WQX Web Tribal Monitoring Data Entry Template

Introduction

This is a step by step guide to using the WQX Web Monitoring Data Entry Template for Physical/Chemical data to prepare your data for import into the WQX Web tool, and subsequent transfer to the STORET Data Warehouse. This guide does not provide instructions for use with the biological or habitat templates. This template will assist in properly formatting your data by providing lists of allowable values, as well as the necessary business rules detailing when various fields are needed. This template is meant to be an easy way to assemble or track your data, maintaining it in such a way so that it can be easily migrated to STORET.

Please note: The WQX Web template is meant to be used with standardized configuration files within the WQX Web tool (see http://www.epa.gov/storet/wqx/wqxweb_downloads.html). It is OK to make changes to the WQX Web template to better suite your needs, however, if you do, the please know that the configuration that you use in WQX Web may need to be changed as well.

Also, please note that the domain values in the WQX Web template might be out of date. Please reference the look up tables in the WQX Web tool in order to get the most up to date values.

Using the WQX Web template

The WQX Web template is made up of two Excel spreadsheet files that are meant to be used together to assist with data tracking and entry. The first file, labeled "Template_dictionary_WQX_Web.xls" provides a dictionary of the types of data, formats, and associated data rules that should be included within a WQX Web data file. The second file, labeled "Template_WQX_Web.xls" provides columns that match the dictionary for the purpose of entering in data, exporting the data into a text file, and making it ready for import into WQX Web. For the purposes of these directions, you will be using "Template_WQX_Web.xls" to enter the data. However, many of the data rules described are included in the dictionary file.

Data Requirements

Three categories of data are required, Projects, Monitoring Locations, and Results.

- *Projects*: At least one project is required. This describes the purpose of the monitoring.

- *Monitoring Locations*: Description of the geographic location of the site where monitoring took place.

- *Results*: Water quality sampling and field observations that take place during a visit to a monitoring station, including descriptions of what was sampled or observed, analytical methods, sample collection procedures and measurements of what was monitored.

Creating Projects

A project should define WHY a sample is being collected. A project should contain a unique ID, a name, and a description of the projects purpose. You need to have at least one project, but you can have many. A project could contain an entire year's sampling, sampling related to a specific study, or even sampling related to particular water types (i.e. a lakes project). To create a project, do the following:

1. Open the template in Excel (Template_WQX_Web.xls).
2. Click the 'Projects' tab.
3. Enter an ID of 35 characters or less
4. Project Name can be no longer than 120 characters
5. Keep the Description as brief as possible.

Creating Monitoring Locations (Stations)

A monitoring location should describe WHERE a sample is being collected. A monitoring location must contain a unique ID, a name, a monitoring location type (i.e. river/stream, lake, etc.), state/county, and latitude/longitude coordinate information including the method for getting the lat/long coordinates. A monitoring location should also contain a name and description. This will help you distinguish monitoring locations down the road. To create a monitoring location, do the following:

- Click the 'Monitoring Locations' tab to begin.

- Each monitoring location must have a unique id. This can be anything up to 35 characters long.

- Monitoring Location name is required. This can be up to 255 characters long.

- Monitoring Location Type is the type of station. Select the best one from the drop down list.

- Use degrees followed by decimal minutes for latitude and longitude. This is the default reading of most GPS units. Longitude must be negative in the western hemisphere.

- The Horizontal Collection method is required. This field represents the method that you used to determine the latitude and longitude of your monitoring location. If you determined the latitude and longitude of your monitoring location using a GPS, but do not have any more specific detail about the GPS method, then you may use GPS-Unspecified. If you determined your coordinates from a map, you must then specify the denominator of your map scale (24,000 instead of 1:24,000) in the Monitoring Location Source Map Scale field.

- The Horizontal Coordinate Reference System Datum Name is required. This field determines the datum that your latitude and longitude coordinates are based upon. Commonly used data are NAD83 or NAD27. This is a setting that may be changed on most GPS units. Good quality maps should have this information in the legend information.

- Select the postal code for the State from the drop down list. Find the county name from the County list and enter it. State is required when the county is entered.

- Optional fields are provided for USGS 8-Digit Hydrologic Unit Code (HUC) and tribal land information.

Results – Water Chemistry Samples

The results section defines the WHAT, WHEN, and HOW of the sample being collected. Within the STORET model, individual samples are identified as unique 'Activities'. An Activity can be defined as any individual action you are performing at a location to collect data. For example, if you were to visit a location, and do the following:

- collect 1 bottle of water to be sent to a lab for nutrient analysis
- collect 1 bottle of water to be sent to a lab for pathogen analysis
- collect 1 grab sample of sediment to be sent to the lab for chemical analysis
- collect a series of field parameters (i.e. pH, DO, Temperature)
- create a field blank to be used as QC for the nutrient analysis

Within STORET, each of these would be considered a separate activity, and would need their own unique Activity ID. In short, any time there is a change in Activity Type, Activity Medium, Monitoring Location, Activity Start Date, or Activity Depth, a new Activity ID must be created. An Activity ID will often contain multiple Characteristics. *An Activity ID must be completely unique across an Organization, so Activity IDs cannot be reused for multiple activities.*

An Activity contains the following components:

- **WHEN**: An Activity Start Date and Time define when the sample was collected.

- **HOW**: The Sample Collection Method (what methods were used to collect the sample) and the Result Analytical Method (method used in the lab to determine the result value).

- **WHAT**: The Characteristic and actual Result, with one row in the template representing one characteristic and value.

To enter results, do the following:

- Click Results tab

- *Project ID and Monitoring Location ID must already exist.*

- Activity ID is required. ***An Activity ID must be completely unique across an Organization, so Activity IDs cannot be reused for multiple activities.*** It is best to use the Sample ID if available. Otherwise devise a scheme that creates a unique ID for each sample or set of field measurements. This can be up to 35 characters long. Commonly used schemes include:

    – Lab Sample ID – if always unique and never repeated.
    – Monitoring Location ID + 8-digit date + F or S for Field Measurement or Sample.

- There are several options for Activity Type and Medium, but in most cases the following defaults can be used:

    – Activity Type – Sample-Routine (for samples taken and sent to a lab) or Field Msr/Obs (for measurements taken at a site such as with a probe or other on site instrument)
    – Medium – Water

- Activity Start Date refers to the date the sample was collected.

- Activity Start Time is optional, but if entered use the format in the example. If time is entered, the three character Time Zone becomes required, for example: **CST**.

- Activity Depth and Depth Units are optional, though if Depth is entered the units must also be entered. Choices are **ft** (feet) and **m** (meters).

- Sample Collection Method ID and Sample Collection Equipment Name are required for samples that are collected and sent to the lab, but not for field measurements. If uncertain about the Sample Collection Method, you may refer to your QAPP, though doing so is not ideal.

- Characteristic Name MUST have a match in STORET. While the template contains all STORET characteristics, the characteristics required by the Section 106 guidance are provided at the top of the list. These are available by either using the dropdown arrow in the Characteristic Name column, or by searching the list in the associated allowable values worksheet. For the 106 guidance, the following STORET characteristics are available:

Parameter as defined in 106 Guidance	Corresponding STORET Characteristic(s)
Dissolved Oxygen	Dissolved oxygen (DO)
Water Temperature	Temperature, water
Turbidity	Turbidity
pH	pH
Phosphorous	Phosphorous*
Total Nitrogen	Nitrogen
E. Coli	Escherichia coli
Enterococci	Enterococcus

*Total Phosphorous is calculated as the sum of both Orthophosphate and Phosphorous, depending on your methodology, you may need to include both of these characteristics to accurately describe Total Phosphorous. Alternatively, you can use the Characteristic of 'Phosphorous' combined with the sample fraction of 'Total' to describe Total Phosphorous

- The optional Method Speciation Name is used to identify the chemical species. For example, Ammonium may be measured as N or as NH_4.

- Result Value is the actual measurement for each characteristic. Either the Result Value field <u>or</u> the Result Detection Condition field must contain a value, never both fields. If the result is below detection limit, the Result Value must be blank, and the Result Detection Condition field must contain 'Not Detected'. If you report a value as 'Not Detected', please consider the following:

  - You must provide the Detection Limit in the Result Detection/Quantitation Limit Measure field. This should be provided by the lab along with appropriate units.

  - You must provide the Detection Limit Units in the Result Detection Quantitation Limit Unit field. The units should be the same as what the Result Value Units would be.

  - You must provide the Result Detection/Quantitation Limit Type, which is a choice list for why the analyte was not detected or quantified.

- The Result Unit field is required for non-text result values, unless the Result Detection Condition field contains a value. For pH it will always be **None**.

- Sample Fraction is a description of the portion of the characteristic being analyzed. Sample Fraction will usually be Total or Dissolved. Which value you use is driven by the method used for the analysis.

- The Result Status ID field is required if you reported a result. In order for your data to be uploaded to the STORET Data Warehouse, this field MUST NOT BE set to "Preliminary".

- The Result Value Type field is required if a result is non-text. It must be either Actual, Estimated, Calculated, or Control Adjusted. The default entry is Actual. If you use Calculated, you may wish to specify the method used to calculate the results in the optional Statistical Base Code field. Examples of valid statistical base codes are Mean, Maximum, or Standard Deviation.

- Result Analytical Method ID and Context are the analytical procedures used by the lab for analyzing samples. For example if you're using the APHA method "Total Coliform- Chromogenic Substrate Test" for analyzing Total Coliform (method number 9223-B), you would enter APHA as the Context, and 9223-B as the Analytical Method ID.

- The Analysis Start Date, which is the date the lab started analyzing samples, and the Result Comment fields may be entered if desired.

Some other items to consider when creating a results file:

- Characteristic Name, Result Value Units, Sample Fraction and Analytical Method and Context should be available from the lab. If the activity is a **Sample-Routine,** a both a Sample Collection and an Analytical Method is required. The **Field Msr/Obs** Activity Type does not require a Sample Collection or an Analytical Method, but they may optionally be provided.

- Analysis date is when the lab actually performed the analysis of the sample. This indicates if the analysis was performed within holding times.

- Important! So that this file can be read properly by WQX, all Characteristic Names MUST be in the same column.

Creating Text Files for Loading into WQX Web

In order to load data from the template into the WQX Web Tool, they must be transformed from spreadsheet format into text files. The template provides an automated process for preparing tab delimited text files.

1. Click the 'Export' tab to begin.
2. Choose the 'Export Projects', 'Export Monitoring Locations', or 'Export Results' button, as appropriate.
3. Navigate to where you want to store your text file, and name your text file.
4. Hit 'Save'.

If the process will not run, a likely reason is that the security settings in Microsoft Excel are set too high. These may be changed in Excel 97-2003 by opening the Tools menu and selecting Options. Under options, choose the Security tab. Under Macro Security, click Macro Security. Then click on the Security Level Tab and select the Security Level that you want. Medium is probably the best to select for this purpose.

If you have Excel 2007, changing the security settings may be done by clicking on the round Office Button at the top left of your screen. Click the Excel Options Button near the bottom of the box that opens. Under the Popular options, click the check box to be checked on for "Show Developer tab in the Ribbon". Click OK. Under the Developer tab select the Macro Security button. Select Macro Settings on the left. Then select the setting you wish to apply on your computer. You may either disable macros, but have a Security Warning pop up at the top of your screen when you open excel, which has an options button to enable macros, or you may enable all macros, which is a more dangerous setting.