/16/2013	1220	1/18/2013	0911	WH
13-0293	MW-31	1/16/2013	0932	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/16/2013	1220	1/16/2013	1306	EMR
13-0294	MW-31	1/16/2013	0932	Total Phosphorus	0.46	mg/l		EPA 365.4	0.02 mg/L	1/16/2013	1220	2/12/2013	1509	SOK
13-0294	MW-31	1/16/2013	0932	NO_2+NO_3	0.009	mg/l	I	EPA 353.2	0.004 mg/l	1/16/2013	1220	1/19/2013	1353	WH
13-0294	MW-31	1/16/2013	0932	NO_3	0.009	mg/l	I C	EPA 353.2	0.004 mg/l	1/16/2013	1220	1/19/2013	1353	SL
13-0295	MW-31	1/16/2013	0932	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/16/2013	1220	1/18/2013	0911	WH

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-0296	MW-34	1/16/2013	1002	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/16/2013	1220	1/16/2013	1306	EMR
13-0297	MW-34	1/16/2013	1002	Total Phosphorus	0.97	mg/l		EPA 365.4	0.02 mg/L	1/16/2013	1220	2/12/2013	1509	SOK
13-0297	MW-34	1/16/2013	1002	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/16/2013	1220	1/19/2013	1353	WH
13-0297	MW-34	1/16/2013	1002	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/16/2013	1220	1/19/2013	1353	SL
13-0298	MW-34	1/16/2013	1002	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/16/2013	1220	1/18/2013	0911	WH
13-0299	MW-20	1/16/2013	1040	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/16/2013	1220	1/16/2013	1306	EMR
13-0300	MW-20	1/16/2013	1040	Total Phosphorus	1.16	mg/l		EPA 365.4	0.02 mg/L	1/16/2013	1220	2/12/2013	1509	SOK
13-0300	MW-20	1/16/2013	1040	NO_2+NO_3	0.943	mg/l		EPA 353.2	0.004 mg/l	1/16/2013	1220	1/19/2013	1353	WH
13-0300	MW-20	1/16/2013	1040	NO_3	0.943	mg/l	C	EPA 353.2	0.004 mg/l	1/16/2013	1220	1/19/2013	1353	SL
13-0301	MW-20	1/16/2013	1040	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/16/2013	1220	1/18/2013	0911	WH
13-0302	MW-19	1/16/2013	1104	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/16/2013	1220	1/16/2013	1306	EMR
13-0303	MW-19	1/16/2013	1104	Total Phosphorus	0.11	mg/l		EPA 365.4	0.02 mg/L	1/16/2013	1220	2/12/2013	1509	SOK
13-0303	MW-19	1/16/2013	1104	NO_2+NO_3	17.330	mg/l		EPA 353.2	0.004 mg/l	1/16/2013	1220	1/19/2013	1353	WH
13-0303	MW-19	1/16/2013	1104	NO_3	16.786	mg/l	C	EPA 353.2	0.004 mg/l	1/16/2013	1220	1/19/2013	1353	SL
13-0304	MW-19	1/16/2013	1104	NO_2	0.544	mg/l		EPA 353.2	0.003 mg/l	1/16/2013	1220	1/18/2013	0911	WH
13-0321	MW-21	1/17/2013	0952	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/17/2013	1336	1/17/2013	1442	WH
13-0322	MW-21	1/17/2013	0952	Total Phosphorus	0.54	mg/l		EPA 365.4	0.02 mg/L	1/17/2013	1336	2/12/2013	1509	SOK
13-0322	MW-21	1/17/2013	0952	NO_2+NO_3	0.007	mg/l	I	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	WH
13-0322	MW-21	1/17/2013	0952	NO_3	0.007	mg/l	I C	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	SL
13-0323	MW-21	1/17/2013	0952	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/17/2013	1336	1/18/2013	0911	WH
13-0324	MW-33	1/17/2013	1027	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/17/2013	1336	1/17/2013	1442	WH
13-0325	MW-33	1/17/2013	1027	Total Phosphorus	0.33	mg/l		EPA 365.4	0.02 mg/L	1/17/2013	1336	2/12/2013	1509	SOK
13-0325	MW-33	1/17/2013	1027	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	WH
13-0325	MW-33	1/17/2013	1027	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	SL
13-0326	MW-33	1/17/2013	1027	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/17/2013	1336	1/18/2013	0911	WH
13-0327	MW-22	1/17/2013	1100	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/17/2013	1336	1/17/2013	1442	WH
13-0328	MW-22	1/17/2013	1100	Total Phosphorus	0.27	mg/l		EPA 365.4	0.02 mg/L	1/17/2013	1336	2/12/2013	1509	SOK
13-0328	MW-22	1/17/2013	1100	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	WH
13-0328	MW-22	1/17/2013	1100	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	SL
13-0329	MW-22	1/17/2013	1100	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/17/2013	1336	1/18/2013	0911	WH
13-0330	MW-17	1/17/2013	1133	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/17/2013	1336	1/17/2013	1442	WH
13-0331	MW-17	1/17/2013	1133	Total Phosphorus	0.99	mg/l		EPA 365.4	0.02 mg/L	1/17/2013	1336	2/12/2013	1509	SOK
13-0331	MW-17	1/17/2013	1133	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	WH
13-0331	MW-17	1/17/2013	1133	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	SL
13-0332	MW-17	1/17/2013	1133	NO_2	0.004	mg/l	I	EPA 353.2	0.003 mg/l	1/17/2013	1336	1/18/2013	0911	WH
13-0333	MW-12	1/17/2013	1208	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/17/2013	1336	1/17/2013	1442	WH
13-0334	MW-12	1/17/2013	1208	Total Phosphorus	0.27	mg/l		EPA 365.4	0.02 mg/L	1/17/2013	1336	2/12/2013	1509	SOK
13-0334	MW-12	1/17/2013	1208	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	WH
13-0334	MW-12	1/17/2013	1208	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	SL
13-0335	MW-12	1/17/2013	1208	NO_2	0.005	mg/l	I	EPA 353.2	0.003 mg/l	1/17/2013	1336	1/18/2013	0911	WH

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-0336	MW-11	1/17/2013	1242	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/17/2013	1336	1/17/2013	1442	WH
13-0337	MW-11	1/17/2013	1242	Total Phosphorus	1.35	mg/l		EPA 365.4	0.02 mg/L	1/17/2013	1336	2/12/2013	1509	SOK
13-0337	MW-11	1/17/2013	1242	NO_2+NO_3	0.126	mg/l		EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	WH
13-0337	MW-11	1/17/2013	1242	NO_3	0.121	mg/l	C	EPA 353.2	0.004 mg/l	1/17/2013	1336	1/19/2013	1353	SL
13-0338	MW-11	1/17/2013	1242	NO_2	0.005	mg/l	I	EPA 353.2	0.003 mg/l	1/17/2013	1336	1/18/2013	0911	WH
13-0399	MW-8	1/23/2013	0841	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/23/2013	1252	1/23/2013	1418	WH
13-0400	MW-8	1/23/2013	0841	Total Phosphorus	0.32	mg/l		EPA 365.4	0.02 mg/L	1/23/2013	1252	2/12/2013	1509	SOK
13-0400	MW-8	1/23/2013	0841	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/23/2013	1252	1/25/2013	1154	EMR
13-0400	MW-8	1/23/2013	0841	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/23/2013	1252	1/25/2013	1154	SL
13-0401	MW-8	1/23/2013	0841	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/23/2013	1252	1/24/2013	0941	EMR
13-0402	MW-16	1/23/2013	0943	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/23/2013	1252	1/23/2013	1418	WH
13-0403	MW-16	1/23/2013	0943	Total Phosphorus	1.38	mg/l		EPA 365.4	0.02 mg/L	1/23/2013	1252	2/12/2013	1509	SOK
13-0403	MW-16	1/23/2013	0943	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/23/2013	1252	1/25/2013	1154	EMR
13-0403	MW-16	1/23/2013	0943	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/23/2013	1252	1/25/2013	1154	SL
13-0404	MW-16	1/23/2013	0943	NO_2	0.015	mg/l		EPA 353.2	0.003 mg/l	1/23/2013	1252	1/24/2013	0941	EMR
13-0405	MW-25	1/23/2013	1018	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/23/2013	1252	1/23/2013	1418	WH
13-0406	MW-25	1/23/2013	1018	Total Phosphorus	0.89	mg/l		EPA 365.4	0.02 mg/L	1/23/2013	1252	2/12/2013	1509	SOK
13-0406	MW-25	1/23/2013	1018	NO_2+NO_3	0.020	mg/l		EPA 353.2	0.004 mg/l	1/23/2013	1252	1/25/2013	1154	EMR
13-0406	MW-25	1/23/2013	1018	NO_3	0.020	mg/l	C	EPA 353.2	0.004 mg/l	1/23/2013	1252	1/25/2013	1154	SL
13-0407	MW-25	1/23/2013	1018	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/23/2013	1252	1/24/2013	0941	EMR
13-0408	MW-29	1/23/2013	1054	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/23/2013	1252	1/23/2013	1418	WH
13-0409	MW-29	1/23/2013	1054	Total Phosphorus	1.26	mg/l		EPA 365.4	0.02 mg/L	1/23/2013	1252	2/12/2013	1509	SOK
13-0409	MW-29	1/23/2013	1054	NO_2+NO_3	0.034	mg/l		EPA 353.2	0.004 mg/l	1/23/2013	1252	1/25/2013	1154	EMR
13-0409	MW-29	1/23/2013	1054	NO_3	0.034	mg/l	C	EPA 353.2	0.004 mg/l	1/23/2013	1252	1/25/2013	1154	SL
13-0410	MW-29	1/23/2013	1054	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/23/2013	1252	1/24/2013	0941	EMR
13-0411	MW-2	1/23/2013	1150	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/23/2013	1252	1/23/2013	1418	WH
13-0412	MW-2	1/23/2013	1150	Total Phosphorus	0.53	mg/l		EPA 365.4	0.02 mg/L	1/23/2013	1252	2/12/2013	1509	SOK
13-0412	MW-2	1/23/2013	1150	NO_2+NO_3	0.037	mg/l		EPA 353.2	0.004 mg/l	1/23/2013	1252	1/25/2013	1154	EMR
13-0412	MW-2	1/23/2013	1150	NO_3	0.037	mg/l	C	EPA 353.2	0.004 mg/l	1/23/2013	1252	1/25/2013	1154	SL
13-0413	MW-2	1/23/2013	1150	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/23/2013	1252	1/24/2013	0941	EMR
13-0430	MW-3	1/24/2013	0947	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/24/2013	1334	1/24/2013	1505	WH
13-0431	MW-3	1/24/2013	0947	Total Phosphorus	1.68	mg/l		EPA 365.4	0.02 mg/L	1/24/2013	1334	2/12/2013	1509	SOK
13-0431	MW-3	1/24/2013	0947	NO_2+NO_3	0.058	mg/l		EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	EMR
13-0431	MW-3	1/24/2013	0947	NO_3	0.058	mg/l	C	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	SL
13-0432	MW-3	1/24/2013	0947	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/24/2013	1334	1/25/2013	0849	EMR
13-0433	MW-5	1/24/2013	1024	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/24/2013	1334	1/24/2013	1505	WH
13-0434	MW-5	1/24/2013	1024	Total Phosphorus	0.57	mg/l		EPA 365.4	0.02 mg/L	1/24/2013	1334	2/12/2013	1509	SOK
13-0434	MW-5	1/24/2013	1024	NO_2+NO_3	0.015	mg/l	I	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	EMR
13-0434	MW-5	1/24/2013	1024	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	SL
13-0435	MW-5	1/24/2013	1024	NO_2	0.011	mg/l	I	EPA 353.2	0.003 mg/l	1/24/2013	1334	1/25/2013	0849	EMR

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-0436	MW-6	1/24/2013	1051	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/24/2013	1334	1/24/2013	1505	WH
13-0437	MW-6	1/24/2013	1051	Total Phosphorus	0.17	mg/l		EPA 365.4	0.02 mg/L	1/24/2013	1334	2/12/2013	1509	SOK
13-0437	MW-6	1/24/2013	1051	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	EMR
13-0437	MW-6	1/24/2013	1051	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	SL
13-0438	MW-6	1/24/2013	1051	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/24/2013	1334	1/25/2013	0849	EMR
13-0439	MW-7	1/24/2013	1126	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/24/2013	1334	1/24/2013	1505	WH
13-0440	MW-7	1/24/2013	1126	Total Phosphorus	0.37	mg/l		EPA 365.4	0.02 mg/L	1/24/2013	1334	2/12/2013	1509	SOK
13-0440	MW-7	1/24/2013	1126	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	EMR
13-0440	MW-7	1/24/2013	1126	NO_3	0.004	Units	U C	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	SL
13-0441	MW-7	1/24/2013	1126	NO_2	0.012	mg/l		EPA 353.2	0.003 mg/l	1/24/2013	1334	1/25/2013	0849	EMR
13-0442	MW-15	1/24/2013	1213	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/24/2013	1334	1/24/2013	1505	WH
13-0443	MW-15	1/24/2013	1213	Total Phosphorus	0.79	mg/l		EPA 365.4	0.02 mg/L	1/24/2013	1334	2/12/2013	1509	SOK
13-0443	MW-15	1/24/2013	1213	NO_2+NO_3	0.015	mg/l	I	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	EMR
13-0443	MW-15	1/24/2013	1213	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	SL
13-0444	MW-15	1/24/2013	1213	NO_2	0.015	mg/l		EPA 353.2	0.003 mg/l	1/24/2013	1334	1/25/2013	0849	EMR
13-0445	MW-26	1/24/2013	1255	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/24/2013	1334	1/24/2013	1505	WH
13-0446	MW-26	1/24/2013	1255	Total Phosphorus	2.49	mg/l	I	EPA 365.4	0.02 mg/L	1/24/2013	1334	2/12/2013	1509	SOK
13-0446	MW-26	1/24/2013	1255	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	EMR
13-0446	MW-26	1/24/2013	1255	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/24/2013	1334	1/25/2013	1154	SL
13-0447	MW-26	1/24/2013	1255	NO_2	0.003	mg/l	U	EPA 353.2	0.003 mg/l	1/24/2013	1334	1/25/2013	0849	EMR
13-0508	MW-27	1/30/2013	0845	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/30/2013	1224	1/30/2013	1340	SOK
13-0509	MW-27	1/30/2013	0845	Total Phosphorus	5.62	mg/l		EPA 365.4	0.02 mg/L	1/30/2013	1224	2/17/2013	1314	SOK
13-0509	MW-27	1/30/2013	0845	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	EMR
13-0509	MW-27	1/30/2013	0845	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	SL
13-0510	MW-27	1/30/2013	0845	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/1/2013	1128	EMR
13-0511	MW-28	1/30/2013	0902	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/30/2013	1224	1/30/2013	1340	SOK
13-0512	MW-28	1/30/2013	0902	Total Phosphorus	2.23	mg/l		EPA 365.4	0.02 mg/L	1/30/2013	1224	2/17/2013	1314	SOK
13-0512	MW-28	1/30/2013	0902	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	EMR
13-0512	MW-28	1/30/2013	0902	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	SL
13-0513	MW-28	1/30/2013	0902	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/1/2013	1128	EMR
13-0514	C-1	1/30/2013	0940	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/30/2013	1224	1/30/2013	1340	SOK
13-0515	C-1	1/30/2013	0940	Total Phosphorus	0.25	mg/l		EPA 365.4	0.02 mg/L	1/30/2013	1224	2/17/2013	1314	SOK
13-0515	C-1	1/30/2013	0940	NO_2+NO_3	0.014	mg/l	I	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	EMR
13-0515	C-1	1/30/2013	0940	NO_3	0.014	mg/l	I C	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	SL
13-0516	C-1	1/30/2013	0940	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/1/2013	1128	EMR
13-0517	C-2	1/30/2013	0951	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	1/30/2013	1224	1/30/2013	1340	SOK
13-0518	C-2	1/30/2013	0951	Total Phosphorus	0.30	mg/l		EPA 365.4	0.02 mg/L	1/30/2013	1224	2/17/2013	1314	SOK
13-0518	C-2	1/30/2013	0951	NO_2+NO_3	0.014	mg/l	I	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	EMR
13-0518	C-2	1/30/2013	0951	NO_3	0.014	mg/l	I C	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	SL
13-0519	C-2	1/30/2013	0951	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/1/2013	1128	EMR

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-0520	C-4	1/30/2013	1006	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	1/30/2013	1224	1/30/2013	1340	SOK
13-0521	C-4	1/30/2013	1006	Total Phosphorus	0.22	mg/l		EPA 365.4	0.02 mg/L	1/30/2013	1224	2/17/2013	1314	SOK
13-0521	C-4	1/30/2013	1006	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	EMR
13-0521	C-4	1/30/2013	1006	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	SL
13-0522	C-4	1/30/2013	1006	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/1/2013	1128	EMR
13-0523	C-3	1/30/2013	1022	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/30/2013	1224	1/30/2013	1340	SOK
13-0524	C-3	1/30/2013	1022	Total Phosphorus	0.32	mg/l		EPA 365.4	0.02 mg/L	1/30/2013	1224	2/17/2013	1314	SOK
13-0524	C-3	1/30/2013	1022	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	EMR
13-0524	C-3	1/30/2013	1022	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	SL
13-0525	C-3	1/30/2013	1022	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/1/2013	1128	EMR
13-0526	C-5	1/30/2013	1037	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	1/30/2013	1224	1/30/2013	1340	SOK
13-0527	C-5	1/30/2013	1037	Total Phosphorus	0.22	mg/l		EPA 365.4	0.02 mg/L	1/30/2013	1224	2/17/2013	1314	SOK
13-0527	C-5	1/30/2013	1037	NO_2+NO_3	0.019	mg/l		EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	EMR
13-0527	C-5	1/30/2013	1037	NO_3	0.019	mg/l	C	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	SL
13-0528	C-5	1/30/2013	1037	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/1/2013	1128	EMR
13-0529	C-6	1/30/2013	1052	Fecal Coliform	20	col/100ml	B	SM9222D	10 col/100ml	1/30/2013	1224	1/30/2013	1340	SOK
13-0530	C-6	1/30/2013	1052	Total Phosphorus	0.21	mg/l		EPA 365.4	0.02 mg/L	1/30/2013	1224	2/17/2013	1314	SOK
13-0530	C-6	1/30/2013	1052	NO_2+NO_3	0.013	mg/l	I	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	EMR
13-0530	C-6	1/30/2013	1052	NO_3	0.013	mg/l	I C	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	SL
13-0531	C-6	1/30/2013	1052	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/1/2013	1128	EMR
13-0532	C-7	1/30/2013	1106	Fecal Coliform	20	col/100ml	B	SM9222D	20 col/100ml	1/30/2013	1224	1/30/2013	1340	SOK
13-0533	C-7	1/30/2013	1106	Total Phosphorus	0.18	mg/l		EPA 365.4	0.02 mg/L	1/30/2013	1224	2/17/2013	1314	SOK
13-0533	C-7	1/30/2013	1106	NO_2+NO_3	0.016	mg/l		EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	EMR
13-0533	C-7	1/30/2013	1106	NO_3	0.016	mg/l	C	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	SL
13-0534	C-7	1/30/2013	1106	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/1/2013	1128	EMR
13-0535	C-8	1/30/2013	1124	Fecal Coliform	20	col/100ml	B	SM9222D	10 col/100ml	1/30/2013	1224	1/30/2013	1340	SOK
13-0536	C-8	1/30/2013	1124	Total Phosphorus	0.21	mg/l		EPA 365.4	0.02 mg/L	1/30/2013	1224	2/17/2013	1314	SOK
13-0536	C-8	1/30/2013	1124	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	EMR
13-0536	C-8	1/30/2013	1124	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/15/2013	1259	SL
13-0537	C-8	1/30/2013	1124	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/30/2013	1224	2/1/2013	1128	EMR
13-0554	C-9	1/31/2013	0945	Fecal Coliform	100	col/100ml	B	SM9222D	10 col/100ml	1/31/2013	1133	1/31/2013	1215	EMR
13-0555	C-9	1/31/2013	0945	Total Phosphorus	0.17	mg/l		EPA 365.4	0.02 mg/L	1/31/2013	1133	2/17/2013	1314	SOK
13-0555	C-9	1/31/2013	0945	NO_2+NO_3	0.033	mg/l		EPA 353.2	0.004 mg/l	1/31/2013	1133	2/15/2013	1259	EMR
13-0555	C-9	1/31/2013	0945	NO_3	0.021	mg/l	C	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/15/2013	1259	SL
13-0556	C-9	1/31/2013	0945	NO_2	0.012	mg/l	I	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/1/2013	1128	EMR
13-0557	C-10	1/31/2013	1003	Fecal Coliform	20	col/100ml	B	SM9222D	10 col/100ml	1/31/2013	1133	1/31/2013	1215	EMR
13-0558	C-10	1/31/2013	1003	Total Phosphorus	0.16	mg/l		EPA 365.4	0.02 mg/L	1/31/2013	1133	2/17/2013	1314	SOK
13-0558	C-10	1/31/2013	1003	NO_2+NO_3	0.026	mg/l		EPA 353.2	0.004 mg/l	1/31/2013	1133	2/15/2013	1259	EMR
13-0558	C-10	1/31/2013	1003	NO_3	0.017	mg/l	C	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/15/2013	1259	SL
13-0559	C-10	1/31/2013	1003	NO_2	0.009	mg/l	I	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/1/2013	1128	EMR

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-0560	C-11	1/31/2013	1027	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	1/31/2013	1133	1/31/2013	1215	EMR
13-0561	C-11	1/31/2013	1027	Total Phosphorus	0.24	mg/l		EPA 365.4	0.02 mg/L	1/31/2013	1133	2/17/2013	1314	SOK
13-0561	C-11	1/31/2013	1027	NO_2+NO_3	0.016	mg/l		EPA 353.2	0.004 mg/l	1/31/2013	1133	2/15/2013	1259	EMR
13-0561	C-11	1/31/2013	1027	NO_3	0.016	mg/l	C	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/15/2013	1259	SL
13-0562	C-11	1/31/2013	1027	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/1/2013	1128	EMR
13-0563	C-12	1/31/2013	1045	Fecal Coliform	20	col/100ml	B	SM9222D	10 col/100ml	1/31/2013	1133	1/31/2013	1215	EMR
13-0564	C-12	1/31/2013	1045	Total Phosphorus	0.25	mg/l		EPA 365.4	0.02 mg/L	1/31/2013	1133	2/17/2013	1314	SOK
13-0564	C-12	1/31/2013	1045	NO_2+NO_3	0.013	mg/l	I	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/15/2013	1259	EMR
13-0564	C-12	1/31/2013	1045	NO_3	0.013	mg/l	I C	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/15/2013	1259	SL
13-0565	C-12	1/31/2013	1045	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/1/2013	1128	EMR
13-0566	C-13	1/31/2013	1103	Fecal Coliform	30	col/100ml	B	SM9222D	10 col/100ml	1/31/2013	1133	1/31/2013	1215	EMR
13-0567	C-13	1/31/2013	1103	Total Phosphorus	0.20	mg/l		EPA 365.4	0.02 mg/L	1/31/2013	1133	2/17/2013	1314	SOK
13-0567	C-13	1/31/2013	1103	NO_2+NO_3	0.026	mg/l		EPA 353.2	0.004 mg/l	1/31/2013	1133	2/15/2013	1259	EMR
13-0567	C-13	1/31/2013	1103	NO_3	0.026	mg/l	C	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/15/2013	1259	SL
13-0568	C-13	1/31/2013	1103	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	1/31/2013	1133	2/1/2013	1128	EMR
13-0682	C-14	2/6/2013	0923	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	2/6/2013	1348	2/6/2013	1437	SOK
13-0683	C-14	2/6/2013	0923	Total Phosphorus	0.17	mg/l		EPA 365.4	0.02 mg/L	2/6/2013	1348	2/17/2013	1314	SOK
13-0683	C-14	2/6/2013	0923	NO_2+NO_3	0.018	mg/l		EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	EMR
13-0683	C-14	2/6/2013	0923	NO_3	0.008	mg/l	I C	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	SL
13-0684	C-14	2/6/2013	0923	NO_2	0.010	mg/l	I	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/8/2013	0840	SOK
13-0685	C-15	2/6/2013	0935	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	2/6/2013	1348	2/6/2013	1437	SOK
13-0686	C-15	2/6/2013	0935	Total Phosphorus	0.17	mg/l		EPA 365.4	0.02 mg/L	2/6/2013	1348	2/17/2013	1314	SOK
13-0686	C-15	2/6/2013	0935	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	EMR
13-0686	C-15	2/6/2013	0935	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	SL
13-0687	C-15	2/6/2013	0935	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/8/2013	0840	SOK
13-0688	C-16	2/6/2013	0948	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	2/6/2013	1348	2/6/2013	1437	SOK
13-0689	C-16	2/6/2013	0948	Total Phosphorus	0.16	mg/l		EPA 365.4	0.02 mg/L	2/6/2013	1348	2/17/2013	1314	SOK
13-0689	C-16	2/6/2013	0948	NO_2+NO_3	0.022	mg/l		EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	EMR
13-0689	C-16	2/6/2013	0948	NO_3	0.022	mg/l	C	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	SL
13-0690	C-16	2/6/2013	0948	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/8/2013	0840	SOK
13-0691	C-17	2/6/2013	1017	Fecal Coliform	60	col/100ml	B	SM9222D	10 col/100ml	2/6/2013	1348	2/6/2013	1437	SOK
13-0692	C-17	2/6/2013	1017	Total Phosphorus	0.26	mg/l		EPA 365.4	0.02 mg/L	2/6/2013	1348	2/17/2013	1314	SOK
13-0692	C-17	2/6/2013	1017	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	EMR
13-0692	C-17	2/6/2013	1017	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	SL
13-0693	C-17	2/6/2013	1017	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/8/2013	0840	SOK
13-0694	C-18	2/6/2013	1035	Fecal Coliform	200	col/100ml		SM9222D	10 col/100ml	2/6/2013	1348	2/6/2013	1437	SOK
13-0695	C-18	2/6/2013	1035	Total Phosphorus	0.04	mg/l	I	EPA 365.4	0.02 mg/L	2/6/2013	1348	2/17/2013	1314	SOK
13-0695	C-18	2/6/2013	1035	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	EMR
13-0695	C-18	2/6/2013	1035	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	SL
13-0696	C-18	2/6/2013	1035	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/8/2013	0840	SOK

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-0697	C-19	2/6/2013	1050	Fecal Coliform	50	col/100ml	B	SM9222D	10 col/100ml	2/6/2013	1348	2/6/2013	1437	SOK
13-0698	C-19	2/6/2013	1050	Total Phosphorus	0.02	mg/l	U	EPA 365.4	0.02 mg/L	2/6/2013	1348	2/17/2013	1314	SOK
13-0698	C-19	2/6/2013	1050	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	EMR
13-0698	C-19	2/6/2013	1050	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	SL
13-0699	C-19	2/6/2013	1050	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/8/2013	0840	SOK
13-0700	C-20	2/6/2013	1141	Fecal Coliform	30	col/100ml	B	SM9222D	10 col/100ml	2/6/2013	1348	2/6/2013	1437	SOK
13-0701	C-20	2/6/2013	1141	Total Phosphorus	0.04	mg/l	I	EPA 365.4	0.02 mg/L	2/6/2013	1348	2/17/2013	1314	SOK
13-0701	C-20	2/6/2013	1141	NO_2+NO_3	0.012	mg/l	I	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	EMR
13-0701	C-20	2/6/2013	1141	NO_3	0.012	mg/l	I C	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	SL
13-0702	C-20	2/6/2013	1141	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/8/2013	0840	SOK
13-0703	C-21	2/6/2013	1113	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	2/6/2013	1348	2/6/2013	1437	SOK
13-0704	C-21	2/6/2013	1113	Total Phosphorus	0.05	mg/l	I	EPA 365.4	0.02 mg/L	2/6/2013	1348	2/17/2013	1314	SOK
13-0704	C-21	2/6/2013	1113	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	EMR
13-0074	C-21	2/6/2013	1113	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/15/2013	1259	SL
13-0705	C-21	2/6/2013	1113	NO_2	0.008	mg/l	I	EPA 353.2	0.004 mg/l	2/6/2013	1348	2/8/2013	0840	SOK

East Port Laboratory

Charlotte County Utilities

EAST PORT WRF

3100 Loveland blvd.

PORT CHARLOTTE, FL. 33980

DATA QUALIFIER DEFINITIONS

A = Value reported is an average of two or more determinations.
B = Results based upon colony counts outside the acceptable range.
C = Calculated value
F = Tested in the field
I = Reported value is between the laboratory MDL and PQL.
J1 = Est. value quality control criteria for precision or accuracy not met. (Spike Recovery)
J2 = Est. value quality control criteria for precision or accuracy not met.(Duplicate RPD)
J3 = Est. value quality control criteria for precision or accuracy not met.(Glucose/Glutamic Acid)
J4 = Est. value quality control criteria for precision or accuracy not met.(analyte detected in blank)
J5 = Est. value quality control criteria for precision or accuracy not met.(DO Depletion <2.00 mg/L)
J6 = Est. value quality control criteria for precision or accuracy not met.(Test Replicate Difference)
K-1 = Off-scale low. The value is less than the lowest calibration standard.
O = Sampled, but analysis lost or not performed.
Q = Sample held beyond accepted hold time.
T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.
U = Analyte analyzed but not detected at the value indicated.
V = Analyte detected in sample and method blank.
Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.
Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.
! = Data deviate from historically established concentration ranges.
? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the Presence or absence of the analyte cannot be determined from the data.
* = Not reported due to interference.

NOTES:
PQL = 4 x MDL
Ammonia PQL = 0.10 mg/L
TKN PQL = 0.50 mg/L

May 13, 2013

Report ID: Spring Lake 03&04-13

East Port Laboratory

Bruce Bullert
Charlotte County Utility
Engineering Department
25550 Harbor View Rd
Port Charlotte, FL 33980

March & April 2013 Lab Results

Lab ID # E54436

The East Port Laboratory is certified by the Florida Department of Health Bureau of Laboratories Environmental Water as a Basic Environmental Laboratory. The East Port Laboratory has a Florida Department of Health approved Comprehensive Quality Assurance/Quality Control Plan which specifies the procedures used in the analysis of the referenced samples. The East Port Laboratory certifies that results meet all requirements of NELAC Standards. The Lab ID number above should be referenced when attesting to regulatory agencies regarding the analytical procedures used.

Attached please find the results from the samples collected by you and sent to the East Port Laboratory for analysis. There are custody numbers assigned to each sample for quality control purposes; please refer to these custody numbers when requesting information regarding these samples. Results relate to samples only.

The East Port Laboratory is pleased to have served you. If you require any further assistance, please feel free to contact me directly.

Sincerely,

Sandra Lavoie

Sandra Lavoie
Laboratory Manager
Tel.: 941-764-4593

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-1059	MW-2	3/6/2013	0928	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/6/2013	1256	3/6/2013	1340	EMR
13-1060	MW-2	3/6/2013	0928	Total Phosphorus	0.51	mg/l		EPA 365.4	0.02 mg/L	3/6/2013	1256	3/13/2013	1320	EMR
13-1060	MW-2	3/6/2013	0928	NO_2+NO_3	0.011	mg/l	I	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1158	EMR
13-1060	MW-2	3/6/2013	0928	NO_3	0.006	mg/l	I C	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1158	SL
13-1061	MW-2	3/6/2013	0928	NO_2	0.005	mg/l	I	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1048	EMR
13-1062	MW-6	3/6/2013	0948	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/6/2013	1256	3/6/2013	1340	EMR
13-1063	MW-6	3/6/2013	0948	Total Phosphorus	0.25	mg/l		EPA 365.4	0.02 mg/L	3/6/2013	1256	3/13/2013	1320	EMR
13-1063	MW-6	3/6/2013	0948	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1158	EMR
13-1063	MW-6	3/6/2013	0948	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1158	SL
13-1064	MW-6	3/6/2013	0948	NO_2	0.004	mg/l	I	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1048	EMR
13-1065	MW-5	3/6/2013	1021	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/6/2013	1256	3/6/2013	1340	EMR
13-1066	MW-5	3/6/2013	1021	Total Phosphorus	1.19	mg/l		EPA 365.4	0.02 mg/L	3/6/2013	1256	3/13/2013	1320	EMR
13-1066	MW-5	3/6/2013	1021	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1158	EMR
13-1066	MW-5	3/6/2013	1021	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1158	SL
13-1067	MW-5	3/6/2013	1021	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1048	EMR
13-1068	MW-15	3/6/2013	1125	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/6/2013	1256	3/6/2013	1340	EMR
13-1069	MW-15	3/6/2013	1125	Total Phosphorus	1.16	mg/l		EPA 365.4	0.02 mg/L	3/6/2013	1256	3/13/2013	1320	EMR
13-1069	MW-15	3/6/2013	1125	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1158	EMR
13-1069	MW-15	3/6/2013	1125	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1158	SL
13-1070	MW-15	3/6/2013	1125	NO_2	0.006	mg/l	I	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1048	EMR
13-1071	MW-24	3/6/2013	1149	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/6/2013	1256	3/6/2013	1340	EMR
13-1072	MW-24	3/6/2013	1149	Total Phosphorus	1.64	mg/l		EPA 365.4	0.02 mg/L	3/6/2013	1256	3/13/2013	1320	EMR
13-1072	MW-24	3/6/2013	1149	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1158	EMR
13-1072	MW-24	3/6/2013	1149	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1158	SL
13-1073	MW-24	3/6/2013	1149	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/6/2013	1256	3/8/2013	1048	EMR
13-1101	MW-26	3/7/2013	1025	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/7/2013	1313	3/7/2013	1358	EMR
13-1102	MW-26	3/7/2013	1025	Total Phosphorus	2.38	mg/l		EPA 365.4	0.02 mg/L	3/7/2013	1313	3/13/2013	1320	EMR
13-1102	MW-26	3/7/2013	1025	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1158	EMR
13-1102	MW-26	3/7/2013	1025	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1158	SL
13-1103	MW-26	3/7/2013	1025	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1048	EMR
13-1104	MW-27	3/7/2013	1106	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/7/2013	1313	3/7/2013	1358	EMR
13-1105	MW-27	3/7/2013	1106	Total Phosphorus	1.84	mg/l		EPA 365.4	0.02 mg/L	3/7/2013	1313	3/13/2013	1320	EMR
13-1105	MW-27	3/7/2013	1106	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1158	EMR
13-1105	MW-27	3/7/2013	1106	NO_3	0.004	Units	U C	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1158	SL
13-1106	MW-27	3/7/2013	1106	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1048	EMR

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-1107	MW-28	3/7/2013	1149	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/7/2013	1313	3/7/2013	1358	EMR
13-1108	MW-28	3/7/2013	1149	Total Phosphorus	4.64	mg/l		EPA 365.4	0.02 mg/L	3/7/2013	1313	3/13/2013	1320	EMR
13-1108	MW-28	3/7/2013	1149	NO_2+NO_3	0.004	mg/l	I	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1158	EMR
13-1108	MW-28	3/7/2013	1149	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1158	SL
13-1109	MW-28	3/7/2013	1149	NO_2	0.010	mg/l	I	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1048	EMR
13-1110	MW-8	3/7/2013	1224	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/7/2013	1313	3/7/2013	1358	EMR
13-1111	MW-8	3/7/2013	1224	Total Phosphorus	1.68	mg/l		EPA 365.4	0.02 mg/L	3/7/2013	1313	3/13/2013	1320	EMR
13-1111	MW-8	3/7/2013	1224	NO_2+NO_3	0.006	mg/l	I	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1158	EMR
13-1111	MW-8	3/7/2013	1224	NO_3	0.006	mg/l	I C	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1158	SL
13-1112	MW-8	3/7/2013	1224	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/7/2013	1313	3/8/2013	1048	EMR
13-1173	MW-25	3/13/2013	1030	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/13/2013	1239	3/13/2013	1407	SOK
13-1174	MW-25	3/13/2013	1030	Total Phosphorus	1.08	mg/l		EPA 365.4	0.02 mg/L	3/13/2013	1239	4/6/2013	1215	EMR
13-1174	MW-25	3/13/2013	1030	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/13/2013	1239	3/15/2013	1235	EMR
13-1174	MW-25	3/13/2013	1030	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	3/13/2013	1239	3/15/2013	1235	SL
13-1175	MW-25	3/13/2013	1030	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	3/13/2013	1239	3/15/2013	1130	EMR
13-1176	MW29	3/13/2013	1108	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/13/2013	1239	3/13/2013	1407	SOK
13-1177	MW29	3/13/2013	1108	Total Phosphorus	3.96	mg/l		EPA 365.4	0.02 mg/L	3/13/2013	1239	4/6/2013	1215	EMR
13-1177	MW29	3/13/2013	1108	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/13/2013	1239	3/15/2013	1235	EMR
13-1177	MW29	3/13/2013	1108	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	3/13/2013	1239	3/15/2013	1235	SL
13-1178	MW29	3/13/2013	1108	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	3/13/2013	1239	3/15/2013	1130	EMR
13-1195	MW33	3/14/2013	1055	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/14/2013	1305	3/14/2013	1347	EMR
13-1196	MW33	3/14/2013	1055	Total Phosphorus	0.32	mg/l		EPA 365.4	0.02 mg/L	3/14/2013	1305	4/6/2013	1215	EMR
13-1196	MW33	3/14/2013	1055	NO_2+NO_3	0.014	mg/l	I	EPA 353.2	0.004 mg/l	3/14/2013	1305	3/15/2013	1235	EMR
13-1196	MW33	3/14/2013	1055	NO_3	0.014	mg/l	C I	EPA 353.2	0.004 mg/l	3/14/2013	1305	3/15/2013	1235	SL
13-1197	MW33	3/14/2013	1055	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	3/14/2013	1305	3/15/2013	1130	EMR
13-1198	MW32	3/14/2013	1150	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/14/2013	1305	3/14/2013	1347	EMR
13-1199	MW32	3/14/2013	1150	Total Phosphorus	0.62	mg/l		EPA 365.4	0.02 mg/L	3/14/2013	1305	4/6/2013	1215	EMR
13-1199	MW32	3/14/2013	1150	NO_2+NO_3	0.019	mg/l		EPA 353.2	0.004 mg/l	3/14/2013	1305	3/15/2013	1235	EMR
13-1199	MW32	3/14/2013	1150	NO_3	0.019	mg/l	C	EPA 353.2	0.004 mg/l	3/14/2013	1305	3/15/2013	1235	SL
13-1200	MW32	3/14/2013	1150	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	3/14/2013	1305	3/15/2013	1130	EMR
13-1324	MW-30	3/27/2013	0844	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/27/2013	1431	3/27/2013	1529	SOK
13-1325	MW-30	3/27/2013	0844	Total Phosphorus	2.00	mg/l		EPA 365.4	0.02 mg/L	3/27/2013	1431	4/6/2013	1215	EMR
13-1325	MW-30	3/27/2013	0844	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/27/2013	1431	3/30/2013	1124	EMR
13-1325	MW-30	3/27/2013	0844	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	3/27/2013	1431	3/30/2013	1124	SL
13-1326	MW-30	3/27/2013	0844	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	3/27/2013	1431	3/29/2013	1024	EMR
13-1327	MW-31	3/27/2013	0907	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/27/2013	1431	3/27/2013	1529	SOK
13-1328	MW-31	3/27/2013	0907	Total Phosphorus	0.15	mg/l		EPA 365.4	0.02 mg/L	3/27/2013	1431	4/6/2013	1215	EMR
13-1328	MW-31	3/27/2013	0907	NO_2+NO_3	0.194	mg/l		EPA 353.2	0.004 mg/l	3/27/2013	1431	3/30/2013	1124	EMR
13-1328	MW-31	3/27/2013	0907	NO_3	0.180	mg/l	C	EPA 353.2	0.004 mg/l	3/27/2013	1431	3/30/2013	1124	SL
13-1329	MW-31	3/27/2013	0907	NO_2	0.014	mg/l	I	EPA 353.2	0.003 mg/l	3/27/2013	1431	3/29/2013	1024	EMR

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-1330	MW19	3/27/2013	1044	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/27/2013	1431	3/27/2013	1529	SOK
13-1331	MW19	3/27/2013	1044	Total Phosphorus	0.15	mg/l		EPA 365.4	0.02 mg/L	3/27/2013	1431	4/6/2013	1215	EMR
13-1331	MW19	3/27/2013	1044	NO_2+NO_3	3.218	mg/l		EPA 353.2	0.004 mg/l	3/27/2013	1431	3/30/2013	1124	EMR
13-1331	MW19	3/27/2013	1044	NO_3	2.978	mg/l	C	EPA 353.2	0.004 mg/l	3/27/2013	1431	3/30/2013	1124	SL
13-1332	MW19	3/27/2013	1044	NO_2	0.240	mg/l	U	EPA 353.2	0.003 mg/l	3/27/2013	1431	3/29/2013	1024	EMR
13-1333	MW-20	3/27/2013	1122	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/27/2013	1431	3/27/2013	1529	SOK
13-1334	MW-20	3/27/2013	1122	Total Phosphorus	1.42	mg/l		EPA 365.4	0.02 mg/L	3/27/2013	1431	4/6/2013	1215	EMR
13-1334	MW-20	3/27/2013	1122	NO_2+NO_3	0.413	mg/l		EPA 353.2	0.004 mg/l	3/27/2013	1431	3/30/2013	1124	EMR
13-1334	MW-20	3/27/2013	1122	NO_3	0.413	mg/l	C	EPA 353.2	0.004 mg/l	3/27/2013	1431	3/30/2013	1124	SL
13-1335	MW-20	3/27/2013	1122	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	3/27/2013	1431	3/29/2013	1024	EMR
13-1352	MW35	3/28/2013	1028	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/28/2013	1346	3/28/2013	1422	EMR
13-1353	MW35	3/28/2013	1028	Total Phosphorus	0.16	mg/l		EPA 365.4	0.02 mg/L	3/28/2013	1346	4/6/2013	1215	EMR
13-1353	MW35	3/28/2013	1028	NO_2+NO_3	1.455	mg/l		EPA 353.2	0.004 mg/l	3/28/2013	1346	3/30/2013	1124	EMR
13-1353	MW35	3/28/2013	1028	NO_3	1.405	mg/l	C	EPA 353.2	0.004 mg/l	3/28/2013	1346	3/30/2013	1124	SL
13-1354	MW35	3/28/2013	1028	NO_2	0.050	mg/l		EPA 353.2	0.003 mg/l	3/28/2013	1346	3/29/2013	1024	EMR
13-1355	MW40	3/28/2013	1104	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/28/2013	1346	3/28/2013	1422	EMR
13-1356	MW40	3/28/2013	1104	Total Phosphorus	0.50	mg/l		EPA 365.4	0.02 mg/L	3/28/2013	1346	4/6/2013	1215	EMR
13-1356	MW40	3/28/2013	1104	NO_2+NO_3	15.171	mg/l		EPA 353.2	0.004 mg/l	3/28/2013	1346	3/30/2013	1124	EMR
13-1356	MW40	3/28/2013	1104	NO_3	15.141	mg/l	C	EPA 353.2	0.004 mg/l	3/28/2013	1346	3/30/2013	1124	SL
13-1357	MW40	3/28/2013	1104	NO_2	0.030	mg/l		EPA 353.2	0.003 mg/l	3/28/2013	1346	3/29/2013	1024	EMR
13-1358	MW41	3/28/2013	1144	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/28/2013	1346	3/28/2013	1422	EMR
13-1359	MW41	3/28/2013	1144	Total Phosphorus	0.63	mg/l		EPA 365.4	0.02 mg/L	3/28/2013	1346	4/6/2013	1215	EMR
13-1359	MW41	3/28/2013	1144	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	3/28/2013	1346	3/30/2013	1124	EMR
13-1359	MW41	3/28/2013	1144	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	3/28/2013	1346	3/30/2013	1124	SL
13-1360	MW41	3/28/2013	1144	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	3/28/2013	1346	3/29/2013	1024	EMR
13-1361	MW39	3/28/2013	1219	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/28/2013	1346	3/28/2013	1422	EMR
13-1362	MW39	3/28/2013	1219	Total Phosphorus	1.49	mg/l		EPA 365.4	0.02 mg/L	3/28/2013	1346	4/6/2013	1215	EMR
13-1362	MW39	3/28/2013	1219	NO_2+NO_3	2.021	mg/l		EPA 353.2	0.004 mg/l	3/28/2013	1346	3/30/2013	1124	EMR
13-1362	MW39	3/28/2013	1219	NO_3	1.999	mg/l	C	EPA 353.2	0.004 mg/l	3/28/2013	1346	3/30/2013	1124	SL
13-1363	MW39	3/28/2013	1219	NO_2	0.022	mg/l		EPA 353.2	0.003 mg/l	3/28/2013	1346	3/29/2013	1024	EMR
13-1364	MW42	3/28/2013	1303	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	3/28/2013	1345	3/28/2013	1422	EMR
13-1365	MW42	3/28/2013	1303	Total Phosphorus	31.69	mg/l		EPA 365.4	0.02 mg/L	3/28/2013	1345	4/6/2013	1215	EMR
13-1365	MW42	3/28/2013	1303	NO_2+NO_3	0.522	mg/l		EPA 353.2	0.004 mg/l	3/28/2013	1345	3/30/2013	1124	EMR
13-1365	MW42	3/28/2013	1303	NO_3	0.465	mg/l	C	EPA 353.2	0.004 mg/l	3/28/2013	1345	3/30/2013	1124	SL
13-1366	MW42	3/28/2013	1303	NO_2	0.057	mg/l		EPA 353.2	0.003 mg/l	3/28/2013	1345	3/29/2013	1123	EMR
13-1446	MW43	4/3/2013	0855	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/3/2013	1256	4/3/2013	1337	EMR
13-1447	MW43	4/3/2013	0855	Total Phosphorus	1.01	mg/l		EPA 365.4	0.02 mg/L	4/3/2013	1256	4/6/2013	1215	EMR
13-1447	MW43	4/3/2013	0855	NO_2+NO_3	1.754	mg/l		EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	EMR
13-1447	MW43	4/3/2013	0855	NO_3	1.633	mg/l	C	EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	SL
13-1448	MW43	4/3/2013	0855	NO_2	0.121	mg/l		EPA 353.2	0.003 mg/l	4/3/2013	1256	4/5/2013	0925	EMR

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-1449	MW44	4/3/2013	0934	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/3/2013	1256	4/3/2013	1337	EMR
13-1450	MW44	4/3/2013	0934	Total Phosphorus	0.92	mg/l		EPA 365.4	0.02 mg/L	4/3/2013	1256	4/6/2013	1215	EMR
13-1450	MW44	4/3/2013	0934	NO_2+NO_3	0.009	mg/l	I	EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	EMR
13-1450	MW44	4/3/2013	0934	NO_3	0.009	mg/l	C I	EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	SL
13-1451	MW44	4/3/2013	0934	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	4/3/2013	1256	4/5/2013	0928	EMR
13-1452	MW45	4/3/2013	1011	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/3/2013	1256	4/3/2013	1337	EMR
13-1453	MW45	4/3/2013	1011	Total Phosphorus	0.34	mg/l		EPA 365.4	0.02 mg/L	4/3/2013	1256	4/6/2013	1215	EMR
13-1453	MW45	4/3/2013	1011	NO_2+NO_3	4.995	mg/l		EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	EMR
13-1453	MW45	4/3/2013	1011	NO_3	4.917	mg/l	C	EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	SL
13-1454	MW45	4/3/2013	1011	NO_2	0.078	mg/l		EPA 353.2	0.003 mg/l	4/3/2013	1256	4/5/2013	0925	EMR
13-1455	MW46	4/3/2013	1035	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/3/2013	1256	4/3/2013	1337	EMR
13-1456	MW46	4/3/2013	1035	Total Phosphorus	0.33	mg/l		EPA 365.4	0.02 mg/L	4/3/2013	1256	4/6/2013	1215	EMR
13-1456	MW46	4/3/2013	1035	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	EMR
13-1456	MW46	4/3/2013	1035	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	SL
13-1457	MW46	4/3/2013	1035	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	4/3/2013	1256	4/5/2013	0925	EMR
13-1458	MW48	4/3/2013	1110	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/3/2013	1256	4/3/2013	1337	EMR
13-1459	MW48	4/3/2013	1110	Total Phosphorus	2.50	mg/l		EPA 365.4	0.02 mg/L	4/3/2013	1256	4/6/2013	1215	EMR
13-1459	MW48	4/3/2013	1110	NO_2+NO_3	0.010	mg/l	I	EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	EMR
13-1459	MW48	4/3/2013	1110	NO_3	0.010	mg/l	C I	EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	SL
13-1460	MW48	4/3/2013	1110	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	4/3/2013	1256	4/5/2013	0925	EMR
13-1461	MW47	4/3/2013	1140	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/3/2013	1256	4/3/2013	1337	EMR
13-1462	MW47	4/3/2013	1140	Total Phosphorus	0.15	mg/l		EPA 365.4	0.02 mg/L	4/3/2013	1256	4/6/2013	1215	EMR
13-1462	MW47	4/3/2013	1140	NO_2+NO_3	0.631	mg/l		EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	EMR
13-1462	MW47	4/3/2013	1140	NO_3	0.557	mg/l	C	EPA 353.2	0.004 mg/l	4/3/2013	1256	4/5/2013	1255	SL
13-1463	MW47	4/3/2013	1140	NO_2	0.074	mg/l		EPA 353.2	0.003 mg/l	4/3/2013	1256	4/5/2013	0925	EMR
13-1485	MW49	4/4/2013	1026	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/4/2013	1330	4/4/2013	1432	EMR
13-1486	MW49	4/4/2013	1026	Total Phosphorus	2.11	mg/l		EPA 365.4	0.02 mg/L	4/4/2013	1330	5/2/2013	1454	EMR
13-1486	MW49	4/4/2013	1026	NO_2+NO_3	0.030	mg/l		EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	EMR
13-1486	MW49	4/4/2013	1026	NO_3	0.024	mg/l	C	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	SL
13-1487	MW49	4/4/2013	1026	NO_2	0.006	mg/l	I	EPA 353.2	0.003 mg/l	4/4/2013	1330	4/5/2013	0925	EMR
13-1488	MW50	4/4/2013	1058	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/4/2013	1330	4/4/2013	1432	EMR
13-1489	MW50	4/4/2013	1058	Total Phosphorus	0.78	mg/l		EPA 365.4	0.02 mg/L	4/4/2013	1330	5/2/2013	1454	EMR
13-1489	MW50	4/4/2013	1058	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	EMR
13-1489	MW50	4/4/2013	1058	NO_3	0.004	mg/l	C U	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	SL
13-1490	MW50	4/4/2013	1058	NO_2	0.004	mg/l	I	EPA 353.2	0.003 mg/l	4/4/2013	1330	4/5/2013	0925	EMR
13-1491	C-1	4/4/2013	1126	Fecal Coliform	20	col/100ml	B	SM9222D	10 col/100ml	4/4/2013	1330	4/4/2013	1432	EMR
13-1492	C-1	4/4/2013	1126	Total Phosphorus	0.20	mg/l		EPA 365.4	0.02 mg/L	4/4/2013	1330	5/2/2013	1454	EMR
13-1492	C-1	4/4/2013	1126	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	EMR
13-1492	C-1	4/4/2013	1126	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	SL
13-1493	C-1	4/4/2013	1126	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	4/4/2013	1330	4/5/2013	0925	EMR

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Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-1494	C-4	4/4/2013	1145	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	4/4/2013	1330	4/4/2013	1432	EMR
13-1495	C-4	4/4/2013	1145	Total Phosphorus	0.19	mg/l		EPA 365.4	0.02 mg/L	4/4/2013	1330	5/2/2013	1454	EMR
13-1495	C-4	4/4/2013	1145	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	EMR
13-1495	C-4	4/4/2013	1145	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	SL
13-1496	C-4	4/4/2013	1145	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	4/4/2013	1330	4/5/2013	0925	EMR
13-1497	C-2	4/4/2013	1210	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/4/2013	1330	4/4/2013	1432	EMR
13-1498	C-2	4/4/2013	1210	Total Phosphorus	0.22	mg/l		EPA 365.4	0.02 mg/L	4/4/2013	1330	5/2/2013	1454	EMR
13-1498	C-2	4/4/2013	1210	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	EMR
13-1498	C-2	4/4/2013	1210	NO_3	0.004	Units	U C	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	SL
13-1499	C-2	4/4/2013	1210	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	4/4/2013	1330	4/5/2013	0925	EMR
13-1500	C-3	4/4/2013	1236	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	4/4/2013	1330	4/4/2013	1432	EMR
13-1501	C-3	4/4/2013	1236	Total Phosphorus	0.18	mg/l		EPA 365.4	0.02 mg/L	4/4/2013	1330	5/2/2013	1454	EMR
13-1501	C-3	4/4/2013	1236	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	EMR
13-1501	C-3	4/4/2013	1236	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	SL
13-1502	C-3	4/4/2013	1236	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	4/4/2013	1330	4/5/2013	0925	EMR
13-1503	C-5	4/4/2013	1256	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	4/4/2013	1330	4/4/2013	1432	EMR
13-1504	C-5	4/4/2013	1256	Total Phosphorus	0.18	mg/l		EPA 365.4	0.02 mg/L	4/4/2013	1330	5/2/2013	1454	EMR
13-1504	C-5	4/4/2013	1256	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	EMR
13-1504	C-5	4/4/2013	1256	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	4/4/2013	1330	4/5/2013	1255	SL
13-1505	C-5	4/4/2013	1256	NO_2	0.004	mg/l	U	EPA 353.2	0.003 mg/l	4/4/2013	1330	4/5/2013	1044	EMR
13-1597	C-6	4/10/2013	0850	Fecal Coliform	20	col/100ml	B	SM9222D	10 col/100ml	4/10/2013	1257	4/10/2013	1415	EMR
13-1598	C-6	4/10/2013	0850	Total Phosphorus	0.26	mg/l		EPA 365.4	0.02 mg/L	4/10/2013	1257	5/2/2013	1454	EMR
13-1598	C-6	4/10/2013	0850	NO_2+NO_3	0.038	mg/l		EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	EMR
13-1598	C-6	4/10/2013	0850	NO_3	0.038	mg/l	C	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	SL
13-1599	C-6	4/10/2013	0850	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/11/2013	1116	EMR
13-1600	C-7	4/10/2013	0915	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	4/10/2013	1257	4/10/2013	1415	EMR
13-1601	C-7	4/10/2013	0915	Total Phosphorus	0.25	mg/l		EPA 365.4	0.02 mg/L	4/10/2013	1257	5/2/2013	1454	EMR
13-1601	C-7	4/10/2013	0915	NO_2+NO_3	0.018	mg/l		EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	EMR
13-1601	C-7	4/10/2013	0915	NO_3	0.018	mg/l	C	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	SL
13-1602	C-7	4/10/2013	0915	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/11/2013	1116	EMR
13-1603	C-8	4/10/2013	0935	Fecal Coliform	30	col/100ml	B	SM9222D	10 col/100ml	4/10/2013	1257	4/10/2013	1415	EMR
13-1604	C-8	4/10/2013	0935	Total Phosphorus	0.33	mg/l		EPA 365.4	0.02 mg/L	4/10/2013	1257	5/2/2013	1554	EMR
13-1604	C-8	4/10/2013	0935	NO_2+NO_3	0.024	mg/l		EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	EMR
13-1604	C-8	4/10/2013	0935	NO_3	0.014	mg/l	I C	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	SL
13-1605	C-8	4/10/2013	0935	NO_2	0.010	mg/l	I	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/11/2013	1116	EMR
13-1606	C-9	4/10/2013	0950	Fecal Coliform	40	col/100ml	B	SM9222D	10 col/100ml	4/10/2013	1257	4/10/2013	1415	EMR
13-1607	C-9	4/10/2013	0950	Total Phosphorus	0.28	mg/l		EPA 365.4	0.02 mg/L	4/10/2013	1257	5/2/2013	1554	EMR
13-1607	C-9	4/10/2013	0950	NO_2+NO_3	0.040	mg/l		EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	EMR
13-1607	C-9	4/10/2013	0950	NO_3	0.040	mg/l	C	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	SL
13-1608	C-9	4/10/2013	0950	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/11/2013	1116	EMR

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Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-1609	C-10	4/10/2013	1010	Fecal Coliform	70	col/100ml	B	SM9222D	10 col/100ml	4/10/2013	1257	4/10/2013	1415	EMR
13-1610	C-10	4/10/2013	1010	Total Phosphorus	0.23	mg/l		EPA 365.4	0.02 mg/L	4/10/2013	1257	5/2/2013	1554	EMR
13-1610	C-10	4/10/2013	1010	NO_2+NO_3	0.031	mg/l		EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	EMR
13-1610	C-10	4/10/2013	1010	NO_3	0.031	mg/l	C	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	SL
13-1611	C-10	4/10/2013	1010	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/11/2013	1116	EMR
13-1612	C-11	4/10/2013	1025	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/10/2013	1257	4/10/2013	1415	EMR
13-1613	C-11	4/10/2013	1025	Total Phosphorus	0.23	mg/l		EPA 365.4	0.02 mg/L	4/10/2013	1257	5/2/2013	1554	EMR
13-1613	C-11	4/10/2013	1025	NO_2+NO_3	0.012	mg/l	I	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	EMR
13-1613	C-11	4/10/2013	1025	NO_3	0.012	mg/l	C I	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	SL
13-1614	C-11	4/10/2013	1025	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/11/2013	1116	EMR
13-1615	C-13	4/10/2013	1045	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/10/2013	1257	4/10/2013	1415	EMR
13-1616	C-13	4/10/2013	1045	Total Phosphorus	0.24	mg/l		EPA 365.4	0.02 mg/L	4/10/2013	1257	5/2/2013	1554	EMR
13-1616	C-13	4/10/2013	1045	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	EMR
13-1616	C-13	4/10/2013	1045	NO_3	0.004	mg/l	C U	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	SL
13-1617	C-13	4/10/2013	1045	NO_2	0.018	mg/l		EPA 353.2	0.004 mg/l	4/10/2013	1257	4/11/2013	1116	EMR
13-1618	C-12	4/10/2013	1110	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/10/2013	1257	4/10/2013	1415	EMR
13-1619	C-12	4/10/2013	1110	Total Phosphorus	0.19	mg/l		EPA 365.4	0.02 mg/L	4/10/2013	1257	5/2/2013	1554	EMR
13-1619	C-12	4/10/2013	1110	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	EMR
13-1619	C-12	4/10/2013	1110	NO_3	0.004	mg/l	C U	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	SL
13-1620	C-12	4/10/2013	1110	NO_2	0.017	mg/l		EPA 353.2	0.004 mg/l	4/10/2013	1257	4/11/2013	1116	EMR
13-1621	C-14	4/10/2013	1125	Fecal Coliform	20	col/100ml	B	SM9222D	20 col/100ml	4/10/2013	1257	4/10/2013	1415	EMR
13-1622	C-14	4/10/2013	1125	Total Phosphorus	0.32	mg/l		EPA 365.4	0.02 mg/L	4/10/2013	1257	5/2/2013	1554	EMR
13-1622	C-14	4/10/2013	1125	NO_2+NO_3	0.016	mg/l	I	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	EMR
13-1622	C-14	4/10/2013	1125	NO_3	0.016	mg/l	C I	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/12/2013	1258	SL
13-1623	C-14	4/10/2013	1125	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/10/2013	1257	4/11/2013	1116	EMR
13-1709	C-15	4/17/2013	0941	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/17/2013	1250	4/17/2013	1412	EMR
13-1710	C-15	4/17/2013	0941	Total Phosphorus	0.42	mg/l		EPA 365.4	0.02 mg/L	4/17/2013	1250	5/2/2013	1554	EMR
13-1710	C-15	4/17/2013	0941	NO_2+NO_3	0.008	mg/l	I	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	EMR
13-1710	C-15	4/17/2013	0941	NO_3	0.008	mg/l	C I	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	SL
13-1711	C-15	4/17/2013	0941	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	0834	EMR
13-1712	C-16	4/17/2013	0959	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	4/17/2013	1250	4/17/2013	1412	EMR
13-1713	C-16	4/17/2013	0959	Total Phosphorus	0.30	mg/l		EPA 365.4	0.02 mg/L	4/17/2013	1250	5/2/2013	1554	EMR
13-1713	C-16	4/17/2013	0959	NO_2+NO_3	0.009	mg/l	I	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	EMR
13-1713	C-16	4/17/2013	0959	NO_3	0.009	mg/l	C I	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	SL
13-1714	C-16	4/17/2013	0959	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	0834	EMR
13-1715	C-17	4/17/2013	1049	Fecal Coliform	20	col/100ml	B	SM9222D	10 col/100ml	4/17/2013	1250	4/17/2013	1412	EMR
13-1716	C-17	4/17/2013	1049	Total Phosphorus	0.39	mg/l		EPA 365.4	0.02 mg/L	4/17/2013	1250	5/2/2013	1646	EMR
13-1716	C-17	4/17/2013	1049	NO_2+NO_3	0.017	mg/l		EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	EMR
13-1716	C-17	4/17/2013	1049	NO_3	0.007	mg/l	C I	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	SL
13-1717	C-17	4/17/2013	1049	NO_2	0.010	mg/l	I	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	0834	EMR

East Port Laboratory Results

Lab ID	Sample	Spl Date	Spl Time	Analysis	Results	Units	Qual.	Method	Det. Limits	Rec'd Date	Rec'd Time	Anal. Date	Anal. Time	Analyst
13-1718	C-18	4/17/2013	1110	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	4/17/2013	1250	4/17/2013	1412	EMR
13-1719	C-18	4/17/2013	1110	Total Phosphorus	0.06	mg/l	I	EPA 365.4	0.02 mg/L	4/17/2013	1250	5/2/2013	1646	EMR
13-1719	C-18	4/17/2013	1110	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	EMR
13-1719	C-18	4/17/2013	1110	NO_3	0.004	mg/l	C U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	SL
13-1720	C-18	4/17/2013	1110	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	0834	EMR
13-1721	C-19	4/17/2013	1127	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/17/2013	1250	4/17/2013	1412	EMR
13-1722	C-19	4/17/2013	1127	Total Phosphorus	0.04	mg/l	I	EPA 365.4	0.02 mg/L	4/17/2013	1250	5/2/2013	1646	EMR
13-1722	C-19	4/17/2013	1127	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	EMR
13-1722	C-19	4/17/2013	1127	NO_3	0.004	mg/l	C U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	SL
13-1723	C-19	4/17/2013	1127	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	0834	EMR
13-1724	C-20	4/17/2013	1158	Fecal Coliform	10	col/100ml	B	SM9222D	10 col/100ml	4/17/2013	1250	4/17/2013	1412	EMR
13-1725	C-20	4/17/2013	1158	Total Phosphorus	0.20	mg/l		EPA 365.4	0.02 mg/L	4/17/2013	1250	5/2/2013	1646	EMR
13-1725	C-20	4/17/2013	1158	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	EMR
13-1725	C-20	4/17/2013	1158	NO_3	0.004	mg/l	C U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	SL
13-1726	C-20	4/17/2013	1158	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	0834	EMR
13-1727	C-21	4/17/2013	1215	Fecal Coliform	30	col/100ml	B	SM9222D	10 col/100ml	4/17/2013	1250	4/17/2013	1412	EMR
13-1728	C-21	4/17/2013	1215	Total Phosphorus	0.10	mg/l		EPA 365.4	0.02 mg/L	4/17/2013	1250	5/2/2013	1646	EMR
13-1728	C-21	4/17/2013	1215	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	EMR
13-1728	C-21	4/17/2013	1215	NO_3	0.004	mg/l	C U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	1032	SL
13-1729	C-21	4/17/2013	1215	NO_2	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/17/2013	1250	4/19/2013	0834	SOK
13-1746	MW53	4/18/2013	1119	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/18/2013	1355	4/18/2013	1412	EMR
13-1747	MW53	4/18/2013	1119	Total Phosphorus	1.22	mg/l		EPA 365.4	0.02 mg/L	4/18/2013	1355	5/2/2013	1646	EMR
13-1747	MW53	4/18/2013	1119	NO_2+NO_3	0.004	mg/l	U	EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	1032	EMR
13-1747	MW53	4/18/2013	1119	NO_3	0.004	mg/l	U C	EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	1032	SL
13-1748	MW53	4/18/2013	1119	NO_2	0.014	mg/l	I	EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	0834	EMR
13-1749	MW51	4/18/2013	1202	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/18/2013	1355	4/18/2013	1427	EMR
13-1750	MW51	4/18/2013	1202	Total Phosphorus	3.60	mg/l		EPA 365.4	0.02 mg/L	4/18/2013	1355	5/2/2013	1646	EMR
13-1750	MW51	4/18/2013	1202	NO_2+NO_3	0.037	mg/l		EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	1032	EMR
13-1750	MW51	4/18/2013	1202	NO_3	0.027	mg/l	C	EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	1032	SL
13-1751	MW51	4/18/2013	1202	NO_2	0.010	mg/l	I	EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	0834	EMR
13-1752	MW57	4/18/2013	1237	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/18/2013	1355	4/18/2013	1427	EMR
13-1753	MW57	4/18/2013	1237	Total Phosphorus	7.02	mg/l		EPA 365.4	0.02 mg/L	4/18/2013	1355	5/2/2013	1646	EMR
13-1753	MW57	4/18/2013	1237	NO_2+NO_3	23.128	mg/l		EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	1032	EMR
13-1753	MW57	4/18/2013	1237	NO_3	22.918	mg/l	C	EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	1032	SL
13-1754	MW57	4/18/2013	1237	NO_2	0.210	mg/l		EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	0834	EMR
13-1755	MW56	4/18/2013	1315	Fecal Coliform	10	col/100ml	U	SM9222D	10 col/100ml	4/18/2013	1355	4/18/2013	1427	EMR
13-1756	MW56	4/18/2013	1315	Total Phosphorus	1.88	mg/l		EPA 365.4	0.02 mg/L	4/18/2013	1355	5/2/2013	1646	EMR
13-1756	MW56	4/18/2013	1315	NO_2+NO_3	39.170	mg/l		EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	1032	EMR
13-1756	MW56	4/18/2013	1315	NO_3	38.980	mg/l	C	EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	1032	SL
13-1757	MW56	4/18/2013	1315	NO_2	0.190	mg/l		EPA 353.2	0.004 mg/l	4/18/2013	1355	4/19/2013	0834	EMR

East Port Laboratory

Charlotte County Utilities

EAST PORT WRF

3100 Loveland blvd.

PORT CHARLOTTE, FL. 33980

DATA QUALIFIER DEFINITIONS

A = Value reported is an average of two or more determinations.
B = Results based upon colony counts outside the acceptable range.
C = Calculated value
F = Tested in the field
I = Reported value is between the laboratory MDL and PQL.
J1 = Est. value quality control criteria for precision or accuracy not met. (Spike Recovery)
J2 = Est. value quality control criteria for precision or accuracy not met.(Duplicate RPD)
J3 = Est. value quality control criteria for precision or accuracy not met.(Glucose/Glutamic Acid)
J4 = Est. value quality control criteria for precision or accuracy not met.(analyte detected in blank)
J5 = Est. value quality control criteria for precision or accuracy not met.(DO Depletion <2.00 mg/L)
J6 = Est. value quality control criteria for precision or accuracy not met.(Test Replicate Difference)
K-1 = Off-scale low. The value is less than the lowest calibration standard.
O = Sampled, but analysis lost or not performed.
Q = Sample held beyond accepted hold time.
T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.
U = Analyte analyzed but not detected at the value indicated.
V = Analyte detected in sample and method blank.
Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.
Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.
! = Data deviate from historically established concentration ranges.
? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the Presence or absence of the analyte cannot be determined from the data.
* = Not reported due to interference.

NOTES:
PQL = 4 x MDL
Ammonia PQL = 0.10 mg/L
TKN PQL = 0.50 mg/L

APPENDIX B
(WATER ELEVATION DATA)

East West Spring Lake Area WW Expansion Pilot Study - 11-0048

Water Table Elevations

Well ID	GROUND ELEVATION	#1 H20 ELEVATION	#1 SAMPLE DATE	#2 H20 ELEVATION	#2 SAMPLE DATE	#3 H20 ELEVATION	#3 SAMPLE DATE	#4 H20 ELEVATION	#4 SAMPLE DATE	#5 H20 ELEVATION	#5 SAMPLE DATE
1 Ground	7.5	0.30	21-Jun-12	0.93	12-Sep-12	*Notation below	7-Nov-12	*Notation below	23-Jan-13	*Notation below	6-Mar-13
2 Ground	6.7	2.98	21-Jun-12	3.87	12-Sep-12	2.84	7-Nov-12	2.33	23-Jan-13	2.12	6-Mar-13
3 Ground	6.4	3.49	21-Jun-12	5.07	12-Sep-12	3.93	7-Nov-12	2.76	24-Jan-13	2.08	6-Mar-13
4 Ground	7.3	6.98	28-Jun-12	6.08	12-Sep-12	5.20	7-Nov-12	*Notation below	23-Jan-13	3.61	6-Mar-13
5 Ground	5.6	1.90	21-Jun-12	4.50	12-Sep-12	3.52	7-Nov-12	2.08	24-Jan-13	1.76	6-Mar-13
6 Ground	4.6	1.48	21-Jun-12	2.48	12-Sep-12	1.76	7-Nov-12	0.62	24-Jan-13	0.68	6-Mar-13
7 Ground	5.3	2.33	21-Jun-12	4.19	12-Sep-12	3.15	8-Nov-12	1.77	24-Jan-13	1.41	6-Mar-13
8 Ground	6.0	5.78	28-Jun-12	4.77	13-Sep-12	4.14	8-Nov-12	3.47	23-Jan-13	2.77	7-Mar-13
9 Ground	6.8	6.69	28-Jun-12	6.63	19-Sep-12	*Notation below	8-Nov-12	*Notation below	16-Jan-13	*Notation below	13-Mar-13
10 Ground	6.8	6.15	21-Jun-12	6.41	19-Sep-12	4.78	14-Nov-12	3.99	16-Jan-13	3.86	27-Mar-13
11 Ground	6.4	4.40	21-Jun-12	4.82	19-Sep-12	3.71	14-Nov-12	40.70	17-Jan-13	2.46	13-Mar-13
12 Ground	5.3	4.24	28-Jun-12	4.19	19-Sep-12	3.30	14-Nov-12	2.97	17-Jan-13	*Notation below	*Notation below
13 Ground	6.1	4.89	28-Jun-12	3.51	13-Sep-12	2.75	8-Nov-12	*Notation below	23-Jan-13	1.50	7-Mar-13
14 Ground	5.3	5.24	28-Jun-12	3.40	13-Sep-12	2.70	8-Nov-12	*Notation below	23-Jan-13	1.69	13-Mar-13
15 Ground	4.0	4.03	11-Jul-12	3.37	12-Sep-12	2.50	8-Nov-12	1.51	24-Jan-13	1.32	6-Mar-13
16 Ground	3.9	3.78	28-Jun-12	4.08	19-Sep-12	2.30	14-Nov-12	1.64	23-Jan-13	1.16	13-Mar-13
17 Ground	5.2	5.09	28-Jun-12	4.71	20-Sep-12	2.91	14-Nov-12	2.51	17-Jan-13	1.88	14-Mar-13
18 Ground	5.7	5.07	28-Jun-12	5.03	20-Sep-12	3.70	14-Nov-12	*Notation below	17-Jan-13	*Notation below	27-Mar-13
19 Ground	6.2	2.46	12-Jul-12	2.17	20-Sep-12	0.84	15-Nov-12	0.64	16-Jan-13	0.31	27-Mar-13
20 Ground	5.0	2.08	12-Jul-12	2.05	20-Sep-12	0.61	15-Nov-12	0.50	16-Jan-13	-0.20	27-Mar-13
21 Ground	5.0	3.57	12-Jul-12	3.50	20-Sep-12	2.02	14-Nov-12	1.42	17-Jan-13	0.85	14-Mar-13
22 Ground	4.6	3.81	28-Jun-12	3.59	19-Sep-12	2.40	15-Nov-12	1.89	17-Jan-13	1.39	7-Mar-13
23 Ground	4.7	4.68	28-Jun-12	*Notation below	19-Sep-12	*Notation below	N/A	N/A	N/A	N/A	N/A
24 Ground	4.3	4.02	11-Jul-12	3.57	12-Sep-12	2.55	8-Nov-12	*Notation below	23-Jan-13	2.20	6-Mar-13
25 Ground	5.2	4.89	28-Jun-12	5.08	19-Sep-12	3.28	14-Nov-12	2.88	23-Jan-13	1.94	13-Mar-13
26 Ground	4.7	2.49	21-Jun-12	3.52	12-Sep-12	2.60	8-Nov-12	1.60	24-Jan-13	1.09	7-Mar-13
27 Ground	4.3	2.77	21-Jun-12	3.35	13-Sep-12	2.59	8-Nov-12	2.61	30-Jan-13	2.05	7-Mar-13
28 Ground	4.4	1.65	21-Jun-12	2.36	13-Sep-12	1.51	8-Nov-12	0.93	30-Jan-13	0.29	7-Mar-13
29 Ground	4.4	4.26	28-Jun-12	3.99	19-Sep-12	1.82	14-Nov-12	1.19	23-Jan-13	0.86	7-Mar-13
30 Ground	3.1	1.29	21-Jun-12	1.99	26-Sep-12	1.02	28-Nov-12	0.82	16-Jan-13	1.05	27-Mar-13
31 Ground	4.0	1.67	21-Jun-12	2.97	26-Sep-12	1.69	28-Nov-12	1.97	16-Jan-13	0.88	27-Mar-13
32 Ground	3.9	*Notation below	21-Jun-12	2.53	26-Sep-12	1.38	15-Nov-12	*Notation below	16-Jan-13	0.75	14-Mar-13
33 Ground	4.7	3.03	11-Jul-12	2.97	20-Sep-12	2.21	15-Nov-12	1.79	17-Jan-13	1.19	14-Mar-13
34 Ground	5.3	1.35	12-Jul-12	1.22	20-Sep-12	0.15	15-Nov-12	0.26	16-Jan-13	*Notation below	*Notation below
35 Ground	4.7	2.54	18-Jul-12	2.03	27-Sep-12	0.94	28-Nov-12	0.49	10-Jan-13	0.55	28-Mar-13
36 Ground	5.4	2.49	11-Jul-12	1.83	26-Sep-12	0.90	28-Nov-12	*See Below	10-Jan-13	0.66	27-Mar-13
37 Ground	3.3	1.51	21-Jul-12	2.45	26-Sep-12	1.21	15-Nov-12	0.55	16-Jan-13	1.15	27-Mar-13
38 Ground	4.7	2.99	11-Jul-12	2.15	26-Sep-12	1.29	28-Nov-12	0.99	10-Jan-13	0.63	14-Mar-13
39 Ground	4.8	1.99	18-Jul-12	1.90	26-Sep-12	0.64	28-Nov-12	*See Below	10-Jan-13	0.45	28-Mar-13
40 Ground	5.3	1.42	18-Jul-12	0.70	27-Sep-12	0.07	29-Nov-12	-0.10	10-Jan-13	-0.14	28-Mar-13
41 Ground	4.7	1.09	18-Jul-12	0.84	26-Sep-12	0.35	28-Nov-12	-0.010	10-Jan-13	-0.10	28-Mar-13
42 Ground	4.0	0.80	18-Jul-12	0.66	26-Sep-12	0.45	28-Nov-12	-0.02	10-Jan-13	-0.40	28-Mar-13
43 Ground	5.7	3.50	19-Jul-12	2.52	27-Sep-12	0.77	29-Nov-12	0.45	10-Jan-13	0.40	3-Mar-13
44 Ground	4.9	1.60	19-Jul-12	1.18	27-Sep-12	0.43	29-Nov-12	0.23	9-Jan-13	0.20	3-Mar-13
45 Ground	4.5	0.88	19-Jul-12	0.56	27-Sep-12	0.10	29-Nov-12	-0.10	9-Jan-13	-0.06	3-Mar-13
46 Ground	5.2	0.54	19-Jul-12	0.19	27-Sep-12	0.04	29-Nov-12	-0.15	9-Jan-13	-0.06	3-Mar-13
47 Ground	4.5	1.20	25-Jul-12	1.42	11-Oct-12	-0.04	29-Nov-12	-0.42	9-Jan-13	-0.05	3-Mar-13
48 Ground	4.8	0.41	25-Jul-12	0.50	11-Oct-12	-0.75	29-Nov-12	0.87	9-Jan-13	-0.66	3-Mar-13
49 Ground	3.6	2.61	25-Jul-12	2.82	11-Oct-12	*See Below	29-Nov-12	0.56	9-Jan-13	0.90	4-Mar-13
50 Ground	4.9	2.27	25-Jul-12	2.54	11-Oct-12	*See Below	29-Nov-12	0.51	9-Jan-13	0.73	4-Mar-13

*1-32 Sample not available. 2-23 Sample removed by unknown. 3-9 Sample point to be repaired; 3-23 Sample removed by unknown; 3-49-50 Not tested; 4-18-36-39 Well dried up during purge; 4-23 No longer testing; 4-24 Hydrant flushing filled well; 4-32 Needs to be repaired; K-1-9-18- Dry sample point, K-12 Damaged, K-23 No longer testing; K-34 Sample not available.

EXHIBIT F

Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

Via E-mail: JOSH.MURPHY@CHARLOTTEFL.COM AND
RUTA.VARDYS@CHARLOTTEFL.COM

January 28, 2014

Mr. Josh Murphy, Grants Analyst
Ms. Ruta Vardys
Charlotte County Board of County Commissioners
25550 Harborview Rd, Suite 1
Port Charlotte, FL 33980

RE: TMDL Water Quality Restoration Grant

Dear Mr. Murphy and Ms. Vardys:

Thank you for submitting the project entitled "Revitalize Impaired Waters of Charlotte Harbor East and West Spring Lakes Phase I" for funding consideration from the FY2013 TMDL Water Quality Restoration Grant. The Department received several project proposals requesting approximately $9,464,000 million in funding for the month of November 2013.

We are pleased to inform you that your project has been accepted for funding in the amount of **$599,670.00** with a Match funding of $3,636,800.00. We have included your project in our draft FY2013 Section TMDL grant work plan. You will be contacted shortly in order to initiate a contract. Please be aware that any funds spent prior to contract execution are not eligible for reimbursement; however, they may be used as match in certain situations.

We appreciate your interest in and support of Florida's nonpoint source management program. We look forward to working with you on this project. If you have any questions, please do not hesitate to call me at (850) 245-8505.

Sincerely,

Connie Becker
Bureau of Watershed Restoration
Division of Environmental Assessment and Restoration
connie.becker@dep.state.fl.us

CB

cc: Kate Brackett, FDEP Nonpoint Source Management Section
Mike Scheinkman, FDEP Contract Manager

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

Via E-mail: MINDY.COLLIER@CHARLOTTEFL.COM

October 8, 2014

Ms. Mindy Collier, Grants Analyst
Charlotte County
25550 Harborview Rd, Suite 1
Port Charlotte, FL 33980

RE: TMDL Water Quality Restoration Grant

Dear Ms. Collier:

Thank you for submitting the project entitled "**REVITALIZE IMPAIRED WATERS OF CHARLOTTE HARBOR EAST AND WEST SPRING LAKES PHASE II**" for funding consideration from the FY2015 TMDL Water Quality Restoration Grant. The Department received several project proposals requesting approximately $14,424,043 million in funding for the month of July 2014.

We are pleased to inform you that your project has been accepted for funding in the amount of **$2,071,324** with a Match funding of $12,159,525. You will be contacted shortly in order to initiate a contract. Please be aware that any funds spent prior to contract execution are not eligible for reimbursement; however, they may be used as match in certain situations.

We appreciate your interest in and support of Florida's nonpoint source management program. We look forward to working with you on this project. If you have any questions, please do not hesitate to call me at (850) 245-8505.

Sincerely,

Connie Becker

Connie Becker
Bureau of Watershed Restoration
Division of Environmental Assessment and Restoration
connie.becker@dep.state.fl.us

cc: Kate Brackett, FDEP Nonpoint Source Management Section