WQX User Meeting
May 28, 2020

There was a total of 42 participants.
The next WQX User Call is scheduled for June 25, 2020.

1) Introduction to WQX/WQX Web 3.0
   a) FAQs for WQX and WQX Web
   b) Best Practices for WQX Data submissions
2) Open Discussion

Webinar materials: ftp://newftp.epa.gov/storet/xfer/How/2020-05-28/

1. **Introduction to WQX/WQX Web 3.0**
   The new schema was released to both WQX and WQX Web on April 13, 2020.
   The release notes can be found at the end of this document and can be downloaded from:
   ftp://newftp.epa.gov/storet/wqx/draft/schemav3/

   Demonstration of WQX/WQX Web 3.0 release features, business rules and documentation

2. **Open Discussion (Questions?)**

Frequently Asked Questions

A)) Users may request and provide domain value definition and descriptions. (`DomainValuesTemplateNew.xlsx`)

B)) Users may request/suggest characteristic group assignments (based on Subject Matter Expertise).

- WQX manages all (?) parameters and characteristic group list for the Water Quality Portal
- **Characteristic groups are not OFFICIAL List**.

However, Characteristic groups serve to allow querying large characteristic list without individual entry
Ie Organics, Pesticides has over 3,000 characteristic members

C)) FTP Site (DomainValuesTemplateNew.xlsx) - To Request a new Domain Value provide the following applicable elements in the worksheet
- ftp://newftp.epa.gov/storet/wqx/DomainValuesTemplateNew.xlsx

D)) Result Qualifier Codes have been mapped from group to individual qualifier codes
-
ftp://newftp.epa.gov/storet/wqx/domain_alerts/DRAFT_Result_Measure_Qualifier_Codes_mappings_DEPRECATED.docx

E)) Comparable and/or Equivalent Elements:
Event Log: View all validation errors and warnings
          Message Type   Inconsistent Data
          Resolution   Resolve in Import File
Note: **For any Activity ID all activity elements must match. Activity elements may not be different on rows assigned the same Activity ID.**

Activity Location (lat/long) - optional	vs	Monitoring Location Geospatial (lat/long) - mandatory
LatitudeMeasure		LatitudeMeasure
LongitudeMeasure		LongitudeMeasure

SourceMapScale		SourceMapScale
HorizontalAccuracyMeasure		HorizontalAccuracyMeasure
HorizontalCollectionMethodName		HorizontalCollectionMethodName
HorizontalCoordinateReferenceSystemDatumName HorizontalCoordinateReferenceSystemDatumName		
ActivityLocationDescriptionText		MonitoringLocationDescriptionText
Activity Location (lat/long) - optional	vs	Result sampling Point - optional
LatitudeMeasure		ResultSamplingPointName
LongitudeMeasure		ResultSamplingPointType (Belt Transect, Line Transect, Point Transect, Strip Transect)
SourceMapScale		ResultSamplingPointPlaceInSeries (replaced v2.0 activity element ActivitySamplingComponentPlaceInSeries)
HorizontalAccuracyMeasure		
HorizontalCollectionMethodName		
HorizontalCoordinateReferenceSystemDatumName		
ActivityLocationDescriptionText		ResultSamplingPointCommentText
ActivityDepthHeightMeasure (Value/Unit) - optional	vs	ResultDepthHeightMeasure (Value/Unit) - optional
ActivityDepthAltitudeReferencePointText - optional	vs	ResultDepthAltitudeReferencePointText - optional
ActivityIdentifier (CHILD/SUBSET)	vs	ActivityIdentifierUserSupplied (PARENT/WHOLE)
CharacteristicName	vs	CharacteristicNameUserSupplied - optional
SubjectTaxonomicName	vs	SubjectTaxonomicNameUserSupplied - optional

ActivityCommentText	vs	ResultCommentText
CollectionDescriptionText		LaboratoryCommentText
SampleCollectionEquipmentCommentText		
SampleTransporationStorageDescription		

ActivityStart / ActivityEnd	vs	AnalysisStart / AnalysisEnd - optional
ActivityStartDate / ActivityEndDate		AnalysisStartDate / AnalysisEndDate
ActivityStartTime / ActivityEndTime		AnalysisStartTime / AnalysisEndTime
		LabSamplePreparation (0 or more)
		PreparationStartDate / PreparationEndDate
		PreparationStartTime / PreparationEndTime

F)) Data owners may find the template and domain value services helpful when preparing their data sets.
Download the Data Exchange Template (excel file) - data directory and element definition. -
ftp://newftp.epa.gov/storet/wqx/draft/schemav3/WQX_Data_Exchange_Template_v3.0.xls
Download the WQX Flow Configuration document - data validation rules, services and schema. -
https://www.epa.gov/waterdata/wqx-flow-configuration-30

The principle document which captures the detailed data exchange processing rules governing WQX using narrative text, diagrams and examples.

WQX Domain Values tables provide data elements to assist data owners and users in conforming to a consistent nomenclature and can be queried to determine the EPA-supplied values.

G)) Import Configuration
Water Quality Portal Site data
Water Quality Portal Sample results (Biological metadata)

Custom Import Configurations   vs   PUBLIC/Shared Import Configurations
 - Custom support translations which transform data to registered WQX domain value
 - Domain Value Resolution options:
        - Correct the value in this dataset only
        - Add a translation to auto-correct future datasets
     - Custom order of elements

G)) WQX Web Glossary (navigation page) - https://cdx.epa.gov/WQXWeb/StaticPages/GlossaryWqx.htm
Step #1. Add missing Sample Collection Methods for organization ID = BVR
for collection methods
Step #2. Add missing Analytical Methods for organization ID = BVR
for combination methods, national method with modification, inhouse/local result analysis methods
     - conditionally required based on activity type contains the word "Sample" ()

STEP#	1	**WQX Business Rule 3.0**
	Rule #16	ResultAnalyticalMethod may be required depending on the value provided for ActivityTypeCode. See the domain value list for ActivityTypeCode for more information. a. However, ResultAnalyticalMethod is never required if BiologicalIntentName is "Individual", "Population Census", "Frequency Class", or "Group Summary"
	Rule #18	ResultAnalyticalMethod's MethodIdentifierContext must either match a value from the AnalyticalMethodContext domain list or it must be the same as the value for the OrganizationIdentifier provided in the submission file. a. If the MethodIdentifierContext matches a value from the domain list, then the MethodIdentifier must also match a value from the AnalyticalMethod domain list (for that Context). Furthermore, MethodName, MethodQualifierTypeName, and MethodDescriptionText are not required and will be ignored (since only

		the Identifier and IdentifierContext are needed to uniquely identify the Analytical Method). b. If the MethodIdentifierContext matches your OrganizationIdentifier (indicating your own method), then MethodIdentifier and MethodName are both required, but do not need to match a value from the domain list (since they are your own). Additionally, MethodQualifierTypeName and MethodDescriptionText can be provided, but are optional, to further describe the Analytical Method used.
	Rule #41	Removed (v3.0) Sample Collection Method is required when Activity Type Code contains the word "Sample"
	Rule #46	ResultAnalyticalMethod may be required depending on the value provided for CharacteristicName. See the domain value list for CharacteristicName for more information

H)) What is the difference between the well depth and the well hole depth?

There are many entries in the system where well depth and well hole depth have different values.

Monitoring Location elements:

Well Hole Depth is the depth of the outer casing of a well <WellHoleDepthMeasure/MeasureValue>;

Well Depth is the depth of the inner casing of a well <WelllDepthMeasure/MeasureValue>;

INDUSTRIAL wells may have >1 foot thick casing

Most private wells the inner and outer casing difference is minimal (1" to 4") or none (feet)

Casing (definition)

A Casing is the tubular structure that is placed in the drilled well to maintain the well opening.

Along with grout, the casing also confines the ground water to its zone underground and prevents contaminants from mixing with the water.

Some states or local governing agencies have laws that require minimum lengths for casing.

Casing Liners for Large-Diameter Water Wells: An Approach ...
URL: https://www.roscoemoss.com/wp-content/uploads/
A relined well consists of an inner casing that extends from ground level
  (with an appropriate stick-up, if needed) to the bottom of the existing well casing.
   Generally, the outside diameter (OD) of the liner is on the order of 3 to 4 inches smaller than the inside diameter (ID) of the existing casing.

Here are a few examples where they (well depth and well hole depth) are different:

AR008-344659091293701 - 11/28/2018 - 130 ft for "WellDepthMeasure/MeasureValue" and 142 for "WellHoleDepthMeasure/MeasureValue"

another example:

USGS-443330101003401   -- 6/25/1980   -- 2386 ft for "WellDepthMeasure/MeasureValue" and 2405 for "WellHoleDepthMeasure/MeasureValue".

I)) Schema v3.0 Element Relationship Diagram
ftp://newftp.epa.gov/storet/wqx/WQX_Schema_v3.0ElementRelationshipDiagram.pdf

Note that the XML schema tags must conform to the order published in the WQX 3.0 Flow Configuration Document (FCD)

Please be-aware that the XML file with tags out of order may not pass schema validation.

Refer to the FCD (page 17) for the order and tag names (including 3.0).

Flow Configuration Document

You can also reference the 3.0 schema on the STORET/WQX FTP Site:
ftp://newftp.epa.gov/storet/wqx/WQX_Schema_v3.0ElementRelationshipDiagram.pdf

Question: How do you add or remove result records to existing Activity IDs?
Each result in WQX, must be part of an Activity. Unlike most other entities in
WQX, Results do not have a Unique ID. Because of this, there is no way to add,
update, or delete an individual Result via an import file. You must always import
an entire Activity and all of its Results.
Example: You collect five Results from your multi-parameter probe at a site. You
import and then submit these Results to CDX as part of a single Activity. You then
discover a correction that needs to be made to one of the Results. To avoid any
data being dropped from WQX, you need to import and resubmit the entire
Activity including all five Results, rather than just the one result that changed.

Question: What is EPA's recommended (Best Practice) way to store profile data?
The webinar mentioned that we could use Result Depth to store depth profile data and use the Analysis Start
Time to record the time of the actual measurement.
This will minimize mapping multiple activity ids for a single sampling activity.

Raw Continuous monitoring data should only be stored in WQX as an Attached Object or
an uploaded document at the Activity Level for set period of operation.
EPA still recommends storing summary information (min, max, every 4 hour event intervals, etc.) as discrete
measurements.

EPA recommends a new data exchange standard for time series data and continuous monitoring data which currently is still in development.

However, a temporary solution for dataowners today maybe storing continuous data as discrete summary information (min, max, actual measurements every 4 hour event intervals, etc.).

Correct, It would be good to formalize some of these recommendations in a guidance document.

The challenge is not all data submission align with published guidance documents.

EPA agrees end users may need a roadmap to know where to look for the information in the downloads from the WQP

 (new Water Quality Portal download reports may address this issue).