Watershed Monitoring Section Regional Project Manager Manual

Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
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Table of Contents

Section 1: Introduction 3
The Status Monitoring Network 3
The Trend Monitoring Network 5
Section 2: Overseeing Sampling 8
Routine Program and Project Duties 8
Section 3: Reviewing Deliverables 12
Project Deliverables for DEP Staff 12
Project Deliverables for Contracted Staff 13
Project Deliverables for Collaborative Agreements 14
Section 4: Reviewing and Managing Data 15
Overview 15
Data Review Procedures 17
Additional Data Entry and Tracking 17
Section 5: Producing and Disseminating Information to the Public 18
Letters to Property Owners 18
Letters to Public Authorities 18
Checklist for Producing Water Quality Reports and Letters 18
Section 6: Participating in Meetings and Training Programs 19
Meetings 19
Training 19
Section 7: Initiating and Renewing Contracts 20
Overview and Funding 20
Contract / Grant Development 21
Appendix A: Project Manager Responsibilities, Listed by Schedule 22
Appendix B: Contract and Grant Management Spreadsheet 24
Appendix C: Relevant Web Pages, Directories, and Documents 25
Appendix D: Data Review Tasks and Deadlines 28
Appendix E: Data Review Checklists for Status & Trend Projects 30
Inventory Project Paperwork and Check for Accuracy 30
Preliminary Review of Station Level Information Using GWIS Database Utilities (Status Network Projects Only) 33
Review of Provisional Field and Lab Data in GWIS Using ADM 34
Review of Station Level Information Using GWIS Database Utilities and ADM 41
Review of Location Data for Surface Water Trend Stations 44

Section 1: Introduction

The Watershed Monitoring Section (WMS) is in the Water Quality Monitoring Program (WQMP), within the Division of Environmental Assessment and Restoration (DEAR) at the Department of Environmental Protection (DEP, or the department). The WMS implements the Status Network and Trend Network monitoring programs, which fulfill requirements of the Florida Water Quality Assurance Act and the federal Clean Water Act. The WMS consists of 10 departmental staff. These staff work with department staff in the DEAR Regional Operation Centers (ROCs), three groups of contractors and one collaborating state agency, to accomplish the data collection required for the two monitoring networks.

The major responsibility of each Project Manager (PM) is to carry out duties associated with both the Status Network and the Trend Network in at least one zone (reporting unit) in the state. These duties include:

- **Overseeing water quality sampling** to ensure proper scheduling, sample collection, and shipment;
- **Ensuring that project deliverables are received**, including documentation and Quality Assurance (QA) reports;
- **Reviewing project data**, including entering, editing, and troubleshooting data;
- **Disseminating public information**, including drinking water quality exceedance reports;
- **Participating in meetings** within the department and with our Water Management District (WMD) and county partners;
- **Attending required training programs**;
- **Assisting with sample collection training and field audits of sampling teams;**
- **Initiating and renewing contracts** with external (contracted) sampling agencies. Currently, this duty is applicable to only one of the PMs.

PMs may refer to Appendix A for a bulleted list of duties. For a quick guide to useful documents and websites, see Appendix C.

The Status Monitoring Network

Description: The Status Network, funded by the State Water Quality Assurance Trust Fund (Chapter 403.067, F.S.), is a stratified, random sampling network with predefined reporting units (zones). In this network, surface and groundwater sampling locations are chosen in a random, unbiased manner from six statewide zones. The boundaries of these zones are equivalent to the WMD boundaries, except for the South Florida WMD, which is divided into eastern and western zones (Figure 1). Florida's fresh waters are divided into seven resource types. Five of the resource types are surface water: rivers (LR), streams (SS), large lakes (LL), small lakes (SL), and canals (CN). The other two resource types are groundwater: confined aquifers (CA) and unconfined aquifers (UA). The WMS began sampling canals in 2012, but only in Zones 3, 4, 5, and 6. Prior to that year, canals were classified as either rivers or streams.

Purpose: The purpose of the Status Network is to obtain a statewide, annual estimate of water quality for each resource type.

Schedule: In the current design, the calendar year is divided into seven index periods, one for each resource type. Each index period lasts between one and three months.

Nomenclature: The sampling of each resource is referred to as a project. Status projects are named according to the zone, resource, year, and month. For example, Z6LR1904 is for sampling of Zone 6 rivers in 2019, starting in April. Figure 2 shows the Status Network sampling periods.

Number of Samples: During groundwater index periods, samples from 20 stations per zone are required. During surface water index periods, samples from 15 stations per zone are required.

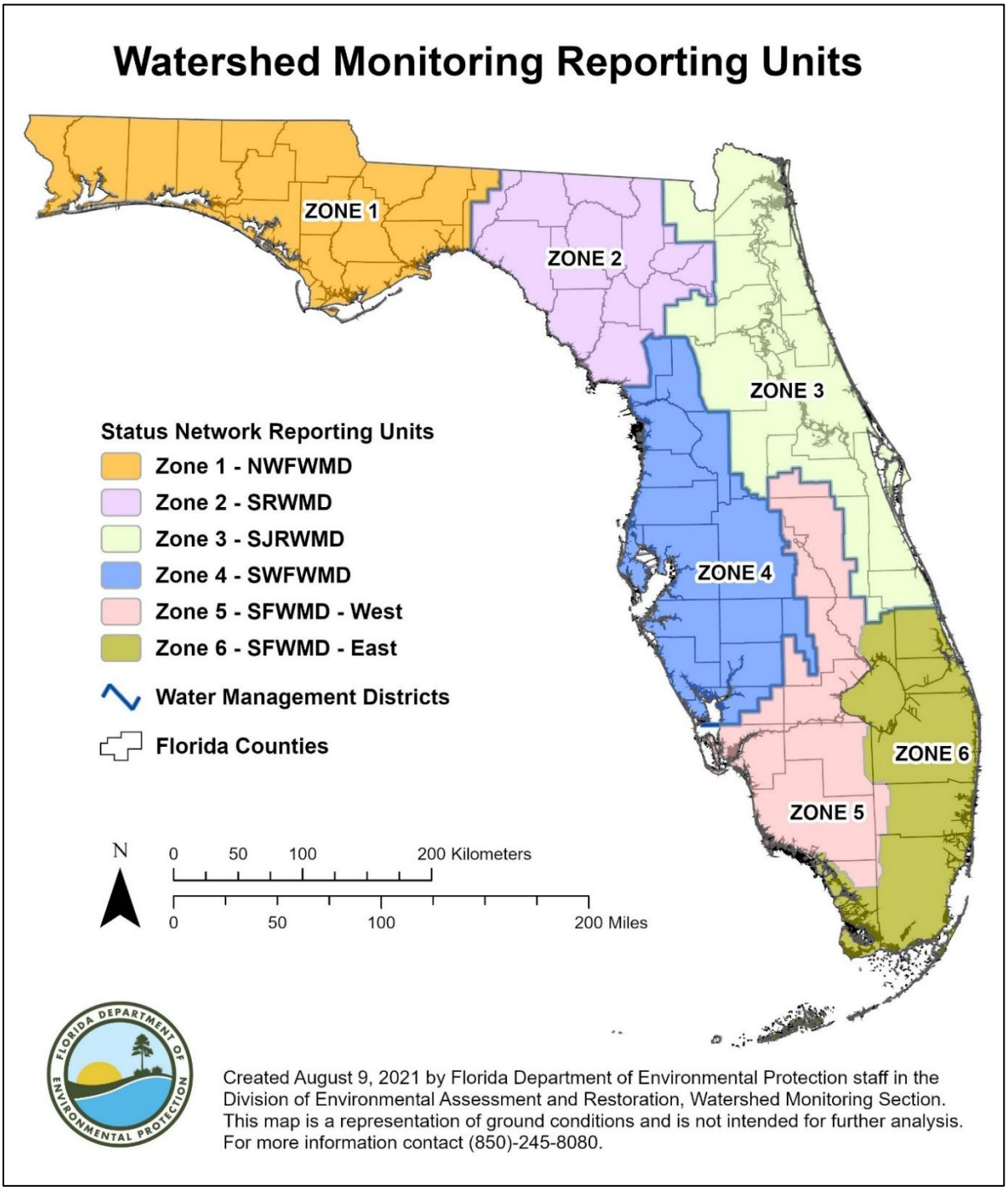


Figure 1. Status Network Reporting Units (Zones).

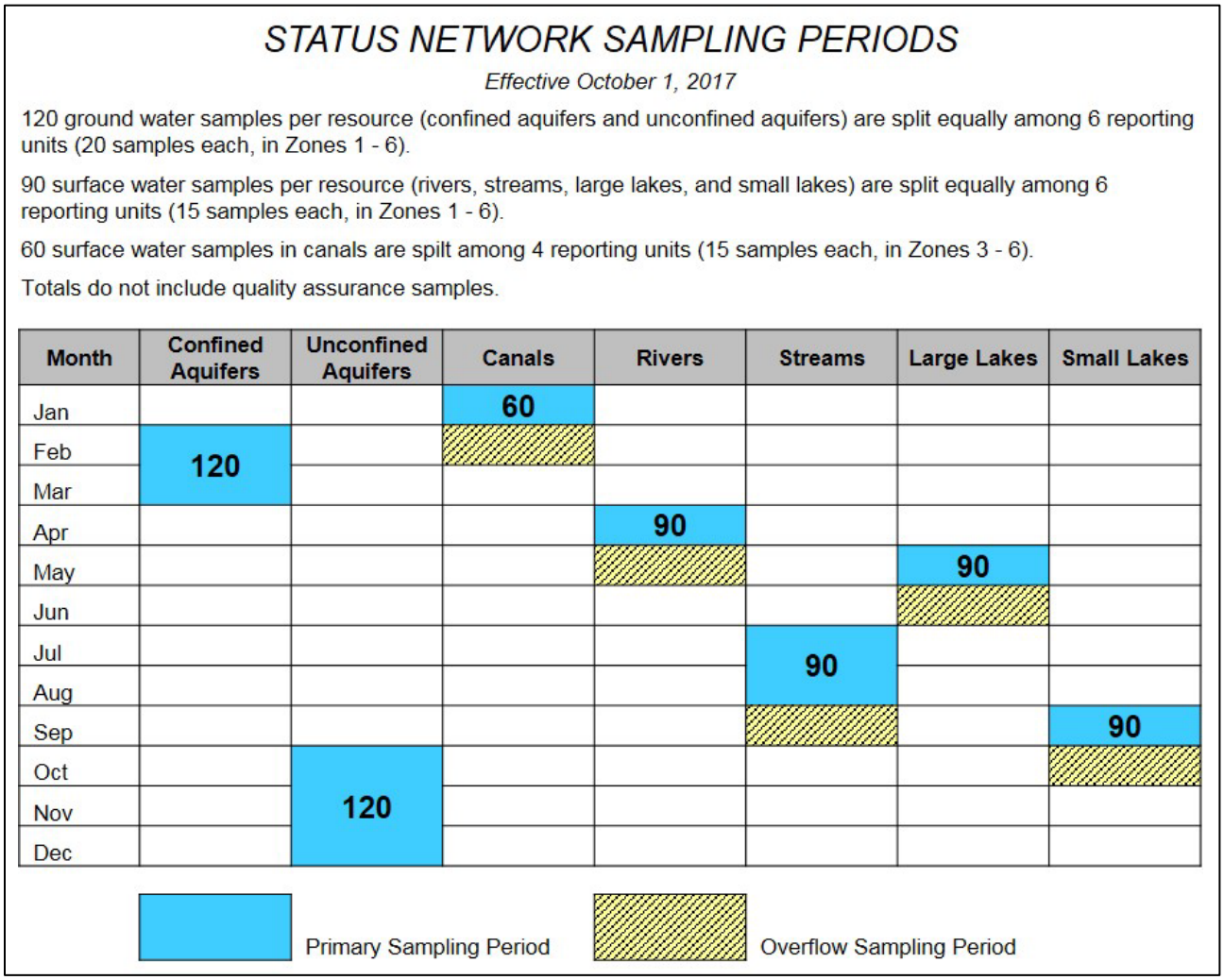


Figure 2. Status Network Index Periods.

The Trend Monitoring Network

Description: The Trend Network consists of 129 fixed stations located throughout the state (78 surface water stations and 51 groundwater stations). Surface Water Trend (ST) sampling is funded by Section 604 of the Federal Clean Water Act; Groundwater Trend (GT) sampling is funded by the State Water Quality Assurance Trust Fund. See Figure 3 and Figure 4 for the locations of Trend stations.

Purpose: The purpose of the Trend Network is to monitor for water quality changes over time at fixed locations. The Groundwater Trend Network is used to measure changes in confined and unconfined aquifer wells; the Surface Water Trend Network is used to measure changes in flowing waters (rivers, streams, and canals).

Schedule: All Surface Water Trend stations are sampled monthly (within a 25- to 35-day window of the previous sampling event) for field and laboratory analytes. All Groundwater Trend stations are sampled quarterly for field and laboratory analytes. In addition, field analyte measurements (such as pH, temperature, and dissolved oxygen) are collected monthly (within a 25- to 35-day window of the previous sampling event) at unconfined Groundwater Trend stations. Figure 5 illustrates the Trend sampling schedule.

Nomenclature: Trend projects are named according to the sample collection agency, resource (ST or GT), year, and month. For example, NWGT1904 is the project name for the Northwest Florida Water Management District (NWFWMD) Groundwater Trend stations sampled in 2019 during April. A list of abbreviations used for sample collection agencies is found in the WMS Data Management Protocols.

Number of Samples: The number of Surface Water and Groundwater Trend sites varies by sample collection agency.

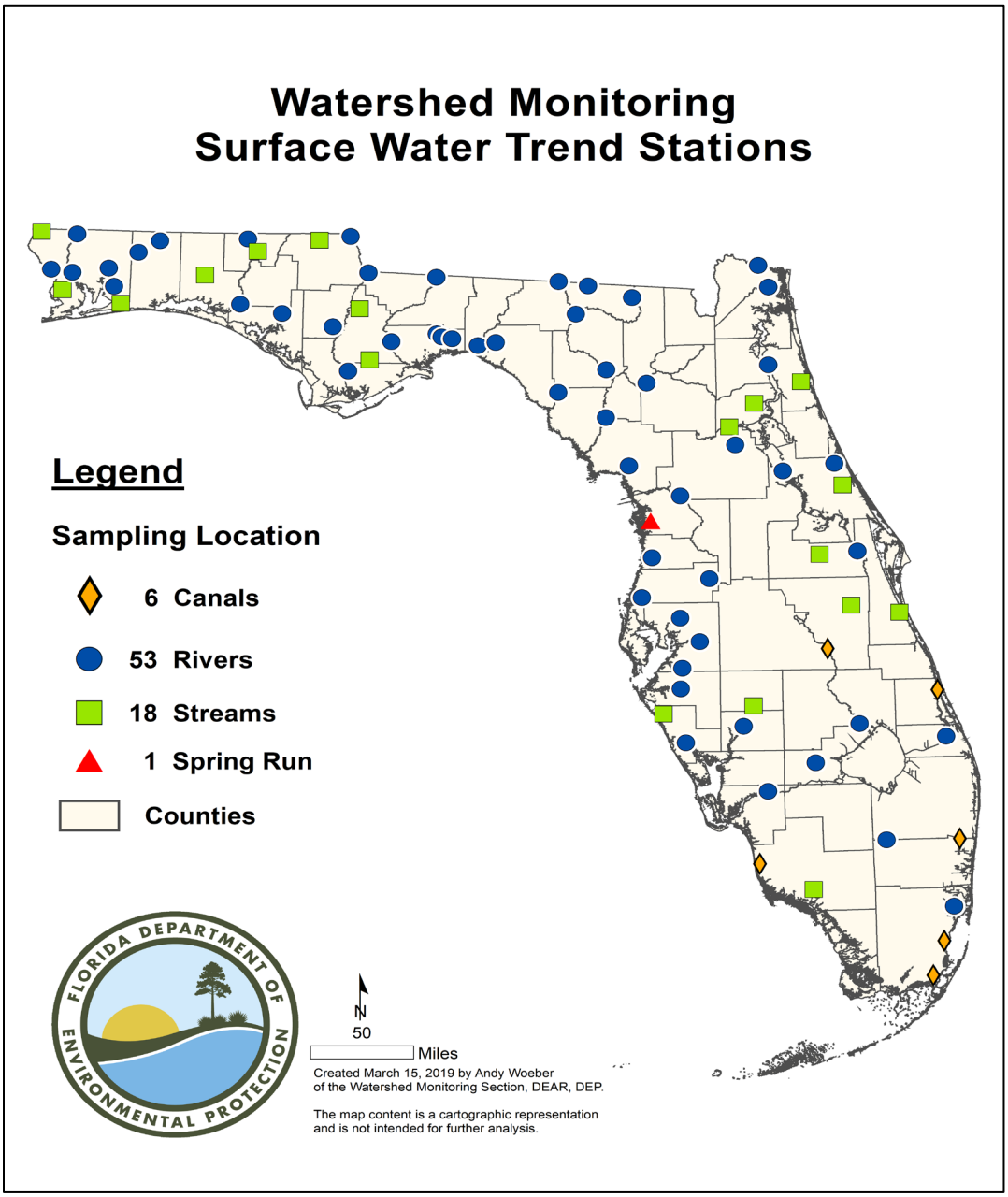


Figure 3. Map of Surface Water Trend stations.

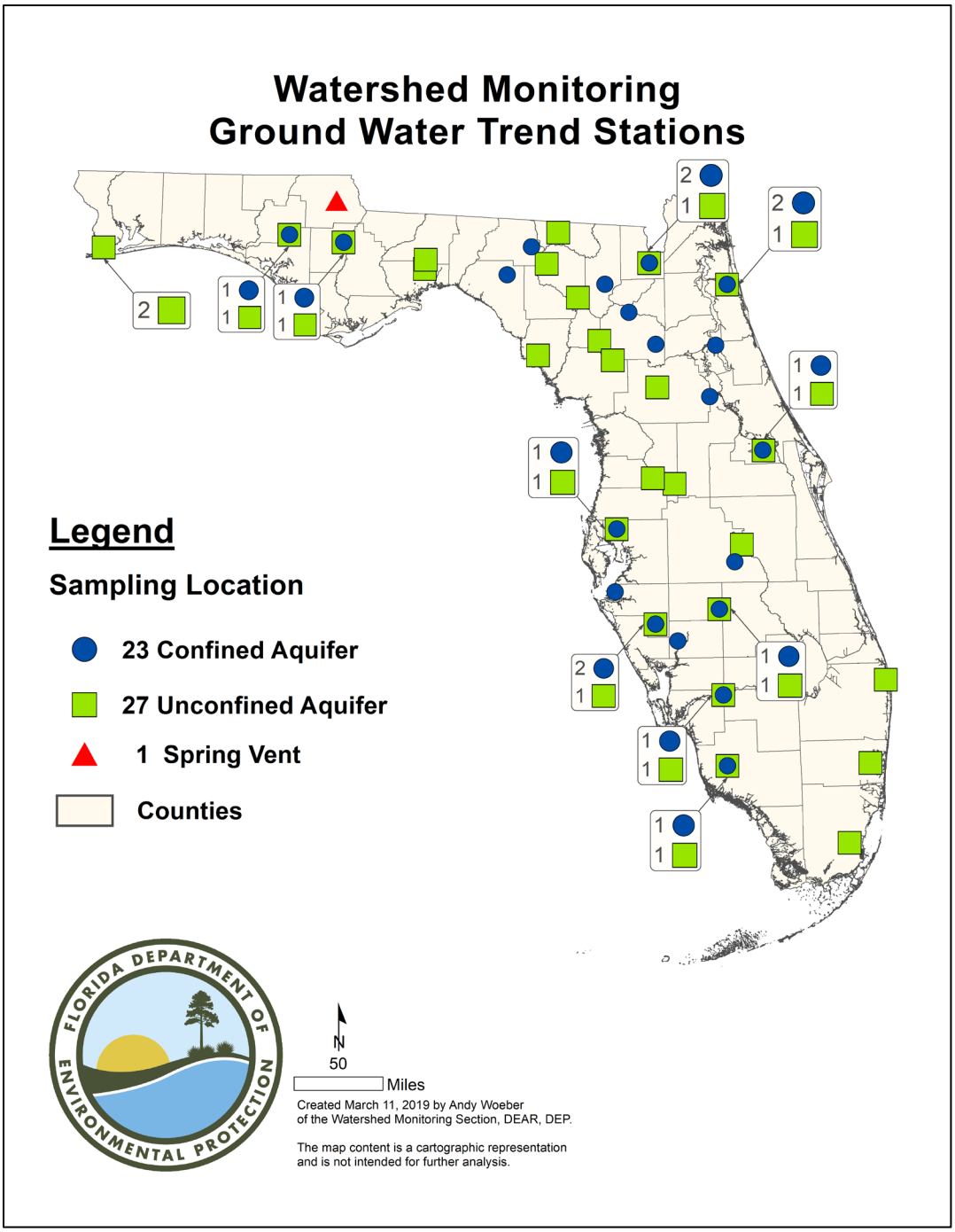


Figure 4. Map of Groundwater Trend stations.

TREND NETWORK SAMPLING SCHEDULE

X = data collected.

[1] Habitat Assessment (HA), Stream Condition Index (SCI), Rapid Periphyton Survey (RPS), and Linear Vegetation Survey (LVS) data are collected at appropriate Surface Water Trend sites twice per year. Sampling events must be at least 4 months apart.

[2] Micro Land Use (MLU) data are collected at all Groundwater Trend sites annually.

[3] Additional water samples for trace metals are collected at all Groundwater Trend stations annually in October, and at all Surface Water Trend stations annually in April.

Month	Surface Waters		Unconfined Aquifers		Confined Aquifers	
	Field Data[1]	Water Samples	Field Data[2]	Water Samples	Field Data[2]	Water Samples
Jan	X	X	X	X	X	X
Feb	X	X	X			
Mar	X	X	X			
Apr	X	X[3]	X	X	X	X
May	X	X	X			
Jun	X	X	X			
Jul	X	X	X	X	X	X
Aug	X	X	X			
Sep	X	X	X			
Oct	X	X	X	X[3]	X	X[3]
Nov	X	X	X			
Dec	X	X	X			

Figure 5. Trend Network sampling schedule.

Section 2: Overseeing Sampling

The primary responsibility of all PMs is to ensure that staff follow the protocols outlined in the Status and Trend Networks Sampling Manual (https://floridadep.gov/dear/watershed-monitoring-section/documents/status-and-trend-networks-sampling-manual). PMs must verify that staff have the necessary schedule, vehicles, equipment, supplies, labels and kits/coolers to perform their duties. Specifics are addressed below.

Routine Program and Project Duties

Reviewing Reconnaissance Progress for Status Network Projects

For Status Network groundwater projects sampled by DEP field teams, PMs are responsible for conducting preliminary review of historic documentation for residential well sites. This preliminary review focuses on the location data for the selected wells. PMs compare the selected site's latitude and longitude in the WMS Generalized Water Information System (GWIS) Oracle database to the location described in the historic documents. The conclusion of the location review is documented by the PM, using the GWIS Database Utilities application tools for Recon Tracking and Existing Station data. PMs exclude wells with highly inaccurate locations (> 1 km difference between GWIS location and location in historic document) and wells with insufficient historic documentation. See \\floridadep\data\dear\wqmp\sol_z\Data Review FAQ\Status Network Recon\HRS Well Recon Instructions for location review procedure documentation and examples.

For all Status Network projects, field staff should be conducting reconnaissance (recon) for their randomly selected sites and recording their findings in a tracking spreadsheet and in GWIS Recon Tracking. Each PM is responsible for keeping track of the recon efforts of their teams and reviewing them on a fortnightly basis. For some field teams or Status resources, it may be necessary to review recon efforts on a weekly basis. Recon review consists of several components:

1. PMs should create their own recon tracking sheet with information from the various field staffs' tracking sheets as well as a section for notes and an ongoing count of which site is slated to be the last sampled site. PMs will often have to track several resources at a time due to recon being done prior to the sampling period as well as keeping track of ongoing sampling and exclusions. Once the tracking sheet has been created, it should be updated with any new notes or information from the field staff's tracking sheets. The PM should make notes on any point of concern or confusion they notice.
2. The PM should reference any exclusions noted in GWIS Recon Tracking and review them. If they accept the exclusion, they should include notes on the exclusion in their tracking sheet and adjust the expected sampling count to reflect those exclusions. If they do not agree or need more information on the exclusion, they should reach out to the samplers or another PM to discuss.
    a. The amount of work that goes into accepting or denying exclusions is dependent on which exclusion is used. PMs should accept owner conveyed access denials, but exclusions due to a site being dry or the wrong resource require extra investigation.
    b. PMs should take advantage of past sampling information, aerial imagery, the Florida National Hydrography Dataset (NHD) layers in Map Direct, other PMs, the QAO, and the Analysis and Reporting Coordinator to investigate exclusions.
    c. Once an exclusion has been approved, PMs should ensure that it has been entered into GWIS Recon Tracking with a comment explaining the exclusion.
3. As sampling commences for a project, the PM should be keeping track of which sites are successfully sampled. They should check in LIMS to see which samples have been received and update their tracking sheet with that information. Once they have confirmed receipt of the sample by the lab, they should also check in GWIS Recon Tracking to ensure that the sampling event was recorded.
4. An email to the field teams and the WMS supervisor and the Analysis and Reporting Coordinator with the results of the recon review should be sent once recon review has been completed. PMs should include if there are any concerns or reasons for staff to follow up on specific sites.

Labels

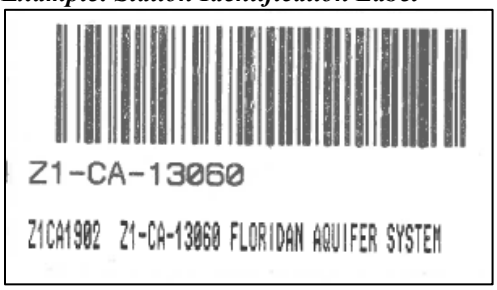
Labels are needed to identify and track samples during collection and lab analysis. A single PM is responsible for printing labels, but all PMs are responsible for reviewing the labels for their projects each quarter. The sequence for generating labels follows:

1. At least four weeks before the start of each quarter (i.e., at the beginning of December, March, June, and September), the Quality Assurance Officer (QAO) compiles the number of samples and blanks to be collected each week for all projects that will occur during the following quarter. The QAO submits the requests to the department's laboratory via the Laboratory Information Management System (LIMS). The Lab approves the scheduling requests and prepares the sample bottle kits. The lab ships the kits and coolers to teams located remotely. Samplers from local

teams (NWFWMD and Tallahassee ROC) pick up their kits and coolers from the lab in Tallahassee.

2. The request numbers (RQs) are automatically generated by LIMS, and the QAO saves the sampling schedule and RQs in \\floridadep\data\DEAR\WQMP\SOL_Z\Sampling Schedule.
3. The QAO informs the WMS Data and Analysis Coordinator (DC) that the requests are scheduled; the DC or Data Manager (DM) then loads the RQs and site IDs into the GWIS Oracle database.
4. When steps 1 - 3 are complete, one of the PMs uses the Automated Data Management (ADM) application to print the station ID, RQ, and blanks labels (see examples, below) for both Status & Trend projects, usually several weeks in advance. See https://floridadep.gov/dear/watershed-monitoring-section/documents/wms-automated-data-management-adm-autodm-application for the ADM User's Manual.
5. Each PM checks the set of labels corresponding to projects in their region(s) prior to providing them to the samplers.

Example: Station Identification Label



Example: RQ Label



Example: Blank Label



Checking Labels for Status Network Projects

Every quarter, a set of station ID and RQ labels is printed for each of the resources monitored during the following three months. The PM ensures that the labels have the correct zone, resource, month, and field ID. The RQ labels also are checked against the schedule developed by the QAO (located in \\floridadep\data\DEAR\WQMP\SOL_Z\Sampling Schedule). As sites are excluded, samplers may request additional labels through their PM who, in turn, communicates the need to the PM responsible for labels.

Each PM checks that there are labels for the appropriate number of Quality Assurance/Quality Control (QA/QC) blanks (field blanks and equipment blanks) scheduled. One blank is collected for every five water quality samples (blanks are not collected for sediment samples). An equipment blank is collected for each piece of equipment used during a project. For example, if the sampling team will be using

multiple groundwater pumps, an equipment blank is collected for each pump within the allotted time frame for the project. A field blank is collected during a project if samples are collected without equipment (surface water direct grabs into sample bottles or groundwater samples from wells with in-place plumbing).

Checking Labels for Trend Network Projects

Every quarter, a suite of station ID and RQ labels is printed for the following three months' Surface Water Trend sampling, as well as labels for the quarterly Groundwater Trend sampling. Each PM ensures that the labels have the correct zone, resource, month, and field ID. The RQ labels are also checked against the schedule developed by the QAO (located in \\floridadep\data\DEAR\WQMP\SOL_Z\Sampling Schedule).

Each PM checks that there are labels for the appropriate number of QA/QC blanks (field blanks and equipment blanks) scheduled. One blank is collected for every five water quality samples (blanks are not collected for macroinvertebrate samples). An equipment blank is collected for each piece of equipment used during the project. For example, if the sampling team will be using multiple Van Dorn samplers, an equipment blank is collected for each Van Dorn within the allotted time frame for the project. A field blank is collected during a project if samples are collected without equipment (surface water direct grabs into sample bottles or groundwater samples from wells with in-place plumbing).

Kits / Coolers

The laboratory prepares and ships coolers containing sample bottle kits for every sampling event. Coolers are shipped approximately two weeks prior to sampling so that they are received at least one week in advance. Upon receipt, field staff must check the coolers for the appropriate sampling kits and report problems to their PM. If there are any problems with the kits, such as missing / broken / incorrect bottles, the field staff or PM contacts the QAO to arrange for immediate shipment of the necessary items.

Purchasing Equipment and Supplies

PMs are responsible for communicating with field staff about equipment needed for water quality monitoring. If there is a need for new or replacement equipment, PMs assist with obtaining the necessary approvals by ensuring that the need has been communicated to the field staff supervisor and the Section Administrator.

Field Audits

Audits are conducted to assess the samplers' ability to follow the required sampling protocols for Status and Trend Network projects. The frequency of audits will depend on the type of sampling that each group of field staff conducts and the number of projects scheduled for that group. It is considered an external audit when the WMS QAO conducts a field audit on sampling staff, and an internal audit when the manager of the sampling team or lead sampler conducts the audit.

The WMS QAO will conduct at least one external field audit for each sampling group at least once every 18 months. PMs attend these audits and complete their own Field Audit Form. The QAO compiles the findings from both Field Audit Forms into the external audit report issued to the sampling group.

Each year, contracted sampling groups are required to conduct internal field audits at the frequency specified in their contractual agreements. These internal audits are conducted by a manager, an approved Lead Sampler, or QAO at the contracted sampling agency, using the WMS Field Audit Form. Findings

are reported in the sampling agency's quarterly progress reports that are submitted to the PM (see the Project Deliverables for Contracted Staff section for more information). Internal audits are not required for DEP ROC staff, but teams may elect to perform internal audits as needed.

Section 3: Reviewing Deliverables

Before checking the data collected by samplers, PMs ensure that all required documentation was received. Internal (DEP) and external (contracted) staff have very similar requirements, but some requirements and timelines are slightly different. Therefore, this chapter is divided into two sections, one related to internal staff, and one related to external staff. Of note, projects where data are collected by non-DEP staff through a collaborative agreement may have deliverables that do not conform to the lists provided in either section below. For these projects, the PM, QAO, and Section Administrator discuss the expectations for deliverables and develop a checklist for the actions that PMs will perform.

Project Deliverables for DEP Staff

DEP samplers submit the **project paperwork** for each Status Network or Trend Network project within 30 days after project completion, i.e., 30 days after the final sample of the project is collected. For each project, it is the PM's responsibility to check that the appropriate sites were sampled and the required data collected, as outlined in the Status and Trend Networks Sampling Manual. The PM maintains a project tracking spreadsheet listing when deliverables are received and approved in the front of their Projects folder or on a DEP Network Server, per the WMS Environmental Administrator's request.

The project paperwork must contain:

- **Quality Assurance (QA) Report**. DEP sampling teams complete a one page form that summarizes the number of samples collected, QA/QC activities, problems, and corrective actions for the project. The same QA Report form can be used for several projects, if the project paperwork for these projects is submitted at the same time. Please refer to the Status and Trend Networks Sampling Manual for an example of a QA Report.
- **Field data sheets**
- **Bioassessment data sheets** (if applicable). A diagram showing the schedule for bioassessment data collection is available in the Appendix of the Status and Trend Networks Sampling Manual.
- **Micro Land Use forms** (if applicable). Micro land use data are collected at all groundwater Status sites and once annually for Groundwater Trend sites.
- **Custody sheets**
- Copies of **relevant pages of log books** (calibration, cleaning, maintenance, and standards/reagents), in hard copy or electronically.
- **Photos** of sampled Status sites and Status sites excluded in the field. Photos are also taken once annually for all Surface water Trend sites. These photos are provided electronically and saved on a DEP Network Server (\\floridadep\data\DEAR\DEAR_Common\Dear Sampling File Storage) following inventory and review by the PM.

PM's complete the following tasks for each set of project paperwork received:

- Review the QA Report to ensure that it is accurate and complete and file it electronically for the QAO to review.
    - Save a copy of the QA Report in the folder for the appropriate year and project, located in \\floridadep\data\DEAR\DEAR_Common\Dear Sampling File Storage.
    - Enter the date that the QA Report was received in the tracking log located in \\floridadep\data\DEAR\WQMP\SOL_Z\QA_Reports.
- Ensure that field data were entered into Survey123. Typically data entry occurs during the sampling event. If data entry is delayed, it must be completed within 30 days after project completion (i.e., 30 days after the final sample of the project is collected). For Status Network projects, ensure that site reconnaissance information, including date sampled or exclusion criteria, were entered into GWIS Database Utilities (https://prodapps.dep.state.fl.us/gwis/) within 30 days after project completion.
- For Status Network projects, ensure that location data collected with Bad Elf units were accurately collected and submitted through Survey123 within 30 days after project completion (preferably within two weeks after project completion).

Project Deliverables for Contracted Staff

Each quarter, contractors submit a series of documents related to the Status and Trend sampling conducted during the previous quarter. These documents are due within 30 days after the end of the quarter, and consist of:

- A **progress report** for the quarter that includes a statement of percent completion of tasks.
- An **invoice** for the quarter.
- Project paperwork for all projects completed within the quarter. The project paperwork must include the following:
    - **Field data sheets**.
    - **Bioassessment data sheets** (if applicable). A diagram showing the schedule for bioassessment data collection is available in the Appendix of the Status and Trend Networks Sampling Manual.
    - **Micro Land Use forms** (if applicable). Micro land use data are collected at all groundwater Status sites and once annually for Groundwater Trend sites.
    - **Custody sheets**.
    - Copies of **relevant pages of log books** (calibration, cleaning, maintenance, and standards/ reagents), in hard copy or electronically.
    - **Photos** of sampled Status sites and Status sites excluded in the field. Photos are also taken once annually for all Surface water Trend sites. These photos are provided electronically and saved on a DEP Network Server (\\floridadep\data\DEAR\DEAR_Common\Dear Sampling File Storage) following inventory and review by the PM.
- A **QA Report** that contains the contract number and a summary of the number of samples collected, QA/QC activities, problems, and corrective actions for all projects completed during

that quarter. Please refer to the Status and Trend Networks Sampling Manual for an example of a QA Report. The October through December QA Report also contains a field sampling Quality Assurance Project Plan (QAPP) for Surface Water Trend sampling.

It is the PM's responsibility to check that the appropriate sites were sampled and the required data collected, as outlined in the Status and Trend Networks Sampling Manual and contract attachments. In addition to the deliverables described above, PMs ensure that the field data for each project are submitted correctly as described below:

- Ensure that field data were entered into Survey123. Typically data entry occurs during the sampling event. If data entry is delayed, it must be completed within 30 days after project completion (i.e., 30 days after the final sample of the project is collected).
- For Status Network projects, ensure that site reconnaissance information, including date sampled or exclusion criteria, were entered into GWIS Database Utilities (https://prodapps.dep.state.fl.us/gwis/) within 30 days after project completion.
- For Status Network projects, ensure that location data collected with Bad Elf units were accurately collected and submitted through Survey123 within 30 days after project completion (preferably within two weeks after project completion).

After the PM determines that the contractors fulfilled their part of the agreement, the PM processes the invoices within five days. PM's complete the following tasks for each set of deliverables received:

- Ensure that an invoice was received within 30 days after the end of each quarter. The contractor has until July 15 for Status and Groundwater Trend contracts, and October 15 for Surface Water Trend contracts, to submit the final invoice for the fiscal year.
- Send an electronic copy of the QA Report to the WMS QAO.
- Complete a Contract Invoicing Form in the Electronic Forms and Flow (ELFF) application (https://www.floridadep.net/resources/electronic-forms-and-flows).
    - List the DEAR Budget Coordinator as the reviewing authority.
    - Scan or convert the following documents to .pdf format and load them into the form as attachments: the invoice, progress report, and any other required supporting documentation.
    - Save a copy of the completed Contract Invoicing Approval Form on a DEP Network Server.
    - Submit the completed Contract Invoicing Form in ELFF. The form will be reviewed by the reviewing authority and sent on to the Contracts Disbursements Section.
- After one month, check with the DEAR Budget Coordinator to ensure payment has been made. Record Voucher # in tracking file.

A Contract and Grant Management Spreadsheet (Appendix B) is kept in the front of the PM's contracts folder or on a DEP Network Server.

Project Deliverables for Collaborative Agreements

For projects where Status Network or Trend Network data is collected under a collaborative agreement, the PM, QAO, and Section Administrator should meet with managers and staff from the collaborating

agency. Project deliverables, quality assurance, and responsibilities for all affected roles should be agreed upon. Examples of items to consider include the following.

- **Data collection plan**: A monitoring plan will be developed with the collaborative agency which shall include: 1) which monitoring stations will be sampled, and at what frequency, 2) how field data will be electronically transmitted to DEP, 3) how the water quality samples will be shipped to the DEP lab, and 4) what project documentation is necessary, who it should be provided to, and by what means and frequency.
- **Equipment and supplies**: DEP and the collaborative agency will determine who will be responsible for providing sampling equipment and supplies.
- **Sampling procedures**: The collaborating agency should follow the procedures in the Status & Trend Networks Sampling Manual. Field staff should be aware of any differences between Status & Trend sampling procedures and procedures for other projects that they participate in.
- **Training**: Field staff responsible for collecting data will be required to attend the Status & Trend Sampling training. Additional on-site training may be necessary depending on the circumstances of the collecting agency.
- **Audits**: External audits will be conducted by the WMS QAO, at a frequency dependent on the type of sampling being conducted and the number of projects scheduled for the collaborative agency. DEP and the collaborative agency will determine if internal audits will also be conducted by the collaborative agency.

Section 4: Reviewing and Managing Data

After all the deliverables are accounted for, the PM checks the data for accuracy. This chapter provides an overview of WMS data management and checklists for data review.

Overview

The WMS uses multiple applications to oversee data flow. Collectively, these platforms are referred to as the Oracle Generalized Water Information System (OGWIS). Depending on the type of data (reconnaissance, field parameters, or lab data), a different application is used to upload or access the data. The following list describes the applications in detail. Please refer to the WMS Data Management Protocols document at https://floridadep.gov/dear/watershed-monitoring-section/documents/wms-data-management-protocols for more information.

- GWIS Database Utilities: This is an internet application that samplers or PMs use to enter reconnaissance information for Status sites. It also connects users to other Status and Trend station information including location, water resource type, and links to maps and aerial photographs via Map Direct (https://ca.dep.state.fl.us/mapdirect/?focus=gwis). PMs use the Database Utilities to track the progress of Status site reconnaissance and to add or edit station information, such as landowner contact information. For each project, samplers enter either the date sampled or justification and comments for excluded sites[1]. These entries are due within 30

[1] Exclusions are covered at length in the Sampling Manual and Status Network Reconnaissance Manual: https://floridadep.gov/dear/watershed-monitoring-section/documents/status-and-trend-networks-sampling-manual; https://floridadep.gov/dear/watershed-monitoring-section/documents/status-network-recon-manual

days (preferably 2 weeks) of project completion (i.e., 14-30 days after the final sampling date of the project).

The URL for the GWIS Database Utilities Internet application is https://prodapps.dep.state.fl.us/gwis/. This application can be accessed via Chrome or Firefox, and DEP staff will login using the same username and password as their Outlook account. Please see the GWIS Database Utilities User's Manual and Data Management Protocols for directions on how to add or edit station information using the Database Utilities.

- Survey123 Field Application: This application can be installed on desktop / laptop computers and mobile devices. Samplers login to this application using their organization ArcGIS Online user credentials, and enter **field data from Status and Trend site visits**. The data entered into this application are stored temporarily in an ArcGIS Online feature layer, and then loaded into the GWIS database by the DM or DC. Typically data entry occurs during the sampling event. All field data must be submitted within 30 days (preferably 2 weeks) after project completion. Field staff must notify the DM and DC when all data for each project have been entered. Additional instructions for using the Survey123 Application are available on the Watershed Monitoring Information Center FTP site (https://floridadep.gov/dear/watershed-monitoring-section/content/watershed-monitoring-information-center), in the sampling information section.
- Global Navigation Satellite System (GNSS) Units: Samplers collect **location data from Status sites** using Bad Elf GNSS devices and the Survey123 application on their field tablets / smartphones. Copies of the station data (location data, location metadata, and owner / contact information) collected with Survey123 are automatically saved in the WMS Data_Review SharePoint folder. The PM downloads a copy of the station data at the end of each Status Network project. The PM uses Map Direct to review the location data and works with the DM and DC to make corrections to the station data in GWIS if needed.
- Automated Data Management (ADM): This is an Oracle Forms application installed on PMs computers Many of the reports generated by this application are viewed using the AutoDM web interface, available at https://prodapps.dep.state.fl.us/autodm/. ADM is used to track the progress of individual projects (from preparation through release of the data), to review lab and field data, and to generate reports from the data. Please see https://floridadep.gov/dear/watershed-monitoring-section/documents/wms-automated-data-management-adm-autodm-application for a detailed ADM manual.

PMs are responsible for ensuring that all data are transferred in full and on a timely basis, for tracking their review, and for reporting exceedances of primary drinking water standards in potable water wells. Because this entire process can take up to nine months, PMs use a Status and Trend data tracking sheet such as the one saved in \\floridadep\data\DEAR\WQMP\SOL_Z\Data Review FAQ\Applicable to All projects\REVIEW_CHECKLIST_EXAMPLE.xlsx. Appendix D provides a summary of the deadlines for major data review tasks. All data are considered provisional until they have been reviewed by the DM, PM, and any additional data reviewers designated by the contracted sampling agency. After this point, the data are considered release quality, and are uploaded to the Watershed Information Network (WIN) public database (https://floridadep.gov/dear/watershed-services-program/content/winstoret) by the DC.

Data Review Procedures

Status Network Location Data

Copies of the station data (location data, location metadata, and owner / contact information) collected with Survey123 are automatically saved in the WMS Data_Review SharePoint folder. The PM downloads a copy of the station data at the end of each Status Network project. The PM uses Map Direct to review the location data, and works with the DM and DC to make corrections to the station data in GWIS if needed. Appendix E contains a detailed checklist of the steps which must be performed when reviewing Status Network location data.

Combined Field and Lab Data

Once the lab and field data files have been uploaded into GWIS, the DM will notify the PM that the provisional data are ready for review. The PM uses ADM to prepare reports that will be used to review the data. These reports can be shared with staff at the sampling agencies, as needed. All corrections to data visible in reports from ADM are submitted to the DM by filling out a **Data Correction Request Form** (\\floridadep\data\DEAR\WQMP\SOL_Z\datamgmt\DATA_Corrections_Tracking\GWIS Sample Data Corrections). After approving the corrections made by the DM, the PM releases the data for uploading to WIN. Appendix E contains a detailed checklist of the steps which must be performed when reviewing the provisional data. Additional instructions for using ADM are available in the ADM Manual at https://floridadep.gov/dear/watershed-monitoring-section/documents/wms-automated-data-management-adm-autodm-application.

Additional Resources for Data Reviewers

An archive of previous data review questions is saved at \\floridadep\data\DEAR\WQMP\SOL_Z\Data Review FAQ. This archive contains guidance on how to document a variety of scenarios that may occur during Status and Trend Network projects. Examples include missing documentation, detections in field blanks and/or equipment blanks, and resampling. When PMs encounter an unusual data management scenario, they should refer to this archive for guidance. If documentation for the scenario is not found in the archive, the PM discusses the scenario with the QAO, DM, and/or other PMs, and saves the resulting guidance to the Data Review FAQ archive.

Additional Data Entry and Tracking

Equipment and Field Blanks

Each quarter, the QAO updates the Surface Water and Groundwater blank tracking sheets. Spreadsheets from previous years are saved in \\floridadep\data\DEAR\WQMP\SOL_Z\QAQC Blanks. Spreadsheets for the current year are saved in the WMS Tracking_Spreadsheets SharePoint folder. A shortcut to the SharePoint folder is saved in the DEP Network folder listed above. These reports are intended to help PMs and the QAO with identifying the sources of contamination in blanks. Each quarter (or more frequently if needed), PMs fill in unknown or missing information in their tab(s) of the spreadsheets. Items that are commonly unknown or missing include Equipment Used and Actions Taken. The PM also updates the Spreadsheet Edited By column for rows where they have added or updated information. The Instructions tab in each spreadsheet contains more information.

Bioassessment Data

After the field and lab data are uploaded to WIN, any bioassessment data collected for the project must be entered into the Statewide Biological (SBIO) Database. PMs keep track of bioassessment data entry progress using a tracking spreadsheet located in the WMS Tracking_Spreadsheets SharePoint folder.

- Bioassessment data collected by non-DEP staff must be entered by the PM. After the bioassessment data have been entered, the PM asks another PM to review the data for accuracy and completion.
- Bioassessment data collected by DEP staff are entered into SBIO by the field staff. However, the PM verifies that the data have been entered using the Retrieve Data tool in the SBIO application. If data have not been entered within 30 days after the water quality data for a project have been released, the PM contacts the field staff to develop a plan for entering these data. PMs may assist the DEP field staff with bioassessment data entry as needed.

Section 5: Producing and Disseminating Information to the Public

Letters to Property Owners

After the data have been reviewed and released, the PM uses ADM to produce water quality reports for letters to be sent to the landowners who request monitoring results. Groundwater Trend letters for privately owned wells are sent upon request. Letters for Groundwater Trend wells typically contain water quality reports from all sampling events conducted during the previous year.

Letters to Public Authorities

In addition to notifying landowners, the WMS also informs the Florida Department of Health (DOH) and the DEP Water Supply Restoration Program (WSRP) of exceedances in state drinking water standards for groundwater. The DOH and/or WSRP will notify the landowner if further sampling or filter installation are required.

Checklist for Producing Water Quality Reports and Letters

The following tasks are performed by the PM, after the data for an individual project have been reviewed and released. The PM should confirm that this project's station data in GWIS are accurate before proceeding with the steps below.

- Notify the WMS Surface Water Data Analyst (DA) that the project is ready for owners letters and water quality threshold exceedance checks. The DA will run R markdown scripts that check for water quality thresholds exceedances, summarize findings by station, and use the property owners and contact information in the GWIS station table to generate letters as needed.
    - Letters are sent to all property owners or contacts that have requested a copy of the data through communications with field staff or the PM.
    - If exceedances were present for groundwater primary drinking water thresholds or Class I surface water quality thresholds, the property owner or contact is added to the list of persons who will receive copies of the data.
    - If exceedances were present, share the results and associated station information (WIN ID, latitude, longitude) with the following entities, in addition to notifying the property owner or contact:
        - Exceedances of groundwater primary drinking water thresholds in potable and non-potable wells:
            - DOH (Michael Berry)

        - DEP WSRP (Ethan Morrow).
    - Exceedances of Class I surface water quality thresholds:
        - DEP WSRP (Ethan Morrow).
        - Utility responsible for drinking water production using the sampled waterbody
- Review all letters generated by the DA to ensure that each letter is worded appropriately for the waterbody that was sampled and that letter recipient details are accurate and formatted correctly.
- For letters that will be sent via U.S. Postal Service mail, use Microsoft Word to print mailing labels or print letter recipient details directly on the envelopes.
- For letters that will be sent via email, convert the reviewed letter to PDF format before attaching it to the email. This preserves document formatting and ensures that the recipient will be able to open the document with any free PDF reader software.
- Once all letters have been sent for a project, open the ADM reports tab for that project and click on the **Record Date** button. The date recorded is the date that the last letter for the selected project was sent (i.e., the date when letters are complete for the entire project).

Section 6: Participating in Meetings and Training Programs

Meetings

WQMP Meetings

The WQMP conducts periodic meetings to exchange information and provide training for contractors and monitoring partners. The ROC Annual Meeting is the forum in which participants share new developments in the program, report results, train samplers in new methods, and discuss all aspects of the sampling networks. PMs often are recruited to give presentations or demonstrations.

Biocriteria Meetings

The Aquatic Ecology and Quality Assurance Section (AEQAS) conducts periodic Biocriteria Meetings to exchange information and conduct training with department staff, contractors, and other monitoring partners. The Biocriteria Meeting is the forum in which the participants share information on new biological indices, report results, train samplers in new bioassessment methods, and discuss specific biological aspects of the sampling networks. PMs may attend for information sharing or training purposes.

Training

Sampler Training

Any person collecting water samples for the Status or Trend sampling networks must participate in a Sampler Training at least once every five years. The WMS QAO conducts Sampler Training at least once a year. PMs are expected to give presentations or demonstrations.

Bioassessment Training

Any person collecting Habitat Assessment (HA) data, Stream Condition Index (SCI) samples, or Lake Vegetation Index (LVI) data for the WMS must complete bioassessment training and receive DEP

certification. Bioassessment training information is available at https://floridadep.gov/dear/bioassessment/content/bioassessment-training-evaluation-and-quality-assurance. All bioassessment testing, auditing, and certification is performed by the AEQAS. PMs should check the online Bioassessment Method Proficiency Registry to ensure that field staff have met the proficiency requirements for the bioassessment methods utilized during Status and Trend Networks sampling events.

Section 7: Initiating and Renewing Contracts

This chapter applies to PMs who manage contract / grant agreements with external agencies.

Overview and Funding

Some of the sampling for the Status and Trend Networks is conducted through contracts / grants with NWFWMD, SJRWMD, and Alachua County. The PM who manages these contracts / grants is responsible for ensuring that:

- Work is completed on time and according to the QA/QC protocols and Standard Operating Procedures outlined in the Status and Trend Networks Sampling Manual, and any other contract/grant agreement attachments.
- Data submittals and deliverables are checked for accuracy.
- Invoices are reviewed and processed to ensure that staff or contractors / grantees are paid within the allotted time frame.
- All contract / grant agreements are amended or reinitiated successfully before services are due for the next fiscal year.

The funding for the Status and Trend Networks, described below, generally comes from two sources:

Surface Water Trend

Surface Water Trend sampling is funded by federal dollars (Clean Water Act Section 604 money). As this is federal funding, the fiscal year used for these contracts is October 1 through September 30.

Fiscal Year for Surface Water Trend

Quarter	Dates
1	October 1 – December 31
2	January 1 – March 31
3	April 1 – June 30
4	July 1 – September 30

Groundwater Trend, Groundwater Status, and Surface Water Status

The Status Network and Groundwater Trend Network are funded by the State Water Quality Assurance Act Trust Fund. As this is state funding, the fiscal year used for these contracts July 1 through June 30.

Fiscal Year for Groundwater Trend, Surface Water Status and Groundwater Status

Quarter	Dates
1	July 1 – September 30
2	October 1 – December 31
3	January 1 – March 31
4	April 1 – June 30

PMs who manage contracts use a Contract and Grant Management Spreadsheet (Appendix B) to document all actions pertaining to each contract / grant.

Contract / Grant Development

WMS works with the department's Procurement Section in developing contracts and grants. Final contract / grant content is the responsibility of the Office of Procurement. Sampling contracts and grants must be amended or reinitiated each fiscal year. PMs begin the process at least four months before the end of the contract or grant period, and follow procedures in the department's Contract / Grant Manager training resources (https://www.floridadep.net/resources/contracts).

PM's complete the following tasks when developing each contract / grant (including renewals):

- Complete the DEAR Contract Initiation Form and include the following attachments:
  - Budget-Cost Analysis Form (Form 55-229).
  - Agreement Scope of Work with requested edits or additions.
- Obtain all required signatures on the DEAR Contract Initiation Form and email the completed form (plus the scope of work and any other attachments) to the department Procurement Office, where their staff will develop the final contract language.
- Once the package is returned to the PM, review contract and forms for accuracy. Contact the Procurement Office if errors are present.
- The final agreement and its attachments are sent first to the contractor / grantee for signature, who then returns the documents for signature by the Division Director (or other DEAR managers with authorization to execute agreements).
- After all signatures have been obtained, send a copy of the signed agreement to the contractor / grantee.
- Save a copy of the signed agreement to a DEP Network server.
- Email the signed agreement and completed Florida Accountability Contract Tracking System (FACTS) workbook to the department's Procurement Office.

Appendix A: Project Manager Responsibilities, Listed by Schedule

Note: The time frames listed below are guidelines. Some items should be addressed on an ongoing basis, or more frequently than the time frame listed. Setting up recurrent appointments in an Outlook calendar can help with keeping track of these responsibilities. Unless otherwise indicated, these tasks apply to all PMs.

Weekly:

- Conduct coordination meetings with field staff. Meeting frequency may be reduced to fortnightly at the discretion of the PM and field staff managers.
- Relay issues affecting samplers discussed in WMS Staff Meetings; for example, ensure that field staff are notified of trainings, deadlines, sampling coordination, or data management needs.

Monthly:

- Check labels for Status Network projects and send to samplers.
- Ensure that Surface Water and Groundwater Trend field data from the previous month are entered into Survey123 and that the DM and DC have been notified.
- Use data review tracking spreadsheets and ADM to determine whether any data need to be reviewed, corrected, released, or if any letters need to be sent to owners/contacts.
- Review the monthly Groundwater Trend, Surface Water Trend, or Status deliverables for each project. Provide feedback to samplers (e.g., needs more documentation, provide missing field sheets, complete documentation differently, etc.). See Project Deliverables for DEP Staff for more details.

Quarterly:

- Check labels for Groundwater and Surface Water Trend projects and send to samplers.
- Update the Surface Water and Groundwater Blank Tracking sheets (spreadsheets and links to shared OneDrive saved in \\floridadep\data\DEAR\WQMP\SOL_Z\QAQC Blanks\)
- For projects with data collected by external staff: review the series of documents described in Project Deliverables for Contracted Staff. Provide feedback to samplers (e.g., needs more documentation, provide missing field sheets, complete documentation differently, etc.).
- Update the WMS Bioassessment Tracking spreadsheet.

Annually:

- At end of calendar year, check to ensure that all sampling field sheets & documentation have been received and filed.
- For Groundwater Trend wells: ensure that Micro Land Use, metals samples, and site photographs were taken once within the calendar year.
- For Surface Water Trend sites: ensure site photographs and location data were taken once within the calendar year, and that bioassessment data were collected at appropriate sites.
- Plan and schedule field sampling audits with the QAO.
- Prepare presentation(s) for Sampler Training.
- Prepare presentation(s) for Q-Meeting.

- For PMs who manage contract / grant agreements with external agencies:
    - Ensure that a Quality Assurance Protection Plan (QAPP) is included with the first QA Report of the year, for Surface Water Trend Network agreements.
    - Before the end of the fiscal year, develop new contract(s). Consult Section 7: Initiating and Renewing Contracts for details.

All the time:

- Populate data review tracking spreadsheets as data are received/reviewed/released.
- If something is needed to ensure samplers' safety, request it ASAP.
- Request immediate notification from samplers if something goes wrong, including, coolers not picked up, wrong RQ sent with shipment, kits / coolers not sent on time, etc. This is important because there may be additional actions required that are beyond the samplers' knowledge or control.

Appendix B: Contract and Grant Management Spreadsheet

Example contract and grant management spreadsheet for invoices for the 2012 – 2013 fiscal year.

Contract #	Amendment	Invoice	Invoice #	Invoice Date	Invoice Period	Amount	Balance	Contract Total	Date Sent to DEP Disbursement Section
G00*xx* NWFWMD	Original	1							
G00*xx* NWFWMD	Original	2							
G00*xx* NWFWMD	Original	3							
G00*xx* NWFWMD	Original	4							
G00*xx* NWFWMD	Amendment #1	1							
G00*xx* NWFWMD	Amendment #1	2							
G00*xx* NWFWMD	Amendment #1	3							
G00*xx* NWFWMD	Amendment #1	4							
G000*x* SJRWMD	Original	1							
G000*x* SJRWMD	Original	2							
G000*x* SJRWMD	Original	3							
G000*x* SJRWMD	Original	4							
G000*x* SJRWMD	Amendment #1	1							
G000*x* SJRWMD	Amendment #1	2							
G000*x* SJRWMD	Amendment #1	3							
G000*x* SJRWMD	Amendment #1	4							

Appendix C: Relevant Web Pages, Directories, and Documents

Name	Purpose	Location	Access Restrictions
SOL_Z	Common directory that all WMS employees can access. Contains any files that are shared within the Section.	\\floridadep\data\DEAR\WQMP\SOL_Z\	Can only be accessed from computers connected to the DEP network.
Dear Sampling File Storage	Common directory where reviewed project documentation is saved for all DEAR monitoring projects.	\\floridadep\data\DEAR\DEAR_Common\Dear Sampling File Storage	Can only be accessed from computers connected to the DEP network.
Watershed Monitoring Information Center	Provides information to field staff collecting data for Status & Trend Network projects (Survey123 instructions, manuals, field sheets, sampling schedules, training presentations, etc.). Also provides links to presentations from previous Q-Meetings and a directory of contact information.	https://floridadep.gov/dear/watershed-monitoring-section/content/watershed-monitoring-information-center	N/A
Generalized Water Information System (GWIS) Database Utilities	Reconnaissance of Status sites, as well as enter Status and/or Trend site data (as opposed to monitoring data). Contains interactive maps of sites via Map Direct.	https://prodapps.dep.state.fl.us/gwis/	Employees use same login credentials as their DEP Outlook accounts.

Name	Purpose	Location	Access Restrictions
Watershed Monitoring Home Page	Provides information about the WMS projects and reporting, including the 305(b) report, brochures, Status and Trend Report Cards, and other relevant links.	https://floridadep.gov/dear/watershed-monitoring-section	N/A
Secure File Transfer Protocol (SFTP) Site	Used for file exchanges; large files often are posted here rather than being sent as an e-mail attachment.	https://dep-file-portal.dep.state.fl.us/login	N/A
Watershed Monitoring Sediment Guidelines	Contains documents that assist staff with issues related to freshwater and saltwater sediment contamination.	https://floridadep.gov/dear/watershed-monitoring-section/content/sediment-guidelines-index	N/A
WMS Design Documents	Give a detailed description of the WMS program for various cycles.	Design Document for current year: https://floridadep.gov/dear/watershed-monitoring-section/documents/watershed-monitoring-design-document. Archive of previous Design Documents: https://publicfiles.dep.state.fl.us/dear/DEARweb/WMS/Reports_Docs_SOPs/Design_Docs/.	N/A
WMS Data Management Protocols	Describes procedures for WMS data management.	https://floridadep.gov/dear/watershed-monitoring-section/documents/wms-data-management-protocols	N/A
WMS Recon Manual	Guides samplers and PMs on office and field reconnaissance procedures for Status Network projects.	https://floridadep.gov/dear/watershed-monitoring-section/documents/status-network-recon-manual	N/A

Name	Purpose	Location	Access Restrictions
WMS Sampling Manual	Provides detailed sampling procedures for Status and Trend Networks projects.	https://floridadep.gov/dear/watershed-monitoring-section/documents/status-and-trend-networks-sampling-manual	N/A
DEP Standard Operating Procedures (SOPs)	Lists all sampling and laboratory analysis procedures conducted at the department.	Field procedures: https://floridadep.gov/dear/quality-assurance/content/dep-sops. Lab procedures: https://floridadep.gov/dear/florida-dep-laboratory/content/dep-laboratory-quality-assurance-manual-and-sops.	N/A
WMS Quality Manual	Outlines QA procedures for the WMS.	https://floridadep.gov/dear/watershed-monitoring-section/documents/wms-quality-manual	N/A

Appendix D: Data Review Tasks and Deadlines

The table below summarizes the deadlines for data review tasks associated with each project.

Projects	Person(s) Completing Task	Task Description	Deadline
Status & Trend	Field Staff	Enter field data into Survey123	30 days after sampling is complete.
Status	DM or DC	Notify PM that station data are available for review via GWIS Database Utilities.	2 weeks after project completion notification from ARC.
Status & Trend	Field Staff	Compile project paperwork, review for completeness, and send to PM.	DEP Staff: 30 days after sampling is complete. Contracted Staff: 30 days after end of quarter that project was completed in.
Status	PM	Review project paperwork. Review station data and recon tracking information via GWIS Database Utilities (see data review checklist in Appendix E). Notify DM and DC when station data review is complete. Notify Analysis and Reporting Coordinator (ARC) when recon tracking information review is complete.	60 days after sampling is complete.
Status & Trend	DM or DC	Merge field data and lab data. Notify PM that provisional data are available for review via ADM.	30 days after sampling is complete and applicable lab data is made available.

Projects	Person(s) Completing Task	Task Description	Deadline
Status & Trend	PM	1. Review provisional data for accuracy using ADM and GWIS Database Utilities (see data review checklist in Appendix E). 2. If corrections are needed to sample or results level data, document using data correction form. Email completed correction form to DM. Corrections will be made within 5 business days after correction request is received. 3. If corrections are needed to station level data, contact DM and DC. Corrections will be made within 5 business days after correction request is received. 4. Repeat Steps 1 - 3 as many times as needed until all corrections are complete. 5. If corrections are not needed, release data using ADM. 6. Email pivot table with blank batch ID information to DC.	30 days after receipt of provisional data or 60 days after sampling is complete (whichever is greater)
Status & Trend	DEP Field Staff or PM (for data collected by non-DEP staff)	If bioassessment data were collected, enter, review, and authorize data in SBIO.	Trend: DEP - 30 days after sample collection: non-DEP - 60 days after end of quarter that project was completed, Status: 30 days after station data loaded to WIN.
Status	PM	Check released data for water quality exceedances. Send letters to property owners and public authorities (see instructions in Section 5 of this document)	360 days after sampling is complete.

Appendix E: Data Review Checklists for Status & Trend Projects

Inventory Project Paperwork and Check for Accuracy

The data reviewer performs the following tasks for all Status and Trend Networks projects. These steps ensure that the project paperwork is complete and accurate. This is necessary because the project paperwork will be used to verify that information that has been entered or transferred into the GWIS database is correct. This step also helps the data reviewer understand any problems or quality assurance issues that were encountered during data collection for the project.

1. Inventory project paperwork to ensure that the following are present:
    a. One completed field sheet present for each station sampled.
    b. All samples documented on custody sheets.
    c. (Surface Water Only) Field sheets for any bioassessment data collection performed during this project.
    d. Calibration logs present for all days that sampling was conducted. Meter ID(s) on calibration logs matches meter ID(s) on field sheets.
    e. Temperature verification logs present for all YSIs used during project.
    f. (Groundwater Only) Turbidity meter calibration log present, and verifications documented for all days that sampling was conducted.
    g. (Surface Water Only) Depth verification logs present for all devices used during project.
    h. Equipment cleaning logs present for project duration.
    i. Equipment maintenance logs and reagents logs present for project duration. If electronic log books are used (e.g., DEP SharePoint logs) then paper copies do not need to be filed with individual projects.
    j. QA report present. Use this as a quick reference for any issues that may require qualifiers / extra comments / etc.
2. (Status Network Projects Only) Use GWIS Database Utilities Recon Tracking to inspect information about all sites evaluated for the project.
    a. Verify that sample dates are entered and are correct for sampled sites.
    b. Verify that exclusion category and criteria are entered for excluded sites.
    c. Verify that there are no sites listed as “Can be sampled = N/A” with random sample locations lower than that of the highest sampled random sample location.
3. Check project paperwork for accuracy.
    a. Check pass/fail accuracy for all entries in calibration logs by comparing results to acceptance criteria.
        - If calibration or ICV fails, meter should not be used until passing IC and ICV data obtained. If meter was used, all field data for parameters that failed calibration or ICV need J-qualifier & result comment.
        - If CCV fails, all field data from that day for parameter that failed CCV need J-qualifier & result comment.

b. Check expiration dates listed for all standards. If an expired standard was used, the standard must have been verified prior to using it for meter IC/ICV/CCV. Check standards log for verification documentation. If verification not performed, all field data collected for that parameter on that day need J-qualifier & comment.

c. Verify that all field measurements collected each day meet chronological bracketing requirements.

   - For pH, specific conductance, and DO, must have passing verification (ICV or CCV) from before sampling and after sampling. If either are missing, or if any data are collected after end-of-day CCV, all affected field data from that day need J-qualifier & comment.
   - For temperature, must have passing quarterly verification from before sampling event. If missing, remind field staff to perform temperature verification ASAP. All temperature data from before verification need J-qualifier & comment. If a temperature verification fails, add qualifier & comment to all temperature data collected since last passing verification.

d. Verify that all field measurements collected each day for pH and specific conductance are quantitatively bracketed by calibration or calibration verification data.

   - Before and after passing calibration log entries (IC, ICV, or CCV) must have one higher standard value and one lower standard value, than all values measured in field. If any field measurements are outside range encompassed by standards, those data need J-qualifier and comment.
   - If specific conductance values measured in the field are < 100 umhos/cm, must have CCV using 100 umhos/cm standard. (Can have more than one CCV to meet bracketing requirement for higher values.) If 100 umhos/cm standard not used for CCV, all field measurements < 100 umhos/cm need J-qualifier and comment.

e. Verify that data qualifiers (usually “J” for calibration / bracketing failures, “S” for secchi visible on bottom, "O" for measurements not performed, or "?" for negative DO) and comments have been documented on field sheets as needed.

f. (Groundwater Only) Check all calculations on field sheets (water column height, minimum purge volume, actual purge volume, stability criteria). Apply J-qualifiers to affected field data if stability criteria are not met. Apply J-qualifiers to field and lab data if actual purge volume is less than minimum purge volume. Apply data qualifiers (usually “J”) as needed if other field SOPs were not followed.

g. (Status Network Lakes Only) Check that all items are complete in sediment sampling section of field sheet.

   - Verify that sediment sample depth is equal to the total depth of the waterbody. If it is not, request clarification from the field staff.
   - Verify that the number of sediment grabs collected was ≥ three. If it was < three, J-qualifiers and result comments will need to be added to the sediment data.
   - Verify that the sediment sample has a unique sample collection time. The sediment sample collection time must be after the sample collection time for the primary and bottom water quality data, or else J-qualifiers and associated result comments will need to be added to the water quality data.

- Verify that cleaning log entries show that sediment equipment was cleaned before sample collection.

h. For samples & blanks collected with equipment, verify that cleaning log entries show the equipment was cleaned before sample collection. However, if equipment is cleaned before a blank, additional cleaning is not required between the blank and the next sample. If there is no evidence that the equipment was cleaned before sample or blank collection, J-qualifiers and result comments will need to be added for all analytes that contact equipment (all lab data for surface water & groundwater; all field data for groundwater except DTW, purge volume and micro land use.

i. Check field sheet for completion (all spaces filled in or crossed out if N/A) and make sure that all values entered make sense (e.g., correct month / year for dates).

j. Record reviewer's name and date on bottom of each field sheet in the "Reviewed for completion by" section.

Preliminary Review of Station Level Information Using GWIS Database Utilities (Status Network Projects Only)

The following steps are performed for all Status Network projects after receiving notification from the DM or DC that the stations are available for review. Performing these steps will increase the accuracy and completeness of the station data in GWIS for these projects, which will reduce the need for corrections during later steps in the data review process. Performing these steps soon after the stations are available in GWIS allows the DC to load the station data to WIN more quickly, which makes these stations available for use with bioassessment data management tasks in SBIO. This must be completed before a project can be released.

1. Verify that correct number of stations are present. Check that the same stations are listed as being sampled in the following 3 places: field sheets, GWIS Database Utilities Recon Tracking, and GWIS Database Utilities Existing Station. Note that projects with station-level QA issues (e.g. resampling event, incorrect location sampled, wrong well sampled) may deviate from this pattern and require additional discussion with the QAO, DC, and/or DM.
2. Verify that each station has a valid latitude / longitude. Make sure coordinates plot in correct Zone when checked using Map Direct. Look for unreasonable locations like groundwater wells in waterbodies or surface water sites on dry land. Compare station location data, which were collected with the GNSS units and Survey123, to random site location from GWIS Database Utilities Recon Tracking. Ask samplers for clarification if difference is greater than expected or if location collected with GNSS unit appears to be on incorrect waterbody.
3. Verify that location method is WGPS for all stations. If another value is present, a station comment related to the location method used is required.
4. Verify that random sample location is in correct format (e.g., Z5-UA-8001) and has correct 2 letter resource abbreviation.
5. Verify that address information is present and correct.
    a. If landowner was contacted to obtain permission and owner information is known, it is entered as OWNER.
    b. If landowner not contacted, and site sampled from public access point or if WMD gave permission, enter WMD as CONTACT. If USGS gave permission, enter USGS as CONTACT. If no information available, enter WMS Project Manager as CONTACT.
    c. Use notes in GWIS Database Utilities Recon tracking and informal recon tracking spreadsheets to verify that data request (Yes/No) is accurate.
6. Add project level comments (in ADM) as needed to document scenarios with station-level QA issues.
7. (Surface Water Only) Verify that waterbody information (if known) is listed correctly in “SW Hydrology” tab. Waterbody name information reflects names included in the federal Geographic Names Information System (GNIS) database. Use caution when viewing maps produced by sources which may include local / unofficial names for waterbodies.
8. (Surface Water Only) Verify the class of the waterbody in Map Direct. Any Class I sources must be checked for exceedances regardless of whether the owner requested results or not.
9. Notify the DC and DM by email when preliminary station data review described in steps above is complete.

Review of Provisional Field and Lab Data in GWIS Using ADM

The following steps are performed for all Status Network and Trend Network projects, before the provisional data are released, to ensure that the sample and result data have been reviewed prior to being loaded to WIN. Performing these steps can begin after notification is received from the DM indicating that a project's provisional data are ready for review.

The DM has developed a data correction reporting template, found at \\floridadep\data\DEAR\WQMP\SOL_Z\datamgmt\DATA_Corrections_Tracking\GWIS Sample Data Corrections. Use the most recent template for reporting data errors to the DM. Instructions on file naming conventions and on how to fill out the form are found under the different tabs in the workbook.

1. Examine Project Comments in ADM "Review" Tab. Add any additional comments needed regarding missing samples, missing results, or other major issues that occurred during data collection for the project.
2. Generate metadata file in ADM by selecting the "Review" tab and then selecting the "Run Checks" button. Make note of any issues identified in this report. These may require further action when reviewing the blank data or result data reports.
    a. Stations Sampled section: Confirm that all stations sampled are listed.
    b. Missing Primary Sample Data section: Make note of any missing data listed here, and check the blank data report or result data report to confirm that it is actually missing (i.e., it has not been loaded to the GWIS database.)
        - If it is missing because it was not collected, need to submit a data correction request to add a result for the missing parameter with a null value, "O" qualifier and a result comment.
        - If it is missing but the data were collected (field data present on field sheet or lab results present in LIMS), need to work with DM to get the missing data loaded.
    c. Analyte Count and Missing Analytes sections: Confirm that all samples of similar type (primary, bottom, or blank) have the same analyte count. Investigate which analytes are missing for those samples that have different analyte counts, and document deviations from expected analyte count in the Project Comments section in the ADM "Review" tab. Note that the analyte count is not automatically updated if analytes are added using a data correction request. Updates to the number_of_results for individual sample(s) must be specified in the data correction request.
    d. Total Blanks section: Confirm that this number matches the total number of blanks collected for the project.
    e. Blank Detections section: Make note of any detections in field blanks or equipment blanks for use during review of result data. (Note that additional blank detections may be present. Review ADM blank data report to ensure that all detections are noted.)
    f. Measurement Range Check section: Investigate any values listed here as being outside of the expected range (e.g., pH > 14).
    g. Measurements Reporting Negative Values section: Make note of any negative values, investigate these further and add data qualifiers with associated result comments if needed. If DO (mg/L or % sat) is negative, make sure that it has the "?" qualifier and an associated comment.

h. Excessive Turbidity section: Make note of any samples reported with excessive turbidity. If groundwater samples are reported with excessive turbidity (> 20 NTU), a sample level comment such as "HIGH TURBIDITY" must be added. If Surface Water samples are reported with excessive turbidity (> 100 NTU), investigation of historic data is required to determine if the value observed is excessive for that waterbody. If the value is determined to be excessive, a sample level comment such as "HIGH TURBIDITY" must be added. Of note, the excessive turbidity section of the metadata report will only show values >100 NTU, so groundwater samples must be manually checked.

i. Report any errors in the metadata report to the DM for correction before the data are released.

3. Generate provisional blank data file in ADM by selecting the "Reports" tab and then selecting the "Blank Data" button.
    a. Verify that all QA/QC blanks (field blanks and equipment blanks) are included in the Blank Data file.
    b. Review blank data for accuracy by comparing sample type (field blank vs. equipment blank) / equipment type / equipment name / date / time / sample collection agency / sampler names to information documented on field sheets.
    c. Review blank data for completion by confirming that the following information is present: analyzing agency, lab sample ID, lab date, and analysis method.
    d. Review sample comments and results comments to ensure that information have been retained correctly. Do not remove any comments added by the lab, unless they clearly are duplicates.
    e. If a result value (typically zero) is present for sample depth, total depth, or depth to water, submit a data correction request to remove this result. There is no need to store this information for blanks.
    f. Make note of any detections (data that are **not "U" qualified**, including results without any data qualifiers) in blanks, and the agency and piece of equipment associated with those detections. This information will be used when checking that associated data have been qualified properly.
    g. Review result values to ensure that "N/A" or "0" (zero) is not inserted where the value is actually null. Also verify that parameters for which data are missing (collection was scheduled, but data were not reported due to a problem encountered in the field or lab) are documented with null values, "O" qualifiers, and appropriate result level comments.
    h. The QA/QC Blank tracking spreadsheets (\\floridadep\data\DEAR\WQMP\SOL_Z\QAQC Blanks) also are helpful for keeping track of detections in field and equipment blanks. Data reviewers and QAOs use these spreadsheets to keep track of all blank results (clean blanks and those with detections) and actions associated with detections (investigation of detections, extra cleaning, and qualifying associated data). The Data Review FAQ folder contains flowcharts and additional guidance about data qualifiers and reviewing data with analytes of interest detected in blanks.
4. Generate provisional result data file (data from sampled sites) in ADM by selecting the "Reports" tab and then selecting the "Result Data" button.
    a. Verify that all sampled sites are included in the Result Data file.

b. Review data for accuracy by comparing sample type (primary or bottom) / equipment type / equipment name / date / time / sample collection agency / sampler names / and result values for field data to information documented on field sheets.

c. Review result data for completion by confirming that the following information is present: analyzing agency, lab sample ID, lab date, and analysis method.

d. (Surface Water Only) Note that Surface Water projects have two samples with field data per site (primary and bottom) – verify that the data have been loaded into the correct sample type.

e. (Status Network Lakes Only) Note that Status Network lakes projects have sediments data. Verify that the sediment data have been loaded as a separate sample (sample type will be primary) with a unique sample collection time. The sediment sample collection time must be after the sample collection time for the primary and bottom water quality data, or else J-qualifiers and associated result comments will need to be added to the water quality data.

f. (Groundwater Only) Verify that depth to water (DTW) is the correct value (undisturbed reading). For flowing artesian wells, DTW is reported as a negative number. For wells where the DTW was not measured, there must be an "O" qualifier and a comment present indicating why the measurement was not taken.

g. Review result values to ensure that "N/A" or "0" (zero) is not inserted where the value is actually null. Also verify that parameters for which data are missing (collection was scheduled, but data were not reported due to a problem encountered in the field or lab) are documented with null values, "O" qualifiers, and appropriate result level comments.

h. Review sample comments and result comments to ensure that information have been retained correctly.

- Do not remove any comments added by the lab, unless they clearly are duplicates.
- A list of standardized language that is used for comments is available in \\floridadep\data\DEAR\WQMP\SOL_Z\Data Review FAQ\.
- (Surface Water Only) For stations where the waterbody is < 1.5m deep and no bottom samples are collected, verify that the comment "TOO SHALLOW TO COLLECT BOTTOM FIELD MEASUREMENTS" has been recorded in 3 places: a project comment, a sample comment, and a result comment for total depth on primary sample.

i. Review data qualifiers

- Remove any duplicate qualifiers and associated duplicate comments.
- Do not remove any qualifiers or comments added by the lab, unless they clearly are duplicates.
- Verify that all field data are qualified properly (e.g., "S" for Secchi visible on bottom or "J" for data associated with failing meter verifications or improperly bracketed readings).
- Verify that all qualifiers added by field staff or data reviewers have associated result comments.
- Verify that "G" qualifiers and associated comments (e.g., "Analyte detected in field collected blank.") have been applied as needed to ensure that results associated with

blank detections are qualified appropriately. This step often is performed using both the ADM result data report and the ADM pivot table text report (see step 5 below for additional details).

5. Generate provisional Pivot Table Text report in ADM by selecting the "Reports" tab and then selecting the "Pivot Table Text" button. The pivot table only contains information about collection date/time, sample type, equipment type, equipment name, result values, and result value qualifiers. It is helpful for examining field parameter data ranges, identifying result data that must be G-qualified, and comparing data columns for logical errors. The Result Data report and Blank Data report must still be reviewed to check information contained in other fields (e.g., sampler names, sample collection agency, comments). The Pivot Table Text must also be checked to review results for parameters reported as text.

    a. (Surface Water projects only) Review result values for any parameters reported as text (stream flow qualitative, water level, sediment odor, sediment color, etc.). The pivot table text report is the only ADM report that contains these data.

    b. Compare field specific conductance and lab specific conductance. The values will not be an exact match, but if disagreement by an order of magnitude or more is present, this is a good indication that there may have been an error in merging the field and lab data. If an error in data merging is suspected, please discuss with the QAO.

    c. (Surface Water projects only) Compare result values for transparency and total depth. Transparency must be ≤ total depth. If transparency is equal to total depth, an S-qualifier and result comment "Secchi visible on bottom" must be present.

    d. (Surface Water projects only) Compare result values for sample depth and total depth. For water samples, sample depth must be < total depth.

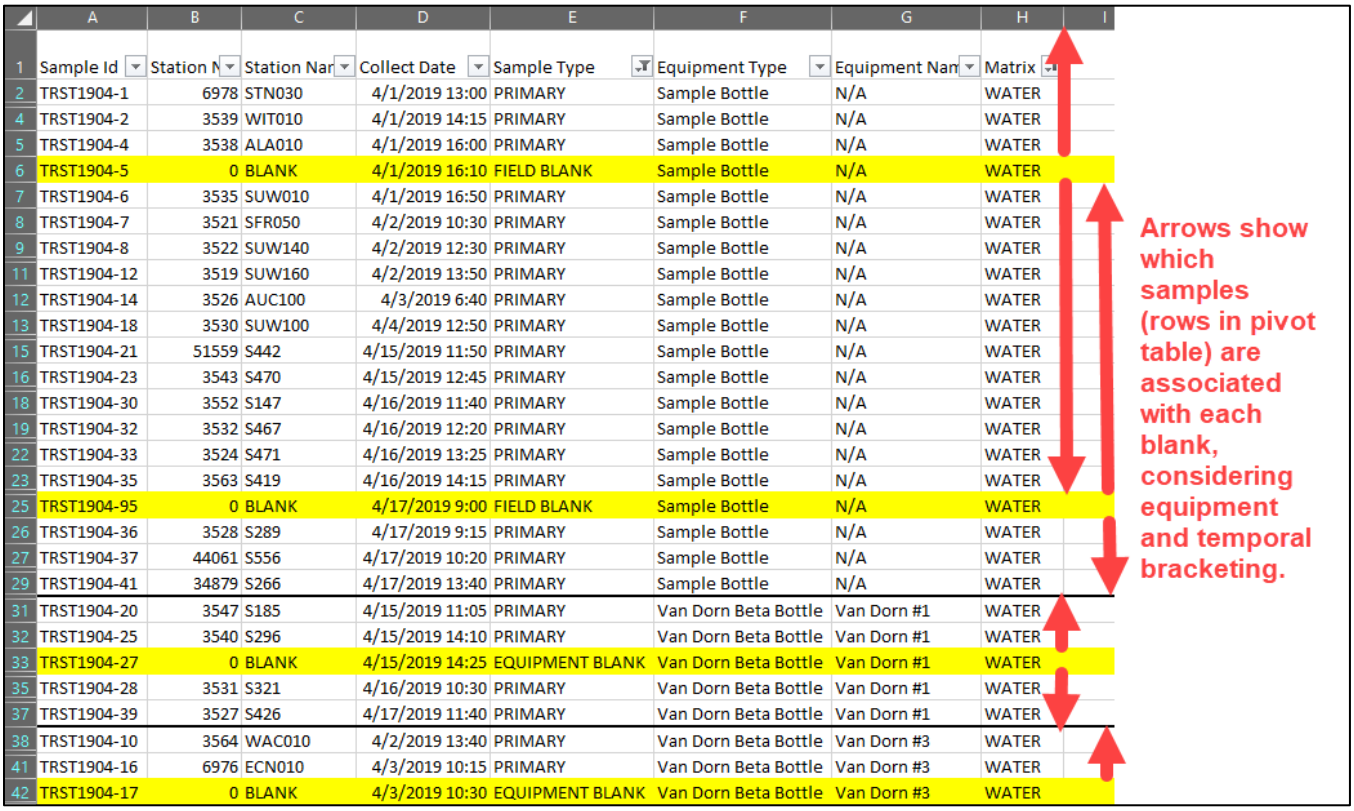
    e. Examine result data ranges for DO (% and mg/L), pH and turbidity.

        - If groundwater samples are reported with excessive turbidity (> 20 NTU), a sample level comment such as "HIGH TURBIDITY" must be added.
        - If Surface water samples are reported with excessive turbidity (> 100 NTU), investigation of historic data is required to determine if the value observed is excessive for that waterbody. If the value is determined to be excessive, a sample level comment such as "HIGH TURBIDITY" must be added.
        - For Trend sites, if a value is reported that is much greater or much smaller than the historic range of values for that station, then add a result comment describing the deviation.

    f. Review blank batch IDs.

        - Confirm that blank batch IDs are present for the correct sample types. Blank batch IDs are required for all field blanks, equipment blanks, and primary water samples. Sediment samples, biological samples (e.g. SCI, algal ID), and samples for bottom field measurements should not have blank batch IDs.
        - Use filtering to hide data in rows where sample type is BOTTOM and rows where MATRIX is SEDIMENT or BIOLOGY.
        - Sort all data in Pivot Table by Equipment Name and Collection Date.

- Use highlighting and/or borders to distinguish rows for field collected blanks, and to distinguish between different groups of equipment (see screenshot below for example).



	A	B	C	D	E	F	G	H
1	Sample Id	Station N	Station Nar	Collect Date	Sample Type	Equipment Type	Equipment Nan	Matrix
2	TRST1904-1	6978	STN030	4/1/2019 13:00	PRIMARY	Sample Bottle	N/A	WATER
4	TRST1904-2	3539	WIT010	4/1/2019 14:15	PRIMARY	Sample Bottle	N/A	WATER
5	TRST1904-4	3538	ALA010	4/1/2019 16:00	PRIMARY	Sample Bottle	N/A	WATER
6	TRST1904-5	0	BLANK	4/1/2019 16:10	FIELD BLANK	Sample Bottle	N/A	WATER
7	TRST1904-6	3535	SUW010	4/1/2019 16:50	PRIMARY	Sample Bottle	N/A	WATER
8	TRST1904-7	3521	SFR050	4/2/2019 10:30	PRIMARY	Sample Bottle	N/A	WATER
9	TRST1904-8	3522	SUW140	4/2/2019 12:30	PRIMARY	Sample Bottle	N/A	WATER
11	TRST1904-12	3519	SUW160	4/2/2019 13:50	PRIMARY	Sample Bottle	N/A	WATER
12	TRST1904-14	3526	AUC100	4/3/2019 6:40	PRIMARY	Sample Bottle	N/A	WATER
13	TRST1904-18	3530	SUW100	4/4/2019 12:50	PRIMARY	Sample Bottle	N/A	WATER
15	TRST1904-21	51559	S442	4/15/2019 11:50	PRIMARY	Sample Bottle	N/A	WATER
16	TRST1904-23	3543	S470	4/15/2019 12:45	PRIMARY	Sample Bottle	N/A	WATER
18	TRST1904-30	3552	S147	4/16/2019 11:40	PRIMARY	Sample Bottle	N/A	WATER
19	TRST1904-32	3532	S467	4/16/2019 12:20	PRIMARY	Sample Bottle	N/A	WATER
22	TRST1904-33	3524	S471	4/16/2019 13:25	PRIMARY	Sample Bottle	N/A	WATER
23	TRST1904-35	3563	S419	4/16/2019 14:15	PRIMARY	Sample Bottle	N/A	WATER
25	TRST1904-95	0	BLANK	4/17/2019 9:00	FIELD BLANK	Sample Bottle	N/A	WATER
26	TRST1904-36	3528	S289	4/17/2019 9:15	PRIMARY	Sample Bottle	N/A	WATER
27	TRST1904-37	44061	S556	4/17/2019 10:20	PRIMARY	Sample Bottle	N/A	WATER
29	TRST1904-41	34879	S266	4/17/2019 13:40	PRIMARY	Sample Bottle	N/A	WATER
31	TRST1904-20	3547	S185	4/15/2019 11:05	PRIMARY	Van Dorn Beta Bottle	Van Dorn #1	WATER
32	TRST1904-25	3540	S296	4/15/2019 14:10	PRIMARY	Van Dorn Beta Bottle	Van Dorn #1	WATER
33	TRST1904-27	0	BLANK	4/15/2019 14:25	EQUIPMENT BLANK	Van Dorn Beta Bottle	Van Dorn #1	WATER
35	TRST1904-28	3531	S321	4/16/2019 10:30	PRIMARY	Van Dorn Beta Bottle	Van Dorn #1	WATER
37	TRST1904-39	3527	S426	4/17/2019 11:40	PRIMARY	Van Dorn Beta Bottle	Van Dorn #1	WATER
38	TRST1904-10	3564	WAC010	4/2/2019 13:40	PRIMARY	Van Dorn Beta Bottle	Van Dorn #3	WATER
41	TRST1904-16	6976	ECN010	4/3/2019 10:15	PRIMARY	Van Dorn Beta Bottle	Van Dorn #3	WATER
42	TRST1904-17	0	BLANK	4/3/2019 10:30	EQUIPMENT BLANK	Van Dorn Beta Bottle	Van Dorn #3	WATER

- For each primary sample, check that the BLANK_BATCH_ID column contains the batch ID name for the blanks(s) associated with that sample (see screenshot below for an example from a surface water project). Batch IDs use the following nomenclature: Project-MMDDYY_EB for equipment blanks and Project-MMDDYY_FB for field blanks. A single slash is used to separate multiple batch IDs for samples that are associated with multiple blanks.

	A	B	C	D	E	F	G	H	I	J
1	Sample Id	Station N	Station Nar	Collect Date	Sample Type	Equipment Type	Equipment Nan	Matrix	Equipment Blank Batch ID	Field Blank Batch ID
2	TRST1904-1	6978	STN030	4/1/2019 13:00	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB
4	TRST1904-2	3539	WIT010	4/1/2019 14:15	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB
5	TRST1904-4	3538	ALA010	4/1/2019 16:00	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB
6	TRST1904-5	0	BLANK	4/1/2019 16:10	FIELD BLANK	Sample Bottle	N/A	WATER		TRST1904-040119_FB
7	TRST1904-6	3535	SUW010	4/1/2019 16:50	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
8	TRST1904-7	3521	SFR050	4/2/2019 10:30	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
9	TRST1904-8	3522	SUW140	4/2/2019 12:30	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
11	TRST1904-12	3519	SUW160	4/2/2019 13:50	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
12	TRST1904-14	3526	AUC100	4/3/2019 6:40	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
13	TRST1904-18	3530	SUW100	4/4/2019 12:50	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
15	TRST1904-21	51559	S442	4/15/2019 11:50	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
16	TRST1904-23	3543	S470	4/15/2019 12:45	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
18	TRST1904-30	3552	S147	4/16/2019 11:40	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
19	TRST1904-32	3532	S467	4/16/2019 12:20	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
22	TRST1904-33	3524	S471	4/16/2019 13:25	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
23	TRST1904-35	3563	S419	4/16/2019 14:15	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-040119_FB / TRST1904-041719_FB
25	TRST1904-95	0	BLANK	4/17/2019 9:00	FIELD BLANK	Sample Bottle	N/A	WATER		TRST1904-041719_FB
26	TRST1904-36	3528	S289	4/17/2019 9:15	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-041719_FB
27	TRST1904-37	44061	S556	4/17/2019 10:20	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-041719_FB
29	TRST1904-41	34879	S266	4/17/2019 13:40	PRIMARY	Sample Bottle	N/A	WATER		TRST1904-041719_FB
31	TRST1904-20	3547	S185	4/15/2019 11:05	PRIMARY	Van Dorn Beta Bottle	Van Dorn #1	WATER	TRST1904-041519_EB	
32	TRST1904-25	3540	S296	4/15/2019 14:10	PRIMARY	Van Dorn Beta Bottle	Van Dorn #1	WATER	TRST1904-041519_EB	
33	TRST1904-27	0	BLANK	4/15/2019 14:25	EQUIPMENT BLANK	Van Dorn Beta Bottle	Van Dorn #1	WATER	TRST1904-041519_EB	
35	TRST1904-28	3531	S321	4/16/2019 10:30	PRIMARY	Van Dorn Beta Bottle	Van Dorn #1	WATER	TRST1904-041519_EB	
37	TRST1904-39	3527	S426	4/17/2019 11:40	PRIMARY	Van Dorn Beta Bottle	Van Dorn #1	WATER	TRST1904-041519_EB	
38	TRST1904-10	3564	WAC010	4/2/2019 13:40	PRIMARY	Van Dorn Beta Bottle	Van Dorn #3	WATER	TRST1904-040319_EB	
41	TRST1904-16	6976	ECN010	4/3/2019 10:15	PRIMARY	Van Dorn Beta Bottle	Van Dorn #3	WATER	TRST1904-040319_EB	
42	TRST1904-17	0	BLANK	4/3/2019 10:30	EQUIPMENT BLANK	Van Dorn Beta Bottle	Van Dorn #3	WATER	TRST1904-040319_EB	

- The screenshot below shows an example of the blank batch IDs for a groundwater project. If an equipment blank was not collected for a piece of equipment used to collect samples, discuss the scenario with the QAO. It may be possible to use results from another project.

Sample Id	Station No	Station Name	Collect Date	BlankBatch	Sample Type	Equipment Type	Equipment Name
Z5CA1902-2	3116	L-02527	2/6/2019 13:11	Z4CA1902_021919_FB	PRIMARY	In-Place Plu	N/A
Z5CA1902-3	4536	2.64E+14	2/7/2019 10:00	Z4CA1902_021919_FB	PRIMARY	In-Place Plu	N/A
Z5CA1902-7	3115	L-02525	2/13/2019 13:45	Z4CA1902_021919_FB	PRIMARY	In-Place Plu	N/A
Z5CA1902-8	3078	HIF-0006	2/14/2019 11:40	Z4CA1902_021919_FB	PRIMARY	In-Place Plu	N/A
Z5CA1902-9	2863	C-00575	2/18/2019 15:08	Z4CA1902_021919_FB	PRIMARY	In-Place Plu	N/A
Z5CA1902-15	48869	L-02328	2/25/2019 10:45	Z4CA1902_021919_FB	PRIMARY	In-Place Plu	N/A
Z4CA1902		BLANK	2/19/2019	Z4CA1902_021919_FB			FIELD
Z5CA1902-19	12143	L-02313	3/7/2019 15:32	Z4CA1902_021919_FB	PRIMARY	In-Place Plu	N/A
Z5CA1902-20	3431	POF-0006	3/12/2019 14:30	Z4CA1902_021919_FB	PRIMARY	In-Place Plu	N/A
Z5CA1902-21	0	BLANK	3/18/2019 11:45	Z5CA1902_031819_EB	EQUIPME	Pump/Subm	Pig
Z5CA1902-22	1351	OR0082	3/19/2019 13:22	Z5CA1902_031819_EB	PRIMARY	Pump/Subm	Pig
Z5CA1902-23	1053	LOUGHM.	3/20/2019 12:45	Z5CA1902_031819_EB	PRIMARY	Pump/Subm	Pig
Z5CA1902-24	3240	ORF-0010	3/21/2019 14:05	Z5CA1902_031819_EB	PRIMARY	Pump/Subm	Pig
Z5CA1902-5	55300	L-00742	2/12/2019 13:40	Z5CA1902_021219_EB	PRIMARY	Pump/Subm	Rediflo 2
Z5CA1902-6	0	BLANK	2/12/2019 14:15	Z5CA1902_021219_EB	EQUIPME	Pump/Subm	Rediflo 2
Z5CA1902-4	3108	L-02200	2/7/2019 12:26	Z5CA1902_022019_EB	PRIMARY	Pump/Subm	Squirts
Z5CA1902-11	38279	L-01418	2/20/2019 11:17	Z5CA1902_022019_EB	PRIMARY	Pump/Subm	Squirts
Z5CA1902-12	0	BLANK	2/20/2019 12:20	Z5CA1902_022019_EB	EQUIPME	Pump/Subm	Squirts
Z5CA1902-13	12139	L-05648	2/20/2019 13:35	Z5CA1902_022019_EB / Z5CA1902_030419_EB.	PRIMARY	Pump/Subm	Squirts
Z5CA1902-14	2844	C-00298	2/21/2019 12:42	We use the most stringent blank detection	PRIMARY	Pump/Subm	Squirts
Z5CA1902-16	55299	C-00130	2/27/2019 12:43	value to each parameter (i.e., case by case).	PRIMARY	Pump/Subm	Squirts
Z5CA1902-17	0	BLANK	3/4/2019 9:35	Z5CA1902_030419_EB	EQUIPME	Pump/Subm	Squirts
Z5CA1902-18	12140	C-00977	3/4/2019 11:28	Z5CA1902_030419_EB	PRIMARY	Pump/Subm	Squirts
Z5CA1902-1	29147	L-02640	2/5/2019 11:06	Z4CA1902_020919_EB	PRIMARY	Pump/Perist	Whale 1
Z5CA1902-10	24071	L-2643	2/19/2019 12:30	Z4CA1902_020919_EB	PRIMARY	Pump/Subm	Whale 1
Z4CA1902		BLANK	2/9/2019	Z4CA1902_020919_EB			Whale 1

g. Verify that "G" qualifiers and associated comments (e.g., "Analyte detected in field collected blank.") have been applied as needed to ensure that results associated with blank detections are qualified appropriately.

- Locate columns for parameters that had detections (value qualifier does not include "U") in any of the field collected blanks. (Use information obtained from review of the Metadata Report or Blank Data Report to help determine which parameters were detected in field collected blanks.)
- Determine which sites (if any) require a "G" qualifier for the parameters where blank detections were noted. Result data must be "G" qualified if all the following are true for a given parameter:
    - The field collected blank and sample value are both ≥ MDL (no "U" qualifier).
    - The blank value > 10% of sample value (note that this is mathematically equivalent to saying 10X blank value > sample value).
    - The sample is associated with the field collected blank.
        - Blank and sample are in the same Status or Trend project.
        - The same equipment was used for the blank and sample.
        - There is no evidence based on temporal bracketing that the blank contamination is no longer present. (This applies to projects where more than one field blank or equipment blank using the same equipment is collected.)
    - If multiple blanks are associated with a result, the largest blank value is used to evaluate that result.
- Examine "G" qualifiers that have been automatically applied during provisional data preparation. If any additions / deletions are needed, submit a data correction request. Note that all qualifiers need associated result level comments, so the result comments will also need to be updated to reflect any additions / deletions.
- For large numbers of G-qualifier deletions/additions, it helps the DM if changes are grouped such that all result qualifier changes are listed, followed by all result comment changes (see example screenshot below).

Request Type	Record Type	Sample ID	Station	Parameter	Sample Type	Field to Modify	Values		Reason for Change	Reviewer Comment
							Old	New		
DELETE	T_RESULT	Z6CA1902-19	50379	630	PRIMARY	VALUE_QUALIFIER	G		INCORRECT VALUES	Please remove G qualifier.
DELETE	T_RESULT	Z6CA1902-3	3444	630	PRIMARY	VALUE_QUALIFIER	IG	I	INCORRECT VALUES	Please remove G qualifier.
DELETE	T_RESULT	Z6CA1902-5	45007	630	PRIMARY	VALUE_QUALIFIER	IG	I	INCORRECT VALUES	Please remove G qualifier.
DELETE	T_RESULT	Z6CA1902-19	50379	630	PRIMARY	RESULT_COMMENT	ANALYTE DETECTED IN A FIELD GENERATED BLANK.		INCORRECT VALUES	Please remove G qualifier comment.
DELETE	T_RESULT	Z6CA1902-3	3444	630	PRIMARY	RESULT_COMMENT	ANALYTE DETECTED IN A FIELD GENERATED BLANK.		INCORRECT VALUES	Please remove G qualifier comment.
DELETE	T_RESULT	Z6CA1902-5	45007	630	PRIMARY	RESULT_COMMENT	ANALYTE DETECTED IN A FIELD GENERATED BLANK.		INCORRECT VALUES	Please remove G qualifier comment.

h. Notify the DC by email when the project data are released.

Review of Station Level Information Using GWIS Database Utilities and ADM

The following steps are performed for all Status Network projects before the provisional data are released, to ensure that the station data have been reviewed prior to being loaded to WIN. These steps should also be performed for all Trend stations at least once per year.

Performing these steps can begin after the DM or DC has loaded the station data and field data to GWIS from Survey123. If the provisional data are not yet available for review, data reviewers can use GWIS Database Utilities Existing Station to look up each site sampled using Random Site ID. If the provisional data have been made available for review, the station data file in ADM can be generated by selecting the "Reports" tab and then selecting the "Station Data" button. The Station Data file allows the reviewer to see the station data for all stations in a project in tabular format.

Corrections to many station data fields can be made by the PM, using GWIS Database Utilities Existing Station. For station data fields that are not editable using this online tool, corrections must be made using the data correction request form

The following information must be reviewed for each station:

1. Verify that owner and /or contact information is listed correctly.
    a. Owner is actual property owner (contacts designated by owner, tenants, business managers also are noted in the owner info).
    b. Contact is agency responsible for sampling and/or managing data associated with site.
    c. Notification_Letter indicates if either the owner or contact has requested that PM send them a copy of the data.
2. (Groundwater Only) Verify that the FLUWID matches the FLUWID on the field sheet, and in the station photos. If the FLUWID is new, make sure it has been entered into GWIS correctly. Verify that only one GWIS station exists for each FLUWID.
    a. If FLUWID label is newly attached, verify that this station does not already have a different FLUWID assigned to it.
        - If no FLUWID is listed in the GWIS station data record, samplers are correct in attaching new FLUWID tag. Use the data correction request form to add the new FLUWID to the station data record if it is missing.
        - If a different FLUWID is listed, there is a potential problem – investigate further. (Could be wrong well sampled or could be multiple tags on same well.)
    b. If FLUWID label is not newly attached, verify that FLUWID in GWIS matches field sheet, if different there is a potential problem that requires investigating. (Could be wrong well sampled or could be multiple tags on same well.)
    c. Use GWIS Database Utilities Existing Station to search for each station's FLUWID. Verify that only one station record is present in GWIS for each FLUWID, and that the GWIS station ID (pk_station) returned when searching by FLUWID matches that station ID associated with the data being reviewed. If multiple station records are returned for a single FLUWID, there is a problem that requires investigating (Could be duplicate station records present for the same well or could be incorrect FLUWID data associated with one or more stations. If duplicate stations are present, work with DC or DM to reassign recently collected data to the older existing station.)

3. (Groundwater Only) Verify that total depth, casing depth, casing diameter, and casing material are correct.
    a. Compare values recorded on field sheet to values in GWIS.
    b. If disagreement exists (including if values are missing from GWIS), research source of values on field sheet. Discuss scenario with QAO and/or DC to ensure that the correct well was sampled and develop plan for documenting well information.
4. (Groundwater Only) Verify that MPE & LSE are listed correctly in GWIS.
    a. If field sheet and GWIS station record are missing MPE and LSE:
        - If DTW was measured, MPE and LSE must be determined before data can be loaded to WIN. Obtain GIS-based LSE value from DC or ARC and calculate MPE as LSE + stickup.
        - If DTW was not measured, MPE and LSE are not needed to load water quality data to WIN. No further action needed.
    b. If field sheet is missing MPE or LSE, check GWIS or corresponding WMD database for the missing value. Use GWIS value if it is present. If value is not present in GWIS use stickup to calculate the other value. (e.g., MPE = LSE + stickup; LSE = MPE – stickup).
    c. Compare values recorded on field sheet to values in GWIS. If disagreement exists, research source of values on field sheet (e.g., search databases for agency that owns well, look at photos of well instrumentation & recon notes).
        - If value is missing in GWIS and populated on field sheet, update values in GWIS and add station comment listing date of update and source of information. Note that if datum and/or source are unknown, this must also be documented in the comment. (e.g., *John Doe 4/18/2019: Added MPE and LSE values; MPE & LSE datum = NAVD88; MPE from SWFWMD well instrumentation; LSE calculated from stickup.*)
        - If value in GWIS is different from value on field sheet and source of new information is known, update values in GWIS and add station comment describing date of update, information that was changed, and source of information. (e.g., *John Doe 4/18/2019: changed MPE from 10.05 to 11.50; changed LSE from 8.5 to 10.50; new MPE & LSE datum = NAVD88; MPE from SWFWMD well instrumentation; LSE calculated from stickup.*)
        - If value in GWIS is different from value on field sheet and source of new information is unknown, do not update value in GWIS. Add comment on field sheet indicating that value differs from that in GWIS and list GWIS value. (e.g., MPE value used differs from GWIS value of 10.50. Source of new value unknown).
    d. If MPE and LSE values in GWIS match values on field sheet but measured stickup differs from these values by > 1 ft, add the following to the station comment in GWIS ("*LSE and MPE are historic values with low accuracy.*")
5. (Groundwater Only) Verify that additional details known about the well have been correctly transferred from the well listframe table (GWIS Database Utilities Recon tracking CSV file) to the GWIS station data table (ADM Station Data file). Using the Recon Tracking file as a reference, verify that information in the following fields of the Station data report is correct. Make corrections for missing values in the Station Data report using GWIS Database Utilities Existing Station or the data correction request form. If disagreement exists between Recon Tracking and the Station Data

file, investigate to determine the correct value. If the value in Recon Tracking is incorrect, notify the DC so that the error can be corrected in future years' listframes.

- CONFINED (value should be Y for confined aquifer wells and N for unconfined aquifer wells).
- WATERBODY NAME
- WELL GEOLOGIC LOG
- WELL LITHOLOGIC LOG
- WELL DRILLER LOG
- WELL HYDROLOGIC DATA
- WELL DRILL DATE
- WELL STATUS
- WELL TYPE
- WELL CONSTRUCTION METHOD
- WELL LIFT TYPE
- WELL FINISH
- WELL SCREEN BEGIN DEPTH
- WELL SCREEN END DEPTH
- WELL SCREEN MATERIAL
- WELL SCREEN DIAMETER
- LSE DATUM ID
- MPE DATUM ID
- WELL WATER LEVEL RECORDER
- WELL LEAD WEIGHT
- WELL GRID CELL
- DATA SOURCE
- AGENCY MAINTAINING STATION INF (value should match data collection agency name)
- SUBAQUIFER
- TOP OF AQUIFER
- BOTTOM OF AQUIFER

6. (Surface Water Only) Verify that waterbody name is correct. Waterbody name information reflects names included in the federal Geographic Names Information System (GNIS) database. Use caution when viewing maps produced by sources which may include local / unofficial names for waterbodies. For waterbodies that are unnamed, select a waterbody name like "Unnamed Stream", "Unnamed Large Lake", etc.
7. (Surface Water Only) Verify the waterbody class in Map Direct and make note of any class I sites, they will need to be checked for drinking water exceedances.
8. Verify that any relevant information about station that would apply to all sampling events (current and future) is captured in "Comments" tab.
9. Send the DC a list of stations that were updated using GWIS Database Utilities Existing Station so that the changes can be loaded to WIN.

Review of Location Data for Surface Water Trend Stations

The following steps are performed for all Surface Water Trend stations at least once per year, following annual collection of location data and photos. These steps are necessary to ensure that Surface Water Trend data continue to be collected from the established location for each station.

1. The location data will be collected using the Bad Elf GNSS units and the Survey123 application on the field tablets / smartphones. The PM receives an automated email notification each time that field staff collect location data for a Trend Network station. The location data are immediately available for review using Map Direct. In the add AGO layer box, paste the item ID for the appropriate Status & Trend Survey123 Events Page View Layer:
    - Surface Water = b7d3834ed3e54c648eb197f959db47f3
    - Groundwater = 15821f6bc68c4aea8e9bada757b6994
2. Check where the points collected with the GNSS units fall in reference to the lat/long in GWIS for these stations.
    a. If they do not differ, the process is complete. No updates are needed.
    b. If they differ by more than a few meters, further investigation is needed. Discuss the observed difference with the QAO. Contact the field staff to obtain additional information / clarification if needed.
        - If the reason for a difference in the lat/long coordinates is determined to be accidental drift, or if the field staff are uncertain why sample collection location was moved, request that field staff return to collecting data at lat/long listed in GWIS. No updates are needed to station data in GWIS.
        - If the reason for a difference in the lat/long coordinates was due to a safety issue, or other reason that PM and QAO agree justifies the move, then the updated location data for only the affected station(s) is sent to the DC, along with a comment about when and why the sample location had to be moved. Note that a new station will need to be created if the new location is greater than 200 meters from the old location, or if there is a tributary, outfall, or other significant change in the hydrology of the water between the old and new location (Chapter 62-303.320(4)(e), F.A.C.).