

Watershed Monitoring Data Management Protocols, version 5

Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
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Introduction

The Watershed Monitoring Section (WMS) of the Florida Department of Environmental Protection (FDEP) oversees data flow through the use of several platforms, including an Oracle® database, Internet applications, Microsoft® (MS) Access applications, and standard data transfer formats in dBASE and MS Excel. Collectively, these platforms are referred to as the Oracle Generalized Water Information System (OGWIS).

This document outlines the normal data management protocols to be used for any project scheduled by the WMS. The protocols follow the progress of the project to its conclusion, marked by the final release of data to the general public. These protocols are, for the most part, managed by an in-house computer program known as ADM (Automated Data Management), and an Internet application known as GWIS Database Utilities, which allows contractors/staff to edit, update, and export data generated by the WMS.

ADM, developed by WMS staff, is an Oracle forms application used to retrieve and update data within the WMS' Oracle database. ADM may be used to track the progress of individual projects (from preparation through release of the data), to review data, and to generate reports from the data. Appendix A details the general features of project data management via ADM.

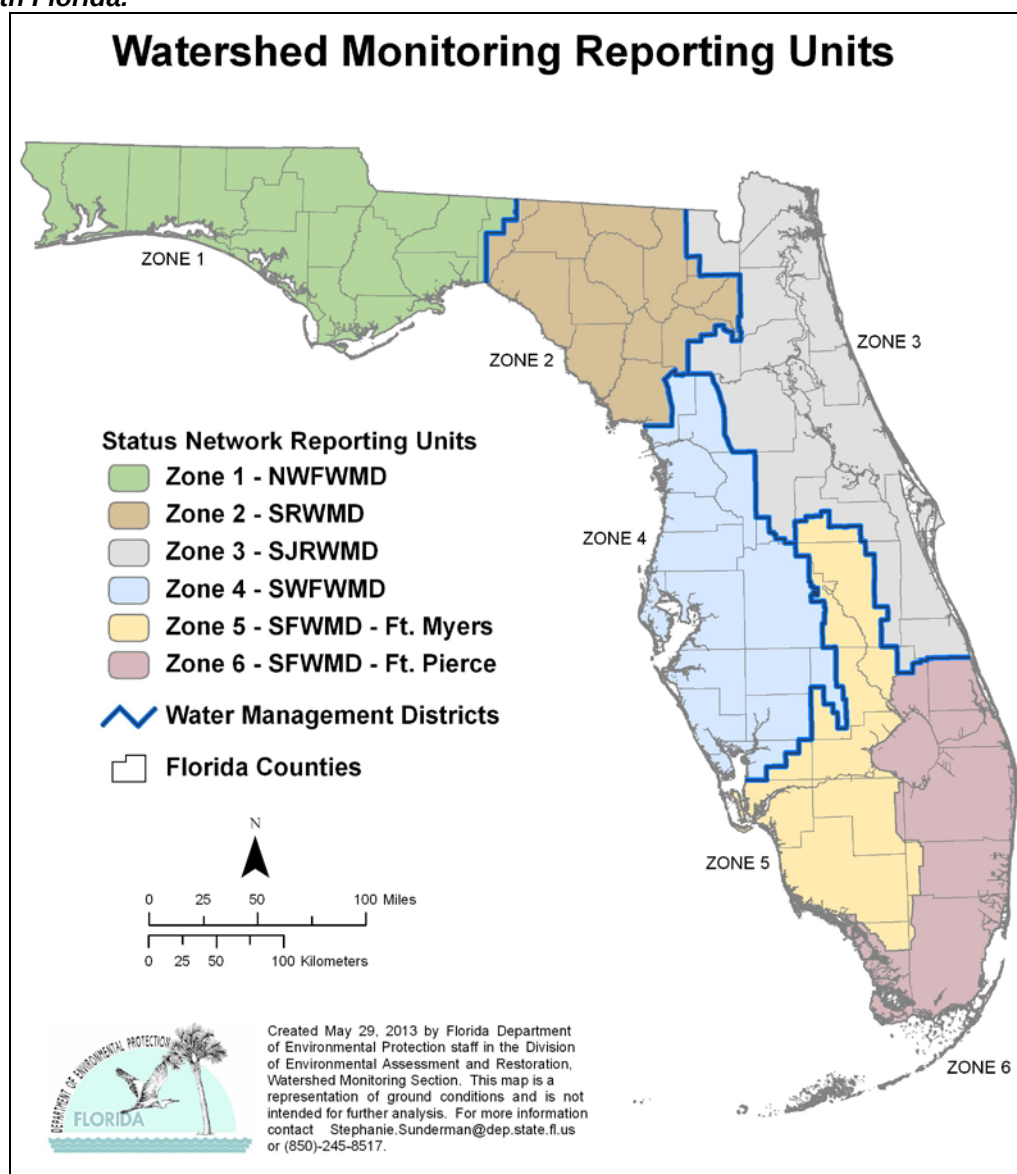
GWIS Database Utilities is an online Active Server Page (ASP) application, which interacts with the WMS' Oracle database. A Users Manual for the Database Utilities is found at <http://publicfiles.dep.state.fl.us/dear/watershed%20monitoring/documents/WMS-GWISManual.pdf>.

Project Preparation

Definition of Project

Projects are the basic unit of WMS sampling. Project names consist of three acronyms: Region/Zone (see Figure 1), project type (see *Current Project Types* below), and date in YYMM format (e.g., Z2GT0901 is Zone 2 Ground Water Trend sampling conducted in January 2009; Z2CA0901 is Zone 2 Confined Aquifer Status sampling conducted in January 2009).

Figure 1. WMS zones (reporting units). The zones are equivalent to the state's five Water Management Districts (WMDs), with South Florida WMD divided into eastern and western zones. NWF = Northwest Florida; SR = Suwannee River; SJR = St. Johns River; SWF = Southwest Florida; SF = South Florida.



Current Project Types (calendar year 2013)

GT - Ground Water Trend
ST - Surface Water Trend
UA - Status Unconfined Aquifer
CA - Status Confined Aquifer
CN - Status Canals
SS - Status Streams
LR - Status Rivers
SL - Status Small Lakes
LL - Status Large Lakes
SP - Special Projects

Historic Project Types

B - Background
M - Ground Water Temporal Variability, Monthly/Quarterly
T - Surface water Temporal Variability, Monthly
V - VISA (Very Intense Study Areas for ground water protection)
LS - Status Low Order Stream
HS - Status High Order Stream

LIMS Scheduling

For each project, the samplers estimate the number of samples to be collected during each week of the sampling period. This information is given to the WMS Project Managers (PMs) and Quality Assurance Officer (QAO). The QAO schedules the sampling on the FDEP Laboratory Information Management System (LIMS). The WMS Data Manager then enters the Lab Requisition (RQ) numbers and ancillary data into the table T_RQ_LIST in the Oracle database. This information is used to create RQ labels for the custody sheets.

List of Stations

Periodically, the stations and blanks to be sampled per project are loaded into the table T_PENDING in the Oracle Database. This information is used to create the bar code labels for the sample containers and custody sheets.

Project Paperwork

Two weeks prior to a project begin date, either a PM or the Data Manager will generate the necessary project paperwork. Please refer to the WMS' Sampling Manual

(<http://publicfiles.dep.state.fl.us/dear/watershed%20monitoring/documents/WMS-SamplingManual.pdf>) for further details on project paperwork.

Site Reconnaissance and Stations Maintenance

The site and stations tables reside on the Department's Oracle server as part of the Section's Oracle database. The database will normally be accessed via Internet Explorer (version 6.0 or greater). The URL for GWIS Database Utilities Internet application is <http://gwis.dep.state.fl.us/>. Please refer to the [User's Manual](#) for instructions concerning site reconnaissance and station maintenance.

Site Reconnaissance

The Sampling Agency, PMs, and/or other FDEP staff perform all site reconnaissance activities (see <http://publicfiles.dep.state.fl.us/dear/watershed%20monitoring/documents/WMS-ReconManual.pdf> for a detailed Reconnaissance Manual). After field/office reconnaissance has been performed, reconnaissance information is stored in Oracle, using the Recon Tracking Utility in GWIS Database Utilities.

Site/Station Data Maintenance

Responsibility for site/station data maintenance, such as updates to owner information, is addressed by the appropriate PM. Typically, individual updates and additions are done by the PM or sampling staff via GWIS Database Utilities. The Data Manager initiates batch additions and updates at the request of the PM. The Data Manager or PMs add all new stations to the database.

Status Network Stations

1. The WMS works with the US Environmental Protection Agency (EPA) to generate all new Status Network random site selections for surface water (SW) and ground water (GW) resources (for further details, see the WMS' Monitoring Design Document, <http://publicfiles.dep.state.fl.us/dear/watershed%20monitoring/documents/WMS-MonitoringDesignDocument.pdf>).
2. The site locations are assigned site identifiers. Next, the site locations are superimposed on the appropriate GIS layers to extract geographic data elements. The Data Manager adds project-specific data elements.
3. The SW site data are then loaded into the table T_RANDOM_SAMPLE_LOCATION, and the GW data are loaded into the table T_WELL_LISTFRAME in GWIS schema of the Production Oracle database.

4. New SW stations are inserted into the T_STATION table after the sites are sampled and locational data received. T_RANDOM_SAMPLE_LOCATION is updated with the new station identifier at that time.
5. When a GW well is marked sampleable, T_STATION is automatically checked to see if the station record exists. If the station record exists (i.e., the well has been sampled previously), the station record is automatically updated with the Random_Sample_Location identifier, and T_WELL_LISTFRAME is automatically updated with the station identifier. If the station record does not exist (i.e., the WMS has never sampled the well), the new station record is inserted in T_STATION after the wells are sampled and the locational data received. T_WELL_LISTFRAME is updated with the new station identifier at that time.
6. Note: the PM or sampling staff must check/enter the minimum data required whenever a new station is added to the Station table.

Minimum Data Requirements for Stations

- **For a GW well** to be included into the database the following information is required, as defined in the current GWIS Database Data Dictionary (found at <\\tlhwrmsol\z\datamgmt\GWIS DATABASE DATA DICTIONARY 1.5.doc>): STATION NAME, AGENCY, WATERBODY NAME, WATER RESOURCE, LATITUDE, LONGITUDE, LOCATION METHOD, LOCATIONAL DATUM, CASING DIAMETER, CASING MATERIAL, CASING DEPTH, TOTAL DEPTH, CONTACT INFORMATION, and DATA SOURCE. A statement describing why the well was selected for inclusion should be supplied with the electronic data in the comment column for the well(s).
- **For a SW station** to be included into the database the following information is required, as defined in the current GWIS Database Data Dictionary (found at <\\tlhwrmsol\z\datamgmt\GWIS DATABASE DATA DICTIONARY 1.5.doc>): STATION NAME, AGENCY, USGS HYDROLOGIC UNIT, WATERBODY TYPE, WATERBODY NAME, WATER RESOURCE, LATITUDE, LONGITUDE, LOCATION METHOD, LOCATIONAL DATUM, CONTACT INFORMATION, and DATA SOURCE. A statement describing why the station was selected for inclusion should be supplied with the electronic data in the comment column for the station(s).
- **In addition** to the above mentioned data elements, the samplers and/or PMs should make every effort to fill in as much information for the station as appropriate and possible via GWIS Database Utilities (see below for station updates).

Updating Existing Station Data

Periodically, some of the data for a station (either GW or SW site) may change (e.g., ownership of a well may change). Updates to reflect these changes should be made in a timely manner by either the WMS PM or the contracted sampling staff. Existing station data can be updated in the following manner.

1. Select **Existing Station** from the main menu of GWIS Database Utilities.
2. Retrieve the station by entering the station name or typing in the first few characters of the name, and then clicking **Submit**.
3. From the list of retrieved stations, locate the station of interest, and click on the hyperlinked station ID.
4. Using the tabs, locate the form page that contains the data element in need of updating.
5. Make updates as necessary, and click **Save**.

Batch Station Updates to Existing Data

Requests for large-scale updates to T_STATION should be made to the Data Manager.

Data Transfer

Status Network Field Data Transfer

Status Network field data transfer is made via a field data entry program installed on the samplers' Trimble® GPS data loggers. The resultant files are then forwarded to the WMS PM via Internet, diskette, or other mutually acceptable electronic media. Details of the management of these data are found in the "Status Monitoring Network GPS Data Management Procedures" Appendix in the [Design Document](#).

Trend Field Data Transfer

Trend Network field data transfer is made via an online data entry page, or in a standardized format that has been approved by the Data Manager. To use the online application:

1. Open Netscape / Internet Explorer 6.0 or higher, and go to <http://waterwebprod/ambient/field>.
2. Click **Surface Water**, **Springs**, or **Ground Water**, depending on the type of data to be entered.
3. Then, select the **zone**/agency you are entering data for from the table provided. This will take you to the actual field data entry form.

4. Select a Trend station from the **Station** dropdown list.
5. Select the month and year of the sampling project from the **Trend Project** dropdown lists.
6. Enter the date on which samples were taken using the **Sample Date** dropdown lists.
7. Select the **Sample Time** in the boxes provided (note that Primary and Bottom samples coming from the same station must have different sample times, and that the time is in 24-hour format).
8. Select a **Sample Type** (Primary/Surface or Bottom) from the dropdown list
9. Enter the name of the person collecting samples in the **Sampler's Name(s)** box.
10. **Enter Your Name** into the box provided. You must enter a name, or else submission of the form will be rejected.
11. Enter the field data in the appropriate fields of the form:
 - a. Starting at the top of the **Parameter** list, type in the **Value** measured in the field. If no measurement was made, leave the Value null, add an 'O' in the **Value Qualifier** field and make the appropriate **Comments**.
 - b. Select any pertinent **Value Qualifiers** associated with each measurement. A list of acceptable value qualifiers is available by clicking on the provided link.
 - c. Type in any comments pertaining to that particular measurement into the **Comment** box. There is an 80-character limit.
 - d. Follow this procedure until all of the field measurements are entered.
12. Any comment pertinent to the station as a whole may be entered into the **Comments** field at the bottom of the form. Again, there is an 80-character limit.
13. If data entry is complete, click **Submit**.
14. To clear the form and start over, click **Reset**.
15. Once you click **Submit**, you will get a confirmation screen. To enter data for another station click the "Return to Form" link, and follow the preceding steps for the next station.
16. To view the data you have entered click on the download link, or to download the data file, right click on the download link and select SAVE from the popup menu.
17. When you have completed entering all the data, be sure to e-mail a notification back to FDEP to let us know the data are waiting. An e-mail link, which is already addressed, is provided via the application.

Within 30 days of receipt, FDEP will download the submitted data from the web server. These data are then loaded into the table T_FIELD_DATA in OGWIS, and the column DATE_FIELD_DATA in T_PROJECT is updated.

For sampling staff who do not have Internet access, Trend Network field data transfer shall be via one of the two standard file formats described on page 11 in the section, *Acceptable Transfer Formats for Trend Field Data*

. The file will be forwarded to the WMS PM via Internet, diskette, or other mutually acceptable electronic media.

Required Field Measurements - Ground Water

This is a three-column table. Column 1 lists the measurement, column 2 lists the unit, and column 3 lists the legacy STORET code.

Note: °C = degrees Celsius; umho/cm = micromhos per centimeter; mg/L = milligrams per liter; NTU = Nephelometric Turbidity Unit; NGVD = National Geodetic Vertical Datum; N/A = not applicable

MEASUREMENT ¹	UNITS	LEGACY STORET CODE
Water Temperature, field	°C	00010
Specific Conductance at 25° C, field	umho/cm at 25°C	00094
Dissolved Oxygen, field	mg/L	00299
Dissolved Oxygen Percent Saturation, field	Percent	00301
pH, field	standard units	00406
Depth to Water from Measuring Point	feet	72109
Turbidity, field ²	NTU	82078
Elevation of Measuring Pt., above or below NGVD	feet	82514
Microlanduse ³	N/A	84147

¹ = Measurements that were required, but were not taken, should be listed as null (empty) values along with an 'O' value qualifier and a comment indicating why the measurement was not performed.

² = Required by FDEP SOP as of 8/06/2002, however this is subject to change.

³ = Once per year at Trend sites, and at each Status Site.

Required Field Measurements – Surface Water

This is a three-column table. Column 1 lists the measurement, column 2 lists the unit, and column 3 lists the legacy STORET code.

Note: °C = degrees Celsius; umhos/cm = micromhos per centimeter; mg/L = milligrams per liter; NTU = Nephelometric Turbidity Unit; NGVD = National Geodetic Vertical Datum; N/A = not applicable

MEASUREMENT ¹	UNITS	LEGACY STORET CODE
Water Temperature, field	°C	00010
Specific Conductance at 25° C, field ²	umhos/cm at 25°C	00094
Dissolved Oxygen, field	mg/L	00299
Dissolved Oxygen Percent Saturation, field	Percent	00301
pH, field	standard units	00406
Salinity ²	parts per thousand	00480
Secchi Depth (transparency) ³	meters	00078
Total Depth at Sampling Site ⁴	meters	82903
Stream Stage ⁵	feet	00065
Sample Depth	meters	90068

¹ = Measurements that were required, but were not taken, should be listed as null (empty) values along with an 'O' value qualifier and a comment indicating why the measurement was not performed.

² = Specific conductance will be reported for fresh waters and salinity will be reported for saline waters.

³ = If disc is visible on bottom of water body, the 'L' value qualifier must be used.

⁴ = If sampling done from a fixed point.

⁵ = Surface Water Trend sites only, where available.

Acceptable Transfer Formats for Trend Field Data

DBF (dBASE® File) Format:

This is a four-column table. Column 1 lists the parameter name, column 2 lists the parameter type, column 3 lists the total number of characters or digits, and column 4 lists the number of decimal digits.

NAME	TYPE	TOTAL CHARACTERS OR DIGITS	DECIMAL DIGITS
STATION	CHARACTER	25	N/A
PARAM_CODE	NUMERIC	5	0
PARAM_NAME	CHARACTER	40	N/A
TEXT_VALUE	CHARACTER	11	N/A
VAL_QUAL	CHARACTER	5	N/A
SAMP_DATE	CHARACTER	8	N/A
SAMP_TIME	CHARACTER	4	N/A
SAMP_SEQ	CHARACTER	2	N/A
SAMP_TYPE	CHARACTER	1	N/A
PROJECT	CHARACTER	30	N/A
COMMENT	CHARACTER	80	N/A
SAMPLER	CHARACTER	50	N/A

Microsoft® Excel Format:

This is a four-column table. Column 1 lists the parameter name, column 2 lists the parameter type, column 3 lists the total number of characters or digits, and column 4 lists the number of decimal digits.

NAME	TYPE	TOTAL CHARACTERS OR DIGITS	DECIMAL DIGITS
STATION	TEXT*	25	N/A
PARAM_CODE	NUMERIC	5	0
PARAM_NAME	TEXT	40	N/A
TEXT_VALUE	TEXT	11	N/A
VAL_QUAL	TEXT	5	N/A
SAMP_DATE	TEXT	8	N/A
SAMP_TIME	TEXT	4	N/A
SAMP_SEQ	TEXT	2	N/A
PROJECT	TEXT	30	N/A
COMMENT	TEXT	80	N/A
SAMPLER	TEXT	50	N/A

* = All text columns to be left justified

Please refer to the WMS' Field Database Data Dictionary Version 2.4 at \\TLHWRM\SOL\Z\DATAMGMT\FIELD_V2.6.doc for data element definitions.

Field Data Submittal Deadlines

Deadline for Trend and Status field data submittal is 30 days from project end date.

Field Data Paperwork (Status and Trend)

Copies of all relevant paperwork for the project, including sample custody records and the list of stations actually sampled, should be mailed to the WMS PM within 30 days from the project end date (the day that the last sample was collected for the project).

Lab Data Submittal

Once all analyses for a project are completed, the FDEP lab transfers the receipt, result, and QA/QC records to AMBIENT holding tables on their Oracle database in the Schema VGSM. These data are then transferred directly to the WMS' Oracle database via PL/SQL procedures. These procedures are scheduled to run weekly every Monday night at 7pm.

Project Processing

1. Once all lab and field data for a project are loaded into the WMS' Oracle database, the Data Manager runs a series of PL/SQL procedures to normalize the data. During this process, each sample is spot checked for missing analytes. Furthermore, the Data

Manager checks for missing stations. The resultant data are held in temporary tables in the WMS Oracle database.

2. Once all of the data have been accounted for, they are transferred to the tables T_SAMPLE and T_RESULT, and the column DATE_PROVISIONAL in T_PROJECT is updated.

Provisional Data Review

After the Data Manager has normalized the files, the appropriate staff are notified that the data are ready for review using ADM. Detailed instructions are given below.

1. Open ADM and select the project of interest. Select the **Review** tab. If the project is loaded, there should be a date listed beside 'Provisional'. If this is the case, the operator may run the Database Checks by clicking **Run Checks**.
2. A text document will be created and opened in MS Word. The document contains the name of the project, the date the checks were run, the stations sampled, the number of analytes per station and sample type, missing analytes per station, detections coming from associated blanks, and samples with excessive turbidity. The file name will be the same as project root, with .RTF extension. The file is automatically saved to <\\TLHWRM\SOL Z\PROVIS>.
3. The purpose of this file (commonly referred to as the project's documentation file or metadata file) is to document the life history of the project's data. Comments documenting any changes made to the data, or referring to any unusual results, should be included in the Comments section of the file.
4. Once the documentation file is created and reviewed by the WMS PM, it should be forwarded to the sampling contractor and/or sampler for review. In addition, MS Excel exports of the project data and the project's blank data should be submitted at the same time. These exports are created within ADM by navigating to the **Reports** tab, and selecting **Result Data** and **Blank Data** from the Open Data View window. These files are also copied to <\\TLHWRM\SOL Z\PROVIS> upon creation through ADM. The results file name is the same as the project name with an .XLS extension. The QA/QC-blank file name additionally has a '-B' on the end of the project name.

NOTE: Data exports from ADM do not include all data associated with the project.

Data Correction

1. Updates and additions to the Stations table are made through the GWIS Database Utilities application as described in the **Site/Station Data Maintenance**
2. Section above. PMs and sampling managers are granted access, and changes/additions are made at their discretion.
3. Sample data corrections are made through a form review process. The Sampling/Contract Agency sends requests for sample data correction to the appropriate PM at FDEP. The PM then forwards the data correction form to the WMS Data Manager for review and update of the appropriate Oracle tables.
4. Requested data corrections are to be submitted on a copy of the Sample Data Correction Request Form at <Z:\datamgmt\Sample Data Correction Request Form.xlsx>. More extensive, systematic changes can be requested by e-mail, as long as all pertinent data are included. In such cases the PM, briefly describing the changes requested in the letter, submits a data correction form. Correction requests are dated upon receipt, annotated with action taken and date action taken, copied and the original returned to the correction requestor by the PM.

Any editing changes made to a database are documented in the project's documentation file (see project's documentation file, under the section **Provisional Data Review** above). Furthermore, the Data Manager updates the comment columns of the sample and/or results table to reflect any editing changes made to either of these two tables.

Project Data Release (PM +Sampling Agency Project Manager)

Certification of Data for Release

1. Certification for public release can come only after the sampling agency's/contractor's review of the project data (see **Provisional Data Review** above), and after any needed editing has been completed and reviewed.
2. Both the sampling agency's Project Manager and WMS' Project Manager must approve the data before it is certified for release. The only exception occurs if the data review time period (see **Data Management Deadlines**
3. below) has expired, and FDEP deems it necessary to release the data so that data analysis may proceed.
4. Project status is upgraded to Release in ADM, via the **Review** tab's **Release** button. A note adding the date the data were deemed released and who approved the data for

release should be added to the project's documentation file (refer to 'project's documentation file', under the section **Provisional Data Review** above).

5. Once the data from a project is released by FDEP, the PM notifies the Sampling Agency's Project Manager.
6. In rare instances data may be 'unreleased' via the **Review** tab's **Revert Release** button. This should only occur when egregious errors are noted in released data. If data are 'unreleased' any noted errors causing this action must be corrected and the data must be reviewed again before they are released. The PM should obtain approval from the Data Manager and the Sampling Agency's Project Manager before 'unreleasing' any data.

General Release Databases

1. Once provisional data have been reviewed, edited, and certified as being ready for general release, exports of the data can be distributed for general use. It is important to use ADM to export the data directly from the Oracle Database for each request, because any changes made to the data will be reflected in the current export. There is no guarantee that prior exports will be up to date with edits/changes that may have been made to the database.
2. Newly released data will also be loaded to the US EPA STORET database on a quarterly basis.

Deletion of Data from Release Database

To be physically deleted from the database, data must meet at least one of the following criteria: data were collected in obvious violation of sampling agreement with station owner; data were not collected for a WMS Monitoring Network.

Data Notifications

Data Notifications will be created and forwarded to other programs within FDEP, the Florida Department of Health, and property owners, as referenced in the WMS Project Manager Manual (saved at <http://publicfiles.dep.state.fl.us/dear/watershed%20monitoring/documents/WMS-ProjectManagerManual.pdf>).

Data Security

WMS File Server (\\TLHWRM\SOL Z\PROVIS\)

Partial backups containing newly created files, and those files which have changed in the past 24 hours, will be run every business day. A complete backup to tape is run weekly. These files are protected only from disk crash, not from editing or disk management blunders.

Oracle Database

1. Once loaded to the WMS Oracle Database, each sample data record is locked and changes are solely permitted by the WMS Data Manager. However, updates to the Comment column of the Project Table will be made available to the PMs and contractors via the ADM Application (refer to Appendix A). Updates to the STATIONS tables will be allowed via GWIS Database Utilities, <http://gwis.dep.state.fl.us/> as indicated in the [GWIS Users Manual](#).
2. The database is located on the Department's dbprod.floridadep.net server. Partial backups containing newly created tables/scripts, and those tables/scripts which have changed in the past 24 hours, are run every business day. A complete backup to tape is run weekly.

Data Management Deadlines

Note: due dates are from project end date, the day on which the final sample for the project was taken.

<u>Item</u>	<u>Due Date</u>
Field Data Receipt	30 days
Lab Data Receipt	90 days
Provisional DBF Creation	120 days
Project Review/Data Release	240 days
Letter to Owner/contact Person	360 days
Dept. of Health Letter	360 days

Data Availability

Data are available from the FDEP upon request; for availability and access please refer to <http://www.dep.state.fl.us/water/monitoring/data.htm>.

Appendix A: Features of Project Data Management Using ADM

Schedule Tab

The Schedule tab displays general information about the begin/end date, request numbers, target ship dates, the number of stations/samples, and type of samples scheduled for each project. The reports available on this tab are the Sample Schedule Report and the Samples Report. Both of these reports are printable. The Sample Schedule Report details the number of stations scheduled, as well as blanks, and the shipment date for sampling kits. The Samples Report provides information coming from the sampling event after it has been completed. There is information pertaining to each sample taken in a project that includes station name, station ID, sample date and time, sample depth, sample type and sample comments.

Preparation Tab

The Preparation tab contains information pertaining to the initial distribution of WMS documentation that will be used during the sampling events of each project. This tab is used to print barcode and request labels, and has the capability of producing a stations list that the PM may use to verify the stations have been scheduled to be sampled. In addition, this tab has a display of the request label numbers, and actual dates that the lab shipped the sampling kits.

Review Tab

The Review tab displays information concerning the target dates for a project including the following dates: field data loaded, lab data loaded, data provisional, data released, and data loaded from the Oracle database to STORET. As well as displaying the status of target dates for the WMS, a PM can run the Database Checks Report, the Project Status Report, and update the Project Comments field. The Database Checks Report includes a station count, analyte count per station, missing analytes, equipment blank count, equipment blank detections, and the existence of excessive turbidity. When the report is generated, it is written to [\\TLHWRM\SOL Z\PROVIS](#) as an .RTF file. This file is named after the project for which it was created, and it is then referred to as the project documentation or metadata file for the project. Station, result or project-level comments should be added to this file when needed.

Target Dates are defined as those dates for which field and lab data are expected to be received, and those dates that the project data are made provisional and then released (refer to **Data Management Deadlines**

above). The Project Status Report is a printable report form that contains target dates for each project, as defined above, and whether or not they have been met. Finally, when project data are ready for release the PM is able to record the current date in the database as the release date by clicking **Release**. Once the project is released, the .RTF file is moved to [\\TLHWRM\SOL\Z\RELEASE](#). Any changes made will then have to be copied and pasted to the original .RTF on [\\TLHWRM\SOL\Z\RELEASE](#).

Reports Tab

The Reports tab is used when the PM needs to create an MS Excel output of the project data to distribute to his/her samplers. The **Result Data**, **Pivot Table**, and **Blank Data** buttons generate MS Excel spreadsheets of the current database contents including fields such as station name and ID, sample date/time and type, result values, value qualifiers, units, sampling agency, etc. These files are written to [\\TLHWRM\SOL\Z\PROVIS](#), [\\TLHWRM\SOL\Z\PIVOT TABLE TEXT](#), [\\TLHWRM\SOL\Z\PIVOT TABLE NUMBER](#). These spreadsheets are not for permanent storage and they should not be re-used to fill data requests. If a data request is made, the PM should generate a new spreadsheet to send at that time. In addition, corrections by PMs or samplers should not be made to these spreadsheets, as they will never make it to the database. The procedure for regenerating spreadsheets does not vary from the initial creation procedure.

The results data export and the two pivot table exports are to be used in data review. They are named as the project name with an .XLS extension and _value.csv, _value_txt.csv, respectively. Blank-data files are named after the project name and have a "-B" on the end of the name to distinguish them from the result data files. The **Metadata** view button will open an existing documentation file for the selected project if the **Run Checks** button on the **Review** tab has been used (discussed in *Provisional Data Review* above). The documentation file includes a list of all stations sampled for the project, basic data checks, blank detections, etc. This information is very useful during data review. Additionally, the PM may add comments to the documentation file concerning sampling or analysis idiosyncrasies.

The Reports tab also contains information about each project's notification status. There is a listing of which contacts/owners have requested letters and a display/update for the date letters are sent. In addition, this tab contains the water quality report, owner's letter and mailing label generating capabilities. Once generated, these reports must be saved to the PM's hard drive using the "Save As" function in MS Word.