Operational Project Monitoring Plan

For

Central Flow-way
Stormwater Treatment Area 2

(STA2)

4/19/2023

4/20/2023

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SFWMD-FIELD-OMP-073-09

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1.0 Project Organization

The following documents define the procedures used by South Florida Water Management District (SFWMD or District) Water Quality Monitoring (WQM) Section personnel to meet the Florida Department of Environmental Protection's (FDEP or Department) Quality Assurance (QA) Rule, Florida Administrative Code (F.A.C.) 62-160, and should be referred to for details on key personnel and relevant responsibilities.

- Overall project organization and responsibilities -
    - SFWMD Water Quality Bureau (WQB) and Applied Sciences Bureau (ASB) Quality Management Plan (QMP).
- Field activity and data validation responsibilities -
    - SFWMD Water Quality Monitoring Section's (WQM) Quality Manual (QM), Field Sampling Manual (FSM), and applicable Standard Operating Procedures (SOP).
- Laboratory analysis and data validation responsibilities –
    - SFWMD Analytical Service's (AS) Chemistry Laboratory Quality Manual (CLQM) and applicable SOPs.

2.0 Project Description

2.1 Project Introduction and Background

This document serves as a reference for surface water quality monitoring for Stormwater Treatment Area Two (STA2). This operational monitoring plan (OMP) includes descriptions of the mandates, frequency of collection, and parameters by station.

This OMP consists of 19 stations which includes four (4) inflow(s), two (2) outflow(s) and two (2) diversion stations (Table 1). The construction, operation and maintenance of this project are mandated by the FDEP. The guidance contained herein is intended to assist in maintaining consistency of sampling locations, parameter lists, and frequencies. In addition, the plan documents the project's scope and provides an ongoing historical perspective.

There are five flow-ways in STA2: 1) flow-ways 1, 2 and 3 in the original STA2, 2) flow-way 4 in the North Buildout (NBO) and 3) flow-way 5 in the South Buildout (SBO). The total effective treatment area for all three flow-ways is 14,919 acres and is divided as detailed in Table 1 and illustrated on Figure 1.

- The original STA2 began operations in 2000 and accepts inflow from the Hillsboro canal through S6 and from privately owned lands through G328. Water is directed into three cells through gated culverts;
    - Cell 1 / Flow-way 1 (2086 acres) has four inflow culverts G329A-D
    - Cell 2 / Flow-way 2 (2406 acres) has seven inflow culverts G331A-G, and
    - Cell 3 / Flow-way 3 (2324 acres) has five inflow culverts G333A-E.

  - Water flows out of Cell 1 through five gated culverts G330A-E and from Cells 2 and Cell 3 through gated spillways (G332 and G334, respectively) north of two common discharge canals.

The treatment area was expanded by 1,902 acres with the construction of Cell 4, which was flow capable by December 2006. This additional treatment cell was later incorporated into the NBO.

- The NBO, or Flow-way 4, began operations in November 2012 and accepts water from the North New River Canal through G434 which flows into gated culverts in Cells 5 (G438A-E) and 6 (G438F-J).
  - Cell 5 (2214 acres) has four outflow culverts G367D-F and G443B, and
  - Cell 6 (1891 acres) has four outflow culverts G367A-C and G443A, which all flow into Cell 4.
  - Cell 4 (1978 acres) discharges to the southern of two common discharge canals through gated culvert G368. Additionally, there is a seepage pump at the G434 pump station to redirect seepage back into the NBO inflow.
  - G337A acts as a divide structure when open, allowing inflow from S6 and G328 to enter the NBO or allowing water from G434 to enter Cells 1 – 3.

The SBO began startup testing in November 2012 and regular monitoring began on 05/22/2013. Water enters from the North New River Canal through G435 and flows into:

- Cell 7 through six gated culverts (G440A-F).
  - The water then flows out of Cell 7 (1559 acres) and into Cell 8 (1475 acres) through three gated culverts (G442A-C).
  - Water leaves Cell 8 through two gated culverts (G441A-B) to the southern of two common discharge canals. G445, a seepage pump station located near the inflow of Cell 8, pulls seepage from the Florida Power and Light (FPL) right of way located between Cell 8 and the L6 canal.
    - Flow was interrupted from January 8, 2014 through August 6, 2014 to allow for grading in Cell 8.
    - Supplemental sampling occurred in Cells 1 and 3 from August 2014 through late 2018 due to one component of the Restoration Strategies Science Plan and to monitor the effects of Hurricane Irma. This was not included in the OMP.

Water from all five flow-ways is collected in the two common and openly connected discharge canals and is discharged to the L6 canal to Western Water Conservation Area 2A (WCA2A) through either G335 or G436.

While also part of CAMB (SFWMD-FIELD-MP-064), S6 has been included within this OMP.

2.2 Sampling Mandates

Station locations, sampling frequencies, and parameters are dictated by the mandate and/or permits governing this project (Appendix 1). Appendix 2 details the Mercury and Other Toxicants monitoring program as required by the Everglades Forever Act (EFA) Permit. There is no Compliance Monitoring Plan (CMP) associated with this project.

As part of the Central Flow-way for the Everglades Construction Project, STA2 is subject to

- the Everglades Forever Act Permit (EFA 0311207) and
- the National Pollutant Discharge Elimination System Industrial Wastewater Facility Permit (NPDES FL0778451)

both effective on September 29, 2022 and expiring on September 29, 2027.

S6, G335, and G436 are subject to the Settlement Agreement: parameters and frequencies are overseen by the Technical Oversight Committee. Additionally, TP is collected at S6, G328, G434 and G435 on a weekly basis for the Chapter 40E-63, Florida Administrative Code (F.A.C.).

2.3 Project Objectives

The primary objectives of this monitoring project are to evaluate water quality status and trends within the STA. The water quality data obtained under this program will be used to:

- assess compliance with applicable water quality standards and phosphorus discharge limits,
- aid in determining the nutrient concentrations to quantify the tons of nutrients removed by the STA annually, and guide mid- and long-term resource management decisions for nutrient removal capabilities of the STA.

2.3.1 Modification or Termination Conditions

The monitoring described herein will continue as required by the EFA 0311207 and NPDES FL0778451 permits, which are renewed once every five (5) years. Conditions for modification or termination of the project are detailed in the mandates that specify the conditions of the project.

Monitoring for operations will continue indefinitely in support of the project goals and objectives. Monitoring may increase or decrease over time, depending upon individual cell operations, data results, end user needs and permit requirements. Short-term changes to collection events may be made as a result of an extreme weather conditions (i.e., droughts and tropical storms/hurricanes), other safety concerns, or construction activities. Periodically, for adaptive management of the

STA and the Science Plan, special monitoring is requested. Monitoring requests, when applicable, shall be approved by the EMRT.

3.0 Geographic Location

3.1 Regional Area

STA2 is located within western Palm Beach County (Figure 1).

3.2 Station Location and Access

Monitoring stations are depicted in Figure 1 with locations described in Table 1.

The gates on roadways into STA2 are secured with a District "1W" lock. The lock requires a "1W" lock key, which can be obtained through a request made through the Field Project Manager (FPM) and/or Science Technician Supervisor.

Table 1: STA2 Surface Water Monitoring Stations and GPS Coordinates

Station	Latitude (ddmmss.sss)	Longitude (ddmmss.sss)	Description
G328	262702.535	802757.727	Pump station discharging EAA water into the Supply Canal for inflow into STA2; approximately 2 miles southwest of S6. Also can pump water from STA2 for irrigation.
G329B	262515.146	802923.299	Four gated culverts labeled G329A to G329D accept inflow to Cell 1 of STA2. G329B is inflow culvert to Cell 1.
G330D	262246.04	803123.691	Five gated culverts labeled G330A to G330E discharge water from Cell 1. G330D is an outflow culvert from Cell 1 of STA2.
G331D	262514.994	803102.815	Seven gated culverts labeled G331A to G331G accept inflow to Cell 2 of STA2. G331D is inflow culvert to Cell 2.
G332	262248.031	803138.478	Outflow spillway from Cell 2.
G333C	262514.706	803242.059	Five gated culverts labeled G333A to G333E accept inflow to Cell 3 of STA2. G333C is inflow culvert to Cell 3.
G334	262245.632	803141.361	Outflow spillway from Cell 3.
G335	262244.593	803049.481	Outflow pump station discharging into the L-6 canal from STA2 and Comp B
G337A	262514.760	803317.057	Optional North Buildout Inflow from the Hillsboro Canal through S6 and G328. This structure can also supply STA2 with inflow water from the North New River Canal.
G338	262812.298	802643.587	Gated spillway structure located in the Hillsboro Canal downstream of the S6 pump station. This structure can divert water to WCA2.
G339	262750.945	802707.354	Gated spillway structure located at the confluence of the STA2 inflow canal and the L6 borrow canal. This structure is intended to move water from the S6 and G328 pump stations to the L6 borrow canal.
G368	262240.785	803322.153	STA2 North Buildout outflow from Cell 4 to G335 or G436.
G434	262603.962	803641.967	North Buildout inflow pump station located on the North New River Canal.
G435	262237.385	803402.856	South Buildout Inflow Pump Station located on the North New River Canal
G436	262237.323	803056.838	Outflow pump station discharging into the L-6 canal.

Station	Latitude (ddmmss.sss)	Longitude (ddmmss.sss)	Description
G438D	262607.136	803503.930	Five gated culverts labeled G438A to G438E accept inflow to Cell 5 of North Buildout. G438D is inflow culvert to Cell 5.
G438I	262607.531	803311.692	Five gated culverts labeled G438F to G438J accept inflow to Cell 6. G438I is inflow culvert to Cell 6.
G441	262238.579	803114.842	South Buildout outflow gated culvert from Cell 8 to G335 or G436
S6	262819.254	802645.361	STA2 primary inflow pump station located on the Hillsboro Canal.

The standard positional goal for station coordinates is detailed in the Establishing & Verifying Water Quality Monitoring Station Registration SOP (SFWMD-FIELD-SOP-031). The coordinates are relative to NAD83 HARN horizontal datum.

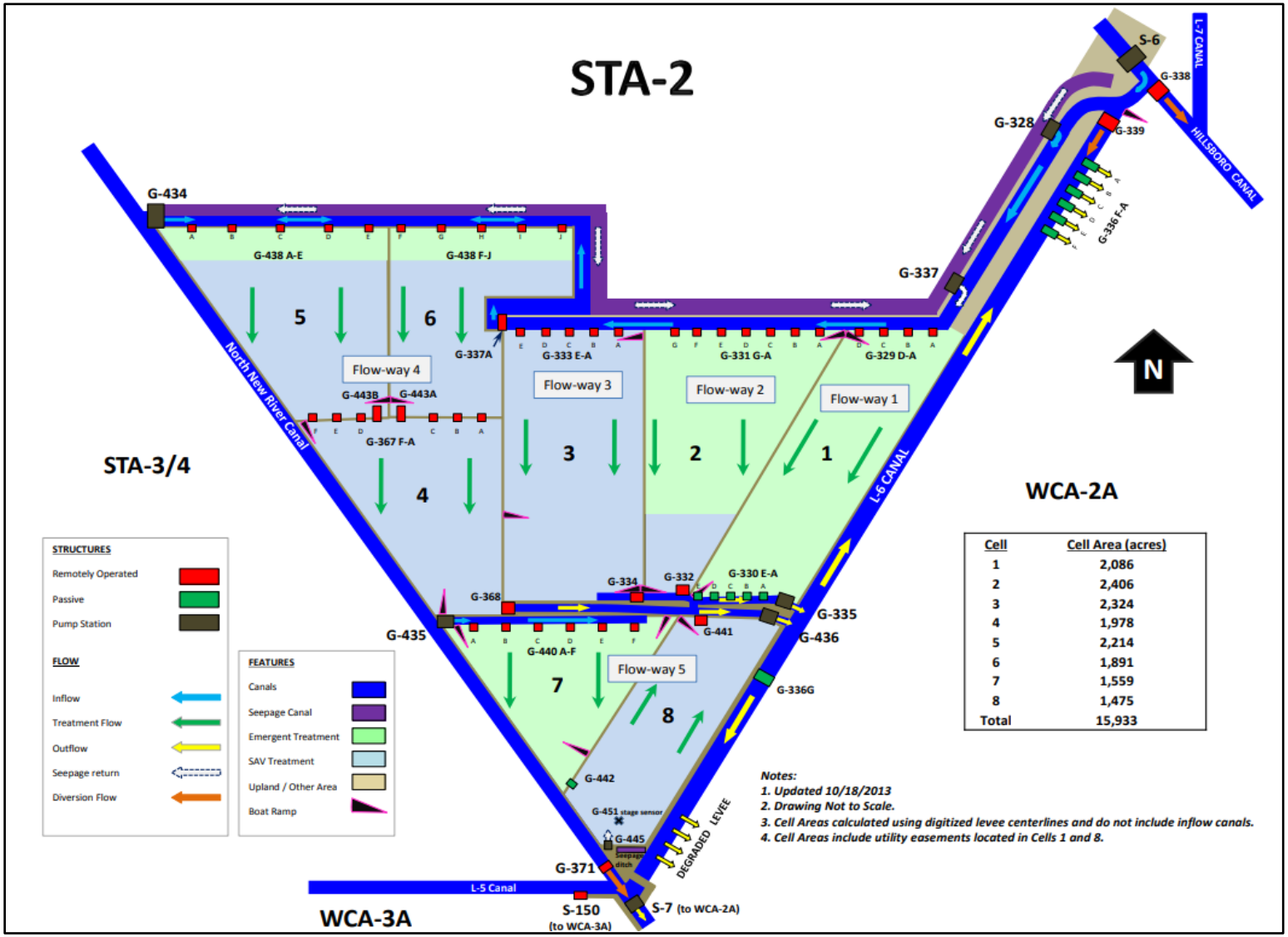

Figure 1: STA 2 Station Locations

4.0 Field Activities

4.1 Monitoring Frequencies and Parameters Collected

All monitoring parameters, frequencies of collection and locations are listed in Table 2.

Stations collected on a frequency determined by recorded flow are sampled following the SOP outlined in the Sampling Flow-Related Stations SOP (SFWMD-FIELD-SOP-027). If no flow (i.e., no operations) is recorded during the prescribed time period, the station is designated as a No Bottle (NOB) sample and the structure is not visited unless other parameters (i.e., TP) are required to be collected regardless of flow. Diversion Structures (G338 and G339) are only monitored if flowing, NOBs are not assigned during nonflow periods.

Table 2: STA 2 Station Frequency and Parameter TESTS

Station	Collection Method	Frequency	Parameter TESTS
Outflow Stations			
G335 **G436**	Grab	Weekly (W)	Dissolved Oxygen (DO*), pH (PH*), Specific Conductivity (SCOND*), Temperature (TEMP*), Total Phosphorus (TP)
		Bi-weekly Recorded Flow (BWRF)	Alkalinity (ALKA), Ammonia (NH4), Total Dissolved Phosphorus (TDPO4), Ortho-Phosphate (OPO4), Total Nitrogen (TN), Nitrate-Nitrite (NOX), Sulfate (SO4), Chloride (CL), Calcium (CA), Total Suspended Solids (TSS), DO*, PH*, SCOND*, TEMP*
		Quarterly (Q)	Dissolved Organic Carbon (DOC)
	Autosampler Composite Flow (ACF)	W	TP
Inflow Stations			
S6[1]	Grab	W	TP, DO*, PH*, SCOND*, TEMP*
		Weekly Recorded Flow (WRF)	ALKA, NH4,CA, CL, DOC, Potassium (K), Magnesium (MG), Sodium (NA), NOX, OPO4, SIO2, SO4, Total Dissolved Nitrogen (TDN), TDPO4, TN, Total Organic Carbon (TOC), TSS
		Q	DOC, Total Iron (TOTFE)
	ACF	W	TN, TP
G328 **G434** **G435**	Grab	W	TP, DO*, PH*, SCOND*, TEMP*
		WRF	CA, CL, NH4, NOX, OPO4, SO4, TDPO4, TN, TSS
		Q	DOC
	ACF	W	TP
Diversion Stations			
G338[2] **G339**[2]	Grab	WRF	ALKA, NH4,CA, CL, K, MG, NA, NOX, OPO4, SIO2, SO4, TDN, TDPO4, TN, TP, TSS, DO*, PH*, SCOND*, TEMP*

Station	Collection Method	Frequency	Parameter TESTS
Flow-way Starts, Ends and Interior Stations			
G330D **G332** **G334** **G368** **G441**	Grab	WRF	CA, OPO4, TDPO4, TP, DO*, PH*, SCOND*, TEMP*
		Q	DOC
G329B **G331D** **G333C** **G438D** **G438I**	Grab	BWRF	CA, TP, DO*, PH*, SCOND*, TEMP*
Divide and Seepage Structure			
G337A	Grab	Monthly Recorded Flow (MRF)	TP, DO*, PH*, SCOND*, TEMP*

*In Situ Grab
[1]May reverse pump under request by STA Operations.
[2]S6 Pump Station is the surrogate sampling point for G-338 and G-339 when these diversion structures are open.

4.2 Project Specific Guidelines

All surface water grab samples are collected on the upstream side of any structure at a depth of 0.5 meters unless collection of a representative sample is inhibited by vegetation and/or other conditions. If an alternative sampling location is required, a consultation with a Science Technician Supervisor and/or the Field Project Manager (FPM) must take place prior to the sampling being collected; this action must be documented in the field notes.

G337A is a divide structure and flow may occur in both directions. Flow originating from S6 shall be considered the upstream location for the purposes of this monitoring plan and flows originating from G434 will be considered as reverse flow for this structure. If STA Operations requests S-6 pump station back flow (i.e., reverse flow); a TP sample will be collected at S6 sampling location and reverse flow documented in the field notes along with any other conditions that could affect sample quality.

4.3 Grab Sampling Procedures

Sample collection for this project shall follow the procedures and requirements found in the *Grab Sampling Protocol* section of the WQM FSM. Project-specific deviations are detailed in Section 4.2.

4.4 Field Parameters

The collection of field parameters follows the procedures and requirements outlined in the *Instrument Calibration and Field Measurements* section of the WQM FSM. Project-specific deviations are detailed above in Section 4.2.

4.5 Field Quality Control Requirements

Field quality control requirements shall follow the procedures found in the *Field Quality Control Measurements and Requirements* section of the WQM FSM. Project-specific deviations are detailed above in Section 4.2.

4.6 Autosampler Collection

Autosampler samples are collected in accordance with the *Autosamplers* section of the WQM FSM. The intake for the autosampler is affixed to a float or structure at a depth.

For this project, samples are collected as flow-proportional (ACF) at the inflow pump stations (S6, G328, G434 and G435) and the outflow pump stations (G335 and G436) as identified in Table 2. Station-specific "trigger volumes" are established through the protocols described by Abtew and Powell (2004). Discrete bottles within each autosampler are pre-acidified and composited on a weekly basis and analyzed for TP.

In addition, flow proportional samples for TN are collected at S6 for the CAMB Project; this autosampler was refrigerated until December 9, 2015. On January 8, 2013, the following autosamplers were decommissioned and these stations are now sampled by grab only: G332, G334, G330D, G337A, G368, G329B, G331D, and G333C. The autosampler at G337 was also decommissioned on January 8, 2013 and monitored by grab only until November 23, 2015 at which time all monitoring at G337 was terminated. Grab monitoring at G440D was also terminated effective November 23, 2015. The autosampler at G441 remained on flow until July 10, 2013 to capture discharges related to seepage and rainfall.

4.7 Sample Submission

When the District laboratory is used, samples are transported to the laboratory and submitted for analyses in accordance with the requirements specified in the WQM FSM. Samples are submitted to the laboratory on the same day as collection or via courier the following day. Sample acceptance criteria are detailed in Section 6 of the CLQM. If samples are submitted to another laboratory it must meet the contract laboratory requirements as specified in Section 5.2 below.

5.0 Data Quality Objectives (DQOs)

5.1 Data Usage and Reporting

The data from this project are compiled and are summarized in an annual report in accordance with the conditions outlined in the permit or mandate named in Appendix 1.

5.2 Data Quality

All monitoring described herein shall meet the requirements conveyed in the FDEP's QA Rule, 62-160 F.A.C. The District has adopted a uniform set of DQOs following criteria detailed within the *Analytical Methods and Default QA/QC Targets* table of the CLQM.

Field parameter DQOs are described in the *Field Instrument Minimum Accuracy Requirements* table found in the *Instrument Calibration and Field Measurements* section of the FSM. The most recent version of the FSM details the specific field testing DQOs at the time of sample collection.

Samples are analyzed according to the provisions within the FDEP QA Rule, 62-160 F.A.C. and the CLQM. The most current version of the CLQM details DQOs at the time of sample collection for each specific laboratory analysis. Data are qualified in accordance with the FSM, CLQM and applicable data validation SOPs.

No contract laboratory is being used.

5.3 Completeness Target

The completeness target (i.e., the number of samples successfully collected and analyzed, as a percentage of those that were planned) has been set at 95% annually for this project. Sampling attempts shall be included in the completeness target. At times samples will not be able to be collected due to no flow or low water conditions, unsafe station conditions, equipment malfunction, site maintenance, tropical storms/hurricanes or other unforeseen problems that might affect sample collection and/or quality. If samples cannot be collected on an attempt, collectors shall document the sample as a "NOB" to indicate an attempt was made and/or the sample could not be collected for the documented reasons.

6.0 Data and Records Management

The District evaluates data in accordance with the data quality objectives stated in the District's FSM and CLQM. All data submittals shall conform to existing District guidelines.

6.1 Contract Deliverables

There are no contract deliverables for this project.

6.2 Data and Record Storage

After the data validation process, all data and records are maintained so that end users can retrieve and review information relative to a sampling event. Field records are maintained in accordance with the *Archive Records Storage and Retention* SOP (SFWMD-FIELD-SOP-022). All analytical data and specified metadata are sent to the DBHYDRO database for long-term storage and retrieval.

The District shall maintain master copies of field and laboratory generated records. It is the responsibility of the District to maintain both records of current and historical methodologies and operating procedures so that at any given time the conditions that were applied to a sampling event can be evaluated.

Field records storage protocols are outlined in the *Archive Records Storage and Retention* (SFWMD-FIELD-SOP-022). Corrections of field data, records or data in DBHYDRO must follow the WQM *Correction of Field Records SOP* (SFWMD-FIELD-SOP-032) and the FSM.

7.0 References

Abtew, Wossenu and Barbara Powell, 2004. Water Quality Sampling Schemes for Variable Flow Canals at Remote Sites. Journal of the American Water Resources Association (JAWRA) 40(5):1197-1204.

FDEP (Florida Department of Environmental Protection). Quality Assurance Rule, 62-160 Florida Administrative Code (F.A.C.). April 16, 2018.

SFWMD (South Florida Water Management District). *Archive Records Storage and Retention*, SFWMD-FIELD-SOP-022, Water Quality Monitoring Section

SFWMD, *Chemistry Laboratory Quality Manual (CLQM)*, SFWMD-LAB-QM-001, most current effective version. Analytical Services Section.

SFWMD, *Correction of Field Records*, SFWMD-FIELD-SOP-032, Water Quality Monitoring Section

SFWMD, *Field Sampling Manual (FSM)*, SFWMD-FIELD-FSM-001, Water Quality Monitoring Section.

SFWMD, *Field Quality Manual (QM)*, SFWMD-FIELD-QM-001, Water Quality Monitoring Section.

SFWMD, *Sampling Flow-Related Stations*, SFWMD-FIELD-SOP-027, Water Quality Monitoring Section.

SFWMD, *Station Registration*, SFWMD-FIELD-SOP-031, Water Quality Monitoring Section

SFWMD, Water Conservation Area Material Budget (CAMB), SFWMD-FIELD-MP-064, Water Quality Monitoring Section

SFWMD, *Water Quality and Applied Sciences Bureaus Quality Management Plan (QMP)*, SFWMD-QS-QM-001. Applied Sciences and Water Quality Bureaus.

8.0 Revisions and Modifications

Version	Date	Section	Notes
01	11/02/2010	All	MP-048 superseded by MP-071 which was superseded by MP-073
02	01/01/2013	All	Monitoring plan modified to conform to requirements of EFA Permit # 0311207, NPDES Permit # FL0778451, and their associated Consent Orders as well as STA Operational considerations.
03	10/24/2013	3.1	Documented Compartment B SBO passed startup 05/17/13 and transitioned to routine monitoring 05/22/13.
		3.4.1	Clarified the timeline, time and flow collections and parameters for the initiation of sampling for the STA Expansion. Added references to Settlement Agreement (G335 / G436) and EAA Rule (G434 / G435).
		Table 2	Modified station not yet being monitored to regularly being monitored.
		Appendix 2	Revised Appendix 2. Oct 2, 2013 FDEP issued concurrence to terminate other toxicant monitoring for flow-ways 4 and 5 for surface water and fish collection. After one year of monitoring bass and sunfish monitoring was completed in flow-way 4.
04	01/05/2015	Appendix 2	Revised formatting.
		Table 2	Clarified how recorded flow at G442 is determined (positive flow at either G440D or G441). Added DOC to Quarterly parameters at S6.
		3.2	Added clarification on additional mandated for certain stations. S6, G335, and G436 are subject to the Settlement Agreement. Parameters and frequencies are overseen by the Technical Oversight Committee. Additionally, TP is collected at S6, G328, G434 and G435 on a weekly basis for the EAA Rule.
		3.1	Documented construction in Cell 8. Flow was interrupted from January 8, 2014 through August 6, 2014 to allow for grading in Cell 8.
		5.6	The autosampler at G441 remained on flow until July 10, 2013 to capture discharges related to seepage and rainfall. It was then decommissioned.
		Sig Page	Updated to reflect internal signatures
		All	Annual Review
05	03/11/2015	Title Page, Revision Table	Standardized Font sizes and colors
		All	Standardized to new template

Version	Date	Section	Notes
06	03/14/2016	Appendix 3, 3.4.2 Table 2	Added Appendix 3 for Supplemental Monitoring and documented in Table 2
		Tables 1 and 2 and Appendix 1	Removed all references to G337, G440D, and TKN. Added TN. STA Coordination Team approved termination of all monitoring at seepage structures G337 and G440D on 11/16/15. The TOC approved TN direct method 10/27/15, negating the need to analyze TKN
		Table 2 and Appendix 1	On 01/26/16 the TOC approved the addition (OPO4, TDPO4, ALKA, CA, CL, NA, K, MG, SO4, TN, NOX, NH4, TSS, DO, pH, SCOND, TEMP) of WRF grab and physical parameters at diversion structures G338 and G339.
		Appendix 3	Flow-way 1 End Date: 04/14/2016 corrected to 04/14/2017
		Appendix 3	Flow-way 2,3 End Date: 04/14/2015 corrected to 04/14/2016
07	07/22/2021	Appendix 2 and Figure 1	Removed Phase 2 monitoring and adjusted map accordingly. 03/21/16 - FDEP approved termination of Phase 2 – Tier 1 sampling and move to Phase 3 – Tier 1.
		Appendix 3	Removed Supplemental Lake Release Monitoring section and table, terminated 2015.
		Appendix 3	Removed Supplemental Flow-way 2 sampling, terminated 4/14/16.
		Appendix 3	Changed end date for Supplemental Flow-way 3 sampling from 2016 to 2017. Delia Ivanoff requested on 04/06/16 to continue supplemental sampling for Flow-ways 1 & 3 until current work finished
		Appendix 3	Changed end date for Supplemental Flow-ways 1 & 3 from 2017 to 2018. Delia Ivanoff requested on 04/11/17 to continue supplemental sampling for Flow-ways 1 & 3 for another year or until P-flux study is complete in these Cells.
		Appendix 3, Section 5.2	EMRT approved extension 05/18/17; SVH asked for applicable revisions in OMP.
		All	Total revision into new OMP formatting, removal of Rest strategies supplemental sampling, updating of map
		All	Further revision into new OMP formatting, removal of references to FSQM, addition of references to FSM and QM. New signatures.
		Appendix 2	Removed all requirements for Mercury and other toxicants
		Table 1, Table 2 and Appendix 1	EMRT approval to terminate sampling for the interior structures (April 30, 2020)
08	04/26/2022	All	Updated to match the most current OMP Template language (Template Version Date 04/28/2021).

Version	Date	Section	Notes
09	04/19/2023	ALL	Updated to match the most current OMP Template language (Template Version Date 03/16/2023).
		Signature page	Updated to reflect internal signatures
		2.2	Updated dates of EFA and NPDES mandates.
		Table 2 & Appendix 1	Added footnote to indicate S6 as surrogate sampling station if recorded flow occurs at G338 and/or G339.

Appendix 1: Station Requirements by Mandate

Station(s)	Mandate	Collection Method	Frequency	Parameter TESTS
S6	Everglades Agricultural Area Chapter 40E-63 (EAA Rule)	Autosampler Composite Flow (ACF)	Weekly (W)	Total Phosphorus (TP}
		Grab	W	TP
	National Pollution Discharge Elimination System (NPDES) Permit # FL0778451	ACF	W	TP
		Grab	Weekly Recorded Flow (WRF)	TP
	Everglades Forever Act (EFA) Permit #0311207	ACF	W	TP
		Grab	WRF	TP, pH (PH*), Specific conductance (SCOND*), Temperature (TEMP*)
		Grab	Bi-weekly Recorded Flow (BWRF)	Nitrite-Nitrate (NOX), Sulfate (SO4), Total Nitrogen (TN)
	STA Operations	ACF	W	TP
		Grab	W	TP, Dissolved Oxygen (DO*), PH*, SCOND*, TEMP*
			WRF	Ammonia (NH4), Calcium (CA), Chloride (CL), NOX, Ortho phosphorus (OPO4), SO4, Total Dissolved Phosphorus (TDPO4), TN, Total Suspended Solids (TSS)
			Quarterly (Q)	Dissolved Organic Carbon (DOC)
	Settlement Agreement Appendix D	ACF	W	TP, TN
		Grab	WRF	Alkalintiy (ALKA), CA, CL, DOC, Magnesium (MG), NH4, NOx, OPO4, Potassium (K), Silica (SiO2), Sodium (NA), SO4, Total Dissolved Nitrogen (TDN), TDP, TN, Total Organic Carbon (TOC), TP, TSS, DO*, PH*, SCOND*, TEMP*
		Grab	Q	Total Iron (TOTFE)

Station(s)	Mandate	Collection Method	Frequency	Parameter TESTS
G338[1], G339[1]	NPDES[1] Permit # FL0778451	Grab	WRF	TP
	EFA[1] Permit #0311207		WRF	TP
	Loxahatchee National Wildlife Refuge (LNWR)[1]		WRF	ALKA, Ammonia (NH4), Calcium (CA), Chloride (CL), Magnesium (MG), NOX, Ortho phosphorus (OPO4), Potassium (K), Sodium (NA), SIO2, SO4, TDN, Total Dissolved Phosphorus (TDPO4), TN, TP, Total Suspended Solids (TSS), DO*, PH*, SCOND*, TEMP*
G335, G436	NPDES Permit # FL0778451	ACF	W	TP
		Grab	WRF	TP, PH*
	EFA Permit #0311207	ACF	W	TP
		Grab	WRF	TP, DO*, PH*, SCOND*, TEMP*
			BWRF	NOX, SO4, TN
	Settlement Agreement Appendix D	ACF	W	TP
		Grab	W	TP, DO*, PH*, SCOND*, TEMP*
			BWRF	ALKA, CA, CL, NH4, NOx, OPO4, SO4, TDPO4, TN, TSS
	STA Operations	ACF	W	TP
		Grab	W	TP, DO*, PH*, SCOND*, TEMP*
			BWRF	CA, CL, NH4, NOX, OPO4, SO4, TDP, TKN, TSS
			Q	DOC

Station(s)	Mandate	Collection Method	Frequency	Parameter TESTS
G328, G434, G435	NPDES Permit # FL0778451	ACF	W	TP
		Grab	WRF	TP
	EFA Permit #0311207	ACF	W	TP
		Grab	WRF	TP, DO*, PH*, SCOND*, TEMP*
			BWRF	NOX, SO4, TN
	EAA Rule	ACF	W	TP
		Grab	W	TP
	STA Operations	ACF	W	TP
		Grab	W	TP, DO*, PH*, SCOND*, TEMP*
			WRF	CA,CL, NH4, NOX, OPO4, SO4, TDPO4, TN, TSS
			Q	DOC
		Grab	WRF	CA, OPO4, TDP, TP, DO*, PH*, SCOND*, TEMP*
			Q	DOC
G329B G331D G333C G438D G438I	STA Operations	Grab	BWRF	CA, TP, DO*, PH*, SCOND*, TEMP*
G337A	STA Operations	Grab	MRF	TP, DO*, PH*, SCOND*, TEMP*

[1] S6 Pump Station is the surrogate sampling point for G-338 and G-339 when these diversion structures are open.
*In-Situ

Appendix 2: Mercury and Other Toxicants Monitoring Plan

Flow-Path: Central
Stormwater Treatment Area 2
EFA Permit No. 0311207

Monitoring of water-column concentrations of total mercury (THg) and methylmercury (MeHg) began in the summer of 2000 at STA-2. STA-2 Cells 2 and 3 met mercury (Hg) startup criteria, as specified in Exhibit "D" of EFA Permit No.0126704, in September 2000 and November 2000, respectively. In August 2001, flow-through operation of Cell 1 was authorized under an EFA permit modification; Cell 1 met startup criteria in November 2002 (for review, see 2003 and 2004 Everglades Consolidated Reports and the 2005 South Florida Environmental Report [SFER]).

In January 2007, the District completed construction of a new flow-way in STA-2, known as Cell 4. STA-2 Cell 4 met the mercury start up criteria as specified in Exhibit "D" of EFA Permit No. 0126704-005-EM in September 2007. Routine monitoring of mercury in Cell 4 was initiated October 2007. In addition, Cell 4 met conditions contained in "*A Protocol for Monitoring Mercury and Other Toxicants"* (dated April 2011; hereafter referred to as the *Protocol*) to terminate atrazine monitoring in June 2008 (see data summary provided in correspondence from H. Andreotta, SFWMD dated January 6, 2012). The Florida Department of Environmental Protection (Department) approved termination of atrazine monitoring January 30, 2012. February 29, 2012, the Department approved transfer of STA-2 mercury monitoring from Phase 2 - Tier 1: Routine Monitoring during Stabilization Period for Cells 1, 2 and 3 of STA-2 to Phase 3 – Tier 3: Routine Operational Monitoring After Year 9 and Phase 3 – Tier 1: Routine Operational Monitoring From Year 4 to Year 9 for Cell 4 of STA-2. Phase 3 – Tier 3 implemented the termination of all site-specific mercury monitoring at STA-2 Cells 1, 2, and 3.

In August 2012, the District completed construction of the EAA Compartment B Buildout Project (Compartment B). Compartment B includes three pump stations (G-434, G-435, and G-436) and two flow-ways: the North Buildout (NBO), which includes Cells 4, 5, and 6 and the South Build-out (SBO), which includes Cells 7 and 8. Compartment B incorporated the existing Cell 4. Startup monitoring for mercury and other toxicants was performed for Compartment B in September (mosquitofish) and October (sediment) of 2011 to capture the "first-flush effect" when NBO and SBO were initially inundated. Compartment B met the mercury and other toxicant startup criteria as specified in Specific Condition 23 of EFA Permit No. 0311207 in October 2011 (see data summary provided in correspondence from H. Andreotta, SFWMD dated December 14, 2012). December 20, 2012, the Department approved transfer of monitoring from Phase 1 – Tier 2: Field Sampling for Initial Startup Monitoring Prior to Discharge to Phase 2 – Tier 1: Routine Monitoring During Stabilization Period for Compartment B (Cells 4, 5, 6, 7 and 8).

In July 2013, the District completed one year (i.e., four quarterly sampling events) of Phase 2 – Tier 1: Routine Monitoring During Stabilization Period. Based on guidance contained in the *Protocol* (page 14, 2nd paragraph), after one year of monitoring, project managers may elect to reduce the number of operating units (OU) sampled for large-bodied fish to one OU with the highest observed concentration of mercury and one downstream station and assess results as "worst case". Consistent with this guidance (see data summary provided in correspondence from H. Andreotta, SFWMD dated October 1, 2013) and with concurrence of the Department, the District terminated large-bodied fish monitoring at the Compartment B NBO station ST2C4A and will monitor SBO station ST2C8A as "worst case", effective October 2, 2013.

The *Protocol* also states that "if, after one year of monitoring, action level criteria are met, surface water sampling for other toxicants would be discontinued. If levels of other toxicants in tissues do not exceed recognized background tissue concentrations or benchmarks established in ecological risk assessments completed as part of the Environmental Site Assessment (ESA), then sampling would be discontinued." Compartment B met these criteria (see data summary provided in correspondence from H. Andreotta, SFWMD dated October 1, 2013) and October 2, 2013 the Department approved termination of monitoring for other toxicants.

In July 2015, the District completed three years of Phase 2 – Tier 1: Routine Monitoring During Stabilization for STA-2 Cells 4, 5, 6, 7, and 8. These Cells met criteria to transfer to Phase 3 – Tier 1: Routine Operational Monitoring from Year 4 to Year 9 (see data summary provided in correspondence from H. Andreotta, SFWMD dated March 17, 2016). March 21, 2016, the Department approved transfer of monitoring from Phase 2 – Tier 1: Routine Monitoring During Stabilization to Phase 3 – Tier 1: Routine Operational Monitoring from Year 4 to Year 9 for Cells 4, 5, 6, 7, and 8).

The Department issued concurrence April 2, 2020, approving transfer of STA-2 Compartment B (Cells 4, 5, 6, 7 and 8) mercury monitoring from Phase 3 – Tier 1: Routine Operational Monitoring from Year 4 to Year 9 to Phase 3 – Tier 3: Routine Operational Monitoring After Year 9. This implemented the termination of all site-specific mercury monitoring at STA-2.