Operational Project Monitoring Plan

For

Surface Water Monitoring in Big Cypress National Preserve

(BCWQ)

4/22/2024

4/25/2024

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Table of Contents

1.0 Project Organization

The following documents define the procedures used by South Florida Water Management District (SFWMD or District) Water Quality Monitoring Section (WQMS) 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 WQMS 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 the Surface Water Quality Monitoring under project BCWQ in Big Cypress National Preserve (BCNP). This operational monitoring plan (MP) contains descriptions of the monitoring including frequency of collection and parameters by station.

Cooperative Agreement No. C90-1103 between BCNP and the District to monitor hydrology and water quality began in 1990. The purpose was to establish continuous hydrologic and water quality baselines to enhance pre-existing monitoring, and to provide data to prepare for the increasing required standard for the Greater Everglades. The partnership was designed to use the strengths of each and to share the costs and responsibilities of monitoring.

Monitoring for BCWQ began in 1994 with 10 stations: A1, BCWQA1, BCWQA3, BCWQA4, BCWQA5, BCWQA9, BCWQA10, BCWQA12, BCWQA13, and BCWQA14. Stations A1 was dropped and BCWQA2 was added 1995 and sampled through 1999. Three additional stations, BCWQA16, BCWQA17, and BCWQA18 were added in 2000 and sampling of these 13 stations continued through 2004. In 2005, BCWQA9 and BCWQA13 were replaced with BCWQA9A and BCWQA13A. In addition, three (3) new stations, BCWQA19, BCWQA20, and BCWQA21 were added and sampled through 2010. Sampling continued in 2011 with the removal of BCWQA1, BCWQA2, and BCWQA13A. In 2012, sampling for the project was re-engineered with all existing stations dropped and 14 new stations, BCWQB1 through BCWQB8, and stations BCWQL1 through BCWQL6. In 2022, the District and BCNP agreed to remove stations BCWQB4A, BCWQB6, BCWQB7, and BCWQB8.

These stations were replaced with BARRON, BCWQC2, and BCWQA1. This change shifted the project's focus from the Turner River area to the Highway 29 canal, which is the most active artificial waterway in BCNP. Currently, BCWQ consists of a network of 13 surface water sampling stations.

The guidance contained herein is intended to assist in maintaining consistency of surface water sampling locations, parameter lists, and frequencies as well as providing documentation of the project scope and an ongoing historical perspective.

2.2 Mandates and Permits

Station locations, sampling frequencies, and parameters (Appendix 1) are dictated by the Memorandum of Agreement (MOA) previously governing this project, which expired in January 2021.

A history of the mandate modifications follows:

- C90-1103 Cooperative agreement between BCNP and the District issued in 1990
- C91-2345 Issued in 1991
- C-3332 Issued in 1992
- C-5308 Issued in 1994
- C-12150 Issued in 2000

- MOA 4600002248 Original issued on 01/05/2011 and was for (5) years
  - A-1 Issued in 2014

- MOA 4600003352 Issued in 2016
  - A-01 Issued in 2017
  - A-02 Issued in 2018
  - A-03 Issued in 2018
  - A-04 Issued in 2020

MOA 4600003352 A-04 expired in January of 2021. No current permits, mandates or Compliance Monitoring Plans are associated with the project. In the future, this monitoring program may be re-engineered to provide data for the Western Everglades Restoration Project (WERP).

2.3 Project Objectives

The primary objectives of this monitoring project include providing data from relatively undisturbed locations within BCNP, measuring water quality around water control structures, and monitoring the effectiveness of restored areas. All sampling is done during the summer and fall sheetflow seasons.

2.3.1 Modification or Termination Conditions

Sampling under this cooperative monitoring effort may be modified by mutual agreement between the District and BCNP. In-kind District services are subject to availability of funds pending annual budget approval by the District's Governing Board. The mandate listed in Section 2.2 has expired. Future discussions will be conducted between BCNP and the District with regards to renewing the MOA.

3.0 Geographic Location

3.1 Regional Area

Although BCNP extends from Collier County, north to Hendry County, east into Miami-Dade County and south into Monroe County, BCWQ is located mainly within Collier County (Figure 1).

3.2 Station Location and Access

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

Access to surface water quality stations except BCWQA1 is by public road. Access to BCWQA1 is by private road, but there are no gates or locks impeding the roadway.

Table 1: BCWQ Surface Water Monitoring Stations and GPS Coordinates

Station	Latitude (ddmmss.sss)	Longitude (ddmmss.sss)	Description
BCWQB1	261305.536	-811733.322	Bear Island Loop – On Bear Island Grade 3.7 miles E of SR29
BCWQB2	261150.507	-811601.772	Bear Island Loop – On Perocchi Grade Road at East Hinson Marsh, 2.4 miles SE of BCWQB1
BCWQB4	260544.757	-811554.232	Bear Island Loop – On Turner River Road at Fire Prairie trail; 5.3 miles south of BCWQB3
BCWQB4B	255754.200	-811952.040	Bear Island Loop – Lower Wagon Wheel Road Culvert; the sixth culvert from Birdon Road
BCWQL1	254540.520	-805428.165	Loop Road – Loop 1; 5 miles W of 40 Mile bend (i.e., east intersection of Loop Road and US 41)
BCWQL2	254447.730	-805714.045	Loop Road – Loop 2; Crooked Culvert – Culvert 46; 3.6 miles from BCWQL1, 8.3 miles W of 40 Mile Bend
BCWQL3	25452.350	-805759.195	Loop Road – Bridge 37; 1 mile from BCWQL2, 9.3 miles W of 40 Mile Bend
BCWQL5	254536.980	-810253.904	Loop Road – Bridge 29; 3.25 miles from BCWQL4, 14.55 miles W of 40 Mile Bend
BCWQL6	254718.990	-81559.684	Loop Road – Bridge 6 near BCA11; Sweetwater Strand; 5 miles S from Monroe Station; 4 miles from BCWQL5, 19.55 miles W of 40 Mile Bend
BCWQL7	254904.430	-81601.360	Loop Road – Robert Lake Strand Culvert; the second culvert from Gator Hook Trail
BARRON	255752.899	-812112.998	U.S. 29 – Intersection of U.S. 29 and Wagon Wheel Road; 3.9 miles north of U.S. 41
BCWQC2	261609.199	-812030.699	U.S. 29 – 7.9 miles north of I75. Collier County structure SLD31.

Station	Latitude (ddmmss.sss)	Longitude (ddmmss.sss)	Description
BCWQA1	261454.398	-811742.500	BCA1 – 4.1 miles off U.S 29. on private road. Private road located at 8400 U.S. 29 between I75 and Oil Well Road.

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.

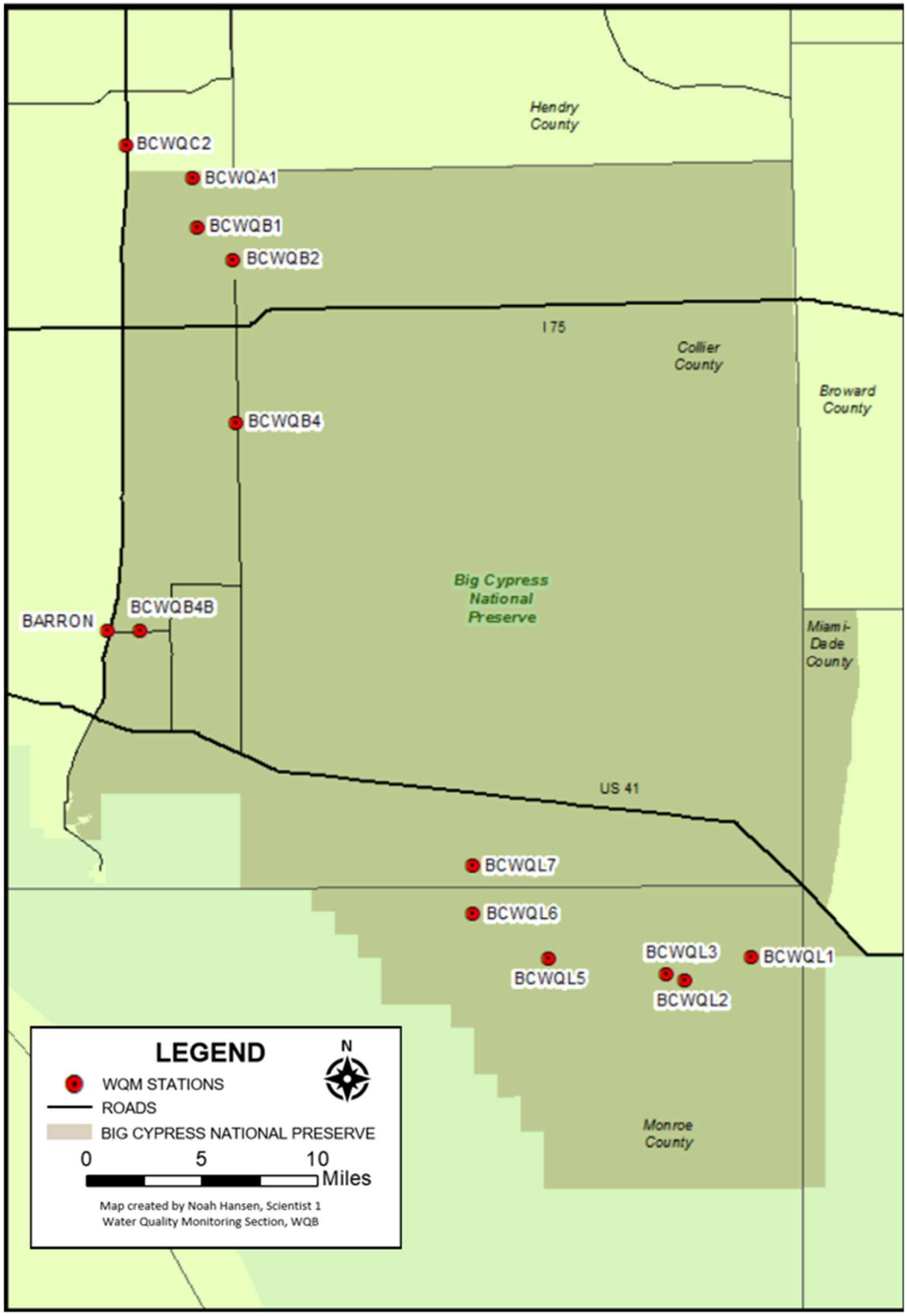

Figure 1: BCWQ Station Locations

4.0 Field Activities

4.1 Monitoring Frequencies and Parameters Collected

All monitoring parameters, frequencies of collection and locations are listed in Table 2. Some analytes may be reported by the lab that are not requested by the project.

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 are only monitored if flowing, NOBs are not assigned during nonflow periods.

Table 2: BCWQ Station Frequency and Parameter TESTS

Station	Collection Method	Frequency	Parameter TESTS
All Surface Water Stations	Grab	Monthly[1] (M)	Alkalinity (ALKA), Ammonia (NH4), Calcium (CA), Chloride (CL), Magnesium (Mg), Nitrite (NO2), Potassium (K), Sodium (Na), Orthophosphorus (OPO4), Silica (SIO2), Sulfate (SO4), Total Dissolved Solids (TDS), Total Nitrogen (TN), Total Phosphorus (TP), Dissolved Oxygen (DO)*, pH (PH)*, Specific conductance (SCOND)*, Temperature (TEMP)*
	Grab	Quarterly (Q)	Total Copper (TOTCU), Total Zinc (TOTZN)

[1]Surface water samples are collected from June to January with no more than six (6) collected in the season.
*In-Situ Grab

4.2 Project Specific Guidelines

Surface water grab samples, except for BCWQA1 and BCWQC2, are collected on the upstream side of the structure, at a depth of 0.5 meters unless collection of a representative sample is inhibited by vegetation and/or other conditions, or if specific sampling depths are specified in the associated SOP or FSM for the sampling method. BCWQA1 is not associated with a structure and the sample will be collected directly off the platform. BCWQC2 will be collected downstream of the associated structure. If an alternative sampling location is required, a consultation with a Science Technician Supervisor (STS) and/or the Field Project Manager (FPM) must take place prior to the sample being collected; this action must be documented in the field notes. Samples are collected from June to January with no more than six (6) collected in the season.

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 WQMS 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 WQMS FSM.

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 WQMS FSM.

4.6 Autosampler Collection

There is no requirement for the use of autosamplers for this project.

4.7 Sample Submission

If the District laboratory is to be used, samples are transported to the laboratory and submitted for analyses in accordance with the requirements specified in the WQMS 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

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

5.2 Data Quality

All monitoring described herein 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 Measurement* 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 recent 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. At times a sampling attempt will be made, but samples will not be able to be collected because of no flow or low water conditions, unsafe station conditions, equipment malfunction, vegetation or other site impacts that may affect the representativeness of a

sample, 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. Sampling attempts are included with successfully collected and analyzed samples in the completeness target.

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, or records or data in DBHYDRO must follow the WQMS *Correction of Field Records SOP* (SFWMD-FIELD-SOP-032) and the FSM.

7.0 References

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. *Station Registration*, SFWMD-FIELD-SOP-031, 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

Revision Number	Date	Section	Change/Reason
01	02/12/2017	All	Original OMP version
02	7/6/2022	All	Updated to match the most current OMP Template language (Template Version Date April 28, 2021). Eliminated stations BCWQB4A, BCWQB6, BCWQB7 and BCWQB8; added stations BARRON, BCWQC2 and BCWQA1 per BCNP staff request.
03	04/22/2024	All, Table 2, Appendix 1, TOC, Title page	Updated to match to the most recent OMP Template language (Version Date 11/9/2023); updated Signature names and version; table 2 and appendix 1 to match template requirements

Appendix 1: Station Requirements by Mandate

Mandate	Station	Collection Method	Frequency	Parameters TESTS
District/BCNP Agreement (Expired)	BCWQB1, BCWQB2, BCWQB4, BCWQB4B, BCWQL1, BCWQL2, BCWQL3, BCWQL5, BCWQL6, BCWQL7, BARRON, BCWQC2, BCWQA1	Grab	Monthly (M)	Alkalinity (ALKA), Ammonia (NH4), Calcium (CA), Chloride (CL), Magnesium (Mg), Nitrite (NO2), Orthophosphorus (OPO4), Potassium (K), Silica (SIO2), Sodium (Na), Sulfate (SO4), Total Dissolved Solids (TDS), Total Nitrogen (TN), Total Phosphorus (TP) Dissolved Oxygen (DO)*, pH (PH)*, Specific conductance (SCOND)*, Temperature (TEMP)*
		Grab	Quarterly (Q)	Total Copper (TOTCU), Total Zinc (TOTZN)

*In-situ Grab