2002-2003 WESTERN BASINS AREA BMP GRANT PROGRAM ANNUAL REPORT

South Florida Water Management District
Fiscal Year 2002-2003

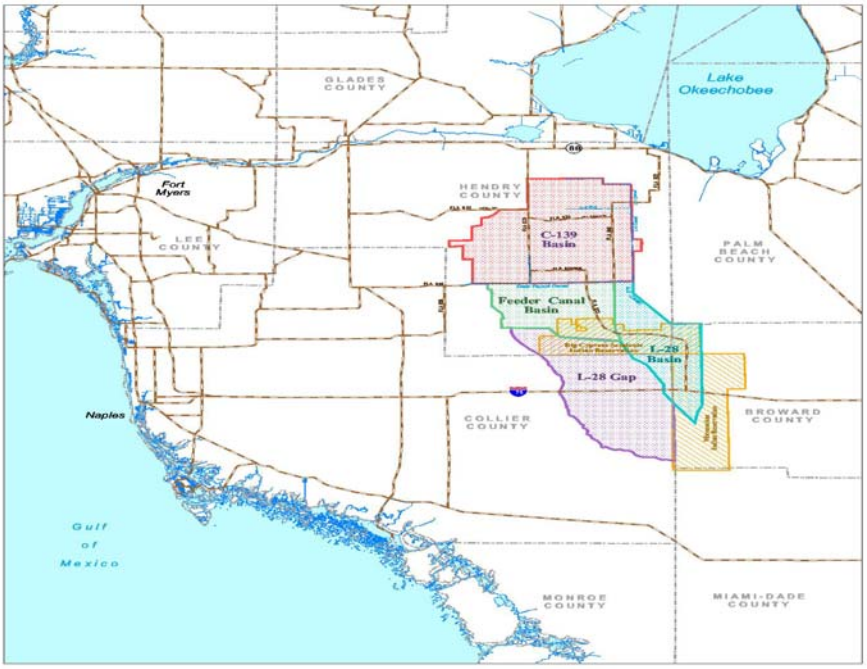
EXECUTIVE SUMMARY

Four watersheds located in South Central Florida are collectively known as the Western Basins Area. These basins are comprised of over 430,000 acres of mostly agricultural lands that discharge into the Everglades Protection Area. There are currently two regulatory programs in the Western Basins that are driven by the Everglades Forever Act (EFA), the Everglades Storm Water Program (ESP) and the C-139 Basin Program. Both are aimed at improving water quality by implementing on farm best management practices (BMPs). The ESP includes a voluntary BMP program in L-28, Feeder Canal, and the Gap or Tieback Basins while in the C-139 Basin a mandatory BMP program based on a rule adopted for that particular basin in accordance with the EFA has been implemented. In order to maximize basin participation and provide incentives to improve water quality the Western Basins Area Best Management Practices Grant Program was proposed and authorized by the South Florida Water Management District (SFWMD). The District's Governing Board approved initial project funding for $100,000.00 in FY 2002, $100,000.00 in fiscal year 2003, and based on Board approval $100,000.00 in fiscal year 2004.

The Western Basins Best Management Practices Grant Program has been a true success story. The number of landowners and stakeholders expressing interest in the program has increased dramatically and the program is growing. During the 2002-2003 Western Basins landowner meeting a handful of people attended. In comparison, at the recent 2003-2004 landowner meeting the room was packed with landowners, who were excited about participating in the program. The cooperative effort between landowners, the South Florida Water Management District (SFWMD), the Natural Resource Conservation Service (NRCS), and the Hendry Soil and Water Conservation District (HSWCD) is a direct result of the innovative vision of the SFWMD Governing Board and District leadership in providing funding for this unique program.

The budget for the first 2 years (2002 and 2003) of the program was $200,000.00 with the potential of another $100,000.00 in fiscal year 2004. However, due to the overwhelming public response project funding has been increased by the SFWMD for fiscal year 2004 from $100,000.00 to over $400,000.00. In addition to the increased BMP Grant Program funding, the Florida Department of Agriculture and Consumer Services (FDACs) have pledged $200,000.00 this fiscal year to combine with another $200,000.00 from SFWMD. These combined monies ($400,000.00) will be used in conjunction with the NRCS's EQUIP Program. The $400,000.00 provided by the SFWMD and FDACs will take the NRCS's EQUIP 50% cost share monies to 75%. NRCS is also projecting EQUIP money to increase in the Western Basins area for fiscal year 2004.

In the first two years of the program the Western Basins Grant Program provided funding for three separate projects, which involved the construction of surface water systems and retention areas. In fiscal year 2003-2004 the Grant Program is projected to fund twelve (12) large construction projects. The projects that have been constructed to date and future construction projects in the Western Basins Area will improve water quality and reduce phosphorus loadings discharged to STA 5 and the Everglades Protection Area. The NRCS is developing resource management plans for landowners across these priority basins. The plans provide a holistic approach to ranching and farming while developing improvement strategies for water quality, water quantity, nutrient management, best management practices, and wildlife. The construction efforts and resource management plans through a cooperative effort will have a positive impact in the Western Basins Area.



Project Location

INTRODUCTION

Canal Systems

In the 1950's the Army Corps of Engineers (ACOE) constructed an extensive drainage network made up of canals and levees as public works known as the Central and South Florida Flood Control Project (C&SF). The project encouraged agriculture to expand further south of Lake Okeechobee and in some areas to the east, as well as the formal creation of the Everglades Agricultural Area (EAA) (Solecki, et al., 1999). A part of this project was a conveyance system designed to improve drainage within the Everglades Agricultural Area (EAA). This construction resulted in lands within the Everglades being divided into Conservation Areas 1, 2A, 2B, 3A, and 3B. These Conservation Areas essentially function as stormwater impoundment areas. Later construction of levees further impacted and changed the drainage areas west of the EAA. Thus, surface water flows were effectively interrupted and diverted south into Conservation Area No. 3A. The borrow canals used to create the levees became the primary conveyance system for what is referred to now as the C-139 Basin. In the early 1960's the construction of a major levee, the L-28, was completed. The design provided improved drainage to Indian lands located further west of the Everglades. As a result of these improvements the L-28 and Feeder Canal Basins were created.

Another area that also drains into Conservation Area No. 3A is the L-28 Tieback Basin (Gap Basin). This basin consists of natural undisturbed wetland marsh and slough systems. The entire region is low-lying and nearly level, resulting in poorly drained soils. This basin is located south of the Feeder Canal Basin and runoff from the Gap Basin sheet flows in a southeast direction. See Figure 1.

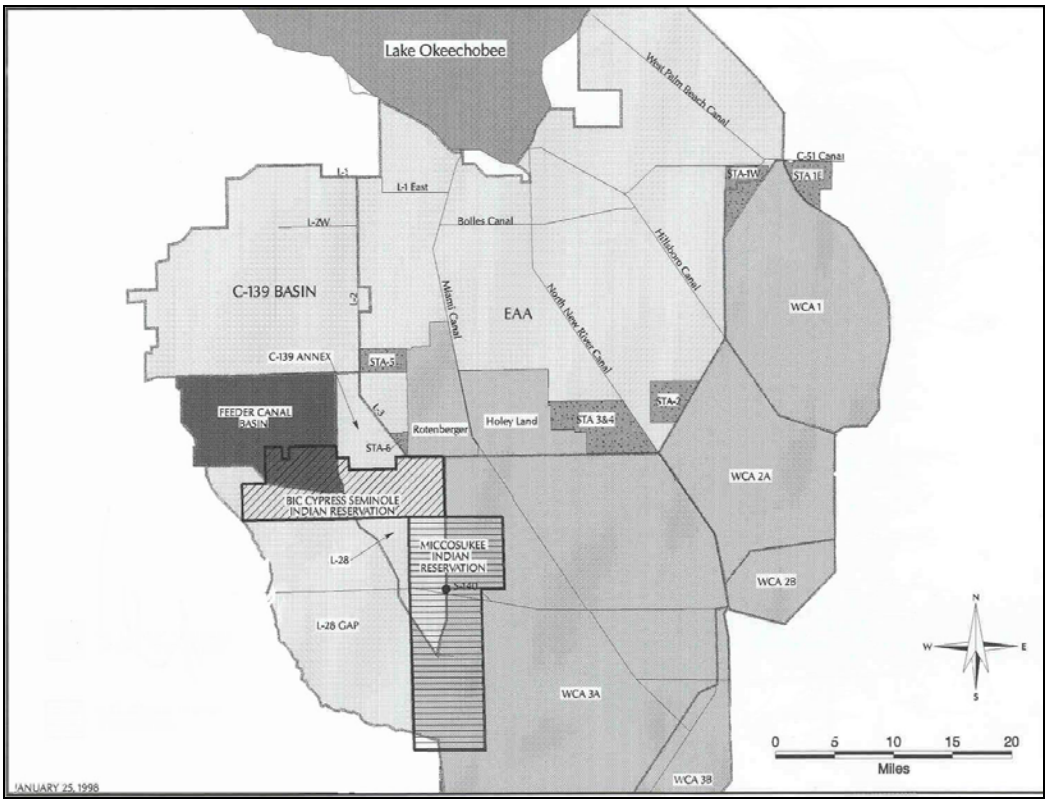


Figure 1 Drainage and Conveyance Systems

LEGISLATIVE HISTORY

The Everglades Forever Act of 1994 (EFA) set into motion an aggressive and comprehensive restoration program of construction, research and regulation projects designed to ensure that all waters discharging into the Everglades Protection Area achieve and maintain compliance with phosphorus and other water quality standards by December 31, 2006 (SFWMD, 2002). Environmental impacts caused by too much, too little, or by the quality of the runoff led the South Florida Water Management District (SFWMD) to take a lead role in improving water deliveries and water quality in the area through the Everglades Program. The Everglades Construction Project (ECP) as permitted from the Florida Department of Environmental Protection is one element of the Everglades Program under the SFWMD's responsibility. The ECP includes, but is not limited to, the construction of stormwater treatment areas, hydro-pattern restorations, water diversions, and other improvements. For the remaining structures not permitted under the ECP, a second element of the Program required the SFWMD to obtain a separate permit referred to as the non-ECP permit.

From the non-ECP Permit, the SFWMD created the Everglades Stormwater Program (ESP). The objective of the ESP is to ensure that the water quality standards are met by the end of 2006 at all structures that the SFWMD controls and discharge water into, within, or from the Everglades Protection Area, which are not within the Everglades Construction Project. The basins discharging through these structures include existing urban, agricultural, and Indian reservation lands. Compliance with water quality standards will be achieved through implementing the Non-ECP permit, water quality monitoring, water quality improvement strategies, solutions such as Best Management Practices (BMPs), or construction projects. Other components of the program include implementing an education campaign and if needed, developing a regulatory program to specifically address the Non-ECP basins.

Another goal of the EFA was to ensure that the historical average annual phosphorus load from the C-139 Basin not be exceeded. In WY00 (May 1, 1999 through April 30, 2000), the C-139 Basin alone was responsible for 53 tons of phosphorus entering the Everglades Protection Area (EPA). The District

amended Chapter 40E-63, of the Florida Administrative Code (F.A.C.), effective January 24, 2002, to include a compliance methodology and actions required by landowners in the C-139 Basin. This was to ensure that the phosphorus load limitation for the basin not be exceeded. Landowners were required to apply for permits and implement an initial level of Best Management Practices for phosphorus reduction by April 24, 2002. The first compliance measure in the C-139 Basin is Water Year 2003. A Basin Tax in C-139 was also implemented through the EFA. Monies generated by the tax are used for the construction and continued maintenance of Stormwater Treatment Area 5 (STA5). The STA serves to filter and cleanse surface water discharging from the C-139 Basin before final release downstream. This water eventually flows south into the Everglades.

WESTERN BASINS' BMP GRANT PROGRAM

Several options to reduce nutrient loading for this basin were explored. One was a voluntary implementation of BMPs for farms and ranches but it did not include a financial incentive. Even though this may have resulted in some nutrient reduction, many cattle ranches were either not interested or not able to participate given their economic difficulties. Another option for basins other than the C-139 would require a lengthy rulemaking process, and while this may be required in the future, this option would take several years to develop. District Staff derived that the best option for the immediate reduction of nutrient loading would be involve development of a BMP program based on financial incentives. With that the Western Basins BMP Grant Program was designed and implemented. The program provides cost share dollars for landowners implementing water quality improvement strategies. Alternatively, this incentive program can result in immediate load reductions and assist the landowners in compliance with future regulations and rules. Without the financial incentive, implementation of BMPs in the Western Basins and reductions in nutrient loading to the Everglades would most likely be delayed several years.

Interest in the program has been high. A large group of landowners participated in the initial BMP Incentive Program meetings with twenty-five projects applying for funding this fiscal year (2002-2003). Several other landowners and farming operations have begun the application process for next fiscal year (2004). At the first BMP meeting the Florida Department of Agriculture (DOA) came forward and pledged dollars for the program. The District's Governing Board approved project funding for $100,000.00 in FY 2002, $100,000.00 in fiscal year 2003, and based on Board approval an additional $100,000.00 in fiscal year 2004.

The SFWMD was granted the option of forming a partnership with a state or federal governmental entity for assistance in administering the program and entered into a cooperative agreement with the Hendry Soil and Water Conservation District (HSWCD). There were two important factors in this decision. First, the soil and water conservation program is well established and has a history of dealing with natural resource and environmental issues since the 1930's. Secondly, there was an existing partnership between the HSWCD and the U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS). Conservation Districts determine what conservation programs need to be implemented locally, and the NRCS provides technical expertise. The conservation partnership in Florida presently works through 63 conservation districts that are political subdivisions of state government. Conservation Districts are assisted by a staff of NRCS soil scientists, agricultural engineers, rangeland management specialists, and technical experts, who help cooperating landowners voluntarily plan and implement conservation practices on their lands.

There were several benefits to forming a partnership between the SFWMD and the HSWCD through a cooperative agreement:

- Structuring a "grass roots" approach with a government entity that has the technical expertise, local knowledge, and history of assisting landowners with conserving and protecting natural resources in the area,
- Accomplishing the required tasks through one contract between the SFWMD and the HSWCD instead of many contracts between the SFWMD and each participating landowner,

- Funding a voluntary incentive program to assist local landowners within the Western Basins Area implement BMPs and water quality strategies as outlined in NRCS conservation plans. The NRCS was currently designing conservation plans in the Western Basin Area, but were limited with cost share monies for landowners to implement the plans,
- Achieving the SFWMD goal of improving water quality in the Western Basins while keeping the processes simple for the SFWMD, HSWD, NRCS, and local landowners and
- Coordinating the BMP Incentive Program with NRCS environmental programs such as the Environmental Quality Incentive Program (EQUIP) and the Wetland Reserve Program (WRP).

The SFWMD and the Hendry Soil and Water Conservation District (HSWCD) agreed to participate in this cooperative agreement with the understanding of the need to develop fair and equitable processes in the selection of lands and landowners for the project. The partnership provides the technical assistance to design on-farm conservation plans, develop water quality improvement strategies, and implement appropriate BMPs in the Western Basin Area. The volunteer cost share program creates an incentive to local landowners and stakeholders, who effectively implement pre-approved water quality improvement strategies and BMPs. This team effort resulted in the following work products:

- An Applicant Handbook to provide process guidelines to landowners,
- Criteria for ranking and selecting projects for the volunteer cost share program,
- Farm conservation plans,
- Landowner meetings and workshops,
- Final inspections and approvals to verify effective BMP implementation,
- Development of a water quality monitoring network,
- Requirements and criteria for the release of cost share funds and
- End of the year report summarizing projects, water quality, and BMPs implemented to date.

PROGRAM OBJECTIVES

The criteria for ranking the projects for funding were an integral component in the selection process. The selection was also constrained by limited dollars and resources and therefore had to rely on choosing the projects that offer the most benefit with respect to water quality improvements. The ranking and selection of projects enables the program to maximize environmental benefits per dollar expended while considering various environmental benefits achieved. This information is summarized in Table 1.

Table 1 Ranking Environmental Benefits

Project Component	Benefit
Water	Water quality and quantity improvement and the establishment of water quality monitoring.
Impacts of project	Total acres, number of landowners or contiguous lands positively impacted by project, proximity to overall basin outfall locations and/or District monitoring sites.
Soil Conservation	Erosion reduction, deposition reduction, sediment or particulate transport reduction
Plant	Suitability enhancement and condition improvement
Animal	Habitat improvement and other natural resource concerns

One of the goals of the project team was to help the stakeholders develop comprehensive across farm BMP plans. BMPs were assigned points based on their potential for reducing downstream water quality impacts. Points were cumulated and totaled during the review of the conservation plan. Projects with

the highest number of BMP points ranked high and were targeted for funding. The project team developed the following point matrix based on the above criteria as listed in Table 2.

Table 2 BMP Point Matrix

Number	BMP Practice	Points Awarded	Number	BMP Practice	Points Awarded
WB1	Heavy Use Area Protection	10	WB13	Liming	10
WB2	Filter Strip	15	WB14	Sediment Basins-Water Treatment Areas	20
WB3	Grassed Waterway	15	WB15	Pasture Planting (re-establishing)	10
WB4	Nutrient Management	20	WB16	Land Use Conversion (from crop to pasture)	20
WB5	Pest Management	5	WB17	Crop Residue Management	10
WB6	Exotic Invading Species	5	WB18	Wildlife Habitat Management	5
WB7	Cattle Watering Facilities	15	WB19	Waterway/Ditch/Canal Bank Stabilization	10
WB8	Prescribed Burning	5	WB20	Regulating Reservoir or Detention Area	25
WB9	Prescribed Grazing	15	WB21	Brush Management	5
WB10	Fencing of Canals	20	WB22	Improved Internal Infrastructure Controls	20
WB11	Canal Cleaning	20	WB23	Water Quality Monitoring	Up to 15
WB12	Structures Water Control headers)	15	WB24	Impacts of Projects	Up to 25

Past and present water quality sampling efforts within each Basin (C-139, Feeder Canal (S-190), and L-28 (S-140) include automatic sampler monitoring for nutrients at the final basin outfall. Two basin monitoring programs have also provided baseline data for this project. These are the Synoptic Monitoring Network for the C-139 Basin Best Management Practice Research Project (SWET, 2001) and the Feeder Canal Basin Water Quality Grab Sampling Survey (SFWMD/ERD, 1998).

Sampling Design

The Environmental Protection Agency (1994) stated that data collected should have sufficient quality and quantity to support defensible decision making. Unfortunately, past BMP plans from early projects in the BMP Incentive Program have largely lacked detailed plans describing data objectives and sampling designs that would ensure this quality data. This gap leaves managers with the difficult task of trying to gauge effectiveness of BMPs without a sound method or foundation for comparison. Within these Western Basins, providing the necessary information to meet the EFA mandate of improving water quality requires that a well thought out sampling plan be applied in this BMP Incentive Program. In addition, future funding and additional assistance for this program will be based on demonstrating water quality improvement.

This sampling plan should provide planning, implementation and assessment of expected quality and quantity prior to the collection of samples as defined in the Data Quality Objectives (DQOs). The DQO process is a systematic planning tool based on the Scientific Method for establishing criteria for data quality and for developing data collection designs (EPA, 1994). When a project is selected for funding, the Data Quality Objectives (DQOs) outlining sampling plans, assessment and analyses of water quality data will be established before the conservation or BMP plan is implemented. The initial data from these projects will provide a benchmark from which future progress can be monitoring and evaluated.

The water quality monitoring defined for this project is the collection of physical and chemical characteristics to identify nutrient concentrations from farm level discharge. The scope of this work will not include contributing factors for loading such as climate conditions (rainfall, temperatures), fate and transport of nutrients, and/or soil chemistry. Therefore, this sampling effort will be considered as reconnaissance monitoring only. It is not expected that this sampling design will yield trends, statistical differences, or pollutant loads from the farm-level.

Assessing water quality data for this project and its adequacy, as reconnaissance monitoring, is based on strategic sampling locations and quantity of sites. This selection will be determined by the number of contributing water tributaries and other factors such as, land area, land use, and water conservation systems. The adequacy of sites will further be determined by the number of expected rainfall events, contributory sources of pollution, and parameter variability. Based on past synoptic surveys for total phosphorus, the mean number of samples sufficient to detect changes from one period to the next (in this case, the period is a year) is expected to be twenty per year. Given the past rainfall/discharge events, this is a reasonable expectation.

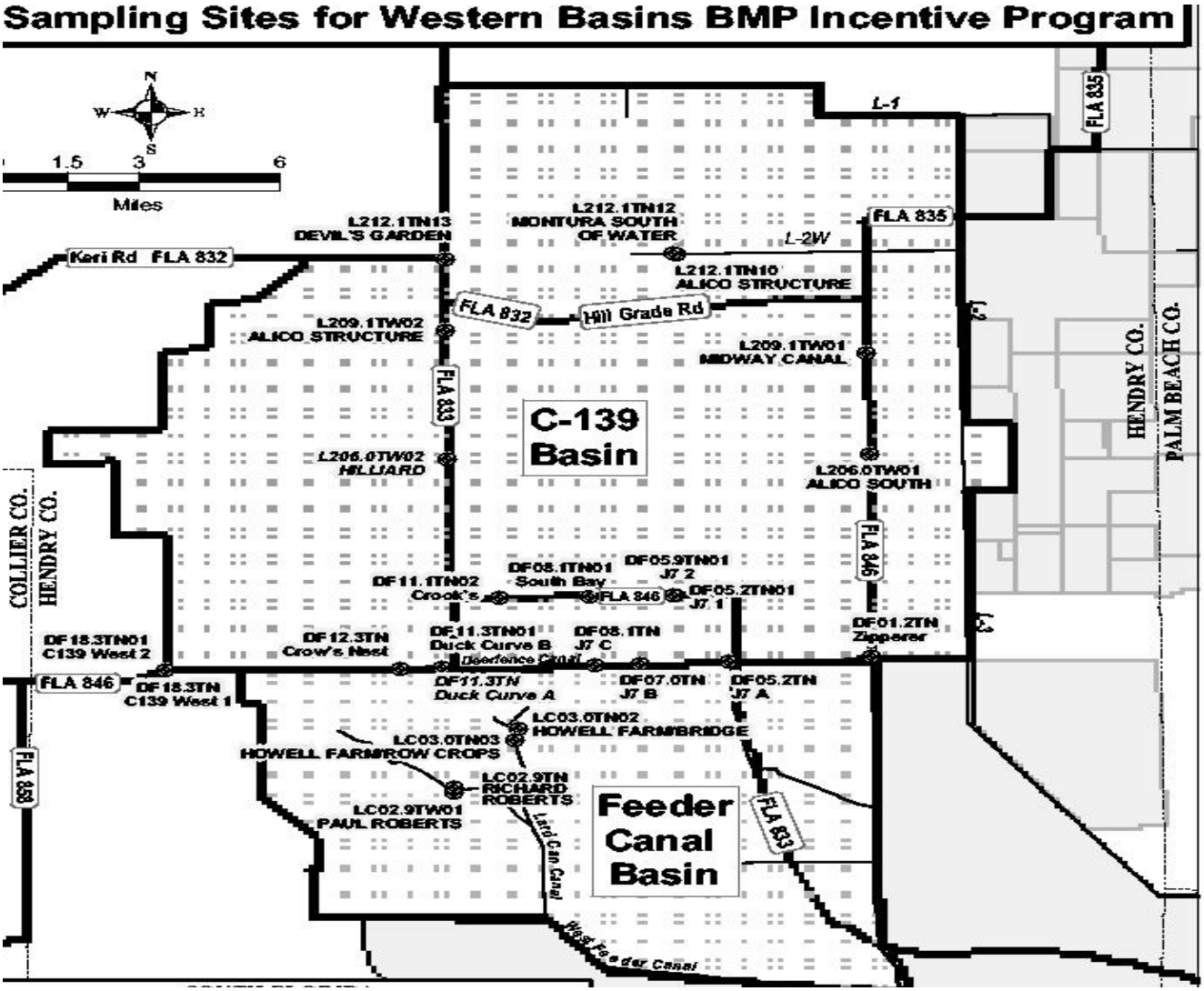
It is expected that the result of this type of monitoring will be used to target resources available for BMPs for farm-level management. The intended objectives of the data for this project are to provide the following:

- The static assessment of current water quality status before implementing new BMPs,
- Identification of potential problem areas, or 'hotspots',
- A basis from which to direct resources and
- The future ability to evaluate 'relative' effectiveness of the program.

A successful water quality program, meeting the above-intended uses, will allow the Project Manager to effectively evaluate the potential success of this Western Basins' BMP Incentive Program. Documentation of water quality improvement from Non-Point Sources (NPS) pollution controls is necessary to provide feedback to project coordination and maintain political and economic support for NPS control programs (Spooner, 1993). Evaluating the impact of BMPs on water quality allows the project manager the ability to determine the most cost-effective practices to achieve watershed restoration since each will have varying installation costs, environmental and economic impacts, and effectiveness for pollutant reduction.

2002-2003 Water Quality Data

Due to the limited number of samples taken at this time water quality data and analyzes for 2003-2004 will be provided in next fiscal year's 2004 Annual Report.



Program Sampling Locations

PROJECTS SELECTED FOR FUNDING IN FISCAL YEAR 2002-2003

J-7 Ranch is a 6,000 acre beef cattle and row crop operation located in the C-139 Basin. The partnership between the South Florida Water Management District, Hendry Soil and Water District, and the Natural Resource Conservation Service (NRCS) provided funding to the ranch for the implementation of water quality improvement strategies. The ranch was issued an Environmental Resource Permit from the South Florida Water Management District for constructing a total of 13 retention areas across the farm. The grant program provided $94,988.00 to construct two retention areas (D1 and D2) and the NRCS Equip Program provided $75,000.00 for additional on farm best management practices (BMPs). The reservoirs known as D-1 and D-2 were comprised of 123 acres of retention area designed to treat over 450 acres of row crops.

The picture above is an aerial overview depicting a portion of the J-7 Ranch Project's row crop operation before construction. The green area will serve as the D-1 and D-2 detention areas.

The picture above is an aerial overview of the J-7 Ranch Project's D-1 and D-2 retention area during construction. The white line around the green area is the retention area's perimeter berm.

The picture above depicts construction of the perimeter berm around D1 and D2 from the ground.

J-7 beef cattle operation.

The second project selected for funding during fiscal year 2003-2004 was the Toney Strand Project. The project is located in the Feeder Canal Basin. Because of the size of the drainage basin and the number of landowners involved in the project it was considered a regional BMP effort. $50,000 from the Grant Program was awarded for this project. The BMPs consisted of: the removal of sediments and the cleaning of 7 miles of the Toney Strand Waterway and the replacement or addition of 8 structures. These structures included sediment boards and headers to slow velocities and decrease sediment

transport. Sediment collection sumps were installed upstream of each structure to prevent sediment movement downstream. Cattle crossings were added to minimize cattle activities in the waterway. Structures were strategically placed to provide each landowner with the ability to hold water during the dry season.

Aerial overview of the Southern Portion of the Toney Strand Project before construction.

Toney Strand Project before sediment removal.

The picture above depicts cattle crossing within the Toney Strand Project before construction.

The picture above depicts a portion of the Toney Strand Project after sediment removal and cleaning.

A cattle crossing installed on the Toney Strand. The crossing reduces cattle access within the waterway.

Culvert with header and sediment boards installed as part of project.

The Howell Farm was the third project selected for funding in Fiscal Year 2002-2003. Howell Farm is a 550 acre row crop and beef cattle operation. The grant program awarded the project 45,000.00 for the construction of two retention areas totaling 101.5 acres. The retention areas treat 390 acres of row crop. Howell Farms forms a portion of the Lard Can Canal headwaters within the Feeder Canal drainage basin.

Howell Farm Project before construction.

Howell Farm Project during construction.

Perimeter berm being constructed around Retention area.

Wildlife abounds in Western Basins Area

MATRIX FOR WESTERN BASINS WATERSHED INITIATIVE

The following Matrix depicts the following: Landowner, project monies provided through the SFWMD partnership with the NRCS (Natural Resource Conservation Service) and the Hendry Soil and Water Conservation District, and total projected future expenditures for projects in the area. The NRCS attempts to develop a Resource Management Systems Plan for each landowner. The plan provides a conservation overview and planning for the entire farm or ranch. Components of the plan include water quality, water quantity, farming practices, BMPs, and wildlife.

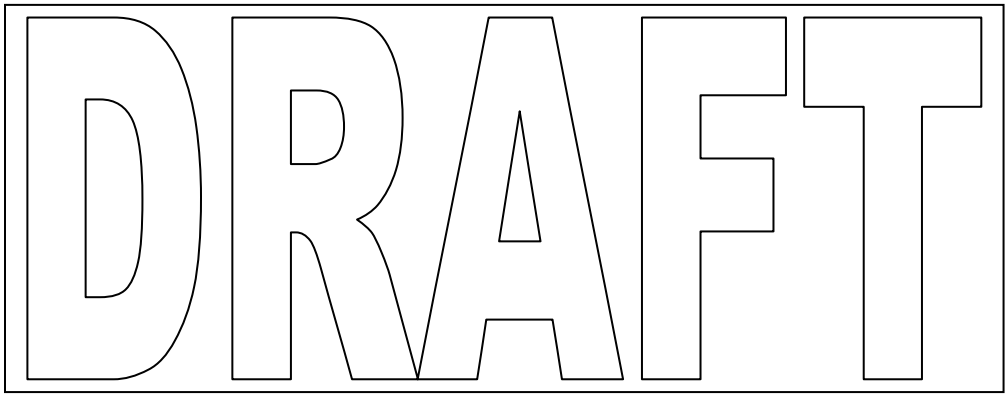
Landowner	2003 WRP Funding	2003 EQUIP Funding	2002-2003 SFWMD Grant	Total Projected Expenditures for Project	Comments
McDaniel Ranch	2.3 Million	0	0	3.3 Million	Landowner constructing large surface water system.
Howell Farms	0	0	45,000	$513,000	Surface water system, RMS plan, additional BMPs, and RMS Plan
Duck Curve Farm	0	0	0	$673,000	Surface water system, and RMS Plan
Crooks Ranch	0	50,000	0	1,453,000	Surface water system and RMS Plan
J-7 Ranch	0	75,000	94,988	900,000	Surface water system and RMS Plan
Giddens Ranch	0	0	0	100,000	Surface water system improvements and RMS Plan
Point of Cypress Farm	0	0	0	2 Million	Surface water system, other bmps, and RMS Plan
Toney Strand	0	0	50,000	300,000	Improve surface water system, additional bmps, RMS Plans on adjacent sub-basins
Seminole Tribe	0	0	0	1 Million	Improve surface water system, additional bmps, and RMS Plans
Miccosukee	0	0	0	100,000	RMS Plans and bmps
Cecil Howell	0	0	0	50,000	RMS Plans and bmps
Golden Ox	0	0	0	500,000	Surface water system, RMS Plan, and additional bmps
US Sugar	0	0	0	1 Million	Improve surface water system, RMS Plan, additional bmps
Mills	0	0	0	50,000	Improve surface water system, RMS Plan, additional bmps
Alico	0	0	0	250,000	Improve surface water system, RMS Plan, additional bmps
Obern Farms	0	0	0	100,000	Improve surface water system, RMS Plan, additional bmps
Zipper Farms	0	0	0	900,000	Demonstration project
Collier Enterprises	0	0	0	200,000	Will pay for project on their own. Pulled out of Grant Program
Graves Brothers	0	90,000	0	200,000	Improve surface water system, RMS Plan, additional bmps
APG Groves	0	0	0	250,000	Reservoir demonstration project, Improve surface water system, RMS Plan, additional bmps
Frank Smith	0	0	0	200,000	Improve surface water system, RMS Plan, additional bmps
Giddens Boundary	0	0	0	35,000	Improve surface water system, RMS Plan, additional bmps
Giddens Lard Can	0	0	0	35,000	Improve surface water system, RMS Plan, additional bmps
Jackman Ranch	0	0	0	50,000	Construct reservoir system, RMS Plan, additional bmps
2004 Inner Basin and Project Water Quality Monitoring	0	0	0	30,000 a year	Water quality sampling within the basin and water quality sampling for each project selected for Grant Program
Proposal: Evaluating Canal Vegetation and Sediments in C-139 Basin	0	0	0	45,000	Research proposal.
C-139 Basin Sediment Removal Project	0	0	0	200,000 a mile	Regional bmp project. Removing sediments from C139 Basin conveyance system.
L-28 I Modifications	0	0	0	37 Million	L-28I Diversion Project
Miccosukee Water Management Area	0	0	0	500,000	Regional BMP Project
Hendry Soil and Water Board	0	0	0	5%	Hendry Soil and Water Board provides contract administration for 5% of SFWMD Grants

Technical Publication

WESTERN BASINS BMP INCENTIVE PROGRAM SAMPLING ANALYSIS PLAN

September 15, 2003

Project Manager: Steve Sentes, Lead Regulatory Representative Specialist
Water Quality Manager: Barbara Powell, Senior Environmental Scientist



Everglades Storm Water Program
South Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406

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SAMPLING AND ANALYSIS PLAN

This Sampling and Analysis Plan is to augment specific references to other Manuals and Standard Operating Procedures. The primary source for these referenced Standard Operating Procedures is the South Florida Water Management District's Field Sampling Quality Manual (FSQM) (SFWMD 12/01/02) and Laboratory Quality Manual (12/31/03) as defined to meet the Florida Department of Environmental Protection (FDEP) FAC 62-160 requirements.

Field and lab procedures are expected to follow the quality system, documentation and other requirements outlined in DEP-SOP-001/01 (Field Procedures) and DEP-SOP-002/01 (Laboratory Procedures). Laboratory analyses shall comply with the applicable standards of the National Environmental Laboratory Accreditation Conference 62-160.300 Laboratory Certification.

1.1. Introduction

The purpose of the Everglades Regulation Division's Storm Water Program is to ensure that water quality standards are met at all structures (other than those included in the Everglades Construction Project) that discharge into, within, or from the Everglades Protection Area by the end of 2006. This mandate provides an impetuous for a detailed and well thought-out sampling analysis plan that will document water quality improvements through various initiatives. This Sampling Analysis Plan (SAP) will detail the planning, implementation, assessment and reporting of the water quality data before sampling begins.

1.1.1. Project Description

The Western Basins Area is located in South Central Florida and includes the Feeder Canal, L-28, and L-28 Gap Basins. In addition to the Western Basins, the project includes the adjacent C-139 Basin (part of the Everglades Forever Act ECP Project). These basins consist of over 430,000 acres of mostly agricultural lands that discharge into the Everglades Protection Area. See Map (Figure1: Western Basins Map).

There are currently two regulatory programs in the Western Basins that are based upon the Everglades Forever Act (EFA). They are the Everglades Storm Water Program (ESP) and the C-139 Basin Program. Both target improving water quality by implementing Best Management Practices (BMPs). While the ESP is a volunteer BMP program that includes the L-28, Feeder Canal, and the Gap or Tieback Basins. The C-139 Basin Program is a mandatory BMP program based on a rule adopted for that particular basin in accordance with the EFA. To maximize basin participation and provide incentives for improving water quality within this area, the Western Basins BMP Incentive Program was proposed and authorized by the South Florida Water Management District (SFWMD).

The goal of this Program is to support the landowners in reducing nutrient loading through a partnership providing technical assistance in designing on-farm conservation plans, developing water quality improvement strategies, and implementing appropriate BMPs for this Western Basin Area.

1.1.2. Project Scope and Purpose

1.1.2.1. Purpose

This Program intends to create an incentive for local landowners and stakeholders to effectively implement pre-approved water quality improvement strategies and BMPs. While this effort will result in several work products, it is the development of a water quality monitoring network which will be the focus of this Sampling Analysis Plan.

It is expected that the initial period of data (two years) will provide a reference point from which future water quality monitoring can be evaluated.

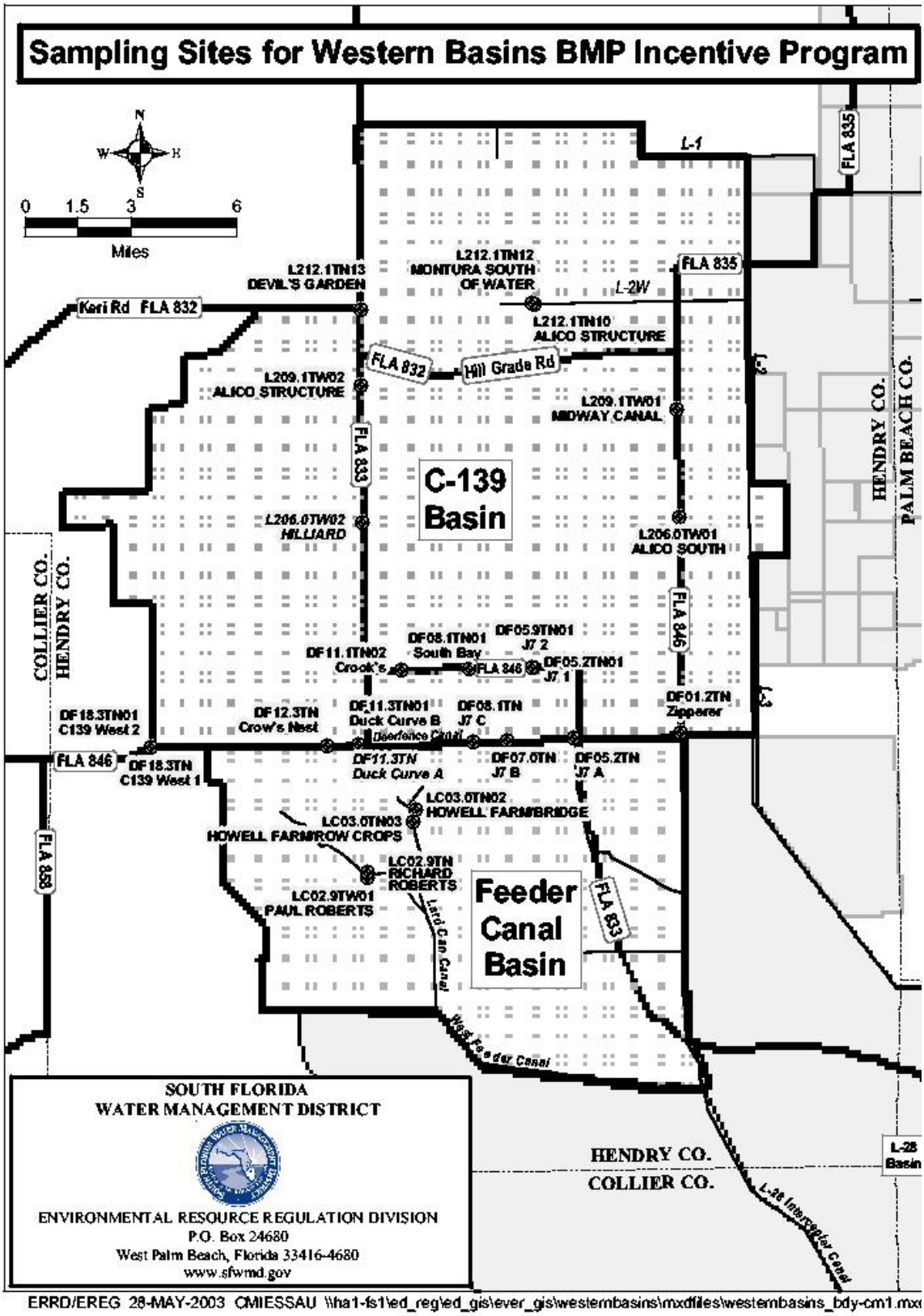

Figure1: Western Basins Area

1.1.2.2. Anticipated Length

Sampling for each selected project will begin before the completion of the on-farm conservation plan and BMPs. Once a project is selected for construction, an initial water quality sample will be taken prior to its completion. Each project will then be sampled for a period of at least two (2) years.

1.1.2.3. Projected Schedule for the project

The schedule of sampling for this project is based on discharge and will therefore be regulated by rainfall within the Basins. However, the frequency of sampling will be no greater than bi-weekly (every two weeks). Based on past sampling results in this land area, this frequency of sampling should yield enough variability in the nutrient analyses to detect a change from one year to the next.

1.1.3. Project Organization

Key positions for this project are listed below.

Everglades Regulation

Division Director	Pamela Sievers, P.E.

Everglades Storm Water Program

Senior Supervising Engineer	Currently Vacant
Lead Regulatory Representative Specialist	Steve Sentes
Regulatory Professional	Robert Pearce
Senior Engineer	William Donovan
Senior Environmental Scientist	Barbara Powell

Key responsibilities for the collection of water quality samples, field measurements, laboratory analysis, data validation and reporting and documentation are outlined in Table 2.1 of the Field Sampling Quality Manual (FSQM) 2002. Specifically, for this project the following tasks are listed below.

Sr. Supervising Engineer

Responsible for the allocation of Division resources, overseeing all field units within the Division. Ensuring that all mandate requirements are met and that monitoring programs are within compliance and reporting of results meet the needs of end user.

Lead Regulatory Representative Specialist

Responsible for managing project/Contract Management Unit, budgeting and resource allocation within the unit, and overseeing the development and management of contracts, projects and reports. Responsible for collecting water quality samples, managing field sampling and data collection unit, ensuring samples are collected using proper protocols, maintain, calibrate, and tracks documentation for field sampling equipment, tracking inventory, documentation and reviewing field data. Notifies the Senior Supervising Professional immediately and in writing of any known QA/QC deficiencies.

Senior Environmental Scientist

Responsible for designing sampling network, detailing Sampling Analysis Plan, collecting water quality and field parameter samples, ensuring complete documentation, transporting samples, reviewing of field and laboratory data, analysis of data, and report formulation. Takes corrective action that may be required by audit findings and reports such findings with corrective actions to the ESP management.

1.2 Data Quality Objectives (DQO)

Under this BMP Program when a project is selected for funding, the Data Quality Objectives (DQOs) that outline the planning, implementation, assessment and reporting of water quality data are established before the water sampling begins.

Since the Data Quality Objective (DQO) process is a strategic, systematic process for planning scientific data collection efforts, the process should be able to answer the following questions (Research Triangle Institute, 2002)

- Why are the data needed?
- What must the data represent?
- How will the data be used?
- How much uncertainty is tolerable?

1.2.1. Data Need

The data for this project are needed to support decision-makers in the continuation of a voluntary BMP incentive program for the Western Basins in the Everglades Storm Water Program (ESP).

1.2.2. Data Use

The water quality monitoring for this project is the collection of physical and chemical characteristics for identifying certain nutrient concentrations discharging from farm-level BMPs. Because there will be no qualification over contributing factors such as climate conditions (rainfall, temperatures) or fate and transport of nutrients, this monitoring effort will be considered ***reconnaissance monitoring***. It is not expected that the level of water quality sampling design for this project will be able to determine trends, statistical differences, or actual pollutant loads from the farm-level.

It is expected that the result of this level of monitoring will be used to target additional resources available for the encouragement of BMPs within farm-level management.

The intended objectives of the data for this project are to provide the following:

- The static assessment of current water quality status before the implementation of BMPs,
- Identification of potential problem areas, or 'hotspots',
- A basis from which to direct resources, and
- The future ability to evaluate the effectiveness of the program.

It is expected that a successful water quality program meeting the above-intended uses will allow the Project Manager to effectively evaluate the potential success of this Western Basins' BMP Incentive Program.

1.2.3. Databases/Data Repositories

1.2.3.1. Repository of data

After the data validation process, all data is maintained so those end users can retrieve and review all information relative to a sampling event. Field notes are maintained on an internal server either by scanning actual field note pages or by uploading narratives from field computers. All analytical data and field conditions are sent to DBHYDRO, the District's database for long term storage and retrieval or a comparable database.

1.2.3.2. Assurance of data accuracy

The Water Quality Monitoring Division maintains records of field notes and the Water Quality Analysis Division maintains all records relative to the chain of custody and analytical data. It is the responsibility of each division to maintain both current and historical method and operating procedures so that at any given time the conditions that were applied to a sampling event can be evaluated.

1.2.3.3. Verification of the data

Verification of the data for DBHYDRO water quality database is listed in Sect. 8.2 of the FSQM, 2002. This review and assessment is based upon standard acceptance criteria and incorporates both laboratory and field collection quality and data are assessed for acceptability into applicable water quality database.

1.2.4. Expected Data Quality

Assessing water quality data for this project and its adequacy to meet the above stated objectives will be based on the sampling location and number of sites selected. This selection will be determined by the number of contributing water tributaries and other factors such as, land area, land use, water conservation systems, rainfall events, possible contributory sources of pollution, and parameter limits.

Based on past synoptic surveys for Total Phosphorus, the mean number of samples sufficient to detect changes from one period to the next (in this case, the period is a year) is expected to be twenty per year. Given the past rainfall/discharge events, this is a reasonable amount of samples that are expected to be collected.

1.2.4.1. Analytes

The analytes of concern for this project are Total Phosphorus (TP), Total Kjeldahl Nitrogen (TKN) and Nitrite+Nitrate as N (NOX). The laboratory Minimum Detection Level of 0.002 mg/L for TP is more than sufficient to meet the expected levels for land use in the Western Basins. It is anticipated that there will be a high variability reflected in both the temporal and spatial factors, but this is taken into consideration when determining the number of samples needed to detect change from one period to the next. See Table 1: Test Methods.

1.2.4.2. Field Parameters

In-situ physical parameters are measured with a multiparameter measurement instrument (HydroLab Surveyor and Data Sonde 4a) and the sampler will follow the provisions for physical data collection as described in the Field Sampling Quality Manual (FSQM) (SFWMD, 12/01/02). All field measurement data are directly read from the instruments and field notes are entered into the Laboratory Information Management System (LIMS). These measurements include pH, specific conductance, dissolved oxygen, temperature and depth of sample. The data are automatically temperature-compensated for pH, specific conductance, and dissolved oxygen. The cell constant for specific conductance is determined by the manufacturer. The field technician calibrations as required by the FSQM (12/02) and will not be calibrating in the field.

These parameters are generally expected to be variable and possibly correlated to water quality nutrients.

1.2.4.3. Sampling Design

Based on past survey type data for this land area, the prescribed sampling analysis plan should supply sufficient information to reach the above stated goals under the Data Quality Objectives. That is; to assess current water quality status, to identify potential ‘hotspots’, to evaluate effectiveness of the BMP and to be able to direct resources to these identified ‘hotspots.’

1.2.4.4. Quality Control Measures

The District follows the Field Sampling Quality Manual (SFWMD, 12/01/02) and the Florida Department of Environmental Protection’s Field Standard Operating Procedures DEP-SOP-001-01 per the DEP Quality Assurance Rule, 62-160.200 & 62-160.320, F.A.C. Quality control procedures are included to ensure that the required precision, accuracy, and reliability levels for this project are met. The quality control measures that will be used are Equipment Blanks (EB) and Field Duplicates (FD) to assess proper equipment cleaning and sampling techniques. Completeness of the field header sheets and calibration logs will be reviewed. Proper preservation of the samples will be verified through laboratory sample checks.

For each sample collection trip, one equipment blank (EB) is required. One duplicate sample (RS) set is required per quarter. These quality control terms are defined as follows:

- **Equipment Blank (EB)** - A sample composed of deionized water (one liter or enough to fill one set of all containers) that is used to rinse all sampling equipment at the first field site before a field sample is taken. One EB is required per sampling event. Equipment blanks are prepared by pouring deionized water into the sample collection container and through each piece of sampling equipment. The equipment blank for grab samples is filtered, preserved and handled as a routine sample
- **Replicate Sample (RS)** - Two distinct samples in addition to the regular sample collected nearly simultaneously from the same site. One RS set will be collected quarterly from one location per project.

The field sampling personnel are responsible for following the sampling procedures and reviewing, filling out and signing all forms and logs correctly and completely. The Senior Scientist is responsible for reviewing field data entries for accuracy. The Senior Regulatory Professional is responsible for assuring that the field data quality objectives for his/her specific project(s) are being met

The Laboratory QA Officer is responsible for reviewing the quality of the sampling event and the analyses performed for each event. A Staff member of the Water Quality Analysis Division validates all data qualifications/flags. This is done through initial data review following analysis and review of the field quality control results for adherence to established standards. Data that have been finalized are then sent to the LIMS administrator and database analysts.

Staff from the District's Water Quality Analysis Division may conduct audits of the field activities of District employees. Audits are performed to provide feedback to field personnel and/or project managers and ensure that corrective measures are taken for any deficiencies listed.

1.2.5. Test Methods with Precision and Accuracy

Table 1.2: Test Methods

Component	Analytical Method #	Precision (% RPD)	Accuracy (% Rec.)	MDL (mg/L)
Nitrate + Nitrite	SM4500-NO_3^- F	0 – 5	90 – 110	0.004
Total Kjeldahl Nitrogen	EPA 351.2	0 – 10	90 – 110	0.5
Total Phosphorus	SM4500-P F	0 – 5	90 – 110	0.004

1.3 Data Quality Indicators (DQI)

1.3.1 Quantitative DQIs

This Sampling Plan has considered the five attributes of data quality adapted by USEPA, precision, accuracy, representativeness, completeness and comparability, known by the acronym PARCC. To address these characteristics, Table 1.1 (Test Methods) details the acceptable range for precision and accuracy expected for this project.

The representativeness of the sampling is limited to accessibility of the sites, but it is expected that the chosen sampling locations will be sufficient to capture discharge from that particular land area.

The completeness of the planned data is expected to be within 95 to 100 percent. That is to say, the percent of data lost due to equipment or sampling failure is expected to less than 5 percent, due, in part, to the use of manual grab sampling.

It is the comparability of data sets over time that will limit the use of the data in establishing trends over time. Although the laboratory precision is more than adequate, it is the field variability of TP concentrations that will limit their use in determining water quality trends. Given the range and variability of the TP data, and the inability to control for field conditions (i.e., rainfall, transport, temperatures, etc.,), the data will only be used for detecting a change from one year to the next. To achieve this goal, it is expected that at least 20 samples per year will be needed.

1.3.2. Qualitative DQIs

Only those data that can be reasonably defined as not being representative or comparable to known water quality for that land area, based upon supporting field sampled parameters and sampler observations will be flagged within the database. This review will be made by project managers and laboratory reviewers.

1.3.3. Quality Control Measures

The frequency of this Lab Quality Control Checks are listed in Table1.3 (Laboratory QC)

1.3.3.1 Laboratory Quality Control Checks

Laboratory Quality Control Measures according to the South Florida Water Management District (SFWMD) Laboratory Quality Manual (02/03) is listed in Table 1.3 (Laboratory QC). These controls include the use of, Method Blanks, Matrix Spike Samples, Quality Control Check Standards, and Replicate or Duplicate Samples

Table 1.3: Laboratory QC

Type	Frequency (All parameter groups)
Method Reagent Blank	1 per sample set (batch)
Matrix Spikes (spike added prior to sample preparation)	At least 1 per run and 1 per 20 samples analyzed; if more than one matrix, 1 from each matrix.
Quality Control Check Samples (PE)	Blind Performance Evaluation Samples- analyzed in duplicate at least semiannually*
Quality Control Check Standards (QC)	Analyzed at the beginning of each analytical run to verify standard curve. One QC is also analyzed at the end of the analytical run.
Duplicate Samples (Dup or Rpt)	At least 1 per run and 1 per 20 samples analyzed; if more than one matrix, 1 from each matrix.
Spike Duplicate (Spk. Dup)	Used in place of Dup or Rpt when analyte is suspected to be <10xMDL for a reasonable precision assessment, ex. Trace metals, Hg, NO_2.
Continuing Calibration Standard (CCV)	1 per 20 samples in an analytical set (at least one in each batch is at a concentration of 1-2 times the PQL).

1.4 Field Activities

1.4.1. Sampling Design

The location of grabs samples are selected to support the Data Quality Objectives, e.g., assessing current water quality status, identifying potential 'hotspots', and evaluating 'relative' effectiveness of the BMP. Past synoptic surveys provide a basis from which to select locations to meet the above objectives.

As this project will be storm-event driven, the total number of sampling locations will be limited to a single, sampling day. It is estimated that given the area, twenty to twenty-five (20-25) sites will be selected for each sampling event.

The frequency of grab sampling for a storm event will be based on farm-level discharge.

1.4.2. Sampling/Test Locations

The site location map is shown in Figure 1. Western Basins' BMP Sampling Locations.

Each sampling location is identified with the registered site name and the land owners' name for ease in field identification. Further, each location will be registered with DBHYDRO as a site name, latitude and longitude reference and site description. See Appendix 1. Western Basins BMP Sampling Sites

All sites are to be sampled as specified in District's Field Sampling Quality Manual (SFWMD, 12/01/02) using a grab sampler. The analyses will be for the above listed nutrients and *in situ* parameters of temperature, dissolved oxygen, specific conductance and pH.

1.4.3. Sample Collection Methods

The District has adopted the Florida Department of Environmental Protection's Field Standard Operating Procedures DEP-SOP-001-01 per the DEP Quality Assurance Rule, 62-160.200 & 62-160.320, F.A.C. These procedures replace the District's 1999 Comprehensive Quality Assurance Plan. Applicable sections of the SOP include surface water sampling collection methods, decontamination, field test methods and quality control procedures.

This project will use the collection of surface water samples via a collection bucket or dipped directly into the stream of water. All collection equipment will be included in the appropriate equipment blank or field blank (if directly collected into the sample bottle).

1.4.4. Field Testing Activities

All anticipated test measurements to be conducted in the field are referenced in Field Sampling Quality Manual (SFWMD, 12/01/02). Documentation of all activities will be recorded with the Header Sheets.

1.4.5. Equipment

The equipment to be used for sample collection includes;

- Horizontal sampling bottle
- Plastic buckets
- 60 ml disposable syringes
- Disposable 0.45 micron filters

1.4.6 Testing Equipment

- Hydrolab, Surveyor IV
- Datasonde 4a multiprobe

1.5. Laboratory Activities

1.5.1. Laboratory Certification

The South Florida Water Management District's Environmental Laboratory Certification Program certificate is E46077.

DOCUMENTATION, RECORD KEEPING REQUIREMENTS

All laboratory and field records and data will be retained for at least 5 years after the completion of the project.

2.1. Documentation

2.1.1. Field notes

Documentation for field activities shall be consistent with the District's Field Sampling Quality Manual (SFWMD, 12/01/02). Field notes are documented using a permanent marker by field staff in a bound water proof notebook, known commonly as a "black book". The project manager is responsible for reviewing the field notes for accuracy immediately after a sample event. They are than electronically scanned into the District's server.

2.1.2. Sample header sheets, including data from in-situ measurements

Header sheets contain all field information about the samples collected. Original header sheet forms are retained by the laboratory. The project manager reviews all header sheets for accuracy by comparing it to the black book notes. These two documents should be in agreement with one another. The project manager reviews the data in LIMS against the header sheet for accurateness.

2.1.3. Equipment/instrument Calibration, Maintenance and Troubleshooting Logs

Laboratory and field staff must record all calibration information on properly designated calibration logs. Field equipment calibration logs are maintained by the project manager and kept in the office area. Field parameters calibration information is documented on the last page of the LIMS generated header sheet. Calibration logs are kept with the header sheet and login report files.

2.1.4. Laboratory

Records of all laboratory activities will be consistent with the District's Laboratory Quality Manual (SFWMD, 02/30/03).

2.2. Organization

2.2.1. Project Records

The laboratory and field records for a project will be linked so that information on the project can be easily and quickly retrieved. Field Notes will be kept in a bound, water-proof paper book specific to this project. All Header sheets will be archived in the District's LIMS database. All field instrument calibration sheets will also be kept in the District's LIMS database.

An electronic tracking report format will be developed for this project that will include the lab results, the sampling plan, the sampling locations, maps and historical data.

REPORTING REQUIREMENTS

3.1. Format

3.1.1. Laboratory Report Format

The laboratory report format for this project is detailed in the District's Laboratory Quality Manual (02/03) and is consistent with Section 5.13 of the NELAC standards.

3.1.2. Field Information

The field information and test measurements will be submitted in the Header Sheets and Field Notebook as detailed in the SFWMD Field Sampling Quality Manual (12/03).

3.2. Report Contents

In addition to the laboratory reports and field information for this project, annual project reports will be written with details as listed below.

3.2.1. Physical Considerations

- Legal Description
- Site Maps
- Total acreage
- Land uses
- Brief description of on-site drainage and conveyance system
- Structure descriptions (culvert, etc.)
- Description of Conservation Plan
- Before and after construction photos
- BMPs implemented on farm
- Sample Analysis Plan

3.2.2. Water Quality Monitoring

- Map of water quality sites
- Water quality report as described above (includes, sample dates, sample methods, calibrations of test equipment, parameters sampled, flow conditions, weather conditions, canal water conditions, samplers name, preservation methods and amounts, etc.)

3.2.3. Laboratory Related Data

All laboratory data will be reported according the SFWMD Laboratory Quality Manual (02/03).

QUALITY CONTROL REQUIREMENTS

4.1. Quantitative Data Quality Indicators

All quality control measures specified by the NELAC standards, the District's standards operating procedures and any other project specific requirements shall be implemented.

Each Quality Control measure shall be assessed against acceptance criteria and corrective actions taken if any criterion is not met.

Data that are associated with an unacceptable Quality Control measure must be appropriately qualified.

All Quality Control reviews, assessments and corrective actions shall be documented.

4.2. Comparison Checking

All comparison checking will be performed according to the District's standard operating procedures as specified in the Laboratory Quality Manual (02/03).

APPENDIX II - REFERENCES

The following documents are used to support this set of criteria:

South Florida Water Management District

"Department of Environmental Protection Standard Operating Procedures for Field Activities", DEP-SOP-001/01 (January 1, 2002), Florida Department of Environmental Protection, Bureau of Laboratories, Environmental Assessment Section. This document is a compendium of standard operating procedures with the following major topics:

- FA 1000: Regulatory Scope and Administrative Procedures for Use of FDEP SOPs;
- FC 1000: Cleaning / Decontamination Procedures;
- FD 1000: Documentation Procedures;
- FM 1000: Field Planning and Mobilization;
- FQ 1000: Field Quality Control Requirements;
- FS 1000: General Sampling Procedures;
- FS 2000: General Aqueous Sampling;
- FS 2100: Surface Water Sampling; and
- FT 1000: General Field Testing and Measurement.

"Department of Environmental Protection Standard Operating Procedures for Laboratory Activities", DEP-SOP-002/01 (January 1, 2002), Florida Department of Environmental Protection, Bureau of Laboratories, Environmental Assessment Section:

- LD 1000: Laboratory Documentation;
- LQ 1000: Laboratory Quality Control; and
- "EPA Requirements for Quality Assurance Project Plans", EPA QA/R-5 (EPA/240/B-01/003, March 2001), United States Environmental Protection Agency.
- "National Environmental Laboratory Accreditation Conference Constitution, Bylaws and Standard", approved July 1999, EPA 600/R-99/068, United States Environmental Protection Agency.

APPENDIX III- DATA QUALITY FLAGS

The following qualifier codes maybe used for all field and laboratory data generated for SFWMD environmental data.

Flag/ Remark Codes	Definition
PMR	Flag set at project manager's request; non-fatal qualifier
PMF	Flag set at project manager's request; fatal qualifier
A	Value reported is the mean (average) of two or more determinations. **Non-fatal qualifier code.**
B	Results based upon colony outside the acceptable range.
F	When reporting species : F indicates the female sex
H	Value based on field kit determination: results may not be accurate.
J	Estimated value: value not accurate.
K	Off-scale low. Actual value is known to be less than the value given.
I	The reported value is between the lab method detection limit and the lab practical quantitation limit. **Non-fatal qualifier code.**
?	Data is rejected and should not be used.
*	Not analyzed due to interference
D	Measurement was made in the field (i.e. in-situ).
E	Indicates that extra samples were taken at composite stations.
R	Significant rain in the past 48 hours.
!	Data deviates from historically established concentration ranges.
L	Off-scale high. Actual value is known to be greater than value given.
M	When reporting chemical analyses: presence of material is verified but not quantified: the actual value is less than the
N	Presumptive evidence of presence of material.
O	Sampled but analysis lost or not performed.
Q	Analysis done after the approved holding time.
T	Value reported is less than the laboratory method detection limit.
U	Indicates that the compound was analyzed for but not detected. **Non-fatal qualifier code.**
V	Indicates that the analyte was detected in both the sample and the associated method blank.
Y	The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
Z	Too many colonies were present (TNTC), the numeric value represents the filtration volume.
J1	Surrogate % Rec. Exceeded
J2	No Known QC Criteria Exists
J3	Precision or Accuracy Criteria Not Met
J4	Matrix Interference
J5	Improper Lab or Field Protocol

APPENDIX IV-WESTERN BASINS' BMP SAMPLING LOCATIONS

	Station	Description	Latitude Coordinate (DDMMSS.SSS)	Longitude Coordinate (DDMMSS.SSS)
1	L212.1TN13	Devil's Garden Discharge east to L2 West	263619.128	810738.306
2	L209.1TW02	Alico Structure Discharge east to L2 Canal	263428.452	810737.228
3	L207.6TW02	Alico Gator Discharge east to L2 Canal	263227.120	810735.880
4	L206.0TW02	Alico Southwest Discharge east to L2 Canal	263108.970	810734.832
5	DF18.3TN	C139 West 1 Discharge east to Deer Fence	262540.924	811323.686
6	DF18.3TN01	C139 West 2 Discharge south to Deer Fence	262541.494	811323.424
7	DF12.3TN	Crow's Nest Discharge north to Deer Fence	262543.679	810833.356
8	DF11.3TN	Duck Curve A Discharge east to L3 Canal	262544.8667	810741.739
	DF11.3TN01	Duck Curve B Discharge east to L3 Canal (Preferred site but choked out by weeds at present)	262545.227	810741.877
9	LC02.9TN	Richard Roberts Discharge east to end of Toney Strand to Lard Can	262230.285	810726.242
10	LC02.9TW01	Paul Roberts Discharge east through Toney Strand at Y in Road	262238.285	810726.242
11	LC03.0TN02	Howell Farm Discharge south to WWeir at Bridge under FPL Lines	262409.500	810606.250
12	LC03.0TN03	Howell Farm/Row Crops Discharge east to Lard Can then south	262352.854	810609.421
13	DF11.1TN01	Crook's Discharge south to Deer Fence	262733.792	810630.653

14	DF08.1TN01	South Bay Discharge south to Deer Fence	262735.920	810438.139
15	DF05.2TN01	J7 1 Discharge south to Deer Fence	262737.128	810253.201
16	DF05.9TN01	J7 2 Discharge south to Deer Fence	262737.207	810253.348
17	DF05.2TN	J7 A Discharge south to Deer Fence	262554.247	810145.292
18	DF07.0TN	J7 B Discharge south to Deer Fence	262550.544	810334.916
19	DF07.5TN	J7C Discharge south to Deer Fence	262549.320	81047.920
20	DF08.1TN	South Bay South Crossroad culvert. Discharge south to Deer Fence	262548.680	810431.900
21	DF01.2TN	Zipperer Discharge East to L3 Canal	262602.645	805849.420
22	L206.0TW01	Alico South Discharge East to L2/L3 Canal	263117.437	805851.703
23	L209.1TW01	Midway Canal Discharge east to L2 Canal	263354.283	805855.004
24	L212.1TN10	Alico Structure Discharge east to L2 West	263627.174	810250.335
25	L212.1TN12	Montura South of Water Discharge east to L2 West	263629.444	810254.300

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