

# **SUBMITTING WATER QUALITY DATA to WQX/STORET:** **SUBMISSION METHOD SELECTION INSTRUCTIONS**

December 2010

Monitoring ambient surface water and ground waters including beaches, rivers, lakes, bays and streams is the responsibility of states territories and tribes. Organizations, tribes and government entities have a variety of options available to them in submitting and accessing chemical, physical, biological and habitat data and associated metadata. This document overviews different options for submitting water quality data, to assist users in making their decision as to which option is best for them. (Figure 1).

Water quality data can be submitted to the water quality exchange (WQX) in multiple ways:

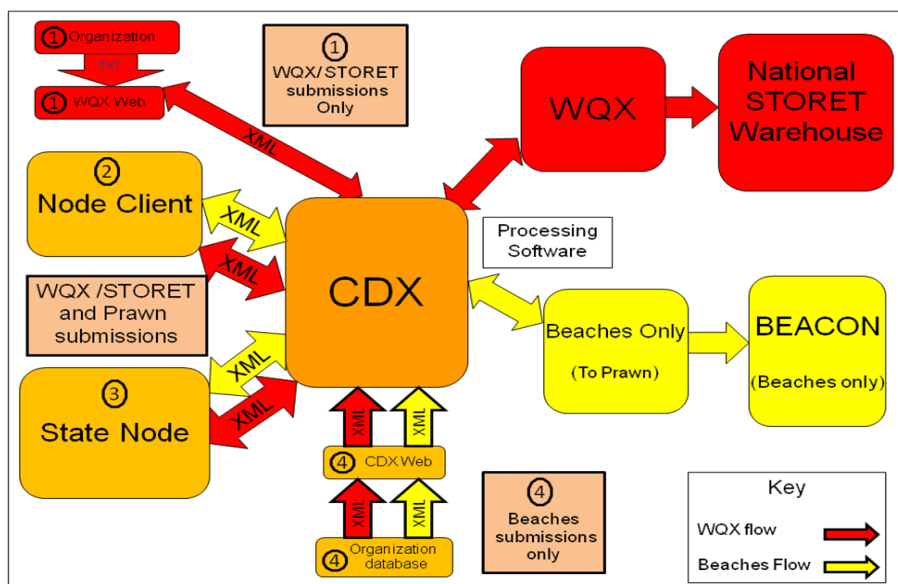
- via Exchange Network Nodes or Node Clients (Option 2 & 3) or
- via a provided Web application (Options 1 & 4).

Regardless of which option you select, you will also need:

1. An EPA WQX/STORET organization ID, (e.g., 21NYBCH), Organization IDs are assigned by the EPA STORET Team upon the request of the user, send an email to the STORET helpdesk STORET@epa.gov, or contact the WQX help desk 1-800- 424-9067.
2. An EPA NAAS account ID (usually your email address) and password. To request an NAAS account, send an email to the STORET helpdesk (see 1, above).
3. For eBEACHES submissions contact Bill Kramer at Kramer.bill@epa.gov, 202-566-0385.

For a more detailed explanation of the WQX network, review the WQX Flow Configuration Documents (FCD) at: <http://www.exchangenetwork.net/exchanges/water/wqx.htm>  
[For user support, contact 1- 800-424-9067 or STORET@epa.gov ]

**Figure 1.**



## **Option 1 – Using WQX Web (Submitting to STORET only)**

Unlike the other options, WQX Web converts text file submissions into XML script allowing organizations unable to generate XML script on their own to submit water quality monitoring data to the STORET Warehouse. For more information on using WQX Web, please access the following URL. [http://www.epa.gov/storet/wqx/wqxweb\\_downloads.html](http://www.epa.gov/storet/wqx/wqxweb_downloads.html)

## **Option 2 – Using Node Client software**

Submission through a node is more suited for larger flow volumes compared to the other options. To use the Node Client Software you will need a NAAS account associated with your Organization ID. (See page1) If you already have a Org ID and NAAS ID, download and install node client software (add icon to Desktop); e.g., from <http://www.windsorsolutions.biz/nodeclient2007/> (Node Client Lite) [For user support, contact [Node Support](mailto:nodehelpdesk@epacdx.net) (nodehelpdesk@epacdx.net); 888-890-1995].. **For additional guidance in submitting data using node client software, please see Appendix A of this document.** *If you decide not to use a State node or node client, use Option 1 or 4.*

## **Option 3 – Using a State Node**

You can either obtain your own Node software or use a state node. **Use of a node assumes you have a local data management system from which you can create XML**

1. Contact your state Node Administrator to determine what it would take to use your state node to submit data. For contact information for your state Node administrator, see: <http://www.exchangenetwork.net/progress/index.htm> (in the map, click on the state).
2. If you decide to use the state Node, your Administrator will create a National Authentication & Authorization System (NAAS) account. You will need to contact the EPA to have that account associated with your CDX account, contact nodehelpdesk@epacdx.net 888-890-1995 option 2; and your WQX/STORET account (see page1).

## **Option 4 - Submitting Beaches data through CDX Web**

CDX Web allows users to submit data to both WQX/STORET and PRAWN. Bill Kramer will register you to the CDX Help Desk as an eBEACHES user for the Notification flow to PRAWN and the Monitoring flow to WQX/STORET. You will receive an e-mail from the EPA CDX HELPDESK with instructions:

- A. If you already have a CDX ID and password: how to add this new monitoring data flow (account profile)
- B. If you are new to CDX: how to register for all eBEACHES data flows (account profiles)

Once registered, you will be directed to <https://cdx.epa.gov/SSL/CDX/login.asp>, where your available account profiles have been listed. Click on the link for the type of file you want to submit. **For additional guidance in submitting data through CDX Web, please see Appendix B of this document.**

## **APPENDIX A. Submitting Water Quality Data Using Node Client Software**

If you decide not to use the State node (option 3), you have the option of using the Node Client Software. Regardless of which option you select, you will also need:

1. An EPA NAAS account ID (usually your email address) and password, To request an NASS account , send an email to the STORET helpdesk (see part 3).
2. An EPA WQX organization ID, (e.g., 21NYBCH), **Organization IDs are assigned by the EPA STORET Team** upon the request of the user contact the WQX help desk (see part 3).
3. For access to eBEACHES contact Bill Kramer; [Kramer.bill@epa.gov](mailto:Kramer.bill@epa.gov), 202-566-0385. For access to STORET/WQX contact the WQX help desk [STORET@epa.gov](mailto:STORET@epa.gov), 800-424-9067.

The STORET Helpdesk will pre-register you to the CDX Help Desk as an user for the notification flow to WQX. You will receive an e-mail from EPA CDX HELPDESK with instructions on completing your registration.

- A. If you already have a CDX ID and password, the provided credentials (username and password) can be used to submit to both Node test and Node production
- B. If you are new to CDX: see the following instructions

Once registered, you will be directed to <https://cdx.epa.gov/SSL/CDX/login.asp> where your available account profiles will be listed. Click on the link for the type of file you want to submit. You must have an Org ID to be able to submit to WQX. An Organization Identifier (Org ID) is a unique identifier to distinguish you within the WQX system and the STORET Warehouse (e.g. ALO\_WQX for the Alliance For a Living Ocean or 21ARIZ\_WQX for Arizona Department of Environmental Quality). To request an NASS account, send an email to the STORET helpdesk [storet@epa.gov](mailto:storet@epa.gov), and provide the following information.

- the NAAS accounts that you want to have access to your Organization ID
  - First name
  - Middle name
  - Last Name
  - Prefix (Mr./Mrs./Ms)
  - WQX Organization ID
  - WQX Organization Name
  - Mailing Address 1
  - Mailing Address 2
  - City
  - State
  - Zip/Postal Code
  - E-mail Address
  - Phone Number
- 
- **NAAS accounts are assigned by Node Administrators or by the CDX Help Desk**  
For users of node clients (who don't have a Node Administrator), NAAS accounts are assigned by the CDX Help Desk on an individual basis

## Accessing the Node Client Lite Application

The Node Client Lite application has a two way flow, allowing users to submit data (in XML format) and retrieve information from WQX such as documented domain values. Node Client Lite also provides users with a record of their submitted data. This reference of submitted data, in addition to access to domain values, may be helpful in determining the cause of error messages. To add the ability to interact with WQX web services as defined in the flow configuration document (FCD [http://www.exchangenetwork.net/schema/WQX/2/WQX\\_FCD\\_v2.1.pdf](http://www.exchangenetwork.net/schema/WQX/2/WQX_FCD_v2.1.pdf)) follow the steps below.

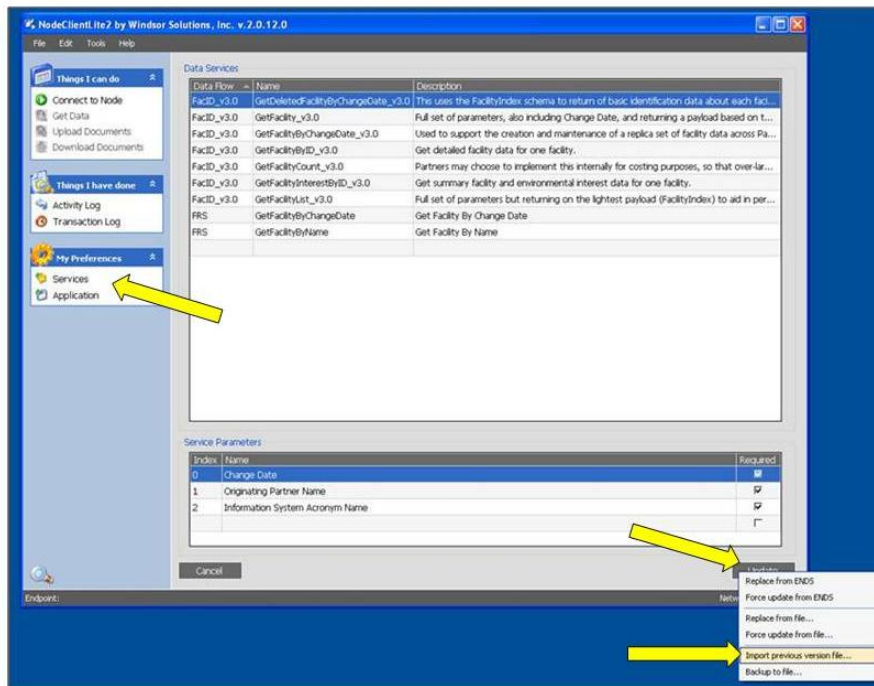
*Note: for Beach Program users, although the file below is v2.0, the v1.0 domain value and transaction ID services are still supported, and this file works with both.*

## Obtaining All Services Available From STORET

Click on the Node Client Lite Application from its location on your desktop, and select the open icon. On the STORET FTP Site download and save (<ftp://ftp.epa.gov/storet/wqx/wqxservices.xml>).

- I. Save the URL as file type “All files”
- II. Name the downloaded file **wqxservices.windsor**
- III. Save the file to a location on your hard drive. On your hard drive, open the file.
- IV. In the Node Client Lite application (Figure 2), under “**My Preferences**” click on **Services**
- V. Right click on the ‘**Update**’ button

Figure 2.



- VI. Choose *'Import previous version file ...'*
- VII. Navigate to where you saved the wqxservices.windsor file
- VIII. Set *files of type* to Service Lite File
- IX. Click *"Open"*

**You should now have all of the WQX services.**

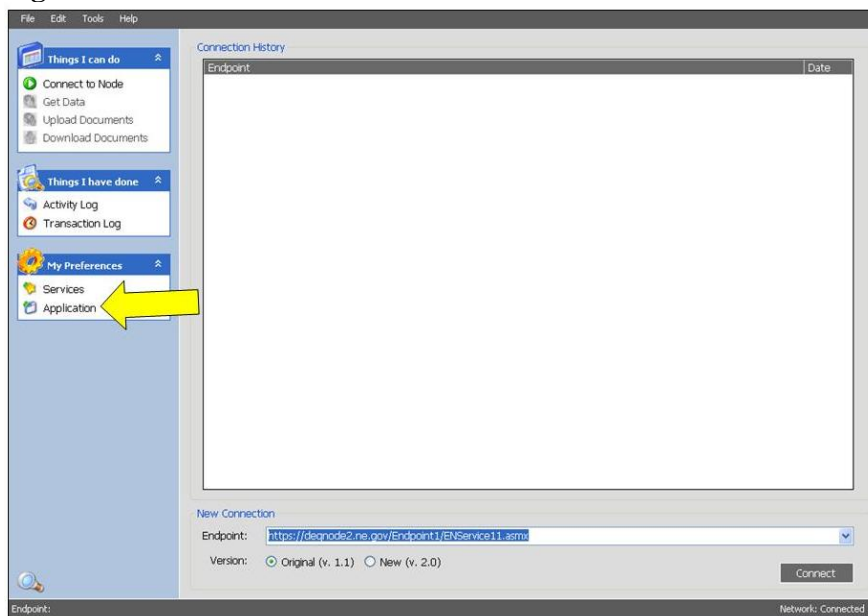
*Do not click 'Update' again, or you will have more items, unrelated to WQX, in your list of services.*

## Inserting Your Username and Password Into Node Client Lite

### Step 1. Use your NAAS ID and password to log in

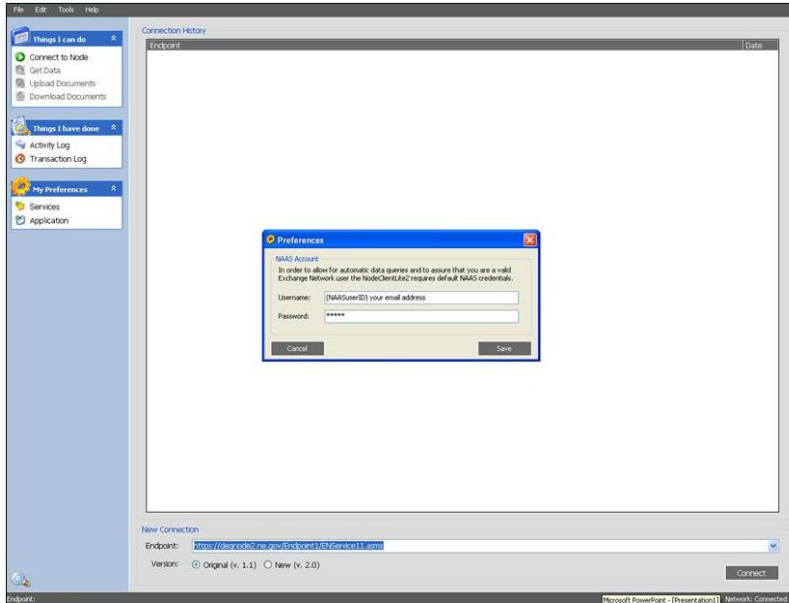
To log into the Node Client Lite application, under *My Preferences* select *Application* (Figure 3).

**Figure 3.**



Enter your credentials and select *save* (figure 4)

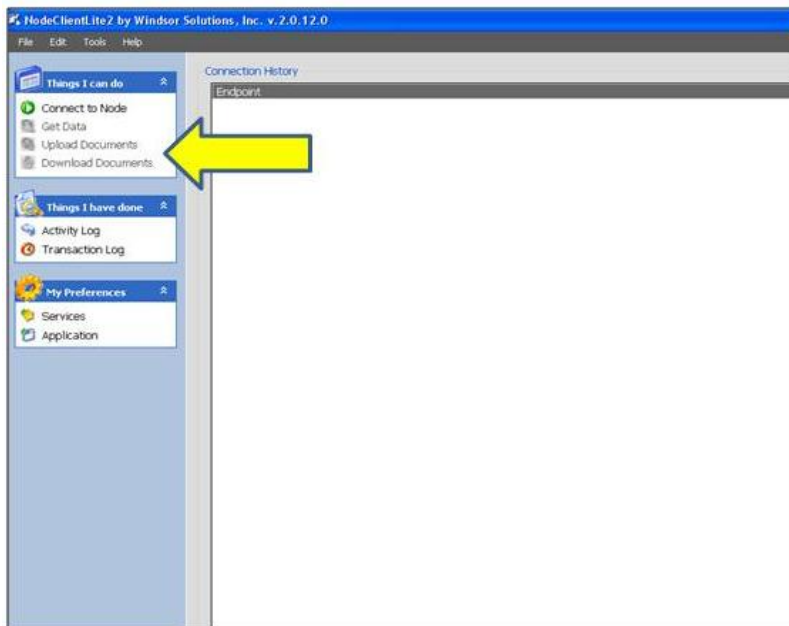
**Figure 4.**



## Step 2. Connect to WQX through CDX

In the upper left hand corner, under **Things I can do** of the application, note that **Connect To Node** is in bold text, signifying an active option, while *Get Data*, *Upload Documents* and *Download Documents* are in grey text signifying inactive options (**Figure 5**). The node is not connected to an endpoint if these options are inactive, meaning data cannot be submitted or received.

**Figure 5.**

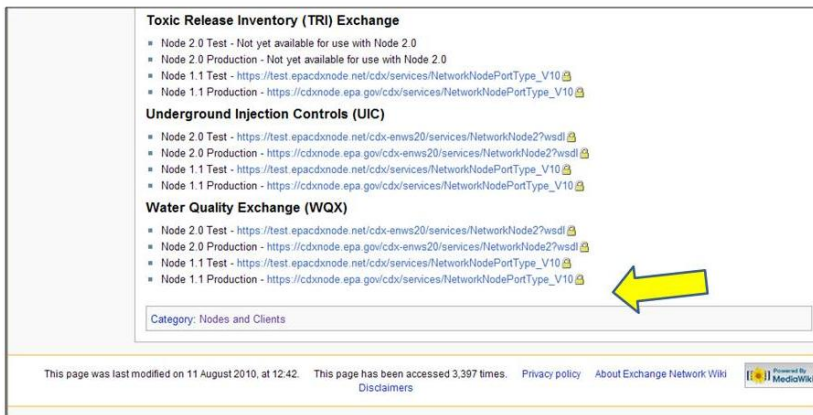


You can obtain the appropriate endpoint to submit and receive data by accessing the exchange network page. For more information about endpoints see the provided link [http://www.exchangenetworkwiki.com/wiki/index.php/Node\\_Endpoints\\_at\\_U.S.\\_EPA's\\_Central\\_Data\\_Exchange](http://www.exchangenetworkwiki.com/wiki/index.php/Node_Endpoints_at_U.S._EPA's_Central_Data_Exchange).

After accessing *U.S. EPA's Central Data Exchange* page, under *Node Endpoints* you will find a section titled *WaterQuality Exchange* (Figure 6). Under the *WaterQuality Exchange* section are links labeled *Node 2.0 Test*, *Node 2.0 Production*, *Node 1.1 Test* and *Node 1.1 Production*. Both the 1.1 and 2.0 versions are options for you to use, however this tutorial will use the 1.1 version.

**You must make one successful test submission from your endpoint, through Node Test before being permitted to submit through Node Production.**

**Figure 6**

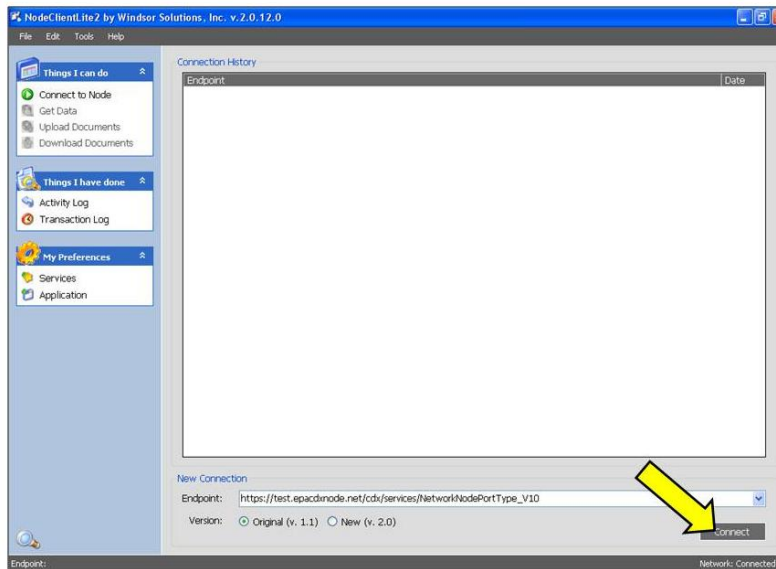


### Step 3. Obtaining a Test connection endpoint,

To connect your node to the EPA node, locate the **New Connection Pane** in the window. Ensure that the correct version is selected (in this case Original ((v1.1) is used) and enter the test endpoint for Node 1.1 ([https://test.epacdxnode.net/cdx/services/NetworkNodePortType\\_V10](https://test.epacdxnode.net/cdx/services/NetworkNodePortType_V10)) provided by the exchange network page ([http://www.exchangenetworkwiki.com/wiki/index.php/Node\\_Endpoints\\_at\\_U.S.\\_EPA's\\_Central\\_Data\\_Exchange](http://www.exchangenetworkwiki.com/wiki/index.php/Node_Endpoints_at_U.S._EPA's_Central_Data_Exchange))

Click **Connect** (Figure 7)

Figure 7.

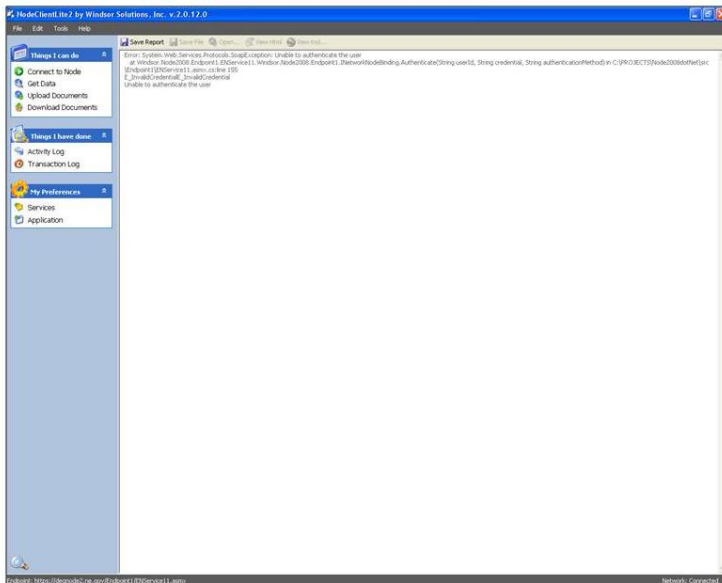




## Trouble shooting

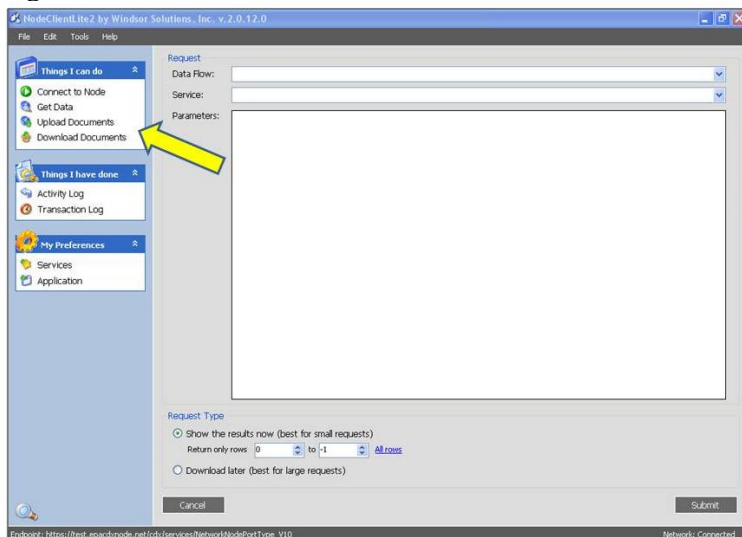
[If you get an “Unable to Authenticate” error (Figure 8) - in the **My Preferences** screen, open **Application**, go to the remote IP tab and switch from the windsorsolutions URL to the whatsmyip.org URL. While there, make sure check box “**Always authenticate against NAAS is NOT checked**”. Click “**Save**” and return to retry to connect]. For further assistance regarding connection issues, contact the Node help desk [(nodehelpdesk@epacdx.net); 888-890-1995] or the WQX help desk [STORET@epa.gov](mailto:STORET@epa.gov), 1-800- 424-9067.

**Figure 8.**



With a successful test connection, the request data page will appear. Notice that all options in the **Things I can do** box are now available with a successful test submission (Figure 9).

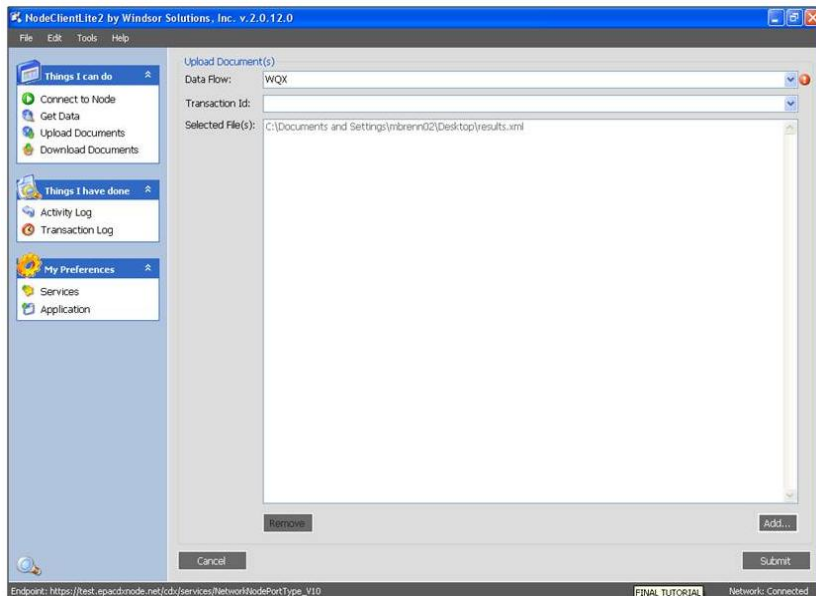
**Figure 9.**



#### Step 4. Submit a Test XML file

1. In left panel, under *Things I Can Do*, click “*Upload Documents*”
2. In the **Upload Documents(s)** panel, in the *Data Flow* field , select **WQX** from the dropdown list
3. If the *Transaction ID* is prepopulated, delete its contents.
4. click “*Add*”
5. A test XML is provided at the following site  
<http://www.exchangenetwork.net/exchanges/water/wqx.htm>. Download the example XML file and save it to your hard drive
6. Select your test XML file(s) from your directories (.zip or .xml); the address will appear in “Selected File(s)” window (Figure 10).

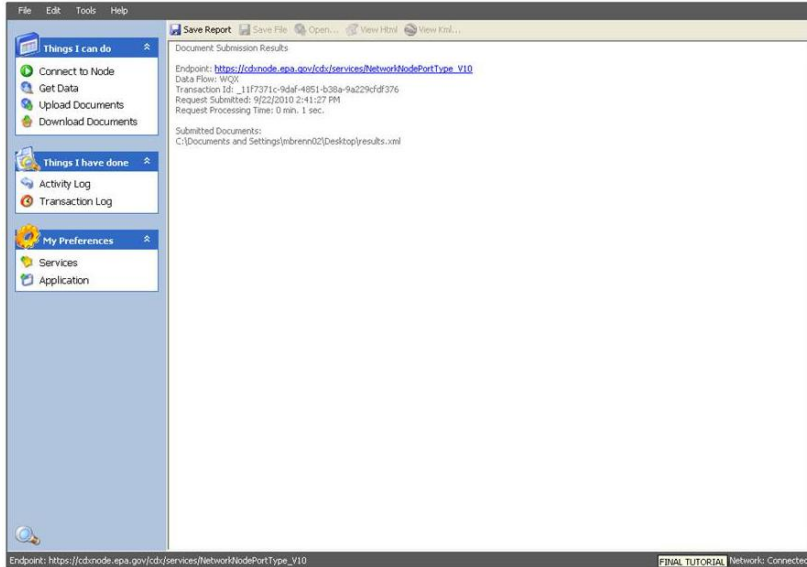
**Figure 10.**



7. click “*Submit*”
8. **Correct any errors encountered (CDX validation and WQX rules).** Users will receive an email to their NAAS account providing details on either a completed submission or a failed submission. Please refer to the following links for guidance on CDX validation ([http://water.epa.gov/grants\\_funding/beachgrants/upload/2008\\_10\\_01\\_beaches\\_grants\\_d atausers\\_2008\\_BeachesNotificationCorrections20081001.pdf](http://water.epa.gov/grants_funding/beachgrants/upload/2008_10_01_beaches_grants_d atausers_2008_BeachesNotificationCorrections20081001.pdf)) and WQX rules ([http://www.exchangenetwork.net/schema/WQX/2/WQX\\_FCD\\_v2.1.pdf](http://www.exchangenetwork.net/schema/WQX/2/WQX_FCD_v2.1.pdf))

9. With a successful test submission, you should get “**Document Submission Results**” as well as an email to your associated NAAS account informing you of a successfully submitted file (Figure 11).

**Figure 11**



### Example email from a completed WQX Submission

```
Your WQX submission, transaction ID [_7d8b8110-02c1-4c9b-8cec-520bef2e458e], has been processed.
The process status is COMPLETED.
The process report, with the document name [Notify_ASEPA Beach Monitoring Data Q2 FY2010.xml.xml]
and the document type of [XML] is ready to be downloaded.
```

### Example email from a failed WQX submission

```
Your WQX submission, transaction ID [_ee7d7b8b-edda-4f66-a7af-c4dfc3e6213f], has been processed.
The process status is FAILED.
The process report, with the document name [Notify_ASEPA Beach Monitoring Data Q2 FY2010.xml.xml]
and the document type of [XML] is ready to be downloaded.
```

## Submitting data through Production

*Once you receive an email confirming the one time successful test submission, you are able to submit to production. Your test username and password most likely is your production user name and password, if you signed up for a NAAS account.*

You can obtain the appropriate production endpoint to submit and receive data by accessing the exchange network page, [http://www.exchangenetworkwiki.com/wiki/index.php/Node\\_Endpoints\\_at\\_U.S.\\_EPA's\\_Central\\_Data\\_Exchange](http://www.exchangenetworkwiki.com/wiki/index.php/Node_Endpoints_at_U.S._EPA's_Central_Data_Exchange)

If your test username and password does not work, you can obtain a Production password from [helpdesk@epacdx.net](mailto:helpdesk@epacdx.net) 888-890-1995; then use the production connection for Node 1.1: [https://cdxnode.epa.gov/cdx/services/NetworkNodePortType\\_V10](https://cdxnode.epa.gov/cdx/services/NetworkNodePortType_V10)

Version 1.0 of the WQX provides the means for partners to share the following types of data:

- The physical conditions in the environment at the time of a site visit;
- The chemical and bacteriological make-up of the water sampled;
- Chemical analyses of fish tissue collected.

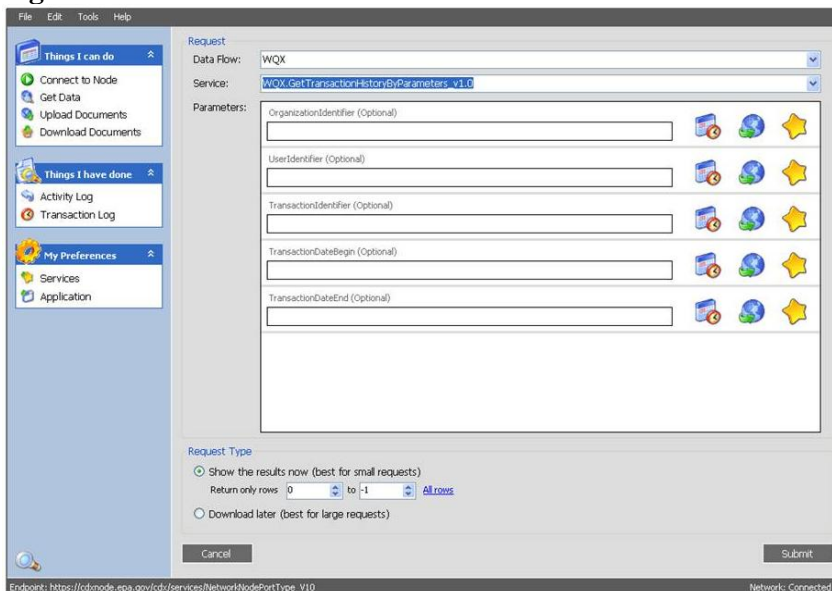
Version 2.0 of the WQX expands on WQX v1.0 and provides the means for partners to share all v1.0 data types as well as the following:

- Biological Taxon Abundance data, including population census, frequency class, group summaries, and individual results;
- Toxicity data;
- Habitat Assessment scores and their related metric scores;
- Biological Index scores and their related metric scores.

## I. To Obtain Data

1. In left pane, in the **Things I Can Do** box, click on **Get Data**
2. In the **Request** pane, In the **Data Flow** box, use the dropdown option to select **WQX** (last one; Figure 12)
3. **Example 1: Get transaction History by Parameters**
  - a. In the **Service** box, select **WQX.GetTransactionHistoryByParameters\_v1.0**
  - a. The Node client light application allows users to specify data by parameters. One or more parameters can be entered for queries. Parameters can be filtered for begin/end dates (right click on icons), Transaction ID, or Org ID e.g.: Orgid [WQXTEST]
  - b. In the **Request Type** pane at the bottom of the application, users are able to select their desired output form. Click **Submit**

Figure 12.



- d. In **Data Request Results** pane the location of your file will be provided. The file name will be based on: YEAR/MONTH/DAY/HOUR/MINUTE/SECOND, e.g.  
C:\2007\08\30\12\49\54
- e. go to the location on your hard drive where the files were downloaded to open folder and view files
- f. open transaction file, find most recent at bottom, copy transaction id; e.g.  
14fd9e21-c495-4c7f-a309-f3dd522b97bc
- g. See the instructions under III. To Download Data for guidance on downloading files.

4. **Example 2: Get DomainValuesbyElementName\_v.1.0**

Note: the “WQX Flow Configuration” document contains the list of domain values documented in WQX.

- a. In the *Service* box, select **WQX. Get DomainValuesbyElementName\_v.1.0**
- b. Specify element name (optional), e.g. “characteristic” and select submit. see 3.b-3.g. Additional services users may request or query data from the WQX database include:

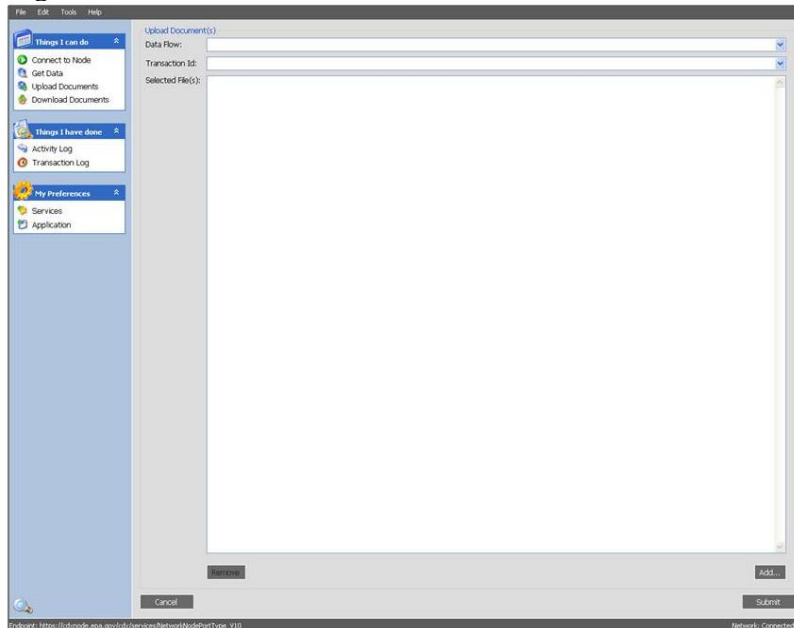
- GetProjectByParameters\_v2.0
- GetMonitoringLocationByParameters\_v2.0
- GetActivityByParameters\_v2.0
- GetActivityGroupByParameters\_v2.0
- GetBiologicalHabitatIndexByParameters\_v2.0
- GetResultByParameters\_v2.0
- GetDomainValueByElementName\_v1.0 and \_v2.0
- GetTransactionHistoryByParameters\_v1.0 and \_v2.0

- All data submitted via WQX and WQX Web are placed in the STORET Warehouse

## II. To Upload Data

1. In left panel, in the *Things I Can Do*, box click **Upload** (Figure 13)

Figure 13.



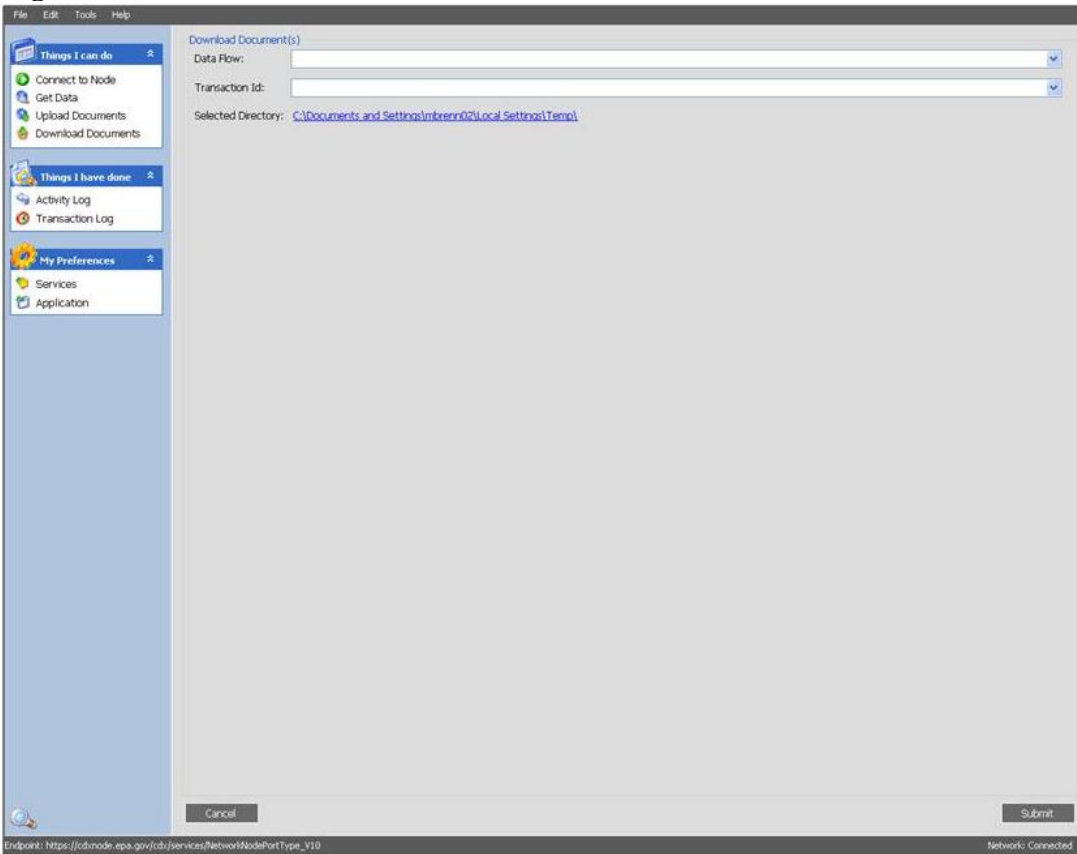
2. Under the **Upload Documents** Panel, In the *Data Flow* box, select **WQX** from the dropdown menu.
3. If the *transaction ID* box is pre-populated, delete its contents

4. click “**Add**”
5. select file(s) from your directories (.zip or .xml); address will appear in “**Selected File(s)**” window
6. click “**Submit**”, to receive a message titled “**Document Submission Results**”
  - a. verify information
  - b. block and copy transaction code (use <Ctrl C>)  
e.g. 14fd9e21-c495-4c7f-a309-f3dd522b97bc
7. Go to III. To Download Data

### III. To Download Data

1. In left panel in the **Things I can Do** box click *Get Data* (Figure 14)

**Figure 14.**



2. Under the **Download** panel, in the *Data Flow* box select **WQX**
3. In the *Transaction ID* box, paste your desired transaction ID, e.g., 14fd9e21-c495-4c7f-a309-f3dd522b97bc
4. Select the directory where file will be download to
5. click “Submit”

6. In **Document Download** pane, below is an example of provided download files  
[file:///C:/20070830124954/BackEndDistribution\\_a6e0ead0-840d-42d5-98b2-4ddc2730e81f.zip](file:///C:/20070830124954/BackEndDistribution_a6e0ead0-840d-42d5-98b2-4ddc2730e81f.zip)  
[file:///C:/20070830124954/Notify\\_WQX\\_valid\\_file.xml.xml](file:///C:/20070830124954/Notify_WQX_valid_file.xml.xml)  
<file:///C:/20070830124954/ProcessingReport.zip>  
[file:///C:/20070830124954/Validation\\_Results](file:///C:/20070830124954/Validation_Results)  
[file:///C:/20070830124954/WQX\\_valid\\_file.xml](file:///C:/20070830124954/WQX_valid_file.xml)
7. Files are saved to folder with name based on:  
YEAR\MONTH\DAY\HOUR\MINUTE\SECOND, e.g. C:\2007\08\30\12\49\54 (.zip)
8. Review the Processing Report file to if there is an error message at bottom of the report.  
This error message can be used to fix the file.
  - a. verify information
  - b. block and copy transaction code (use <Ctrl C>)e.g. 14fd9e21-c495-4c7f-a309-f3dd522b97bc

Additional support for data users is provided below.

[http://water.epa.gov/grants\\_funding/beachgrants/datausers\\_index.cfm](http://water.epa.gov/grants_funding/beachgrants/datausers_index.cfm)

## Error Corrections

If you get an error status from your submission, wait for an email to be sent to the email address associated with your account. *Note the “Edit Load Summary” and “Edit Error Details” reports will not return results in the test environment)*

1. If you get an email that lists no specific data records in error, this means that WQX was not able to successfully open and read your file, and there was probably an XML formatting error. After reviewing your XML file to confirm the formatting is correct, notify CDX of the issue.
2. If you do get a count or list of data records in error, this probably means that the XML was read correctly and there were data quality issues, which are explained on pg 17 (**Fixing Data Quality Issues/ Formatting Data Submissions According To The WQX Structure**). Note the email will only list the first 50 or so errors. This may also mean that required XML elements were missing or superfluous ones were included or a format a format allowed by the schema is not allowed by WQX (since shared elements are re-used, sometimes WQX actually has a stricter limit on a format than the schema). Be aware that the error list will refer to data elements by the target system record and field names as listed in their respective columns i.e. columns G and H of the spreadsheet and not by the XML tag names.

*Note: If you get errors in the data, the data will remain in the WQX “staging” space and conflict with new incoming data for the same monitoring locations and times. You can either try again with different data or clean out the data in the staging space. Contact the CDX help desk if assistance is needed in cleaning out the data in the staging space.*



## **Fixing Data Quality Issues /Formatting Data Submissions According To The WQX Structure**

The largest challenge for users of WQX is mapping their water monitoring data to the WQX schema business rules and domain values. If the file does not pass CDX validation, it does not continue on to WQX for processing. The WQX processing software checks that files conform to WQX data element formats, business rules and domain values.

- Key Domain Value Lists:
  - Characteristics
    - WQX standardizes on the EPA Substance Registry System (SRS) for chemical names
    - WQX will maintain candidate names if a chemical name has not been vetted through SRS
  - Taxa Names
    - WQX standardizes on the Integrated Taxonomic Information System (ITIS) for taxa names and rank
    - May need to roll up to lowest ITIS rank name
    - Monitoring program working with ITIS system for updates
  - Please contact us for new requests
- The CDX node performs validation that the submitted XML is well formed

**More detailed information on WQX structure and flow can be found at the following URL**

*For beach users :* [http://water.epa.gov/grants\\_funding/beachgrants/datausers\\_index.cfm](http://water.epa.gov/grants_funding/beachgrants/datausers_index.cfm)

*For WQX/STORET users:* [http://www.exchangenetwork.net/schema/WQX/2/WQX\\_FCD\\_v2.1.pdf](http://www.exchangenetwork.net/schema/WQX/2/WQX_FCD_v2.1.pdf)

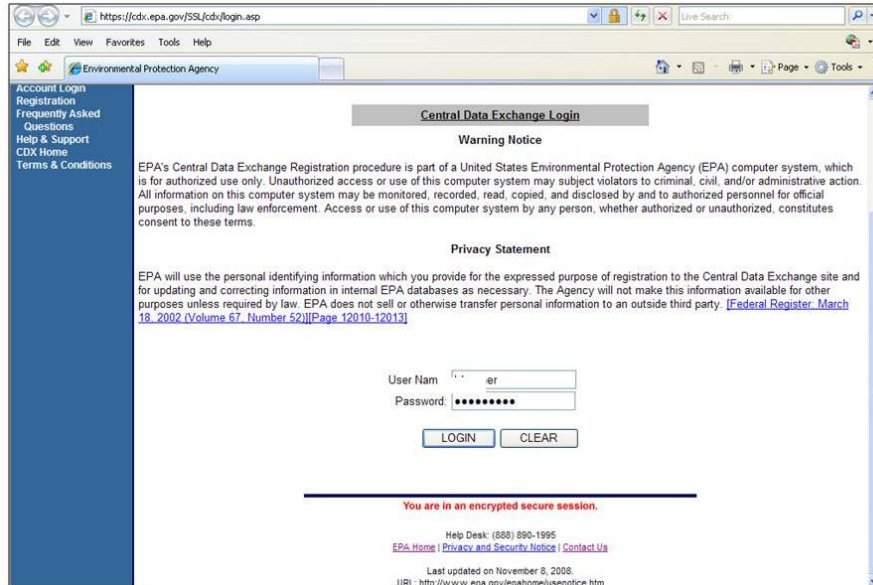
Once a file is submitted using the production link, users can download the following:

- Original XML file submitted
- CDX validation report
- CDX notification file reporting status as either completed or failed
- WQX processing report summarizing the inserted/updated/deleted data and any encountered errors

## APPENDIX B. Submitting data through CDX Web (BEACHES users)

**Step A.** Paste the following URL into your browser to access the CDX home page  
<https://cdx.eda.gov/SSL/CDX/login.asp>. Enter your username and password (Figure 15).

**Figure 15.**



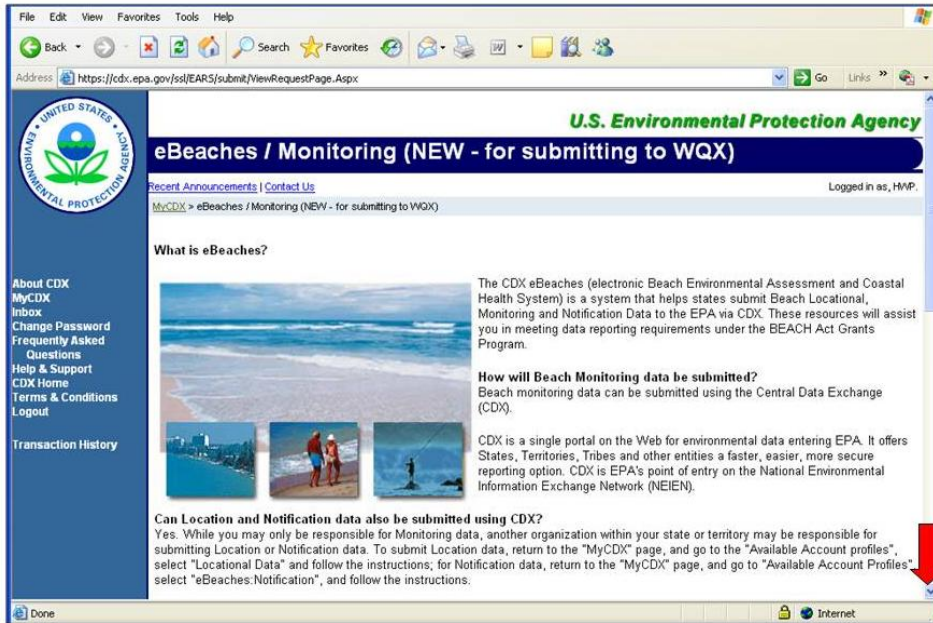
**Step B.** In the MyCDX page locate the available account profiles. eBEACHES users have the option to submit notification data or monitoring data. Select the clickable URL *eBeaches Monitoring* to access the eBEACHES homepage (Figure 16).

**Figure 16.**



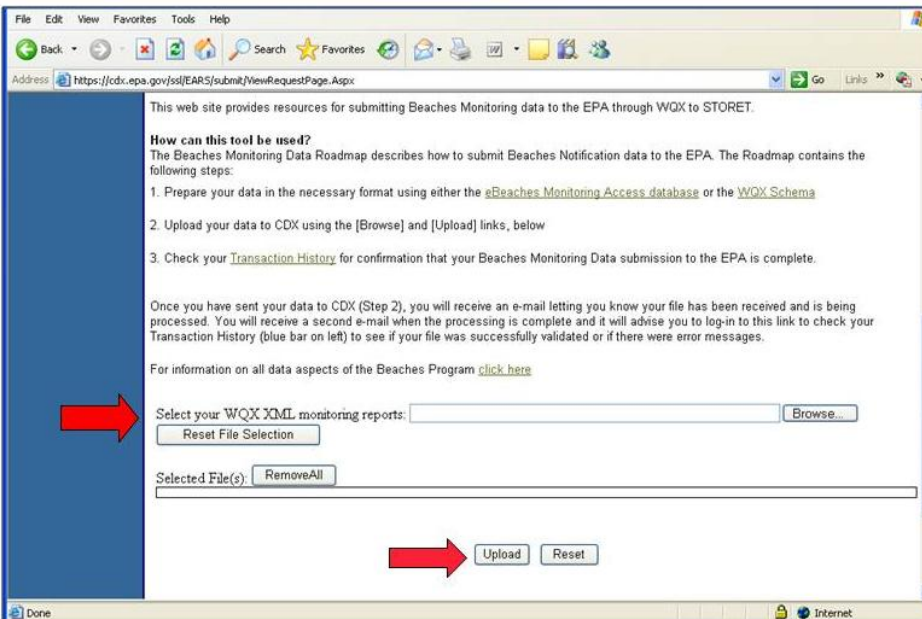
**Step C.** After reviewing the background on eBEACHes (Figure 17), scroll to the bottom of the page to submit your monitoring data.

**Figure 17.**



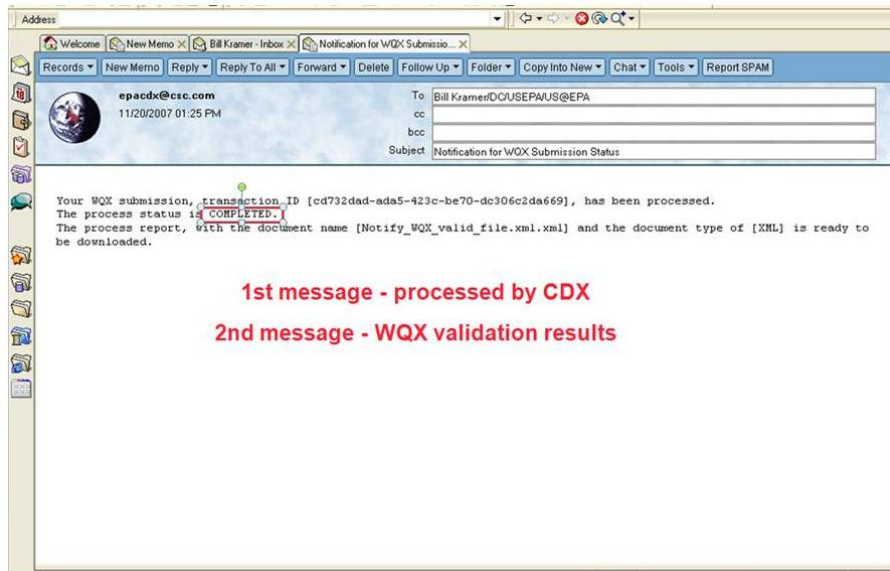
**Step D.** At the bottom of the eBEACHES home page, users are able to submit data in the box titled *Select your WQX/ XML monitoring reports*. Select the browse button and locate your beaches monitoring file on your hard drive. Open the file, and select the *Upload* button located at the bottom of the page (Figure 18).

**Figure 18.**



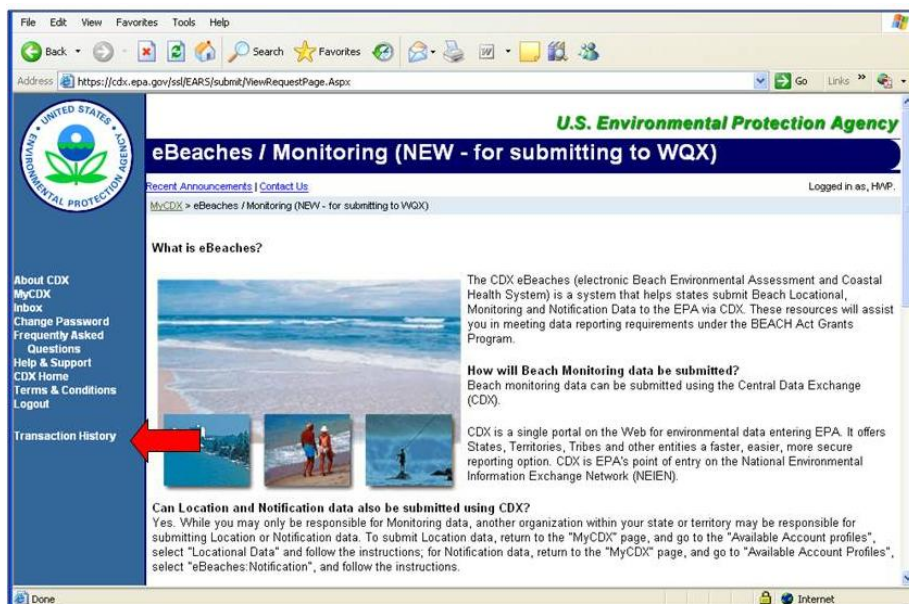
**Step E.** Users will receive an email to their associated NAAS ID regarding the status of their data submittal. If your submittal was successful, you will receive an email stating (a.) Your file was processed at CDX and (b.) your file is ready to be downloaded (Figure 19).

**Figure 19.**



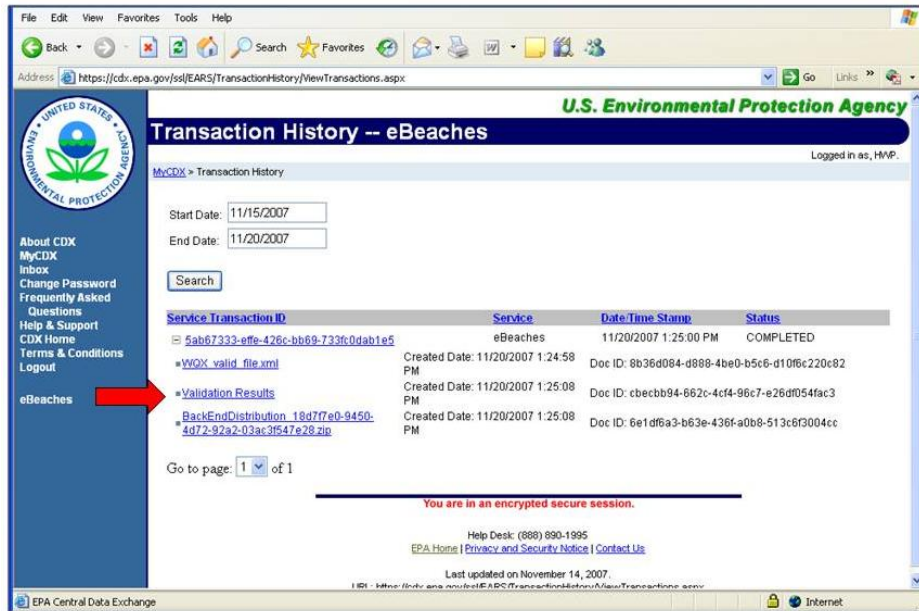
**Step F.** After being notified of a successful data submission, users are able to download their results. Go back to the eBeaches homepage and select Transaction history (Figure 20).

**Figure 20**



**Step G.** The **Transaction History Page** will provide you with a list of successful transactions (Figure 21). Click on your transaction ID to get a report on the status of your transaction. In this case the transaction ID is labeled **Validation Results**.

**Figure 21.**



**Step H.** The validation report will notify you of the final status of your submission. The **process status** will display **Finished** and the **result status** will state **Congratulations!** if the submission was completed (Figure 22).

**Figure 22.**

