Beach Monitoring Database User Guide (For use with WQX)

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2 Revision Log

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6/21/2021	3.1	Added Section 14.4: Load XML option Added text about Next and Previous Buttons, page 66	Chris Stevenson		

3 Introduction

The purpose of this document is to give instruction on how the WQX Access Database can be used to generate XML submission files for the WQX and how the file should be submitted. A working knowledge of the WQX XML Schema is very helpful when working with WQX data, and links to documents which detail the WQX XML are provided in the Reference Materials Section. If you are looking for more general information about WQX or the Beach Act Grant Program, please first visit the links in the Reference Materials section.

3.1 Reference Materials

For more information about the BEACH Act Grant Program or if you are new to the BEACH Act Grant Program, visit these links:

General Beach Program Information – https://www.epa.gov/beaches

Submitting Beach Data to EPA - https://www.epa.gov/beach-tech/submitting-beach-data-epa

Note particularly on that webpage: how to get credentials to submit beach data, how to use the Exchange Network, and the sub-page on submitting Monitoring data.

The WQX team within the EPA has written several documents which are very useful for understanding WQX data and the WQX data submission process. Though these documents are more technical in nature, understanding their contents is very beneficial. These documents are located at the following URLs:

Basic information about WQX - https://www.epa.gov/waterdata/water-quality-data

Information on WQX's Exchange Network presence - https://www.exchangenetwork.net/exchanges/water/wqx.htm

One document that is particularly helpful is the *WQX XML Training for Beach Monitoring Data* (https://www.epa.gov/sites/production/files/2014-09/documents/wqx-xml-trainingmanual-2013.pdf). The *WQX XML Training for Beach Monitoring Data* explains the details and business rules about a submission file.

Since all WQX submission files will be traveling over the Exchange Network, a basic understanding of the Exchange Network is also beneficial. The Network Basics section and FAQs section of https://www.exchangenetwork.net/ give a good overview of how the Exchange Network works and its purpose.

The underlying technology of the Exchange Network and submission files is XML. To learn more about XML, visit http://www.w3schools.com/xml/xml_syntax.asp.

4 Before Submitting Data

These are the steps that must be taken before a submission can be made.

4.1 NAAS Account

A Network Authorization and Authentication Service, or NAAS (pronounced naz), account is required to submit files on the Exchange Network. To request a NAAS account, contact the manager of the eBeaches System, Bill Kramer at kramer.bill@epa.gov You may also need to contact your-jurisdiction's Node Administrator[1].

4.2 WQX Organization ID

The WQX Organization ID can be created by contacting the STORET help desk by email at storet@epa.gov or by phone at 1-800-424-9067. Also, there is a process in place to migrate data from STORET to WQX which will enable states to keep the same Organization ID for WQX submissions. Contact the help desk for more information about this data migration process.

4.3 Submission Method Selection

There are several options available for choosing a method to submit data to the WQX. None of these options affect how data is entered into the database or how the submission file is generated. The submission method chosen will determine what is done with the submission file after it is generated. These options are outlined in a document located here: https://www.epa.gov/waterdata/water-quality-data-upload-wqx

4.4 Table Details

This section explains the business rules of the database and gives some helpful tips. For basic information about Microsoft Access, see Appendix A – Microsoft Access.

2.4.1 Foreign Keys

There are many columns that will be filled out that require a special value which is defined in another table. The table and column that contains the special value are called the reference table and reference key, respectively. The column that uses the reference key is called a foreign key. For example, in the ORG_PHONE table, there is a foreign key column which stores the type of phone number, REF_PHONE_TYPE_NAME. Valid types of phone numbers are stored in the REF_PHONE_TYPE_NAME column of the REF_PHONE_TYPE_NAME table. At the time of

[1] You can find your state's Node Administrator's contact information here: http://www.exchangenetwork.net/progress/index.htm

this writing, the valid types of phone numbers which are stored in the reference table are Fax, Home, Mobile, Office, and Pager.

2.4.1.1 Foreign Key Naming Conventions

There are two naming categories for foreign key columns: Ref columns and UID columns

2.4.1.1.1 REF Columns

Tables that begin with "REF" are reference tables and contain reference keys. The columns that begin with "REF" which are not in a "REF" table are foreign keys.

Generally, each foreign key column whose name begins with "REF" references values which are stored in an identically named reference table which contains an identically named reference key column. The phone type example followed this convention. Two notable exceptions to this general rule are time zone information and unit of measure information. Time zone reference keys are stored in the REF_TIME_ZONE table and time zone foreign keys have TMZONE in their name. Unit of measure reference keys are stored in the REF_MEASUREMENT_UNIT table and unit of measure foreign keys have MSUNIT in their name.

2.4.1.1.2 UID Columns

Most tables have a column which ends with "UID" which is automatically generated and uniquely identifies that row of data. For example, in the ACTIVITY table, each row has a unique number in the ACT_UID column. Tables may also have other columns which end in "UID" which relate rows of data from different tables. For example, the ACTIVITY table has a column named ORG_UID which signifies which organization conducted the Activity. Also, the ACTIVITY table has a column named PRJ_UID which signifies which project the activity is associated with. To summarize, columns which end with UID are either the unique identifier for the row or a foreign key which relates rows from different tables.

2.4.2 Reference Data Updates

The date contained within the reference tables[2] are subject to change based on requests for additions made to the WQX team by the state users. The tables are currently based on the values from 9/28/06. Updates to the reference data will be published periodically.
Using the Node Client Lite, the following steps can be followed to get the current valid domain values.

1. Connect to a node in Node Client Lite
2. Under "Things I can do", click "Get Data"
3. For the Data Flow, select WQX

[2] Reference tables are tables which begin with "REF"

4. For the Service, select "WQX.GetDomainValueByElementName_v1.0"
5. Enter the Element Name
    a. A valid list of elements names is available on page 15 of the *WQX XML Training Manual*. See the Reference Materials for the location of the *WQX XML Training Manual*
6. Click Submit
7. A results screen will come up and show you where the Result File is stored
8. Navigate to the result file, and open the result file with Internet Explorer

2.4.3 Other Naming Conventions

Exhibit 2-1 Other Naming Conventions

Abbreviation	Description
CD	CD stands for Code. This typically means there is a specific abbreviation (code) that is needed for the column. For example, in the ORG_ADDRESS table, there is a REF_STATE_CD column. In this case, valid values for this column are the two digit state codes (AK, AL, etc.) which are located in the REF_STATE_CD column of the REF_STATE_CD table.
ID	All columns that end with ID (e.g. ACT_ID, MLOC_ID, etc) must be unique. Whenever a new set of data is submitted with a previously existing ID, the old data is overwritten. For example, if an Activity in the 2004 data with an ACT_ID of CO123456-01 has been submitted, and a new Activity in the 2005 data has the same ACT_ID, the activity from the 2004 data will be lost. A common naming practice is to combine multiple pieces of data to for an ID. For example, the combination of the Station ID, the date, and time of an Activity would be a good ACT_ID.

5 Entering Data into the Database

The order data should be entered into the database is not strictly enforced, but a basic understanding of how the XML is generated will help explain how data should be entered. The XML generation starts in the ORGANIZATION table and works its way through the tables in this order:

ORGANIZATION
- ORG_ELECTRONIC_ADDRESS
- ORG_PHONE
- ORG_ADDRESS
- PROJECT[3]
  - ATTACHED_OBJECT
  - MONITORING_LOCATION
    - MONITORING_LOCATION_ALTERNATE
    - ATTACHED_OBJECT
  - ACTIVITY
    - ACTIVITY_PROJECT
    - ACTIVITY_CONDUCTING_ORG
    - ATTACHED_OBJECT RESULT
      - RESULT_DETECT_QUANT_LIMIT
      - RESULT_LAB_SAMPLE_PREP
        - ATTACHED_OBJECT
  - ACTIVITY_GROUP
    - ACTIVITY_GROUP_DETAIL

The most important thing to note about this is that data in “child tables” will be ignored unless it relates to a row in its “parent table”. For example, any data in the RESULT table will be ignored unless it relates to a row in its parent table, ACTIVITY. Also, the row in the ACTIVITY table will be ignored unless it relates to a row in its parent table, ORGANIZATION.

[3] Methods of creating Project IDs before WQX resulted in multiple beach names assigned to a single Project ID. To avoid that error using this database, verify that all values in the PRJ_ID column of the PROJECT table are unique.

5.1 Special Cases

Most of the tables and columns are fairly straightforward; however there are some that can be confusing. The following sections are descriptions of how to handle the data which is atypical.

3.1.1 Attached Binary Objects

Since there can be multiple Attached Binary Objects associated with Results, Projects, Monitoring Locations, and Activities, there is a separate table to identify the relationships. To add an Attached Binary Object to the database, follow these steps:

1. Open the ATTACHED_OBJECT table in the database
2. In the FILE_NAME column, enter the file name of the object including the extension
3. In the FILE_TYPE column, enter the file extension of the file you are attaching. For example, if you are attaching lab results in an Excel file, you would enter "xls".
4. In the appropriate column, enter the UID you wish to associate the file with
5. Verify that the SEND_TO_EPA column is checked
6. After creating the XML submission file, add the submission file and all Attached Objects to a zip file
7. Submit the zip file

3.1.2 Activity Project IDs

Since there can be multiple Project IDs[4] associated with an Activity, there is a separate table to identify the relationships. The ACTIVITY_PROJECT table is used to associate Projects and Activities. To add associations, follow these steps:

1. Open the ACTIVITY_PROJECT table
2. Enter the data from the ACTIVITY.ACT_UID column into the ACTIVITY_PROJECT.ACT_UID column
3. Enter the data from the PROJECT.PRJ_UID column into the ACTIVITY_PROJECT.PRJ_UID column
4. Close the ACTIVITY_PROJECT table

3.1.3 Activity Conducting Organization

Since there can be multiple Organizations involved in conducting an Activity, there is a separate table to identify the relationship. The ACTIVITY_CONDUCTING_ORG table is used to associate Activities and their Conducting Organizations. To add associations, follow these steps:

[4] Project IDs and Beach IDs are the same thing. Monitoring data uses the term Project ID, and Notification Data uses the term Beach ID.

1. Open the ACTIVITY_CONDUCTING_ORG table
2. Enter the data from the ACTIVITY.ACT_UID column into the ACTIVITY_CONDUCTING_ORG.ACT_UID column
3. Enter the name of the activity's conducting organization in the ACTIVITY_CONDUCTING_ORG.ACORG_NAME column
4. Close the ACTIVITY_CONDUCTING_ORG table

3.1.4 Activity Group Activity Identifiers

Since there can be multiple Activity Identifiers associated with an Activity Group, there is a separate table to identify the relationships. The ACTIVITY_GROUP_DETAIL table is used to associate Activity Groups and their Activities. To add associations, follow these steps:

1. Open the ACTIVITY_GROUP_DETAIL table
2. Enter the data from the ACTIVITY.ACT_UID column into the ACTIVITY_GROUP_DETAIL.ACT_UID column
3. Enter the data from the ACTIVITY_GROUP.ACT_GRP_UID column into the ACTIVITY_GROUP_DETAIL.PRJ_UID column
4. Close the ACTIVITY_GROUP_DETAIL table

3.1.5 Analytical Method Information

The Analytical Method information in the RESULT table is handled differently than any other data in WQX. There are two REF tables, REF_ANALYTICAL_METHOD and REF_ANALYTICAL_METHOD_CONTEXT, which contain methods which are considered "national" methods which have been approved by various national organizations. WQX users are also able to create their own methods using these tables.

3.1.5.1 Using Analytical Methods

To use the Analytical Methods, the following columns will be filled out in the RESULT table:

RES_ANALYTICAL_METH_ID

RES_ANALYTICAL_METH_CONTEXT

RES_ANALYTICAL_METH_NAME

RES_ANALYTICAL_METH_DESC

RES_ANALYTICAL_METH_QUAL_TYPE

You can first browse the list of Analytical Methods by opening the REF_ANALYTICAL_METHOD table. To add the Analytical Method information to your result, follow these steps:

1. Select the RES_ANALYTICAL_METH_ID from the drop down menu

2. Select the RES_ANALYTICAL_METHOD_CONTEXT which corresponds with the RES_ANALYTICAL_METH_ID you chose
3. Select the RES_ANALYTICAL_METH_NAME which corresponds with the RES_ANALYTICAL_METH_ID you chose
4. Select the RES_ANALYTICAL_METH_DESC which corresponds with the RES_ANALYTICAL_METH_ID you chose (Note, there are no descriptions for the national methods)
5. Select the RES_ANALYTICAL_METH_QUAL_TYPE which corresponds with the RES_ANALYTICAL_METH_ID you chose (Note, there are no qualifier types in the national methods)

3.1.5.2 Creating New Analytical Methods

To create new Analytical Methods, the following columns will need to be filled out:

REF_ANALYTICAL_METHOD_CONTEXT Table

AMCTX_UID

AMCTX_CD

AMCTX_NAME

REF_ ANALYTICAL_METHOD Table

ANLMTH_ID AMCTX_UID

ANLMTH_NAME

ANLMTH_DESC

ANLMTH_QUAL_TYPE

The business rules of WQX dictate that when a state creates their own analytical methods they must use their Organization ID as the context for the new method. So to fill out the REF_ANALYTICAL_METHOD_CONTEXT table, follow these steps:

1. In the AMCTX_UID column, enter a unique number. The easiest way to do this is to add one to the last number in the column. For example, if the last number is 756, your AMCTX_UID would be 757.
2. In the AMCTX_CD column, enter you Organization ID.
3. In the AMCTX_NAME column, enter the name of your organization. This is just used as metadata which will enable future users to easily understand the AMCTX_CD column. The data in this column will not be submitted to WQX and is only for local use.

To fill out the REF_ANALYTICAL_METHOD table, follow these steps:

1. In the ANLMTH_ID table, enter a unique identifier for your method. This method identifier can be any string of characters up to 20 characters in length that is not already used as a national method identifier. An easy way to ensure a unique identifier is to use

your Organization ID as a prefix. For example, if your Org ID is DI21BCH, an appropriate method identifier would be DI21BCH-METHOD.

2. In the AMCTX_UID column, enter the AMCTX_UID which was created in the REF_ANALYTICAL_METHOD_CONTEXT table for your organization.
3. In the ANLMTH_NAME column, enter the name of the analytical method.
4. Optionally, in the ANLMTH_DESC column, enter a description of the method.
5. Optionally, in the ANLMTH_QUAL_TYPE column, enter the qualifier type for the method.

After completing these steps, the newly created analytical method can be used exactly like any other analytical method.

6 Preparing Update/Insert XML Submissions

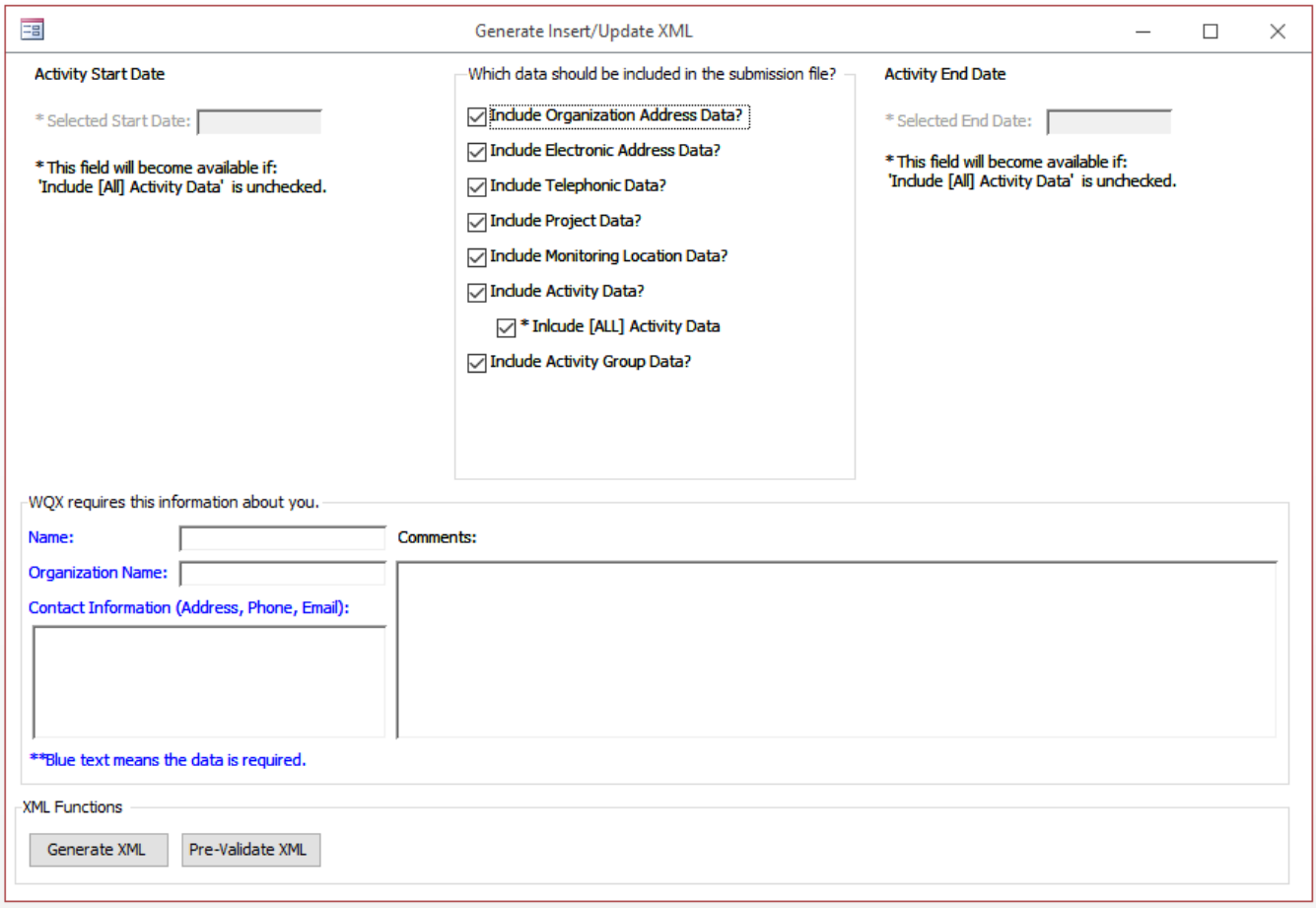
6.1 Process Overview

This database is designed to convert the data within its tables into an XML file compliant with the WQX Schema. These are the basic steps that must be followed to produce an XML Submission file:

1. Fill out the tables in the database.
2. Open the Generate Insert/Update XML form.
3. Enter your name in the Author Name text box.
4. Enter your organization in the Organization Name text box.
5. Enter your contact information in the Contact Information text box. (At least an email address should be provided.)
6. Optionally, you may enter any comments you have about the submission.
7. Uncheck the check boxes next to any information you wish to *exclude* from the submission. (See Excluding Data from Submissions for more information.)
8. Click the Generate XML button.
9. Navigate to the location where you wish to create the file and enter a file name in the File name text box.
10. Click Save.

6.2 Excluding Data from Submissions

Exhibit 4-1 Generate Insert/Update XML Form



There are several methods to exclude data from a submission file. The primary reason for excluding data from a submission would be because the data has already been submitted. First, the check boxes on the Generate Insert/Update XML form can be used to specify which type of data you would like to exclude from the submission. You may want to use this method when you only want to submit specific parts of your data. For example, in the following figure, the XML that is generated will not include the Electronic Address Data, the Telephonic Data, and the Project Data since they are unchecked.

Another method for specifying which data to exclude in the submission file is to use the SEND_TO_EPA column in the tables. This method is useful when you want to keep data in your database, but do not want to upload it to the EPA. You may wish to do this to preserve historical information or just to reduce the size of your submission file. When the submission file is being generated all rows with the SEND_TO_EPA checkbox unchecked will be ignored. For example, in the following picture, the phones with ORGPH_UID 1 and 3 will be included in the submission file, but the phone with ORGPH_UID 2 will be excluded based on its unchecked SEND_TO_EPA column.

Exhibit 4-2 ORG_PHONE Table

ORG_PHONE

ORGPH_UI	ORG_UI	REF_PHON	ORG_PHONI	ORG_PHONE_EX	SEND_TO_EI	Click to Add
1	1	Office	303-896-9777		Y	
2	1	Home	123-456-9999		N	
3	1	Fax	777-888-9999		Y	
(New)	0				Y	

Record: 4 of 4 No Filter Search

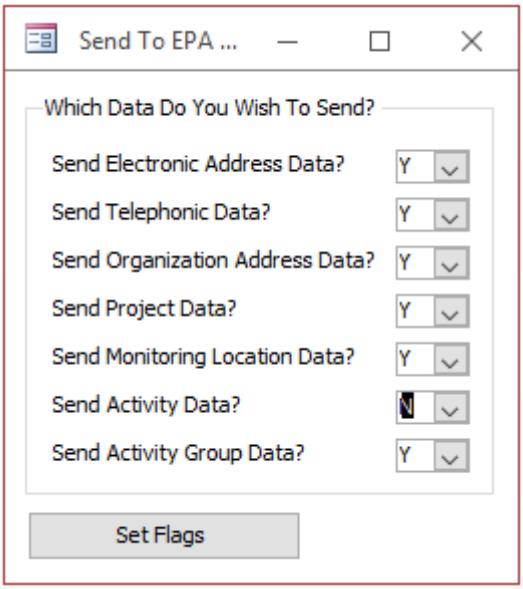
The third method for specifying which data to exclude in the submission file is to use the Send to EPA Flag Manager Form. This method will overwrite any changes made using the second method. The form is intended to be used after a successful submission to prevent data from being submitted multiple times.[5] To use the form, follow these steps:

1. Open the Send to EPA Flag Manager Form.
2. Mark the checkboxes in the form to specify which data table should be sent to EPA. Uncheck any boxes for data you *do not* want to send to EPA.
3. Click Set Flags.

Once the Set Flags button is clicked, **all** the rows of the corresponding data type will have their SEND_TO_EPA columns checked OR unchecked. For example, in the following image, after the Set Flags button is clicked, every row in the ACTIVITY table will have its SEND_TO_EPA column *unchecked* and every row in the other corresponding tables will have their SEND_TO_EPA column *checked*.

[5] Note, data submitted multiple times will be treated as an update, and if no changes have been made in the Beach Monitoring database, no changes will occur in the WQX database.

Exhibit 4-3 Send to EPA Flag Manager.



Note that in all of the above examples, the default value for the "Send" column is always "checked". You must always uncheck the column to exclude the data type.

Exhibit 4-4 shows which tables in the database correspond to the checkboxes in the Send To EPA Flag Manager form.

Exhibit 4-4 Send To EPA Flag Tables

Send To EPA Flag Manager Name	Table Name
Electronic Address Data	ORG_ELECTRONIC_ADDRESS
Telephonic Data	ORG_PHONE
Organization Address Data	ORG_ADDRESS
Project Data	PROJECT
Monitoring Location Data	MONITORING_LOCATION
Activity Data	ACTIVITY
Activity Group Data	ACTIVITY_GROUP

7 Preparing Delete XML Submissions

Users are able to delete data from the WQX by making a Delete XML submission. These are the basic steps that must be followed to produce a Delete XML submission file:

1. If the data to be deleted from the WQX database is not already in the local Access database, fill out the corresponding tables in the database.
2. Open the Generate Delete XML form.
3. Enter your name in the Author Name text box.
4. Enter your organization in the Organization Name text box.
5. Enter your contact information in the Contact Information text box. (At least an email address should be provided.)
6. Optionally, you may enter any comments you have about the submission.
7. Navigate the Projects, Monitoring Locations, Activities, and Activity Groups tabs and highlight the rows which contain the data you wish to delete.
8. Click the Generate XML button.
9. Navigate to the location where you wish to create the file and enter a file name in the File name text box.
10. Click Save.

8 Loading XML

Users are able to take a XML submission file from WQX and import the records back into their monitoring database. It is recommended that you either import these records into a blank database or make a backup of your original database. These are the basic steps to load a XML file.

1. Open the Load XML form.
2. Click Browse and select the XML file.
3. Optionally, you may click the Delete Records button to remove all the records that exist in the database.
4. Click Load XML.
5. You will receive confirmation that your XML file was successfully loaded in the form of a message box.

Exhibit 6-1 Load XML Form and Message

9 Submitting Files

Submitting files is a two-step process. First, the files which you created must be added to a zip file. Second, the files must be uploaded via a node client.

9.1 Preparing the File

All submissions to WQX must first be compressed into a zip file. In Windows XP follow these steps:

1. Right click the submission file.
2. Click "Send To".
3. Click "Compressed (zipped) Folder".
4. Any files referenced in the ATTACHED_OBJECT table with SEND_TO_EPA checked should be added to the zip file by dragging and dropping them onto the zip file.

9.2 The First Submission

The CDX team requires that anyone submitting WQX data over the Exchange Network must first do so in a test environment to ensure proper configuration and functionality. For WQX, the CDX team recommends that users send a small file (for example, just monitoring activities) to the test environment. Data submitted to the test environment is not migrated into production, so you will need to resend any data submitted under test to production. A test NAAS Account as well as WQX Organization ID are required to send test submissions.

Once test data is successfully submitted, please notify the STORET Team, so the new Organization ID can be set up in the production environment enabling you to submit production data.

9.3 Submitting Files

The Exchange Network is comprised of a group of Nodes[6] which exchange data. The Nodes are programmed so the exchanging of information is automated. However, there are node clients that enable human interaction with Exchange Network Nodes.

[6] A Node is just a computer that has the Exchange Network Node software running on it. More information on nodes can be found at http://www.exchangenetwork.net/node/index.htm.

Since all submissions to the WQX must go across the Exchange Network to the WQX Node, a node client such as Node Client Lite is required to manually make a submission[7]. A link to the latest version of Node Client Lite is located in the Before Submitting Data section of this document. To make submissions to the WQX using Node Client Lite, follow these steps:

1. Open Node Client Lite.
2. Select the Node[8] https://cdxnode.epa.gov/cdx/services/NetworkNodePortType_V10
3. Select Status "Production".
4. Enter your NAAS Account username.
5. Enter your NAAS Credentials.
6. Click Connect.
7. On the left under "Things I can do", click Upload Documents.
8. Select the Data Flow "WQX".
9. If applicable, remove any information in the Transaction ID field.
10. Click "Add…"
11. Find and select the zip file which contains your submission.
12. Click Open.
13. Click Submit.
14. If you successfully submitted the document, a page titled "Document Submission Results" will appear.

Note that during this process, you can use the Node Client Help Magnifying Glass to get very useful information about the current screen you are using. It may take several hours or days to process your submission.

9.4 Retrieving Submission Results Using Node Client Lite

Follow these steps to retrieve your submission results using the Node Client Lite:

1. Open Node Client Lite.
2. Select the Node https://cdxnode.epa.gov/cdx/services/NetworkNodePortType_V10
3. Select Status "Production".
4. Enter your NAAS Account username.
5. Enter your NAAS Credentials.

[7] There may be a method to submit data through a web site developed in the future. More information on this will be posted on the Beach Data Users site when available or contact the Beach Program Director for more information.

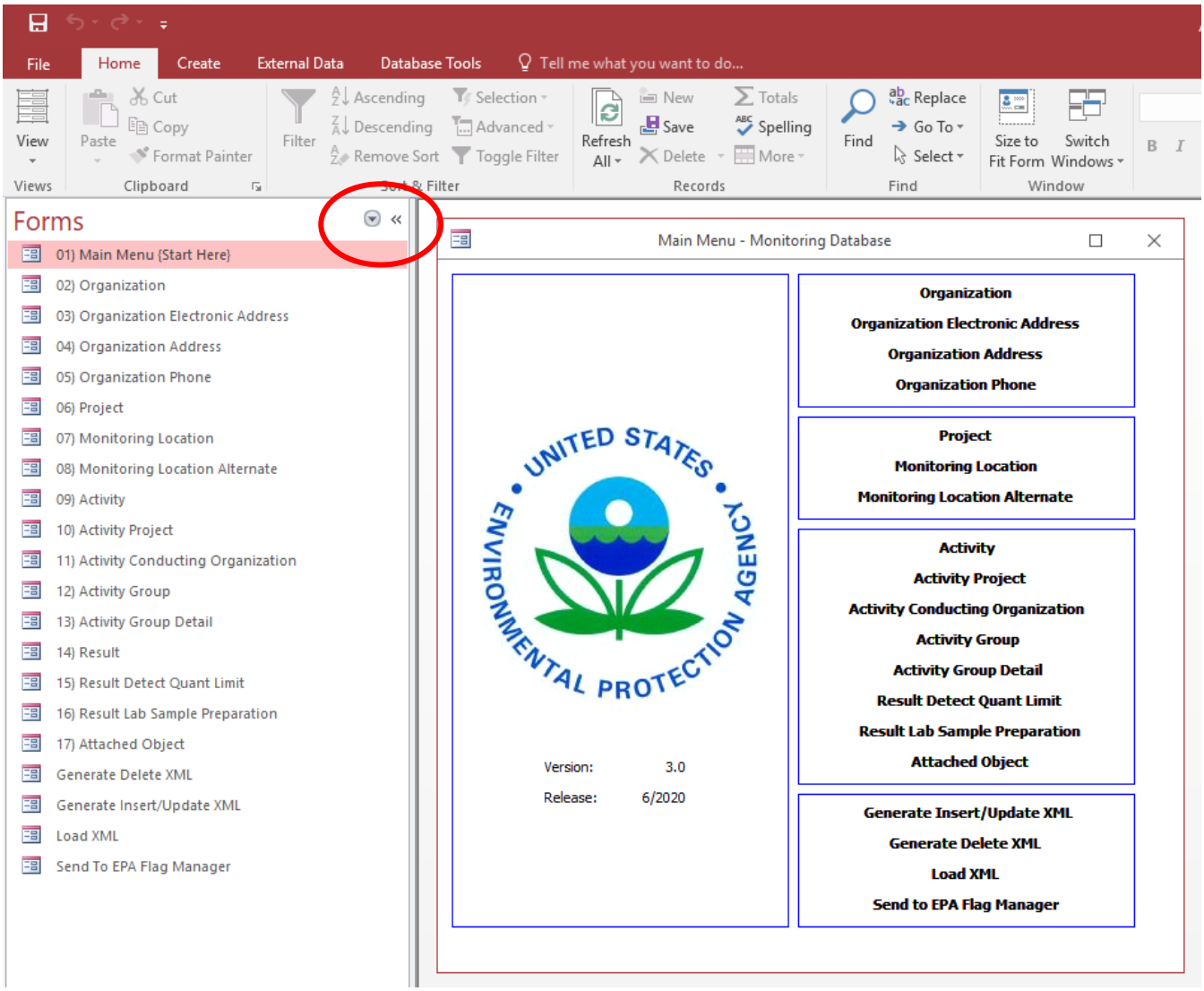
[8] If you do not already have access to the production environment, you must first submit a file to the WQX test environment at https://test.epacdxnode.net/cdx/services/NetworkNodePortType_V10 with the status set to "Test". A successful submission to the WQX test environment is required before you gain access to the WQX production environment.

6. Click Connect.
7. On the left under “Things I can do”, click Download Documents.
8. Select WQX as the Data Flow.
9. Enter the Transaction ID issued for the submission.
10. Select a directory to use to download the results.
11. Click Submit.
12. Open Processing Report in an XML reader which interprets XSL files.
    a. Internet Explorer is the recommended application.
13. Check to see if there were any Errors or Warnings in the file.
    a. If there are no errors or warnings:
        i. Your submission was successfully submitted.
    b. If there are errors or warnings:
        i. Examine the errors in Processing Log.
        ii. Make corrections to your data as necessary.
        iii. Resubmit.

10 Appendix A—Microsoft Access

If you've never used Microsoft Access before, this Appendix provides basic instructions for entering information into the database. After opening the database with Access, you will see a screen as displayed in Exhibit 8-1:

Exhibit 8-1 Beach Monitoring Database



On the left, there is a list of Forms. You may start with forms (easiest) or enter data directly into the tables. TO access the tables directly, select the arrow in the top right of the forms menu (red circle). This will open a menu of all the objects. Select 'Tables' and the forms menu will be replaced with a list of tables. Double-clicking on ORG_PHONE will give display the ORG_PHONE table, as shown in Exhibit 8-2:

Exhibit 8-2 ORG_PHONE Table

ORG_PHONE

ORGPH_UID	ORG_UID	REF_PHONE_TYPE_NAME	ORG_PHONE_NUM	ORG_PHONE_EXT	SEND_TO_EPA	Click to Add
1	1	Office	303-896-9777		Y	
2	1	Home	123-456-9999		N	
3	1	Fax	777-888-9999		Y	
(New)	0				Y	

Record: 1 of 3 No Filter Search

You can use the mouse to click each box and type in information. You will first need to fill out the tables with information before you can generate a submission file. See section 4 for instructions on generating a submission file.

11 Appendix B—Monitoring Database Change Log

V2.2.1 released 7/21/2010

- Date ranges added to XML generation form.
- The Activity form has been revised to include the Results associated with each Activity record.

V2.2.0 released 8/3/2009

- Data entry forms have been added.
- A pre-validation feature has been added.
- The XML generation process has been re-coded to run faster.

V2.1.3 released 12/17/2008

- The user is no longer required to enter the Project ID EPABEACH.

V2.1.2 released 7/2/2008

- Domain values were updated in the reference tables to reflect those in WQX 2.0

V2.1.1 released 2/25/2008

- Fixed bug with incorrect PRJ_UID being inserted into the ACTIVITY_PROJECT table.

V2.1.0 released 2/4/2008

- Added Load XML Form.
- Changed default value MONITORING_LOCATION.MLOC_SOURCE_MAP_SCALE and ACTIVITY.ACT_LOC_SOURCE_MAP_SCALE from 0 to nothing.

V2.0.4 released 11/8/2007

- Corrected bad data in the REF_ANALYTICAL_METHOD_CONTEXT table.

V2.0.3 released 11/7/2007

- Updated reference tables.
- Changed columns which were decimal type to long int to facilitate database maintenance
- Added the REF_ANALYTICAL_METHOD and REF_ANALYTICAL_METHOD_CONTEXT tables (see section 3.1.5)

V2.0.2 released 10/22/2007

- Fixed bug which did not allow letters in the MLOC_ID in the ACTIVITY table
- Changed RESULT.RES_ANALYTICAL_METH_NAME length from 50 to 120
- Fixed bug with the Activity group. Sometimes the activity groups would not be properly added to the XML file

- Fixed bug which caused the result detection quantification limit to not always be properly added to the XML file
- Changed example data to be more like data beach users would typically use

V2.0.1 released 10/10/2007

- Added Relations
- Added descriptions of each column
- Fixed bug which created the XML files with an incorrect Namespace

V3.0 released 7/9/2020

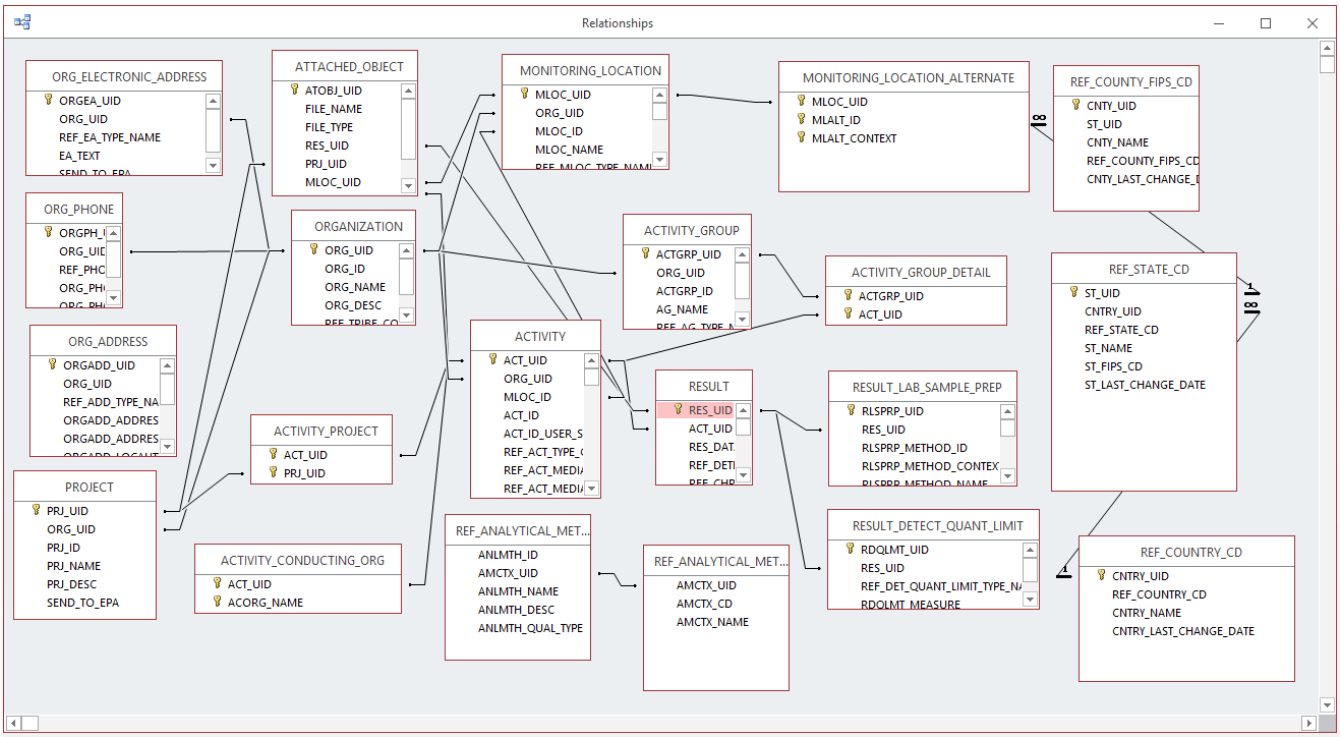
- Updated all data elements to conform with WQX xml Schema 3.0
  - E.g., Increased string lengths and added new Data Names (Appendix D)
- Added "Previous Form" and "Next Form" links to each form to aid in navigation
- Added help tips to each form field label, accessible by clicking on the field and hovering the mouse cursor over the labels.

V3.1 released 7/23/21

- Added Load XML form. Load XML will import an xml file created in the Verification Tool.
- The user is required to enter the Project ID: EPABEACH. Database will add it by default to the xml if it is not entered into the database.

12 Appendix C—Table Relationships

Exhibit 10-1 Table Relationships



13 Appendix D—Data Elements

The XML schema for the data submissions to WQX provides a template for the XML files to be submitted. This schema describes the data elements to be included in the XML document and is also used to validate it. Files are accepted or rejected based on their conformity to the schema. This appendix contains descriptions of the data elements in the WQX XML Schema. For each table in the following sections, the following information is provided:

Data Name: The name of the data element stored in the XML data file.

XML Tag Name: The XML key associated with the data element.

Data Type: Information about the data type for this element. Values in parentheses are the maximum lengths.

Req'd: This value indicates if the column is required in the XML data file. Please note that empty tags such as <TripIdentifier></TripIdentifier> or <TripIdentifier/> will not be accepted when the element is not required. "Y" means the element is required. "N" means the element is not required. "C" means the requirement is conditional; the comment column contains more information about the conditional requirement. Access Table Mapping: The location of the data in the Monitoring Access Database Comments: Additional comments related to the XML data element.

13.1 Organization

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Organization Identifier *Example: 21NYBCH*	OrganizationIdentifier	String (35)	Y	ORGANIZATION.ORG_ID	A designator used to uniquely identify a unique business establishment within a context. Primary key for everything, unique on the planet, supplied by EPA upon application of trading partner.
Organization Formal Name *Example: Test Organization*	OrganizationFormalName	String (255)	Y	ORGANIZATION.ORG_NAME	The legal designator (i.e. formal name) of an organization. Organization Name according to Trading Partner
Organization Description Text Example*: This is the text Organization that is used for test submissions*.	OrganizationDescriptionText	String (500)	N	ORGANIZATION.ORG_DESC	Information that further describes an organization.
Tribal Code *Example: 001*	TribalCode	String (3)	N	ORGANIZATION.REF_TRIBE_CODE	Beach Use Unlikely The code that represents the American Indian tribe or Alaskan Native entity. This value must be a domain value
Electronic Address Text *Example: bob@epa.gov*	ElectronicAddressText	String (120)	C	ORG_ELECTRONIC_ADDRESS.EA_TEXT	A resource address, usually consisting of the access protocol, the domain name, and optionally, the path to a file or location. Required if electronic address type name is present

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Electronic Address Type Name *Example: Email*	ElectronicAddressTypeName	String (8)	C	ORG_ELECTRONIC_ADDRESS.REF_EA_TYPE_NAME	The name that describes the electronic address type. Required if electronic address text is present This value must be a domain value
Telephone Number Text *Example:123-456-7890*	TelephoneNumberText	String (15)	C	ORG_PHONE.ORG_PHONE_NUM	The number that identifies a particular telephone connection. Required if telephone number type name is present
Telephone Number Type Name *Example: Office*	TelephoneNumberTypeName	String (6)	C	ORG_PHONE.REF_PHONE_TYPE_NAME	The name that describes a telephone number type. Required if telephone number text is present This value must be a domain value
Telephone Extension Number Text *Example: 246*	TelephoneExtensionNumberText	String (6)	N	ORG_PHONE.ORG_PHONE_EXT	The number assigned within an organization to an individual telephone that extends the external telephone number.
Address Type Name *Example: Location*	AddressTypeName	String (8)	C	ORG_ADDRESS.REF_ADD_TYPE_NAME	Categorizes an address as either location, shipping, or mailing address. Required if organization address is present. This value must be a domain value
Address Text Example: 123 Main Street	AddressText	String (50)	C	ORG_ADDRESS.ORGADD_ADDRESS	The address that describes the physical (geographic), shipping, or mailing location of an organization. Required if Address Type Name is supplied.

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Supplemental Address Text *Example: Unit B*	SupplementalAddressText	String (120)	N	ORG_ADDRESS.ORGADD_ADDRESS_SUPPLEMENTAL	The text that provides additional information about an address, including a building name with its secondary unit and number, an industrial park name, an installation name or descriptive text where no formal address is available.
Locality Name *Example:Fairfax*	LocalityName	String (30)	N	ORG_ADDRESS.ORGADD_LOCALITY_NAME	The name of a city, town, village or other locality.
State Code *Example: VA*	StateCode	String (2)	C	ORG_ADDRESS.REF_STATE_CD	A code designator used to identify a principal administrative subdivision of the United States, Canada, or Mexico. Required if Organization County Code is reported. This value must be a domain value
Postal Code *Example:20151*	PostalCode	String (10)	N	ORG_ADDRESS.ORGADD_POSTAL_CD	The combination of the 5-digit Zone Improvement Plan (ZIP) code and the four-digit extension code (if available) that represents the geographic segment that is a subunit of the ZIP Code, assigned by the U.S. Postal Service to a geographic location.
Country Code *Example: US*	CountryCode	String (2)	N	ORG_ADDRESS.REF_COUNTRY_CD	A code designator used to identify a primary geopolitical unit of the world. This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
County Code *Example: 005*	CountyCode	String (3)	N	ORG_ADDRESS.REF_COUNTY_FIPS_CD	A code designator used to identify a U.S. county or county equivalent. County codes must be reported using 3-digit FIPS codes. This value must be a domain value

13.2 Project

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Project Identifier *Example: 11*	ProjectIdentifier	String (50)	Y	PROJECT.PRJ_ID	The Beach ID for Beaches Users. A designator used to uniquely identify a data collection project within a context of an organization. This short identifier supports the requirement to update or edit an existing project, subsequent to its initial entry, without repeating all of its component parts.
Project Name *Example: 200 5Acme River Beach*	ProjectName	String (512)	Y	PROJECT.PRJ_NAME	The name assigned by the Organization (project leader or principal investigator) to the project.

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Project Description Text *Example: River Beach Testing Conducted in 2005*	ProjectDescriptionText	String (1999)	N	PROJECT.PRJ_DESC	Project description, which may include a description of the project purpose, summary of the objectives, or brief summary of the results of the project. Must provide either ProjectDescriptionText or supply a Project
Binary Object File Name *Example: Picture.jpg*	BinaryObjectFileName	String (255)	C	ATTACHED_OBJECT.FILE_NAME	The text describing the descriptive name used to represent the file, including file extension. Required only when ProjectAttachedBinary Object is reported. Must provide either ProjectDescriptionText or supply a Project Attached Binary Object.
Binary Object File Type Code *Example: jpg*	BinaryObjectFileTypeCode	String (6)	C	ATTACHED_OBJECT.FILE_TYPE	The text or acronym describing the binary content type of a file. File text extension, free text not domain list validation. Required only when ProjectAttachedBinary Object is reported.

13.3 Monitoring Location

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Monitoring Location Identifier *Example: 123*	MonitoringLocationIdentifier	String (55)	Y	MONITORING_LOCATION.MLOC_ID	A designator used to describe the unique name, number, or code assigned to identify the monitoring location. This was formerly known as the Station Identifier in Monitoring data. This short identifier supports the requirement to update or edit an existing station, subsequent to its initial entry, without repeating all of its component parts.
Monitoring Location Name *Example: Monitoring Location 1*	MonitoringLocationName	String (255)	Y	MONITORING_LOCATION.MLOC_NAME	The designator specified by the sampling organization for the site at which sampling or other activities are conducted. Free text name assigned to the Monitoring Location by the Trading Partner.
Monitoring Location Type Name *Example: Ocean*	MonitoringLocationTypeName	String (45)	Y	MONITORING_LOCATION.REF_MLOC_TYPE_NAME	The descriptive name for a type of monitoring location. This value must be a domain value. For BEACH data users, use a BEACH Program Site domain value. (E.g.- BEACH Program Site River/Stream, BEACH Program Site-Ocean, etc.)

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Monitoring Location Description Text *Example: The monitoring location just south of the pier.*	MonitoringLocationDescriptionText	String (1999)	N	MONITORING_LOCATION.MLOC_DESC	Text description of the monitoring location.
Longitude Measure *Example: 74.141592*	LongitudeMeasure	number (6-9)	Y	MONITORING_LOCATION.MLOC_LONGITUDE	The measure of the angular distance on a meridian east or west of the prime meridian. Signed Decimal Longitude with negative values west of Greenwich
Source Map Scale Numeric *Example: 12500*	SourceMapScaleNumeric	String (60)	C	MONITORING_LOCATION.MLOC_SOURCE_MAP_SCALE	The number that represents the proportional distance on the ground for one unit of measure on the map or photo. Mandatory only when HorizonitalCollectionMethodCode is "INTERPOLATION MAP"
Horizontal Collection Method Name *Example: INTERPOLATION-MAP*	HorizontalCollectionMethodName	String (150)	Y	MONITORING_LOCATION.REF_H_COLLECTION_METHOD_NAME	The name that identifies the method used to determine the latitude and longitude coordinates for a point on the earth. Valid code values correspond to those enumerated for this data element in the FRS XML schema. This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Horizontal Coordinate Reference System Datum Name *Example: NAD83*	HorizontalCoordinateReferenceSystemDatumName	String (6)	Y	MONITORING_LOCATION.REF_H_REFERENCE_DATUM_NAME	The name that describes the reference datum used in determining latitude and longitude coordinates. Valid code values correspond to those enumerated for this data element in the FRS XML schema. This value must be a domain value
Measure Value *Example: 2*	MeasureValue	String (60)	N	MONITORING_LOCATION.MLOC_VERTICAL_MEASURE	The recorded dimension, capacity, quality, or amount of something ascertained by measuring or observing. Required if VerticalMeasure block is reported
Measure Unit Code *Example: ft*	MeasureUnitCode	String (12)	C	MONITORING_LOCATION.REF_VM_MSUNT_CD	The code that represents the unit for measuring the item. Required if VerticalMeasure block is reported. This value must be a domain value
Vertical Collection Method Name *Example: OTHER*	VerticalCollectionMethodName	String (50)	C	MONITORING_LOCATION.REF_V_C0LLECTION_METHOD_NAME	The name that identifies the method used to collect the vertical measure (i.e. the altitude) of a reference point. Required if Vertical Measure/MeasureValue is supplied This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Vertical Coordinate Reference System Datum Name *Example: OTHER*	VerticalCoordinateReferenceSystemDatumName	String (6)	C	MONITORING_LOCATION.REF_V_REFERENCE_DATUM_NAME	The name of the reference datum used to determine the vertical measure (i.e., the altitude). Required if Vertical Measure/MeasureValue is supplied This value must be a domain value
Country Code *Example: US*	CountryCode	String (2)	N	MONITORING_LOCATION.REF_COUNTRY_CD	A code designator A code designator used to identify a primary geopolitical unit of the world. This value must be a domain value
State Code *Example: NJ*	StateCode	String (2)	C	MONITORING_LOCATION.REF_STATE_CD	A code designator used to identify a principal administrative subdivision of the United States, Canada, or Mexico. Required if Monitoring Location County Code is reported. This value must be a domain value
County Code *Example: 021*	CountyCode	String (3)	N	MONITORING_LOCATION.REF_COUNTY_FIPS_CD	A code designator used to identify a U.S. county or county equivalent. County codes must be reported using 3-digit FIPS codes. This value must be a domain value
Binary Object File Name *Example: test.doc*	BinaryObjectFileName	String (255)	C	ATTACHED_OBJECT.FILE_NAME	The text describing the descriptive name used to represent the file, including file extension. Required if Monitoring Location AttachedBinaryObject present

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Binary Object File Type Code *Example: doc*	BinaryObjectFileTypeCode	String (6)	C	ATTACHED_OBJECT.FILE_TYPE	The text or acronym describing the binary content type of a file. Required if Monitoring Location AttachedBinaryObject present

13.4 Activity

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Activity Identifier *Example: 10001*	ActivityIdentifier	String (55)	Y	ACTIVITY.ACT_ID	Designator that uniquely identifies an activity within an organization. This short identifier supports the requirement to update or edit an existing activity, subsequent to its initial entry, without repeating all of its component parts.
Activity ID – User Supplied	ActivityIdentifierUserSupplied	String (55)	N	ACTIVITY.ACT_ID_USER_SUPPLIED	User Supplied Sample ID that uniquely identifies an activity within an organization.
Activity Type Code *Example: Field Msr/ObsPortable Data Logger*	ActivityTypeCode	String (70)	Y	ACTIVITY.REF_ACT_TYPE_CD	The text describing the type of activity. This value must be a domain value
Activity Media Name *Example: Water*	ActivityMediaName	String (20)	Y	ACTIVITY.REF_ACT_MEDIA_NAME	Name or code indicating the environmental medium where the sample was taken. This value must be a domain value
Activity Media Subdivision Name *Example: Surface soil/sediment*	ActivityMediaSubDivisionName	String (60)	N	ACTIVITY.REF_ACT_MEDIA_SUBD_NAME	Beach Use Unlikely Name or code indicating the environmental matrix as a subdivision of the sample media. This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Activity Start Date *Example: 2007-05-13*	ActivityStartDate	Date (YYYY-MM-DD)	Y	ACTIVITY.ACT_START_DATE	The calendar date on which the field activity was started.
Time *Example: 14:20:00*	Time	Time - (hh:mm:ss)	C	ACTIVITY.ACT_START_TIME	The time of day that is reported. Required only when ActivityStartTime is reported
Time Zone Code *Example: HADT*	TimeZoneCode	String (4)	C	ACTIVITY.REF_TMZONE_CD_START_TIME	The time zone for which the time of day is reported. Any of the longitudinal divisions of the earth's surface in which a standard time is kept. Required only when ActivityStartTime is reported This value must be a domain value
Activity End Date *Example: 2007-05-13*	ActivityEndDate	Date (YYYY-MM-DD)	N	ACTIVITY.ACT_END_DATE	The calendar date when the field activity was completed.
Time *Example: 14:20:00*	Time	Time - (hh:mm:ss)	C	ACTIVITY.ACT_END_TIME	The time of day that is reported. Required only when ActivityEndTime is reported
Time Zone Code *Example: HADT*	TimeZoneCode	String (4)	C	ACTIVITY.REF_TMZONE_CD_END_TIME	The time zone for which the time of day is reported. Any of the longitudinal divisions of the earth's surface in which a standard time is kept. Required only when ActivityEndTime is reported This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Activity Relative Depth Name *Example: Bottom*	ActivityRelativeDepthName	String (30)	N	ACTIVITY.REF_ACT_REL_DEPTH_NAME	The name that indicates the approximate location within the water column at which the activity occurred. This value must be a domain value
Activity Depth Height *Example: 2*	MeasureValue	String (60)	N	ACTIVITY.ACT_DEPTH_HEIGHT	The recorded dimension, capacity, quality, or amount of something ascertained by measuring or observing. Required if ActivityDepthHeight Measure block is reported.
Depth Height Measure Unit Code *Example: ft*	MeasureUnitCode	String (12)	N	ACTIVITY.REF_MSUNT_CD_D EPTH_HEIGHT	The code that represents the unit for measuring the item. Required if ActivityDepthHeightMeasure block is reported. This value must be a domain value
Activity Depth Height Top *Example: 2*	MeasureValue	String (60)	N	ACTIVITY.ACT_DEPTH_HEIGHT_TOP	Beach Use Unlikely The recorded dimension, capacity, quality, or amount of something ascertained by measuring or observing. Required if ActivityTopDepthHeightMeasure block is reported.
Depth Height Top Measure Unit Code *Example: ft*	MeasureUnitCode	String (12)	N	ACTIVITY.REF_MSUNT_CD_DEPTH_HEIGHT_TOP	Beach Use Unlikely The code that represents the unit for measuring the item. Required if ActivityTopDepthHeight Measure block is reported. This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Activity Depth Height Bottom *Example: 2*	MeasureValue	String (60)	N	ACTIVITY.ACT_DEPTH_HEIGHT_BOTTOM	Beach Use Unlikely The recorded dimension, capacity, quality, or amount of something ascertained by measuring or observing. Required if ActivityBottomDepthHeightMeasure block is reported.
Depth Height Bottom Measure Unit Code *Example: ft*	MeasureUnitCode	String (12)	N	ACTIVITY.REF_MSUNT_CD_DEPTH_HEIGHT_BOTTOM	Beach Use Unlikely The code that represents the unit for measuring the item. Required if ActivityBottomDepthHeightMeasure block is reported. This value must be a domain value
Activity Depth Altitude Reference Point Text	ActivityDepthAltitudeReferencePointText	String (125)	N	ACTIVITY.ACT_DEPTH_ALTITUDE_REF_POINT	The reference used to indicate the datum or reference used to establish the depth/altitude of an activity.
Project Identifier *Example: 11*	ProjectIdentifier	String (50)	Y	ACTIVITY_PROJECT.PRJ_UID	A designator used to uniquely identify a data collection project within a context of an organization. Multiple instances possible for each Activity instance
Activity Conducting Organization Text *Example: NJ Streamwatchers*	ActivityConductingOrganizationText	String (120)	N	ACTIVITY_CONDUCTING_ORG.ACORG_NAME	Beach Use Unlikely A name of the Organization conducting an activity. Multiple instances possible for each Monitoring Activity instance

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Monitoring Location Identifier *Example: 123*	MonitoringLocationIdentifier	String (55)	C	ACTIVITY.MLOC_ID	A designator used to describe the unique name, number, or code assigned to identify the monitoring location. Although the schema doesn't enforce this, some activity types will require that a monitoring location is present. To determine which activity types require a monitoring location please see the ACTYP_MON_LOC_REQ_YN column in the REF_ACT_TYPE_CD table. If the value in that column is "Y" then a monitoring location is required.
Activity Comment Text *Example: Additional activity comments go here*	ActivityCommentText	String (4000)	N	ACTIVITY.ACT_COMMENTS	General comments concerning the activity.
Subject Taxonomic Name *Example:Apristurus*	SampleTissueTaxonomicName	String (120)	C	ACTIVITY.REF_TISSUE_TAXONOMIC_NAME	Beach Use Unlikely The name of the organism sampled as part of a biological sample. Required if Biological Result Description block is reported.
Sample Tissue Anatomy Name *Example: Skin*	SampleTissueAnatomyName	String (30)	N	ACTIVITY.REF_SAM_TISSUE_ANATOMY_NAME	Beach Use Unlikely The name of the anatomy from which a tissue sample was taken. This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Latitude Measure *Example: 34.141592*	LatitudeMeasure	Decimal 6-8 digits	C	ACTIVITY.ACT_LOC_LATITUDE	Beach Use Unlikely The measure of the angular distance on a meridian north or south of the equator. Signed Decimal Latitude with positive values north of the Equator. Required if ActivityLocation is supplied.
Longitude Measure *Example: -74.141592*	LongitudeMeasure	Decimal 6-9 digits	C	ACTIVITY.ACT_LOC_LONGITUDE	Beach Use Unlikely The measure of the angular distance on a meridian east or west of the prime meridian. Signed Decimal Longitude with negative values west of Greenwich Required if ActivityLocation is supplied.
Source Map Scale Numeric *Example: 12500*	SourceMapScaleNumeric	String (60)	C	ACTIVITY.ACT_LOC_SOURCE_MAP_SCALE	Beach Use Unlikely The number that represents the proportional distance on the ground for one unit of measure on the map or photo. Mandatory only when HorizonitalCollection MethodCode is "INTERPOLATION MAP"

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Horizontal Collection Method Name *Example: INTERPOLATION -MAP*	HorizontalCollectionMethodName	String (150)	C	ACTIVITY.REF_H_COLLECTION_METHOD_NAME	Beach Use Unlikely The name that identifies the method used to determine the latitude and longitude coordinates for a point on the earth. Valid code values correspond to those enumerated for this data element in the FRS XML schema. Required if ActivityLocation is supplied. This value must be a domain value
Horizontal Coordinate Reference System Datum Name *Example: NAD27*	HorizontalCoordinateReferenceSystemDatumName	String (6)	C	ACTIVITY.REF_H_REFERENCE_DATUM_NAME	Beach Use Unlikely The name that describes the reference datum used in determining latitude and longitude coordinates. Valid code values correspond to those enumerated for this data element in the FRS XML schema. Required if ActivityLocation is supplied. This value must be a domain value
Method Identifier *Example: GRAB*	MethodIdentifier	String (35)	C	ACTIVITY.ACT_SAM_COLLECT_METH_ID	The identification number or code assigned by the method publisher. Required when SampleCollectionMethod is present.
Method Identifier Context *Example: MassDEP*	MethodIdentifierContext	String (120)	C	ACTIVITY.ACT_SAM_COLLECT_METH_CONTEXT	Identifies the source or data system that created or defined the identifier. Required when SampleCollectionMethod is present.

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Method Name *Example: Water Grab Sampling – no gear*	MethodName	String (250)	C	ACTIVITY.ACT_SAM_COLLECT_METH_NAME	The title that appears on the method from the method publisher. Required when SampleCollectionMethod is present.
Method Qualifier Type Name	MethodQualifierTypeName	String (25)	N	ACTIVITY.ACT_SAM_COLLECT_METH_QUAL_TYPE	Beach Use Unlikely Identifier of type of method that identifies it as reference, equivalent, or other.
Method Description Text *Example: This is the method we tested out.*	MethodDescriptionText	String (500)	N	ACTIVITY.ACT_SAM_COLLECT_METH_DESC	A brief summary that provides general information about the method.
Sample Collection Equipment Name *Example: Hand corer*	SampleCollectionEquipmentName	String (40)	C	ACTIVITY.REF_SAM_COL_EQUIPMENT_NAME	The name that represents equipment used in collecting the sample. Required when SampleCollectionMethod is present. This value must be a domain value
Sample Collection Equipment Comment Text	SampleCollectionEquipmentCommentText	String (4000)	N	ACTIVITY.ACT_SAM_COLLECT_EQUIP_COMMENTS	Beach Use Unlikely Free text with general comments further describing the sample collection equipment.
Method Identifier *Example: 4*	MethodIdentifier	String (20)	C	ACTIVITY.ACT_SAM_PREP_METH_ID	The identification number or code assigned by the method publisher. Required if Sample Preparation Method block is reported.
Method Identifier Context *Example: 21ALBCH*	MethodIdentifierContext	String (120)	C	ACTIVITY.ACT_SAM_PREP_METH_CONTEXT	Identifies the source or data system that created or defined the identifier. Required if Sample Preparation Method block is reported.

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Method Name *Example: Test Method*	MethodName	String (120)	C	ACTIVITY.ACT_SAM_PREP_METH_NAME	The title that appears on the method from the method publisher. Required if Sample Preparation Method block is reported.
Method Qualifier Type Name	MethodQualifierTypeName	String (25)	N	ACTIVITY.ACT_SAM_PREP_METH_QUAL_TYPE	Identifier of type of method that identifies it as reference, equivalent, or other.
Method Description Text	MethodDescriptionText	String (500)	N	ACTIVITY.ACT_SAM_PREP_METH_DESC	A brief summary that provides general information about the method.
Sample Container Type Name *Example: Aluminum Dish*	SampleContainerTypeName	String (60)	C	ACTIVITY.REF_CONTAINER_TYPE_NAME	The text describing the sample container type. Required if Sample Preparation block is reported This value must be a domain value
Sample Container Color Name *Example: Clear*	SampleContainerColorName	String (60)	C	ACTIVITY.REF_CONTAINER_COLOR_NAME	The text describing the sample container color. Required if Sample Preparation block is reported This value must be a domain value
Chemical Preservative Used Name	ChemicalPreservativeUsedName	String (250)	C	ACTIVITY.ACT_SAM_CHEMICAL_PRESERVATIVE	Information describing the chemical means to preserve the sample. Either ChemicalPreservativeUsedName or ThermalPreservativeUsedName are required if Sample Preparation block is reported

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Thermal Preservative Used Name *Example: Wet Ice (4 deg C)*	ThermalPreservativeUsedName	String (250)	C	ACTIVITY.REF_THERMAL_PRESERVATIVE_NAME	Information describing the temperature means used to preserve the sample. Either ChemicalPreservativeUsedName or ThermalPreservativeUsedName are required if Sample Preparation block is reported This value must be a domain value
Sample Transport Storage Description	SampleTransportStorageDescription	String (250)	C	ACTIVITY.ACT_SAM_TRANSPORT_STORAGE_DESC	The text describing sample handling and transport procedures used. Required if Sample Preparation block is reported
Binary Object File Name *Example: file.doc*	BinaryObjectFileName	String (255)	C	ATTACHED_OBJECT.FILE_NAME	The text describing the descriptive name used to represent the file, including file extension. Required if ActivityAttachedBinaryObject present
Binary Object File Type Code *Example: doc*	BinaryObjectFileTypeCode	String (6)	C	ATTACHED_OBJECT.FILE_TYPE	The text or acronym describing the binary content type of a file. Required if ActivityAttachedBinaryObject present
Activity Group Identifier *Example: 2005-11-01*	ActivityGroupIdentifier	String (55)	Y	ACTIVITY_GROUP.ACTGRP_ID	Designator that uniquely identifies a grouping of activities within an organization.
Activity Group Name *Example:2005-11-01 Field Set*	ActivityGroupName	String (120)	N	ACTIVITY_GROUP.AG_NAME	A name of an activity group.
Activity Group Type Code *Example: Field Set*	ActivityGroupTypeCode	String (50)	Y	ACTIVITY_GROUP.REF_AG_TYPE_NAME	Identifies the type of grouping of a set of activities This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Activity Identifier *Example: 10001*	ActivityIdentifier	String (35)	Y	ACTIVITY_GROUP_DETAIL.ACT_UID	Designator that uniquely identifies an activity within an organization. May have 2 to many occurances for each Activity Group block. This ActivityIdentifier needs to correspond to either an ActivityIdentifier reported in the Activity block of this submission or previously submitted to the system.

13.5 Result

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Data Logger Line Name *Example: 1*	DataLoggerLineName	String (60)	C	RESULT.RES_DATA_LOGGER_LINE	Beach Use Unlikely The unique line identifier from a data logger result text file, normally a date/time format but could be any user defined name, e.g. "surface", "midwinter", and or "bottom".) Required when Activity Type contains phrase "Data Logger". Must be unique within Activity.
Result Detection Condition Text *Example: Present Below Quantification Limit*	ResultDetectionConditionText	String (35)	C	RESULT.REF_DETECTION_CONDITION_NAME	The textual descriptor of a result. Required if "ResultValue/ValueMeasure" is blank. Detection condition explains why there is no result measure value. This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Characteristic Name *Example: Enterococcus Group Bacteria*	CharacteristicName	String (120)	C	RESULT.REF_CHRARACTERISTIC_NAME	The object, property, or substance which is evaluated or enumerated by either a direct field measurement, a direct field observation, or by laboratory analysis of material collected in the field. Required if ResultValue/ValueMeasure is reported This value must be a domain value
Characteristic Name, User Supplied.	CharacteristicNameUserSupplied	String (255)	N	RESULT.RES_CHARACTERISTIC_NAME_USER_SUP	The user supplied object, property, or substance which is evaluated or enumerated by either a direct field measurement, a direct field observation, or by laboratory analysis of material collected in the field.
Result Sample Fraction Text *Example: Total*	ResultSampleFractionText	String (25)	C	RESULT.REF_SAMPLE_FRACTION_NAME	The text name of the portion of the sample associated with results obtained from a physically-partitioned sample. Required for certain characteristics. This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Result Measure Value *Example: 1*	ResultMeasureValue	String (60)	C	RESULT.RES_MEASURE	The reportable measure of the result for the chemical, microbiological or other characteristic being analyzed. Required if Detection Condition is blank. No entry is allowed here if there is an entry in the ResultDectionConditionText.ResultValue Measure must match a domain list value if the CharacteristicName ends with the phrase 'Choice List' This value must be a domain value
Measure Unit Code *Example: mg/l*	MeasureUnitCode	String (12)	C	RESULT.REF_MSUNT_CD_MEASURE	The code that represents the unit for measuring the chemical substance, microbiological substance or other characteristic. Required if a non-text result is reported; can also be reported for non-numeric results. This value must be a domain value
Measure Qualifier Code *Example: U*	MeasureQualifierCode	String (35)	N	RESULT.REF_MEASURE_QUALIFIER_CD	A code used to identify any qualifying issues that affect the results. This value must be a domain value.

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Result Status Identifier *Example: Final*	ResultStatusIdentifier	String (12)	C	RESULT.REF_STATUS_IDENTIFIER_NAME	Indicates acceptability of the result with respect to QA/QC criteria. Required if result is reported. This value must be a domain value. Note: Set this field to Final to add to the warehouse.
Statistical Base Code *Example: Maximum*	StatisticalBaseCode	String (25)	N	RESULT.REF_STATISTICAL_BASE_CD	The code for the method used to calculate derived results. This value must be a domain value.
Result Value Type Name *Example: Actual*	ResultValueTypeName	String (12)	C	RESULT.REF_VALUE_TYPE_NAME	A name that qualifies the process which was used in the determination of the result value (e.g., actual, estimated, calculated). Required if result is non text, Default is actual. This value must be a domain value.
Result Weight Basis Text *Example: Wet*	ResultWeightBasisText	String (60)	N	RESULT.REF_WEIGHT_BASIS_NAME	The name that represents the form of the sample or portion of the sample which is associated with the result value (e.g., wet weight, dry weight, ash free dry weight). This value must be a domain value.

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Result Time Basis Text *Example: 24 Hours*	ResultTimeBasisText	String (12)	N	RESULT.REF_TIME_BASIS_NAME	The period of time (in days) over which a measurement was made. For example, BOD can be measured as 5 day or 20 day BOD. This value must be a domain value.
Result Temperature Basis Text *Example: 10 Deg C*	ResultTemperatureBasisText	String (12)	N	RESULT.REF_TEMPERATURE_BASIS_NAME	The name that represents the controlled temperature at which the sample was maintained during analysis, e.g. 25 deg BOD analysis. his value must be a domain value.
Result Particle Size Basis Text	ResultParticleSizeBasisText	String (15)	N	RESULT.RES_PARTICLE_SIZE_BASIS	User defined free text describing the particle size class for which the associated result is defined. This is usually done for a physical sediment analysis, where the user is free to document the particle size classification structure used in the analysis.
Precision Value	PrecisionValue	String (60)	N	RESULT.RES_MEASURE_PRECISION	A measure of mutual agreement among individual measurements of the same property usually under prescribed similar conditions.
Bias Value	BiasValue	String (60)	N	RESULT.RES_MEASURE_BIAS	The systematic or persistent distortion of a measurement process which causes error in one direction.

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Confidence Interval Value	ConfidenceIntervalValue	String (60)	N	RESULT.RES_MEASURE_CONF_INTERVAL	A range of values constructed so that this range has a specified probability of including the true population mean.
Upper Confidence Limit Value	UpperConfidenceLimitValue	String (60)	N	RESULT.RES_MEASURE_UPPER_CONF_LIMIT	Value of the upper end of the confidence interval.
Lower Confidence Limit Value	LowerConfidenceLimitValue	String (60)	N	RESULT.RES_MEASURE_LOWER_CONF_LIMIT	Value of the lower end of the confidence interval.
Result Comment Text *Example: Lake condition was poor (heavy debris) potentially due to heavy rain in past 48 hours.*	ResultCommentText	String (4000)	N	RESULT.RES_COMMENTS	Free text with general comments concerning the result.
Measure Value *Example: 2*	MeasureValue	String (60)	N	RESULT.RES_DEPTH_HEIGHT	Beach Use Unlikely The recorded dimension, capacity, quality, or amount of something ascertained by measuring or observing. Required if ResultDepthHeight Measure block is reported.
Measure Unit Code *Example: ft*	MeasureUnitCode	String (12)	N	RESULT.REF_MSUNT_CD_DEPTH_HEIGHT	Beach Use Unlikely The code that represents the unit for measuring the item. Required if ResultDepthHeightMeasure block is reported. This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Result Depth Altitude Reference Point Text	ResultDepthAltitudeReferencePointText	String (125)	N	RESULT.RES_DEPTH_ALTITUDE_REF_POINT	Beach Use Unlikely The reference used to indicate the datum or reference used to establish the depth/altitude of a result.
Method Identifier *Example: Method001*	MethodIdentifier	String (35)	C	RESULT.RES_ANALYTICAL_METH_ID	The identification number or code assigned by the method publisher. Required if Result Analytical Method block is reported. Domain Values: This field will be validated against a domain value list only if the MethodIdentifierContext element (05.02.02) is set to one of a predefined list of contexts (e.g. USEPA, ASTM, USDOI This value must be a domain value
Method Identifier Context *Example: NELAC*	MethodIdentifierContext	String (120)	C	RESULT.RES_ANALYTICAL_METH_CONTEXT	Identifies the source or data system that created or defined the identifier. Required if Result Analytical Method block is reported.
Method Name *Example: NJMethod242*	MethodName	String (250)	C	RESULT.RES_ANALYTICAL_METH_NAME	The title that appears on the method from the method publisher. Required only if Method Identifier and Method Identifier Context are not from WQX Domain Value list (i.e. user defined method)

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Method Qualifier Type Name	MethodQualifierTypeName	String (25)	N	RESULT.RES_ANALYTICAL_METH_QUAL_TYPE	Identifier of type of method that identifies it as reference, equivalent, or other.
Method Description Text	MethodDescriptionText	String (500)	N	RESULT.RES_ANALYTICAL_METH_DESC	A brief summary that provides general information about the method.
Laboratory Name *Example: ABC Labs*	LaboratoryName	String (60)	N	RESULT.RES_LAB_NAME	The name of the Lab responsible for the result
Analysis Start Date *Example: 2007-05-26*	AnalysisStartDate	date (YYYYMM-DD)	N	RESULT.RES_LAB_ANALYSIS_START_DATE	The calendar date on which the analysis began.
Time *Example: 14:20:00*	Time	Time - (hh:mm:ss)	C	RESULT.RES_LAB_ANALYSIS_START_TIME	The time of day that is reported. Required only when AnalysisStartTime is reported
Time Zone Code *Example: EST*	TimeZoneCode	String (4)	C	RESULT.REF_TMZONE_CD_LAB_ANALYSIS_START	The time zone for which the time of day is reported. Any of the longitudinal divisions of the earth's surface in which a standard time is kept. Required only when AnalysisStartTime is reported This value must be a domain value
Analysis End Date *Example: 2007-05-27*	AnalysisEndDate	Date (YYYY-MM-DD)	N	RESULT.RES_LAB_ANALYSIS_END_DATE	The calendar date on which the analysis was finished.
Time *Example: 03:00:00*	Time	Time - (hh:mm:ss)	C	RESULT.RES_LAB_ANALYSIS_END_TIME	The time of day that is reported. Required only when AnalysisEndTime is reported

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Time Zone Code *Example: EST*	TimeZoneCode	String (4)	C	RESULT.REF_TMZONE_CD_LAB_ANALYSIS_END	The time zone for which the time of day is reported. Any of the longitudinal divisions of the earth's surface in which a standard time is kept. Required only when AnalysisEndTime is reported This value must be a domain value
Laboratory Comment Text	LaboratoryCommentText	String (4000)	N	RESULT.RES_RESULT_LABORATORY_COMMENT	Remarks which further describe the laboratory procedures which produced the result.
Detection Quantitation Limit Type Name *Example: Method detection level (MDL)*	DetectionQuantitationLimitTypeName	String (35)	C	RESULT_DETECT_QUANT_LIMIT.REF_DET_QUANT_LIMIT_TYPE_NAME	Text describing the type of detection or quantitation limit used in the analysis of a characteristic. Required when ResultDetectioncondition is either *Not Detected" "Present Above Quantification Limit" or "Present and Below Quantification Limit" This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Measure Value *Example: 0.5*	MeasureValue	String (12)	C	RESULT_DETECT_QUANT_LIMIT.RDQLMT_MEASURE	The reportable measure of the result for the chemical, microbiological or other characteristic being analyzed. Required when ResultDetectioncondition is either *Not Detected" "Present Above Quantification Limit" or "Present and Below Quantification Limit"; Also required when DetectionQuantitationLimitMeasure block is reported.
Measure Unit Code *Example: mg/l*	MeasureUnitCode	String (12)	C	RESULT_DETECT_QUANT_LIMIT.REF_MEASURE_MSUNT_CD	The code that represents the unit for measuring the chemical substance, microbiological substance or other characteristic. Required when ResultDetectioncondition is either *Not Detected" "Present Above Quantification Limit" or "Present and Below Quantification Limit"; Also required when DetectionQuantitation Li mitMeasure block is reported. This value must be a domain value
Method Identifier *Example: Method001*	MethodIdentifier	String (20)	C	RESULT_LAB_SAMPLE_PREP.RLSPRP_METHOD_ID	The identification number or code assigned by the method publisher. Required when LaboratorySamplePreparation is present.

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Method Identifier Context *Example: NELAC*	MethodIdentifierContext	String (120)	C	RESULT_LAB_SAMPLE_PREP .RLSPRP_METHOD_CONTEX T	Identifies the source or data system that created or defined the identifier. Required when LaboratorySamplePr eparation is present.
Method Name *Example: NJMethod242*	MethodName	String (120)	C	RESULT_LAB_SAMPLE_PREP .RLSPRP_METHOD_NAME	The title that appears on the method from the method publisher. Required when LaboratorySamplePr ep aration is present.
Method Qualifier Type Name	MethodQualifierTypeNam e	String (25)	N	RESULT_LAB_SAMPLE_PREP .RLSPRP_METHOD_QUAL_TY PE	Identifier of type of method that identifies it as reference, equivalent, or other.
Method Description Text	MethodDescriptionText	String (500)	N	RESULT_LAB_SAMPLE_PREP .RLSPRP_METHOD_DESC	A brief summary that provides general information about the method.
Preparation Start Date *Example: 2007-05-05*	PreparationStartDate	Date (YYYYMM-DD)	N	RESULT_LAB_SAMPLE_PREP .RLSPRP_START_DATE	The calendar date when on which the preparation/extractio n of the sample for analysis began.
Time *Example: 14:20:00*	Time	Time - (hh:mm:ss)	C	RESULT_LAB_SAMPLE_PREP .RLSPRP_START_TIME	The time of day that is reported. Required only when PreparationStartTime is reported
Time Zone Code *Example: EST*	TimeZoneCode	String (4)	C	RESULT_LAB_SAMPLE_PREP .REF_TMZONE_CD_START_TI ME	The time zone for which the time of day is reported. Any of the longitudinal divisions of the earth's surface in which a standard time is kept. Required only when PreparationStartTim e is reported This value must be a domain value

Data Name	XML Tag Name	Data Type	Req'd	Access Table Mapping	Comment
Preparation End Date *Example:2007-05-05*	PreparationEndDate	Date (YYYY-MM-DD)	N	RESULT_LAB_SAMPLE_PREP .RLSPRP_END_DATE	The calendar date when on which the preparation/extraction of the sample for analysis was finished.
Time *Example: 14:20:00*	Time	Time - (hh:mm:ss)	C	RESULT_LAB_SAMPLE_PREP .RLSPRP_END_TIME	The time of day that is reported. Required only when PreparationEndTime is reported
Time Zone Code *Example: EST*	TimeZoneCode	String (4)	C	RESULT_LAB_SAMPLE_PREP .REF_TMZONE_CD_END_TIME	The time zone for which the time of day is reported. Any of the longitudinal divisions of the earth's surface in which a standard time is kept. Required only when PreparationEndTime is reported This value must be a domain value

14 Appendix E—Data Entry Forms

Access forms have been added to ease the data entry process. To access the data entry forms, click the Forms tab. It is still possible to copy and paste records directly into the Access tables.

14.1 Forms Tab

The main menu lists the forms in the order of entry. For example, organization data should be entered before projects.

Exhibit 12-1 Microsoft Access 2000 Forms Tab

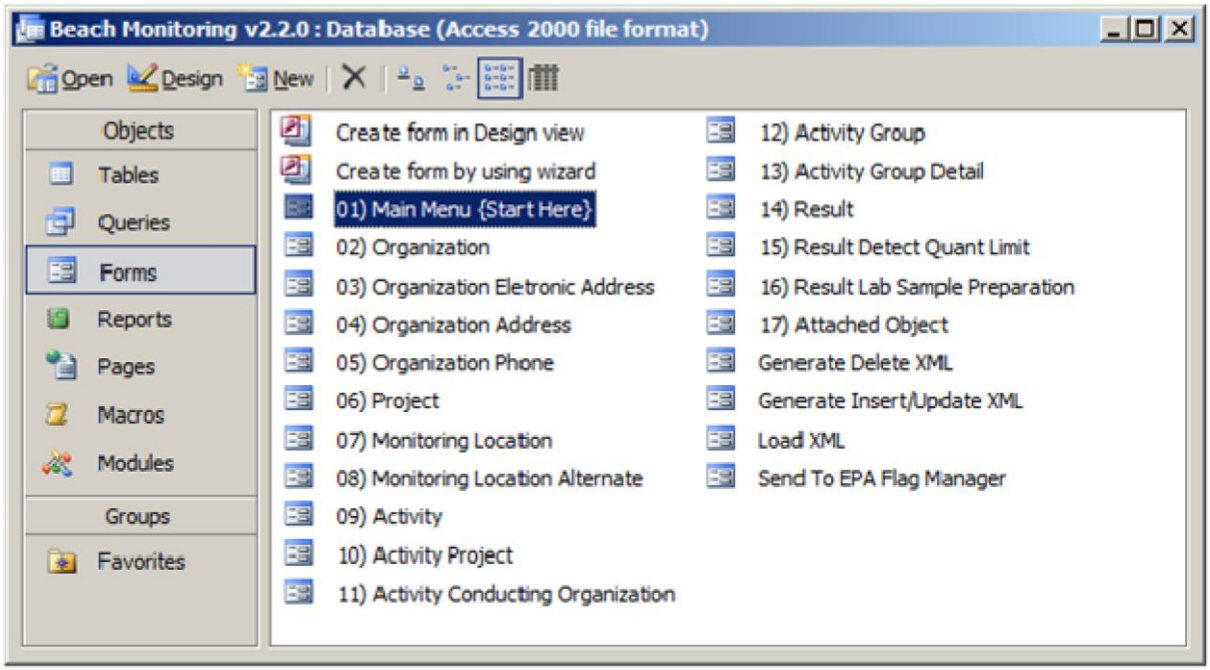


Exhibit 12-2 Microsoft Access 2007 Forms Tab

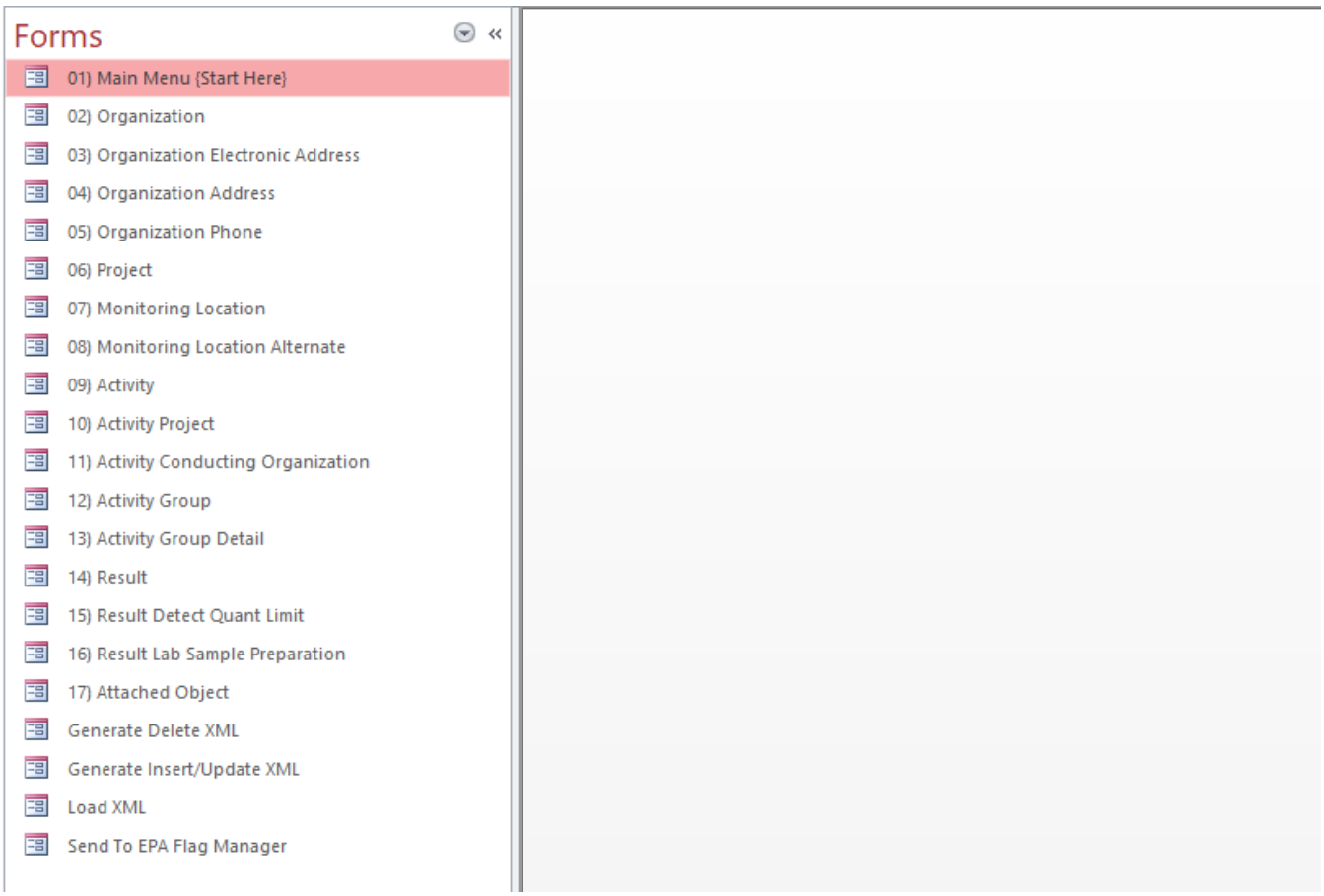
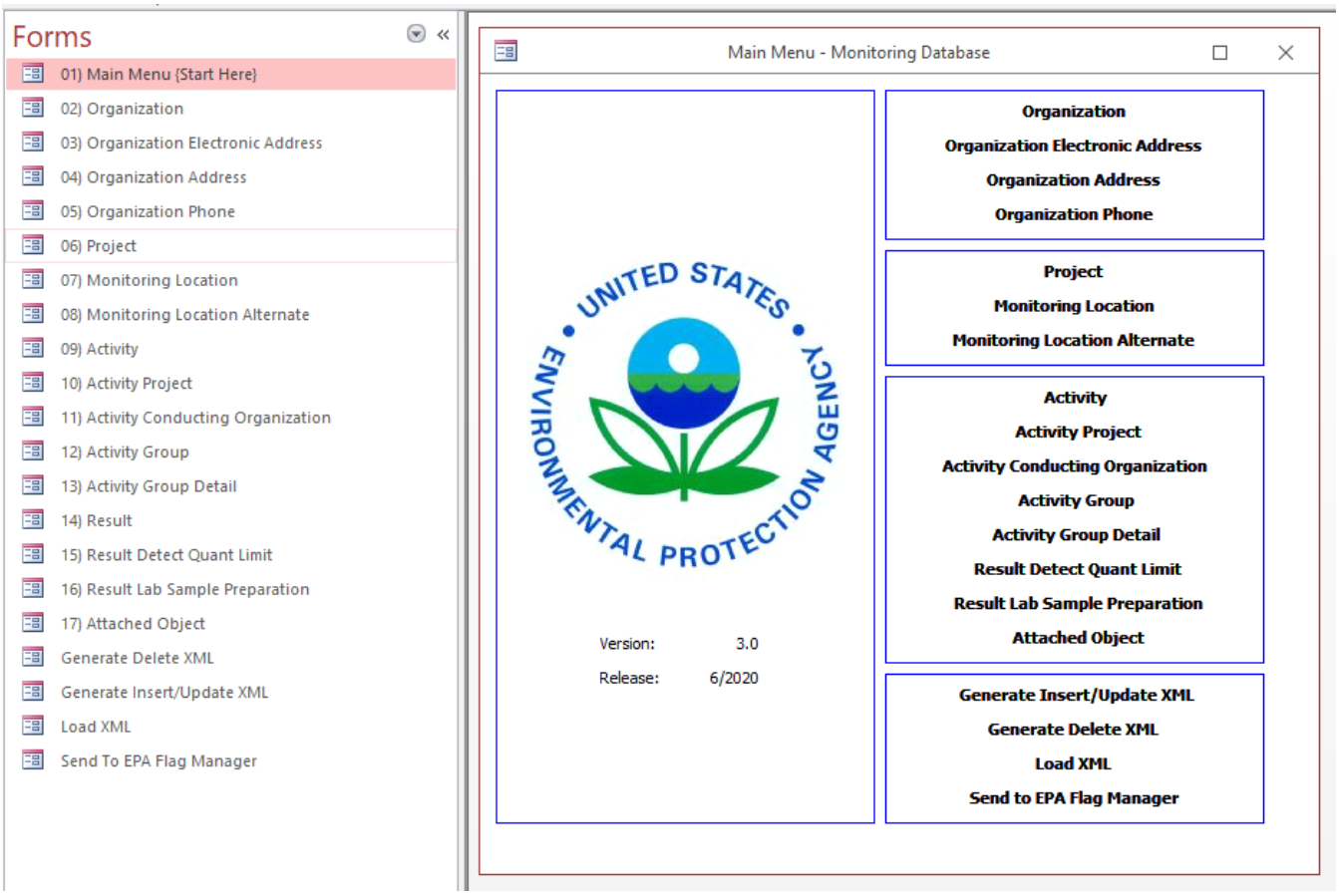


Exhibit 12-3 Microsoft Access 2007 Main Menu



14.2 Return to Main Menu

On the data entry screens there exists a menu item labeled Return to Main Menu. This will close the currently opened screen and open the Main Menu form.

Exhibit 12-4 Microsoft Access 2000 Project Data Entry Screen

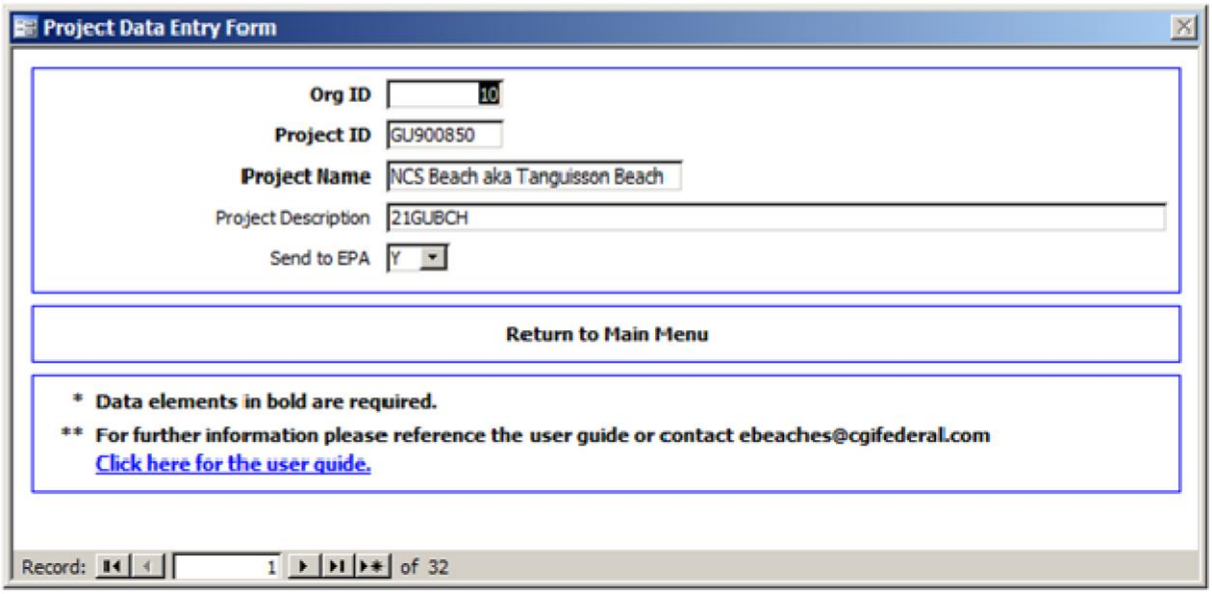
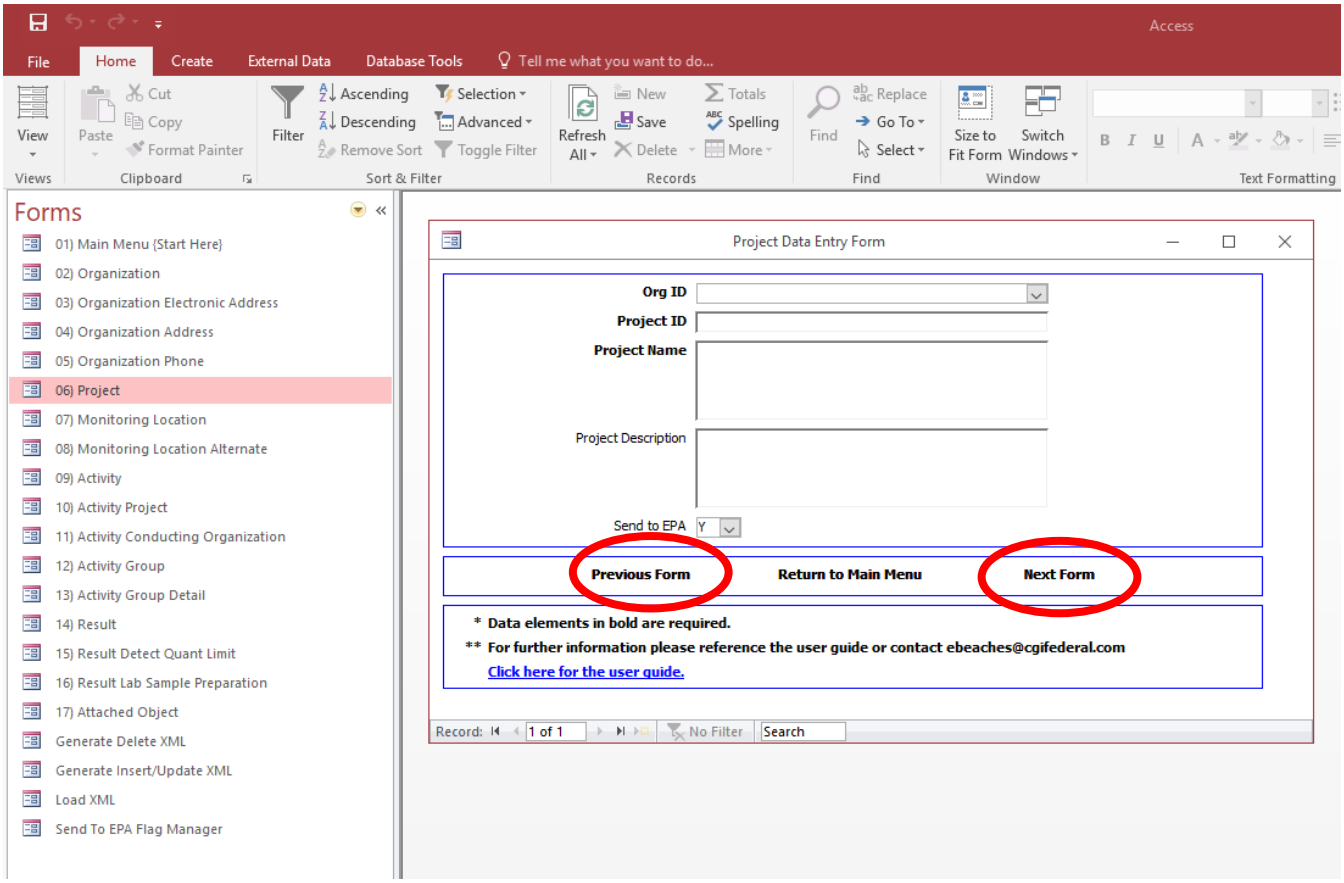


Exhibit 12-5 Microsoft Access 2007 Project Data Entry Screen



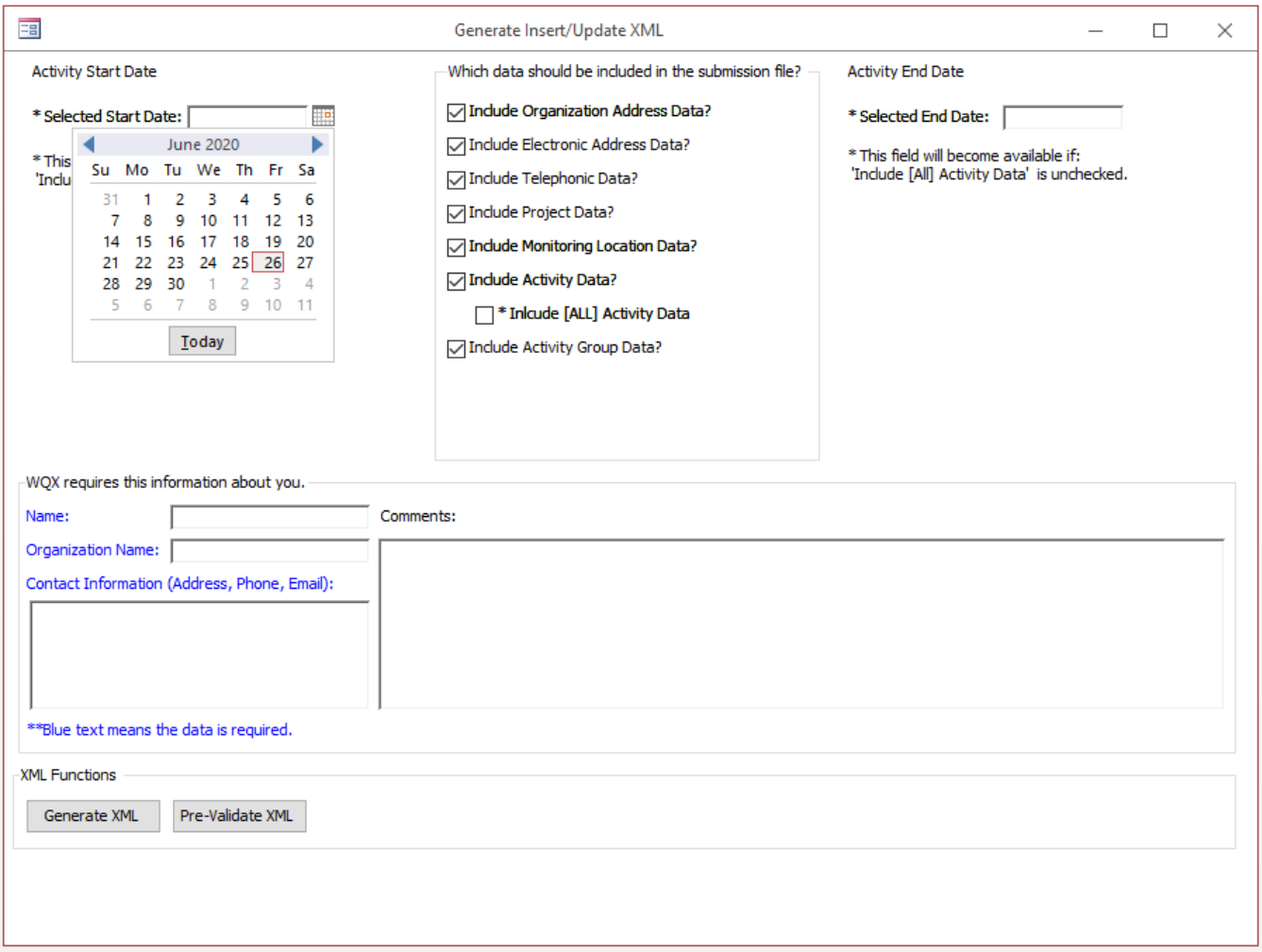
New features in version 3.1 Previous and Next Form Buttons.

The previous and next form buttons will advance to the next or previous form we felt would be easiest to fill out considering the data entered into the current form. They do not follow the order of the forms list.

14.3 Generate Insert/Update XML

The Generate Insert/Update XML form has been changed in v2.2.1. Calendar objects have been added to the form to allow the user to specify date ranges. Only the activities between the specified dates will be included in the XML.

Exhibit 12-6 Microsoft Access 2007 Generate Insert/Update XML Form



14.4 Load XML

The load XML functionality allows users to import changes they have made to the existing monitoring data through the online verification tool, into the Access Database. The process involves editing data in the verification tool, exporting the edited data into an xml file, and importing the xml file into the Access Database to update the existing data with the changes.

As always, when dealing with databases and data, make sure it is backed up before making any changes or importing any new data.

To use this option, click the "Load XML" link on the main menu:

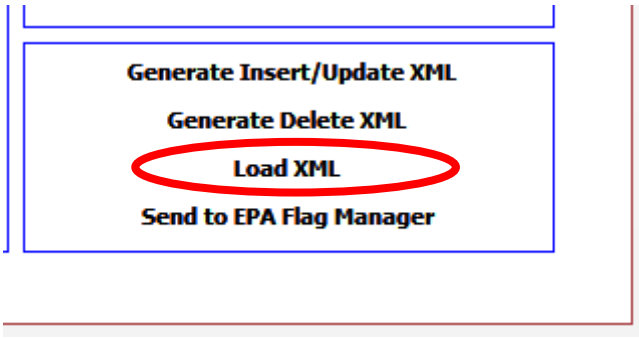
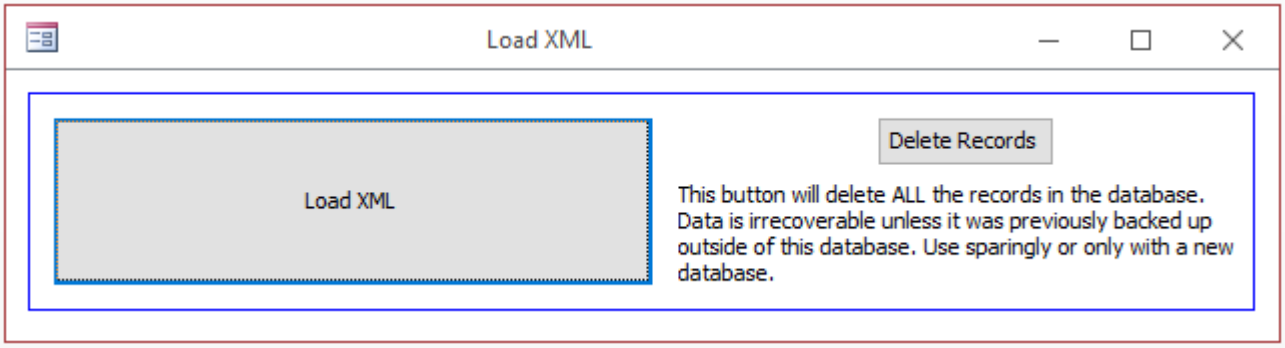


Exhibit **12-7** shows the Load XML form. The form consists of two buttons, Load XML and Delete Records.

Exhibit 12-7 Microsoft Access Load XML Form



Delete Records will delete all the data in the currently opened Access Database. This option should ONLY be used with a brand new database and only after a failed import or if a previous import (into a blank database) contained data that was incorrect and would be corrected with another xml import from the Verification Tool.

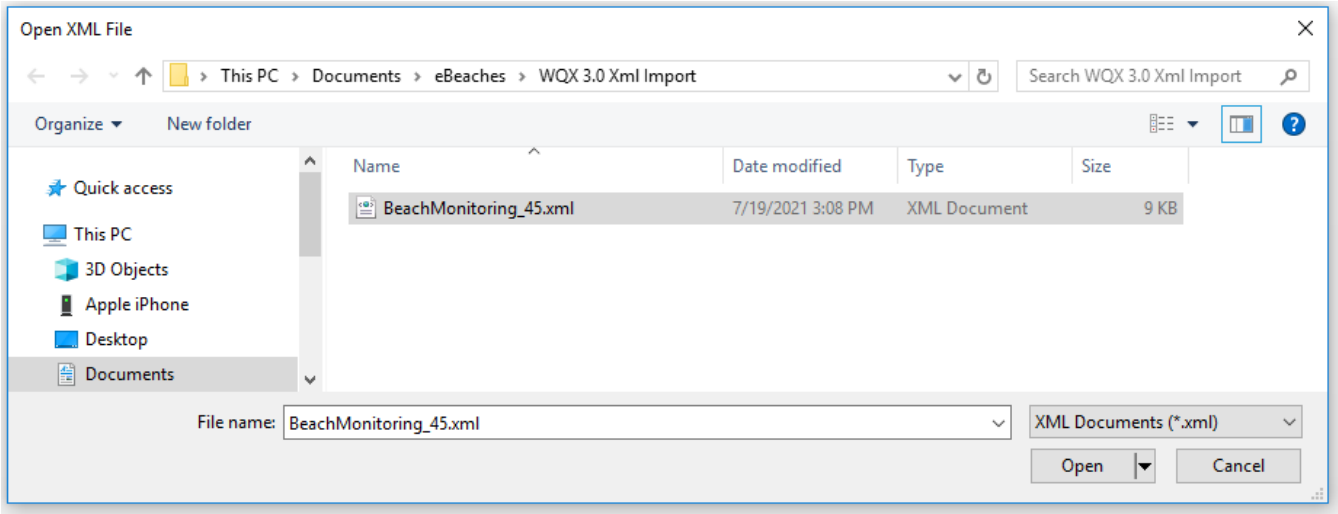
Load XML Button will start the xml import process.

To start the import process, click the “Load XML” button then follow the series of prompts.

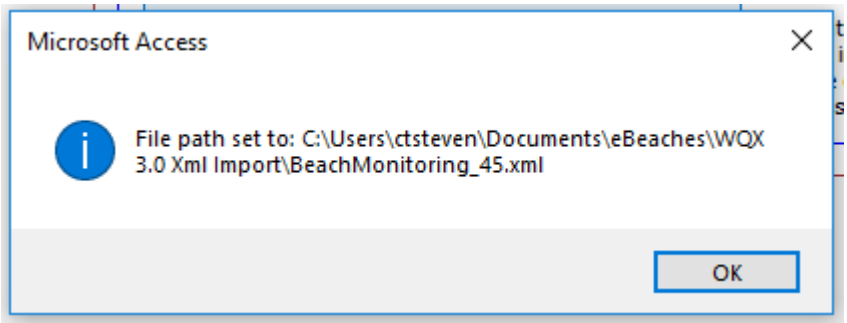
Exhibit 12-8 Set File path prompt

Click the OK button to browse the computers directory and find the xml file generated by the Verification Tool.

Select the file and click Open:



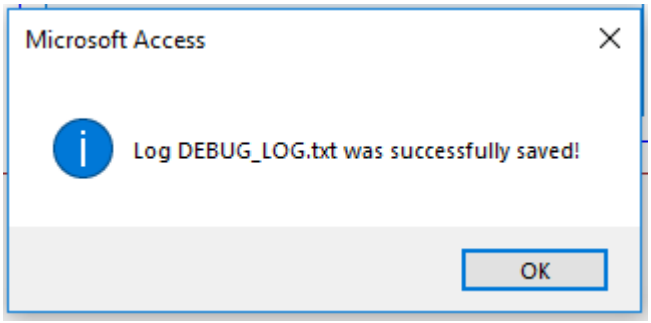
The next prompt will show the file path of the file being imported, click OK.



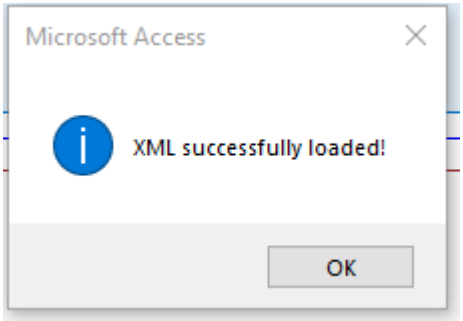
Clicking OK will start the import process.

The next series of prompts will display the stages the importer is going through in validating the file. Continue clicking OK until the import process is started.

Once the process has successfully completed, a log file will be generated of the process. The log file will be saved in the directory the Access Database is in, NOT the directory the imported XML file is in.

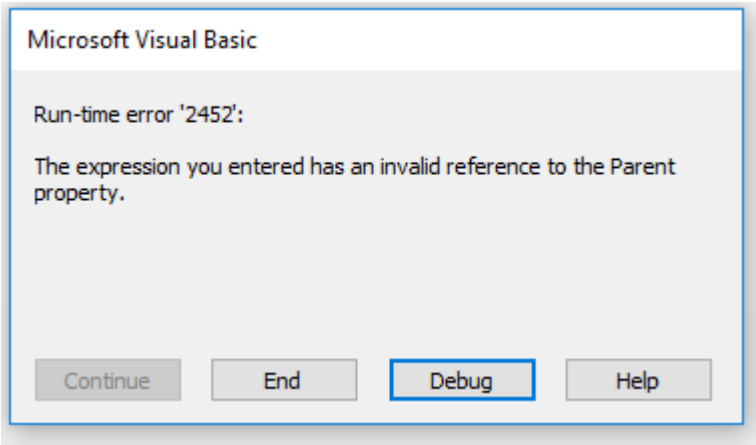


Clicking OK will then display whether or not the file was imported successfully or if it contained errors.



If successful, no further action needs to be taken in the import process. At this point, the user can verify the data was successfully and correctly imported by reviewing the data in the Access Database through the forms or by directly viewing the tables.

The importer will not verify data, it will verify that the xml file is well formed and follows the schema guidelines. If using a file directly generated by the Verification tool, there should not be any issues with the schema or xml validation process. The processor will generate the following error if the file fails to pass the schema validation:



This error should only occur IF the file has been manually edited or changed by the user.

If the error is not obvious right away (it would only occur in the edited sections made by the user) and reversing changes in the file to its original form still generates the error, please send the xml file and a brief description of the process leading up to receiving the error, to CGI Federal eBeaches help desk at: ebeaches@cgifederal.com

Generated Log File

The log file will contain elements that were missing in the xml file, but not required. Users can view the log file to double check that all the data expected to be imported was actually entered into the database.

The missing elements are elements that would be included in a fully formed, 100% complete, XML WQX Data submission. Some may be required to export and successfully submit the changes into WQX, but are not required to import the data into the Access database.

BeachMonitoring_45.xml | 2021-22-07-125315-XMLImportLog.txt

```
1  ------------------------------------------------------------------------------
2  2021-07-22 12:53:15
3  ------------------------------------------------------------------------------
4  Error:  Missing XML tag SamplingComponentName child of ActivityDescription.
5  ------------------------------------------------------------------------------
6
7  ------------------------------------------------------------------------------
8  2021-07-22 12:53:15
9  ------------------------------------------------------------------------------
10 Error:  Missing XML tag SampleDescription child of ActivityDescription.
11 ------------------------------------------------------------------------------
12
13 ------------------------------------------------------------------------------
14 2021-07-22 12:53:15
15 ------------------------------------------------------------------------------
16 Error:  Missing XML tag SamplingComponentName child of ActivityDescription.
17 ------------------------------------------------------------------------------
18
19 ------------------------------------------------------------------------------
20 2021-07-22 12:53:15
21 ------------------------------------------------------------------------------
22 Error:  Missing XML tag SampleDescription child of ActivityDescription.
23 ------------------------------------------------------------------------------
24
25
26
```

15 Appendix F—Summary Reports

Summary Reports have been added to assist in the QA process. To access the summary reports, click the Reports tab.

15.1 Reports Tab

Exhibit 13-1 Microsoft Access 2000 Reports Tab

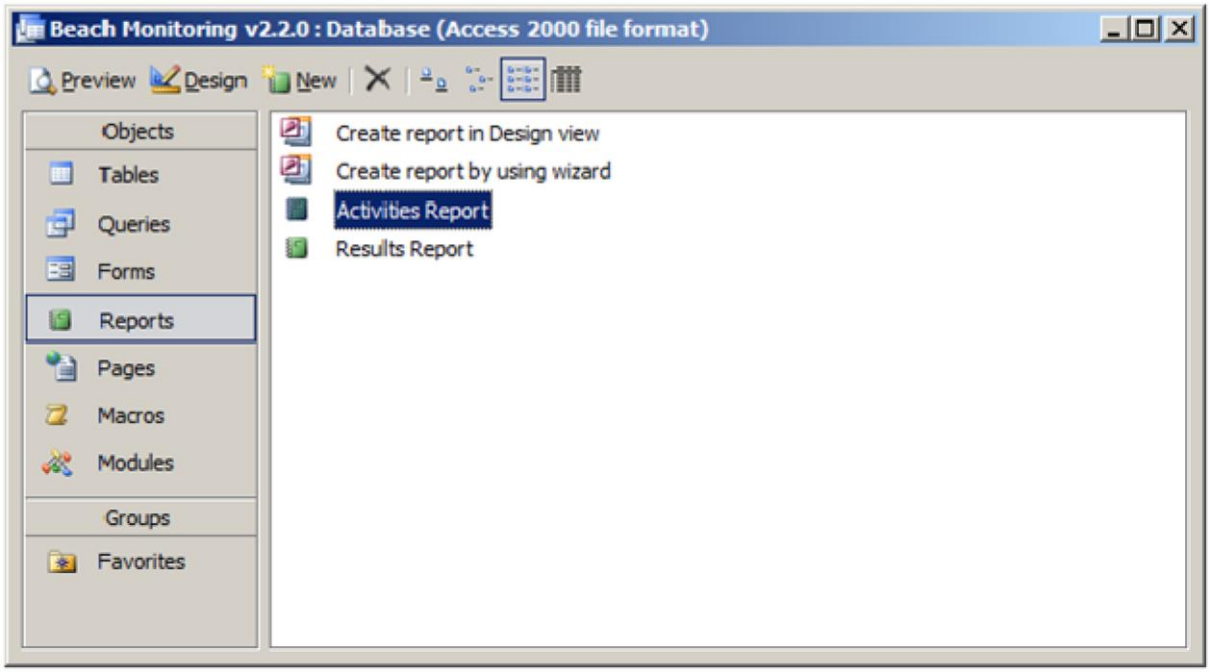
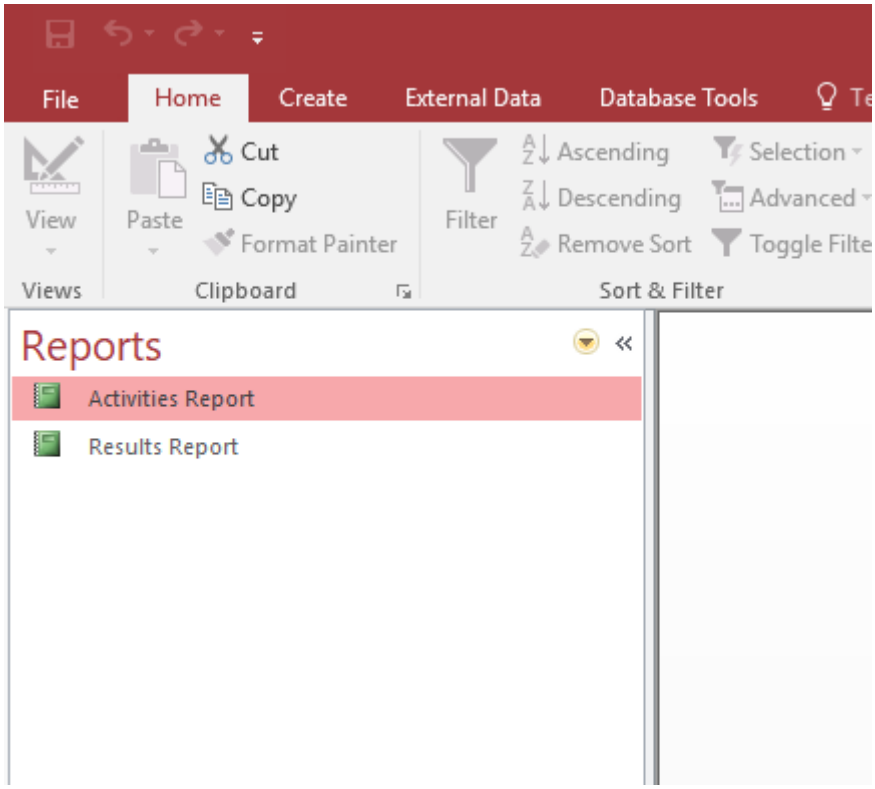


Exhibit 13-2 Microsoft Access 2007 Reports Tab

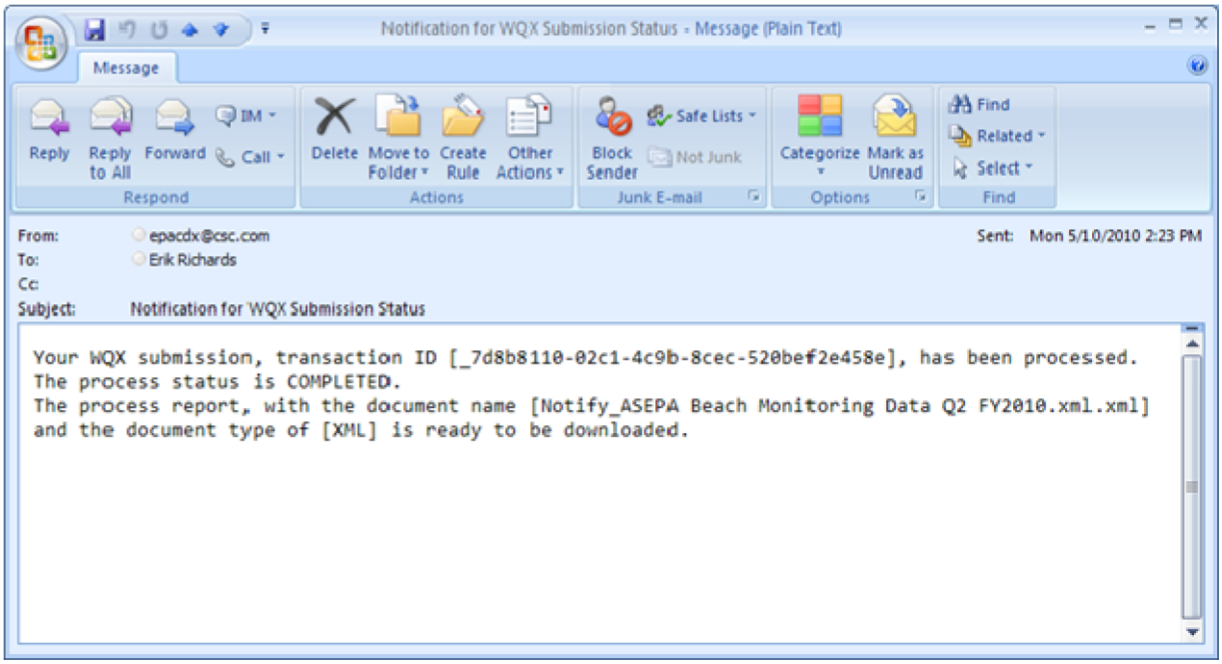


16 Appendix G—CDX Messages

16.1 WQX Submission Status

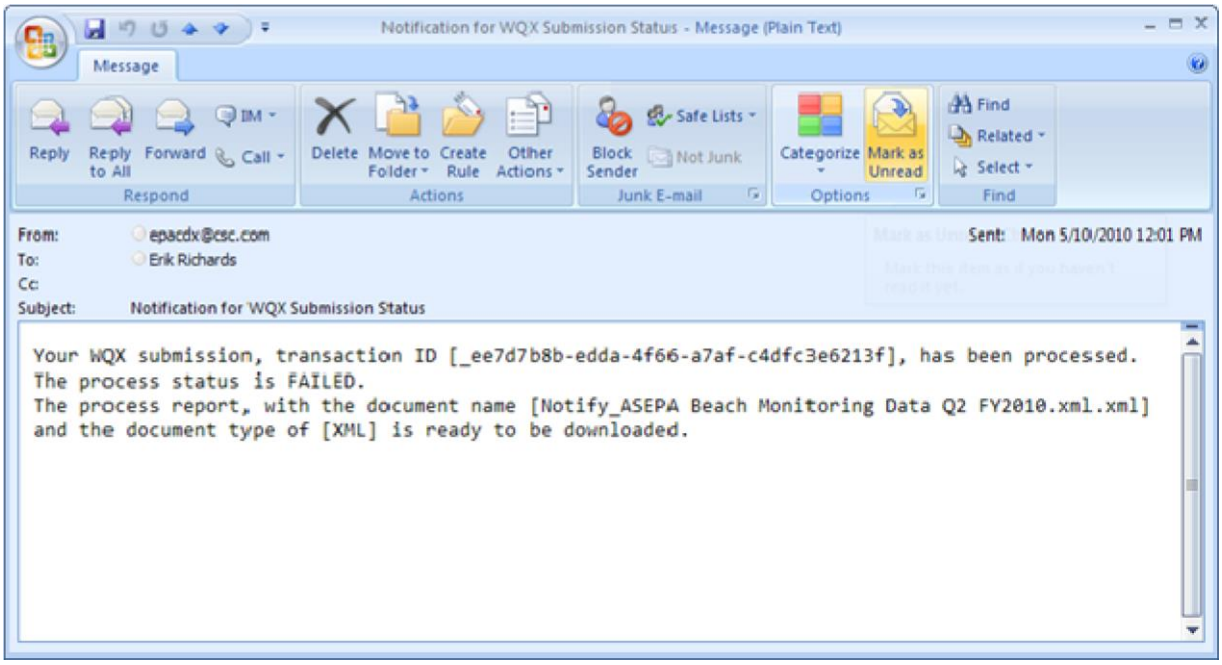
Exhibit 14-1 displays the first email you will receive from CDX. This email will contain the status of your WQX submission.

Exhibit 14-1 WQX Submission Status



The WQX submission in Exhibit 14-2 has FAILED. Download the Validation Results and Processing Report files to identify the errors in the submission.

Exhibit 14-2 WQX Submission Status – Failed



16.2 Transaction History

Click on the Transaction History menu item in CDX to view the submission's processing files. Click on the Validation Results and Processing Report hyperlinks to download and view those files on your computer.

Exhibit 14-3 Transaction History