AQS (Air Quality System)
User Guide

2015

This User Guide is designed to familiarize the user with:

- The look and feel of AQS
- Running AQS
- Batch Loading data
- Creating and modifying site and monitor descriptive information
- Generating output information encompassing user data

Note] screen images may vary depending on the user's operating system and browser.

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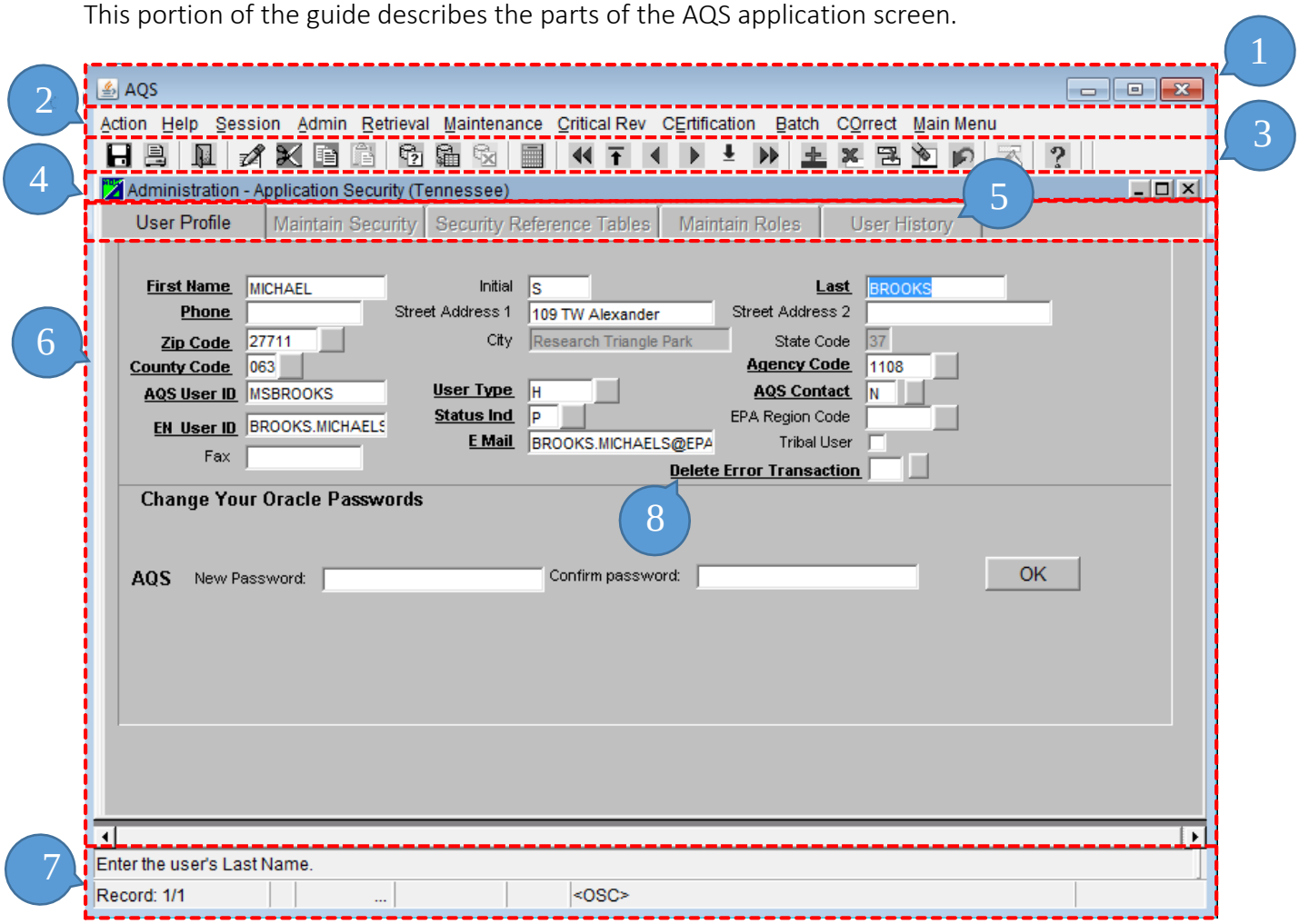
AQS at a Glance

Screen Layout

This portion of the guide describes the parts of the AQS application screen.

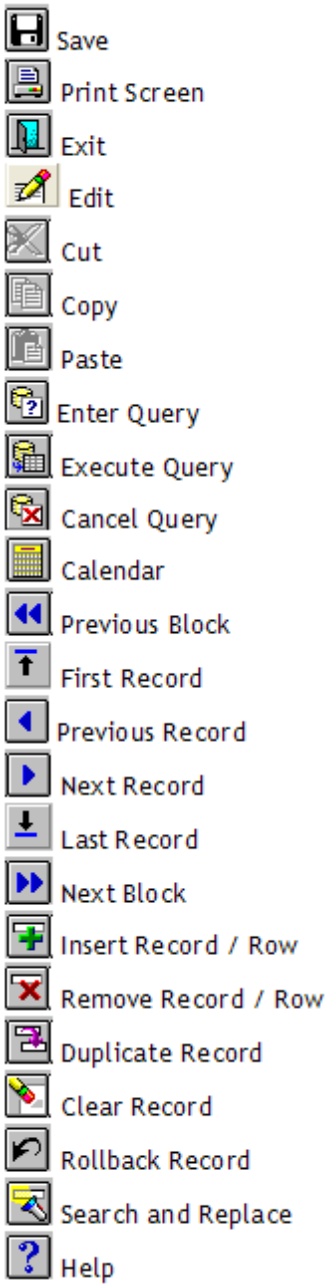


1. AQS Title Bar
2. Menu Bar
3. Icons
4. Form Title Bar
5. Tabs
6. Form Area
7. Status Bar
8. Required Field
    a. Required fields are indicated by the bolding of the field name throughout AQS.

Note] the user should be able to see the entire screen with the exception of some of the longer records that require scrolling to view. If some of the screen seems to be missing (and there's no scroll bar), the user should verify the resolution; 1280x1024 is the recommended minimum resolution.

Icons

Here is a listing of all Icons and their associated function.

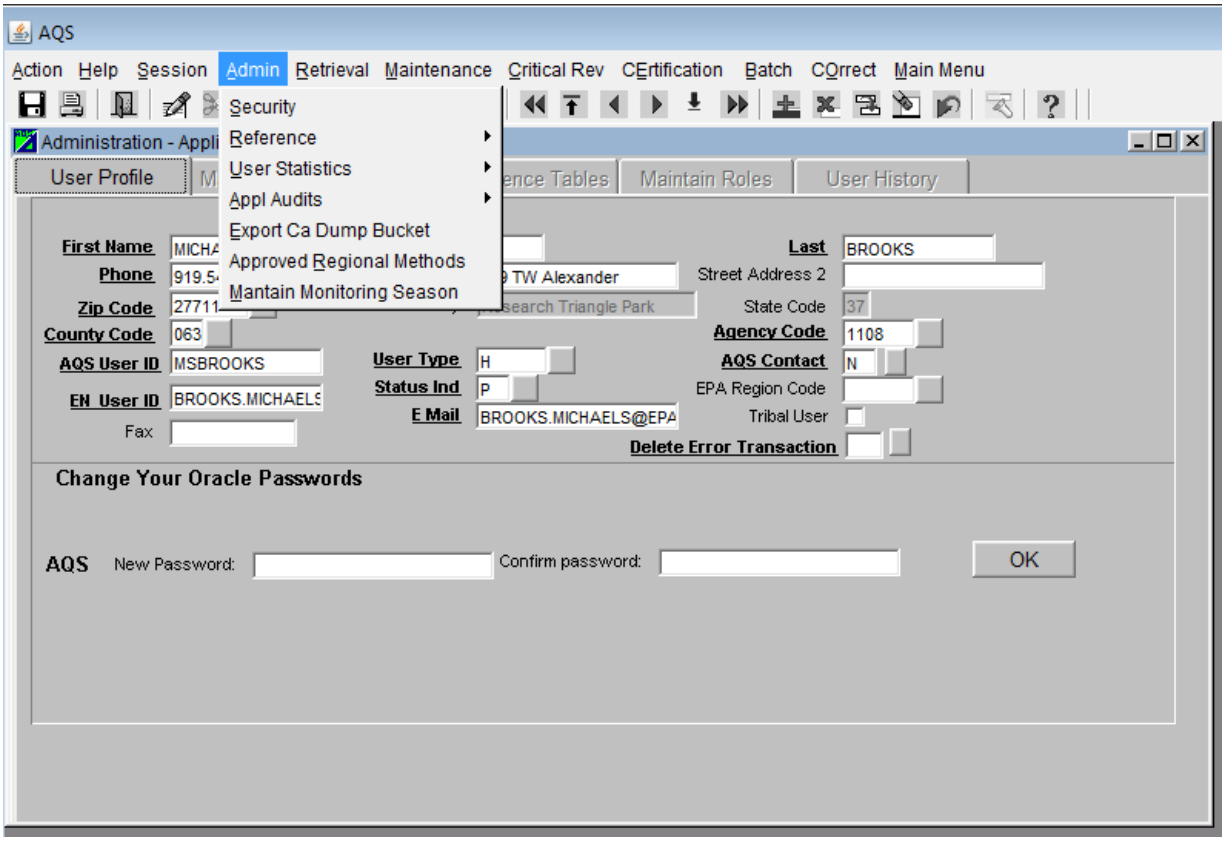


Note] hovering the mouse pointer over an icon will display its name.

Menu Bar, Form Area, and Tabs

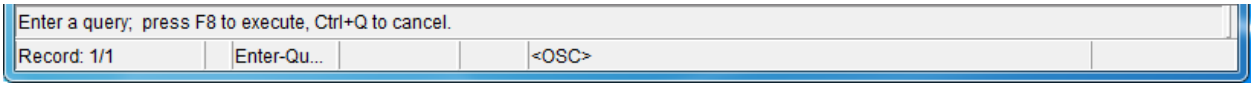
Every menu item in the Menu Bar corresponds to a form within the Form Area. There may be multiple Tabs within a form. Tabs are used to display additional information related to the selected menu item.

The screen capture below shows that the Admin menu item was selected from the Menu Bar and the Security menu items was selected form the drop down menu opening up the Security form in the Form Area and the User Profile tab is highlighted allowing the user to interface with the User Profile portion of the Security form.



Note] Tabs will be located at either the top or right side of the Form Area.

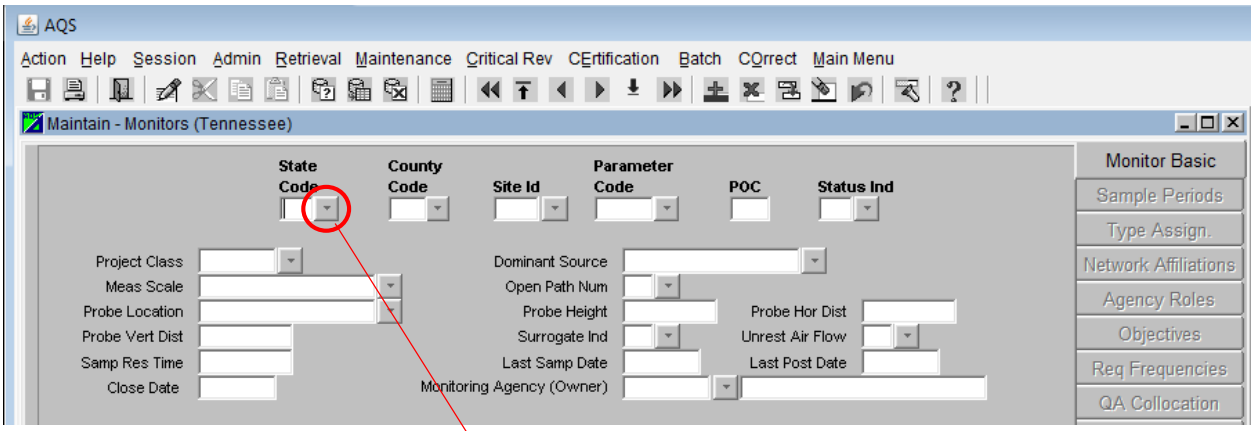
Status Bar



The first line of the status bar is a message area, and the second line shows the AQS query status. On forms that allow data to be entered or queried, the status bar shows the query status of AQS.

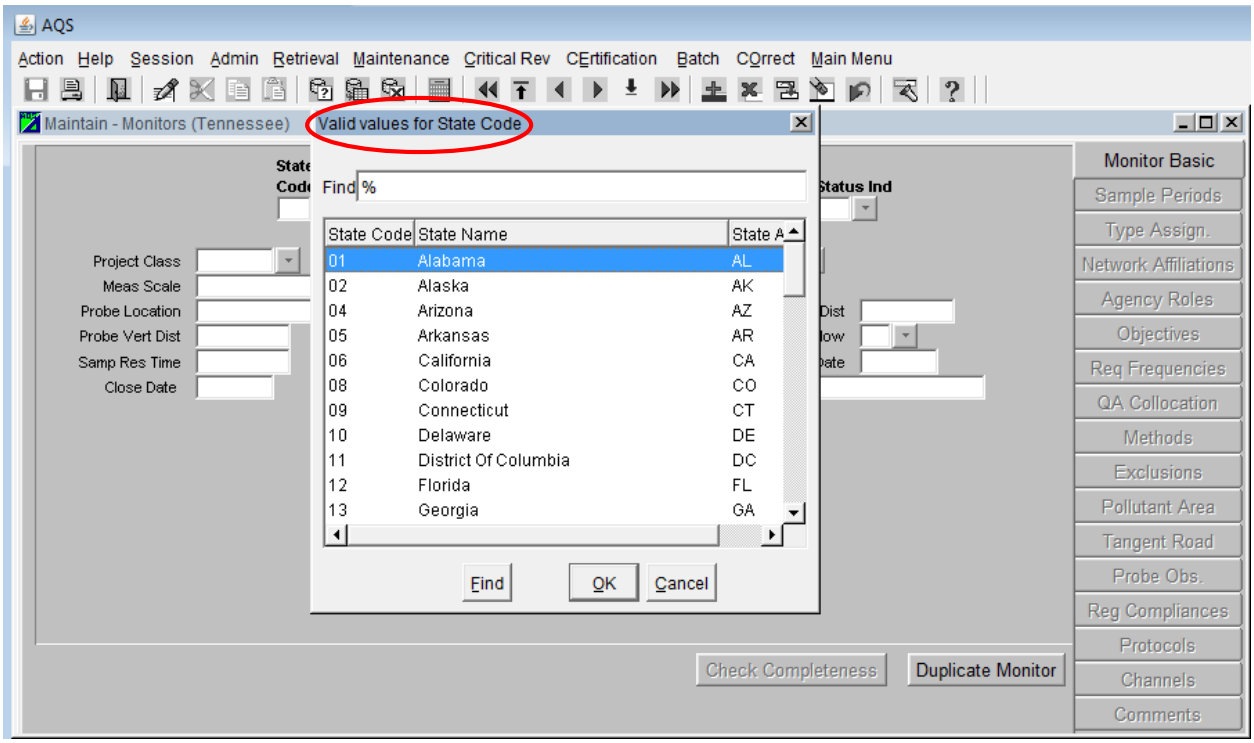
Lists of Values (LOV)

Whenever the user is required to populate data in AQS and the field contents must be one of a specific list of values, AQS presents an LOV (List of Values) icon. The LOV icon is a grey square with a downward pointing triangle in it.

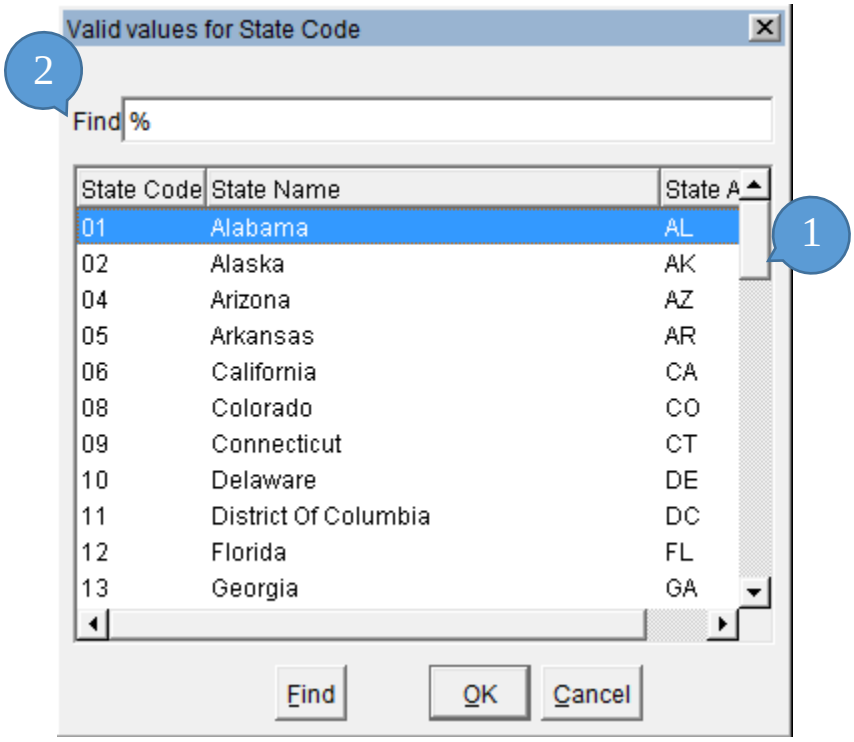


LOV (List of Values) Icon

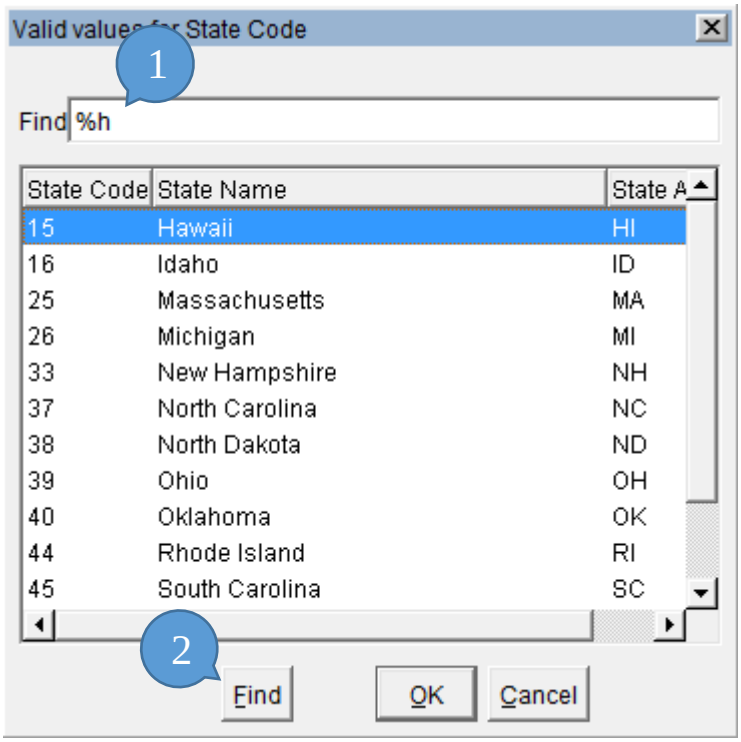
When the LOV icon is clicked the list of valid values is presented. State Code LOV Icon was selected opening up the Valid Values pop-up window.



The Valid Values pop-up window allows the user to manually scroll (1) through the list or use the Find function (2) to narrow down the selection.



The Find function in AQS comes with Wildcard capability. When a Valid Values pop-up window opens, the Find field will be auto populated with the Wildcard Character. In AQS this is represented by a “%” (percent sign). The Wildcard Character is used to represent one or more characters when searching Valid Values.



In the example above “h” was typed into the Find field next to “%” (Wildcard Character) (1). Then the Find button was clicked (2). This brought up only those states that contain an “h” in their name.

Note] the search function executes best with the wildcard, there is no need to remove it from the Find field.

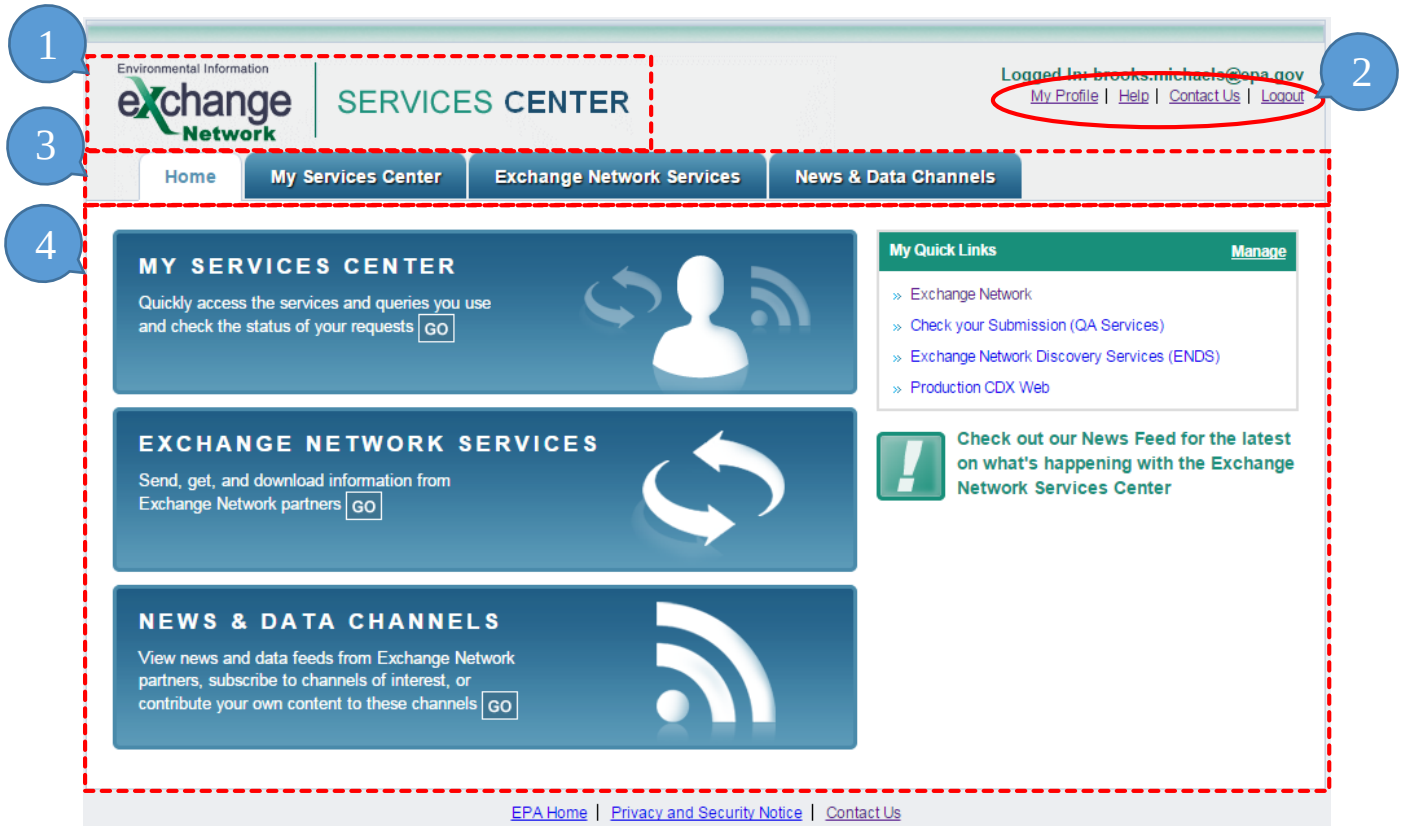
Exchange Network Service Center (ENSC) at a Glance

All files must be submitted to AQS through the National Environmental Information Exchange Network (the "Exchange Network"). Typically, they are submitted through a common interface, the Exchange Network Service Center (ENSC).

Note] the ENSC is provided by the Exchange Network Governing Board to allow files to be submitted to EPA national regulatory programs. Because it is not part of AQS it has a different look and feel that is described below.

Screen Layout

The first step in any interactive batch data submission to AQS takes place at the ENSC.



1. ENSC Title Bar
2. Quick Access Links
3. Tabs
4. Interactive Window

Note] details about how to use the ENSC are in the "Batch" section.

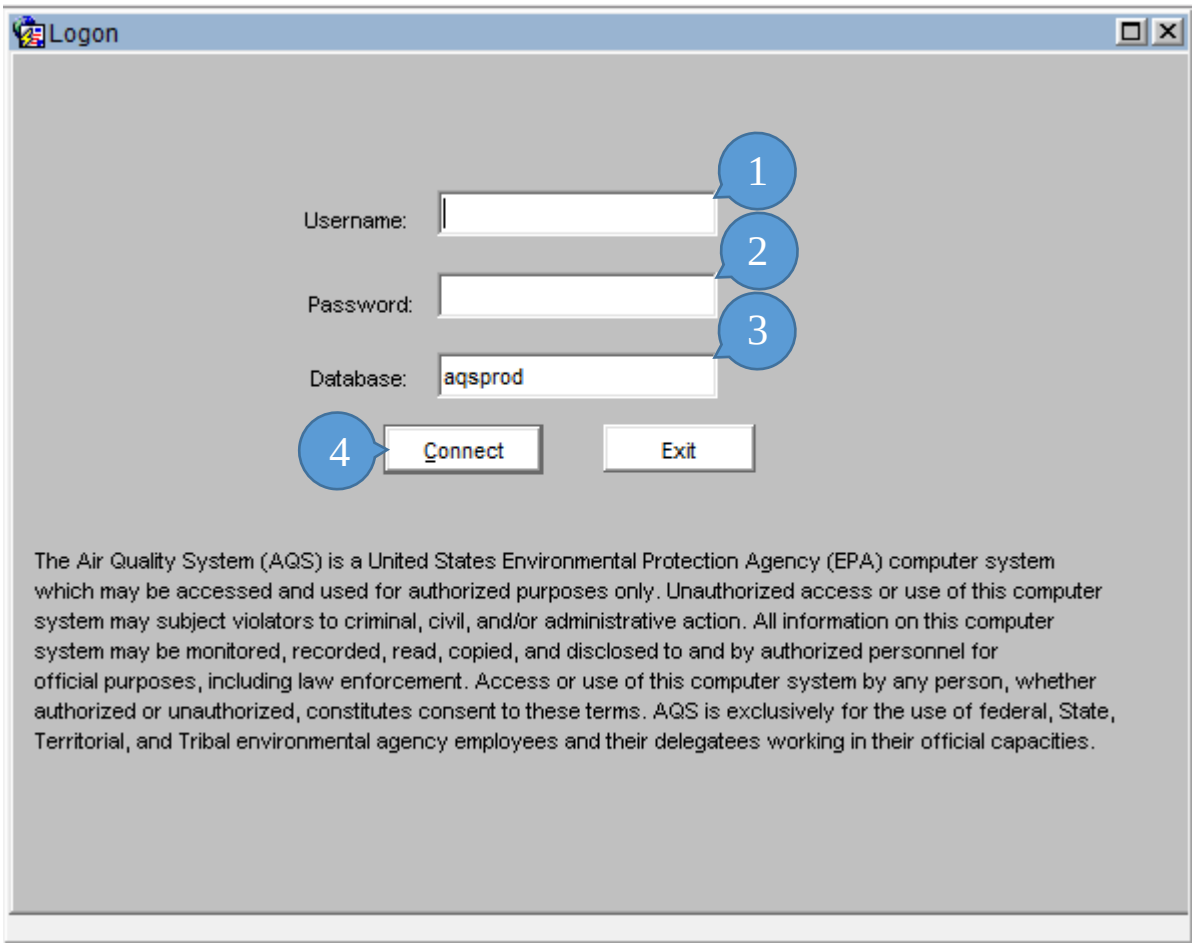
Logging On

The AQS application can be accessed through the application website https://aqs.epa.gov/aqs

Note] the user may be prompted with warning messages when attempting to run AQS.

- If prompted to trust or install a certificate the user should click YES.
- If prompted to block potentially unsafe components the user should click NO.

Logon Screen



Note] the first time AQS runs, the application may take several minutes to load.

The user will enter the User ID into the Username Field (1) and enter the user's password into the Password Field (2). The Database Field (3) is auto populated with the database that the user will connect to; normally this will not change.
Once both the User ID and Password have been entered, the user will press the Enter key or click the Connect Button (4).

Session Screen

After successful logon the user will be taken to the Session Screen where the user will have the option to continue as Read Only User or Screening Group Access. A screening Group roughly

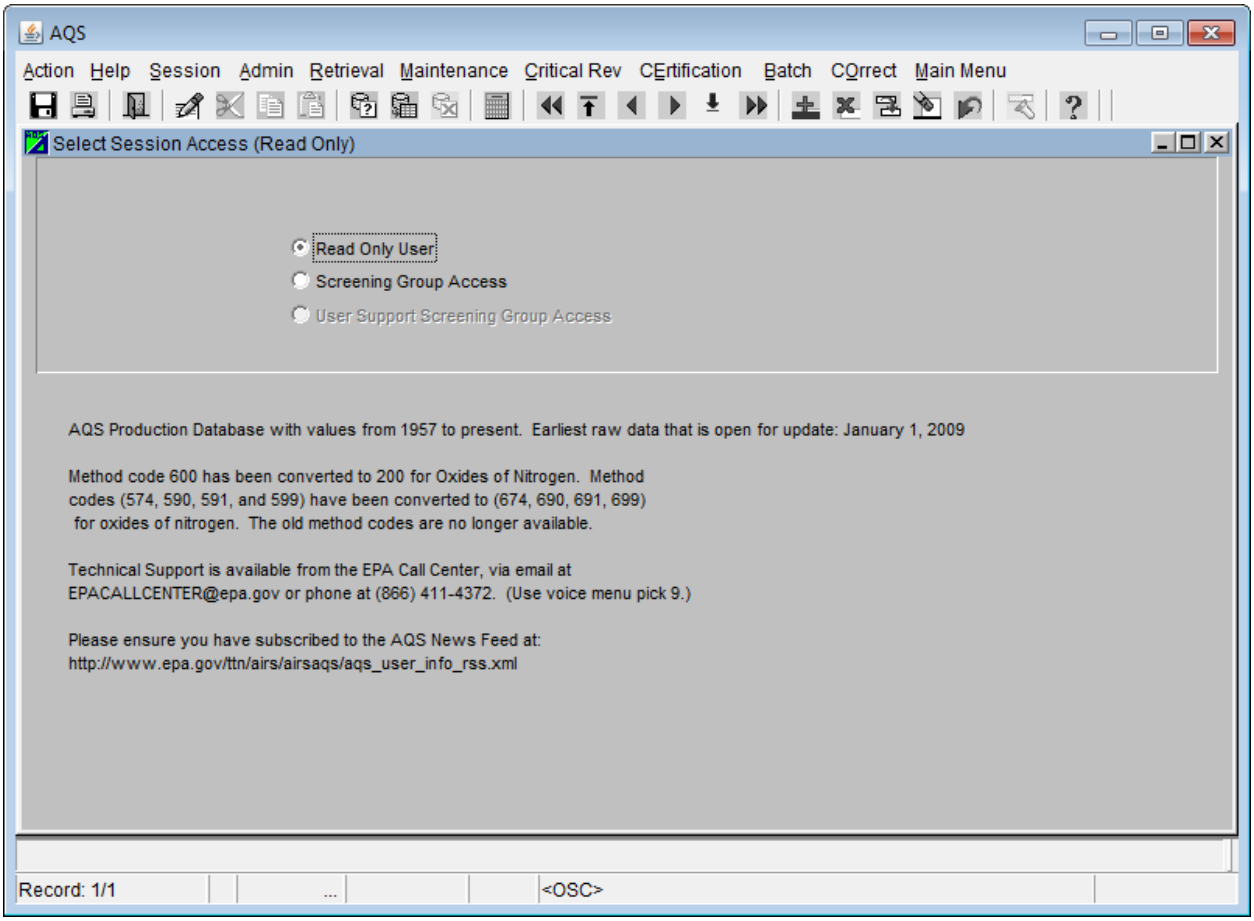
corresponds to an agency or similar organization. Users may be assigned to more than one screening group.

Read Only User:

- This allows access to all of the data in production status in the AQS database. It does NOT allow the user to view any data that is still being processed (i.e., “pre-production” data) or update any data.

Screening Group Access:

- Allows users of the selected screening group to view both production and pre-production data for monitors owned by that screening group. Each monitor and all data for that monitor is owned by only one screening group. Only users with update authority may insert, update, or delete data for the screening group. While using this mode, the user cannot view data owned by other screening groups.

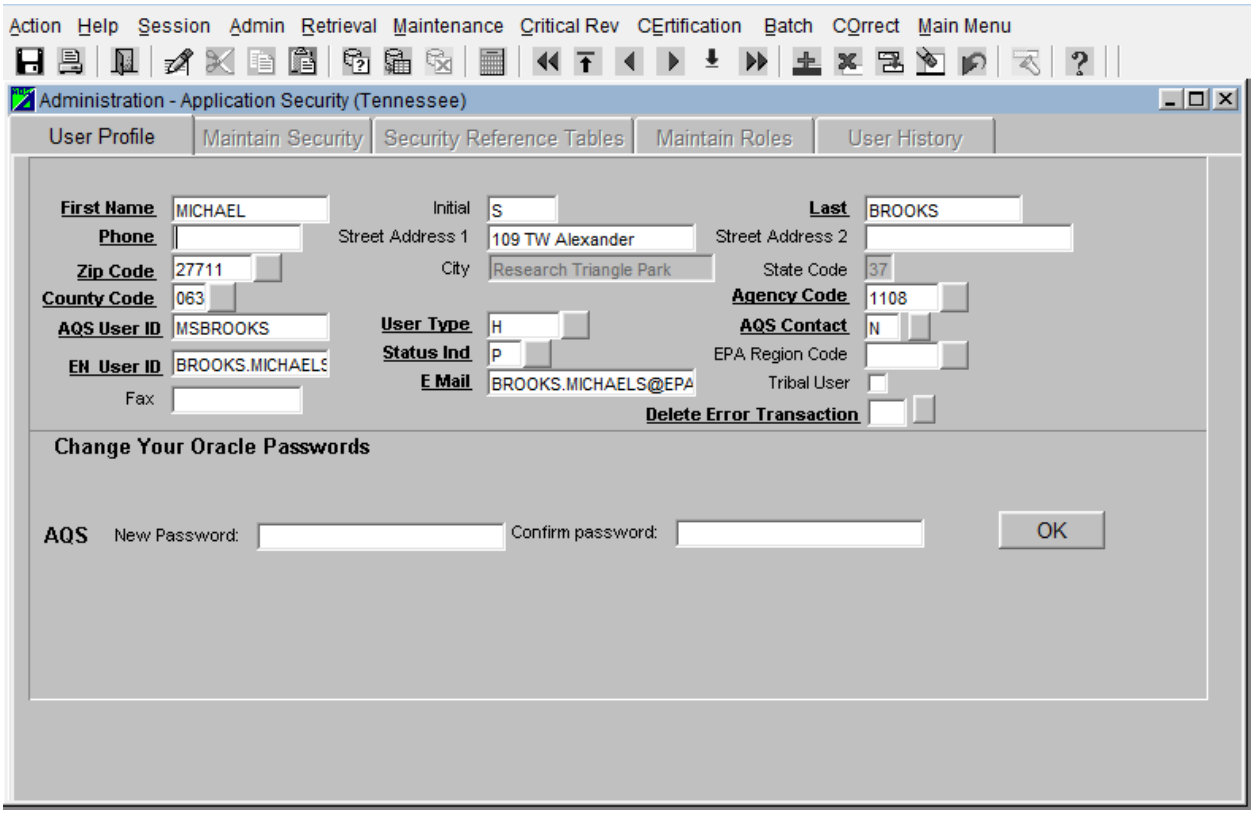


User Profile

All AQS users have a user profile that was created by an AQS administrator. The user should periodically review this information to ensure it is up-to-date.

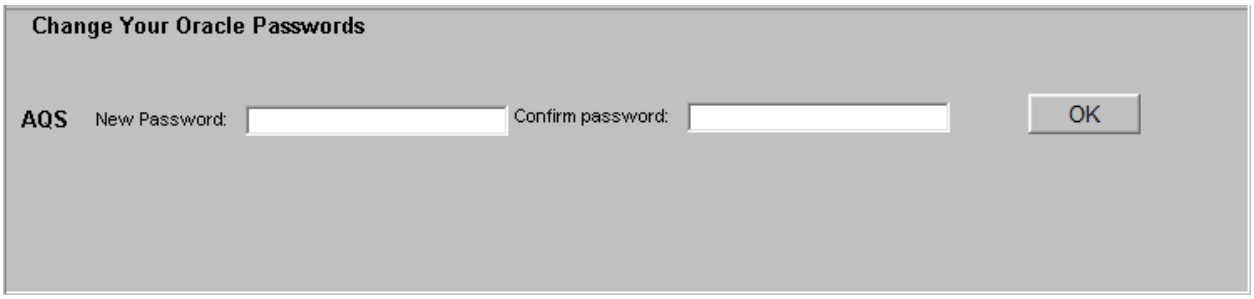
From the Menu Bar the user should click Admin. This will open a Dropdown Menu, at this point the user should click Security. This will open the User Profile Form in the Form Area. The user should verify that their user information is correct.

Note] required fields are indicated by the bolding of the field name throughout AQS.



Password

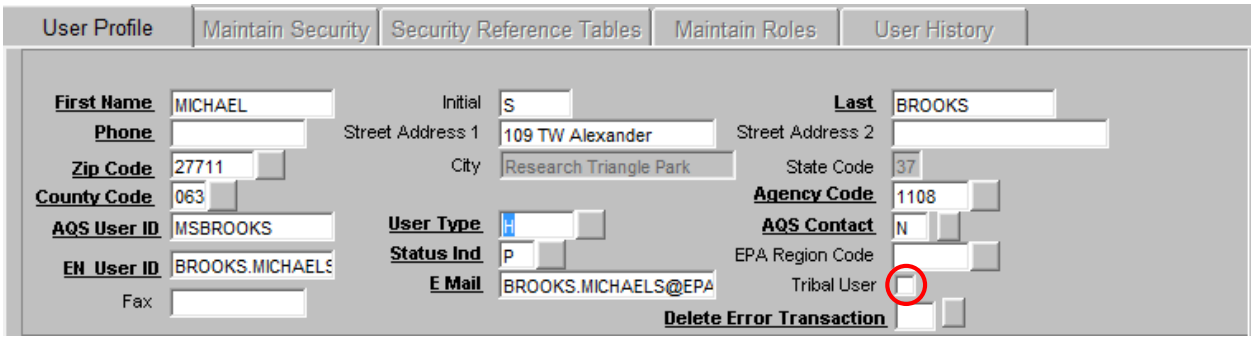
At the bottom section of the User Profile Form there is a change password area. To change the password the user will type the new desired password into the New Password field and then retype it in the Confirm password field. Clicking the OK button will implement the change.



Note] passwords must be at least 8 characters, contain one upper case character, contain one number, contain no special characters, not be a dictionary word, and cannot start with a number. For security reasons passwords must be changed at least every 90 days. It is important that AQS users maintain their passwords in an active status. Inactive passwords will be locked if they are not used within 30 days.

Tribal User

If the user prefers to have the geographic portion of the site ID in AQS presented in terms of Tribal ID rather than Federal Information Processing Standard (FIPS) State - FIPS County ID, the user can set that preference in the User Profile Form.



Select the checkbox labeled Tribal User.

After making the Tribal User selection the user must click the Save button or press F10 on their keyboard to save the selection.

Tribal users are not required to do this, however any user may opt to be a tribal user. This option can be deselected at any time.

Being a Tribal user will change the format of Site IDs on all AQS forms and reports. Instead of the default geographic format of:

```
State FIPS Code - County FIPS Code - Site Number
```

Sites will be displayed in the following format:

```
TT - Tribal Code - Site Number
```

The "TT" is an indicator that the next field is a tribal code and not a county code. The Tribal Code is the Bureau of Indian Affairs (BIA) Tribal code. AQS is not allowed to establish non-BIA codes for tribes.

Batch Submission of Data

Batch Data Submission Overview

Batch submission is loading a batch of data records all at the same time.

The advantages of batch loading data are:

- It allows for mass entry of data
- Processing of valid data happens without human interaction
- The system will notifies the user when the process is complete
- Provides the user with results detailing the outcome

There are a number of steps used to submit data from a text file into the AQS database, those steps depend on the type of data involved. The big picture process involves:

- Transfer - move a data file to the EPA using the Exchange Network (node or ENSC)
- Load - Run a batch process to Load this data into the AQS database
- Post - For raw data only, after reviewing the results of load, flag data as production-ready (available to all)

- The process described here is for completing a batch submission using AQS interactively. An alternative is to use an organization's node on the Exchange Network. For instructions on how to do that, see the AQS Flow Configuration Document on the Exchange Network website.

Formats

There are two data formats that may be submitted:

- AQS transactions - the AQS pipe delimited transaction format introduced in 2001
- XML - structured text data with <tags>

The format used will depend on what data acquisition system and/or analytical labs is available to the user. The vast majority of users take advantage of the AQS transaction format.

Data Compatible with Batch

Not all data in AQS can be loaded via the batch process. Here is a list of the types of data that can be loaded via batch:

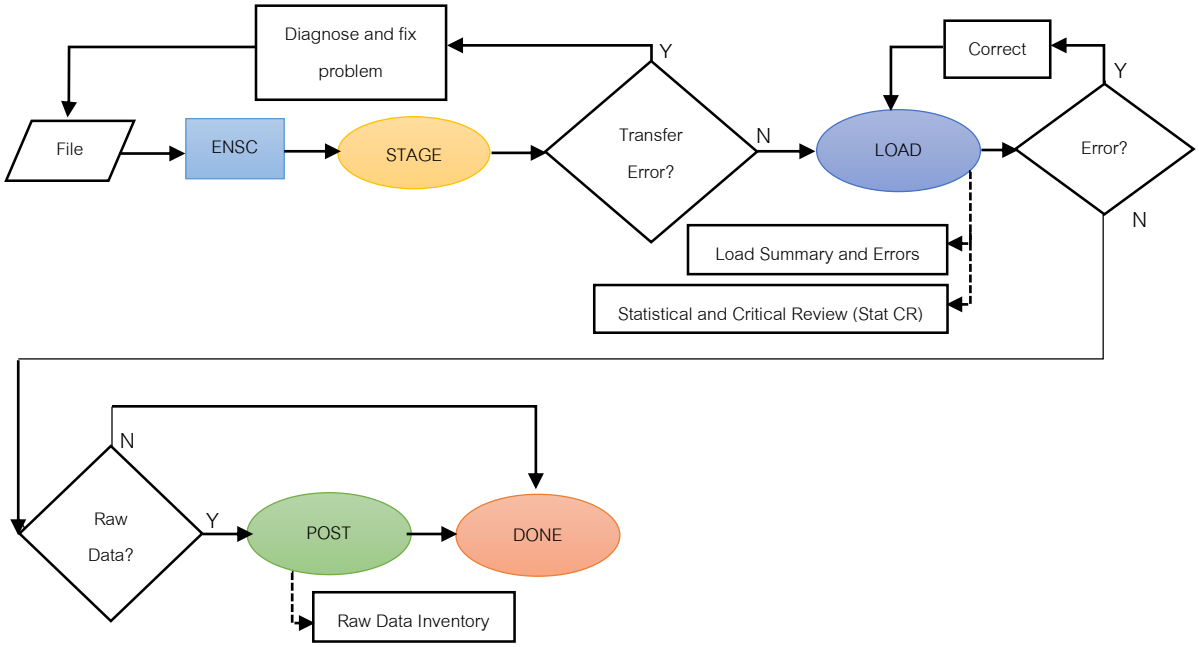
- Site data
- Monitor data
- Raw (sample) data
- Quality Assurance data

Here are the types of data that cannot be loaded via batch:

- Comments (describing sites, monitors, audits, events, etc.)
- Exceptional event definitions, data associations, and concurrence (for EPA staff only)

Batch Data Submissions Flowchart

The following explains the data flow to AQS.



Step 1 (File):

Create file of ambient air data. Valid options are either text files (.txt) using the familiar delimited "Data Input Formats" or XML files (.xml) using the AQS Schema.

Step 2 (ENSC):

Transfer the file to AQS using the Exchange Network Services Center (ENSC).
There are two process control options from the ENSC:

- Option 1 – Manually process: logon to AQS, choose the Screening Group, and proceed to the Batch screen.
- Option 2 – Automatically process: use the ENSC exclusively, bypass AQS and process all data via the ENSC.

Step 3 (STAGE):

Processes the file into AQS.

Step 4 (LOAD):

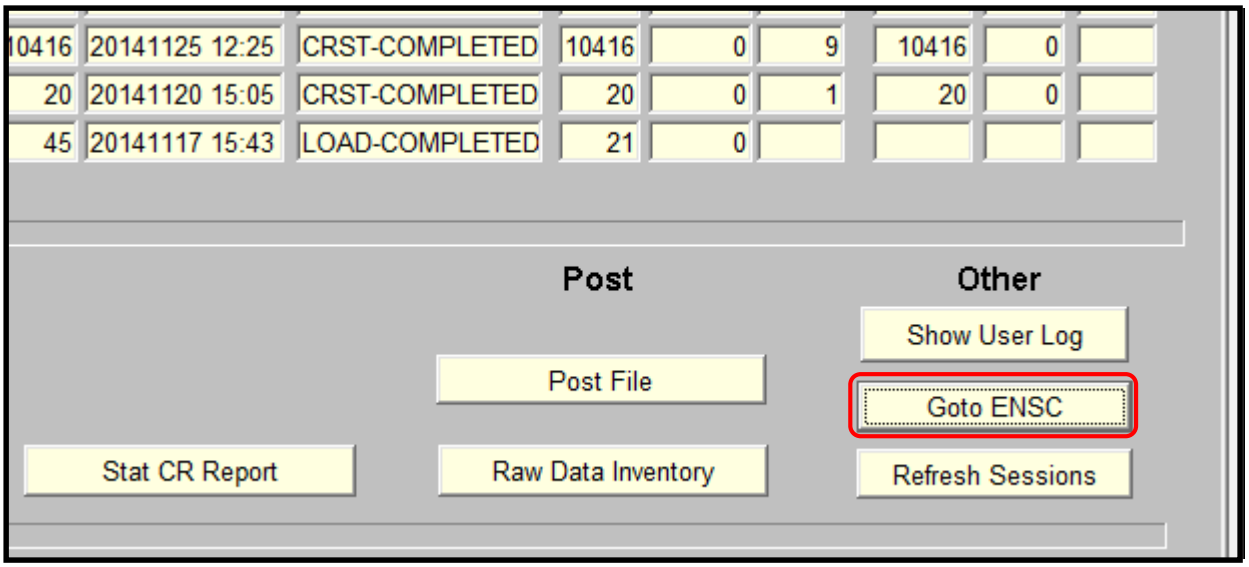
For anything other than Raw Data (i.e. sample measurements) if there were no errors in the file the processing is complete. For Raw Data, the LOAD step also performs STAT/CR (Statistical and Critical Review).

Step 5 (POST):

Moves data from where it can only be seen by members of the relative screening group to where it can be seen by any AQS user (and any EPA web application, and thus the public). It also updates all of the summary values (e.g., NAAQS durations, Daily, Annual, and Design Value if applicable) that the raw data contributes to. This also means that it will be used by EPA in any calculations (completeness, compliance, etc.).

Using the ENSC

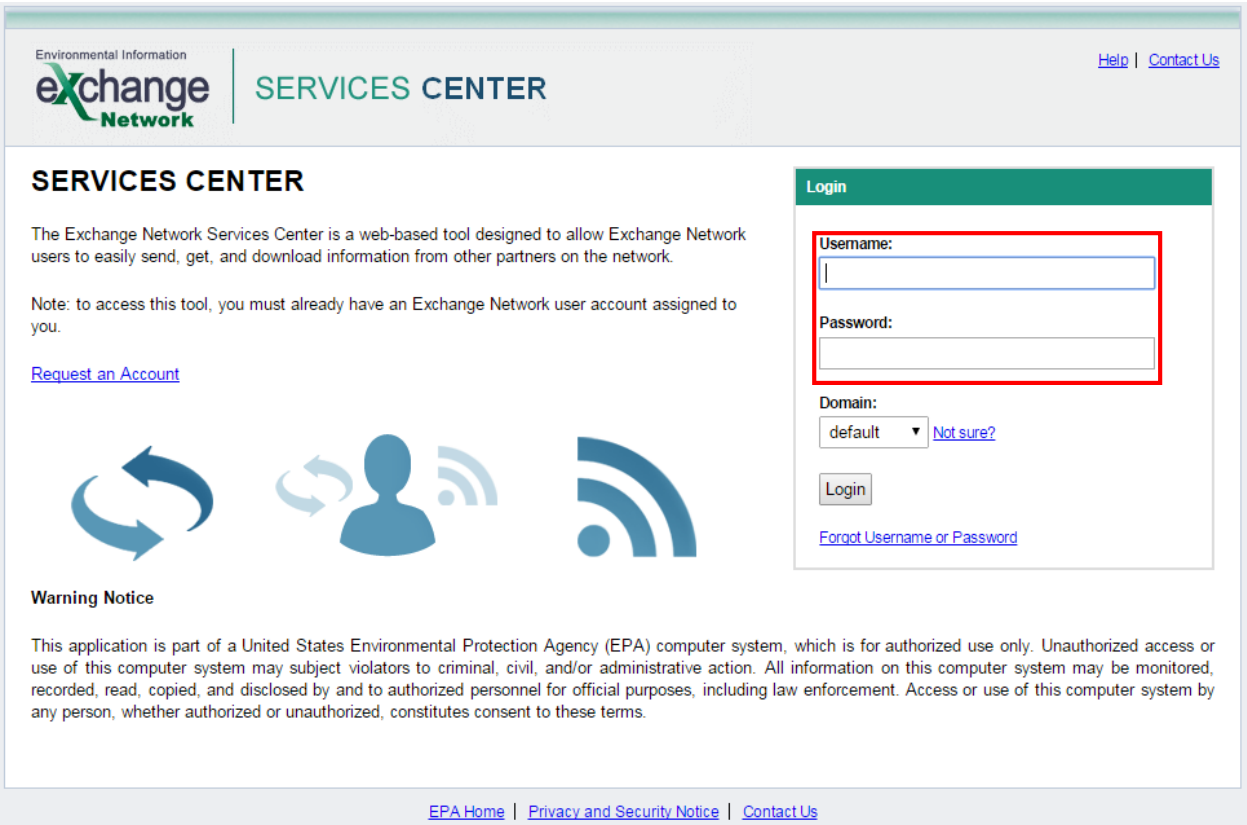
The ENSC is at https://enservices.epa.gov/login.aspx. There is also a button on the AQS Batch Form Area that will open this web page.



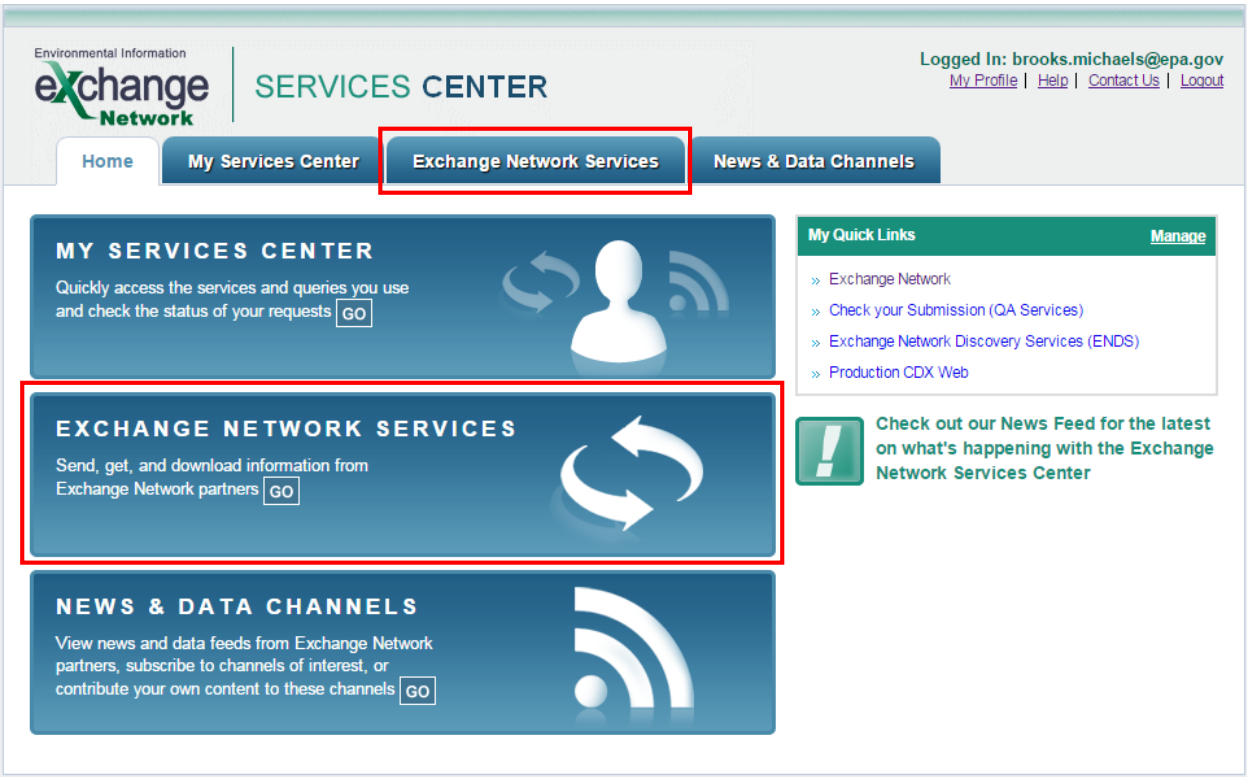
A file can be submitted through an organization's node to AQS via the Exchange Network with processing instructions (The user's IT department will have to set this up) or a file can be submitted manually.

For manually submitting a file the following instructions are provided.

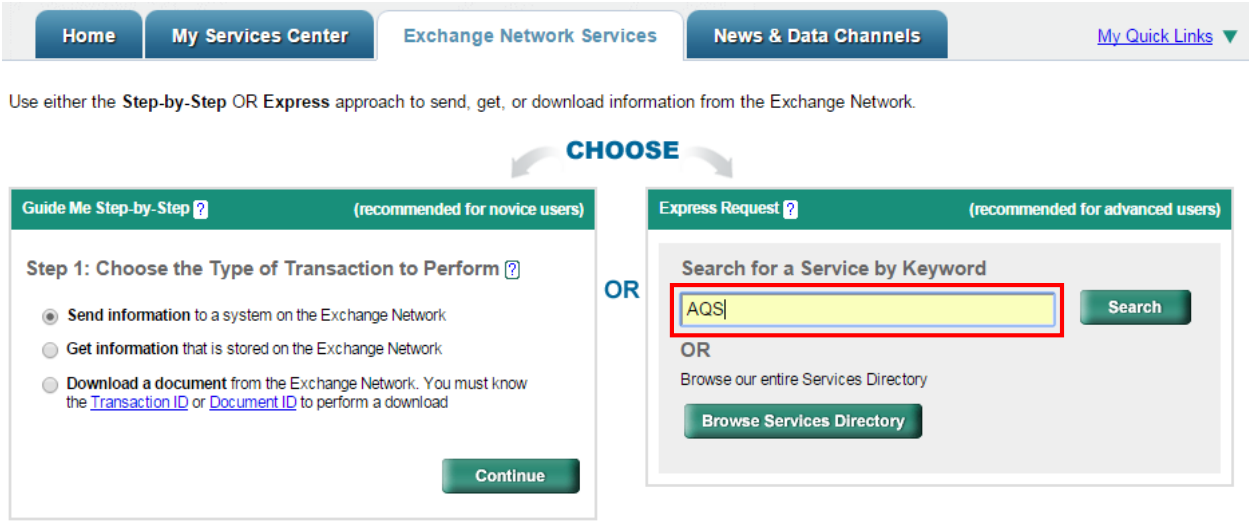
The user will login to ENSC with the production Exchange Network account and password.



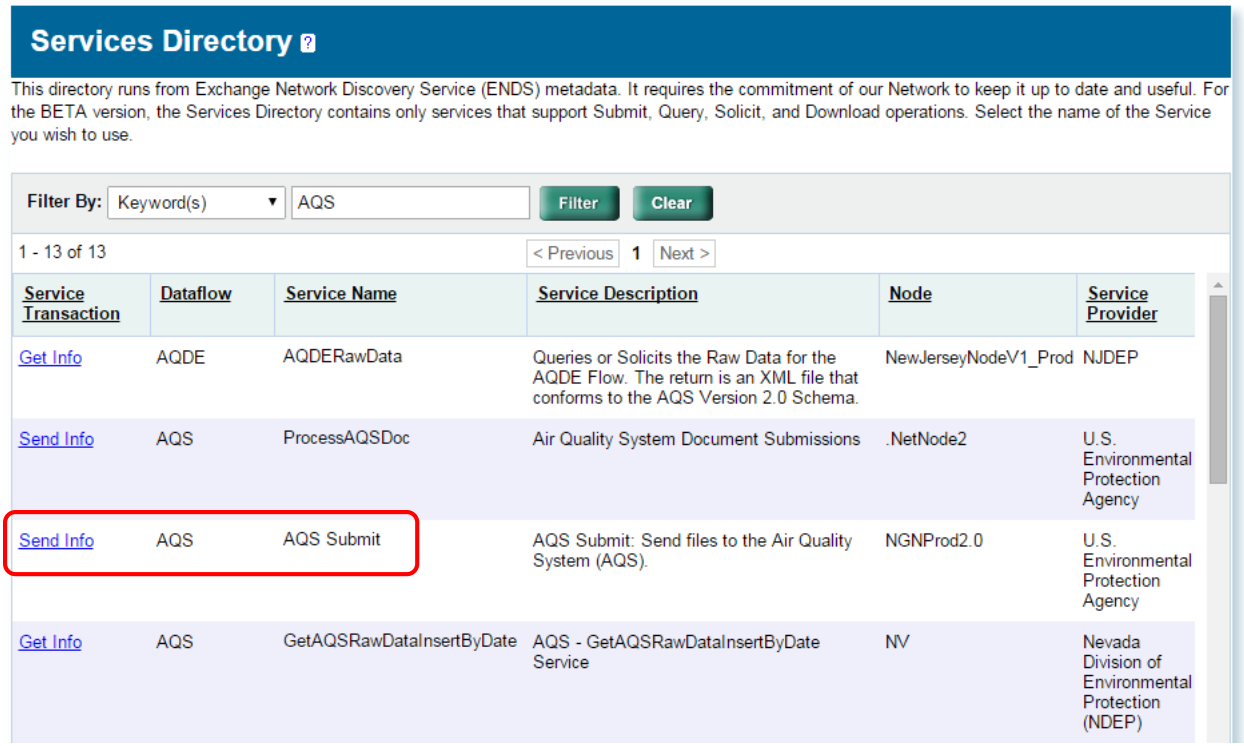
The first time a user logs into the ENSC they will need to add the AQS connection service to their list of services. In order to add the AQS connection the user will select the Exchange Network Services tab or click the 'Go' button on the Interactive Window area labeled EXCHANGE NETWORK SERVICES.



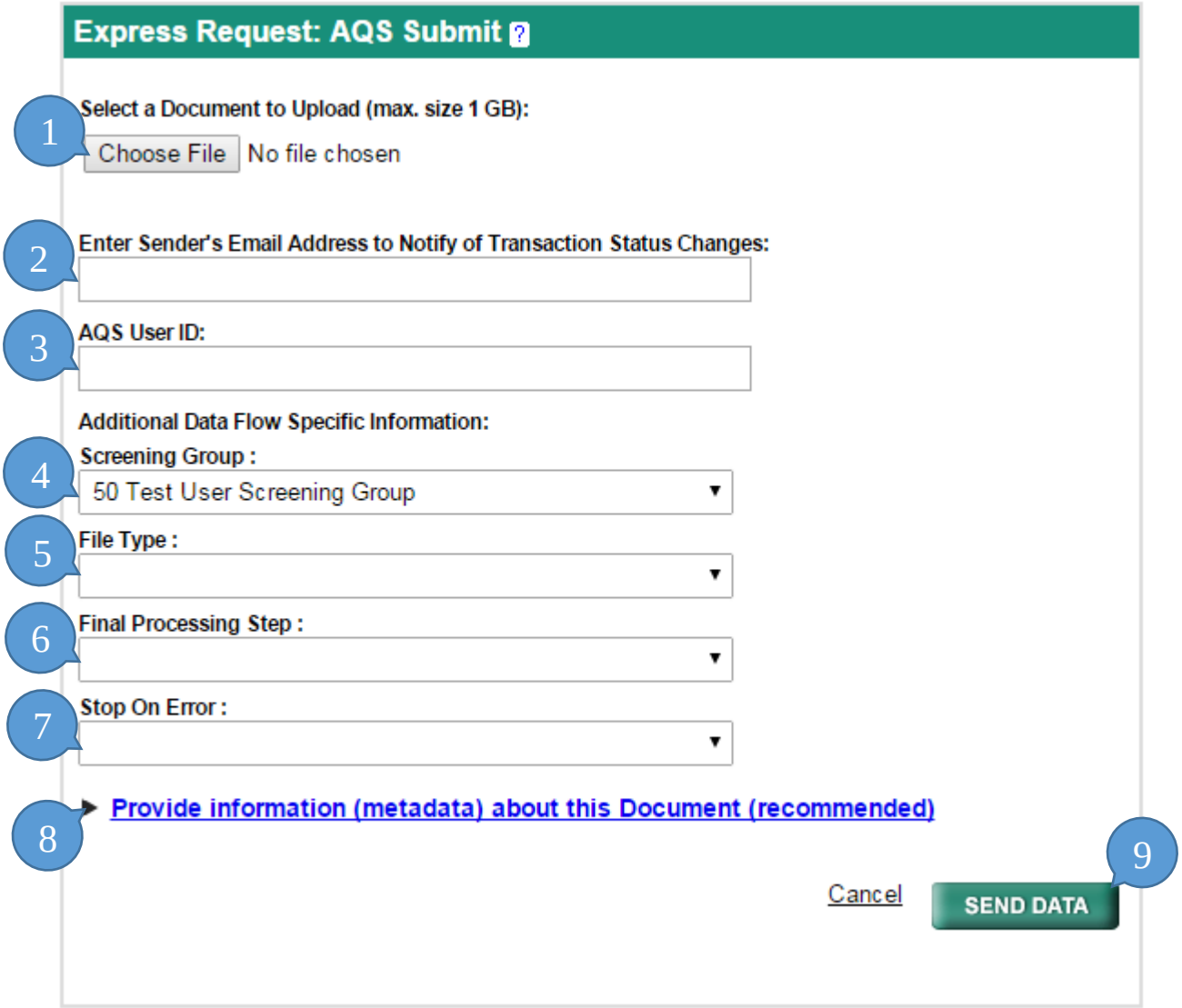
At this point the user will type AQS into the search field of the Express Request box.



The Service Directory window will open displaying a list of choices. The user will click the Send Info link for the AQS Submit service.



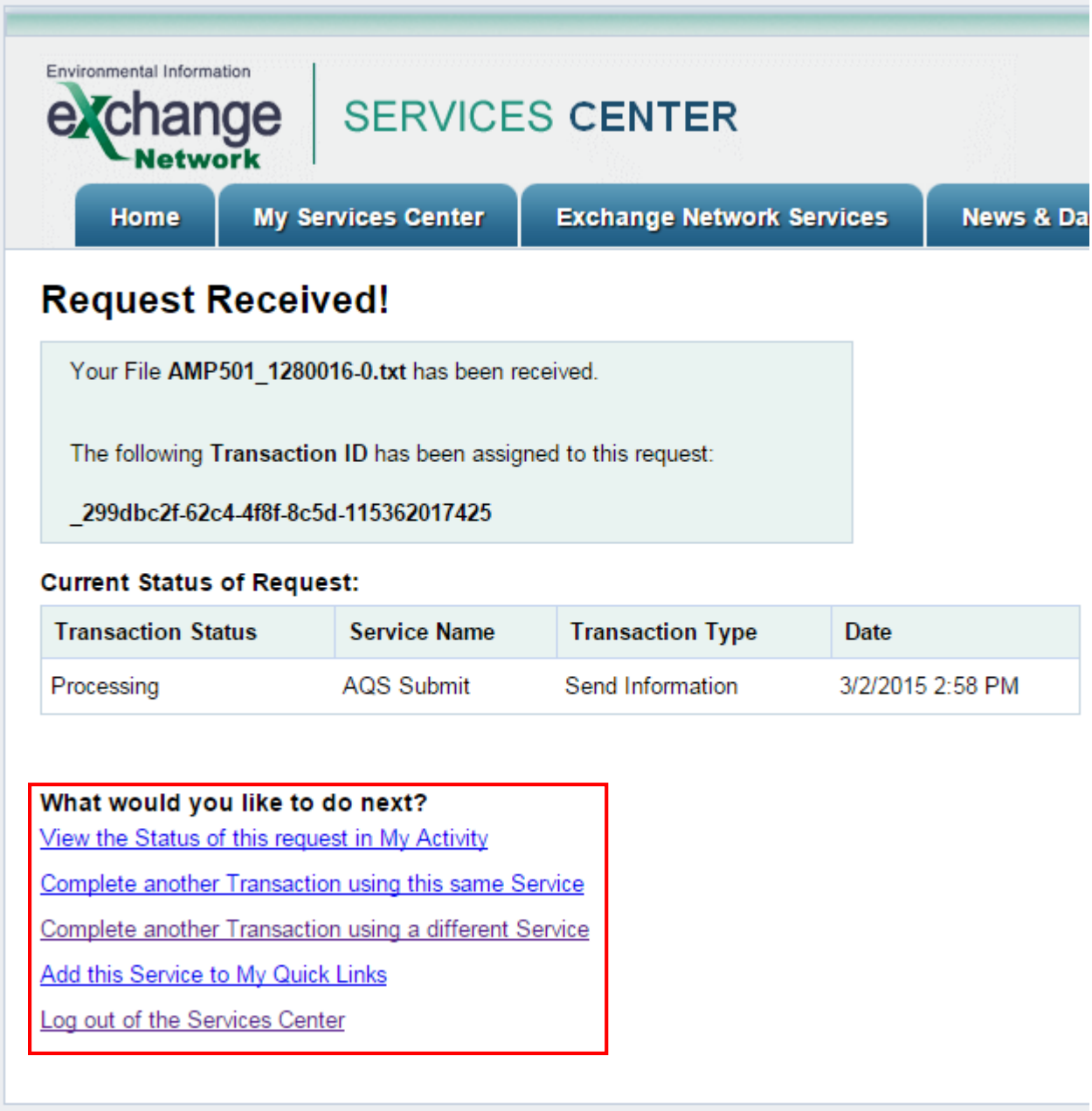
The user will then complete the Express Request form.



1. The Choose File button allows the user to select a document from their local computer or network.
2. File transfer information will be sent to the email address the user inputs into this field. The user can input one or multiple email addresses (this field is optional). Multiple email addresses must be seperated by commas.
3. The user must input the AQS User ID assigned.
4. The user will select, from a drop down menu, the screening group the user is submitting data for.
5. The user will select the appropriate file type (format) from the drop down menu.
    a. AQS text transactions (MA, RD, etc.) are flat files.

6. The Final Processing step is where the user provides AQS with instructions on how far to process the file before stopping and waiting for the user to log on and review/complete processing.
    a. Stage copies the data from the submitted file into the AQS database, but does no processing of the contents of the file. If an error is reported during the stage process, the problem must be fixed in the user's data file and resubmitted.
    b. Load moves the submitted data into the AQS database and performs field validation (i.e. is each field on each transaction valid) and relational checks (i.e. is pre-requisite data present). If errors occur during the load process, the user can fix the error in AQS via the Correct Forms or the user can correct the problem in their own database and start the process over.
        i. Some data can complete the load process while other data has errors.
        ii. For Raw Data Only: AQS runs a variety of statistical tests on the data to look for statistical anomalies (outliers). The user will receive warnings (not errors) if the data is flagged by a statistical check.
    c. For Raw Data Only: Post changes the status of the data from where it can only be seen by members of the user's screening group to where it can be seen by any AQS user. Also, all of the relevant summary values will be updated in this step.
        i. The user cannot have an error during the Post process.
        ii. To process the file as far as possible, select Post.
7. The user will select either 'Yes' or 'No' for the Stop on Error processing command.
    a. Yes prompts AQS to examine the results of the stage and load programs (both for errors and warnings) and stop any additional processing of the file if there are any errors or warnings in the data.
    b. No prompts AQS to process all the data it can through the final processing step you selected.
8. The user can optionally provide additional data by expanding the Provide information (metadata) about this Document but it is not necessary. AQS will not store this additional metadata.
9. After the user has entered values for all of these fields the user should click the Send button to begin the AQS submit process.

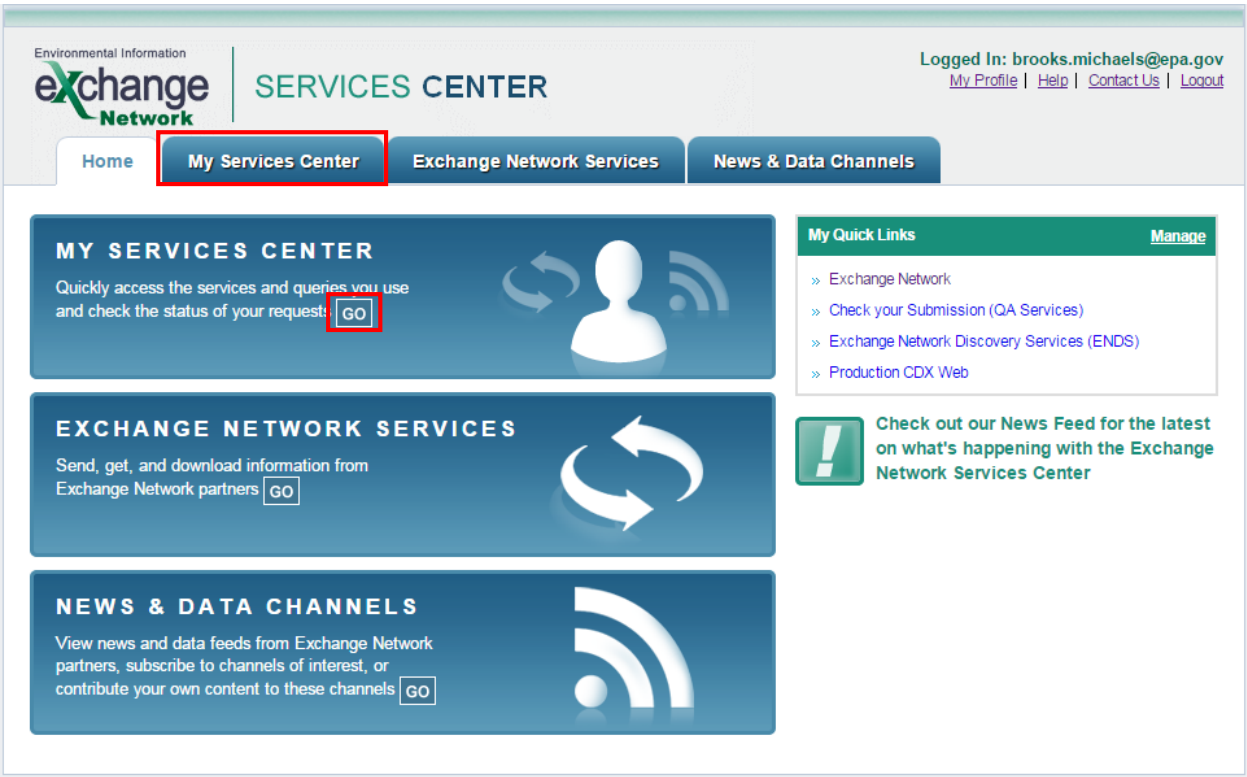
After the user clicks the Send button the 'Request Received!' screen will appear.



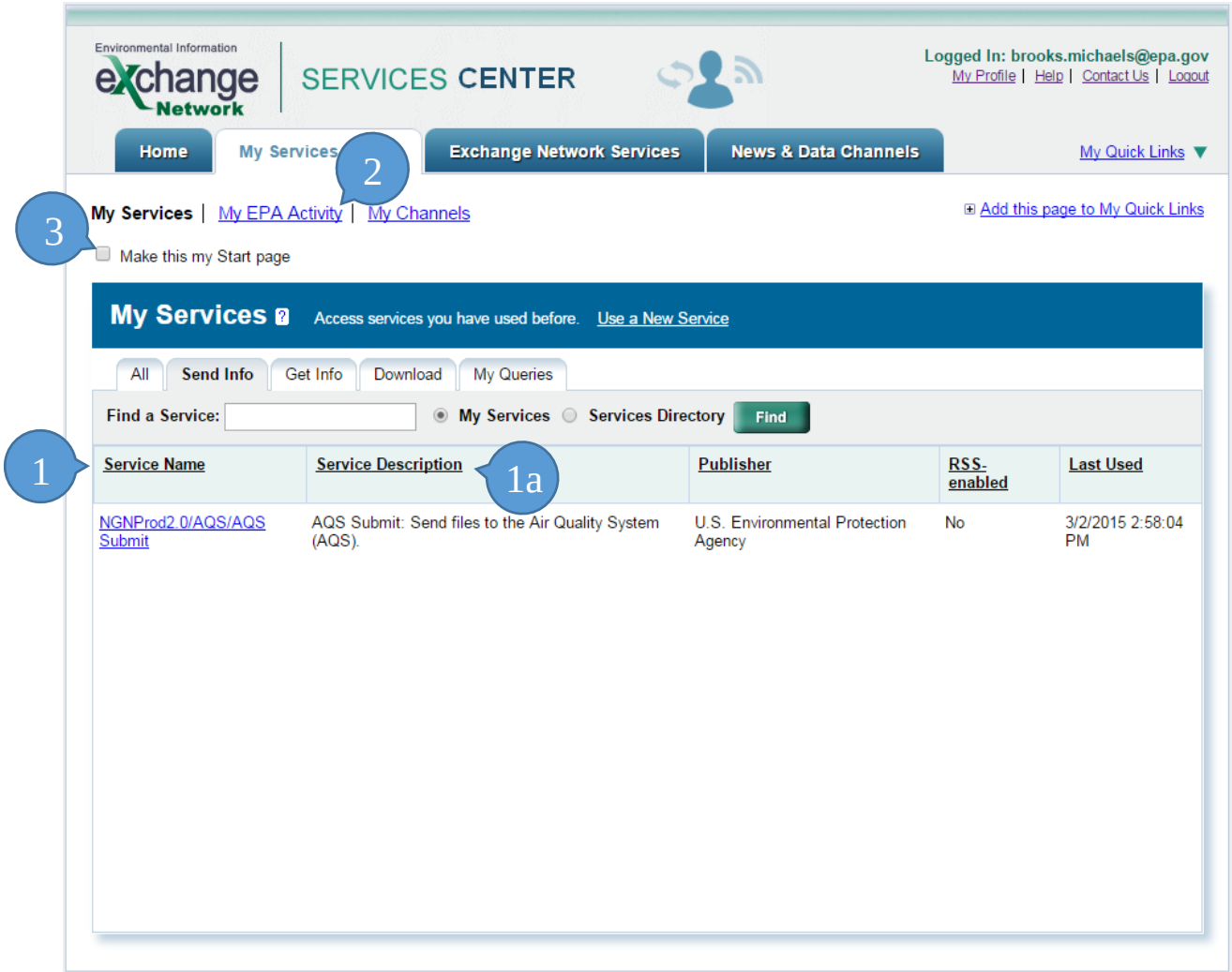
The screen will display the status and a transaction ID. From here the user can select a link under the 'What would you like to do next?' header. An email, from cdx@epa.gov, containing the file transfer information will be sent to the email address or addresses the user input into the 'Enter Sender's Email Address to Notify of Transaction Status Changes:' field. AQS will also send the user (to the address AQS has on record) an email summarizing all processing with links to reports.

ENSC Subsequent Uses

After the initial submittal all subsequent submittals can be processed through the 'My Service Center' interactive window. After logging into ENSC the user will select the My Service Center tab or click the 'Go' button on the Interactive Window area labeled MY SERVICE CENTER.



This will open the My Service Center interactive window.



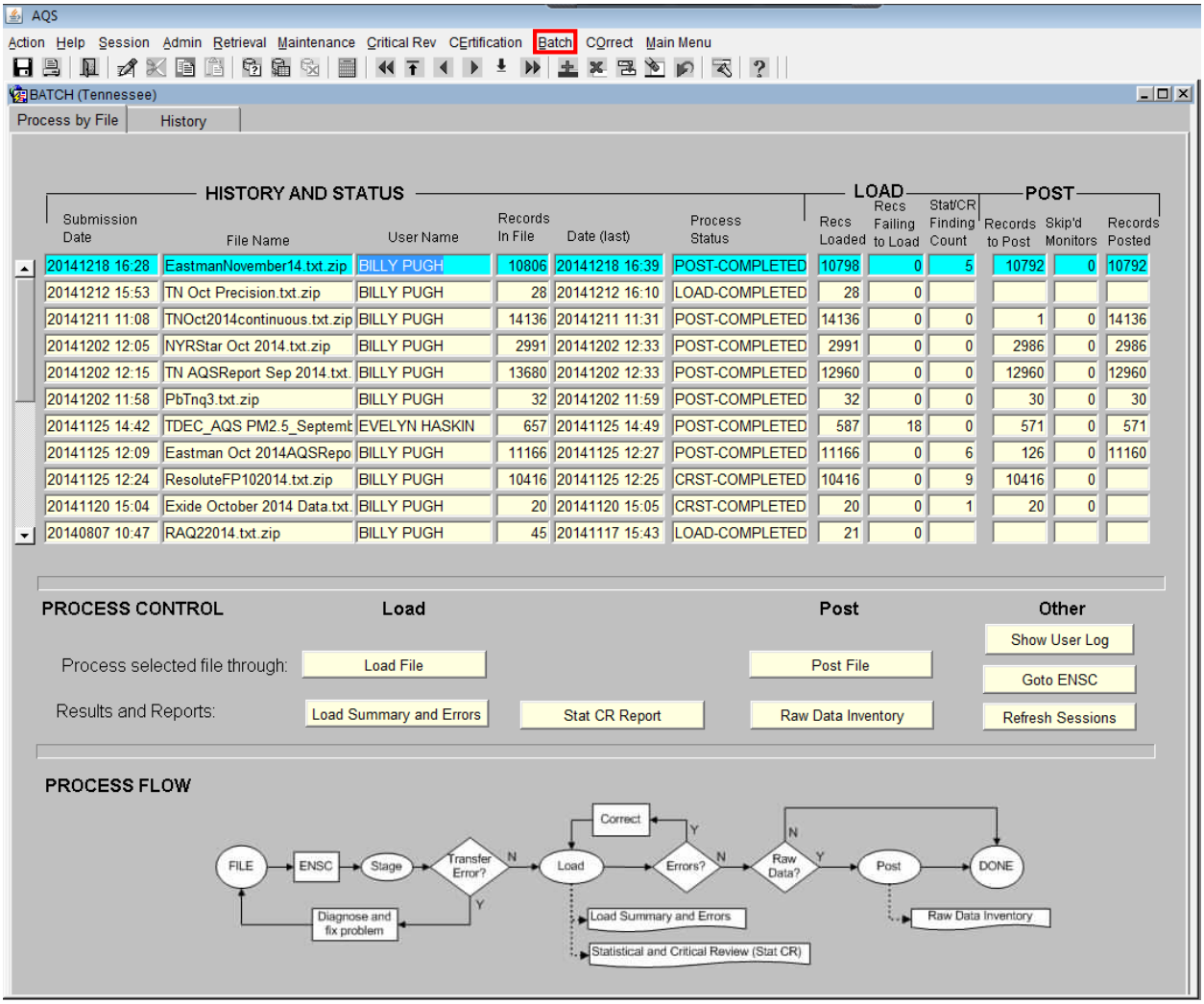
1. To send data to AQS the user will select the 'Service Name' ending in AQS Submit.
    a. The user should verify that the 'Service Description' shows AQS Submit: Send files to the Air Quality System (AQS).
2. The user can see previous submissions by selecting the 'My EPA Activity' link.
3. The user has the option to make this page the Start page, reducing the necessary steps for submitting data.

Loading Files Using AQS

This section covers the file processing functions available within AQS. This section assumes that a file that has been through the stage process, but has gone no further in AQS. (This would be the case if the Final Processing Step from the ENSC was Stage.)

Batch Form Overview

After logging in to AQS the user will select Batch from the Menu Bar.



Process by File Tab

The "Process by File" tab shows a summary of all of the processing that has been performed by AQS for a submitted file.

The AQS Batch "Process by File" tab has 5 main areas.

1. File processing History and Status area.

HISTORY AND STATUS

Submission Date	File Name	User Name	Records In File	Date (last)	Process Status
20141218 16:28	EastmanNovember14.txt.zip	BILLY PUGH	10806	20141218 16:39	POST-COMPLETED
20141212 15:53	TN Oct Precision.txt.zip	BILLY PUGH	28	20141212 16:10	LOAD-COMPLETED
20141211 11:08	TNOct2014continuous.txt.zip	BILLY PUGH	14136	20141211 11:31	POST-COMPLETED
20141202 12:05	NYRStar Oct 2014.txt.zip	BILLY PUGH	2991	20141202 12:33	POST-COMPLETED
20141202 12:15	TN AQSReport Sep 2014.txt.	BILLY PUGH	13680	20141202 12:33	POST-COMPLETED
20141202 11:58	PbTnq3.txt.zip	BILLY PUGH	32	20141202 11:59	POST-COMPLETED
20141125 14:42	TDEC_AQS PM2.5_Septemb	EVELYN HASKIN	657	20141125 14:49	POST-COMPLETED
20141125 12:09	Eastman Oct 2014AQSRepo	BILLY PUGH	11166	20141125 12:27	POST-COMPLETED
20141125 12:24	ResoluteFP102014.txt.zip	BILLY PUGH	10416	20141125 12:25	CRST-COMPLETED
20141120 15:04	Exide October 2014 Data.txt.	BILLY PUGH	20	20141120 15:05	CRST-COMPLETED
20140807 10:47	RAQ22014.txt.zip	BILLY PUGH	45	20141117 15:43	LOAD-COMPLETED

The History and Status area shows a list of the files that have been submitted and the most recent action performed. There is one row per file.

There are six columns in this area, and they are:

- Submission Date: This indicates the original date and time the file was staged to AQS (the format: YYYYMMDD HH:mm where HH is on the 24 hour clock and Eastern Time).
- File Name: The name of the file.
- User name: The name of the last user in the agency who initiated a processing step for this file.
- Records in file: The total number of transactions in the file (records if it is a flat file, the equivalent for XML).
- Date (last): The last time an action was performed on this file.
- Process Status: The most recent process initiated for this file and the status of that process.
    - Process can be:
        - Stage = Converting data from submitted format to AQS database format
        - Load = Loading data into AQS database
        - CRST = Critical Review and Statistical Tests
        - Post = Incorporate data in to summaries and make data public.

- Status can be:
  - Submitted (meaning it is waiting to execute)
  - Active (actively processing)
  - Error (completed with errors)
  - Completed (completed with no errors)

2. Load processing results summary.

LOAD		
Recs Loaded	Recs Failing to Load	Stat/CR Finding Count
10798	0	5
28	0	
14136	0	0
2991	0	0
12960	0	0
32	0	0
587	18	0
11166	0	6
10416	0	9
20	0	1
21	0	

The Load processing results summary. This area provides a summary of what happened to each record (transaction) in the file during all of the load processes.

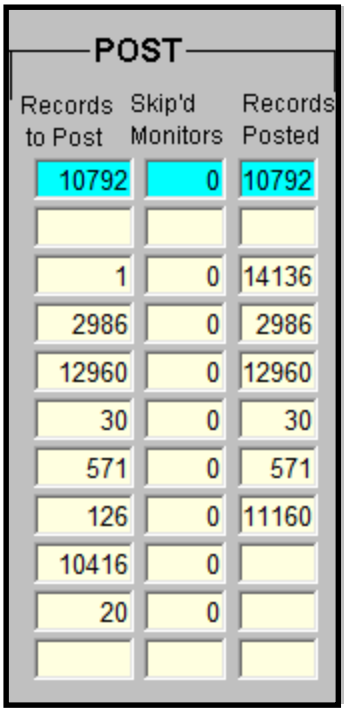
There are three columns in this area, and they are:

- Recs Loaded: The total number of records from this file that have been successfully loaded into AQS. Keep in mind, Load means different things for different types of data. For everything but raw data, it means it is now fully into AQS. Raw data: the data still needs to be posted.

- Recs Failing to Load: The number of records that could not be loaded into AQS due to some kind of error. The "Recs Loaded" plus the value in this column should equal the number of records in the file.

- StatCR Finding Count: The number of records that raised concern during Statistical and Critical Review process (StatCR). The StatCR process is run automatically every time the load process is run with Raw Data. It compares new data to old data and expected ranges, etc. and presents any "findings" of possible outliers or other problematic data. These are not errors, they are oddities in the data flagged for user information.

3. Post processing results summary.



POST

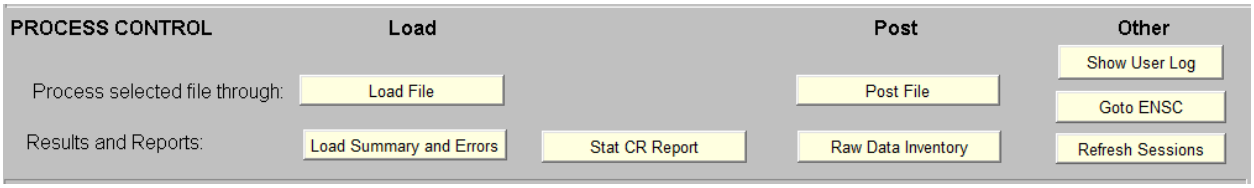
Records to Post	Skip'd Monitors	Records Posted
10792	0	10792
1	0	14136
2986	0	2986
12960	0	12960
30	0	30
571	0	571
126	0	11160
10416	0	
20	0	

The Post processing results summary area provides a summary of the file with respect to the POST processes.

There are three columns in this area, and they are:

- Records to Post: The total number of Raw Data records from this file that need to be posted (the number of successfully loaded raw data records). If this number is more than zero, the Post process needs to be executed to complete the submission of this data to AQS.
- Skip'd Monitors: The number of monitors for which the posting of data was skipped during processing. This should only happen if another user is editing or submitting data for the same monitors.
- Records Posted: The number of records for which post processing completed successfully. When this number matches the "Records to Post" column for the file, processing is complete.

4. Process control - where results can be reviewed and additional processes performed on files.

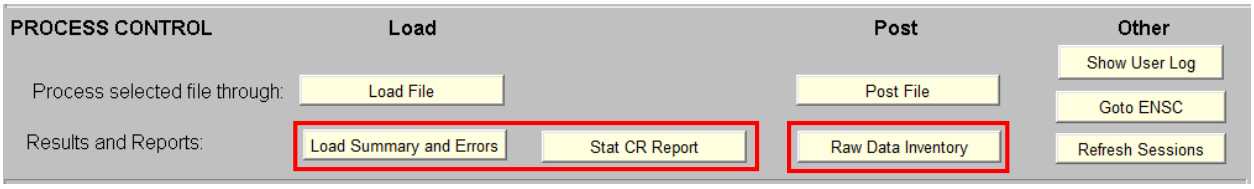


The Process control area allows the user to review results of earlier processed files and perform additional processing. **The process control area only acts on the file (row) that is highlighted on the top part of the form.**

Depending on the status of the file, certain areas will be unavailable (grayed out). The processing of files is controlled on the horizontal row labeled "Process selected file through"

The user can select either load or post. Selecting post will perform load processing on the file if necessary.

The available reports generated by each process are shown below the process. For example, the load process generates two reports, the Load Summary and Errors report and the Stat CR Report. The post process generates only one report, the Raw Data Inventory report.

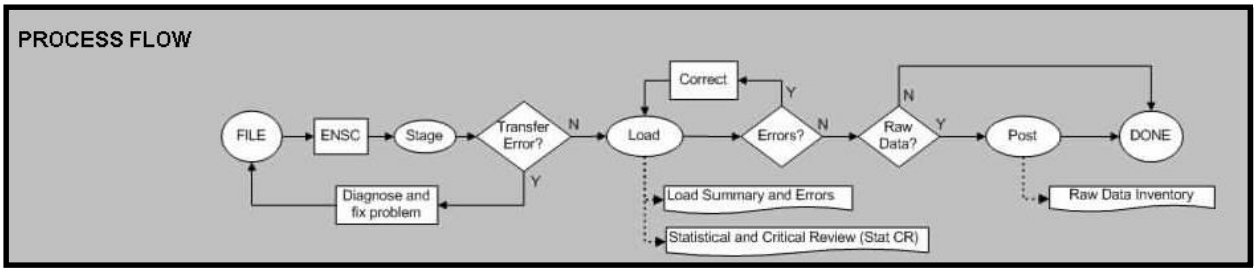


Note] Reports can only be retrieved within two weeks of the Submission Date.

The last group of buttons in the Process Control area are labeled 'Other', they perform the following actions:

- Show User Log: This opens the same file that was emailed to the user (summarizing the most recent processing on the file) in a browser window.
- Goto ENSC: This opens an ENSC (file submission) window in a browser window.
- Refresh Sessions: This updates all of the information on the top part of the screen. If the user is waiting for a job to finish, the user can press this button rather than reloading the entire form to get updated information.

5. Process flow - A reminder of how AQS processes a file.



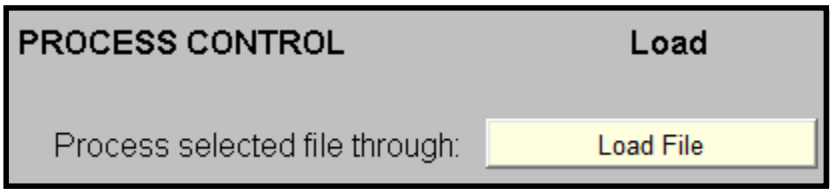
Stage

The first step is to Stage the data file. This means to transfer the file to AQS via the Exchange Network and then to convert the data to the AQS database format.
The following are the most common errors that can occur with Stage:

1. If the file never shows up on the Batch form, then there was a transfer error and AQS never received the file.
    a. To diagnose: Review the status email from the Exchange Network and contact the Exchange Network Node Help Desk. (Email: nodehelpdesk@epacdx.net, Phone: (888) 890-1995).
2. All Stage failures where AQS actually receives the file result in the status, "UPLOAD-FATAL" on the batch form. The email from the Exchange Network will provide a status that can be interpreted as follows:
    a. "E_AccessDenied: Access Denied" This means that the AQS user-id provided on the ENSC submission form is not authorized for the Exchange Network user-id that submitted the file. The user can configure this on the AQS Admin/Security form.
    b. "E_LoaderNoProcess: AQSLOAD process is not active." This means that the AQS batch process started, but did not finish. Contact the EPA Call Center (Email: epacallcenter@epa.gov, Phone: (866) 411-4372) for assistance.
    c. "E_LoaderStartLimitExceeded: AQSLOAD start time limit has been exceeded." This means that the user's account is not set up properly for batch submissions. Contact the EPA Call Center for assistance.
    d. "E_AccessDenied: Unknown AQS User Id specified. Access Denied." This means that an invalid AQS user-id was provided on the ENSC submit form.
    e. "E_InvalidScreeningGroup: Invalid Screening Group" This means that the user is not authorized for the selected screening group. The user should check the screening group provided and correct if incorrect, or contact the EPA Call center if the user needs access to that screening group.

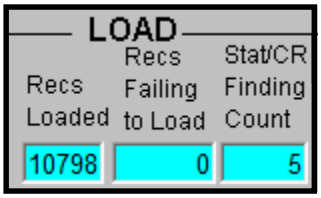
Load

After the file has been staged, it can be loaded. Loading the file moves the submitted data into the main AQS database and performs field validation and relational (e.g., is pre-requisite data present) checks.



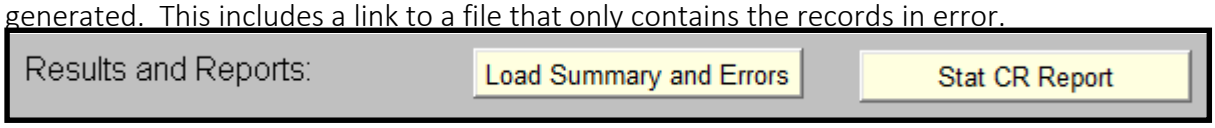
The Statistical Tests and Critical Review (sometimes abbreviated StatCR or CRST) process is also performed at the end of the load step for Raw Data.

This process compares data to other values and expected ranges, etc. and presents any "findings" of possible outliers or other problems. These "findings" are not errors, they are really indications of a data point that is an outlier. The data may be fine, but the user should be alerted to any potential problems.



Note] the results of the StatCR process can change over time. For example, the data representing an incomplete calendar quarter may be different from a complete calendar quarter (this includes data in the submitted file plus any data already in AQS).

The Load process generates the "Load Summary and Errors" report and the "Statistical and Critical Review" report.
Also, the fields in the Load Status area at the top of the form will be updated and the system will send the user an email with a summary of processing and links to all reports that were generated. This includes a link to a file that only contains the records in error.



Load Summary and Errors Report

This report contains two parts. Load Summary and Load Detail.
The first is a table summarizing, by transaction type, the number of records in error and the number of records loaded (in the column labeled "Pre-Production") and the number of records posted. Recall, raw data records will be loaded (to pre-production) and any records that are not raw data will be posted if they are not in error.

The second part of this report details any errors in the data on a record by record basis. The data, in transaction format, will be presented along with the error related to that record. If there are more than a few thousand errors in the file, the system stops listing them so the report will not include all of them.

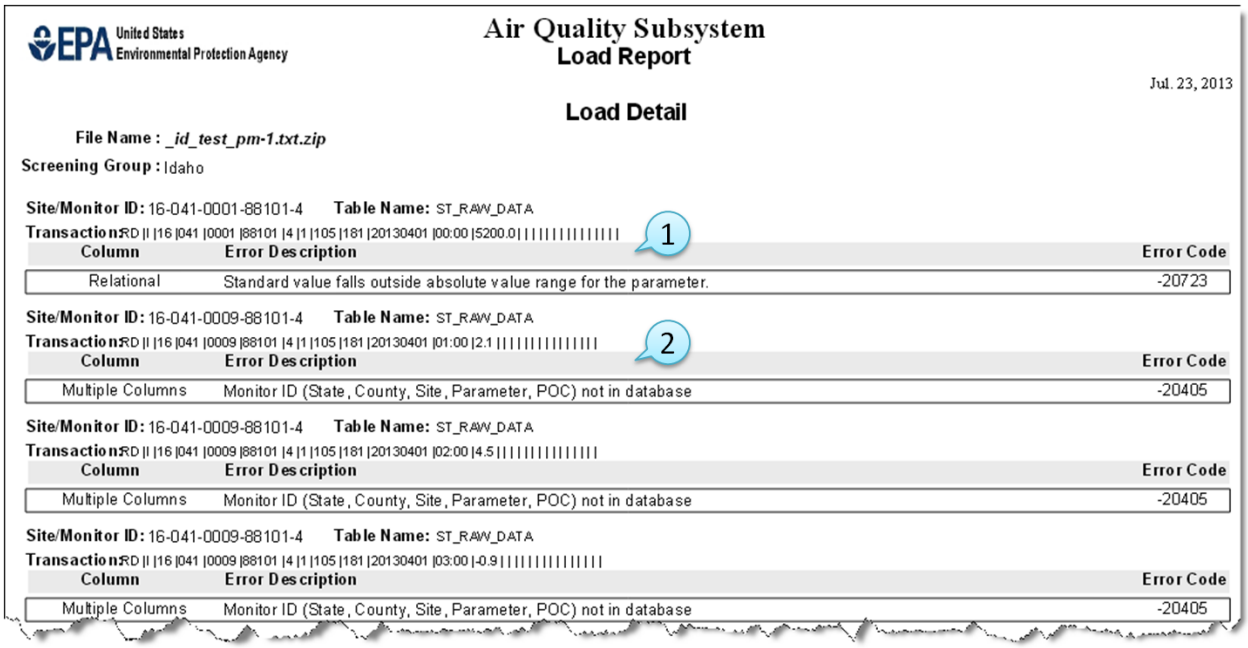
Statistical and Critical Review report

The second report generated by the load process contains information about irregularities in the processed data. These are not errors, but warnings (or "findings").This report will list the monitor, the date/time, and the problem with any data values.

Load Errors?

The "Records Failing to Load" column at the top of the screen or the Load Summary and Errors report will show the user if there are load errors.

Clicking the Load Summary and Errors button will open the LOAD Report in a separate browser window. The third page of this report is where the Load Detail can be found.



EPA United States Environmental Protection Agency

Air Quality Subsystem
Load Report

Jul. 23, 2013

Load Detail

File Name : *_id_test_pm-1.txt.zip*
Screening Group : Idaho

Site/Monitor ID: 16-041-0001-88101-4 **Table Name:** ST_RAW_DATA
Transaction: RD | | 16 | 041 | 0001 | 88101 | 4 | 1 | 105 | 181 | 20130401 | 00:00 | 5200.0 | | | | | | | | | | | | | | | 1

Column	Error Description	Error Code
Relational	Standard value falls outside absolute value range for the parameter.	-20723

Site/Monitor ID: 16-041-0009-88101-4 **Table Name:** ST_RAW_DATA
Transaction: RD | | 16 | 041 | 0009 | 88101 | 4 | 1 | 105 | 181 | 20130401 | 01:00 | 2.1 | | | | | | | | | | | | | | | 2

Column	Error Description	Error Code
Multiple Columns	Monitor ID (State, County, Site, Parameter, POC) not in database	-20405

Site/Monitor ID: 16-041-0009-88101-4 **Table Name:** ST_RAW_DATA
Transaction: RD | | 16 | 041 | 0009 | 88101 | 4 | 1 | 105 | 181 | 20130401 | 02:00 | 4.5 | | | | | | | | | | | | | | |

Column	Error Description	Error Code
Multiple Columns	Monitor ID (State, County, Site, Parameter, POC) not in database	-20405

Site/Monitor ID: 16-041-0009-88101-4 **Table Name:** ST_RAW_DATA
Transaction: RD | | 16 | 041 | 0009 | 88101 | 4 | 1 | 105 | 181 | 20130401 | 03:00 | -0.9 | | | | | | | | | | | | | | |

Column	Error Description	Error Code
Multiple Columns	Monitor ID (State, County, Site, Parameter, POC) not in database	-20405

1. The raw data value is outside the acceptable values (the wrong unit code in the file).
2. An incorrect site ID on the raw data transaction.

If errors occurred during the load process, there are two ways that the data can be fixed. The first is to fix it in AQS via the Correct option in the Menu Bar. (How to use Correct to edit the data is covered elsewhere.) The second option is to use the link to the file of error transactions from the batch job email, to download the file, fix the errors, and resubmit.

Raw Data?

If the user's file contains raw data the user must complete the Post process. If the file contains no raw data the data has been placed in the public part of the AQS database and the file process is complete.

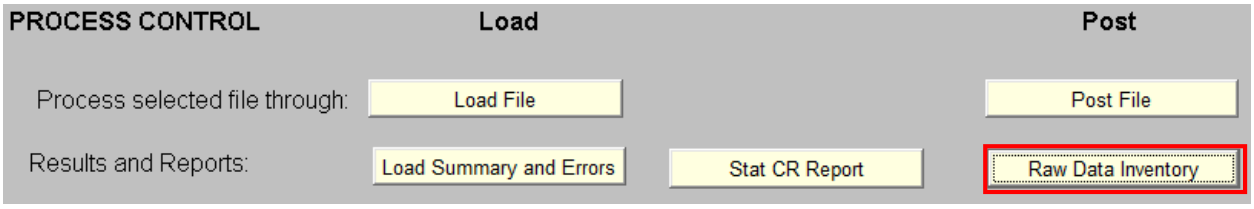
Post

The post process is necessary for raw data. It moves data from where it can only be seen by members of a select screening group to where it can be seen by any AQS user (and any EPA web application, and thus the public). It also updates all of the summary values (e.g., NAAQS durations, Daily, Annual, and Design Value if applicable) that the raw data contributes to.
It is built into the process as a stopping point to allow for review of any load errors or statistical findings before making the data public.

Note] when the user Posts a file, it is run through both the Load (including the StatCR) and Post processes in AQS. This is to ensure that all the data in a file is processed together and no "stragglers" are left behind in our multi-step process. The unfortunate side effect of this is that older Load Summary and Error and Stat CR reports will be overwritten with new (and perhaps empty) results. If a prior version of these reports is needed, it can be obtained using the history tab. (All reports are deleted from AQS after two weeks.)

Raw Data Inventory report

The Post process generates the Raw Data Inventory report. This report is a count by monitor and calendar quarter of the types of data actions (insert, update, and delete) that were taken by AQS.



After running the Post process the submittal of raw data is complete.

When Things Go Wrong

Unfortunately, not all files will be submitted in one step from the ENSC. Files may have an error that causes batch processing to stop (whether the entire file stops processing or just the records in error depends on the "Stop on Error" setting at the ENSC).

Note] in the second quarter of 2013:

- 7,800 files, containing 50 million transactions total, were submitted to AQS.
- 25% of files with Raw Data transactions had a raw data error.
- 50% of files without Raw Data had an error (e.g., site, monitor, or QA data error).

- A file with an error was re-processed (corrected and re-loaded) an average of 1.5 times.

When things go wrong the user can use the AQS 'Correct' (which is covered in the Correct section of this document) or the user can fix the data on the user's end either in the file or in the database and regenerate the file.

Type of Data in AQS

Site Data

Site information refers to the geographical location where monitoring occurs. This includes the following types of information: latitude and longitude coordinates, what geopolitical entities at location (e.g. county, city, EPA Region, etc), local site name, and street address. Information about nearby roads is also stored with the site information.

Identified by:

AQS generally list site IDs in the following way:

SS-CCC-NNNN

SS is the State FIPS (Federal Information Processing Standards) Code, CCC is the County FIPS Code, and NNNN is the Site Number within the county.

Note] leading zeros are always included.

Example:

01-089-0014
Alabama, Madison County, Site Number 14.

Tribal site IDs do not list state and county. They are listed in the following way:

TT-BBB-NNNN

TT is two capital Ts to denote Tribal, BBB is the BIA (Bureau of Indian Affairs) Tribal code, and NNNN is the Site Number within the tribal lands.

Example:

TT-007-7002
Tribal, St. Regis Band of Mohawk Indians of New York, Site Number 7002.

Monitor Data

For the purposes of AQS, a monitor does not refer to a specific piece of equipment. Instead, it reflects that a given pollutant (or other parameter) is being measured at a given site. Monitor description information covers several different types of information about how the monitor is configured. Such as:
When was the monitor operational? How high is the probe? Where is the probe located? How close is this monitor to the highway? What monitoring networks does it belong to? What is the objective of this monitor? Who owns and operates this monitor?

Identified by:

The site where the monitor is located, the pollutant code, and POC (Parameter Occurrence Code), which is used to uniquely identify a monitor if there is more than one device measuring the same pollutant at the same site.

For example monitor IDs are usually written in the following way:

SS-CCC-NNNN-PPPPP-Q
Which is the Site ID plus, PPPPP being the AQS 5-digit parameter code, and Q is the POC.

For example:

01-089-0014-44201-2
Alabama, Madison County, Site Number 14, ozone monitor, POC 2.

Ambient Air Quality Data

Raw data, also called sample data, is by far the most abundant data in the database. The raw data are the individual ambient air quality measurements collected from the monitors.

Identified by:

The monitor where the measurement was taken and the time when the sample was taken.

Quality Assurance Data

Quality Assurance (QA) data consists of the set of audits that are utilized to verify that the measurement uncertainty (error) associated with sample measurements (raw data) is within acceptable limits. For the regulatory pollutants, the process is defined by Title 40 of the Code of Federal Regulations, Part 58, Appendix A. Other specialized programs, such as the Chemical Speciation Network (CSN) have their own QA requirements. AQS supports a set of QA transactions for submitting this information.

Identified by:

The monitor or lab where the quality check was taken and the date-time of the check.

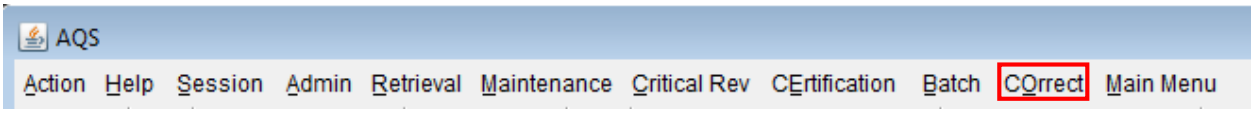
Summary Data

All of the data is submitted to AQS for one primary purpose: to determine the exposure of populations to certain pollutants. Since most of the health-related measurements are couched averages of various time lengths, the system creates multiple levels of summaries of the raw data. The data is summarized on a daily, quarterly, and annual basis. Additionally, if there is a national standard for pollutant with a special averaging time (such as a running 8-hour average for example), the system will create these summarized averages as well.

Correct

Correct Overview

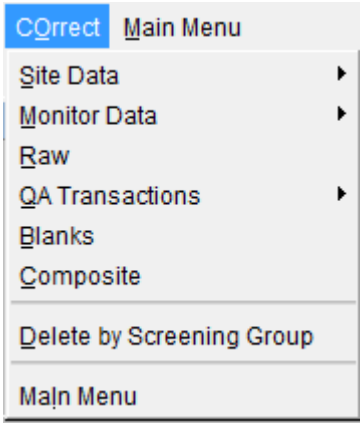
Correct within AQS is used to modify data that has been staged (uploaded) but not yet fully loaded into the AQS database. Correct only works on data that has been staged and not yet loaded.



When data is submitted it is first placed in an area of the system call the "Staging Tables". Once data has been successfully processed by the AQS Load program it is no longer available to Correct.

Since each transaction is formatted differently (has a different number of fields with different content), there is a Correct form for each transaction type.

To access a correct form the user will click the Correct link in the Menu Bar, this will open a drop down menu. Here the user will select the particular form from the menu or sub-menu.



Under Site Data:

- Site
- Open Path
- Tangent Road
- Site Sampler
- Sampler Channel

Under Monitor Data:

- Monitor
- Samp Period

- Types
- Objectives
- Samp Schedule
- Probe Obs
- Reg Compliance
- Collocation
- Protocol
- Agency
- Tangent Road
- Monitor Network Affiliations
- Primary Monitor Period
- Monitor Channel
- Monitor Method
- Monitor Exclusion

Under QA Transactions:

- One Point QC
- Annual Performance Evaluation
- Semi Annual Flow Rate Audit
- Flow Rate Verification
- PM-Coarse Flow Rate Verification
- PM Coarse Semi Flow Rate Audit
- Performance Evaluation Program
- NPAP
- Field Proficiency Test
- Duplicate
- Replicate
- Speciation Flow Rate Verification
- Speciation Semi Annual Flow Rate Audit
- Pb Analysis Audit
- Lab Proficiency Test
- Ozone SRP and Standard Transfer Verifications
- Ambient Air Protocol Gas Verification Program

Correct Raw Data

This section covers how to correct Raw Data.

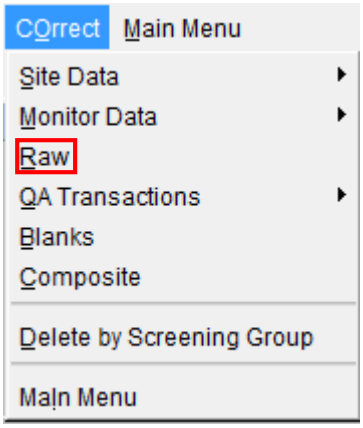
Note] correcting other transaction types (with the exception of QA, which is described later) will work identically.

Procedure Overview

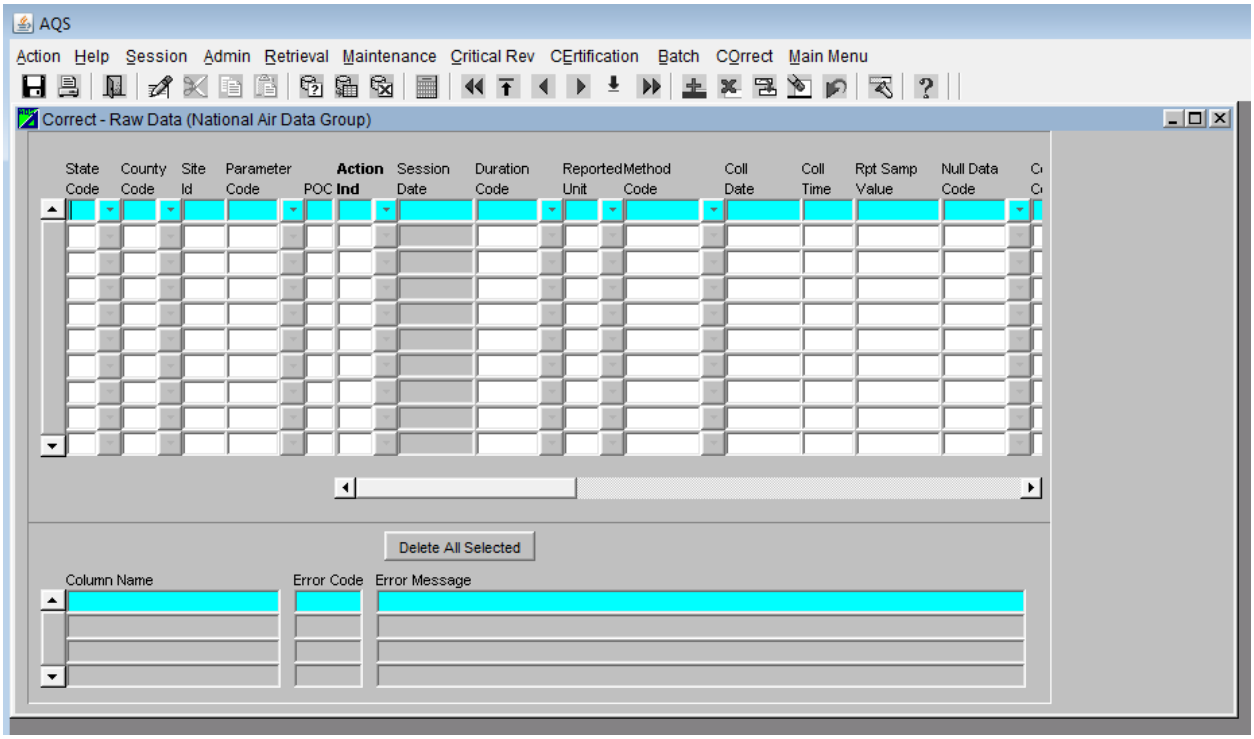
1. The user will select the correct form from the menu or sub-menu
2. The user will query the data requiring correcting from the AQS database
3. The user will edit the data
4. The user will save the data back to the AQS staging area

Open Correct Raw Data Form

To access the Raw Data Form the user will click the Correct link in the Menu Bar, this will open a drop down menu. Here the user will click the Raw link from the menu.



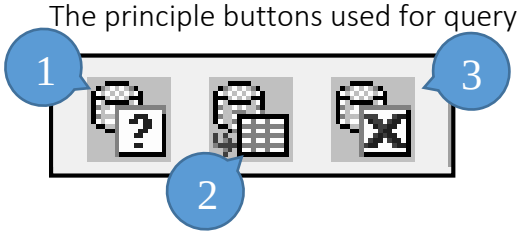
This will open the Raw Data Form.



Query Data

The user will query data from the database in to the form.

The principle buttons used for query operations are:



(1) Enter Query (2) Execute Query (3) Cancel Query

Enter Query

When the form opens it defaults to query mode as evidenced by "Enter Query" in the status bar at the bottom. It assumes the user wants to bring data from the AQS database into the form and allows the user to query all data or limit the data by inputing specific parameters. If the user would prefer to enter data manually then the user must click the cancel query button. However, once the user has begun to enter data manually the query function is no longer available unless the user clears the form.

The purpose of the Enter Query function is to bring data from the database into the form, edit it, and save it back into the AQS database.

Entering values into any field will allow the user to narrow searches. For example, if the user wanted only data for a specific state, the user would enter the corresponding a state code. If the user wanted data for just one parameter in a specific state the user would enter the state code and a parameter code.

A correct form will never bring back data not loaded by the user's screening group.

Once the user has entered query criteria the user will execute the query to bring the data from AQS into the form.

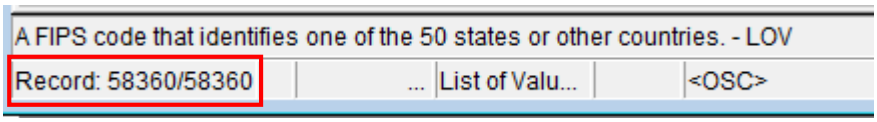
Execute Query

This button retrieves all of the user's screening group data, matching the query criteria, into the Correct form. If no query criteria was entered all data from the screening group will be returned.

Note] all records in the staging tables the match the query criteria will be returned. In the old-style correct forms, there is no way to retrieve only the data that was submitted in a specific file.

To retrieve all the queried data to the form the user will click the Last Record button, otherwise the data is retrieved on screen/page at a time.

The status bar at the bottom left of the screen will display the number of records retrieved from the database to the form.



Cancel Query

This button cancels any active query and cancels the query mode.

The user may need to use this button to execute a second query if the first returned no data. After the user has executed a query with no results the Cancel Query button should be clicked then clicking the Enter Query button will allow the user to enter new criteria.

Edit Data

Once the data is in the form changes can be made to it. There are two ways to do this.

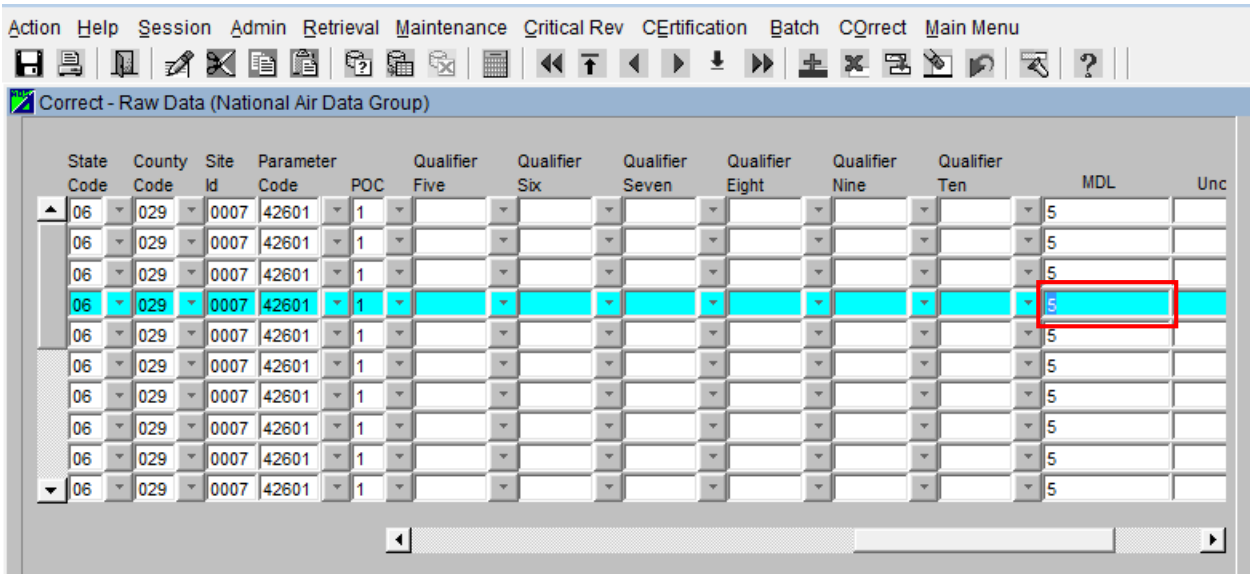
Edit options

1. Type Over

   Edit the data field by field (box by box) on the screen. The user will select text or place the cursor where necessary and insert, delete, or replace text.

2. Global replace

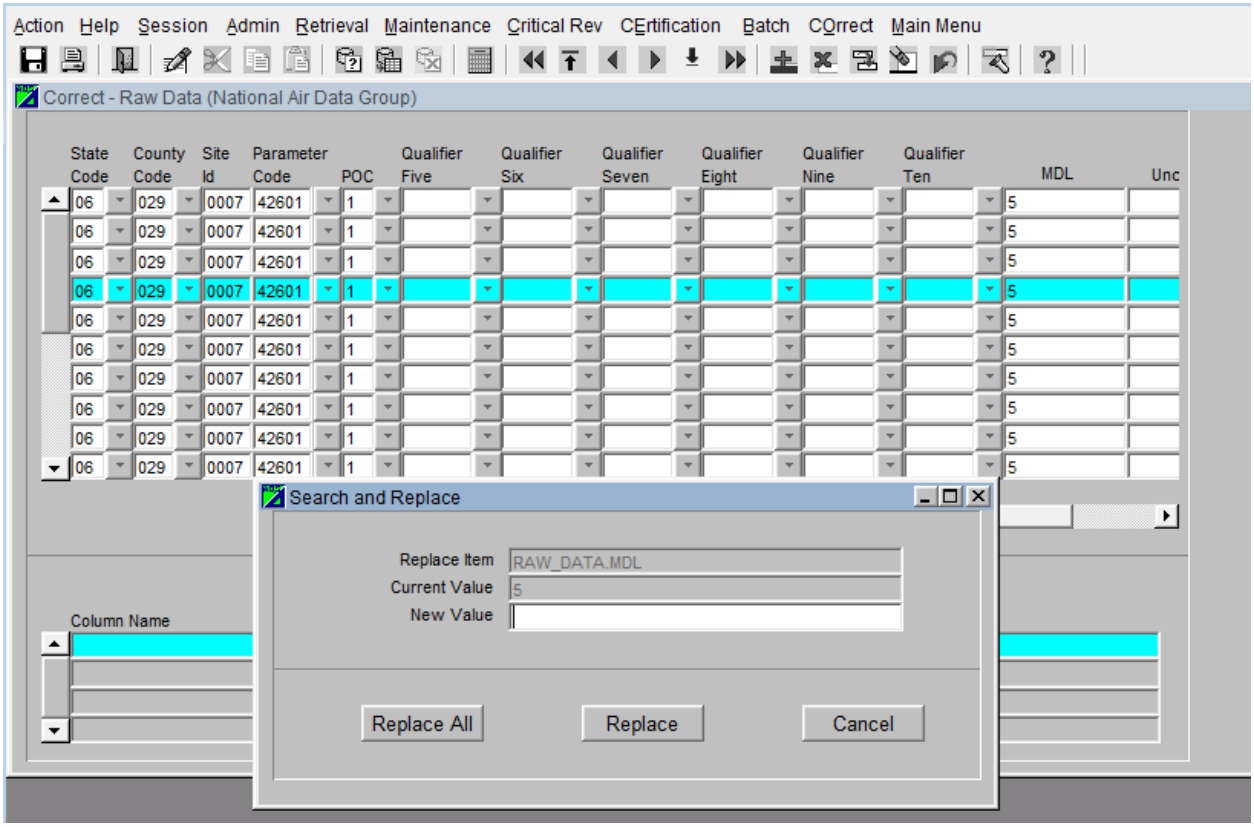
   Perform a "search and replace" in a single column. The user does this by placing the cursor in the value to be replaced.



Then presses the Search and Replace icon.

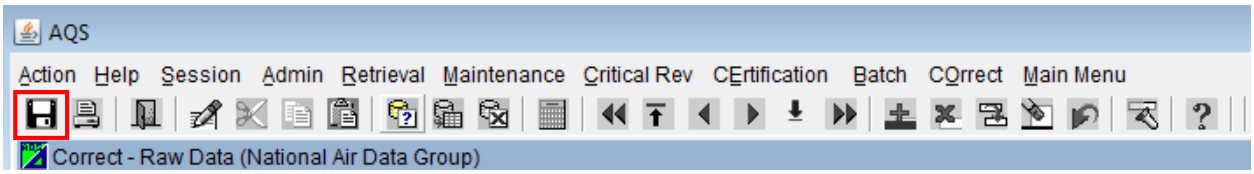
This will bring up a window that will allow the user to replace every occurrence in that column for all data retrieved by the query.

Note] this operation does not work like any other program; “Replace” and “Replace All” replace every value in that column with the new value, not just the ones with the “Current Value”.

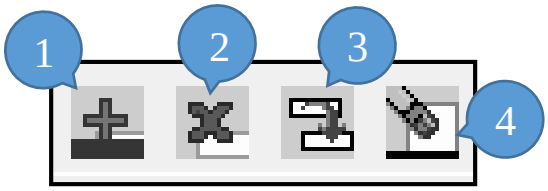


Save the Data

After the data has been edited it is still only in the form until it is saved. Clicking the save icon will save the changes to the database.



Other Correct Features



(1) Insert Record (2) Remove Record (3) Duplicate Record (4) Clear Record

Insert Record: Inserts a new blank record after the highlighted one.

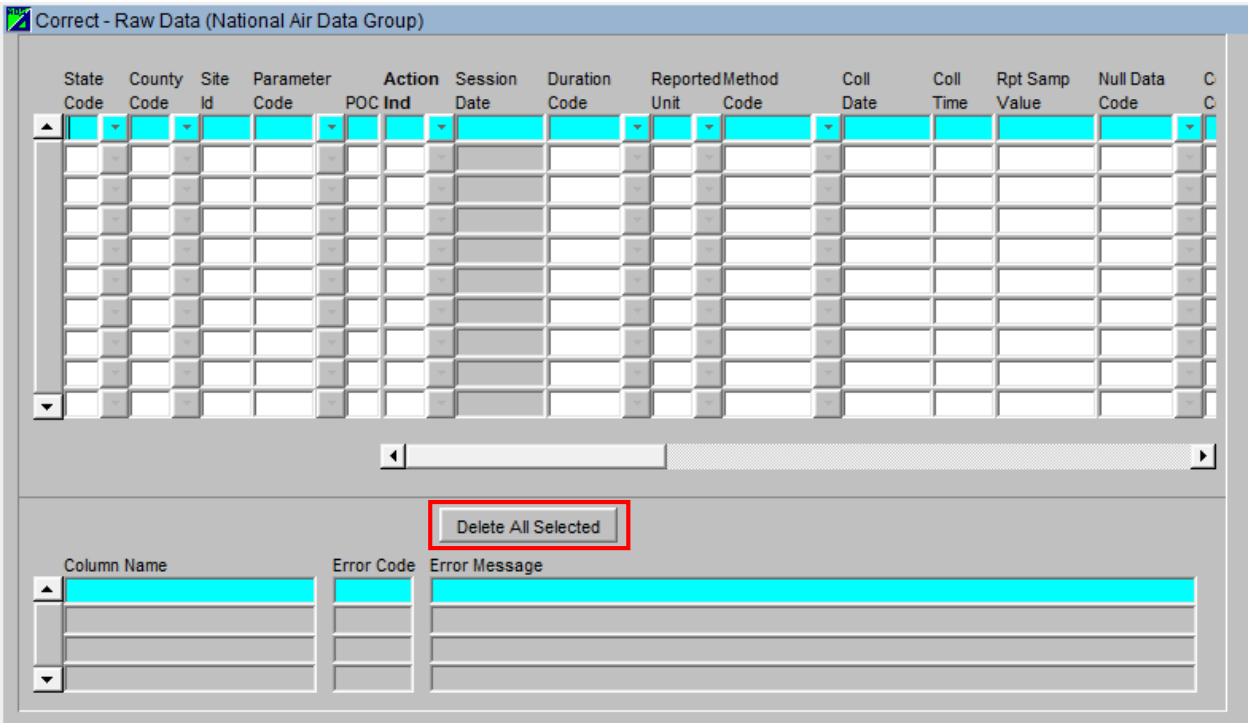
Remove Record: Deletes the highlighted record.

Duplicate Record: Duplicates a record.

Clear Record: Deletes all of the contents of the fields, but not the record.

Note] when transactions are inserted, they are associated with an "on-line" session rather than a previously submitted file. On the Batch form they will be in a file named "ONLINE_UUU_NNNN"; where "UUU" is the user's AQS user-id and 'NNNN' is a unique number.

The Delete All Selected button



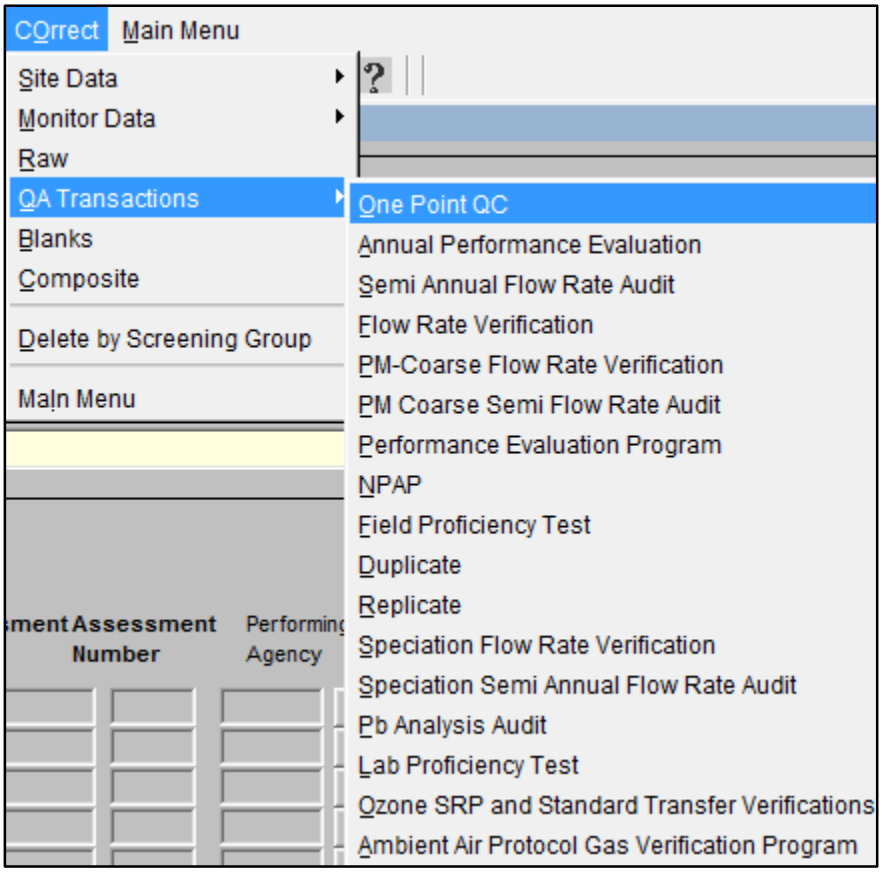
This button deletes all records that were returned by the query.

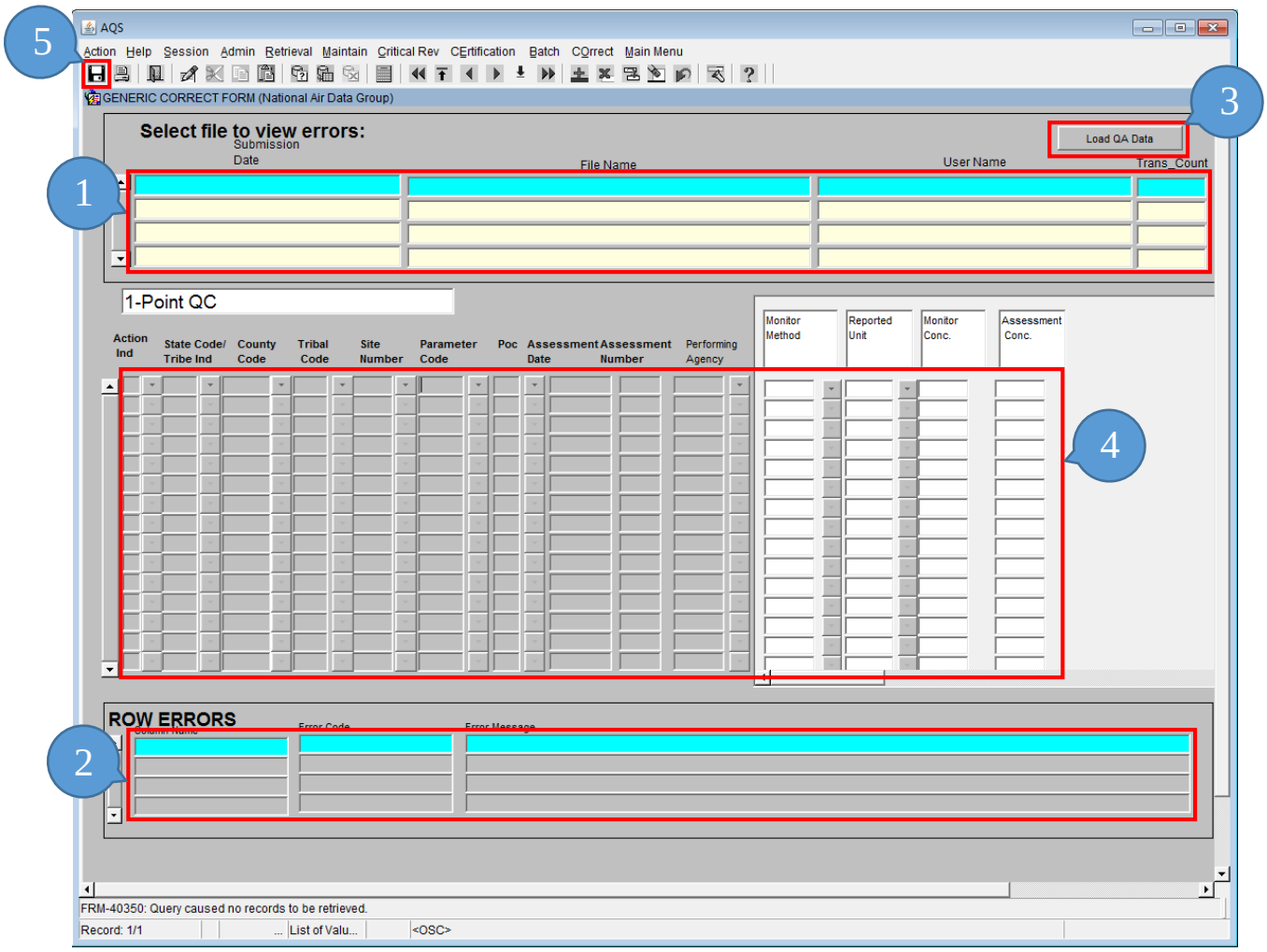
Note] this deletes all records that are listed in the display not just the selected records on the screen.

Correct One-Point QC

This section covers how to correct 1-Point QC transactions. The procedure will be identical for all other QA transactions.

Select the Correct / QA Transactions / One-Point QC menu pick.





1. The User will select the file with errors to be corrected
2. Error Messages for the selected transactions will show up in the Row Errors section
3. Then click the “Load QA Data” button
4. Edit the data retrieved (and/or insert new records)
5. Click the Save icon

Correct Highlights

- Only data that has not yet been loaded into AQS (the staging tables).
- The user can only see data in the user's respective screening group.
- All changes must be saved (including deletes).

Submitting Corrected Data

After the user has made the changes and saved them using the correct forms the data will need to be loaded into AQS. In order to do this the user will:

1. Go back to the Batch form.
2. Highlight the records associated with the file whose data was being corrected.
3. Press the Load File or Post File buttons, depending on what processes needs to be ran.

The process status and the Load and Post record counts will update just as for any other batch process.

On-Line Data Tools – Maintain

Maintain Overview

Maintain allows the user to:

1. Enter new data into the database (without having to go through the batch load process)
2. Edit data in the database (i.e. Insert, Update, or Delete)

Correct and Maintain are very similar in operation - they are a series of forms that allow you to edit data.

There are also a few important differences between Correct and Maintain:

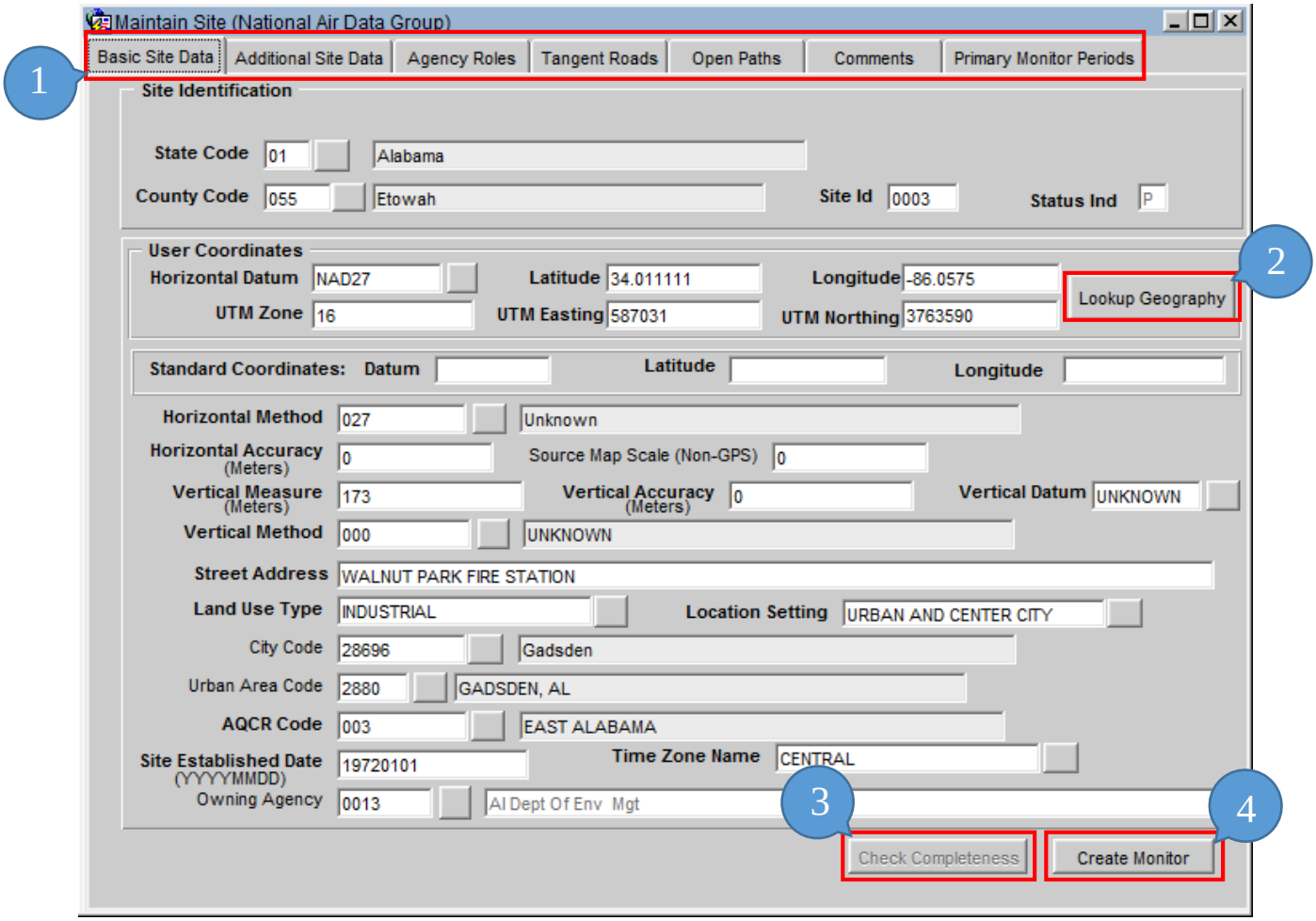
Correct	Maintain
Operates on data not yet loaded into AQS	Operates directly on the AQS database
Forms mirror the structure of the text transactions	Forms mirror the structure of the AQS database
Generally one row for each transaction	Forms are laid out to be easier to read and contain more data
Data not checked for errors until it is Loaded	Data checked for errors when it is saved
User can only see data in respective screening group	If logged in as read only, the user can see any production status data

Maintain is useful for the following tasks:

1. Creating site and monitor records.
    1. Lists-of-values make it unnecessary to know codes
    2. Site form has Check Completeness and Create Monitor buttons
    3. Monitor form has Check Completeness and Duplicate monitor buttons
    4. Each "subordinate" record is displayed as a separate tab
    5. The user can close monitor by entering a close date and saving the record – all subordinate records will automatically be populated with end dates.

2. Entering small amounts of data into AQS.
    1. Data you would rather type than create a transaction and use the load process for
    2. Data that you don’t have transactions for
3. Entering data for which there are not transactions defined
    1. E.g. Events

Maintain Site



The Maintain Site form is used to enter or edit all data relating to a site. This includes data from the site basic transaction and all of the site subordinate transactions.

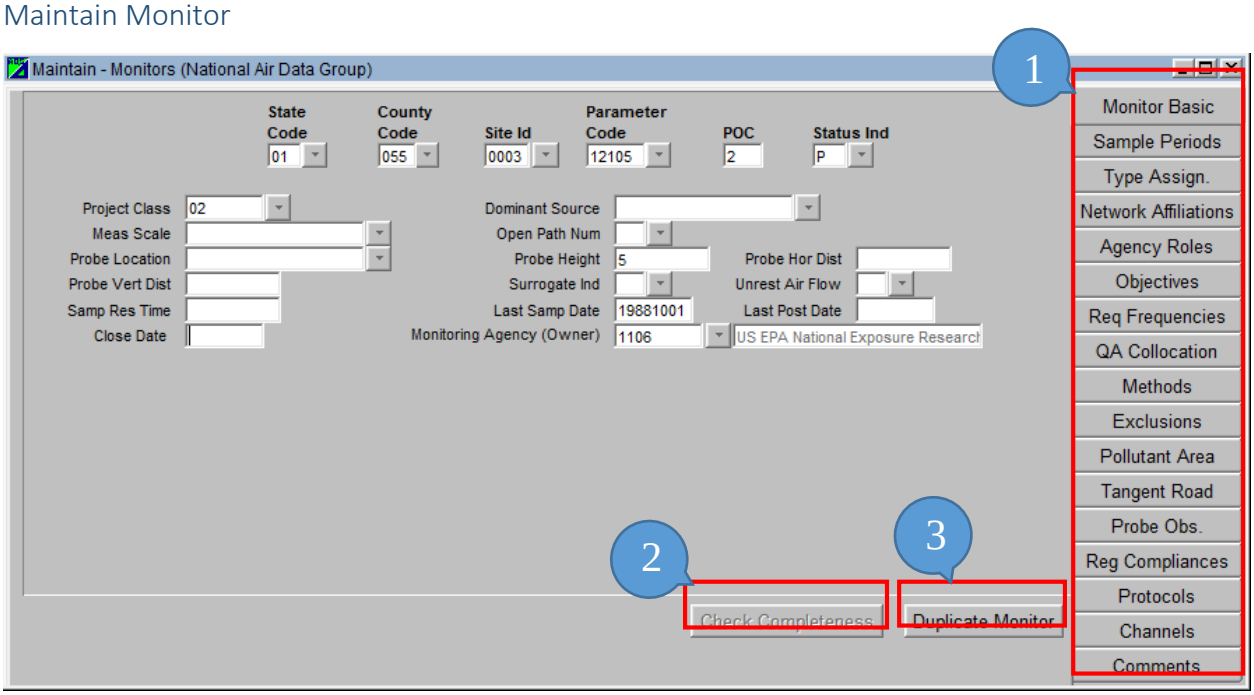
(1) On this form, data from each transaction type is included under a separate tab.

(2) Lookup Geography button allows the geographic coordinates in either latitude and longitude or UTM (Universal Transverse Mercator) to be entered. When this button is clicked, the EPA standard coordinates (lat/lon in the NAD83 datum) are calculated and populated. Also, much of the other geographic data is populated (city, zip, etc.)

(3) The Check Completeness button can help the user determine if AQS thinks that data needed to make a site "complete" is present. This is a convenience to help the user keep track of what to do next, but does not have to be used.

(4) Once the user has completely entered (and saved) site data, the user may create a monitor with as much data as possible pre-populated in the Maintain Monitor form by clicking the Create Monitor button.

Maintain Monitor



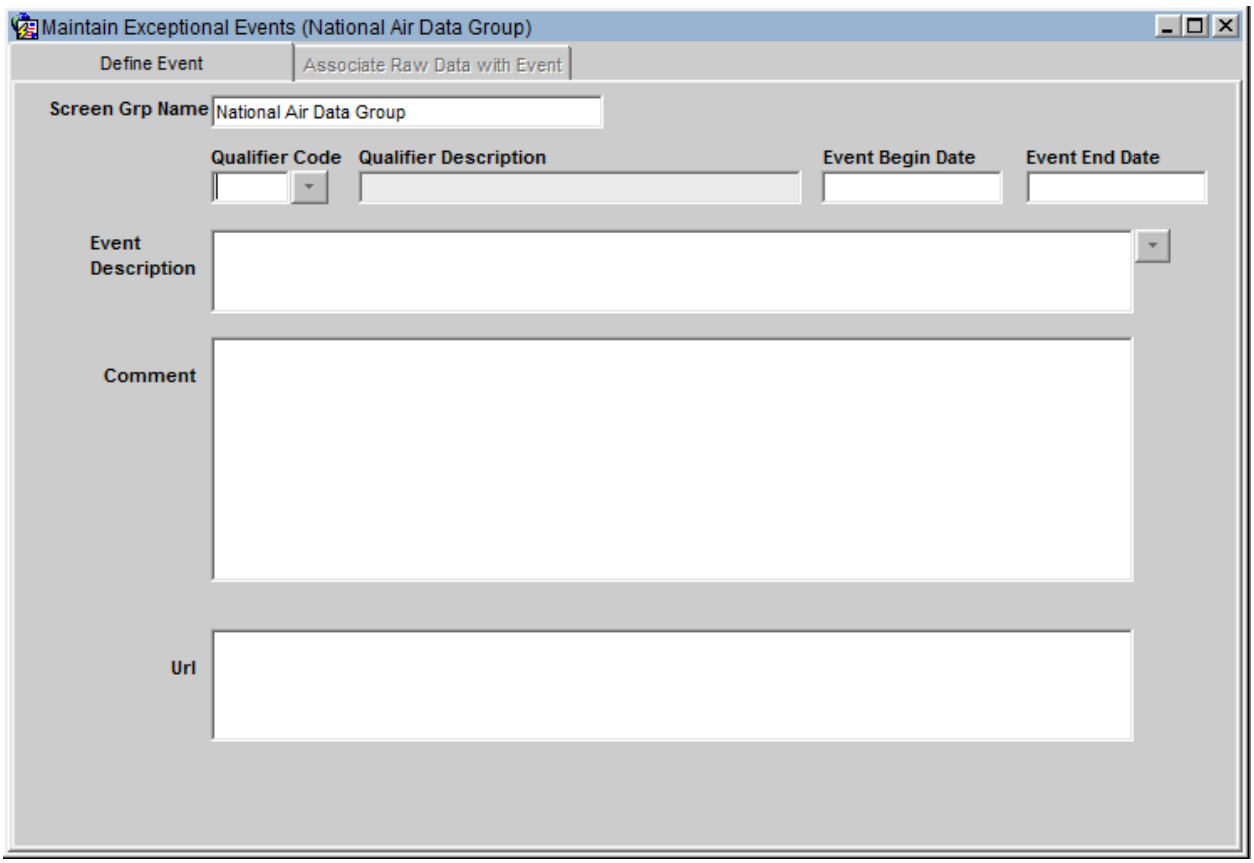
The Maintain Monitor form is used to enter or edit all data relating to a monitor. This includes data from the monitor basic transaction and all of the site subordinate transactions.

(1) On this form, data from each transaction type is included under a separate tab.

(2) The Check Completeness button can help the user determine if AQS thinks that data needed to make a monitor "complete" is present. This can be more convenient than attempting to save the record and getting a series of errors.

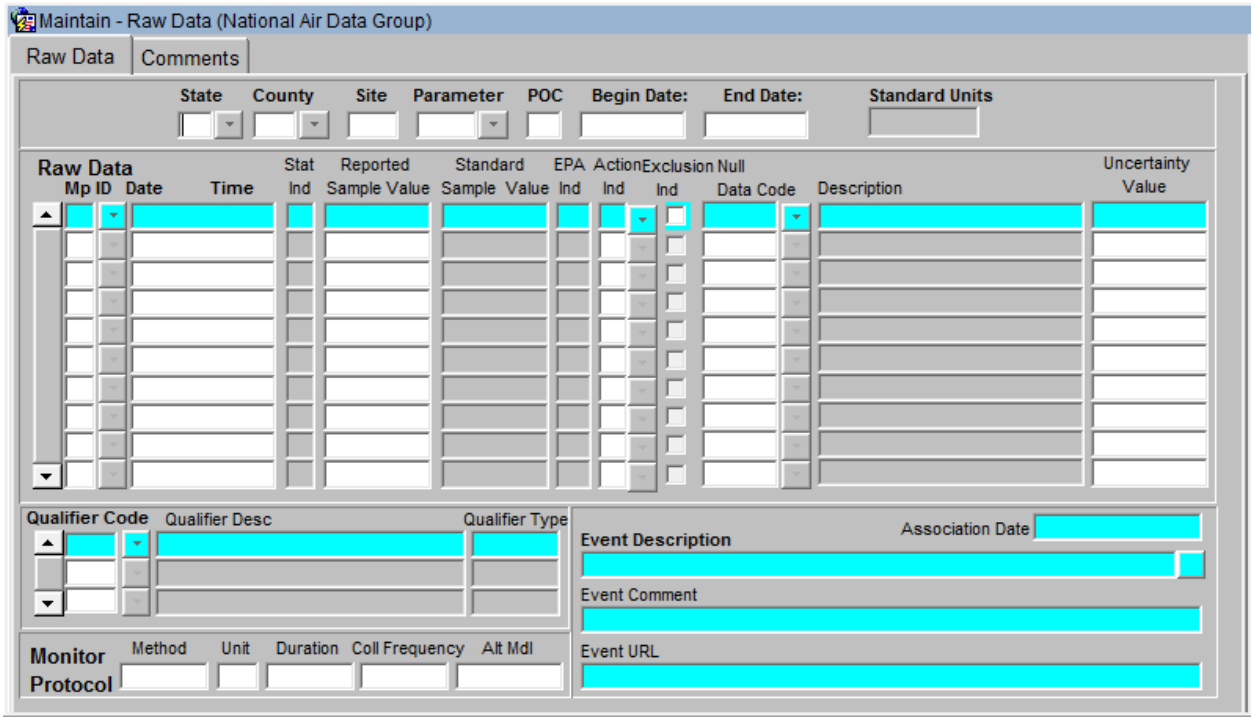
(3) Once the user has completely entered (and saved) data for a monitor the user may create a duplicate of that monitor with as much data as possible pre-populated in the Maintain Monitor form by clicking the Duplicate Monitor button. This is convenient for creating a collocated monitor, or series of speciation monitors, etc.

Maintain Event



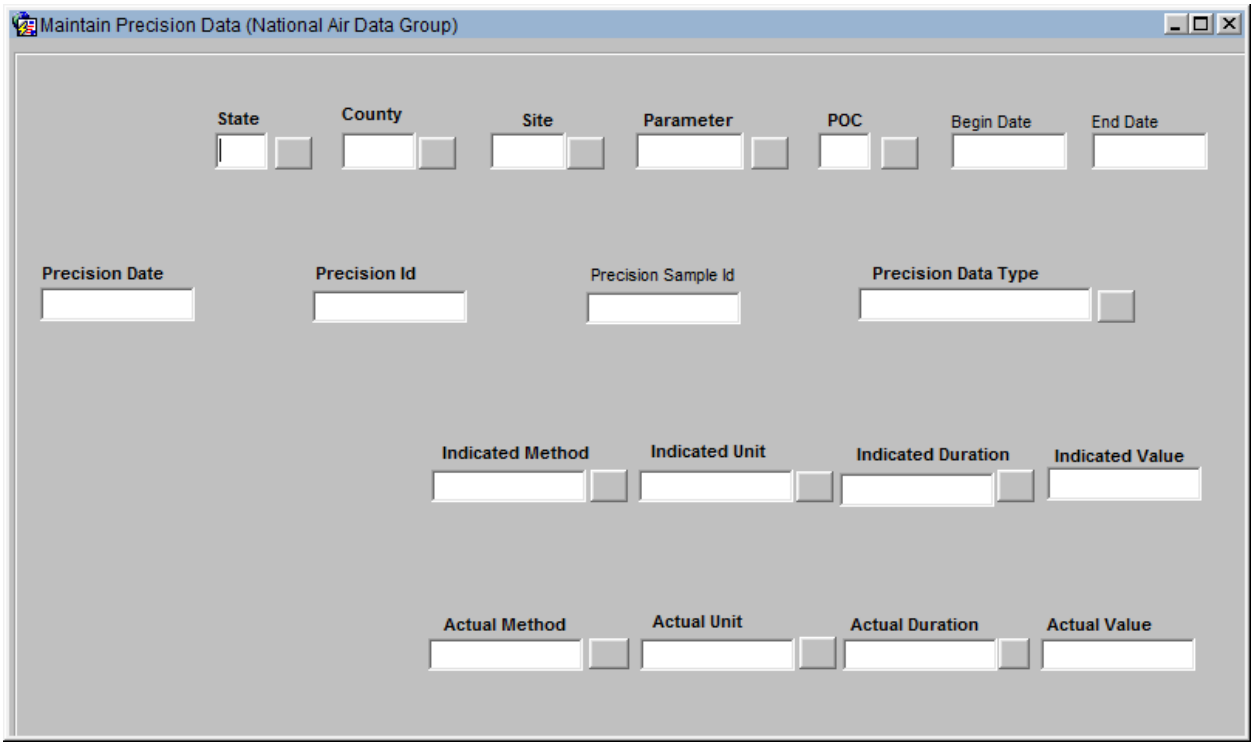
Exceptional events do not have a transaction type in AQS. Therefore the Maintain Event form must be used to enter and update event information that will be used to apply for exclusions.

Maintain Raw Data



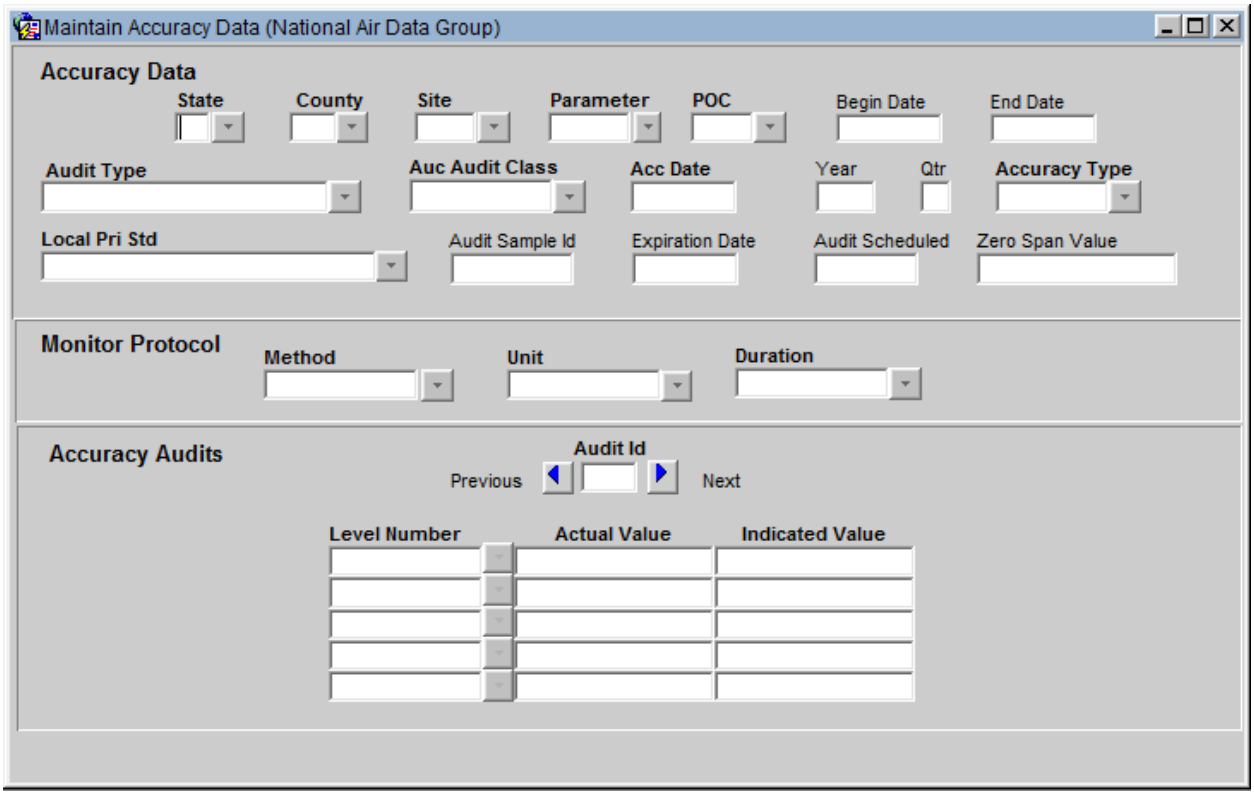
Select Sample Values from the Maintain menu item then select Raw Data from the Select Sample Values sub-menu item. This is very similar to the Correct Raw Data screen except that instead of an area for displaying errors there is an additional area for qualifier, protocol, and event information.

Maintain Precision



The user will likely use this form to enter or edit QA data.

Maintain Accuracy



The user will likely use this form to enter or edit QA data.

Maintain Site

This section describes how to use the maintain forms to create a new site in AQS.

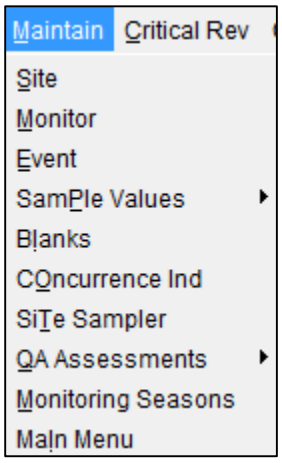
How to use Maintain

The procedure for using Maintain is the same as for Correct.

1. The user will open the maintain form
2. Query the data to edit from the AQS database into the form
3. Edit the data
4. Save the data back to the AQS database

To enter new data (rather than query old data) the user will click the Cancel Query icon and begin entering new data.

To access a maintain form the user will click the Maintain link in the Menu Bar, this will open a drop down menu. Here the user will select the particular form from the menu or sub-menu.



Under Sample Values:

- Raw Data
- Composite Data
- Delete Production Data

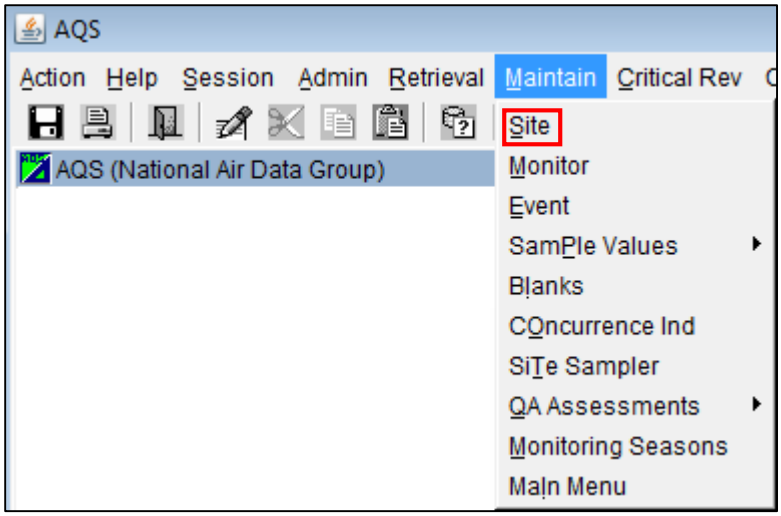
Under QA Assessments:

- 1-Point QC
- Field Proficiency Tests

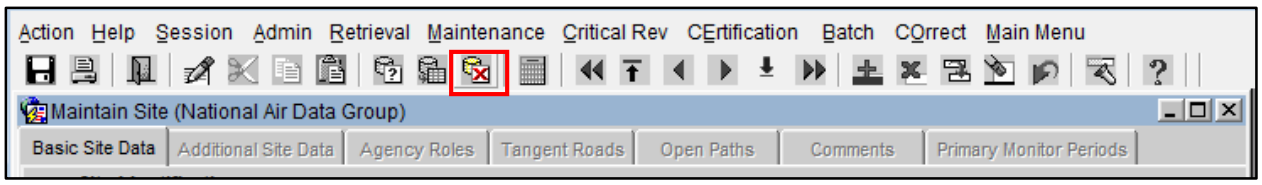
- Flow Rate Verification
- PEP
- Semi Annual Flow Rate Audit
- Annual Performance Evaluation
- NPAP Assessment
- Duplicate Assessment
- Replicate Assessment
- PMc Flow Rate Verification
- PMc Semi Flow Rate Audit
- Speciation Flow Rate Verification
- Speciation Semi Annual Flow Rate Audit
- Lead Analysis Audit
- Lab Proficiency Test
- AA-PGVP Assessment
- Ozone SRP Assessment
- Audits of Data Quality
- Technical Systems Audits
- QA Project Plans
- Quality Management Plans

Enter Site Basic Info

To access the Site form the user will click the Maintain link in the Menu Bar, this will open a drop down menu. Here the user will select Site from the drop down menu.

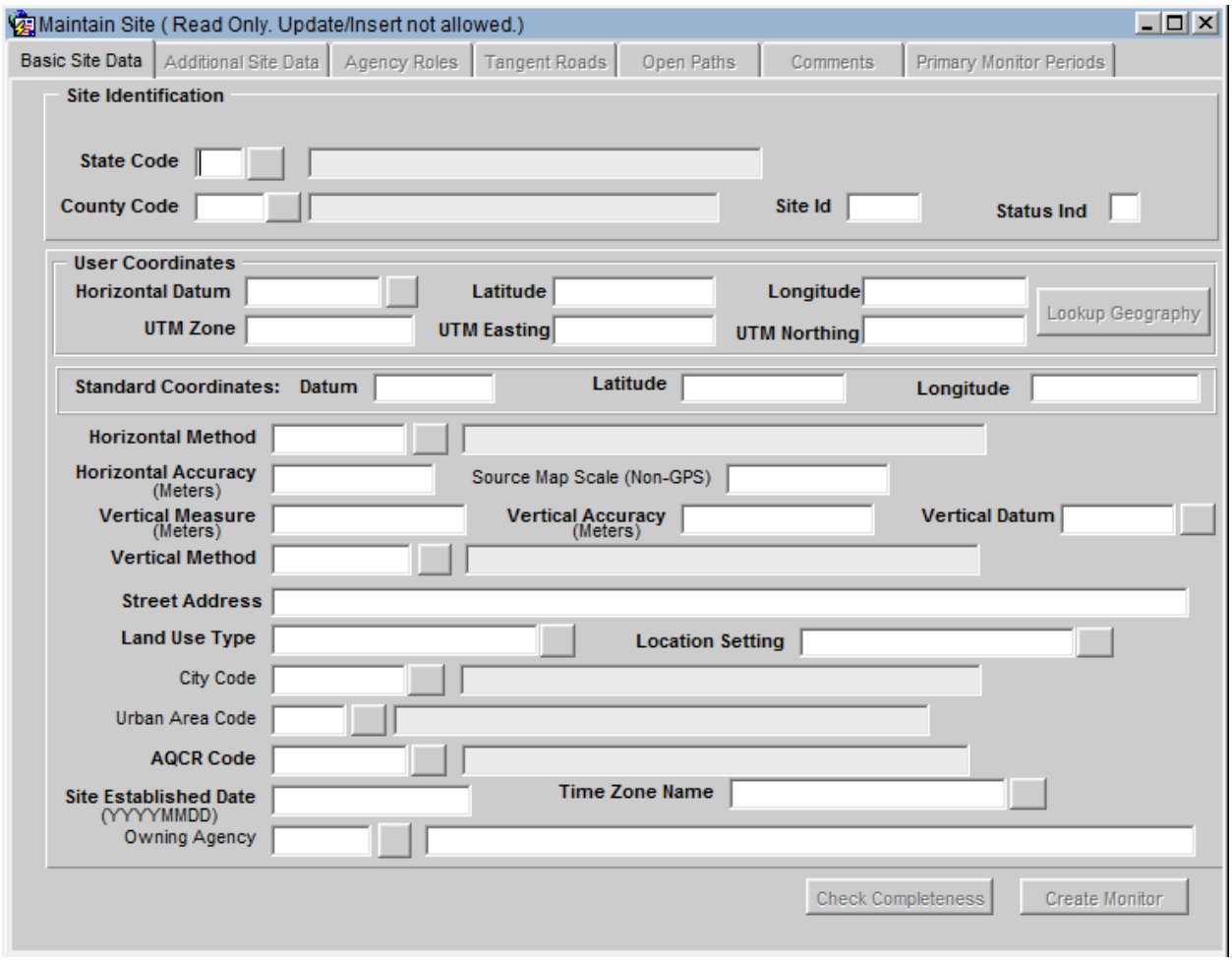


To create a new Site the user will first click the Cancel Query icon.

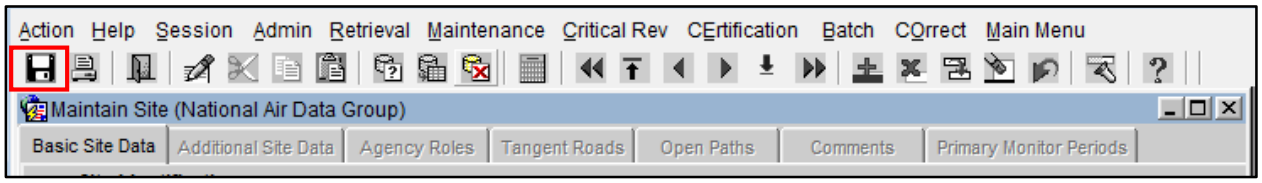


The user then needs to fill in all of the required fields. Required fields are indicated by the bolding of the field name.

Note] on this form, there are very few non-bolded fields.



Once all of the required fields are populated the user should click the Save icon.

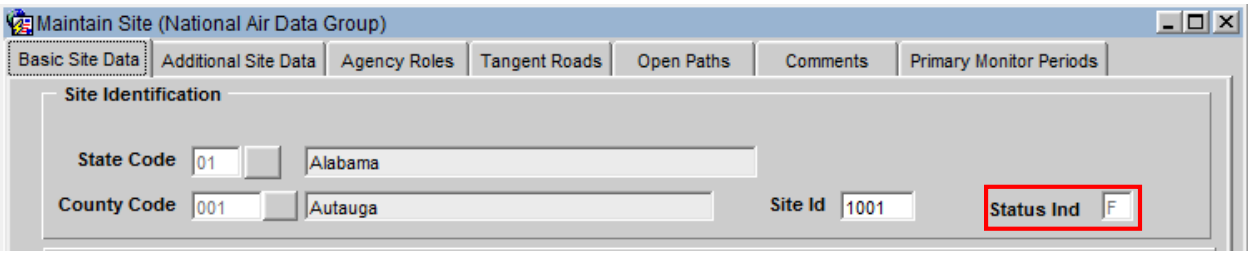


The status bar (at the bottom left of the screen) should indicate that a record has been applied and saved.

At this point the site is still incomplete as additional information is required, such as Supporting Agency Role and at least one Monitor record.

Status Indicators

On the Basic Site Data tab the Status Ind(icator) field will show a value of "F".



Status Indicators are very important in AQS. Every time data is put into AQS the system performs a variety of checks on that data:

1. Is each value a valid value (within acceptable ranges)?
2. Is the format correct (e.g., number versus text)?
3. Are mandatory fields present?
4. Is prerequisite data present (e.g., a monitor must exist before raw data can be loaded)?
5. Is co-requisite data present (e.g., a site must have a Supporting Agency Role, a raw data value must have a Sample Begin Time)?
6. Did raw data undergo the Statistical and Critical Review checks?

Depending on the answers to these questions, (almost) all incoming data is assigned a Status Indicator. This value may change as the data progresses through software checks.

Status Indicators and their meanings:

Status Indicator	Status	Meaning
F	Fields Valid	The individual data elements (fields) are valid (ranges, formats, etc.).
R	Relationally Valid	Prerequisite and co-requisite data is present and complete.
S	Stats Checked	This data has been through the Statistical and Critical Review process.
I	Inactive	This data is no longer relevant. We inactivate some data rather than delete it to keep audit trails.
P	Production	This data is has successfully been submitted to AQS. The reporting requirement has been met. This data is available to anyone.

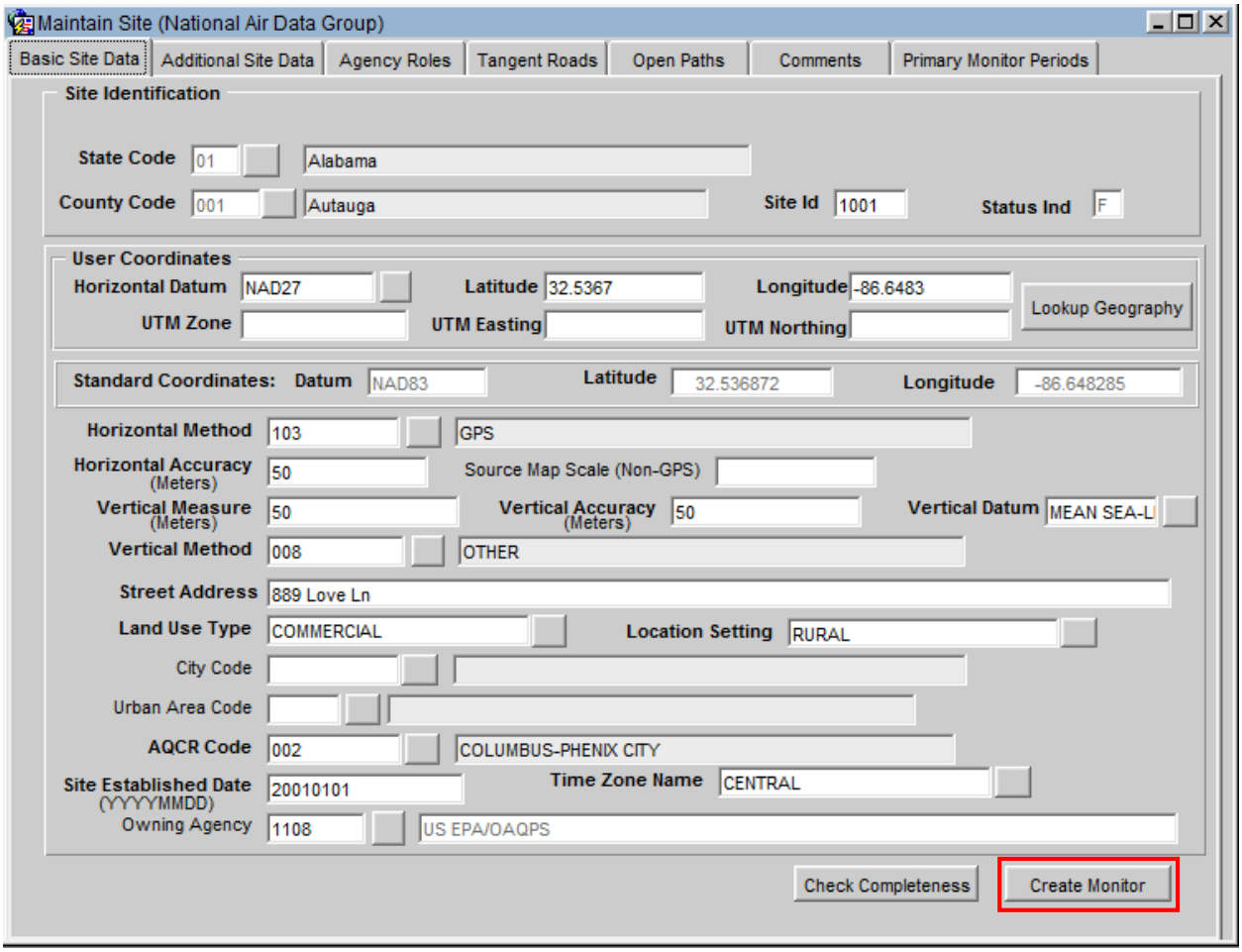
Enter an Agency Role

The user will click the Agency Roles tab. This will open up the Agency Roles form. The user will populate the Agency Role, Agency Code, and Begin Date fields. Once this is complete the user should click the save icon and verify that the save was successful on the status bar.

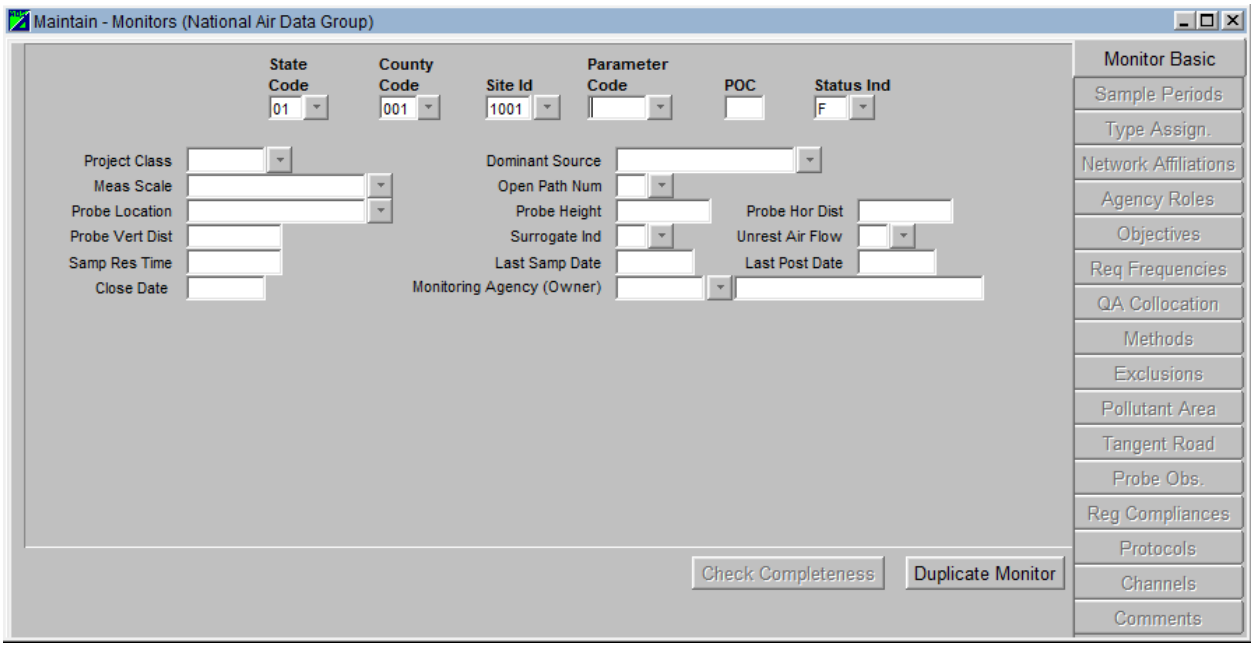
Agency Role	Agency Code	Agency Desc	Begin Date	End Date
SUPPORTING	1108	US EPA/OAQPS	20010101	

Create a Monitor

To create a monitor the user will click the Create Monitor button at the bottom of the Basic Site Data tab from the Maintain Site form or access the Maintain Monitor from the Maintenance menu.



Once this button is clicked either of these will cause AQS to open the Monitor Basic tab of the Maintain Monitors form.



Once all mandatory data is entered in this tab (by adding Parameter Code and POC (Parameter Occurrence Code)) then remainder of the tabs become available for editing (go from grayed out to selectable).

Note] on this form, the Save icon is grayed out (not selectable) until you enter all mandatory fields.

Note] that the Check Completeness button stays grayed out even though the required Monitor Basic information is populated. To activate the Check Completeness button the user must navigate away from the Monitor Basic tab and back to it.

To complete data entry for the monitor the user can either click on each of the tabs and fill in the required fields (indicated with bold field names) or click the Check Completeness button for a to-do list. Once all required fields are populated the user should click the Save icon.

The following are a brief description of each of the tabs on the form:

Sample Periods: Sample periods are the time periods (date ranges) of operation of a monitor. (Required for all monitors)

Type Assign: The Type Assignments is the administrative classification of the monitor. (Required for all monitors) Possible values are:

SLAMS:	State and Local Air Monitoring Station: Regulatory monitor operated by a state or local agency.
SPM:	Special Purpose Monitor: A monitor for a regulated parameter but that is not used for meeting the minimal requirements of Part 58.
TRIBAL:	Regulatory monitor operated by a recognized Native American tribe.

INDUSTRIAL: Monitor operated by an industrial organization (rather than a governmental organization)

EPA: Monitor operated by the EPA itself.

NON-EPA FEDERAL: Monitor operated by another Federal Agency.

OTHER: Monitor for a pollutant/parameter not required by Part 58. (i.e. not addressed by the Clean Air Act)

Network Affiliations: Optional. Network program under which the monitor is operated. e.g. NCORE or PAMS.

Agency Roles: The real-world organizations/agencies with specific responsibilities for a monitor. (Required for all monitors) Possible values are as follows:

- PQAO: Primary Quality Assurance Organization – Agency responsible for QA of the monitoring process at the monitor. Required
- Reporting: Agency responsible for submitting the sample measurements for the monitor to AQS. Required
- Collecting: Agency that collects samples from the monitor (if different from the above) Optional
- Analyzing: Agency that analyzes samples from the monitor (if different from the above) Optional
- Certifying: Agency responsible for sending an annual letter to the EPA that the data submitted to AQS for the monitor is complete and correct. Required for monitors required by Part 58.
- Audit: Agency responsible for submitting Quality Assurance audits to AQS.

Objectives: The purpose for measuring air quality data by the monitor. (Required for monitors defined in Part 58)

Req Frequencies: For manual method monitors (e.g. filter based monitors), how often the monitor collects samples. Required for all manual method monitors.

QA Collocation: If the monitor is paired with another monitor for Quality Assurance (as defined in Part 58 Appendix A), this provides the date range and defines whether the monitor is the primary monitor or the QA monitor. Optional.

Methods: This defines the sampling and analysis method used to analyze monitor data. Required.

Exclusions: Used to indicate that the monitor is excluded from Design Value calculations. Optional

Pollutant Area: Used to indicate the administrative area (e.g. Monitor Planning Area) associated with the monitor. Optional

Tangent Road: Used to indicate the distance to roads that are adjacent to the monitoring site. Optional

Probe Obs: Used to indicate that there is an external object that obstructs the free flow of air to the monitor. Optional

Reg. Compliance: Used to indicate the date when the monitor met the requirements of each of the appendices of Part 58. Optional

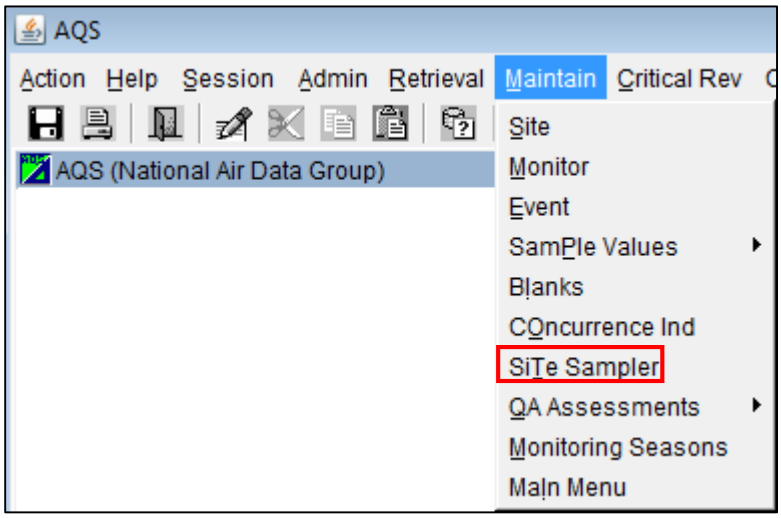
Protocols: Informational Only. Used to indicate if there is an alternate method detection limit for the method used by the monitor. Optional

Channels: For monitors associated with speciation analysis (i.e. analysis of the chemicals on a filter), this indicates which sampler and channel on the sampler is used by the monitor. Optional

Comments: Free form test. Optional

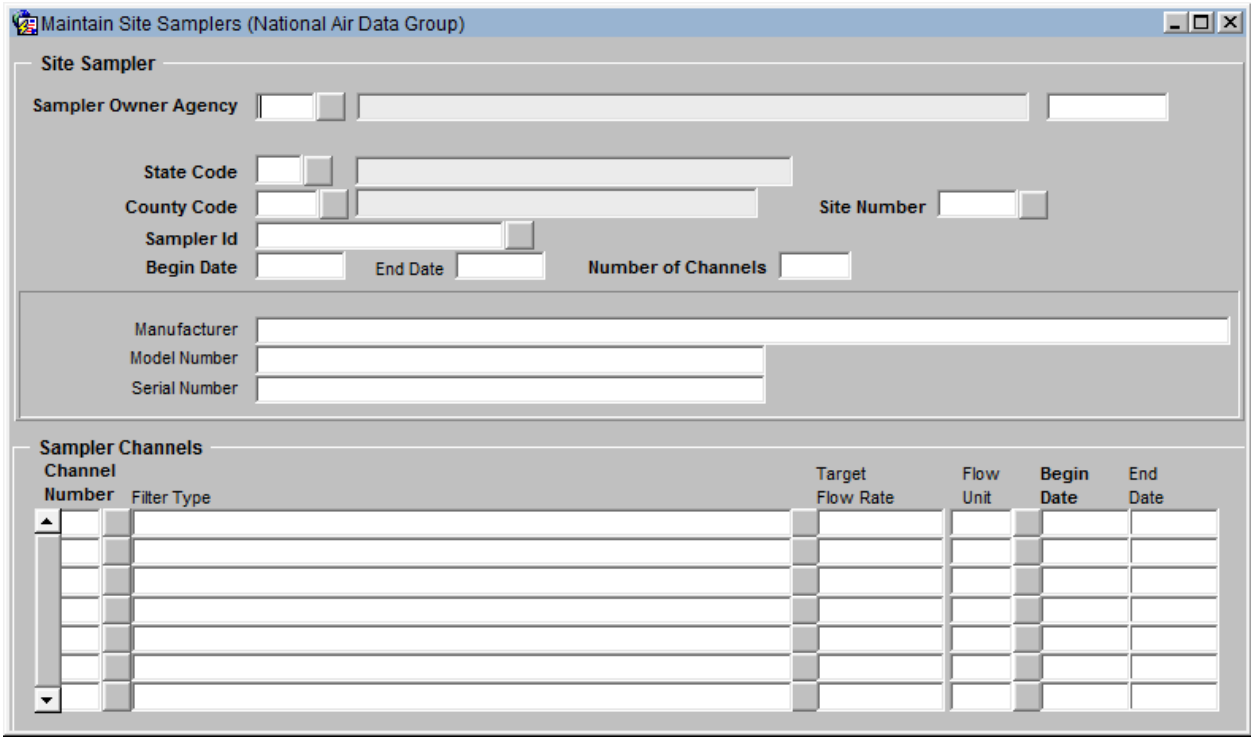
Add Site Samplers

To access the Site Samplers form the user will click the Maintain link in the Menu Bar, this will open a drop down menu. Here the user will select Site Samper from the drop down menu.

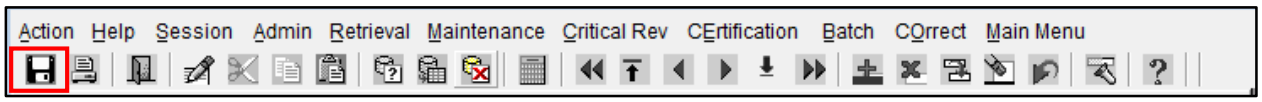


To create a new Site Sampler the user will first click the Cancel Query icon.

The user then needs to fill in all of the required fields. Required fields are indicated by the bolding of the field name.



Once all of the required fields are populated the user should click the Save icon.



The status bar (at the bottom left of the screen) should indicate that a record has been applied and saved.

Adding Events via Maintain

Maintain Event

This section will describe how to use the maintain forms to create a new exceptional event and associate it with raw data. This section of the document is separate from the Maintain section because it is a special case - there are currently no AQS transactions for events, so the only way to enter this data is via the maintain forms.

Exceptional Event Rule

The Exceptional Event Rule (EER) was published March 22, 2007 and became effective May 21, 2007. The EER allows the ambient air quality data which is submitted to AQS and used in making regulatory decisions, to be, in some cases, flagged and, where appropriate, excluded from calculations in determining whether or not an area has attained the standard. The data flagged as “exceptional” must have been affected by an exceptional event, which is defined as an event that affects air quality, is not reasonably controllable or preventable, is an event caused by human activity that is unlikely to recur at a particular location or a natural event, and is determined by the EPA in accordance with 40CFR 50.14 to be an exceptional event.

Event Process Workflow

This section outlines exceptional event related steps occur and in what order. Not all of these steps involve AQS. Steps that are performed within AQS are in italics. How to use AQS to perform these functions is covered next.

1. Event happens. The real-world exceptional event occurs.
2. Event affects data. Ambient air quality is affected by the exceptional event and measured by monitor reporting to AQS.
3. Should data be excluded? Reporting agency investigates and determines that there is cause to suspect exceptional event influence on the sample measurement(s)
4. *Data is flagged. Reporting agency adds a Request Exclusion qualifier to the affected sample measurements in AQS to flag the data in AQS as suspected of being influenced by the exceptional event (note: the flagging of data can occur either before or after the data is submitted to AQS; reporting agency has until July 1st of the year following the year in which the flagged measurement occurred to add an exceptional event qualifier flag)*
5. *Event is defined. Reporting agency enters the initial Event description; AQS responds by creating the event record (note: reporting agency has until July 1st of the year following the year in which the flagged measurement occurred to add an initial description of the exceptional event)*

6. *Associate data with event. Reporting agency accesses AQS to associate the appropriate flagged values with the Event (AQS saves date of association;*
7. Justify exclusion request. Reporting agency can take up to 3 years from the time of the event to conduct analysis, hold public review, prepare justification documentation and submit documentation to the EPA. For appropriate flagged measurements, the reporting agency develops documentation that the exceedance was caused by the exceptional event.
    1. A clear causal relationship exists between the event and the measurement;
    2. The measurement is in excess of normal historical fluctuations, including background;
    3. There would not have been an exceedance or violation if the event had not occurred;
    4. The required public comment process has been followed;
    5. The documentation package includes references to specific exceedances of a specific NAAQS.
8. Submit package. Reporting agency submits (via hardcopy or electronic means) the required justification documentation for affected measurements to their EPA Regional Office
9. Regional Review. EPA Regional Administrator reviews documentation with respect to:
    1. Validity of event occurrence;
    2. Causal relationship to the monitoring data (exceedances) under consideration
10. *Concurrence Indicator Updated. Regional administrator accesses AQS to Concur or Deny with the exclusion request, with respect to the specific NAAQS*
11. *Exclude Data. AQS re-computes affected summaries.*

Flag Values with Event Qualifiers

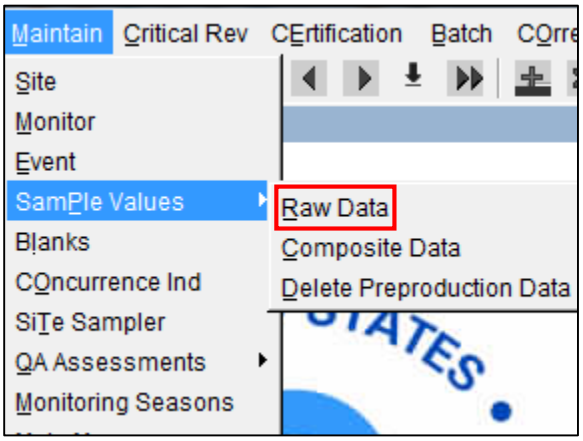
Sample values (raw data) can be flagged using either the Batch process or Maintain forms.

Flagging Values via Batch Data

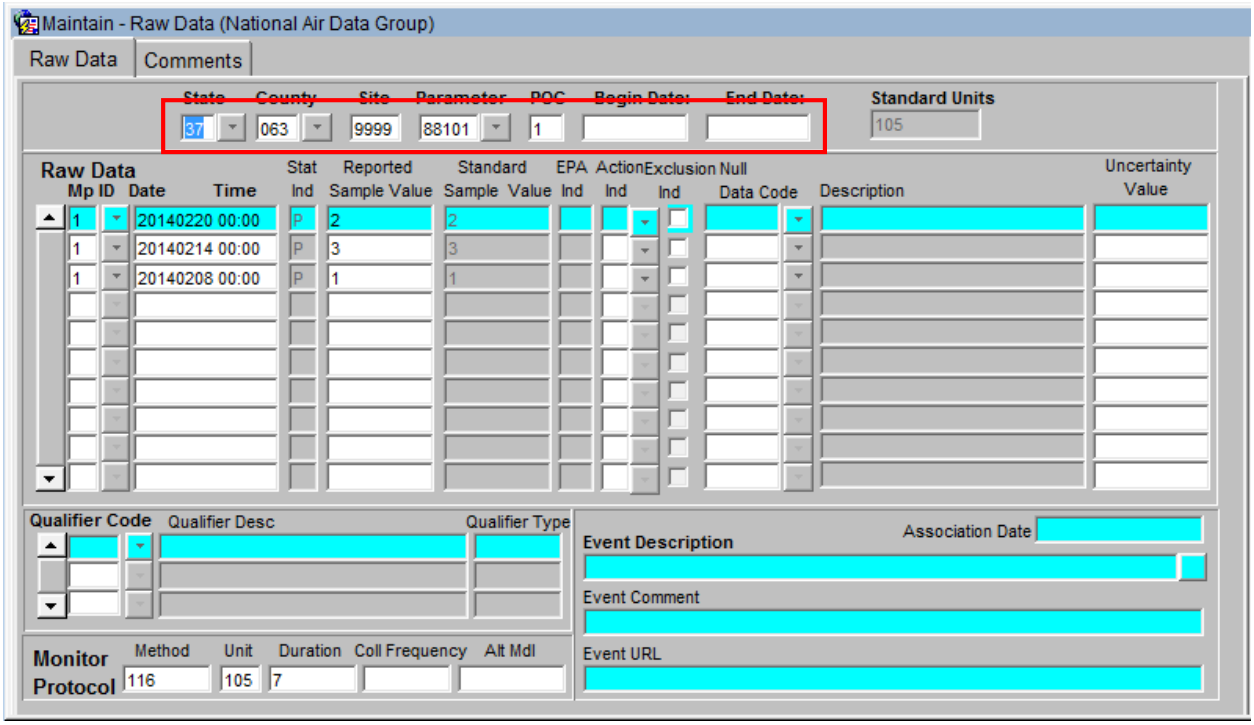
1. Create transactions that have Request Exclusion Qualifiers (see the Data Coding Manual for details) appropriate to the event type.
    1. The transactions can be Insert transactions for new data or Update or Replace transactions for data already in AQS.
2. Load this data using the Batch process.

Flagging Values via Maintain

1. The reporting agency user determines that a specific sample measurement (or small set of measurements) is affected by an exceptional event.
2. The user decides whether to flag the sample measurement with the Informational Qualifier ("INFORM") or the Request Exclusion Qualifier ("REQEXC") for the event.
3. The user queries the measurement. In AQS, Maintain → Sample Values → Raw Data

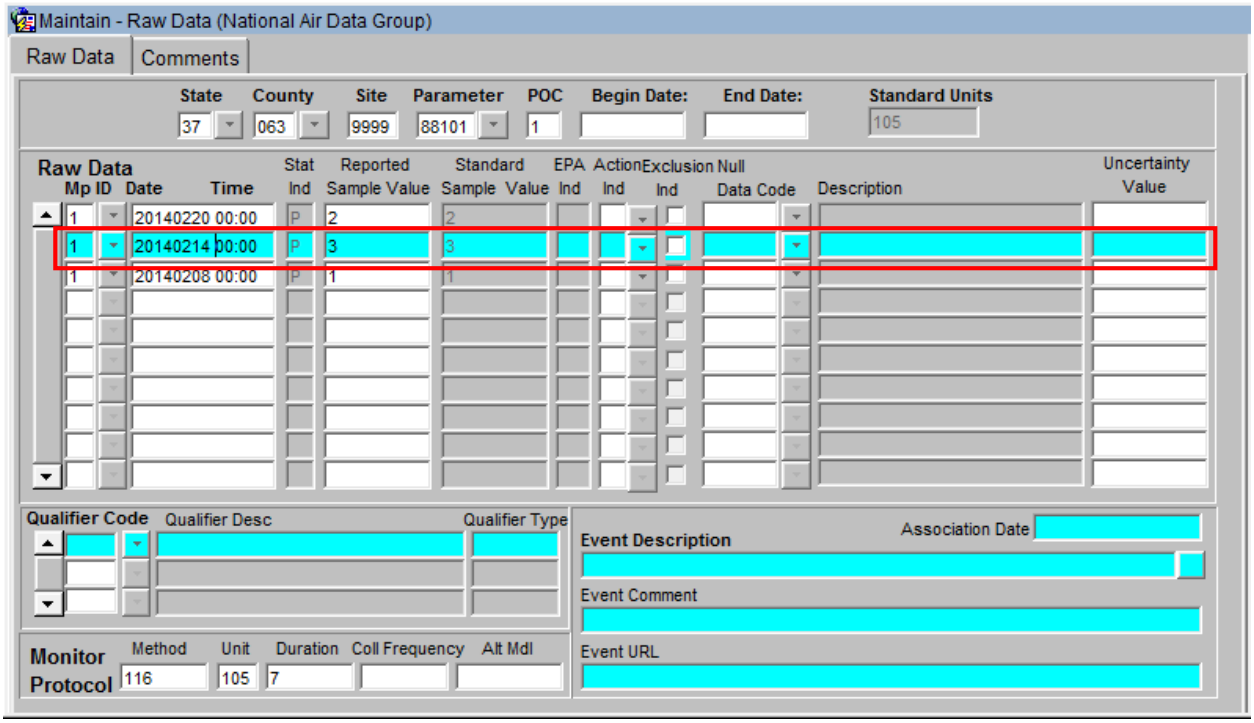


4. The user will then use the Query tool to select the sample measurement to which the user wants to add (or modify) the qualifier code. (State, County, Site, Parameter and/or Begin and End Dates. Then Execute Query)

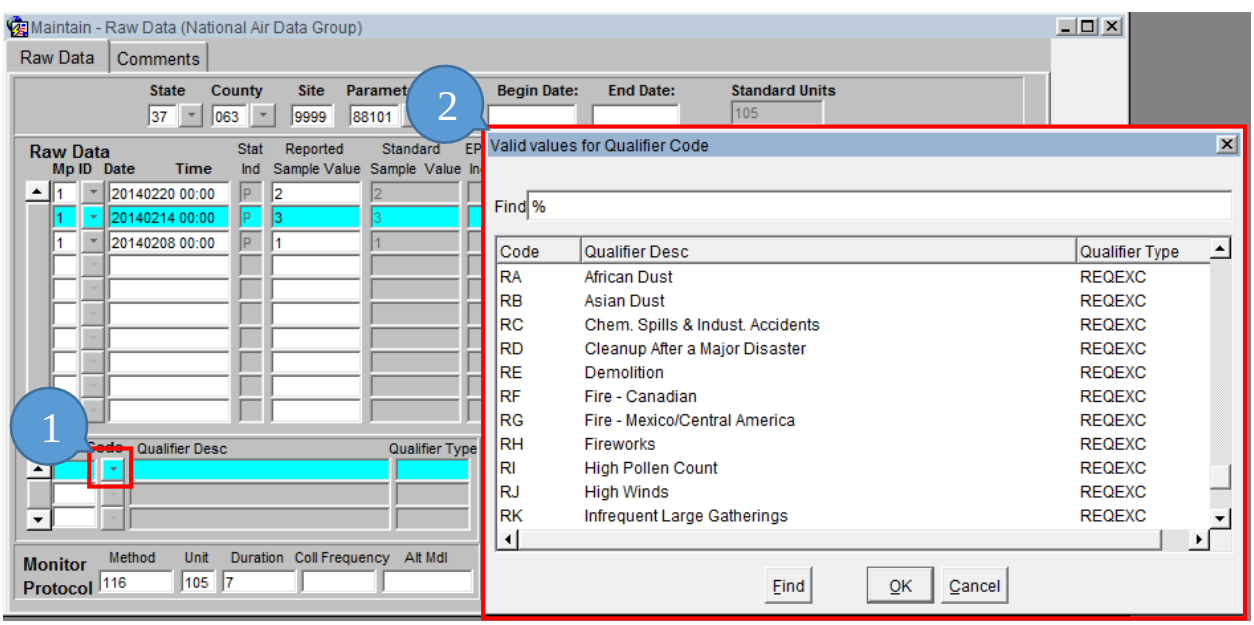


5. The user will then add an exceptional event qualifier to the raw data record.

   The user will select the record to add the exceptional event to by clicking the record field, the respective record should now be highlighted.



   At this point the user will select the appropriate code from the (1) Qualifier Code drop down menu. This will open a (2) pop-up, for the user to select the exceptional event.



Note] Exclusion Qualifier ("REQEXC") codes all begin with the letter 'R'.

Then, the user will save the changes by clicking the Save icon.

The sample value now has an exceptional event qualifier. Before this sample is visible to the Regional Office for concurrence purposes, the sample values must be associated with an Exceptional Event. (See the next section.)

Defining an Exceptional Event

Exceptional events must be described and documented in order for EPA regional office to concur on affected data requests. This documentation must be completed in AQS via online forms.

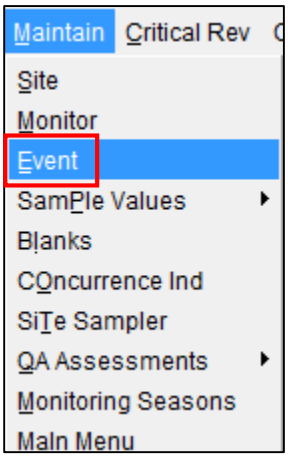
Users do not have to define an exceptional event as a prerequisite to flagging measurement data with the qualifier code. However, if a user requests concurrence from EPA for flagged data to be excluded, then the exceptional event needs to be defined before the concurrence flags can be set.

In order to add exceptional events the user must be in the screening group that "owns" the data and the user must have the authority to edit raw data and event data.

The event can be defined either via Maintain Exceptional Events (recommended if it is anticipate that this event will affect many sample values) or via Maintain Raw for each sample value.

Using Maintain Event to Define and Associate Events

The user will click Maintain on the Menu Bar. This will open the drop down and the user will then select Event. This will open up the Maintain Exceptional Events form.

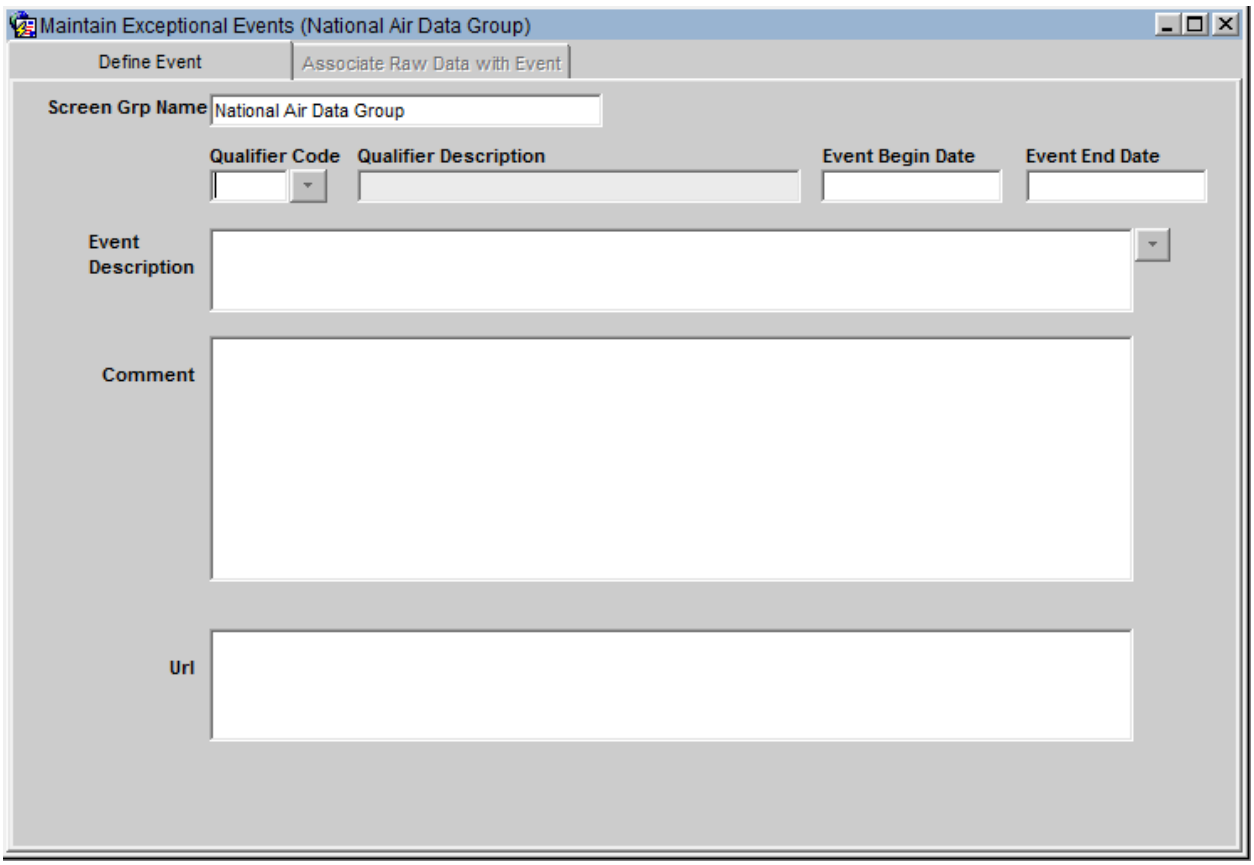


Required information to define an exceptional event:

- Qualifier Code (this is the type of event and are selected from the drop down - these map to the REQEXC type qualifiers).
- Event Description.

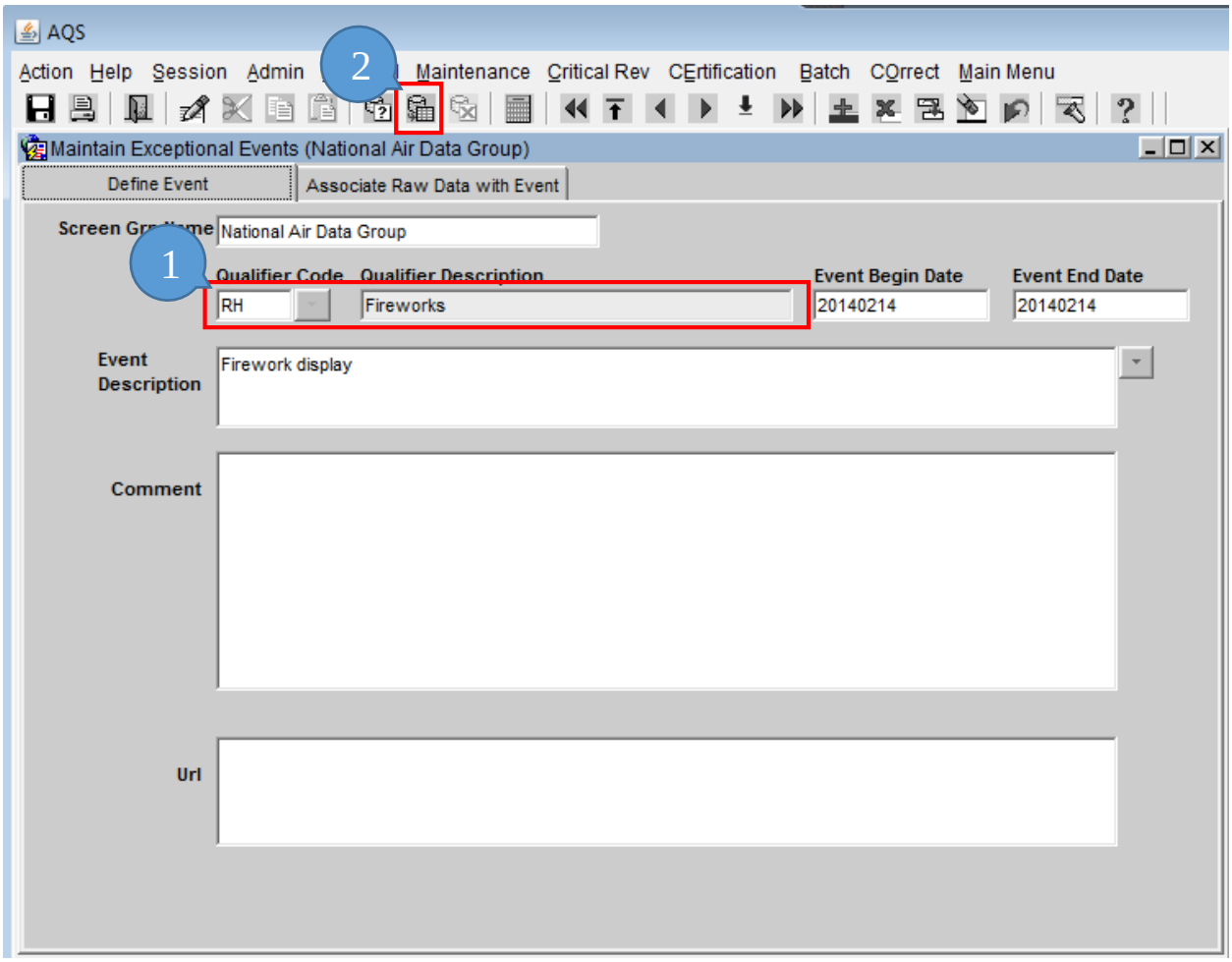
Optional information:

- Event Begin Date.
- Event End Date.
- Comment.
- URL.



On the Define Event tab the user will:

1. Use the drop down on “Qualifier Code” to select the type of exceptional event - **required**
    1. The “Qualifier Description” field will be populated with the description matching the Qualifier Code selection.
2. Add an “Event Begin Date” and “Event End Date” in YYYYMMDD format – **optional**
    1. Usually exceptional events have a distinct begin and end date.
3. “Event Description” – comment field - **required**
4. “Comment” – comment field - **optional**
5. “URL” – add a link to a webpage to add additional explanatory materials - **optional**



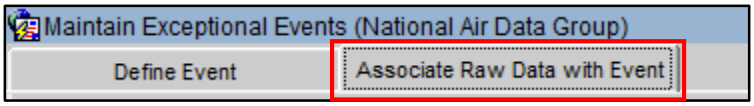
If there is an existing Exceptional Event, then the user can query the event by:

1. Entering the qualifier code and/or the event description.
2. Submitting the query using the "Execute Query" icon.

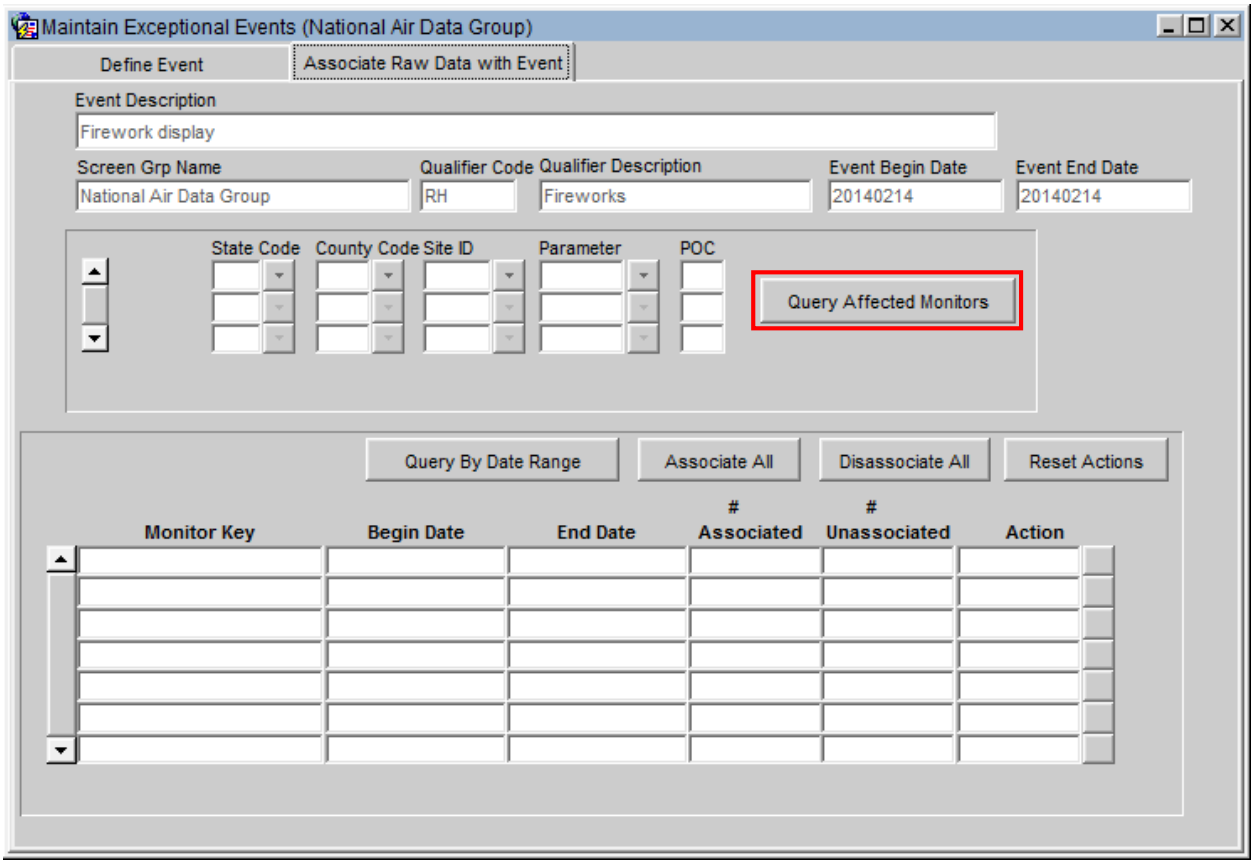
The events that match the query criteria will display on the Define Event tab.

Associate Raw Data with Event

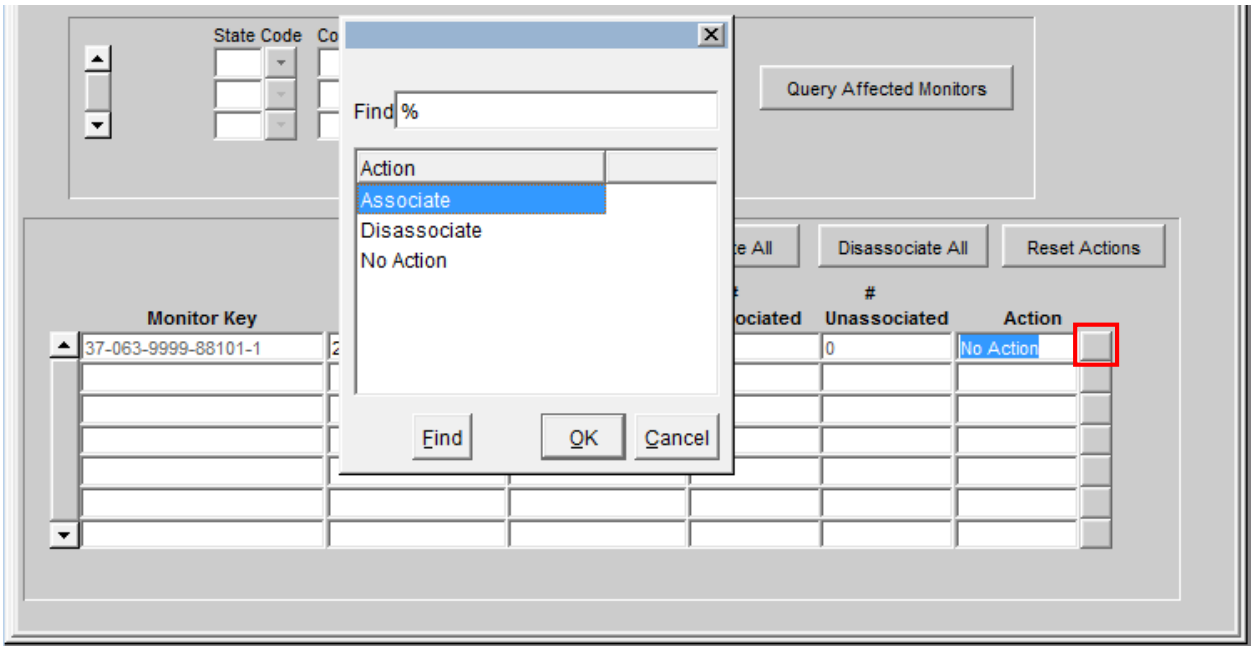
To associated raw data with an event the user will select the Associate Raw Data with Event tab.



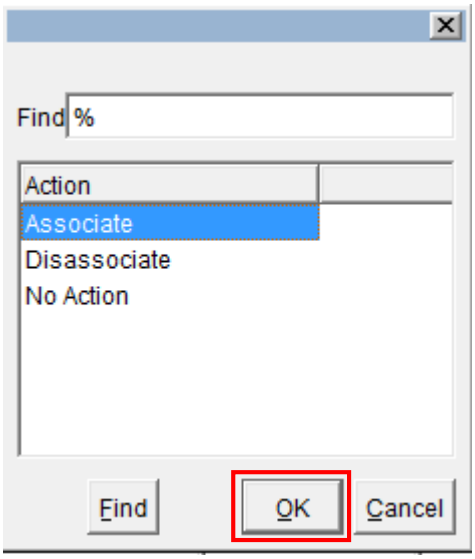
To see which monitors are associated with this event, or to associate a monitor with this event, the user will select “Query Affected Monitors.”



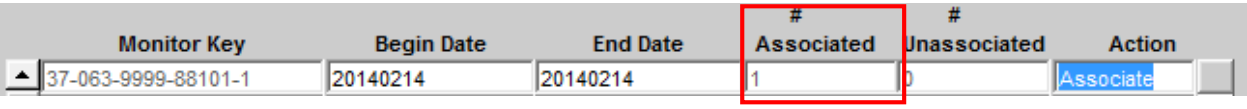
In order for the user to associate any unassociated monitors with the event, the Action LOV button must be clicked for the respective row.



This will open a pop-up that allows the user to select 'Associate' to associate the affected monitor/s. Then the user will click 'OK'.



At this point the user will notice that the monitor will now display in the '# Associated' column.

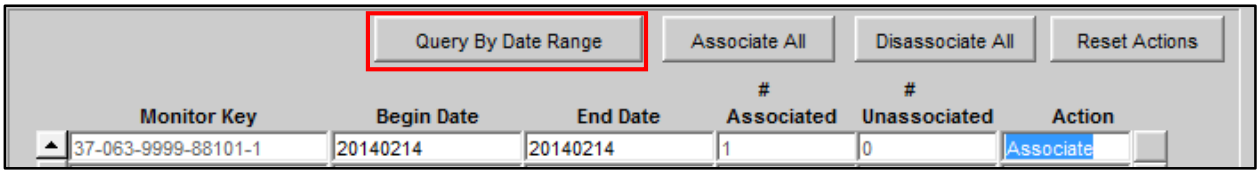


Once the user verifies that all information is correct the 'Save' icon should be clicked.

The sample measurements that match these criteria and that were flagged with the qualifier flag are now available for the Regional Office to set the concurrence indicators via the Maintain Concurrence menu in AQS.

Query by Date

The user can also query the events by date. After the monitor data has been retrieved by the 'Query Affected Monitors' button, the user can change the Begin Date and/or End Date values. Then click the 'Query By Date Range' button. The flagged data available will be limited to that which falls between these new dates.



Add concurrence flag – Regional Office

An EPA Regional Office AQS user can add a concurrence flag to signify that they concur with the exclusion of sample measurements due to an exceptional event. This concurrence can only be done via online forms.

A “Concur” flag means that the Regional Office concurs with the exclusion. A “Deny” means that the Regional Office does not concur with the exclusion.

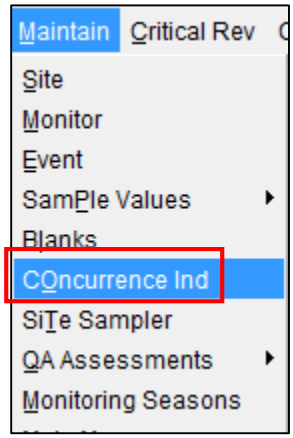
Certification is preserved when data is Concurred or Non-Concurred. The Certification of a Monitor-Year is only removed when the concentration value of a sample measurement is updated, but not when other fields are updated.

Sample values can be concurred/non-concurred based on different existing standards:

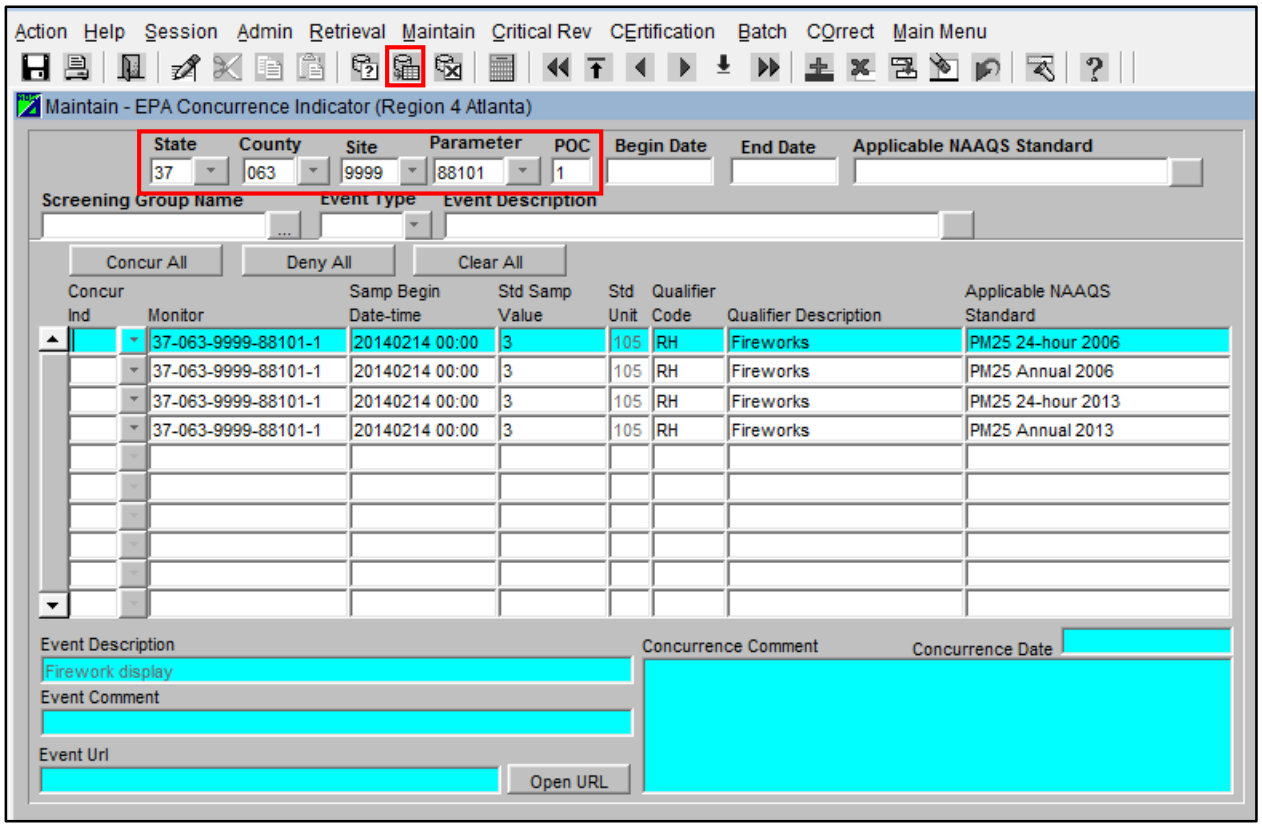
Pollutant	Standards
O_3	8-hour 2008 1-hour Daily 2005 8-hour 1997
SO_2	24-hour 1971 3-hour 1971 Annual 1971
NO_2	Annual 1971
CO	8-hour 1971 1-hour 1971
Pb	Quarterly 1978
PM_{10}	24-hour 2006
$PM_{2.5}$	24-hour 2006 Annual 2006

Work Flow

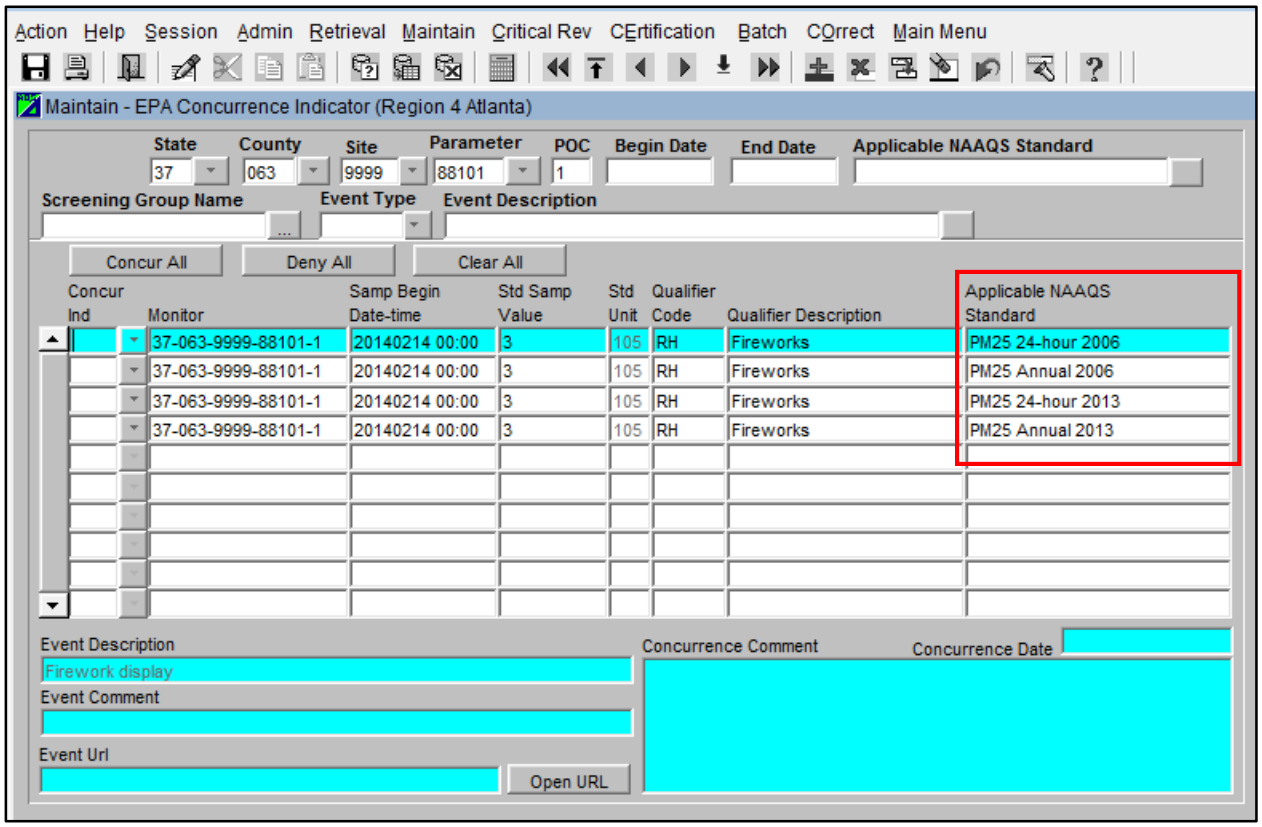
1. The Regional Office user evaluates the documentation for a sample measurement that was flagged as being affected by an exceptional event.
2. The Regional Office user will use the Maintain Concurrence form in AQS to query the affected sample measurements and to set the concurrence flag. To access this portion of AQS, the user must have the correct authorization. An authorized Regional Office user would have access to all the monitors in that region. From the Menu Bar, the user will click 'Maintain' then select 'Concurrence Ind'.



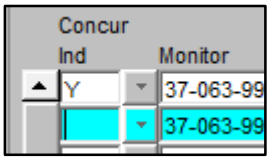
3. Query the affected sample measurements:



4. Where applicable, the concurrence flag can be set for a particular standard.



5. If the region agrees with the exclusion they will enter 'Y' in the 'Concur Ind' field.



Note] a "Concur" flag means that the Regional Office concurs with the exclusion. A "Deny" means that the Regional Office does not concur with the exclusion.

6. The Regional Office will save the changes using the “Save” icon.

The addition of an exceptional event qualifier flag to sample values initiates (during the POST process) the re-computation of all of the summaries:

- At monitor-level:
    - NAAQS Averages
    - Daily Summaries
    - Quarterly Summaries
    - Annual Summaries
- At site-level:
    - Daily Summaries
    - Quarterly Summaries
    - Annual Summaries

Data Reports

Standard Reports Overview

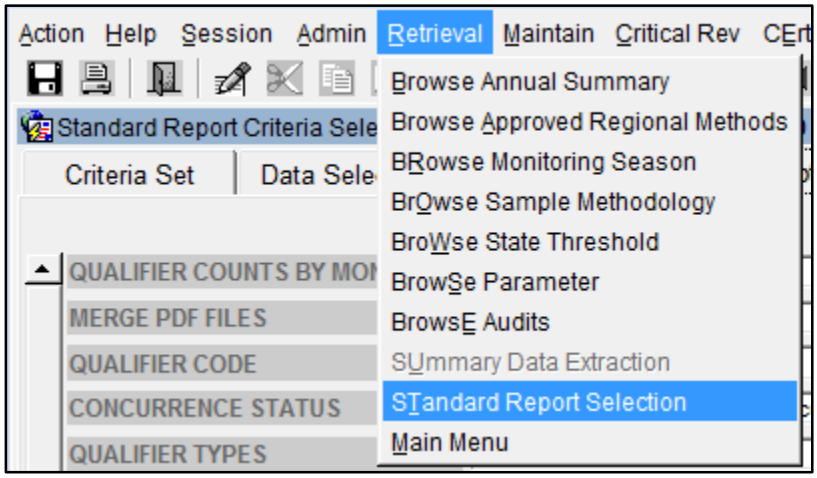
In AQS, the most common way to view data is via Standard Reports. These are pre-defined reports that show most of the data in AQS.

This chapter gives a brief overview of how to use the reports function of AQS. It does not cover the contents, formats, and options available for each report.

Standard Reports Form

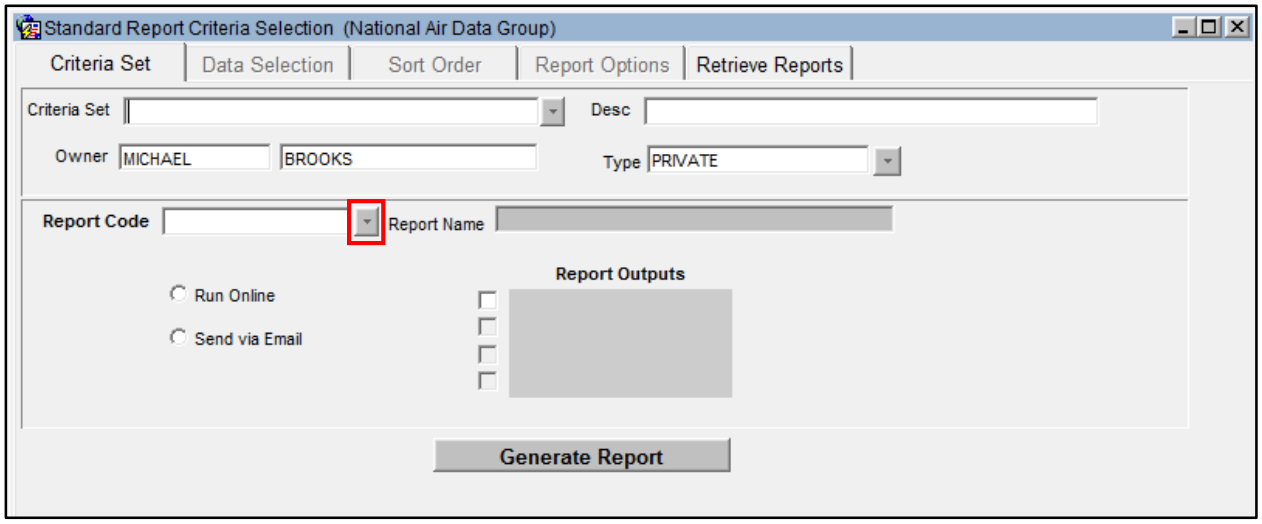
Criteria Set Tab

AQS Standard Reports are under Retrieval in the Menu Bar. To navigate to them, the user will click 'Retrieval' form the Menu Bar then select 'STandard Report Selection' from the drop-down.

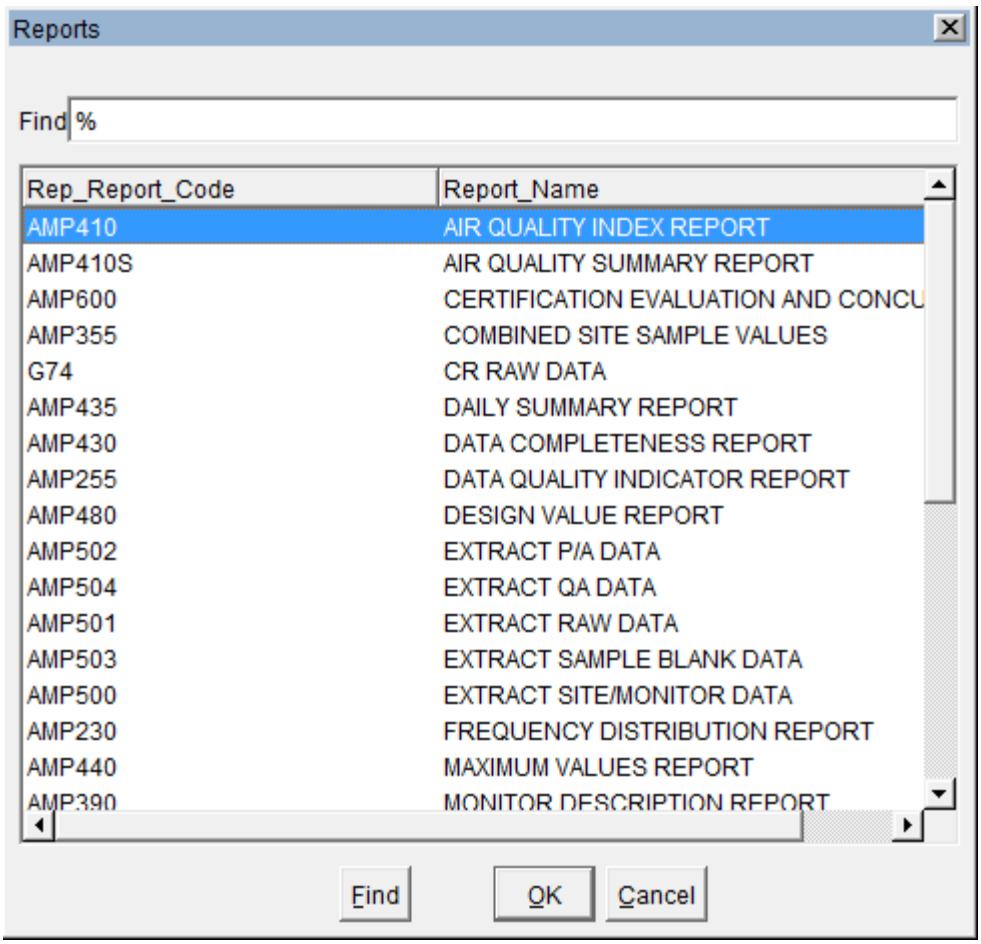


This will open the 'Standard Report Criteria Selection' form.

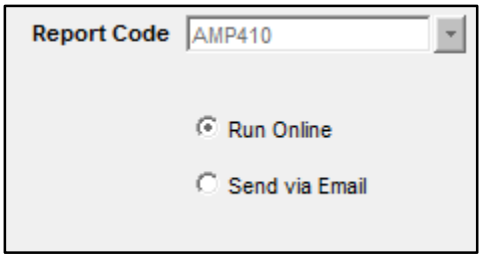
The user will click the LOV associated with the Report Code field.



This will open a pop-up providing the user with a list of reports to choose from.



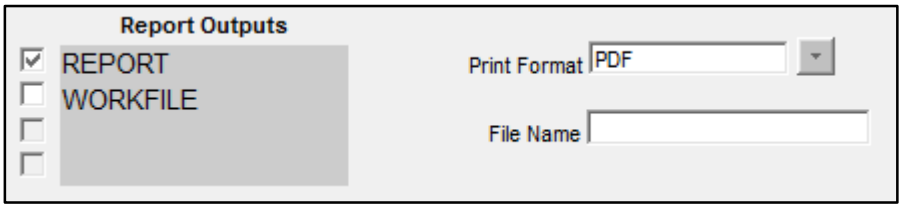
Once the user has done this the mode the report will run in needs to be determined.



If the user selects 'Run Online' the report will be delivered to the user's browser and the user must stay on-line to retrieve the report.

If 'Send via Email' is selected, AQS will email the report to the address in the user profile. This is called a "batch" report (just like batch load, it can be working while the user is not logged in).

After the user selects a Report Code the Print Format will be show. Also, if the user selected 'Send via Email' then the File Name will be shown.



Output Formats

There are generally two Report Output options available, however there may sometimes be more.

Report

This is a formatted report designed to be read. It is associated with the PDF format.

Workfile

This is a text file of tabular data (with a header) for things like spreadsheets to read. Each AQS report has its own distinct workfile format.

XML

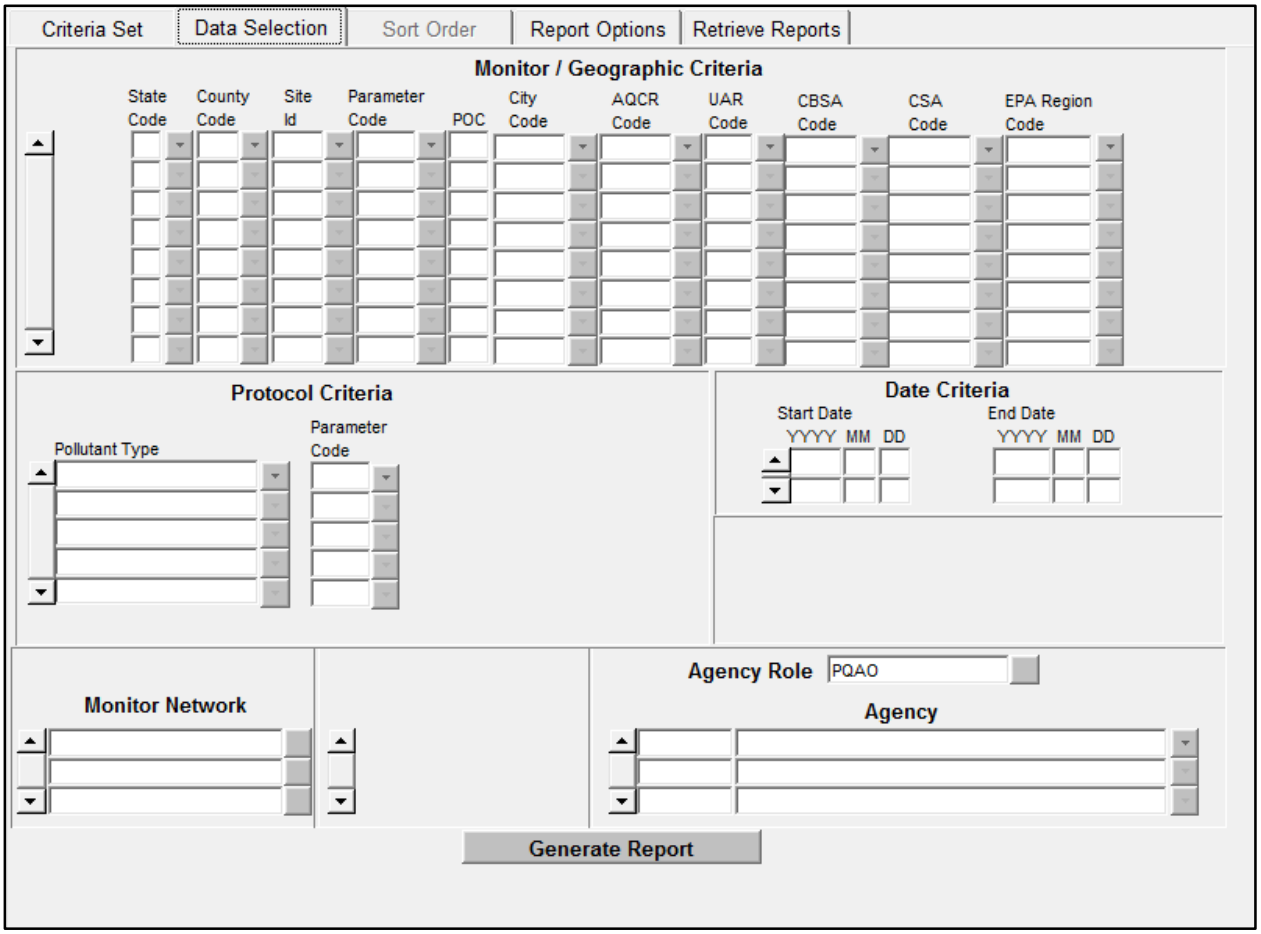
This is a tagged text file of nested data designed for computers to read.

The user may select as many of the Report Outputs as desired. If multiple selections are made, the same data will be sent in different formats.

File Name

If Send via Email was selected the user must give it a short file name in order to have AQS email the report when it is complete.

Data Selection Tab



The form is divided up into several blocks, each with their own bold header: Monitor/Geographic Criteria, Protocol Criteria, Date Criteria, Monitor Network, and Agency Role. Some blocks may have default values populated depending on the report you have selected.

Each of these blocks allows the user to enter selection criteria for the selected report. Only data that matches criteria will be included in the report. There are a few things to keep in mind when entering selection criteria:

- Certain minimum criteria are required. These vary by report, so the fields are not bolded (like correct and maintain forms). If not have enough criteria have been entered, an error message will be generated.
- The more criteria entered the less data will be returned, and the faster the report will run.
- Entering a criteria means produce those values. Leaving a criteria blank means produce all values.
    - For example, entering a state code will return data for all monitors in the state.
    - Entering a state code and a county code and a parameter code will return data for just that parameter in that county.

- Entering a pollutant type or parameter code will return data just for it. Leaving it blank will return data for all parameters.

Sort Order Tab

Each report in AQS includes a default sort order (usually the order of display). For some reports, this can be altered using the Sort Order tab. Sort columns can be moved up or down in the sort order by highlighting them and pressing the up or down arrow buttons. Columns may not be added to the sort order.

Report Options Tab

Each report in AQS includes a default set of options that can be changed. To change the options, the user will select different values for the options by using the LOV (drop down) associated with each.

Some reports (with NAAQS related data) will also include some information (that is not adjustable) about which standards will be represented in the data.

Retrieve Reports Tab

This tab keeps a history of recent reports that have been run (going back 30 days). This tab can be used to check on the status of a long-running batch report. It can also be used to download the output of previous reports that may have been misplaced.

Running a Report

After the report and output options have been chosen and all of the selection criteria (and optionally adjusted the sort order and changed options) have been entered, the report is ready to be run.

Note] every tab on the Standard Reports form (except Retrieve Reports) has a Generate Report button.

After the Generate Report button has been clicked the application may jump back to where the user last had his cursor or to the Criteria Set tab - this is normal.

At this point one of two pop-ups will display:

Report Submitted for Batch Processing

If the report was run in batch mode (emailed to the user when completed), this is the pop-up that will be displayed.

Report Status

If the report was run on-line, the pop-up will display the stage and percent complete of the report. The report can be canceled if an error was made or it is taking too long. When the on-line report is done it will be delivered to the user's browser. If the output is a Report it will appear in a new tab. If the output is a workfile or XML the browser will prompt the user to download a zipped file.

Report Contents

All reports contain a PDF cover page echoing the selection criteria.

If the only output is PDF files, this page will be added to the beginning.

If the output includes non-PDF output, all files will be zipped into a single archive that includes the cover page echoing the selection criteria and one or more files with the results (depending on the report and the outputs). All of the files will begin with the File Name entered on the Criteria Set tab and include suffixes and extensions.

Logging Off

AQS can be closed (and logged off) by clicking on either the usual window close button (the red X on the top right for windows users) or the Exit icon.

The user may be asked whether to commit/save changes or exit. The user should answer appropriately.

The user may also exit AQS by closing the browser window that AQS is running in, however it should be noted that this closes AQS without it prompting if the user would like to save any changes.

Learn more, service, and support

Refer to the following resources to get more AQS support.

To learn about	Do this
General Use Password Reset Reporting problems	Contact the AQS Help Desk M-F 8am-6:30pm EST 866.411.4372 opt 9 epacallcenter@epa.gov M-F 6am-9pm EST
Quick Reference	Go to AQS Quick Ref Guide
Data Retrieval	Go to AQS Data Retrieval Manual
Loading Data	Go to Loading Data in AQS
Detailed information about data in the database	Go to AQS Data Dictionary
AQS related material	Go to Manuals and Guides
Updating the User's Guide	Contact Mr. Michael S. Brooks
User Updates	Go to AQS RSS feed
AQS XML file construction	Go to Exchange Network

Appendix A

Quick Reference Guide

Tips

- Passwords must be changed every 90 days.
- When using reports, be as specific as possible in providing criteria.
- “%” is the wildcard for Oracle queries.
- Date format is: YYYYMMDD
- Under Maintain, if you are logged on in a screening group, you can only access records assigned to your screening group.

Changing Passwords

1. From the Main Menu, click Admin, then Security.
2. Enter new AQS password and Confirm password, click ‘Ok’.

Browse Data

1. From the Main Menu, select Maintain.
2. Select the type of data you want to browse: Site, Monitor, Sample Values (Raw Data)…
3. Enter criteria for limiting the data (For example, state, county, site...).
4. Click the Execute Query button.

Changing Raw Data Values

1. From the Main Menu, click Maintain, Sample Values, and then Raw Data.
2. Enter monitor identifying information, date range, and click Execute Query.
3. Click on field in Raw Data area to change.
4. Change incorrect value.
5. Click Save icon.

Deleting Raw Data Records

1. From the Main Menu, click Maintain, Sample Values, and then Raw Data.
2. Enter monitor identifying information, date range, and click Execute Query.
3. Click on field in Raw Data area to delete.
4. Click Remove Record icon.
5. Click Save icon.

Changing Site/Monitor Data

1. From the Main Menu, click Maintain, then Monitor.
2. Enter Site/Monitor identifying information.
3. Click Execute Query.
4. Make changes.
5. Click Save icon.

Note] changing site data is the same except you would specify Site from the Maintain option.

Using Correct to Change Records in the Staging Tables

1. From the Main Menu, click Correct, then Raw.
2. Enter identifying information, then Execute Query.
3. Correct errors.
4. Click Save icon.
5. Navigate to Batch screen.
6. Click the 'Load File' button.

Uploading Data Using Batch

1. Select Screening Group Access and Screening Group.
2. From the Main Menu, select Batch.
3. Click 'Goto ENSC' and login to the Exchange Network.
4. Click 'My Service Center'.
5. Select the 'Service Name' ending in AQS Submit.
6. Select a Document to Upload.
7. Fill in all other fields and then click 'SEND DATA'
8. After clicking the Send button the 'Request Received!' screen will appear.

Creating Reports

1. From the Main Menu click Retrieval then Standard Reports Selection.
2. Provide Report Code on Criteria Set tab.
3. Choose to run the report online or have it sent via Email.
4. Provide selection criteria on Data Selections tab.
5. If necessary, complete Sort Order and Report Options tabs.
6. Click 'Generate Report' on Criteria Set tab.

Inputting Raw Values Using Maintain

1. From the Main Menu, click Maintain, Sample Values, and then Raw Data.
2. Enter monitor identifying information and then click Execute Query.

3. On Raw Data tab, click on one of the records in the 'Raw Data' area of the screen.
4. Click Insert Record icon in top menu and enter new information.
5. Click the Save icon.

Insert a New Site/Monitor Using Maintain

1. From within Screening Group, click Maintain, and then Site.
2. Click Cancel Query button.
3. On Basic Site Data tab, provide State, County Code, and Site ID.
4. Complete information on Required and Optional tabs of Maintain Site Data screen (Basic Site Data, Agency Roles…).
5. Click Save.
6. Click Create Monitor button.
7. Provide information on Monitor Basic tab as well as other tabs. (Several required fields).
8. Click Save button.
9. Verify that Site & Monitor have been entered by clicking from Main Menu, Maintain, Site and Monitor.
10. Enter State, County, Site ID, and then click Execute Query.
11. Site/Monitor should be displayed.