Ecology EDD Processing Tool

Users' Guide

Funded by an Ecology Stormwater Grant of Regional or Statewide Significance.

Laboratory Data Consultants

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1 Introduction

The City of Seattle received grant funds under the Ecology Stormwater Grant of Regional or Statewide Significance to develop an automated data validation software tool.

A standardized electronic data deliverable (EDD) was created to provide a standardized format for laboratories to streamline the data deliverable process. The Ecology EDD Processing Tool (EEPT) was developed on a Microsoft ACCESS 2000/2002/2003/2007 platform to support technical staff in the evaluation of analytical chemistry data using an expedited and cost effective automated process.

EEPT processing allows the data end user to efficiently evaluate large data sets for key indicators and ultimately determine the usability of the data. The application is designed to perform compliance screening of the EDD and routine data quality accuracy and precision checks traditionally performed through a manual data review. The EDD is checked for standard value errors, incorrect formatting, and missing information from required fields through the EED Error Checker. The EDD Error Checker function verifies the EDD immediately for completeness and compliance against project specific criteria. The EDD Data Review module performs an automated data review and provides the user with discrete data qualification. Data qualifiers are appended to each result in the EDD. After EEPT processing, the qualified data are then ready to be exported into a database.

This document is provided as a user manual for utilizing EEPT Automated Data Validation application. This computer application processes the laboratory electronic data deliverable (EDD) file formatted for the application. The application contains two parts, an EDD error checker and an automated validation module. Laboratories have access to the EDD error checker. Project Managers have access to both the EDD error checker and automated validation module. The error checker screens the laboratory EDD for errors prior to delivery to the client. The automated data validation module performs a quality control data review on the EDD. The EDD is updated with data review qualifiers, if applicable. The exported validated EDD file has the same fields and field sequence specified in the EEPT EDD.

1.1 EEPT EDD File Specifications

The EDD includes records for samples as well as associated quality control samples such as applicable method blanks, laboratory control samples, matrix spikes, and laboratory duplicates. Surrogate results for organic methods are also included in the EDD. Refer to Appendix A of this manual for the EDD file specifications.

The laboratory EDD can be constructed in Microsoft Excel then saved as a .csv file. Refer to the online help within Excel for saving a spreadsheet as a .csv file. Alternatively, the EDD can be constructed in any database table according to the field specifications in the Appendix and then saved as a comma delimited text file. Laboratory data are imported into the application as a Microsoft Excel .csv file or as a comma delimited text file.

1.2 Library and Valid Values

Libraries and Valid Values provide a means of customizing the validation parameters of the EEPT. Libraries and Valid Values can only be edited in the Administrative version of the software.

EEPT libraries hold all requirements for method and analyte name standard values, reporting limits, analytes to be reported for each method and matrix, and accuracy and precision limits for spikes and surrogates for a particular project. There can be more than one project library to reflect different project requirements. In this way, EEPT has flexibility to customize EDD assessment based on individual project requirements. The user selects the appropriate project library from a drop down list before executing error checking or automated data review.

1.2.1 Valid Value

The Valid Value tables are lists of the acceptable values for each column in the EDD format. For example the field “Fraction” is only allowed to have values of “Total”, “Dissolved” or null.

Some Valid Value lists can be edited and added to. For example, if the project required analysis for ß-Propiolactone, but it was not in the valid value list, it could be added to the Parameter and CAS Number Valid Value list. In order for a parameter or method to exist in a library, they must first exist in the Valid Values tables.

1.2.2 Libraries

Libraries are the EEPT version of a QAPP. A Library contains:

- a list of the methods to be used in the analysis
- a list of the parameters being tested
- all of the QC limits for the listed parameters and methods

The control limits entered in the Library should reflect ***project*** limits rather than ***laboratory*** control limits.

A Library created in EEPT will be able to be exported and imported to any copy of EEPT, either at a Laboratory or another Administrative group. Library files can be saved externally for archive purposes. EEPT can generate a series of printed reports based on the Library, which can be included in QAPP documentation if needed.

1.3 Versions

EEPT is packaged as two versions, a laboratory version and an administrative version. The laboratory version performs an error check and a technical consistency check among related results reported in the EDD. The Administrative version has the same functions as the lab version but also performs an automated data review of the EDD. Each version has its own installation CD.

1.4 EEPT EDD Error Checker

The EDD error checker serves two purposes: 1) checks that the EDD is correctly formatted and populated for the automated validation module, and 2) ensures field values reported in the EDD are compatible with the EEPT application. The EDD Error Checker screens the EDD for valid value errors, missing values in required fields, date and time format errors, logical date and time errors, numeric formats in applicable fields, missing laboratory quality control records, logical quality control sample batching, duplicate records, and consistency of field values (i.e. the MDL doesn't exceed the reporting limit). Additionally, the error check process looks at some technical consistency checks among constituent result values for related methods. EDD errors can be viewed in report format or in an Access form format (the EDD Error Log). The EDD Error log view allows users to use Access filter, find, and sort tools for reviewing EDD errors. The EDD Error Log also provides mouse-click access to a snapshot view of any EDD record where an error occurs. Both the EDD Error Report and EDD Error Log provide the record number and field name(s) where the error occurs (if applicable), a general error code number, and detail on each error. The error code number is a broad category error description (i.e. Error Code 0001 = Required Field Missing Information). Error code numbers can be useful when the laboratory first builds and processes EDDs. First attempts usually result in large error counts. In this case the error code number rather than the error description can better facilitate identifying and correcting systematic problems with EDD generation.

1.5 Automated Data Validation Module

The EPPT Data Validation module, which is only accessible in the Administration version, assesses the EDD and qualifies laboratory results against specific quality control limits and validation criteria. The validator imports the EDD received from the laboratory, reruns the error checker to confirm the laboratory EDD error report, and then runs the validation procedure. Automated Data validation updates each sample result record with review qualifiers as applicable. Validation results can be view on screen along with results for all quality control samples associated to each sample and method. The validation module provides a variety of validation reports, quality control outlier reports, and EDD content summary reports.

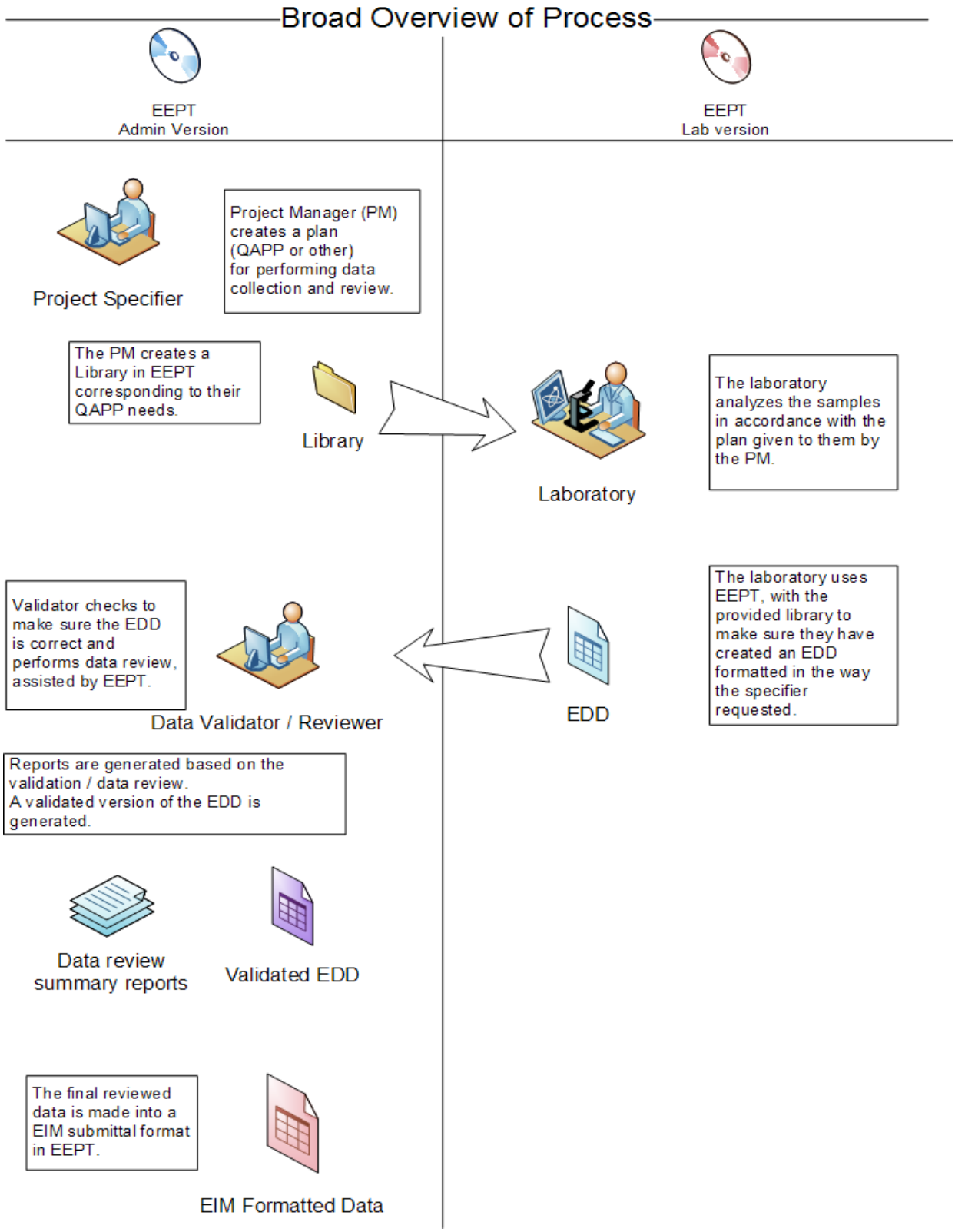
1.6 User Responsibilities

The EEPT functions as a tool to aid data users in evaluating the quality of analytical chemistry results. The application was designed to execute routine data quality accuracy and precision checks traditionally performed through a manual data review process. As inherent with all automated processes, the accuracy and integrity of information imported into the application is of vital importance. In working with analytical laboratories, the data user should design an overall Quality Assurance program to routinely verify the accuracy of electronically reported data versus traditional hardcopy data. The frequency of this check will depend on the capability and performance of the laboratory.

1.6.1 Contact Information

If you have questions or need assistance you may contact Amy Minichillo or Lea Beard at amy.minichillo@seattle.gov or lea.beard@seattle.gov. For questions involving extended licensing and software development, you may contact Laboratory Data Consultants via their website at http://lab-data.com/.

1.7 Work Flow


Broad Overview of Process
EEPT
Admin Version
EEPT
Lab version
Project Specifier
Project Manager (PM) creates a plan (QAPP or other) for performing data collection and review.
The PM creates a Library in EEPT corresponding to their QAPP needs.
Library
Laboratory
The laboratory analyzes the samples in accordance with the plan given to them by the PM.
Validator checks to make sure the EDD is correct and performs data review, assisted by EEPT.
Data Validator / Reviewer
EDD
The laboratory uses EEPT, with the provided library to make sure they have created an EDD formatted in the way the specifier requested.
Reports are generated based on the validation / data review.
A validated version of the EDD is generated.
Data review summary reports
Validated EDD
The final reviewed data is made into a EIM submittal format in EEPT.
EIM Formatted Data

2 Installation

This application is available to all Washington NPDES Stormwater Phase 1 permit holders. The application can be issued in the form of two computer CD-ROMs – one for the Administrative Version and one for the Laboratory Version or alternatively can be emailed in a *.zip file. Consult the Ecology web site for the latest EEPT distribution contact.

To install the program:

1. Insert the appropriate disc into the computer CD drive.
2. Open the CD in the browser window and double click on Setup.bat.

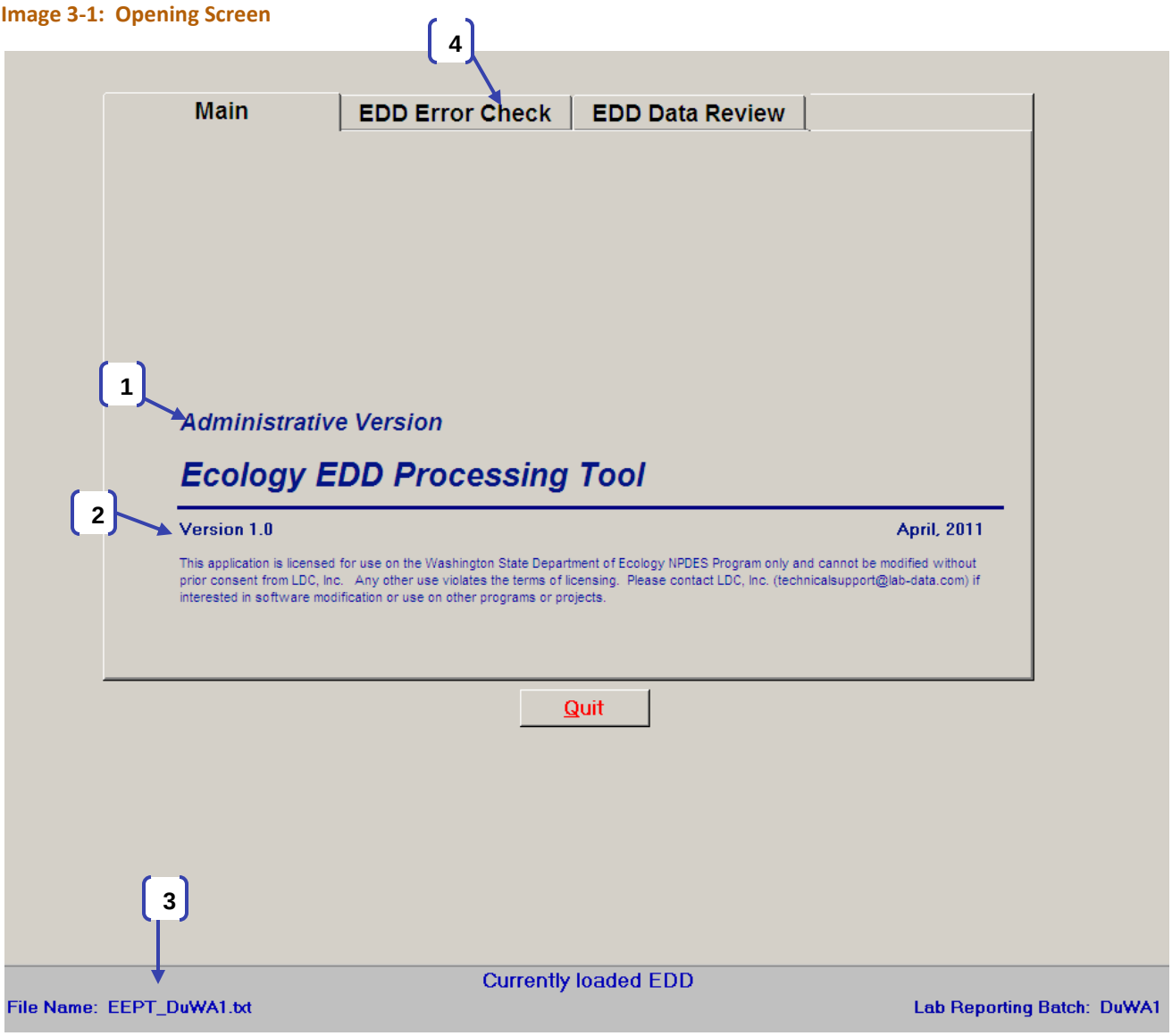
The EEPT will automatically be installed on the computer's C:\ drive, in a folder named "C:\Ecology_1_0". An icon in the will be created in the Start Menu under Programs > Ecology EDD Processing Tool > EEPT. The icon looks like this:

3 Starting

The EEPT application can be started by clicking on the icon that is generated by the installer or by clicking the *EcologyModules.mdb* file on your computer.

When the application starts, an instance of Access will be opened and the following splash screen [Image 3-1] will appear.

Image 3-1: Opening Screen



1. The EEPT version (Administrative or Laboratory) is displayed.
2. Software edition information is displayed.
3. The currently loaded EDD is shown. Only one EDD can be loaded to EEPT at any given time. Once an EDD is loaded it will stay in EEPT until another EDD is loaded.
4. Tabs across the top enable browsing to EDD Error Check and Data Review menus.

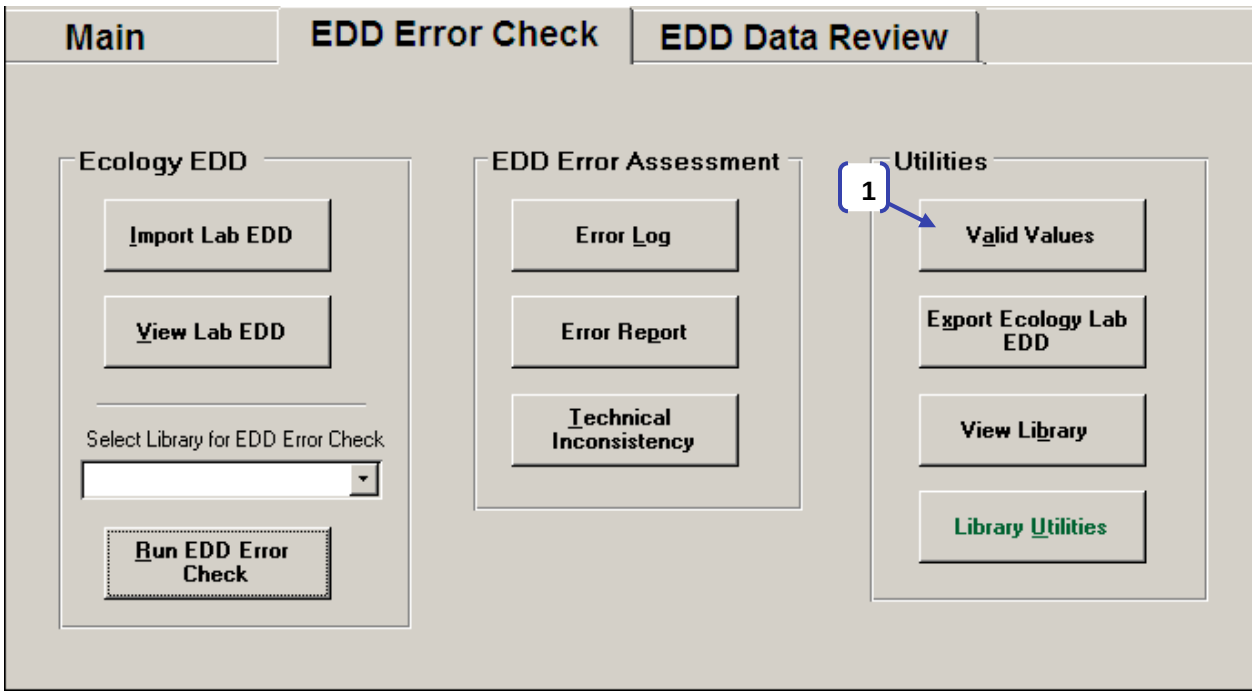
4 Library and Valid Values

Prior to requesting EDDs from a laboratory the project manager will need to create a project Library in EEPT and set the Valid Values. The project Library will need to be created and imported before EDDs can be processed.

4.1 Viewing and Editing Valid Values

Several EDD fields can only accept a restricted set of values. If a value other than a standard value is entered into one of these fields the error checker generates an error. You can view and, if necessary, modify the standard values for each field that requires a standard value.

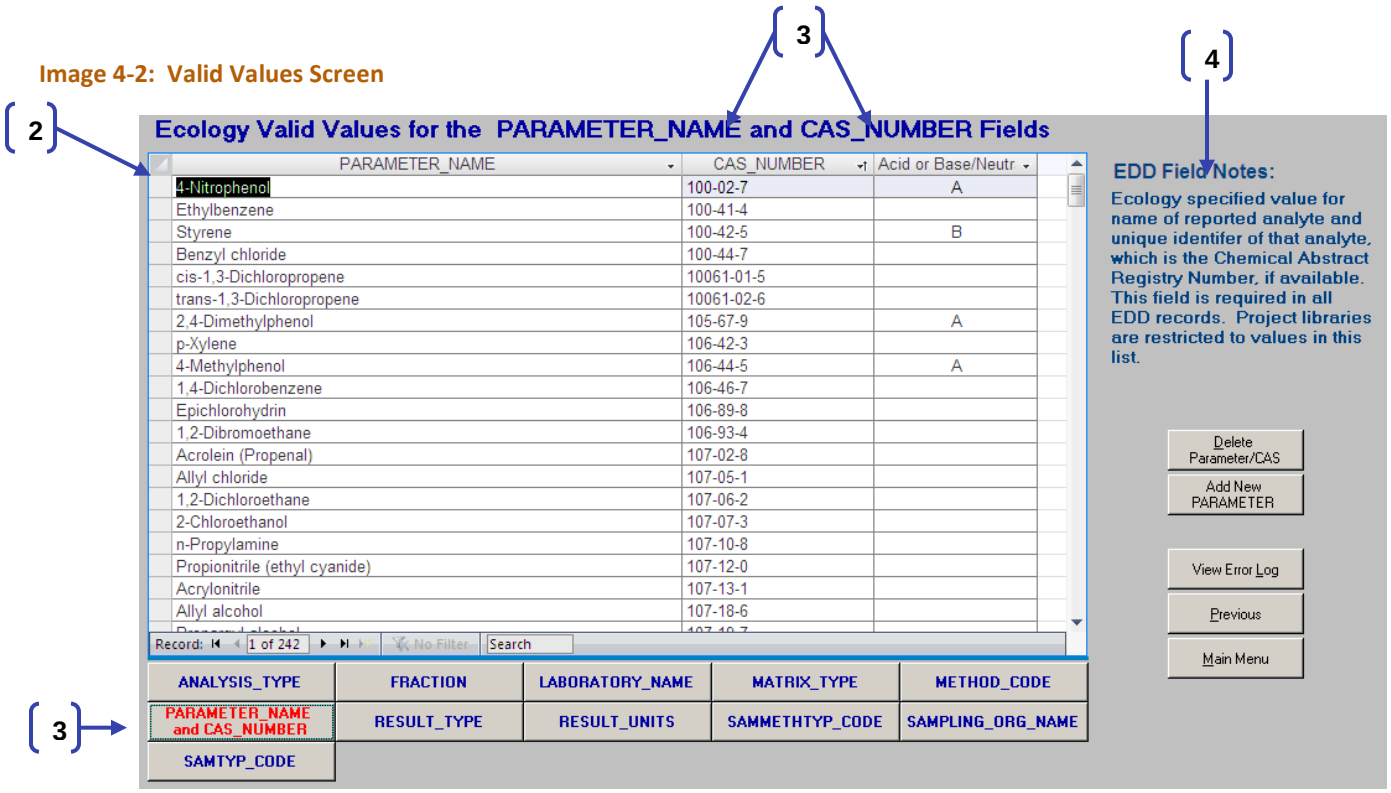
Image 4-1: EDD Error Check – Valid Values



1. Clicking on the "Valid Values" button in the EDD Error Check tab will bring up the Valid Values screen [Image 4-2].

4.1.1 Viewing Valid Values

Image 4-2: Valid Values Screen



2. You can use Access filter, find, and sort tools on the Valid Value and Valid Value Description Fields in the form.
3. Click on a button to view the valid values for the field that button represents. The title at the top of the screen indicates the field name for the currently displayed standard values. The button selected will be shown with red text.
4. The field description is displayed for the field selected in Step 3.

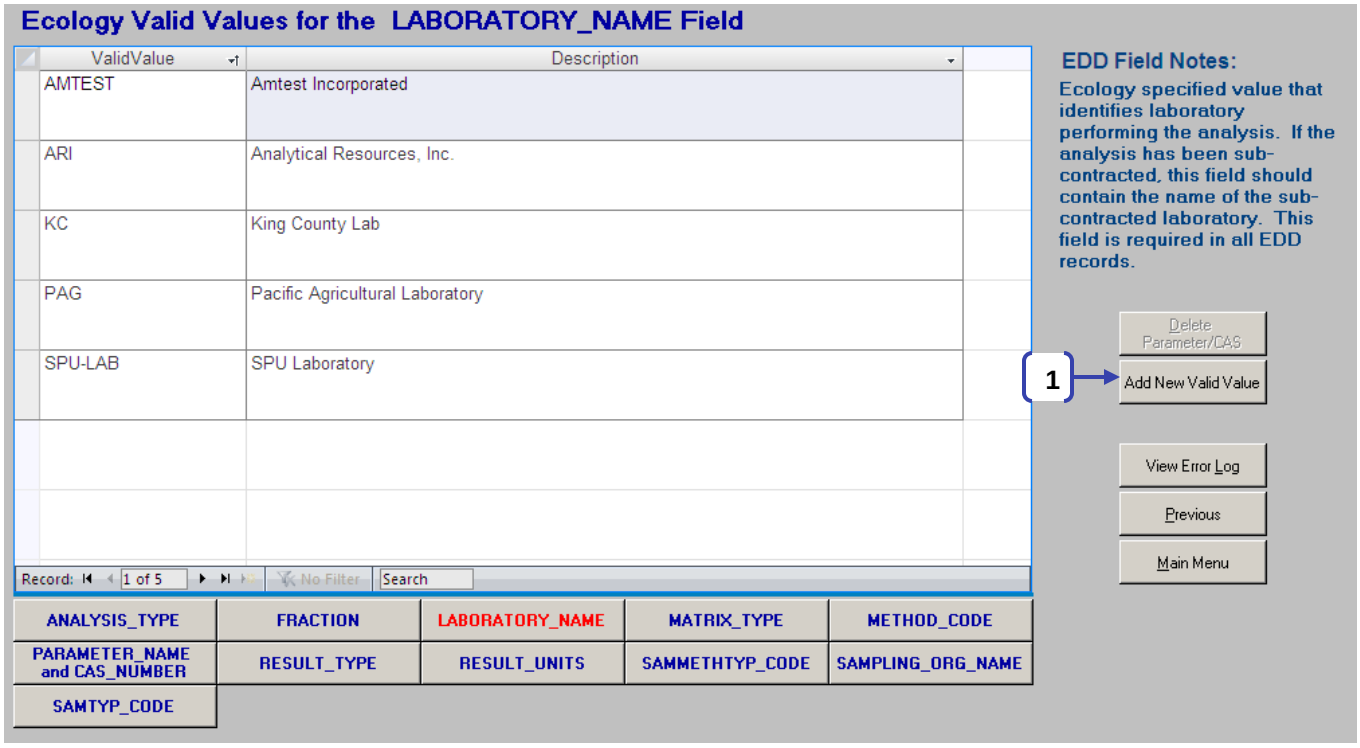
4.1.2 Editing Valid Values

Valid Values should only be added or modified under direction of your data manager. The instructions for adding standard values in Example-1 apply to all valid value fields except the Parameter and Method Code fields. Both these fields have special considerations discussed in Example-2 and Example-3, respectively.

4.1.2.1 Example-1: Generic Case

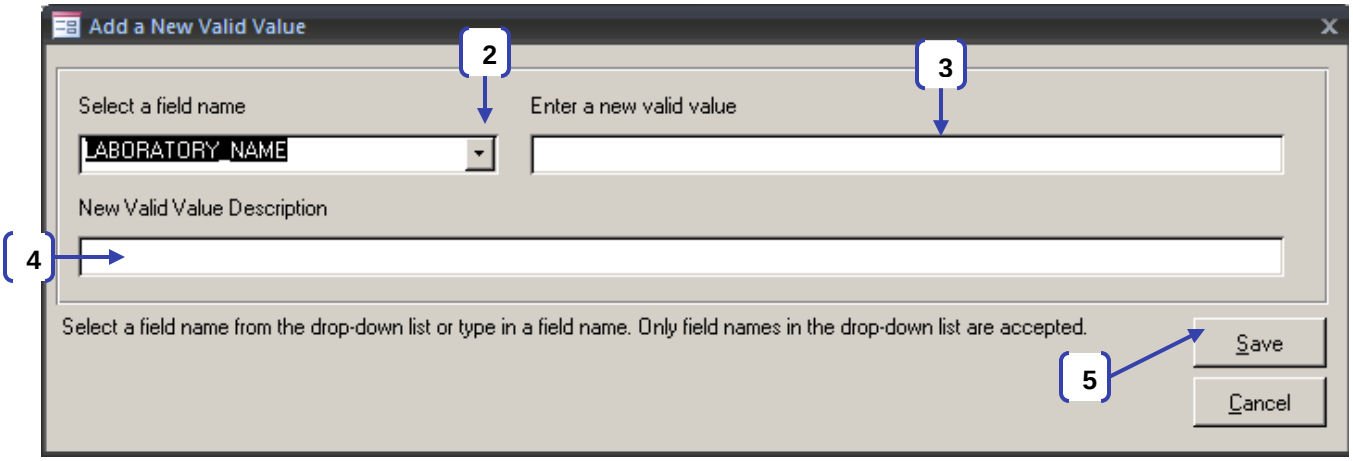
In this example we are looking at adding a new valid value for the *Laboratory_Name* field.

Image 4-3: Valid Values – Adding New Values



1. Click on the "Add New Valid Value" button to open the dialog box shown below. [Image 4-4]
2. Select the field name from the pull-down list to which you want to add a new standard value. Notice that the field name defaults to the current field name. You cannot select the Parameter or Method field names from this pull-down list. See Examples 2 and 3 for more on adding Parameter names and Method codes.
3. Enter the new valid value. You will not be allowed to make a duplicate entry. A message box will indicate this situation if it occurs.
4. Enter a description for the new valid value. Notice that the valid value description does not provide distinction to a new record. That is, if you entered a new valid value for a particular field that already existed for that field, a duplicate record error message would still occur even if you entered a different description.

Image 4-4: Adding New Valid Values - Generic



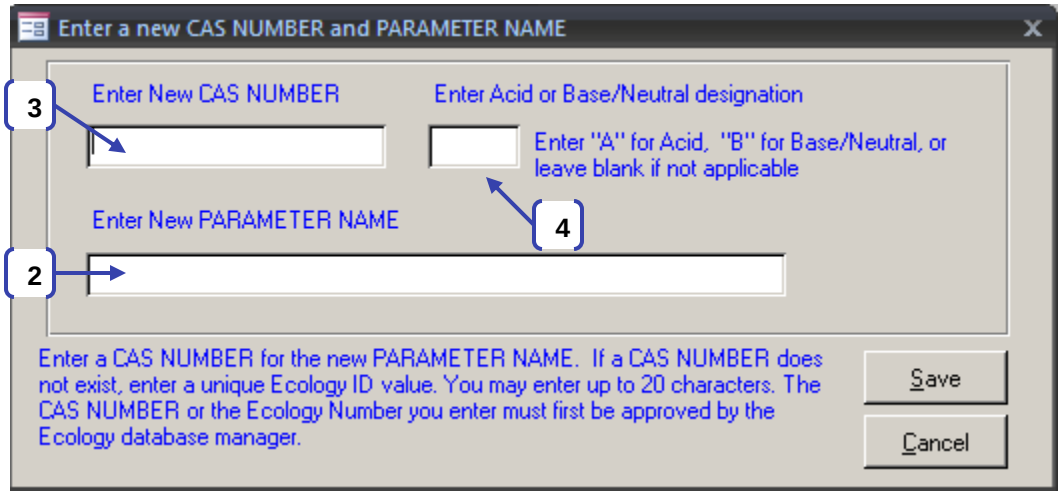
5. Click "Save" after making your entries in Steps 2 through 4. If your entry were to cause a duplicate record, you would be prompted at this point.
6. After hitting the "Save" button, the "Add New Standard Value" pop-up window closes. You must click the field name button, or "refresh"

in [Image 4-3] to for the value to appear in the Valid Value list.

4.1.2.2 Example-2: Parameter Name and CAS Number

Adding a new Parameter Name and CAS Number entry in the Valid Value list is very similar to the process shown in Example-1, with a few minor changes.

Image 4-5: Adding Valid Value – Parameter and CAS



1. When you click on the Add New Valid Value" button (as in [Image 4-3]), a dialog box that looks like that shown above [Image 4-5] will appear.

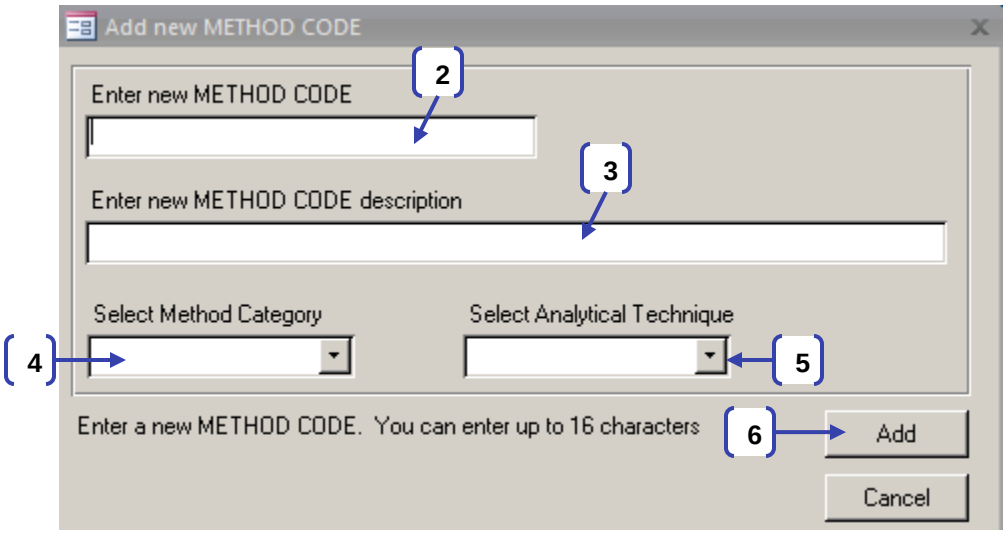
2. Enter a new Parameter Name.
3. You must enter a new CAS number along with the new Parameter Name. Parameters that do not normally have a CAS number will still need to have one entered.
4. Indicate if the compound is an acid or base neutral compound (only applicable to semi-volatile constituents analyzed by GC/MS).

It is important to keep your parameter names and CAS numbers consistent and organized. Your EDD verification will proceed much smoother if you can limit the potential for multiple CAS and Parameter Names for the same analyte.

4.1.2.3 Example-3: Method Codes

Adding a new Method Code entry in the Valid Value list is also very similar to the process shown in Example-1, with a few minor changes.

Image 4-6: Adding Valid Values – Method Code



1. When you click on the Add New Valid Value" button (as in [Image 4-3]), a dialog box that looks like that shown above [Image 4-6] will appear.
2. Enter a new Method Code. This should match how you want the method code to appear in the EDD and Library. (Examples: SM8270D, EPA200.8, etc.)
3. Enter a short description for the Method Code.
4. Select a Method Category from the drop-down list. The automated data review process uses this information to determine how to perform the review.
5. Select an Analytical Technique from the drop-down list. The automated data review process uses this information to determine how to perform the review.

6. Click the “Add” button to add the Method Code to the Valid Value list.

When entering a new Method Code Valid Value it is required that a Method Category and Analytical Technique have been selected. If none of the categories or techniques clearly matches the method you are attempting to enter, use professional judgment to select an option with similar review criteria.

4.2 Viewing and Editing an Existing Library

Libraries contain the methods and their parameters with reporting limits, units, and data review criteria. The EEPT application comes with one “master” library already installed, the Ecology Master Library. The library serves as the reference for EDD error checking and validation.

4.2.1 Opening a library

1. The primary way to view the contents of a Library is through the Library View/Edit interface, which is opened by clicking on the “View Library” button in either the EDD Error Check tab [Image 4-7] or the EDD Data Review tab [Image 4-8].

Image 4-7: EDD Error Check – View Library

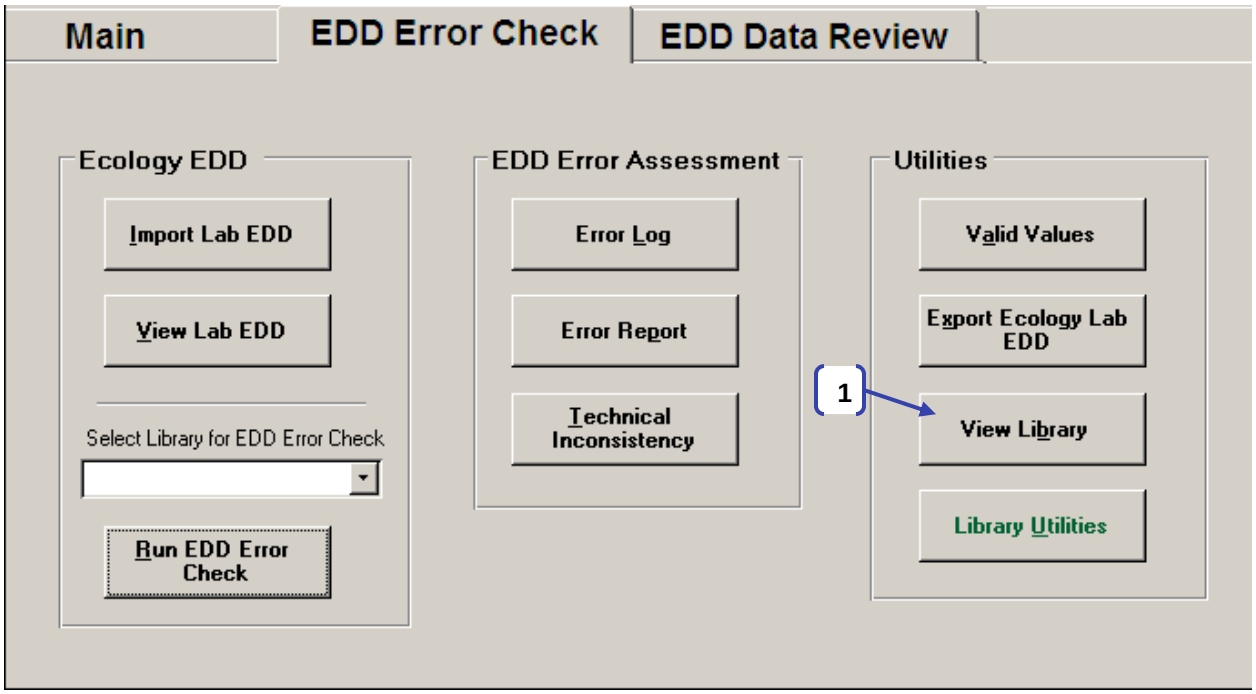


Image 4-8: EDD Data Review – View Libraries

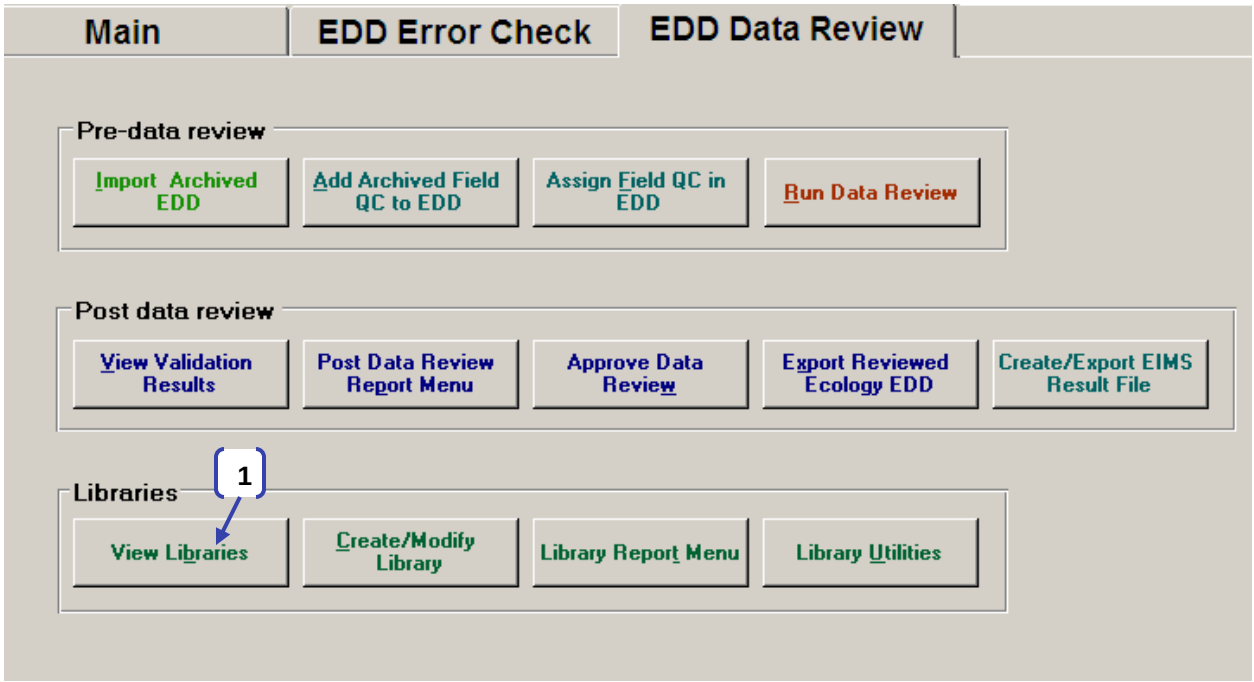
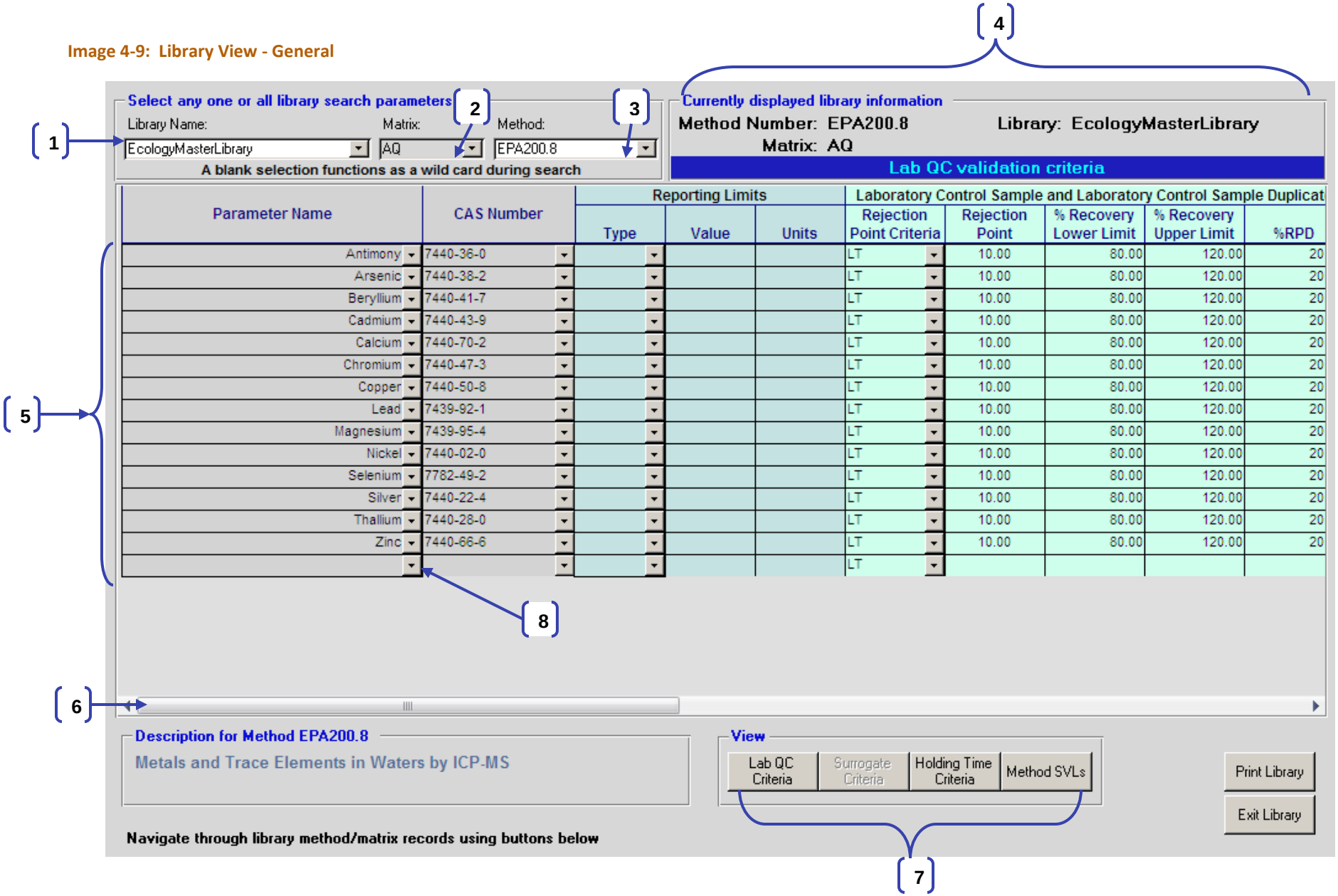


Image 4-9: Library View - General



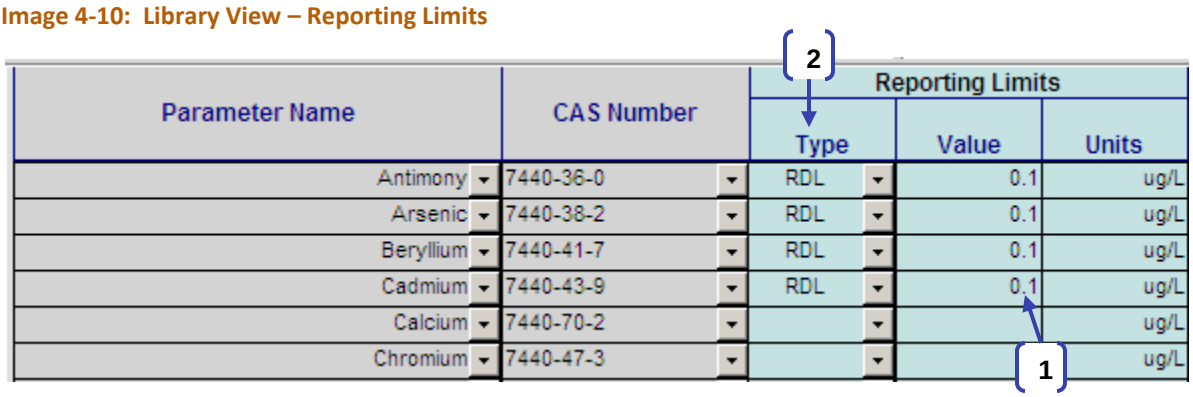
1. Select a library name from the drop-down. Only method codes and matrices included in the selected library will appear in the matrix and method code drop-down lists.
2. Select a Matrix type from the drop-down. Once a matrix is selected, only method codes that are listed for that matrix will appear in the Method drop-down list.
3. Select a Method Code from the drop-down. Once a method is selected, only matrices that are listed for that method code will appear in the Matrix drop-down list.
4. This information indicates the current library information (Library/Method/Matrix) viewed below
5. These are the Parameters and their criteria in the currently displayed Library/Method/Matrix
6. Move the horizontal scroll bar to view other parts of the library Lab QC Criteria
7. Clicking the "View" buttons opens screens for different QC criteria components. This figure shows the Lab QC Criteria.
8. New parameters can be added to a method by selecting them from the dropdown list. All parameter names and CAS numbers must be entered in the Valid Values list before they can be selected here.

4.2.2 Lab QC Criteria View

4.2.2.1 Reporting Limits

The Library Lab QC Criteria section has a place for listing Reporting Limits.

Image 4-10: Library View – Reporting Limits



Parameter Name	CAS Number	Reporting Limits		
		Type	Value	Units
Antimony	7440-36-0	RDL	0.1	ug/L
Arsenic	7440-38-2	RDL	0.1	ug/L
Beryllium	7440-41-7	RDL	0.1	ug/L
Cadmium	7440-43-9	RDL	0.1	ug/L
Calcium	7440-70-2			ug/L
Chromium	7440-47-3			ug/L

1. Reporting Limits are not required to be listed in the library. If you choose to list Reporting Limits, the EDD Error Checker will note if the EDD lists a reporting limit greater than the reporting limit listed in the library. No data qualifiers are assigned based on the reporting limits listed in the Library.
2. The Reporting Limit Type field does not modify the actions of the EDD checker at all. It is there solely for the purposes of documentation.

3. Units indicate the units being used for a given parameter throughout the library. The units indicated here must exist in the Valid Value list for Units. These units also appear in reports.

4.2.2.2 Laboratory Control Sample (LCS/LCSD)

Please see Appendix D for details on how sample results are qualified based on library parameters.

Image 4-11: Library View – LCS/LCSD

Laboratory Control Sample and Laboratory Control Sample Duplicate				
Rejection Point Criteria	Rejection Point	% Recovery Lower Limit	% Recovery Upper Limit	%RPD
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT	10.00	80.00	120.00	20.00
LT				

1. The "Rejection Point Criteria" column is set to "LT". **Do not alter this column**.
2. The "Rejection Point" column holds the lowest acceptable %Recovery value for the LCS/LCSD. If the LCS or LCSD percent recovery is below the value in this field, the associated non-detect sample results will be qualified "R" during the automated data review process.
3. The "% Recovery Lower Limit" column holds the lower limit of % Recovery value for the LCS/LCSD. If the LCS or LCSD percent recovery is below the value in this field, the associated sample results will be qualified "J" or "UJ" (unless already qualified "R") during the automated data review process.
4. The "% Recovery Upper Limit" column holds the upper limit of % Recovery value for the LCS/LCSD. If the LCS or LCSD percent recovery is greater than the value in this field, the associated detected sample results will be qualified "J" during the automated data review process.

5. The “%RPD” column holds the upper limit of the relative percent difference value between the LCS and LCSD. If the LCS/LCSD RPD exceeds the value in this column, the associated sample results will be qualified “J” or “UJ” during the automated data review.

> The EEPT does not calculate the %Recoveries or %RPD values. It requires that the percent recovery and RPD have been entered correctly in the EDD by the laboratory.

4.2.2.3 Matrix Spike (MS/MSD)

The Matrix Spike and Matrix Spike Duplicate part of the Lab QC section works exactly like the LCS/LCSD part. Please see Appendix D for details on how sample results are qualified based on library parameters.

Image 4-12: Library View – MS/MSD

Constituent	Matrix Spike and Matrix Spike Duplicates				
	Rejection Point Criteria	Rejection Point	% Recovery Lower Limit	% Recovery Upper Limit	%RPD
Antimony	LT	10.00	80.00	120.00	20.00
Arsenic	LT	10.00	80.00	120.00	20.00
Beryllium	LT	10.00	80.00	120.00	20.00
Cadmium	LT	10.00	80.00	120.00	20.00
Calcium	LT	10.00	80.00	120.00	20.00
Chromium	LT	10.00	80.00	120.00	20.00
Copper	LT	10.00	80.00	120.00	20.00
Lead	LT	10.00	80.00	120.00	20.00
Magnesium	LT	10.00	80.00	120.00	20.00
Nickel	LT	10.00	80.00	120.00	20.00
Selenium	LT	10.00	80.00	120.00	20.00
Silver	LT	10.00	80.00	120.00	20.00
Thallium	LT	10.00	80.00	120.00	20.00
Zinc	LT	10.00	80.00	120.00	20.00
	LT				

1. The “Rejection Point Criteria” column is set to “LT”. **Do not alter this column**.
2. The “Rejection Point” column holds the lowest acceptable %Recovery value for the MS/MSD. If the MS or MSD percent recovery is below the value in this field, the associated non-detected sample results will be qualified “R” during the automated data review process.
3. The “% Recovery Lower Limit” column holds the lower limit of % Recovery value for the MS/MSD. If the MS or MSD percent recovery is below the value in this field, the

associated sample results will be qualified “J” or “UJ” (unless already qualified “R”) during the automated data review process.

4. The “% Recovery Upper Limit” column holds the upper limit of % Recovery value for the MS/MSD. If the MS or MSD percent recovery is greater than the value in this field, the associated detected sample results will be qualified “J” during the automated data review process.
5. The “%RPD” column holds the upper limit of the relative percent difference value between the MS and MSD. If the MS/MSD RPD exceeds the value in this column, the associated sample results will be qualified “J” or “UJ” during the automated data review.

4.2.2.4 Laboratory Duplicate / Field Duplicate

Please see Appendix D for details on how sample results are qualified based on library parameters.

Image 4-13: Library View - Duplicates

Lab and Field Duplicates	
Lab Dup RPD	Field Dup RPD
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
20.00	50.00
0.00	0.00

1. The “Lab Dup RPD” column holds the upper limit of the relative percent difference value between a primary sample and its laboratory-made duplicate (or split). If the RPD exceeds the value in this column, the associated sample results will be qualified “J” or “UJ” during the automated data review.
2. The “Field Dup RPD column holds the upper limit of the relative percent difference value between a primary sample and its field-made duplicate (or split). If the RPD exceeds the

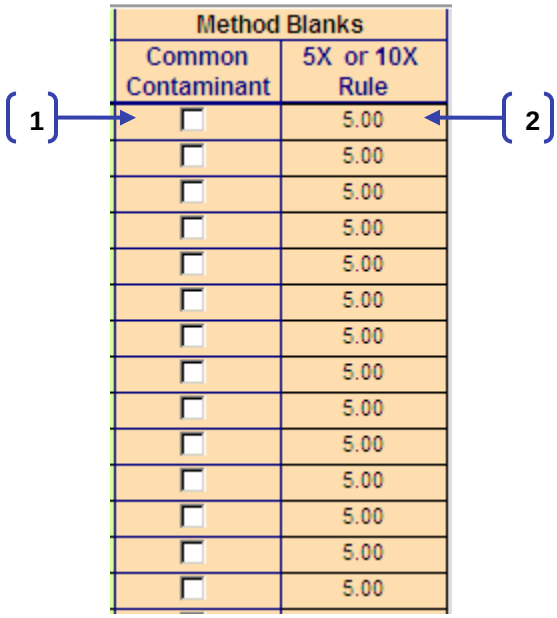
value in this column, the associated sample results will be qualified “J” or “UJ” during the automated data review.

Field duplicates need to be associated with their parent samples by the user. For more information see Section [6-3] on *Associating Field QC Samples*.

4.2.2.5 Method Blanks

Please see Appendix D for details on how sample results are qualified based on library parameters.

Image 4-14: Library View – Method Blanks



1. The “Common Contaminant” field contains a check box. If the common contaminant box is checked for a parameter, and that parameter is detected above the reporting limit in a method blank a comment will be added to the data review report noting that the parameter is considered a common contaminant. This field has no other impact on the data review process.
2. The “5x or 10x Rule” column allows the library user to set the threshold “rule” for the qualification of sample results based on method blank contamination.

4.2.3 Surrogate Criteria View

The surrogate library screen shows surrogate compounds and their validation criteria for organic methods. Some of the gas chromatography methods do not specify surrogates. These must be added to the method of interest along with their lower and upper recovery limits before the application can validate surrogates for that method. In order to add a surrogate compound it must first exist in the Parameter Name/CAS Number valid values. Please see Appendix D for details on how sample results are qualified based on library parameters.

Image 4-15: Libra[1]iew - Surrogates

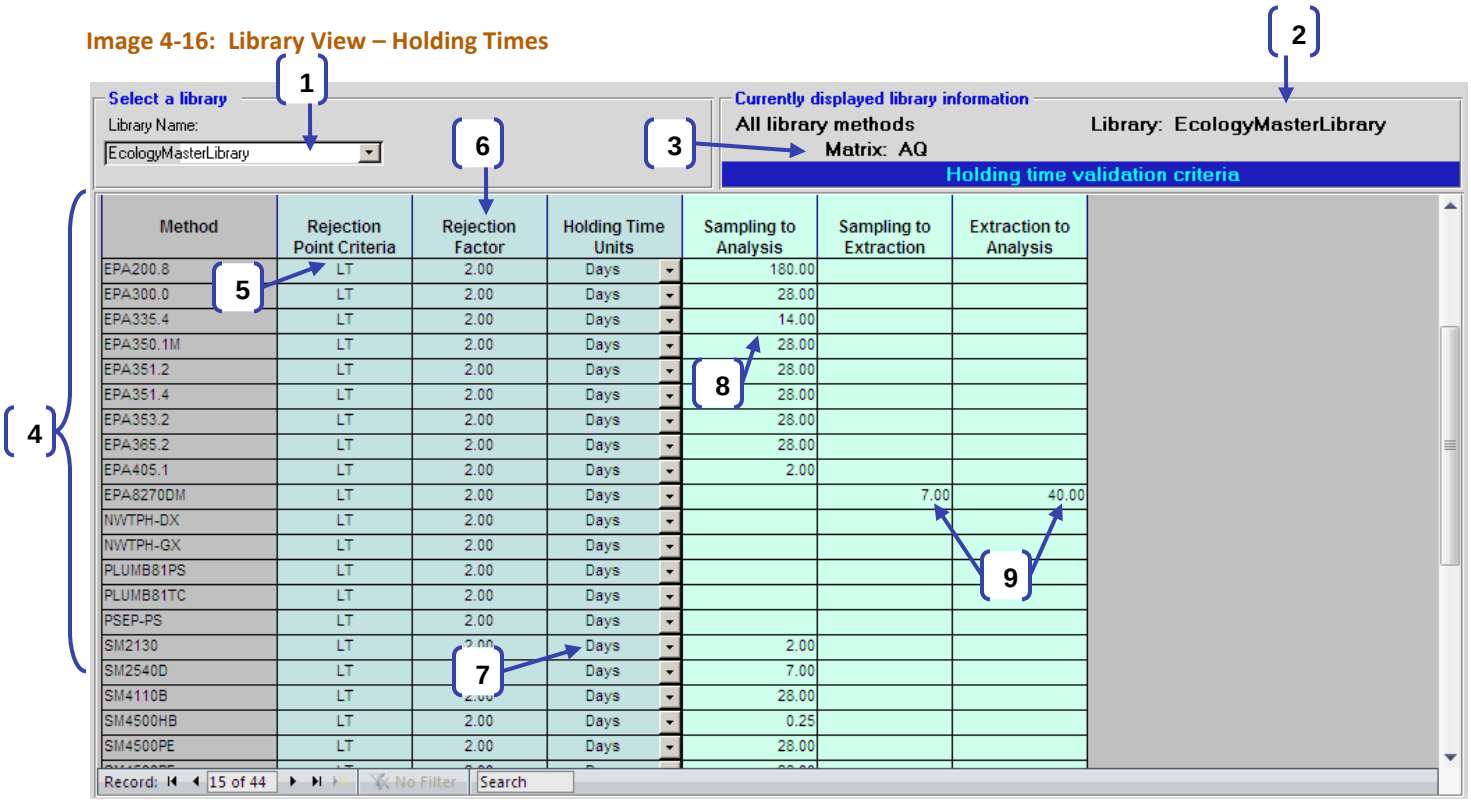
Surrogate	CAS No.	Rejection Point Criteria	Rejection Point	% Recovery Lower Limit	% Recovery Upper Limit
d14-p-Terphenyl	1718-51-0	LT	10.00	80.00	120.00
d4-1,2-Dichlorobenzene	2199-69-1	LT	10.00	80.00	120.00
2-Fluorobiphenyl	321-60-8	LT	10.00	80.00	120.00
d5-Nitrobenzene	4165-60-0	LT	10.00	80.00	120.00

1. The "Surrogate" field holds the name of specified surrogate compound. The surrogate name and CAS number must exist in the Valid Values list for Parameter Name / CAS Number prior to entry in the Library.
2. The "CAS No." field holds the CAS number associated with the Surrogate name as specified in the Valid Values list for Parameter Name / CAS Number.
3. The "Rejection Point Criteria" column is set to "LT". **Do not alter this column**.
4. The "Rejection Point" column holds the lowest acceptable %Recovery value for the Surrogate. If the surrogate percent recovery is below the value in this field, the associated non-detected sample results will be qualified "R" during the automated data review process.
5. The "% Recovery Lower Limit" column holds the lower limit of % Recovery value for the Surrogate. If the surrogate percent recovery is below the value in this field, the associated sample results will be qualified "J" or "UJ" (unless already qualified "R") during the automated data review process.
6. The "% Recovery Upper Limit" column holds the upper limit of % Recovery value for the Surrogate. If the surrogate percent recovery is greater than the value in this field, the associated detected sample results will be qualified "J" during the automated data review process.

4.2.4 Holding Times Criteria View

The library Holding Time Screen shows holding time criteria for all methods for a particular matrix in a library. [Image 4-16] shows a partial list of water methods built into the Ecology Master library and their respective holding time criteria. The Holding Time library screen is different compared with other library screens in that it displays method records, while the Lab QC Criteria and Surrogate Library screens display constituent records. Please see Appendix D for details on how sample results are qualified based on library parameters.

Image 4-16: Library View – Holding Times



Method	Rejection Point Criteria	Rejection Factor	Holding Time Units	Sampling to Analysis	Sampling to Extraction	Extraction to Analysis
EPA200.8	LT	2.00	Days	180.00		
EPA300.0	LT	2.00	Days	28.00		
EPA335.4	LT	2.00	Days	14.00		
EPA350.1M	LT	2.00	Days	28.00		
EPA351.2	LT	2.00	Days	28.00		
EPA351.4	LT	2.00	Days	28.00		
EPA353.2	LT	2.00	Days	28.00		
EPA365.2	LT	2.00	Days	28.00		
EPA405.1	LT	2.00	Days	2.00		
EPA8270DM	LT	2.00	Days		7.00	40.00
NWTPH-DX	LT	2.00	Days			
NWTPH-GX	LT	2.00	Days			
PLUMB81PS	LT	2.00	Days			
PLUMB81TC	LT	2.00	Days			
PSEP-PS	LT	2.00	Days			
SM2130	LT	[illegible]	Days	2.00		
SM2540D	LT	[illegible]	Days	7.00		
SM4110B	LT	[illegible]	Days	28.00		
SM4500HB	LT	2.00	Days	0.25		
SM4500PE	LT	2.00	Days	28.00		

1. Select the Library in which you wish to view/edit holding times.
2. Selected Library name will be shown in the screen header.
3. Since method holding times can vary between matrices, the Holding Time criteria table will show one matrix at a time. The screen header will show which matrix is currently being viewed/edited.
4. For each matrix, holding time criteria is set by method.
5. The "Rejection Point Criteria" column is set to "LT". **Do not alter this column**.
6. The "Rejection Factor" column holds the threshold by which the hold time can be exceeded before the result is qualified "R" (rejected) by the automated data review process. A rejection factor 2 in this case tells automated validation to apply the R qualifier to non-detects when a holding time is exceeded by a factor of 2.

7. “Holding Time Units” can be specified as “Days” or “Hours”.
8. For methods where the Holding Time is specified as a single value representing a maximum amount of time that can elapse between sample acquisition and sample analysis, the hold time value should be entered in the “Sampling to Analysis” column.
9. For methods where the Holding Time is specified as two values (one from sample acquisition to sample extraction and one from sample extraction to sample analysis), the hold time values should be entered in the “Sampling to Extraction” and “Extraction to Analysis” fields.

Method Holding Time criteria should be entered in either “Sampling to Analysis” or “Sampling to Extraction” / “Extraction to Analysis” but not in both.

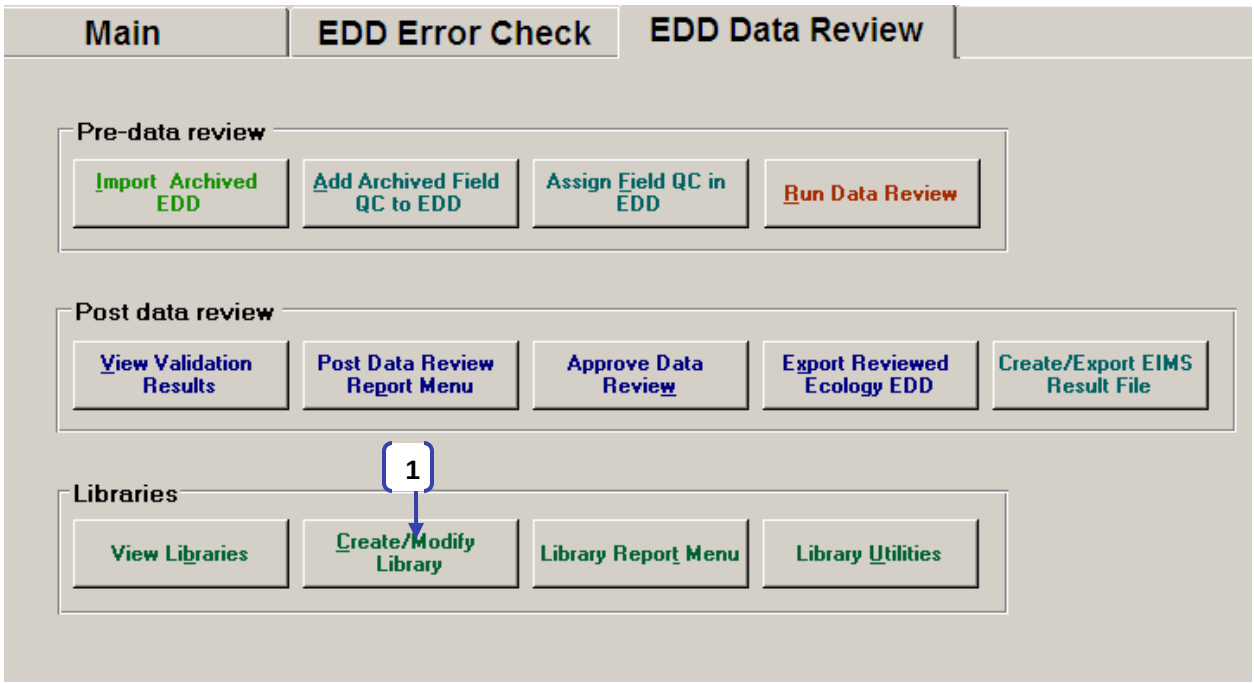
4.3 Creating a New Library

EEPT comes with a large generic library names “EcologyMasterLibrary”. It is highly recommended that you DO NOT edit the Ecology Master Library, but instead create and edit your own libraries. If you accidentally edit, corrupt, or delete the Master Library, it can be re-installed from the EEPT install disc.

New libraries can be created, and existing libraries can be added-to by using the other existing libraries as a starting point.

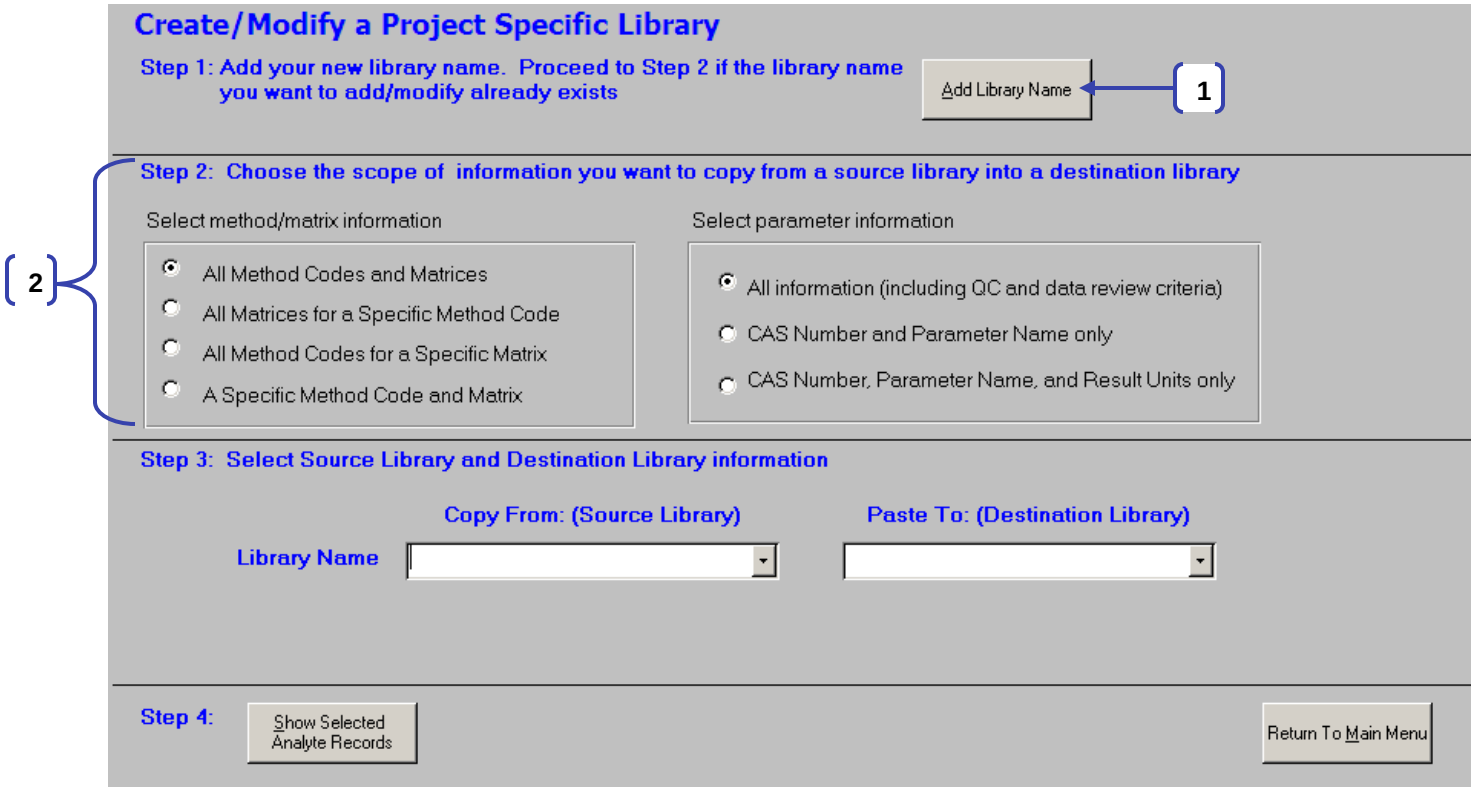
4.3.1 Create/Modify Library View

Image 4-17: EDD Data Review – Create/Modify Library



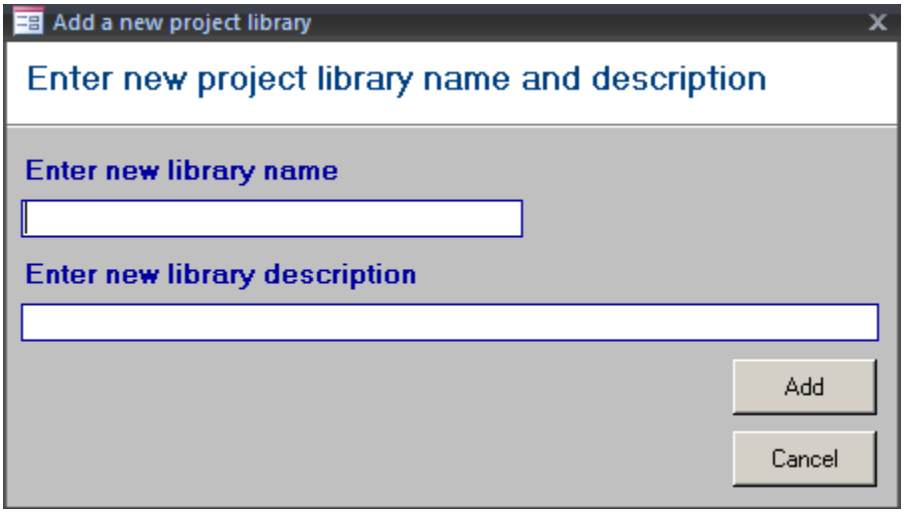
1. Clicking on the "Create/Modify Library" button opens the menu for creating and modifying libraries. [Image 4-18]

Image 4-18: Create / Modify Library Screen



1. If you are creating a new library, click on the "Add Library Name" button. This will cause the dialog box [Image 4-19] to appear. Enter a unique name for the new library and a description that will help you and others successfully identify the library in the future.

Image 4-19: New Library Screen



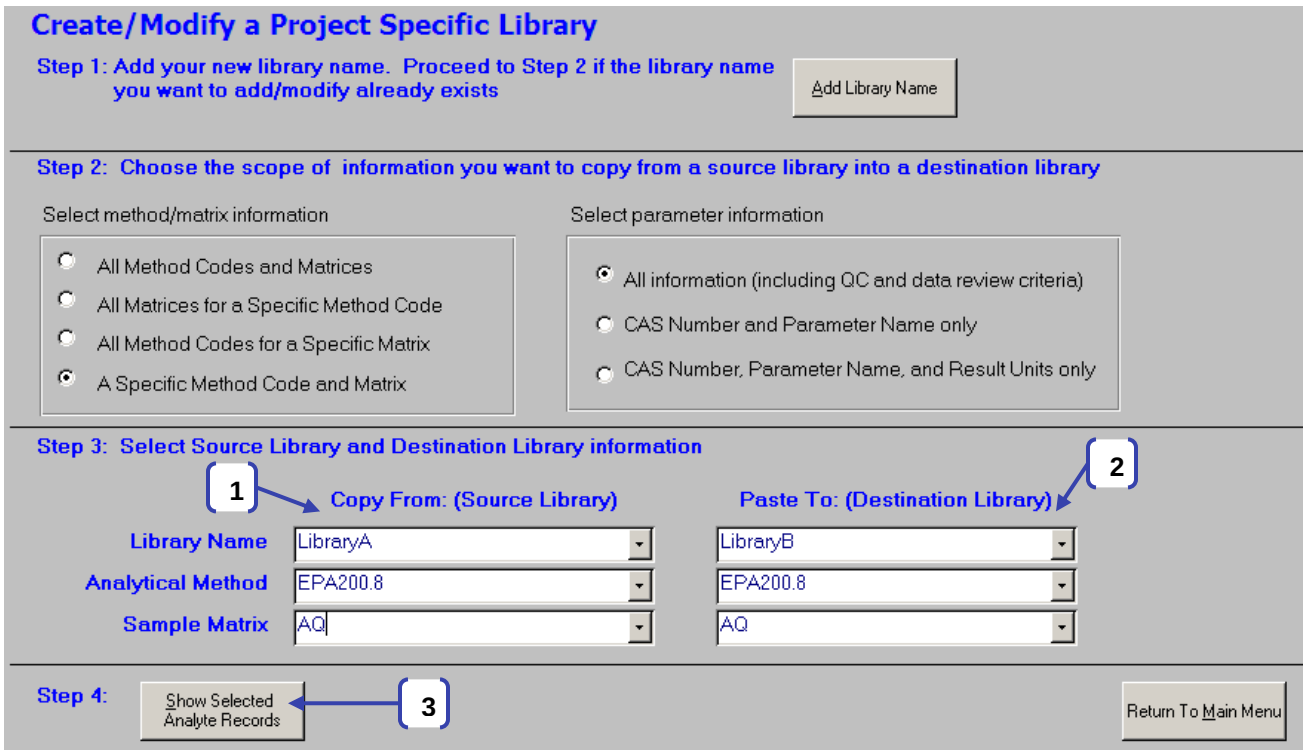
2. The section of the Create/Modify Library menu called "Step 2" contains several options for transferring library criteria from one library to another. Selecting a combination of

"method/matrix information" and "parameter information" will control which portions of a source library are transferred to the destination library.

4.3.2 Adding a Method from an Existing Library

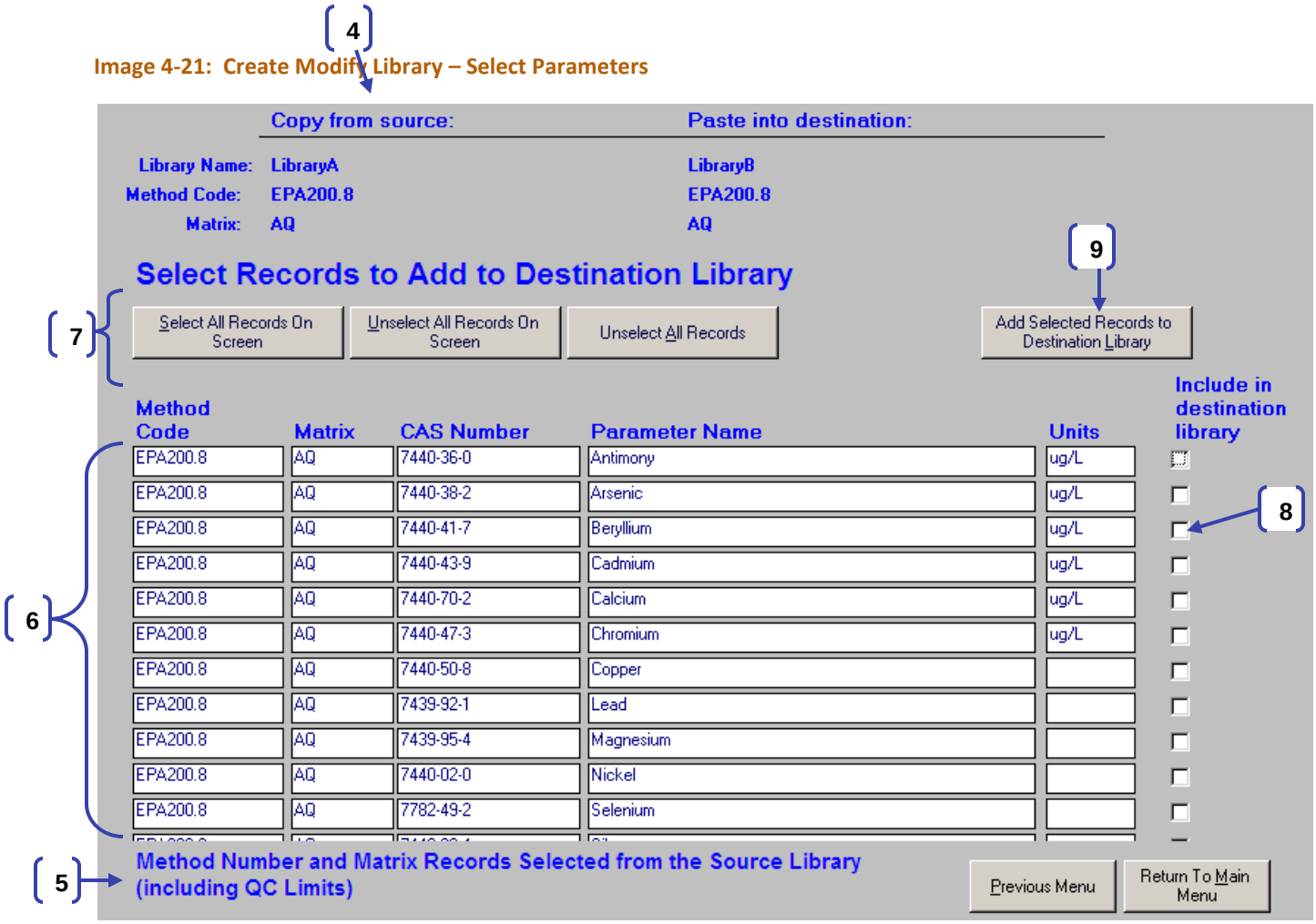
In the following example we are creating method EPA200.8 (aqueous) in Library B by copying it from Library A.

Image 4-20: Create / Modify Library – Add Methods



1. Select the source of the method data to be copied.
2. Enter the destination library information.
3. Click the "Show Selected Analyte Records" button to open the screen shown in [Image 4-21].

Image 4-21: Create Modify Library – Select Parameters



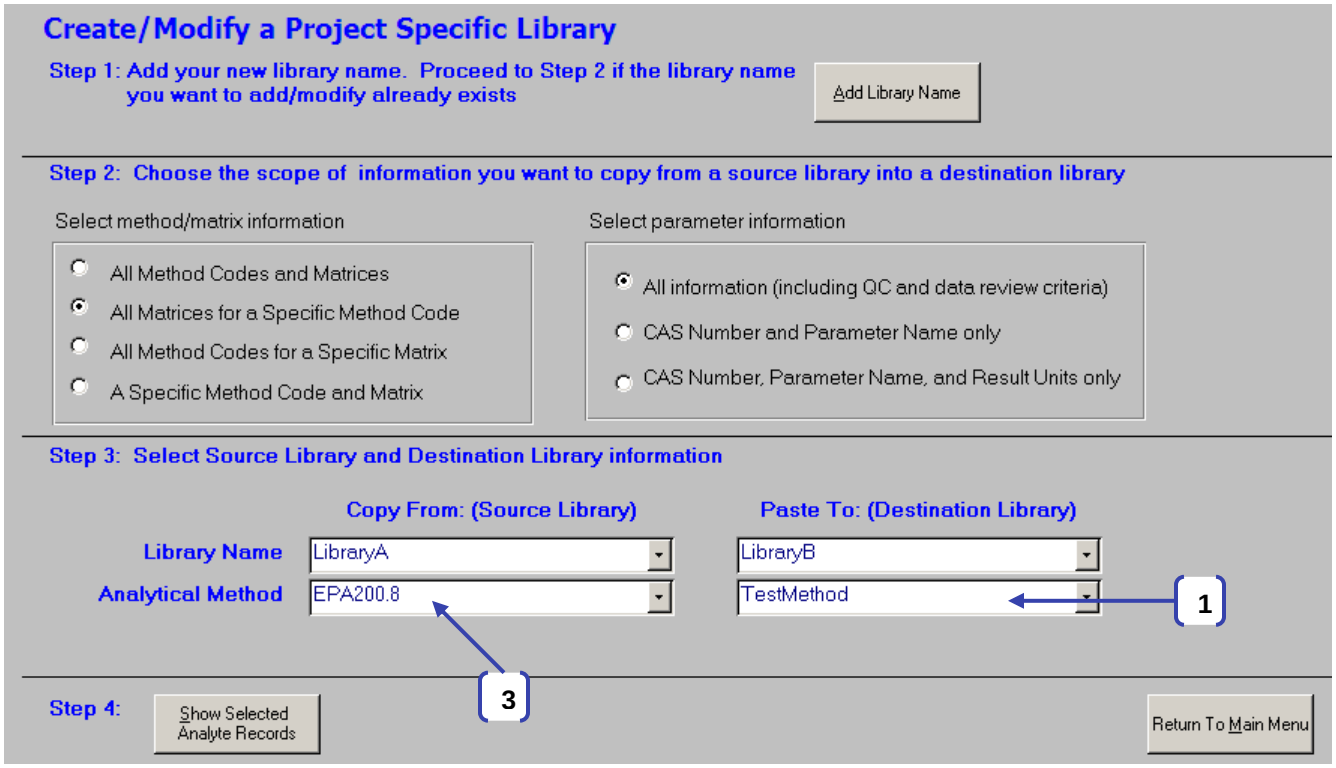
4. The source and destination information is displayed in the header.
5. Parameter information to be copied is displayed along the bottom. This corresponds with [Image 4-20].
6. The parameter list on this screen can be filtered and sorted by the user.
7. The buttons along the upper edge of the data are to make selecting large batches of analytes easier.
8. Select the parameters to be copied into the destination library. Only the parameters which have been checked will be copied.
9. Click on the "Add Selected Records to Destination Library" button to complete the process.

4.3.3 Adding Methods that do not yet Exist in a Library

It is possible to add methods to a library which do not currently exist in the Ecology Master Library. A method new method can be created by doing the following steps:

1. Add the method to the Valid Value List (see [Section 4.1.2.3]).

Image 4-22: Create / Modify Library – Add New Method



2. Open the "Create/Modify Library" menu as though adding an already existing method. [Section 4.3.1]
3. Any library can be selected as the source library for this process so long as it contains methods.
4. Select a destination library and select the new method code (entered in the Valid Value list in step 1).
5. Continue as you would for adding an existing method. [Section 4.3.2]

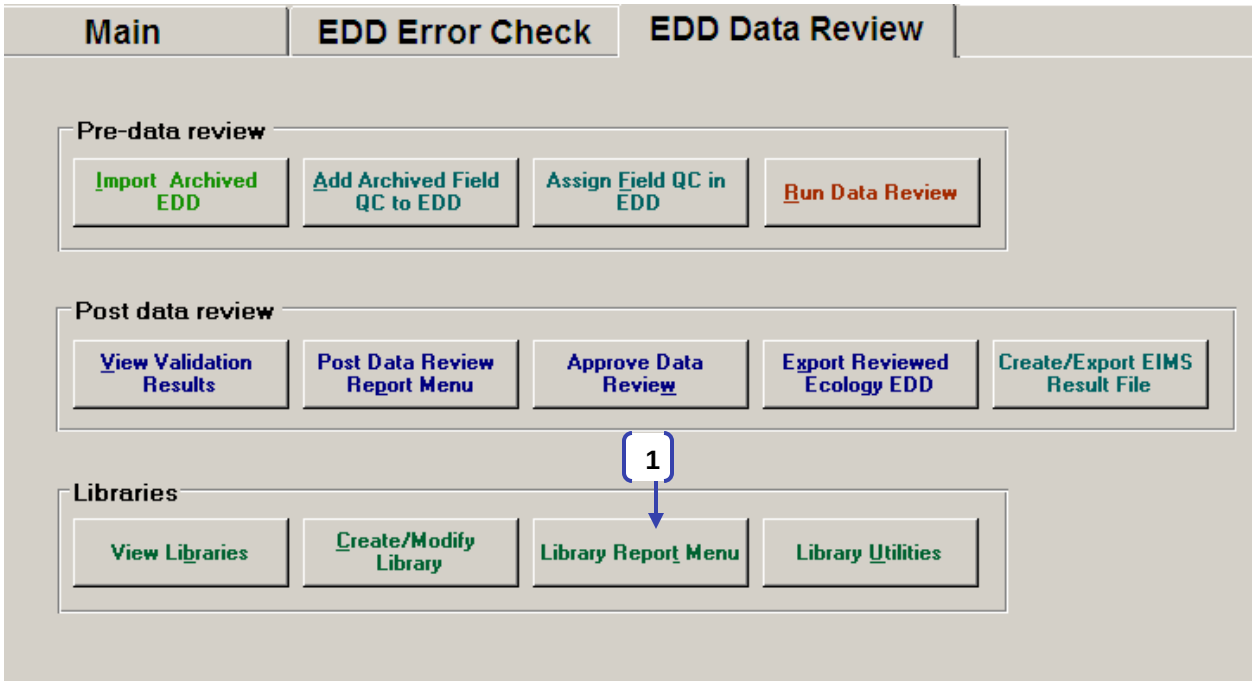
The values from the Source library and method will be used to create the new method values in the destination library.

If you select a method from the source library that is similar to the new method you are creating, fewer alterations will need to be made to the method in the destination library.

4.4 Library Reports

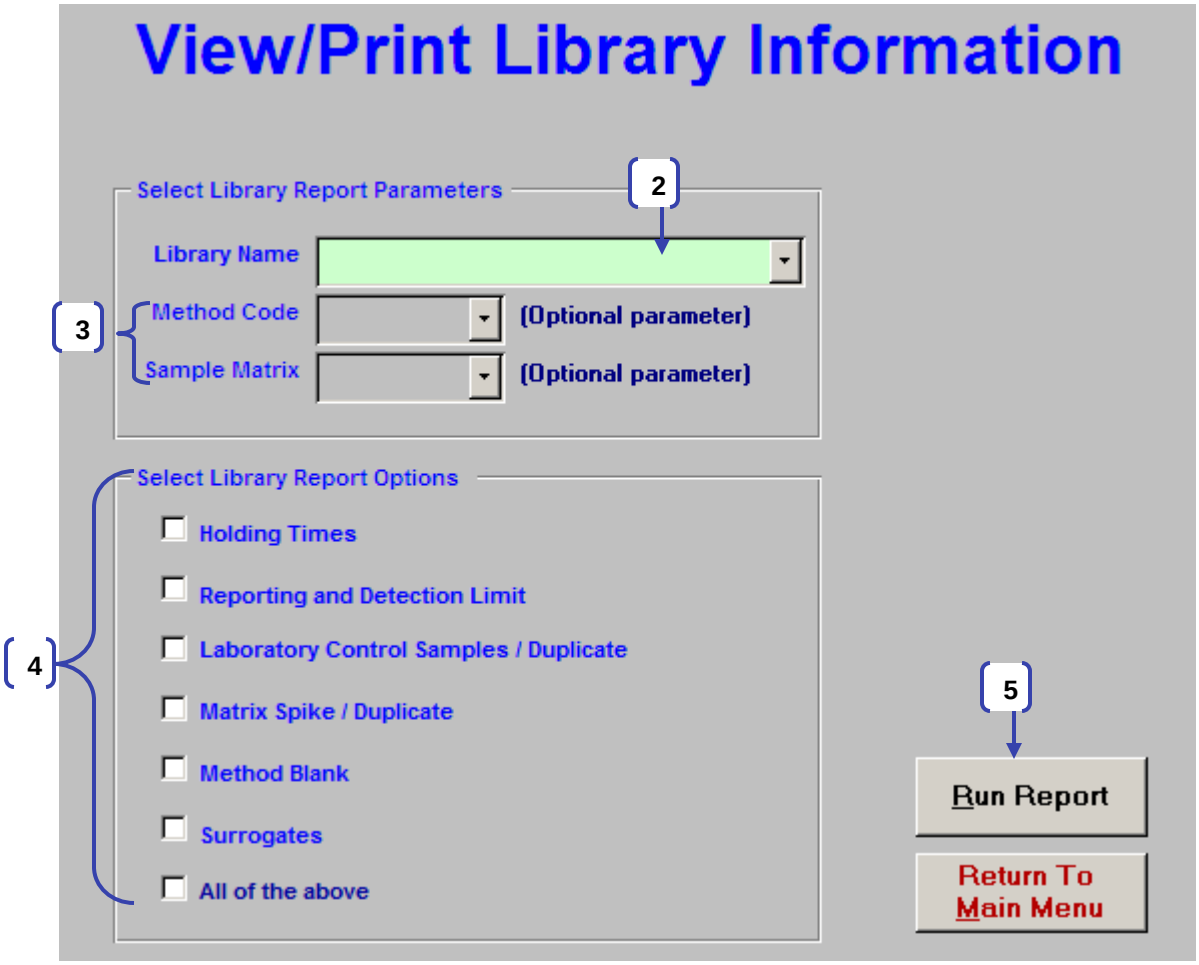
To view a Library in a clear, printable format, a series of "Library Reports" can be generated.

Image 4-23: EDD Data Review – Library Report Menu



1. Click the "Library Report Menu" button to create and view library reports. [Image 4-23]

Image 4-24: Library Report Menu



2. Select a Library from the drop-down.
3. If you only want to view/generate reports on a specific method or matrix within the selected library, select a Method Code and/or Sample Matrix from the appropriate drop-down.
4. Select parts of the library to generate/view reports on. Each of the selections appears as a separate document.
5. Click the "Run Report" button to run the selected reports.
6. Reports will appear on your screen in "Print Preview" mode, and can be printed by clicking "Print" on the top of the screen.

4.5 Importing / Exporting Libraries

Once a Library has been created it can be exported, renamed, or deleted. Of these options, exporting is the most important and frequently used.

Exporting a Library can be useful for saving a copy of your library as a back-up. Exporting is also critical for having a laboratory perform EDD verification. The laboratory version of EEPT is not equipped to generate or edit libraries; however, it must have a library file in order to perform EDD verification. The Library file should be generated in the Administrative version of EEPT by the project specifier (or equivalent), and then exported to the laboratory.

Image 4-25: EDD Data Review - Library Utilities

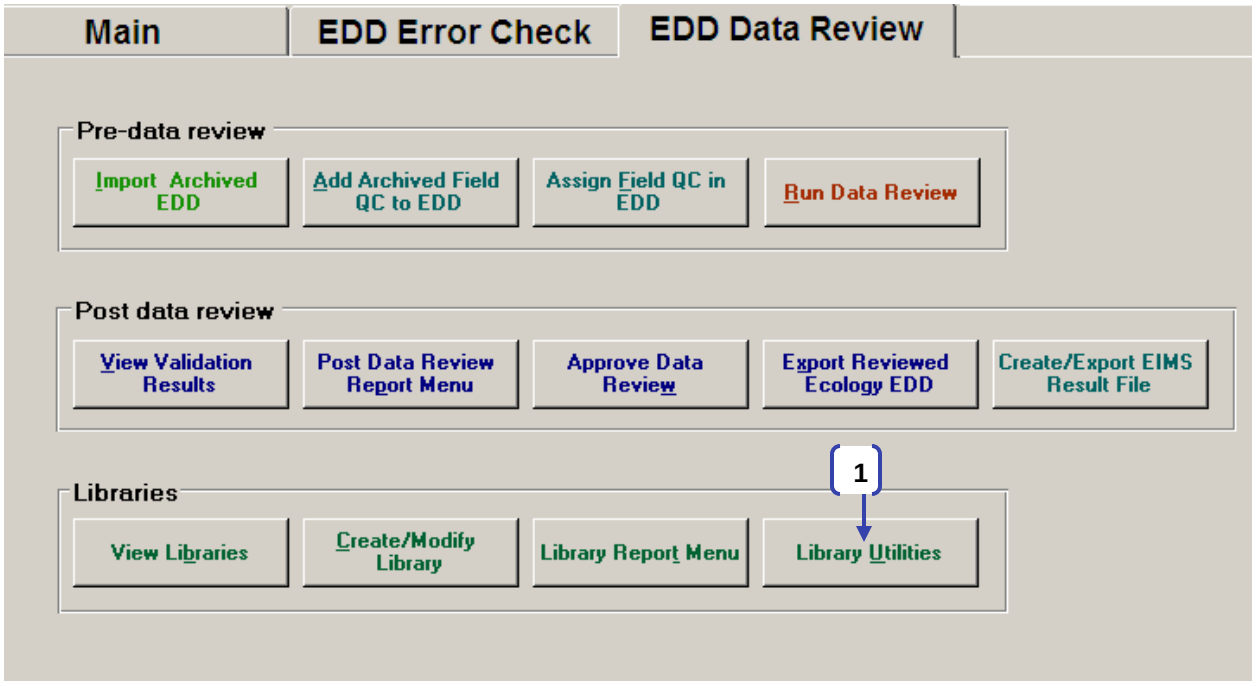
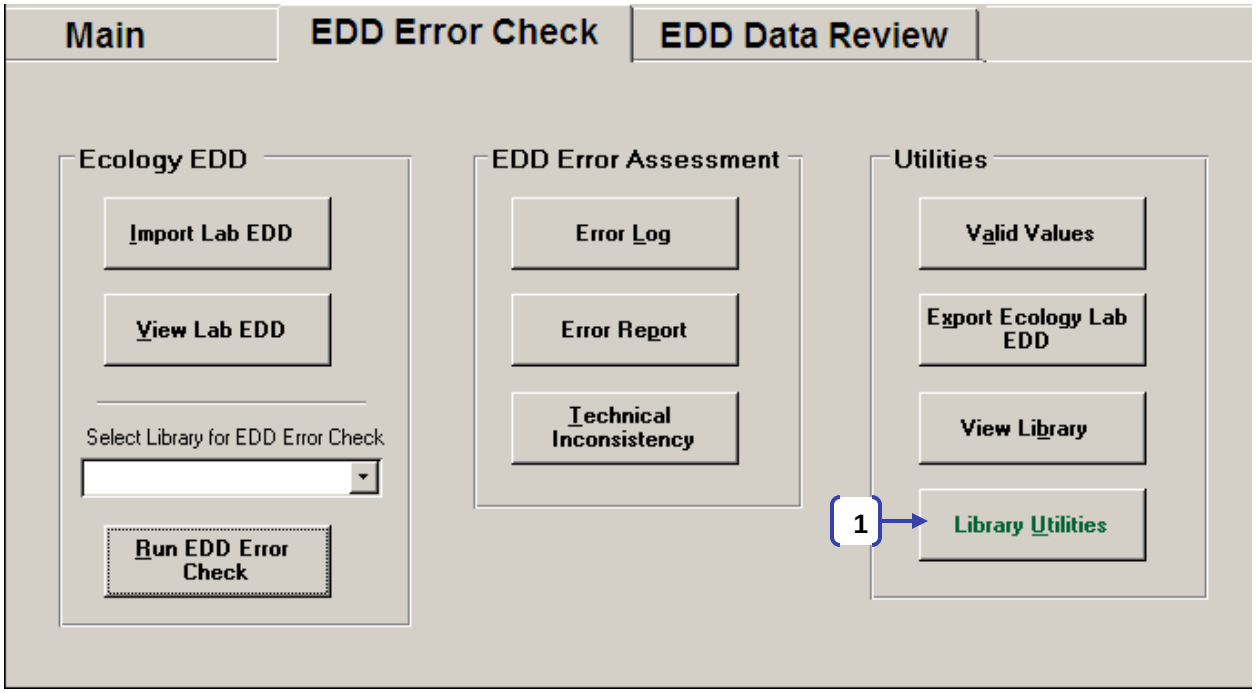
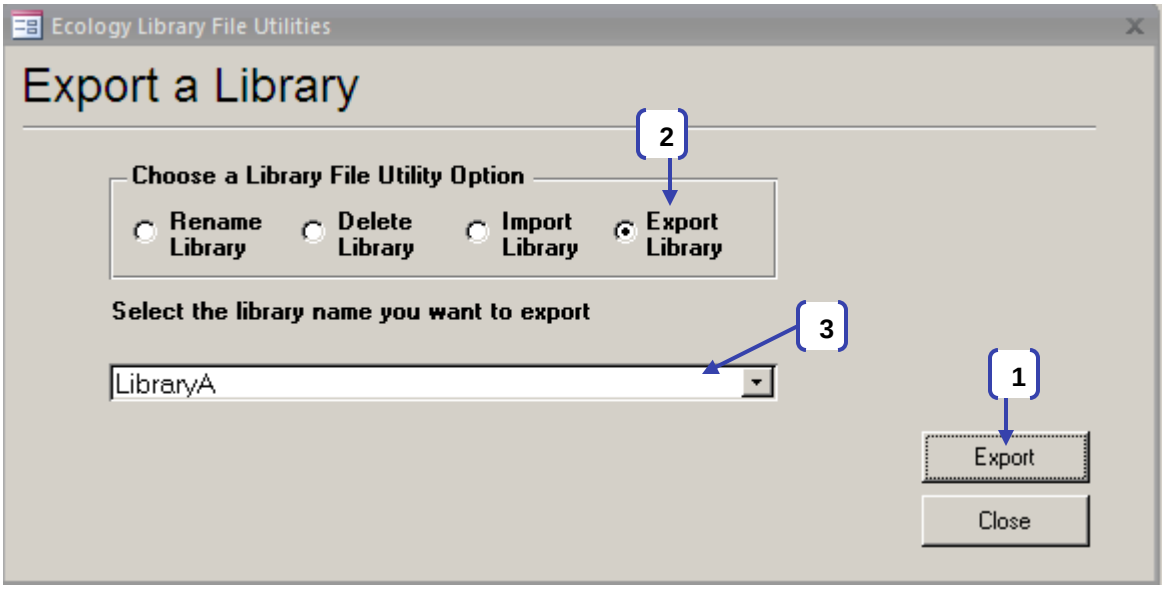


Image 4-26: EDD Error Check – Library Utilities



1. Click on the "Library Utilities" button to access the Import/Export/Rename/Delete menu. [Image 4-27] This button exists in both the "EDD Data Review" tab [Image 4-25] and the "EDD Error Check" tab [Image 4-26].

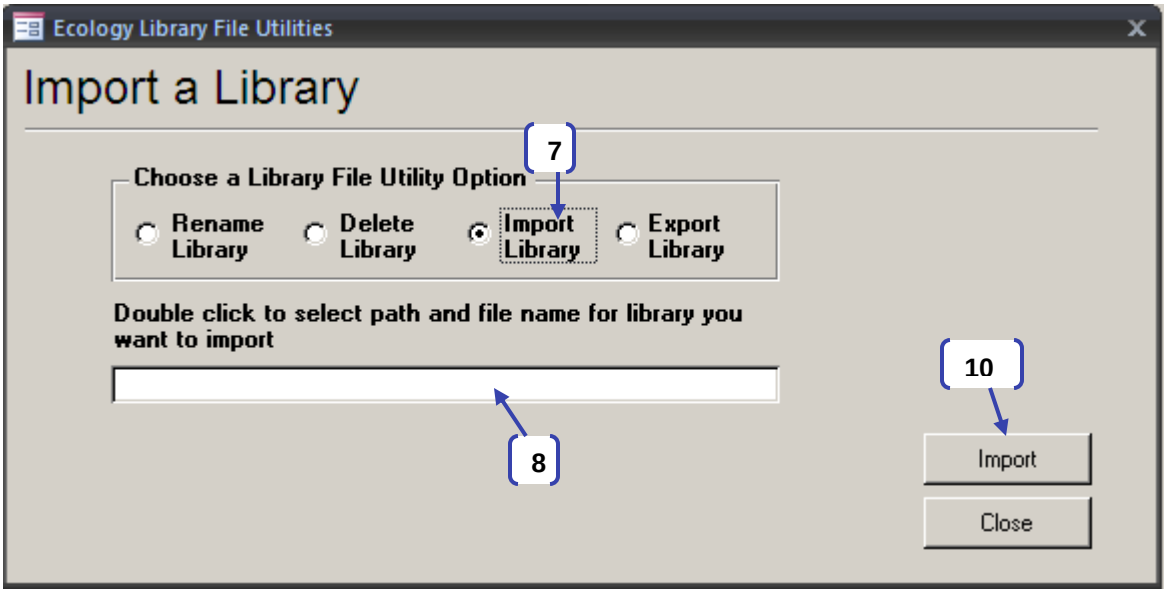
Image 4-27: Library Utility - Export



2. To **export** a library, choose the "Export Library" option.
3. Select the Library you want to export from the drop-down.
4. Click the "Export" button.

5. Library files are automatically exported to the folder C:\Ecology_1_0\LibraryFiles\. If you have already exported a library of the same name to this folder, the previous version will be overwritten.
6. Libraries export as a set of nine (9) text files.

Image 4-28: Library Utility - Import



7. To **import** a library, choose the "Import Library" option.
8. Double click on the path-entry field to browse for a library file.
9. Select any one of the nine library text files for the library you wish to import. (The EEPT application recognizes library file naming conventions and will import all nine files, so long as they are all located in the same file folder, and the names have not been altered.)
10. Click the "Import" button to import the Library.

5 EDD Import and Error Checking

The EDD error checker serves three purposes:

1. Checks that the EDD is constructed according to the Ecology EDD file specifications

2. Checks that the EDD includes necessary quality control results required for automated data review

3. Checks for technical consistency among constituent result values for related methods

The EDD Error Checker screens the EDD for valid value errors, missing values in required fields, date and time format errors, logical date and time errors, numeric formats in applicable fields,

missing laboratory quality control records, logical quality control sample batching, duplicate records, and consistency of field values (i.e. the MDL doesn't exceed the reporting limit). Additionally, the error check process looks at technical consistency among constituent result values for related methods.

Two reports are produced by the error checker. The EDD Error Log reports the results of the first two checks mentioned above. The Technical Inconsistency log reports the results of the third above mentioned check.

EDD errors can be viewed in report format or in an Access form format (the EDD Error Log). The EDD Error log view allows users to use Access filter, find, and sort tools for reviewing EDD errors. The EDD Error Log also provides mouse-click access to a snapshot view of any EDD record where an error occurs. Both the EDD Error Report and EDD Error Log provide the record number and field name(s) where the error occurs (if applicable), a general error code number, and detail on each error. The error code number is a broad category error description (i.e. Error Code 0001 = Required Field Missing Information). Error code numbers can be useful when the laboratory first builds and processes EDDs.

Do not get discouraged if you have a lot of errors. First attempts usually result in large error counts. In this case the error code number rather than the error description can better facilitate identifying and correcting systematic problems with EDD generation.

Technical inconsistencies do not necessarily require any correction by the lab other than checking that data was entered correctly in the EDD. Each situation must be evaluated and corrective action, if required, based on that evaluation.

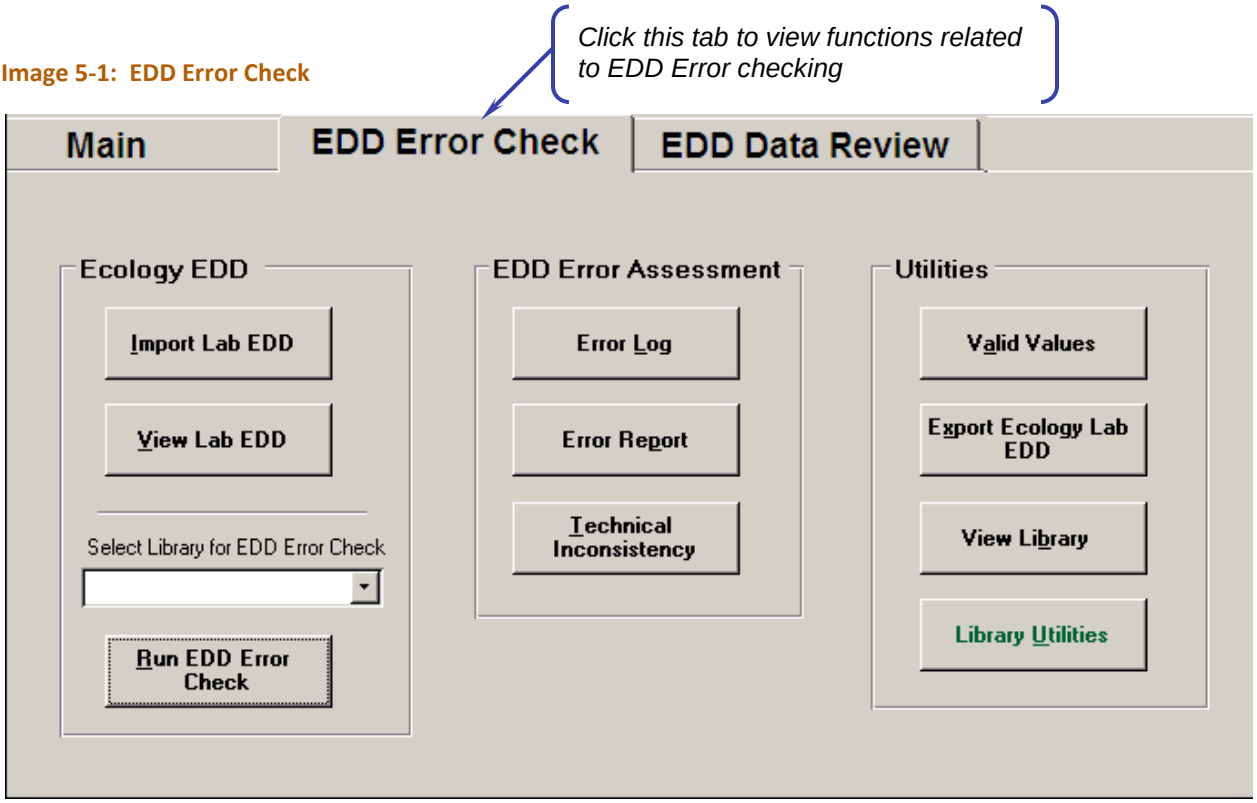
5.1 EDD Error Check Main Menu

The EDD Error Check Main Menu provides the following functions

- Import a laboratory EDD
- View laboratory EDD
- Select a Project Library and run EDD error check
- View and correct EDD errors
- Print both an EDD Error Report and EDD Technical Inconsistency Report

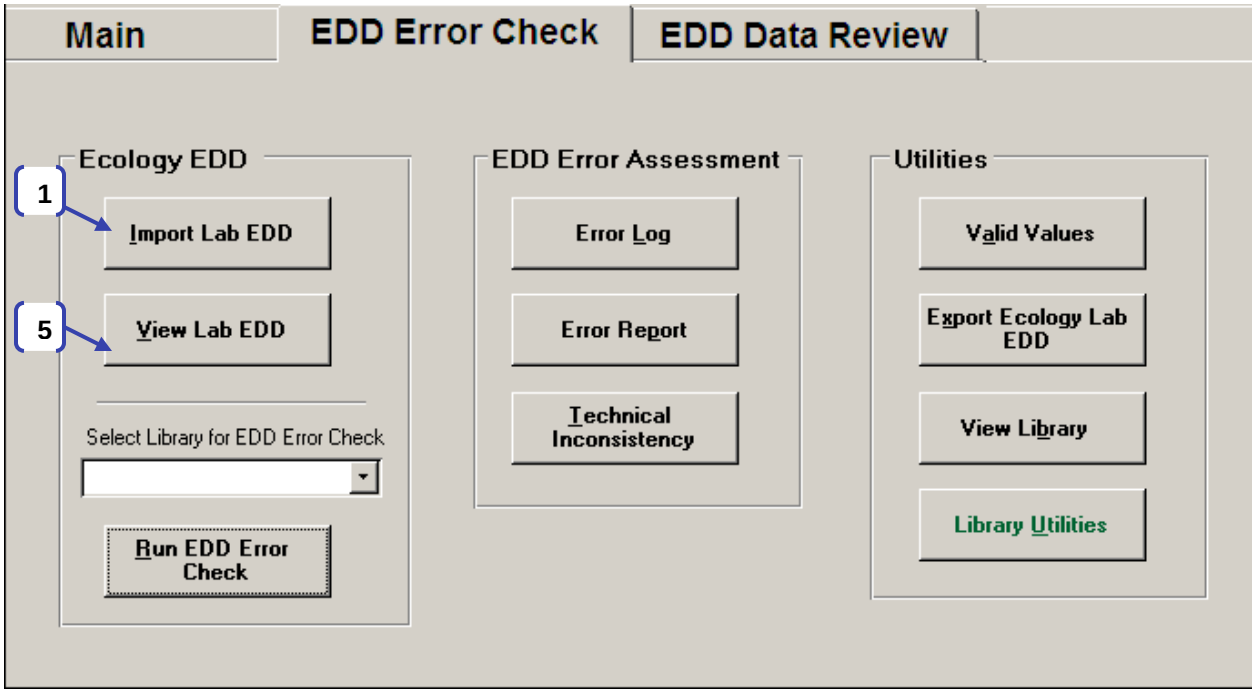
- Provide access to Ecology Valid Value tables
- Export the laboratory EDD for Export to the client

Image 5-1: EDD Error Check



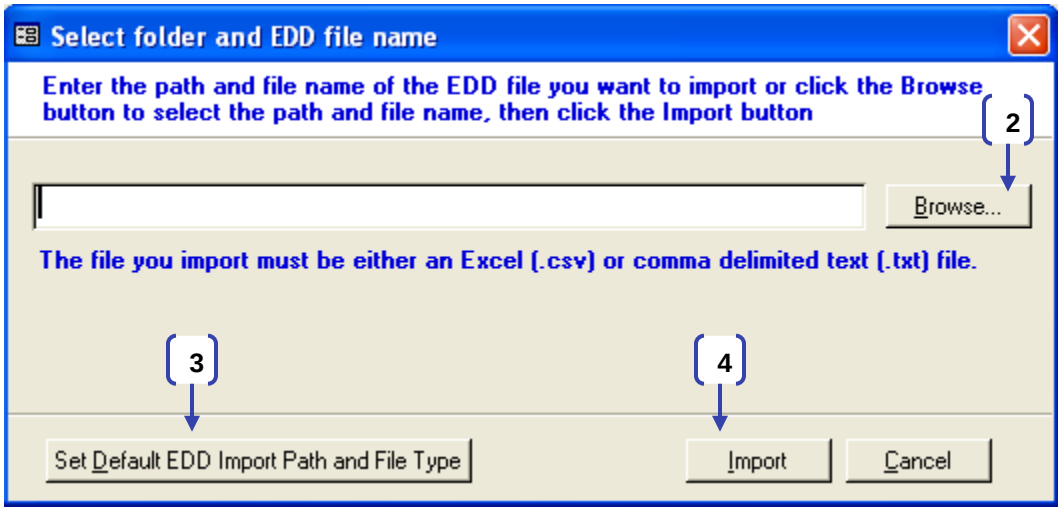
5.1.1 Importing an EDD File

Image 5-2: EDD Error Check – Import/View EDD



1. Click on "Import Lab EDD" button. This will cause the pop-up window [Image 5-3] to open.

Image 5-3: Import EDD

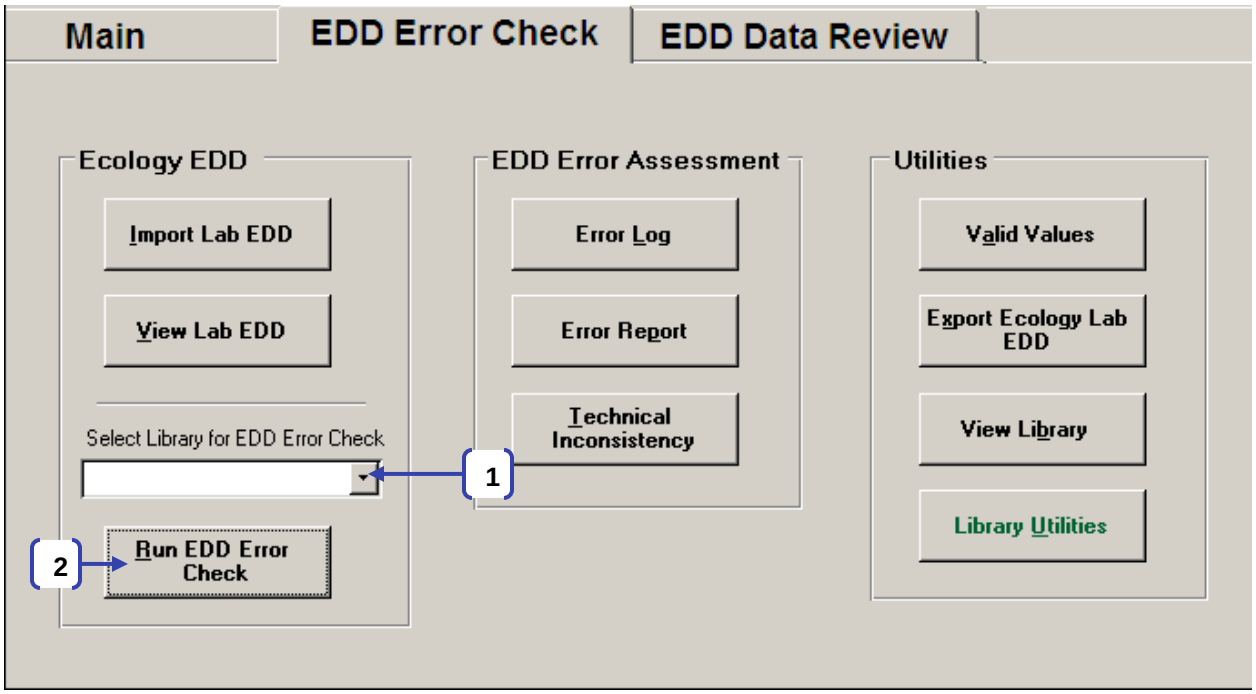


2. Click the "Browse" button to open a dialog box. Select the folder and file name in the dialog box for the laboratory EDD you want to import. You can also double click on the white text box, located left of the Browse button, to open the dialog box.

3. (Optional) You can set the EDD default file type (.txt, .csv, or .asc) and the EDD default path for the dialog box that opens in Step 2 by clicking this button.
4. Click "Import" to import the EDD after entering the folder and file name in step 2.
5. (Optional) Click "View Lab EDD" to view the imported EDD after Step 4. The EDD is displayed in database table format. The view may be filtered, so check to see if the filter indicator is on (Filtered) and turn off the filter if needed.

5.1.2 Running the EDD Checker

Image 5-4: EDD Error Check – Run Check



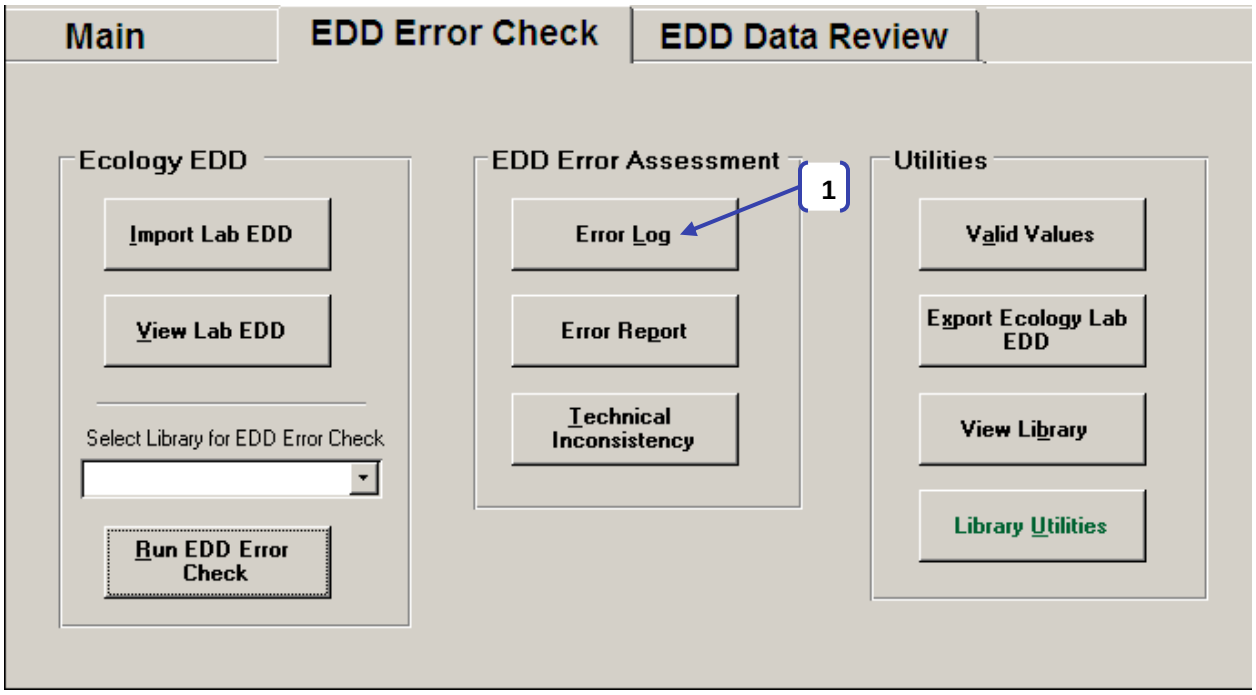
1. Select a Library file on which to base the EDD error check. Which Library you select will determine some of the parameters used in the check.
2. Click on the "Run EDD Error Check" button. After the error checking process has finished, a message box opens indicating the error check has completed and that you may view the error and technical consistency reports.

5.1.3 Viewing the EDD Error Checker Results

5.1.3.1 Error Log

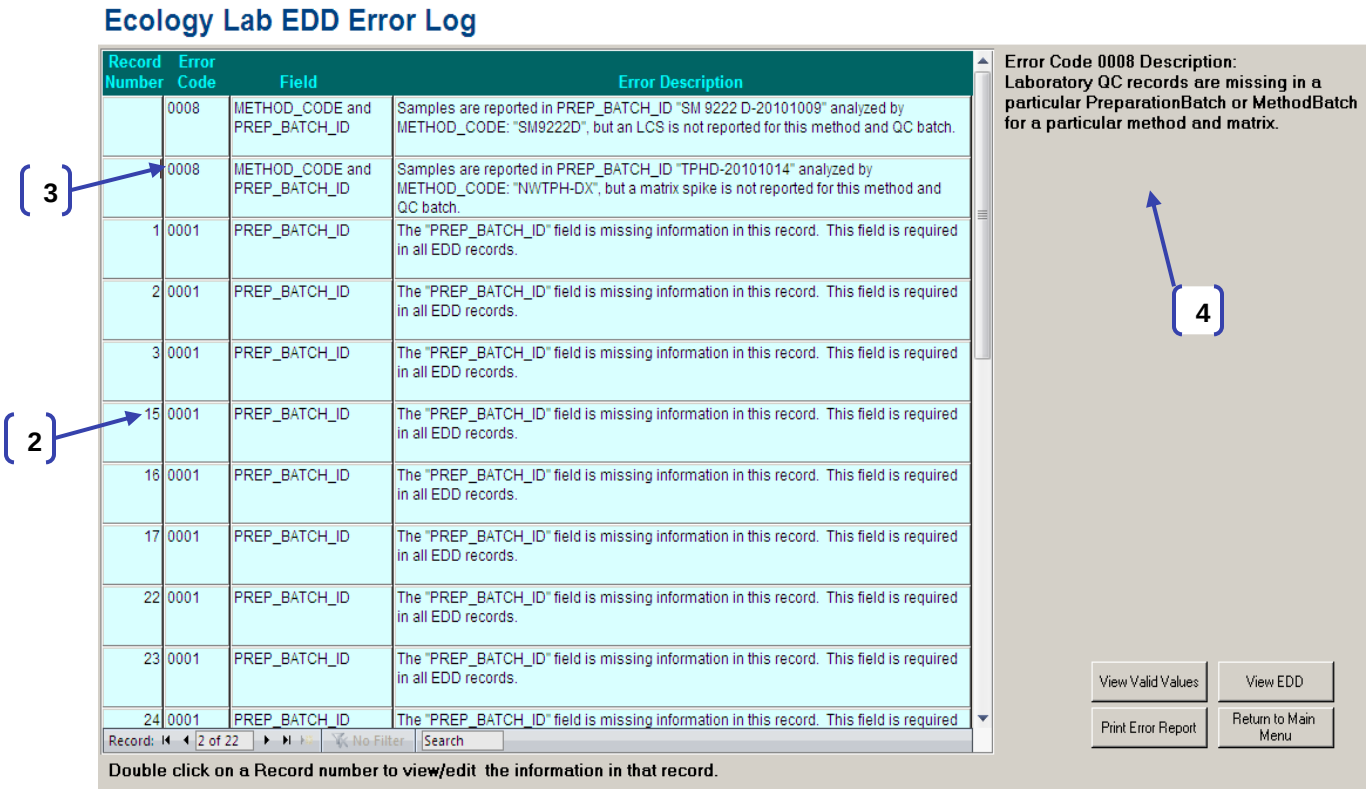
The error log displays information about all the EDD errors found during the error check. You can use the Microsoft Access Filter, Find, and Sort tools to facilitate error assessment and correction.

Image 5-5: EDD Error Check – Error Log



1. Click the "Error Log" button to view the EDD Error Log (shown below).

Image 5-6: Error Log

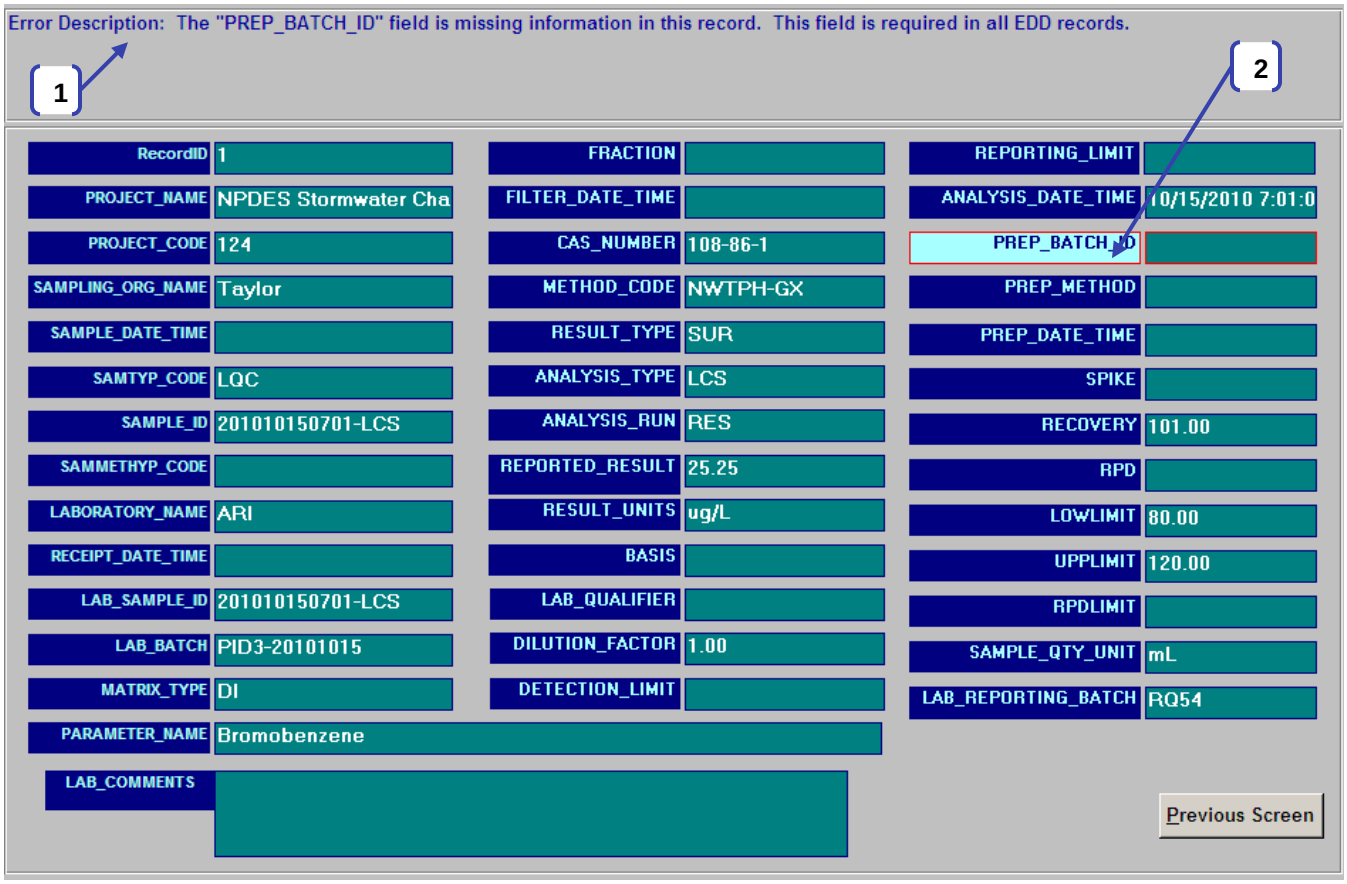


2. Record number in the EDD table where the error occurs. Double click on a record number to view a snap shot of that record. See EDD Error Check Record View for more info.
3. Error Code number - Single click on an Error Code number [3] to view the general description of the Error Code [4].

5.1.3.2 EDD Error Check Record View

The screen in [Image 5-7] opens when you double click the Error Number in the Error Log view as explained in [Image 5-6]. This screen displays all the field headers and the values entered in the EDD for the record number you double clicked in the Error Log. You can correct EDD errors in this screen.

Image 5-7: EDD Error Check Record View



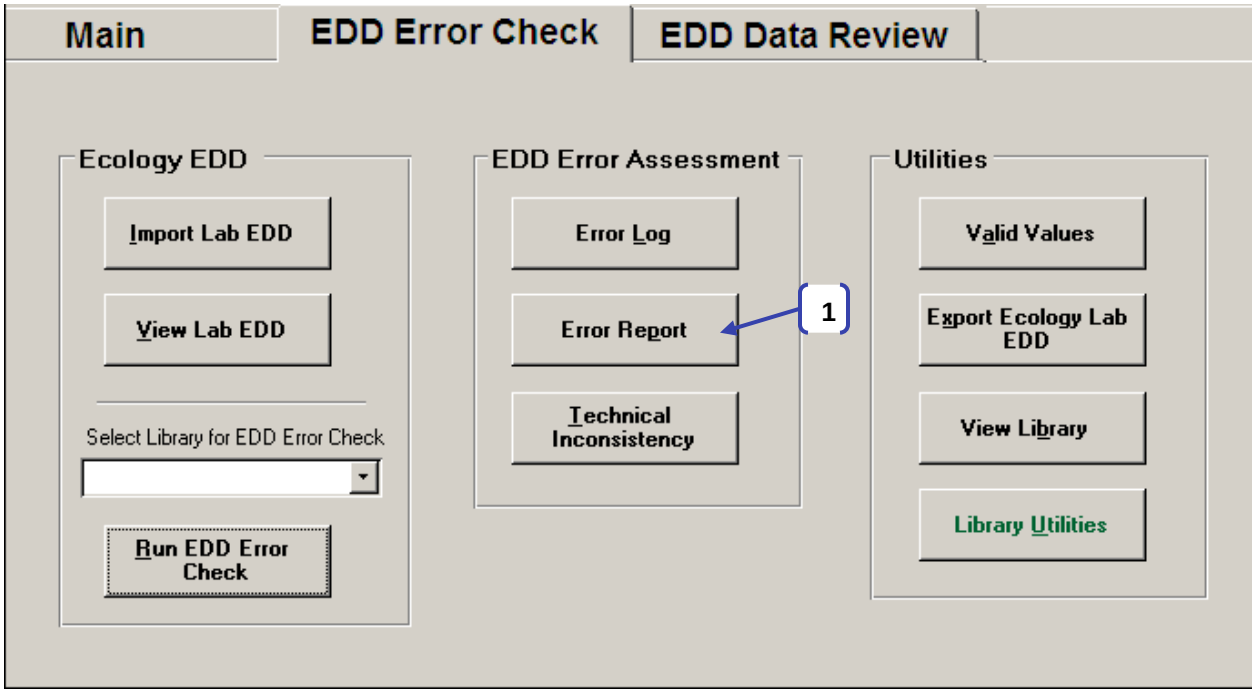
1. The Error Description Field provides a general description of the error.
2. The field name(s) pertinent to the EDD error are highlighted.

Remember that if you make any EDD corrections on this form, you may want to make the same changes to your LIMS database and hardcopies so they reflect the changes here. You should also export the EDD (see [7.1]) so that these changes are saved.

5.1.3.3 Error Report

The Error Report displays the same information as the Error Log in report Format. You cannot use the Access filter, find, and sort tools in the Error Report.

Image 5-8: EDD Error Check – Error Report



1. Click the "Error Report" button to view the Error Report in Print Preview.

There are two sections to the Error Report. The first section, page 1, [Image 5-9], gives a summary of the EDD errors. This includes a count of each error type (Error Code) and the total number all errors found.

Image 5-9: EDD Error Report (a)

Ecology

Laboratory EDD Error Report

Error Summary for Lab Reporting Batch ID: ***RQ54***

Error Code	*Count*	*Error Code Description*
0001	20	Required field is missing information
0002	0	Invalid Ecology value
0003	0	Non-numeric characters in a numeric only field
0004	0	Incorrectly formatted Date or Time field
0005	0	Field character length restrictions violated
0006	0	Logical date and time errors
0007	0	Inconsistent field values
0008	2	Missing laboratory QC records
0009	0	Duplicate records in EDD

Total Number of Errors: ***22***

Report Date: 5/31/2011 12:50 *Page 1 of 2*

The second part of the Error Report provides detail on each error. The record number and field name are included in the Error Report, where applicable.

Image 5-10: EDD Error Report (b)

EDD Error Detail for Lab Reporting Batch ID: RQ54

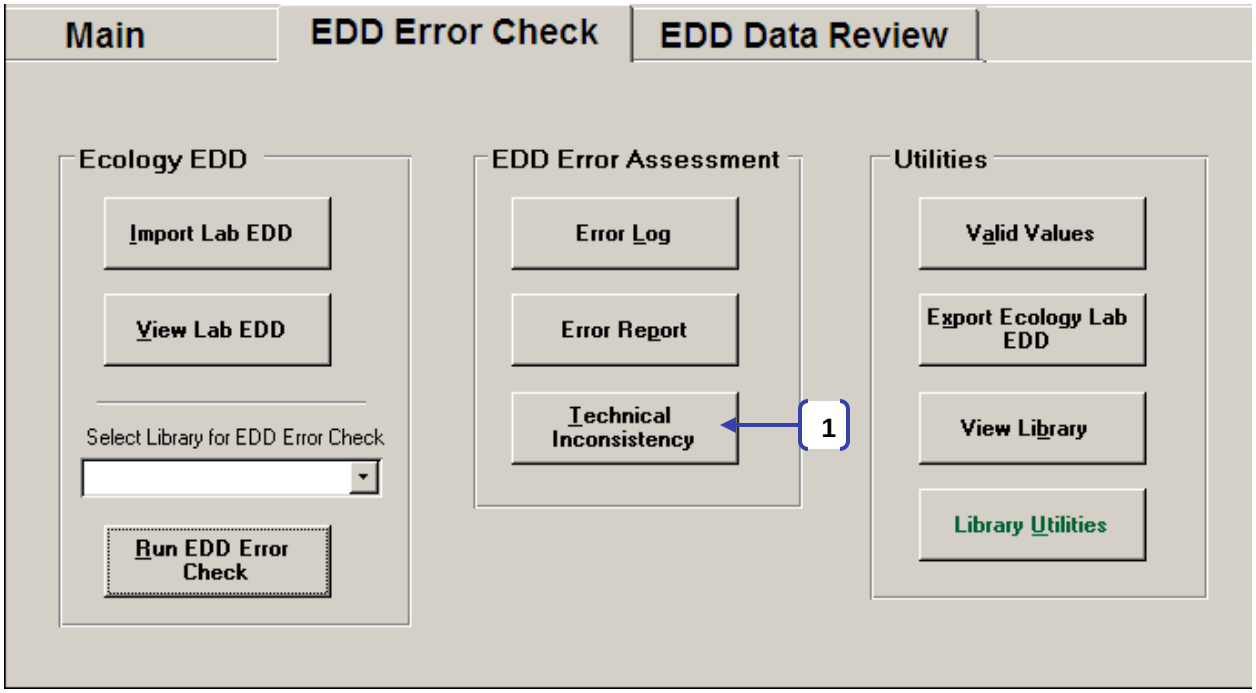
Record ID	Field Name	Error Code	Error Detail
	METHOD_CODE and PREP_BATCH_ID	0008	Samples are reported in PREP_BATCH_ID "SM 9222 D-20101009" analyzed by METHOD_CODE: "SM9222D", but an LCS is not reported for this method and QC batch.
	METHOD_CODE and PREP_BATCH_ID	0008	Samples are reported in PREP_BATCH_ID "TPHD-20101014" analyzed by METHOD_CODE: "NW TPH-DX", but a matrix spike is not reported for this method and QC batch.
1	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
2	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
3	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
15	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
16	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
17	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
22	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
23	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
24	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
29	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
30	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
31	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
33	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
34	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
35	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
36	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
37	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
38	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
39	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.
40	PREP_BATCH_ID	0001	The "PREP_BATCH_ID" field is missing information in this record. This field is required in all EDD records.

Report Date: 5/31/2011 12:54 *Page 2 of 2*

5.1.3.4 Technical Inconsistency Report

The EDD Error Checker also checks sample results for technical inconsistency between sample results for related tests. After running the error checker, you can view a report listing any technical inconsistencies between sample results. The technical inconsistency report is in the same fashion as the error report with the first page providing a count and summary of each technical inconsistency.

Image 5-11: EDD Error Check – Technical Inconsistency



1. Click on the "Technical Inconsistency" button to open the Technical Inconsistency Report in print preview. [Image 5-12]

Image 5-12: EDD Technical Inconsistency Report

Ecology EDD Technical Inconsistency Report

Summary of Technical Inconsistencies for Lab Reporting Batch ID RQ54

Code	Count	Technical Inconsistency Code Description
0001	0	Total fraction result is less than the Dissolved fraction result
0002	0	Total chromium result is less than the hexavalent chromium result
0003	0	TOC result is less than the COD result
0004	0	COD result is less than the BOD result
0005	0	Results for Total Dissolved Solids and Conductivity not consistent with each other
0006	0	Total nitrogen result is less than the TKN result
0007	0	Total nitrogen result is less than the ammonia result
0008	0	TKN result is less than the ammonia result
0009	0	Invalid pH value

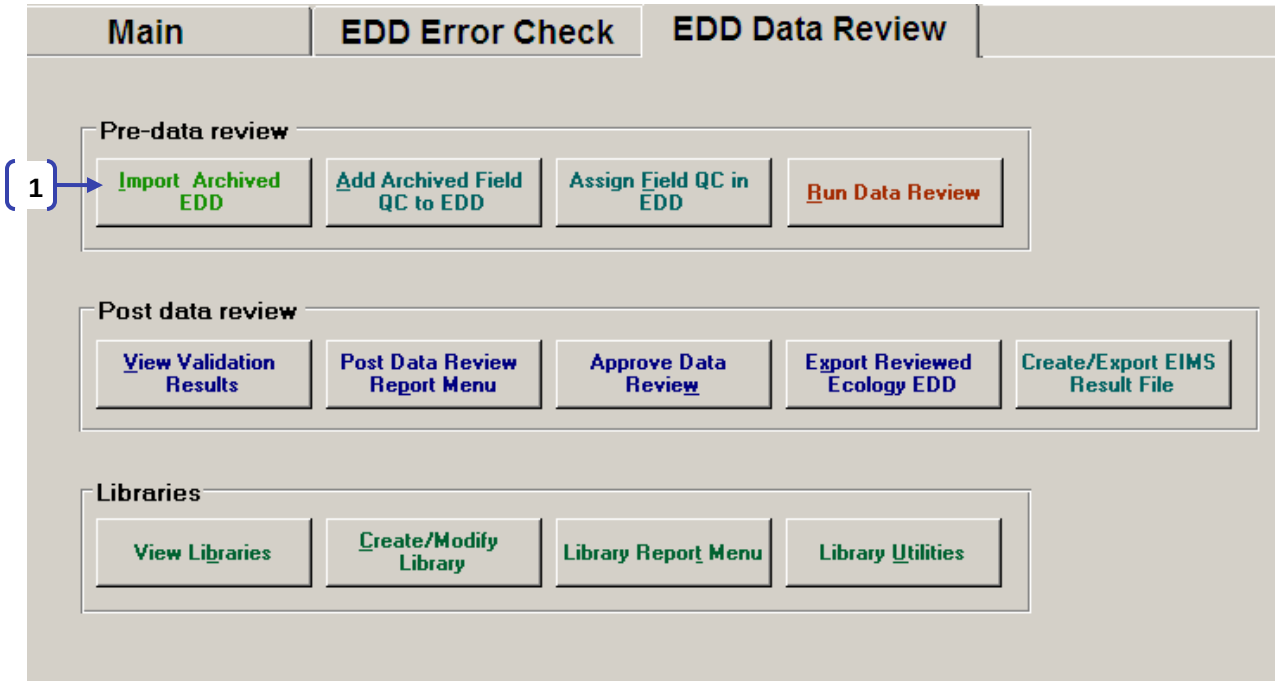
Total Number of Technical Inconsistencies: 0

Report Date: 5/31/2011 13:02 *Page 1 of 2*

6 Performing Data Verification/Validation

Data Verification / Validation functions are located on the "EDD Data Review" tab of the EEPT. The Data Review tab is not accessible on the Laboratory Version, only the Administrative Version.

Image 6-1: EDD Data Review



Processes on the Data Review tab are separated into three main categories: pre-data review actions, reporting/post-data review actions, and library actions.

6.1 Importing Archived EDDs

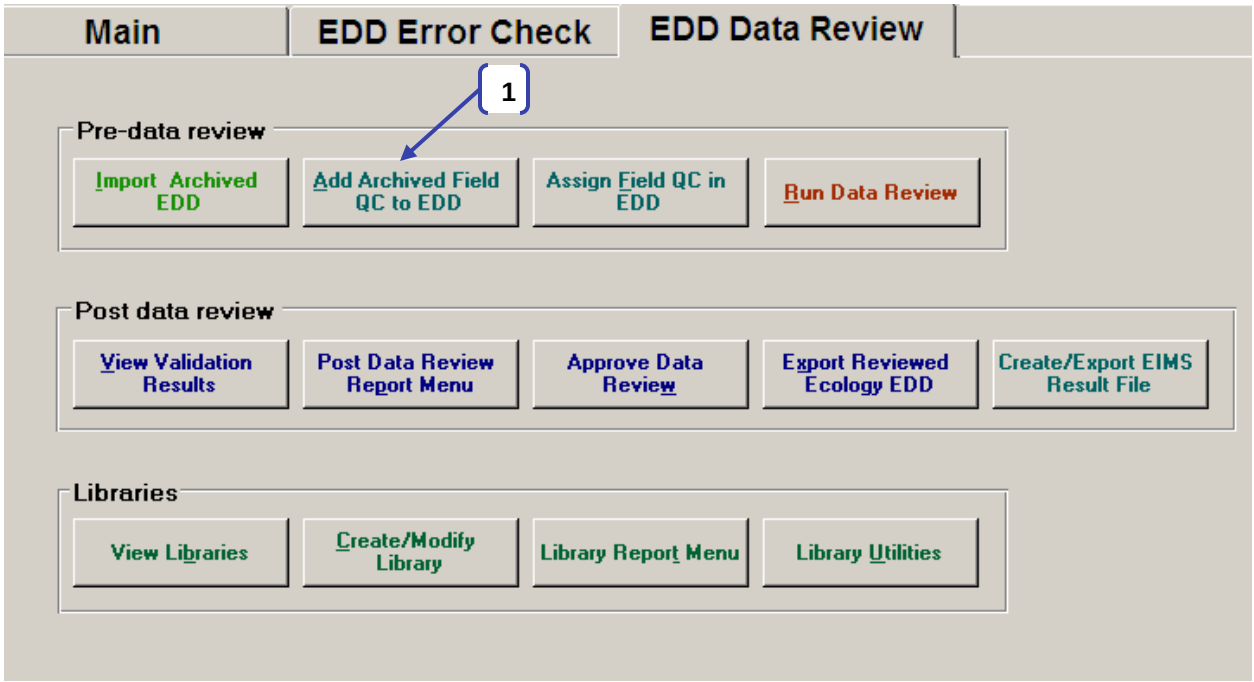
If an EDD has been exported in Archive Format (see Section 7.2), then it can be imported using the "Import Archived EDD" function [Image 6-1]. The benefit of this is that the EDD Error Check process or does not need to be re-run on an archived EDD, so long as it was performed prior to export.

Note that the use of the term "Archived" in this case is *different* than the use of "Archived" with regards to Archived Field QC. These are two separate and unrelated processes.

6.2 Adding Archived Field QC

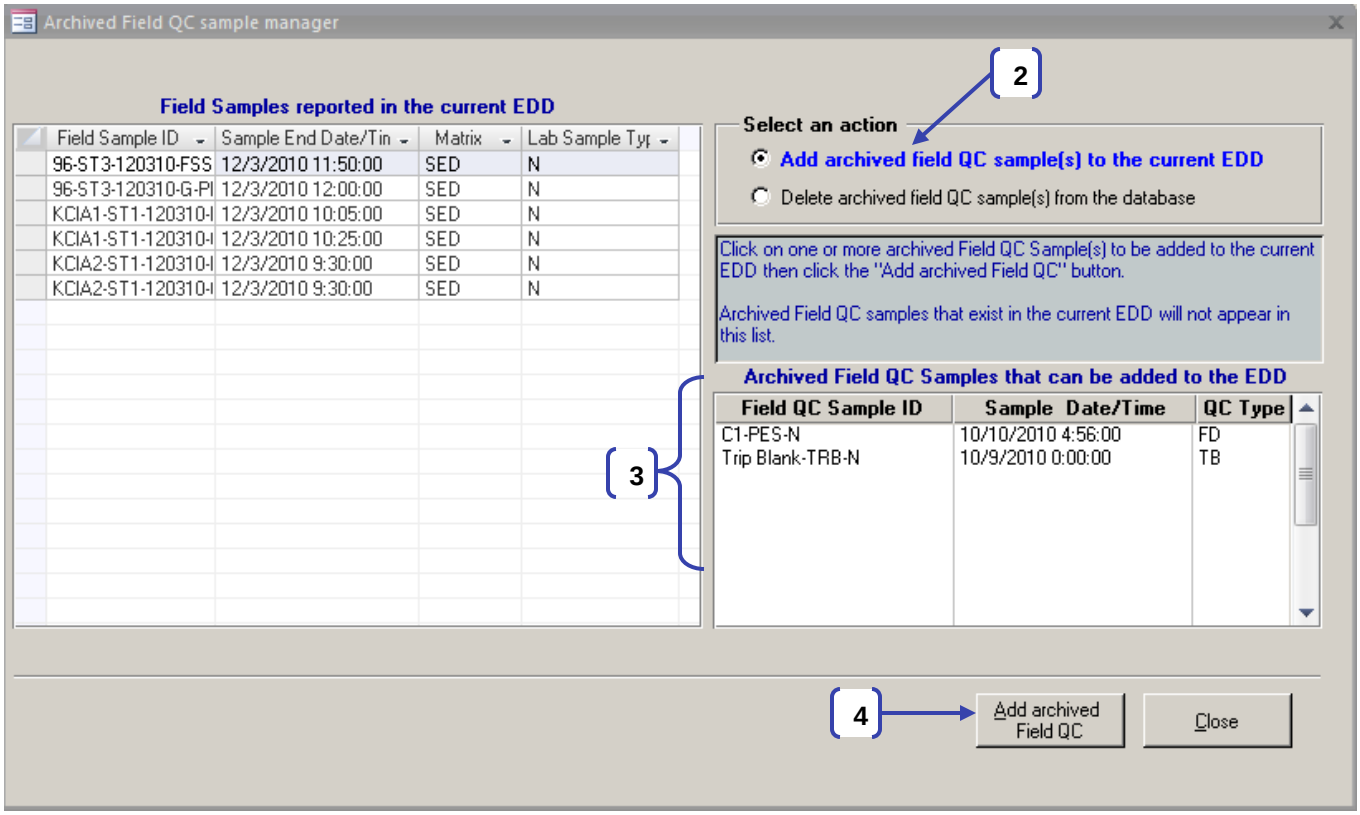
If a Field QC sample from another EDD has been archived, this sample can be added to the currently loaded EDD so that samples in the EDD can be evaluated with respect to this Field QC. Refer to [Section 6.3] about assigning and archiving a Field QC sample.

Image 6-2: EDD Data Review – Add Archived QC



1. Click the "Add Archived Field QC to EDD" button to open the Archived QC Manager [Image 6-3].

Image 6-3: Archived Field QC



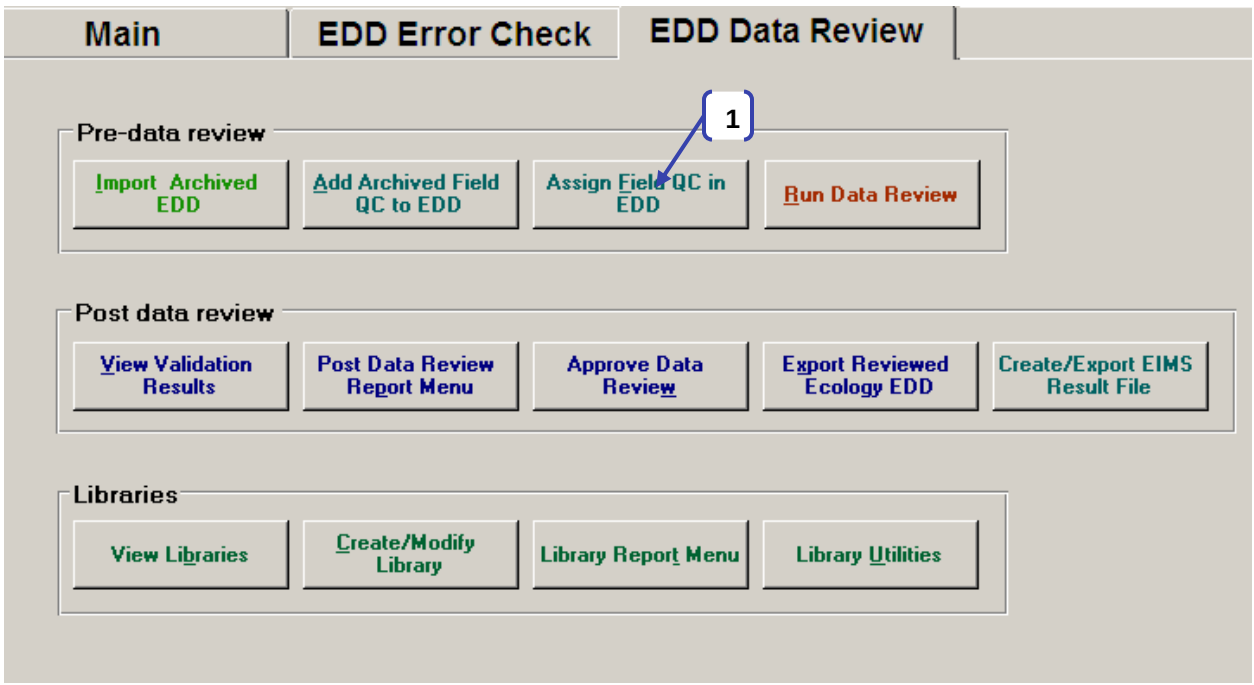
2. You may choose to add selected archived Field QC samples to the current EDD or delete selected archived Field QC samples from the database.
3. Once you have selected and action, select one or more archived Field QC samples to perform this action on.
4. Click the “Add” or “Delete” button.

6.3 Assigning Field QC

You must assign samples as Field QC, if applicable and associate samples in the EDD to each Field QC sample before running automated validation. It is important that Field QC samples be associated correctly to insure consistent and correct data review.

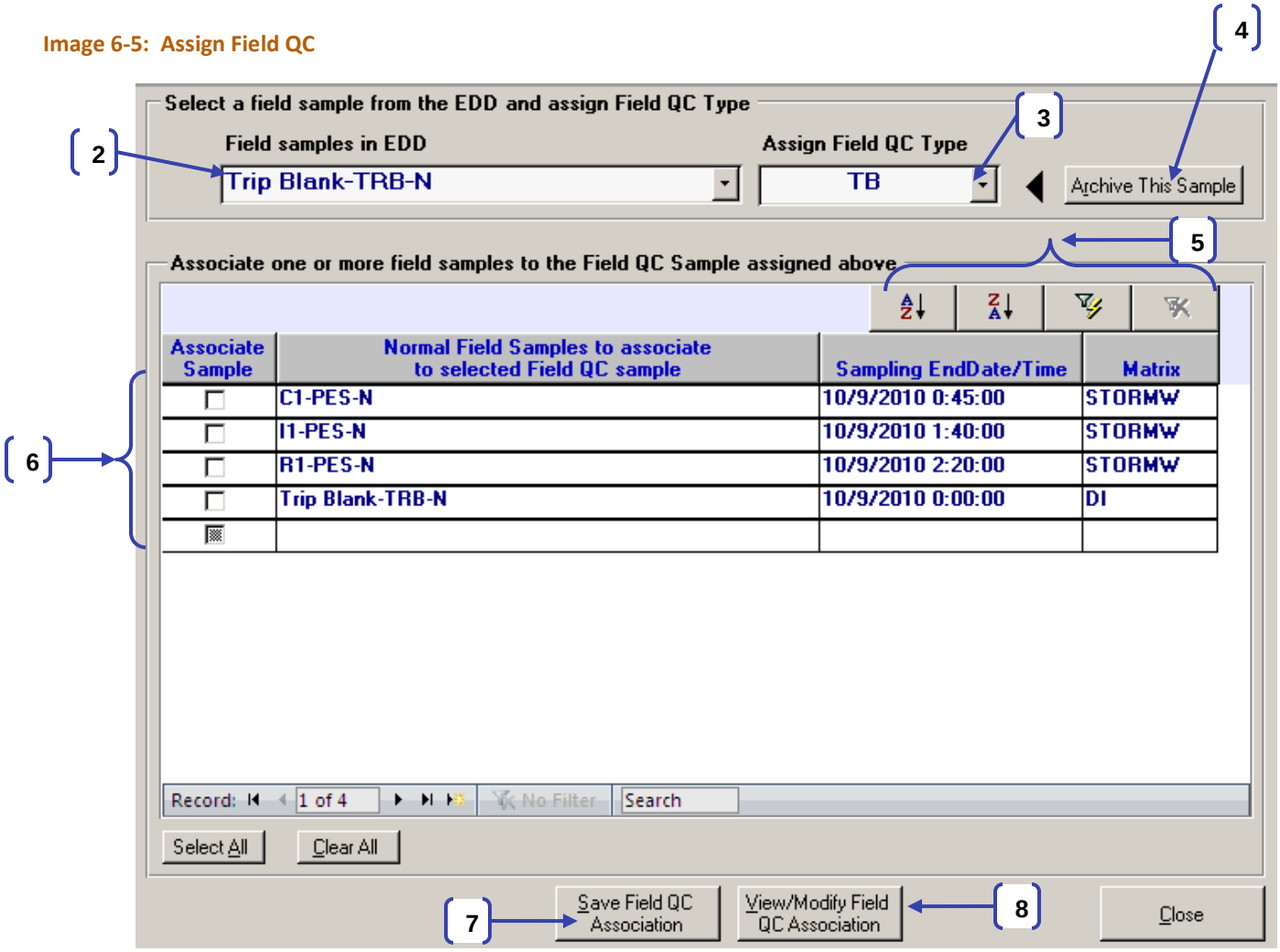
Laboratory QC samples, such as LCS, MS, and Method Blanks are not assigned manually. The software identifies which samples to associate with laboratory QC based on the values in the LAB_BATCH and PREP_BATCH_ID fields of the EDD.

Image 6-4: EDD Data Review – Assign Field QC



1. Click the "Assign Field QC in EDD" button to open the window for assigning field QC [Image 6-5].

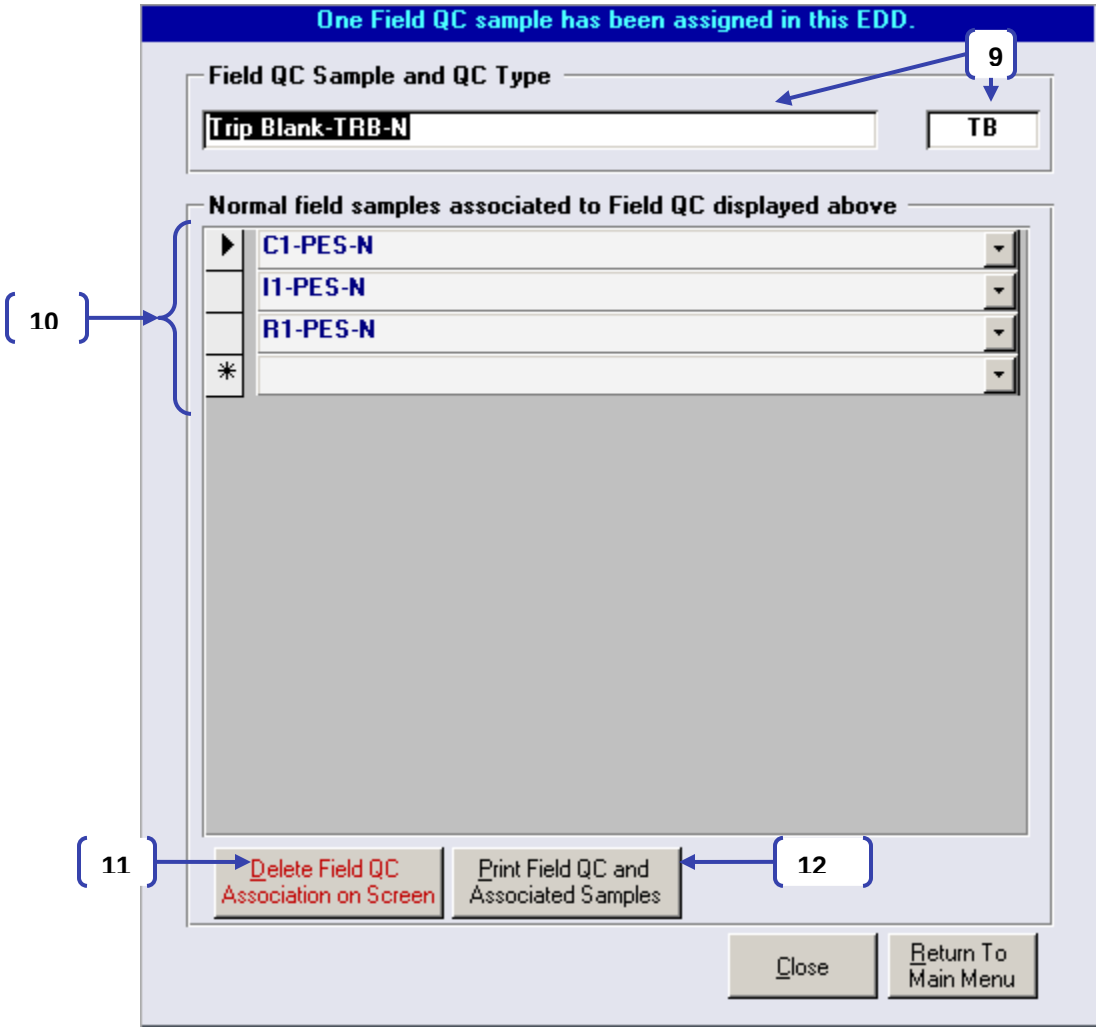
Image 6-5: Assign Field QC



2. Use the drop-down list to select the field sample ID you want to assign as a particular Field QC Sample.
3. Use the drop-down to select the type of field QC sample corresponds to the QC sample selected in step [2].
4. (Optional) You can archive the sample you assigned as a Field QC. This allows you to associate this field QC sample to normal field samples in subsequent EDDs. This is very useful if, for example, there are field blanks that where submitted to the laboratory in a separate COC batch than the samples they are associated with.
5. (Optional) Use these buttons to perform sort and filter operations on the list of field samples listed below.
6. These are the field samples you can associate to the field QC assigned in Step 2. Click the check box to the left of the Field Sample ID to associate that sample. Normally you do not associate a field QC sample to itself. Only associate one sample to a field duplicate.

7. Click the “Save Field QC Association” button to save the Field QC assignment and sample association after performing Steps 2 – 6.
8. Click “View/Modify Field QC Association” button to view all Field QC associations. This action opens the form shown below.

Image 6-6: Check Assigned QC



It is highly recommended that you review your Field QC Associations for accuracy after making associations, and before running the automated data review process.

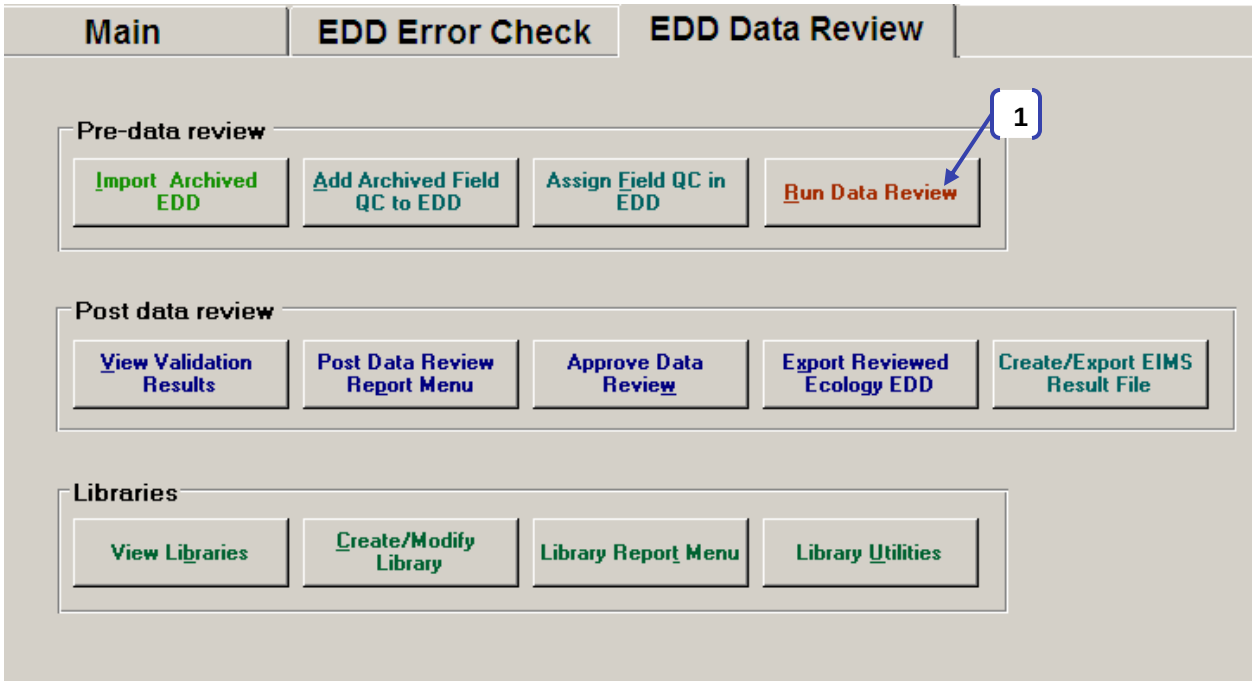
9. Field QC sample ID and QC sample type are shown at the top of the window.
10. The list of samples associated with the Field QC shown in step 9.
11. Use this button to delete the field QC association currently on screen. This action does not affect records in the EDD.

12. Click the “Print” button to print a report listing all field QC assignments and associated samples.

6.4 Running Automated Data Review

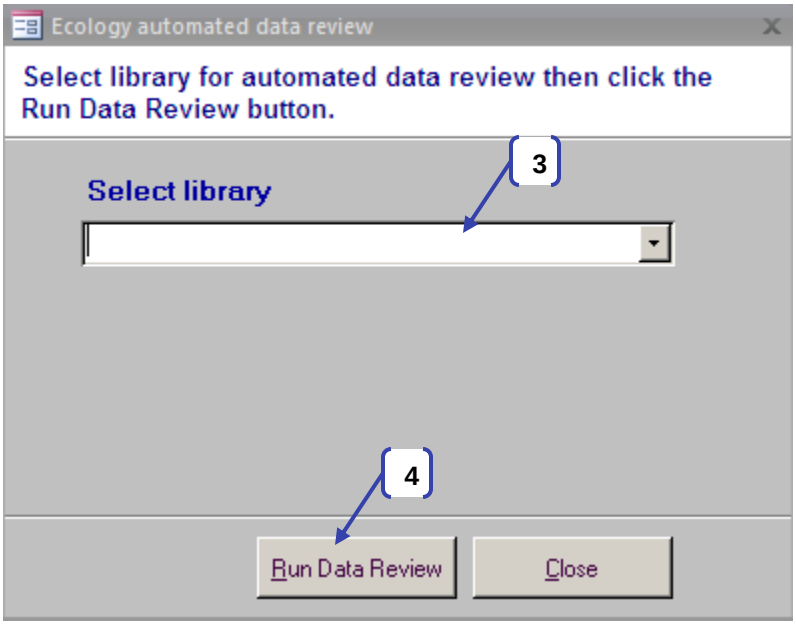
Once all appropriate QC associations have been made, the automated data review can be run.

Image 6-7: EDD Data Review – Run Data Review



1. Click the “Run Data Review” button to initiate the automated data review process.
2. A dialog box will appear [Image 6-8] asking you to select a library.

Image 6-8: Data Review – Select Library



3. Select a reference library for validation from the drop-down list.
4. Click the "Run Data Review" button to start the data review process.

A pop-up information window appears when automated data review has finished.

Automated validation may not work correctly if errors are found in the EDD and not corrected. Valid Value errors and missing information in required fields must be corrected before running automated data review. Always run the error checker and review the error log prior to running automated data review.

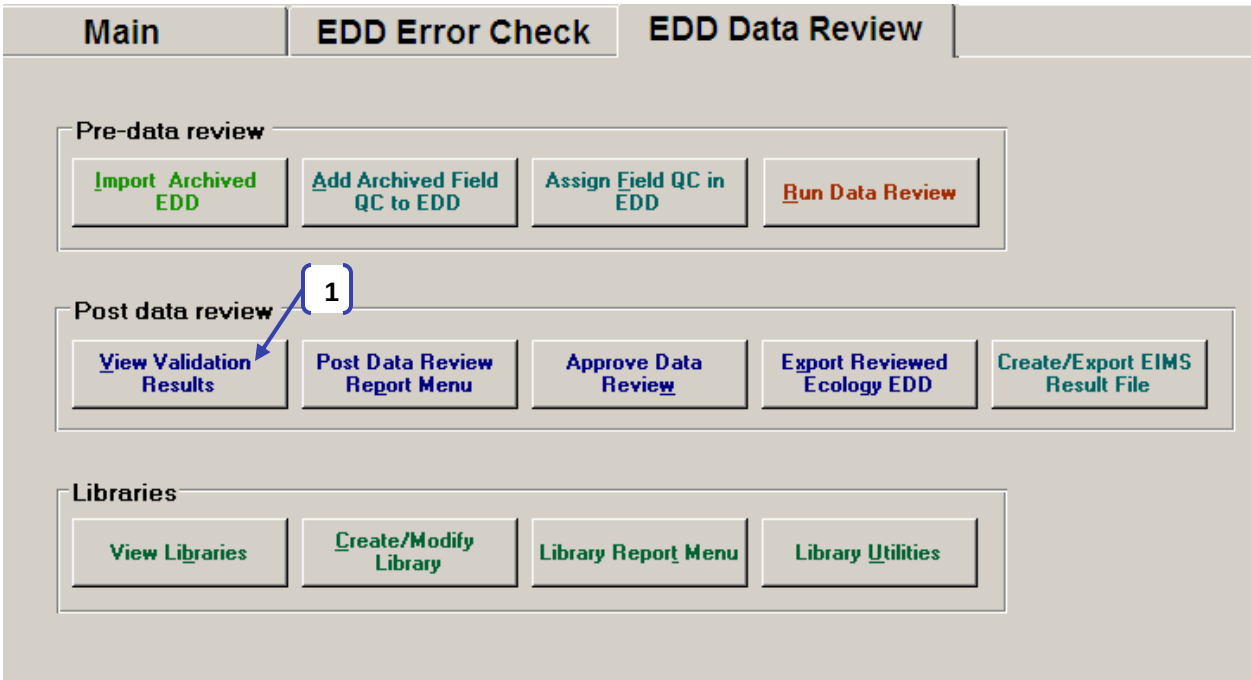
6.5 Viewing Result Validation

6.5.1 Reviewing and Editing Validation Results On-Screen

6.5.1.1 Viewing

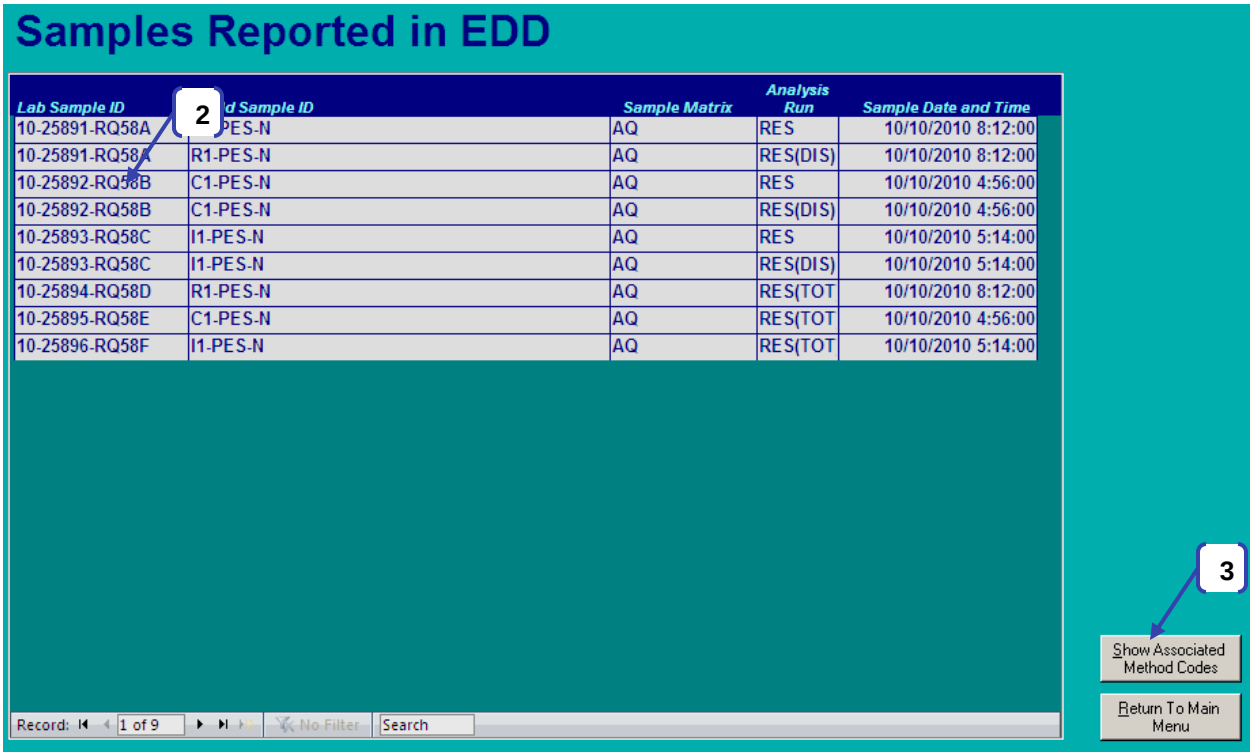
You can review validation results on screen after running the automated validation procedure.

Image 6-9: EDD Data Review – View Validation Results



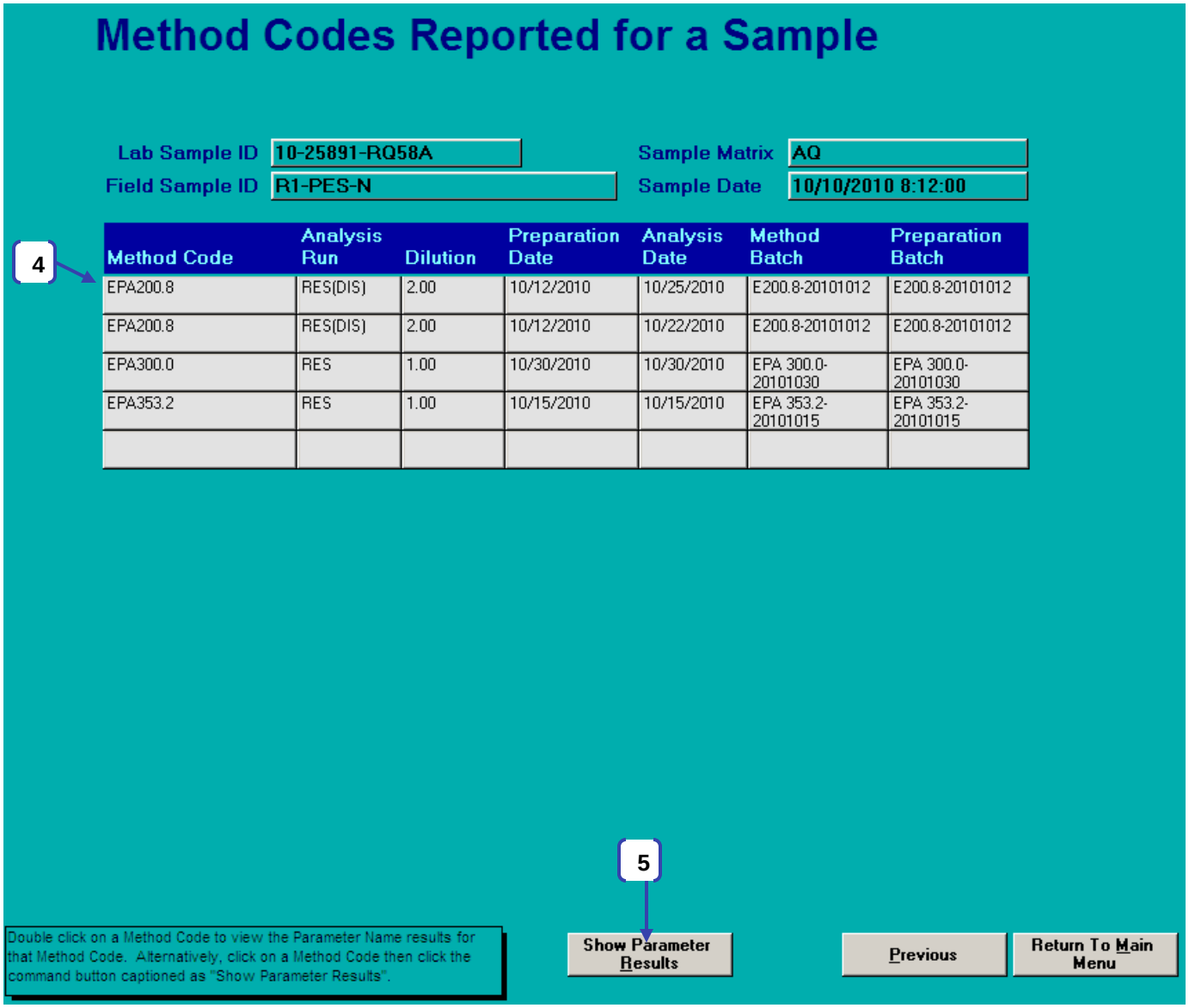
1. Click the "View Validation Results" button to view the validation results on screen. This will cause the Reported Samples screen [Image 6-10] to appear. This screen displays a list of all the samples reported in the EDD.

Image 6-10: Sample List



2. Double click on a Lab Sample ID to view a list of the methods reported for that sample in the EDD.
3. Alternatively, single click on a Lab Sample ID and click on the "Show Associated Method Codes" button. This will open a screen [Image 6-11] that displays all the method codes reported in the EDD for the sample selected.

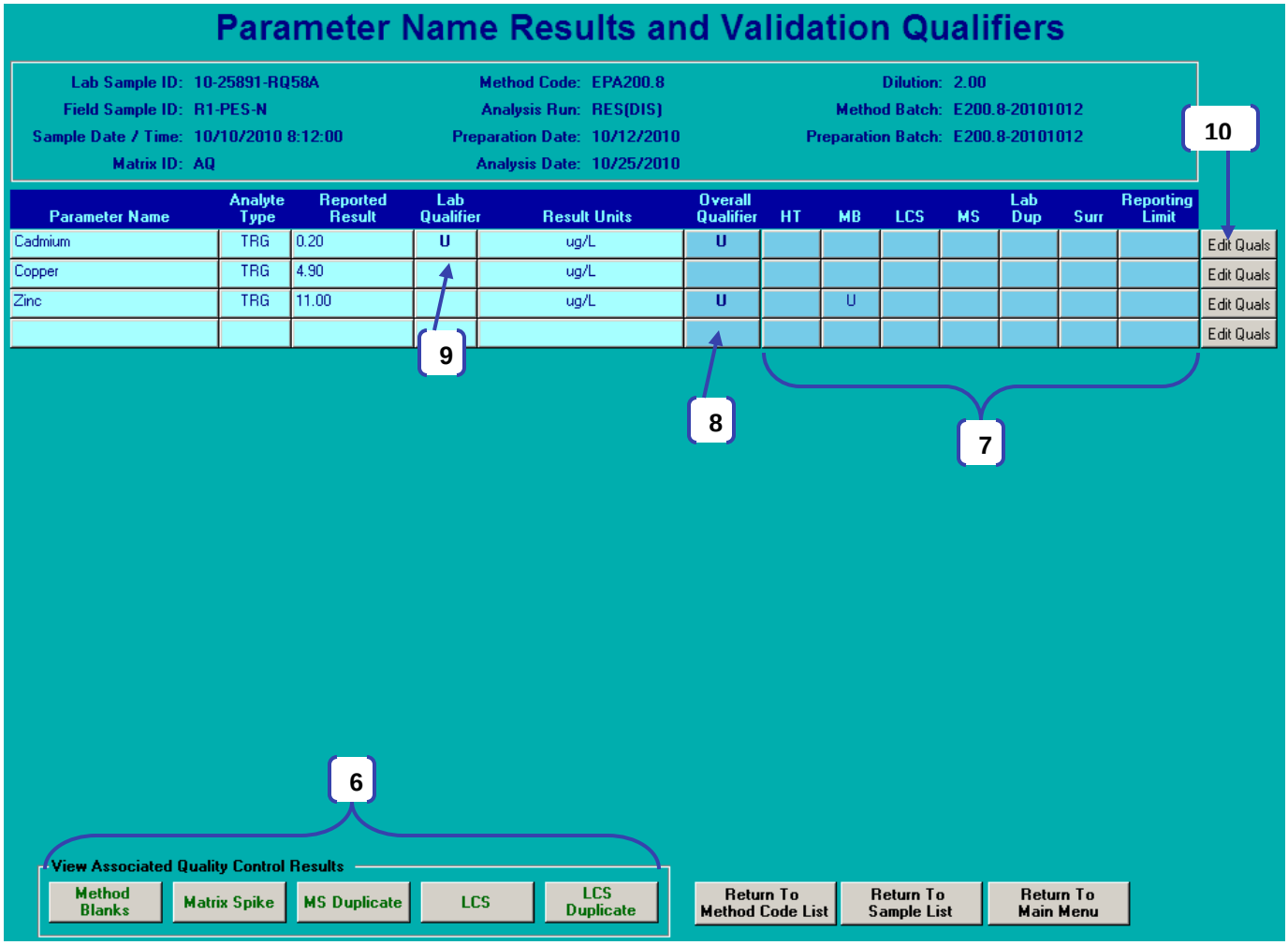
Image 6-11: Method Codes for Sample



Method Code	Analysis Run	Dilution	Preparation Date	Analysis Date	Method Batch	Preparation Batch
EPA200.8	RES(DIS)	2.00	10/12/2010	10/25/2010	E200.8-20101012	E200.8-20101012
EPA200.8	RES(DIS)	2.00	10/12/2010	10/22/2010	E200.8-20101012	E200.8-20101012
EPA300.0	RES	1.00	10/30/2010	10/30/2010	EPA 300.0-20101030	EPA 300.0-20101030
EPA353.2	RES	1.00	10/15/2010	10/15/2010	EPA 353.2-20101015	EPA 353.2-20101015

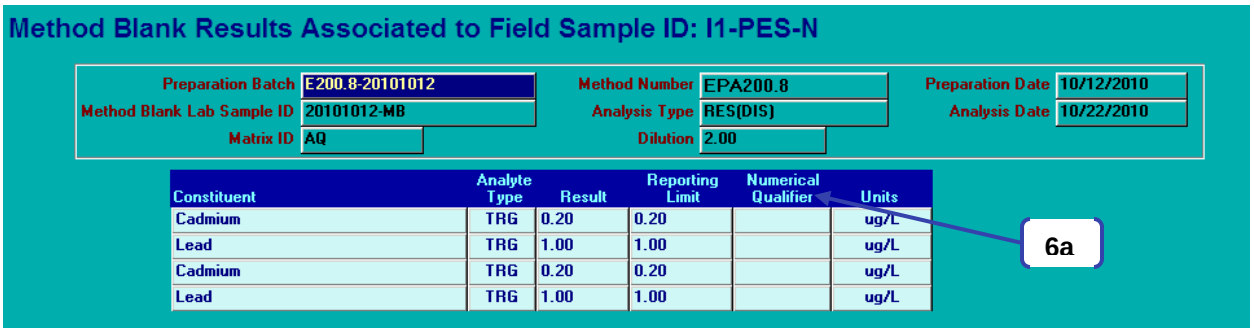
4. Double click on a Method Code to view the parameter results reported for that method on the sample selected.
5. Alternatively, single click on a Method Code then click the "Show Parameter Results" button. This will open a screen [Image 6-12] that displays the parameter results for the sample and the method selected.

Image 6-12: Parameter Results and Qualifiers



6. The results for the various quality control analyses associated to the sample identified in the header of this form can be viewed by clicking the appropriate button along the bottom of this screen. (See [Image 6-13] for example.)

Image 6-13: Associated Method Blank Results

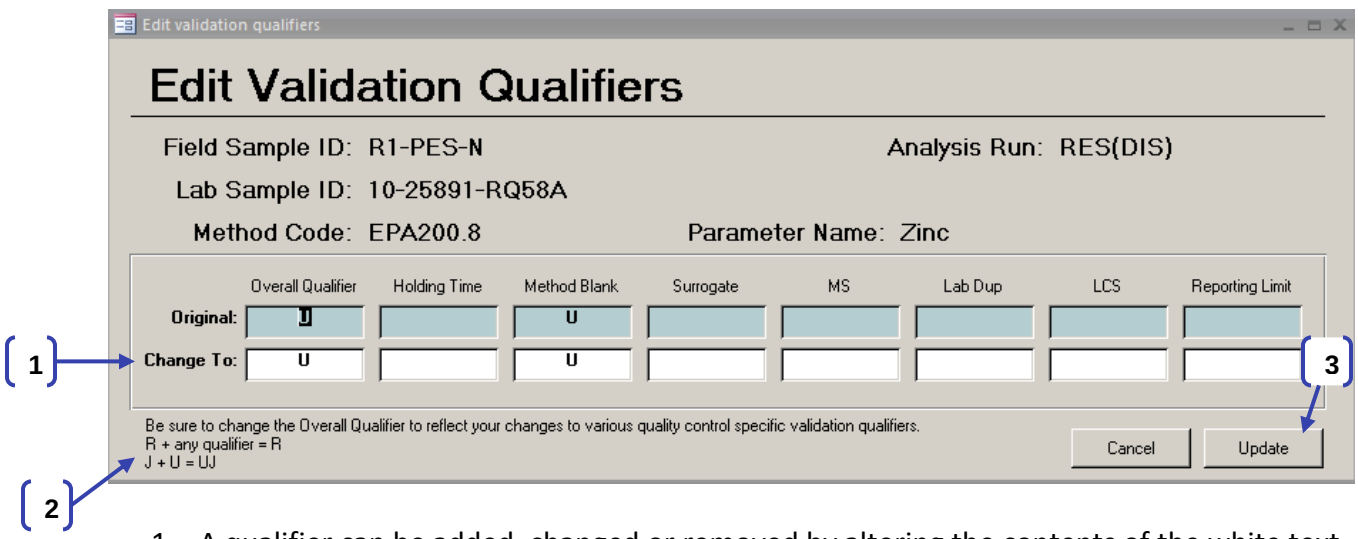


a. The "Numerical Qualifier" field is a hold-over from an older 'sister'-product of EEPT, and has no relevance in the EEPT system.

7. Each quality control element has the potential to contribute a qualifier to the results. Each QC element's qualifier is stored separately in EEPT and "summed" into the Overall Qualifier, which is reported in the final data export. These element qualifiers are shown here to aid human data validation reviewers in their data assessment.
8. The overall validation qualifier represents the summation of all qualifiers contributed by each quality control element. This qualifier is reported in the Overall Qualifier field in the exported EDD.
9. The Lab Qualifier is the qualification flag given to the result by the laboratory and included in the lab EDD. The Lab Qualifier is considered a quality control element qualifier for the purposes of calculating the Overall Qualifier. It is shown here to assist the human data validation reviewer.
10. Qualifiers for a given result can be added or edited by clicking the corresponding "Edit Quals" button. (See [Image 6-12])

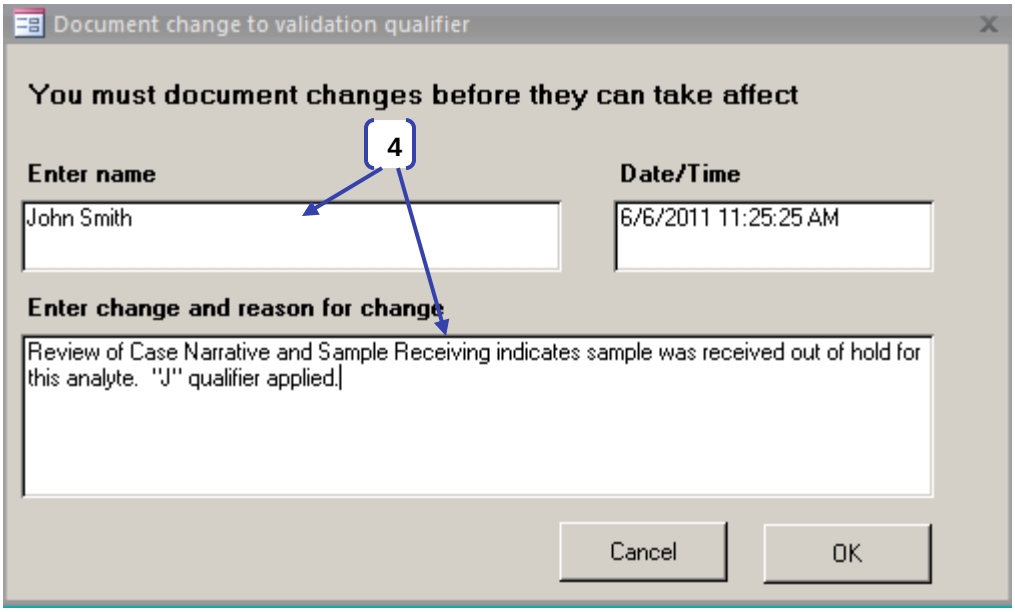
6.5.1.2 Editing

Image 6-14: Editing Validation Qualifiers



1. A qualifier can be added, changed or removed by altering the contents of the white text fields.
2. Remember to fill in a new Overall Qualifier if needed, using the rules listed along the bottom of the screen.
3. Click the "Update" button to submit the qualification changes.

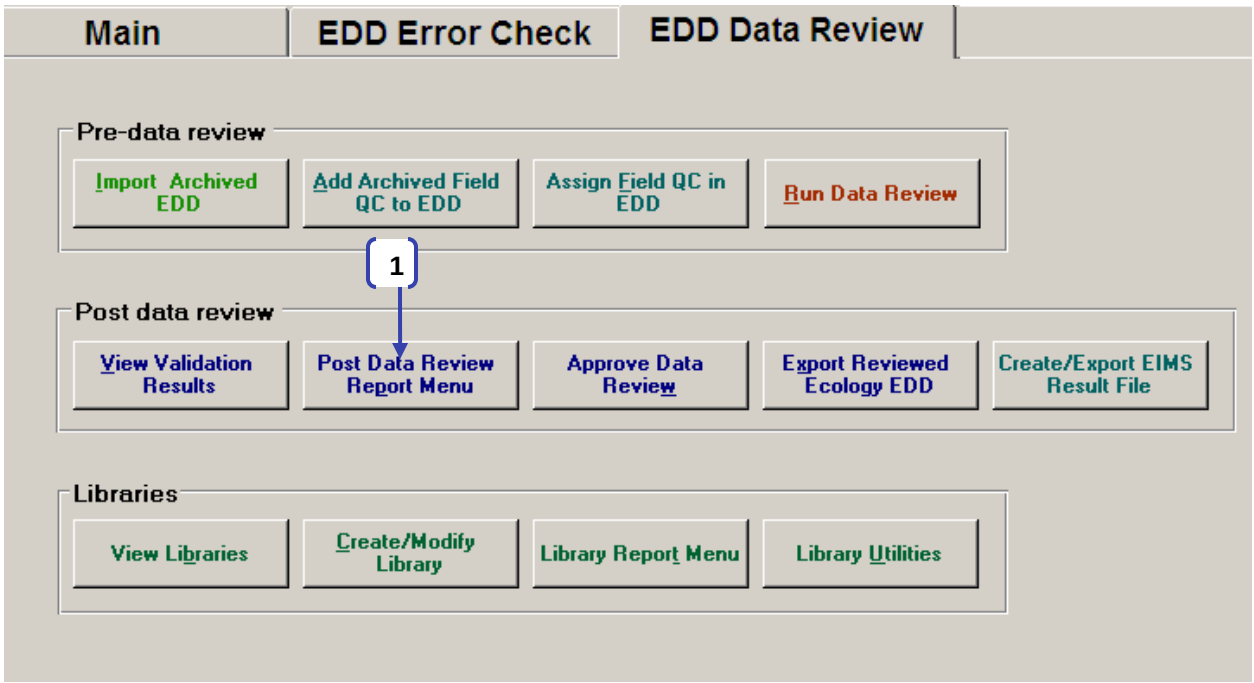
Image 6-15: Document Qualifier Changes



4. A dialog box will appear, requiring information on the change to be documented. Fill in your name (as the data validation reviewer), and enter the reason for the change before continuing.

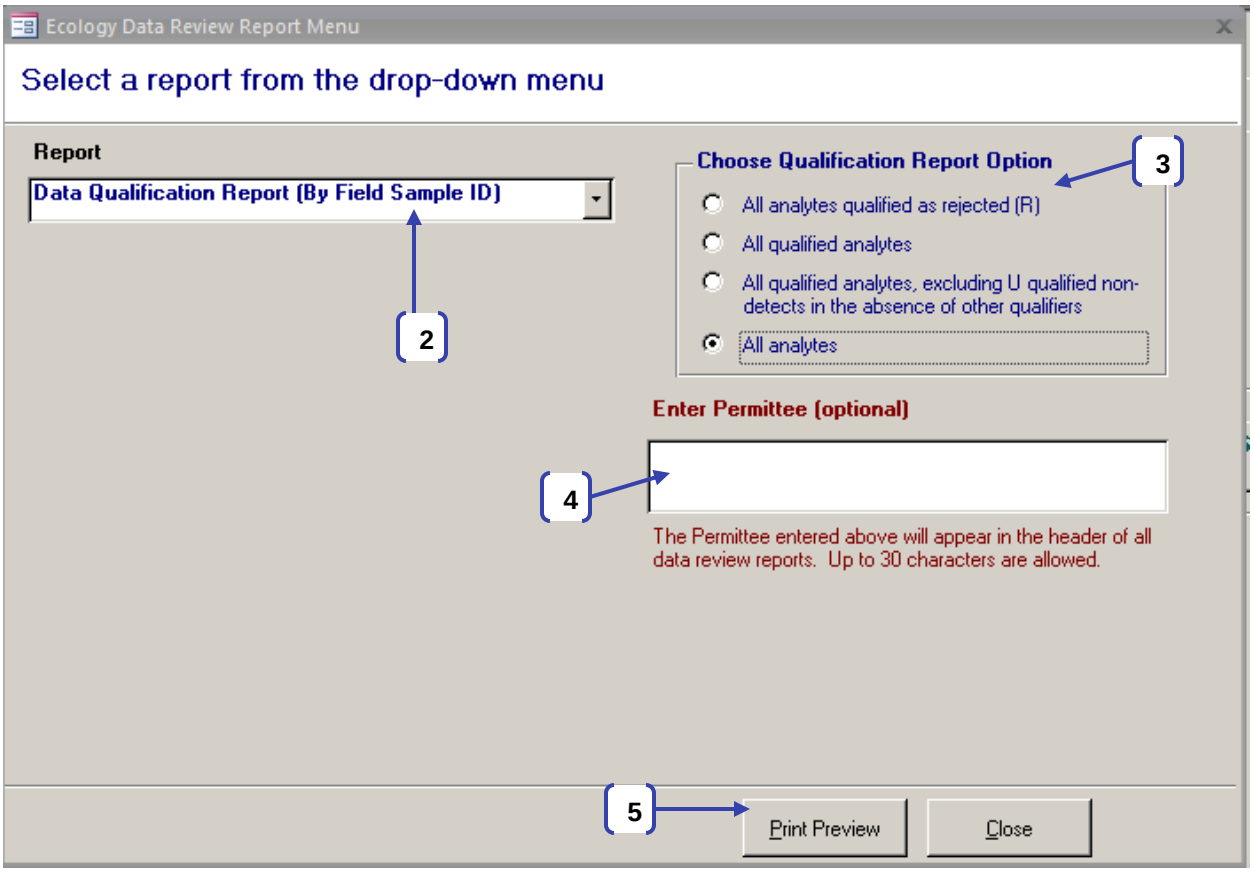
6.5.2 Viewing/Printing Validation Reports

Image 6-16: EDD Data Review – Post Data Review Report Menu



1. Click the "Post Data Review Report Menu" button to view the list of reports that can be generated after the data review process is complete. [Image 6-17]

Image 6-17: Post Review Report Menu



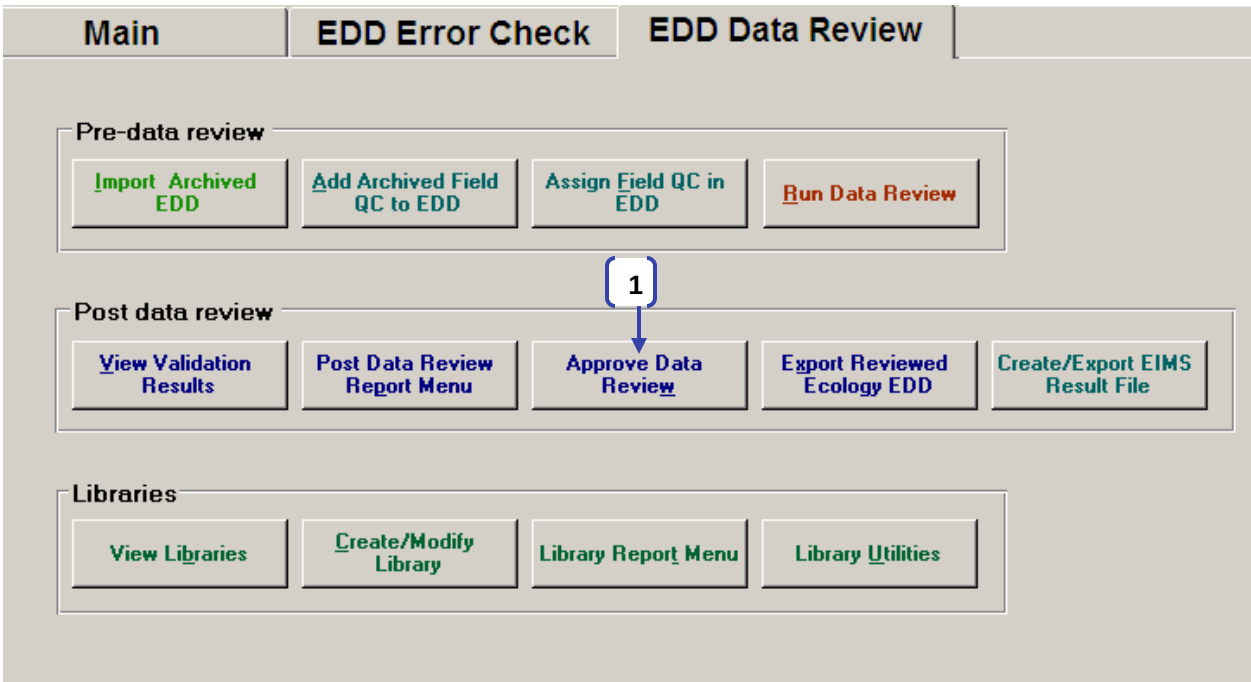
2. Select a report from the drop-down list.
   The following reports are available:
   - Data Qualification Report (By Field Sample ID)
   - Laboratory Report Batch Summary Report
   - QC Outlier: Laboratory Control Sample / Duplicate
   - QC Outlier: Matrix Spike / Duplicate
   - QC Outlier: Surrogate Recovery
   - QC Outlier: Holding Times
   - QC Outlier: Method Blank
   - QC Outlier: Equipment Blank
   - QC Outlier: Field Blank
   - QC Outlier: Trip Blank
   - QC Outlier: Reporting Limits
   - QC Outlier: Field Duplicates (Non-qualified Outliers)
   - QC Outlier: Laboratory Duplicate

3. Some reports, such as Data Qualification Report (By Field Sample ID), have additional options to select from before viewing. Select the appropriate options for the report you want to view.
4. The "Enter Permitee" field is a place to enter any additional information, such as the name of your organization or the NPDES permit number, which you want to appear in the header of your reports. This is not a required field.
5. Click the "Print Preview" button to view the report in print preview mode.

6.6 Approving Validation Results

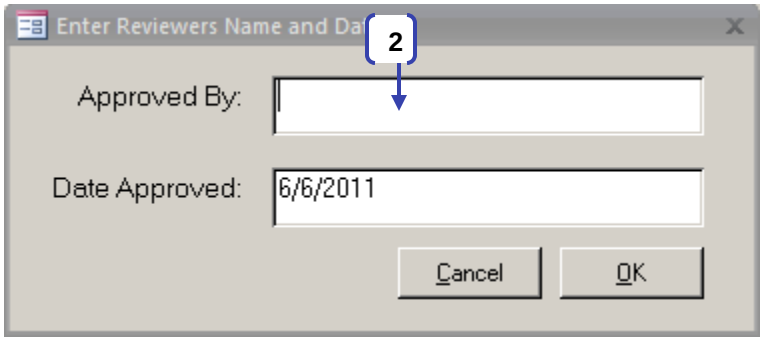
Once a human data reviewer has checked that automated review results and made any necessary changes to qualification, the reviewer should officially approve the results.

Image 6-18: EDD Data Review – Approve Review



1. Click the "Approve Data Review" button to open the approval dialog window. [Image 6-19]

Image 6-19: Approve Review



2. The date reviewer should enter their name or initials and date of approval. The date approved defaults to the current date. Click the "OK" button. This action updates every record in the EDD with the name or initials and the date of approval.

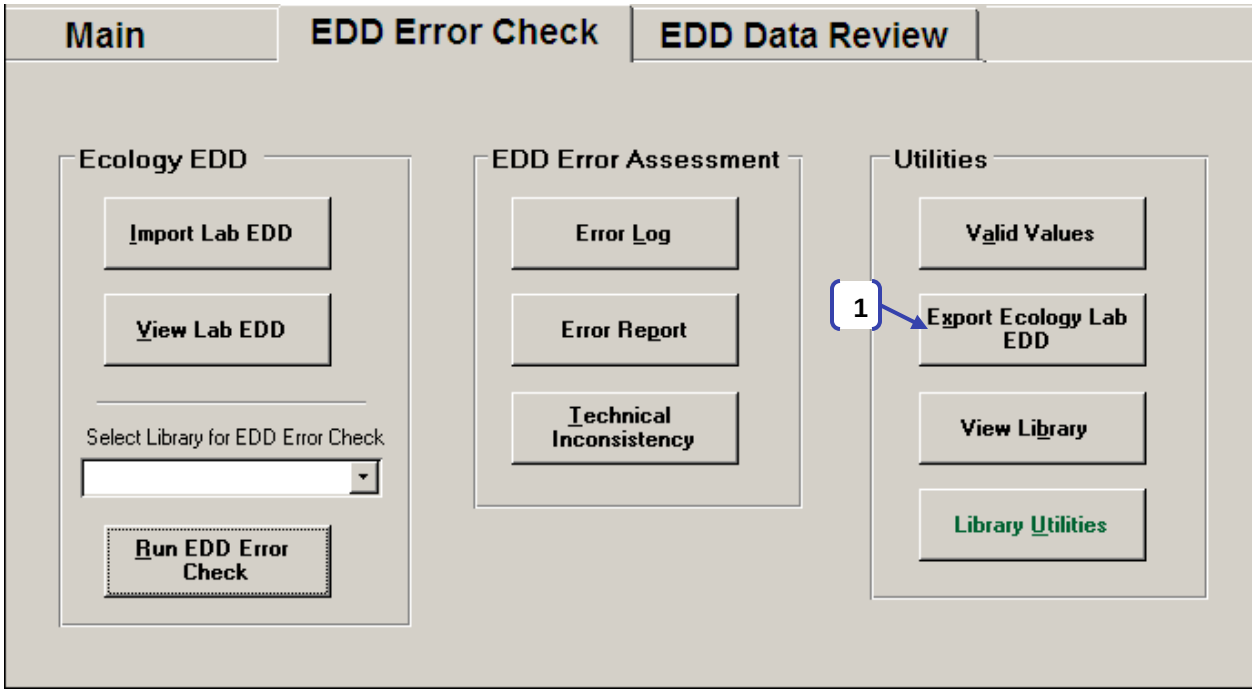
7 Exporting Results

There are several points throughout the EEPT review process at which results can be saved and exported. Laboratories will need to export the results after the EDD Error Check process is complete.

7.1 Exporting EDD after Error Check

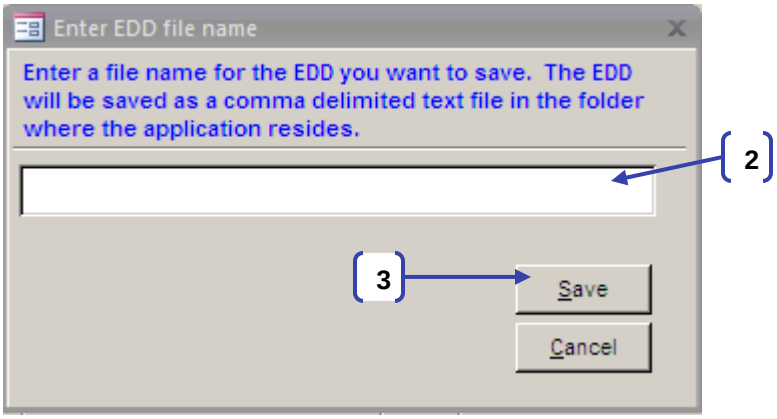
After performing the EDD Check and corrections, labs will need to export the EDD for submission to the data reviewers. It is recommended that data reviewers perform a similar export after they are done reviewing the EDD Error Check.

Image 7-1: EDD Error Check – Export Ecology Lab EDD



1. Click on the "Export Ecology Lab EDD" button to open the export dialog window [Image 7-2].

Image 7-2: Export EDD

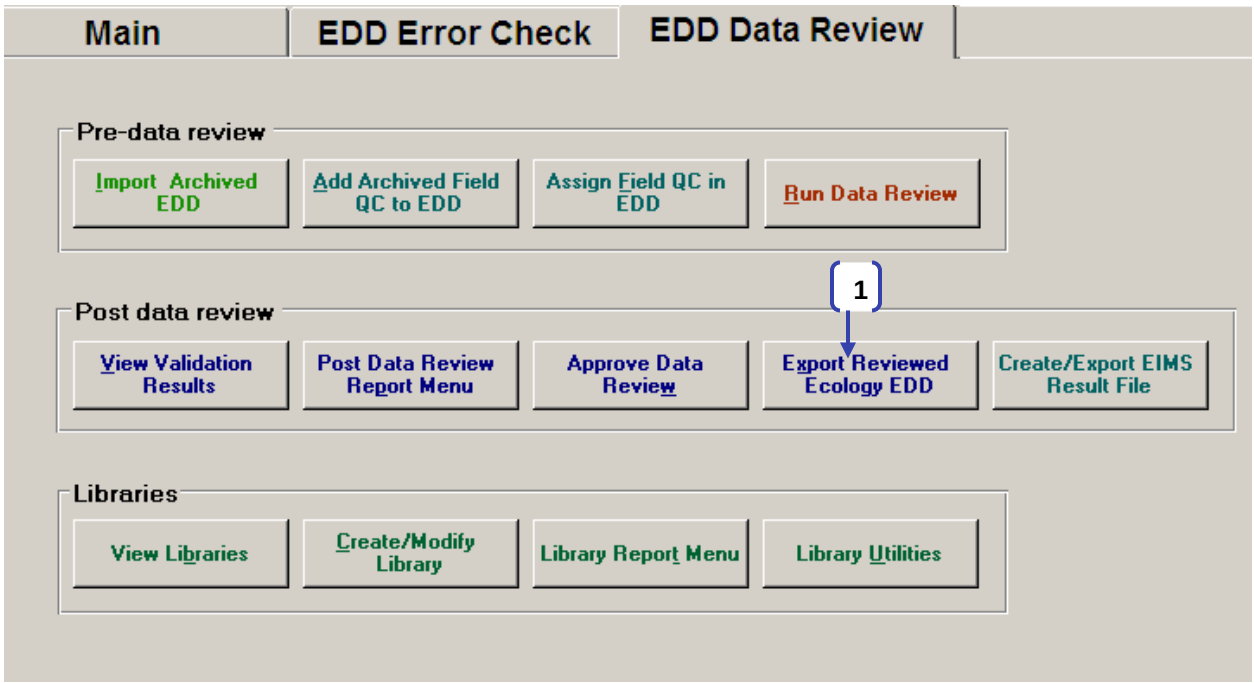


2. Enter a name for the EDD. Do not enter a path – the EDD will be automatically saved to C:\Ecology_1_0\. If you enter a name for your EDD which already exists in the folder C:\Ecology_1_0 that file will be overwritten.
3. Click the "Save" button to export the EDD. The EDD is exported as a comma delimited text file (.csv). The order of fields in the exported file is the same as listed in the Ecology EDD file specifications. You can import this file back into the application if needed.

7.2 Exporting Reviewed / Validated Results

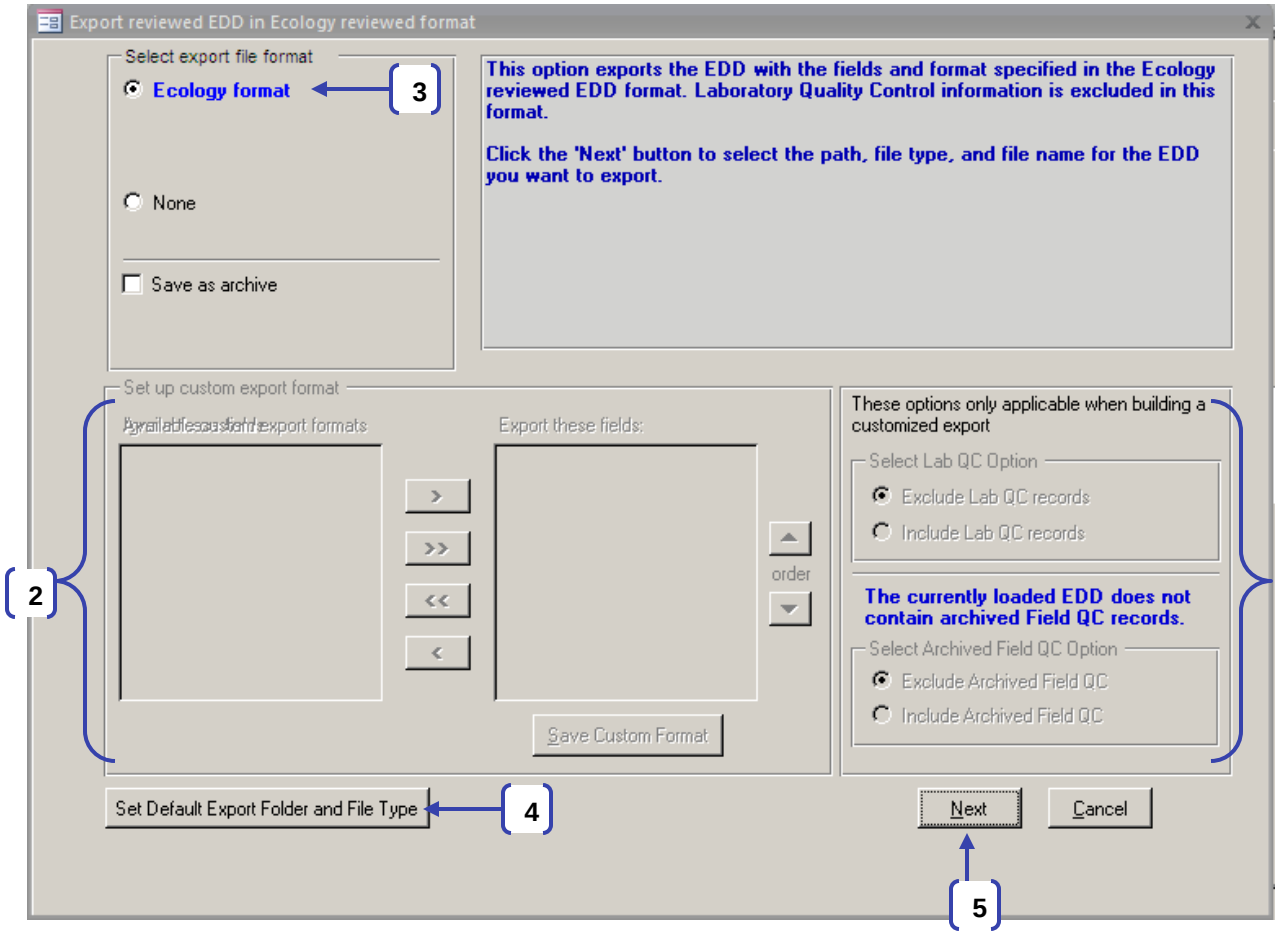
Three main options exist for exporting validated EDD results. One of these is the EIM formatted export, which is discussed in section [7.3].

Image 7-3: EDD Data Review – Export Reviewed Ecology EDD



1. Click "Export Reviewed Ecology EDD" button to open the export menu [Image 7-4].

Image 7-4: Reviewed EDD Export Options



2. There are three sections of export menu window which are a hold-over from an earlier 'sister' product to EEPT. These sections are not used in EEPT and can be safely ignored by the user.
3. The export menu gives a few options for the type of export that can be created. The following is a summary of these options:
    - Ecology Format - This format is the same format as the EDD specification [appendix], but includes validation qualifiers and approvals. All records that existed in the original EDD are present in this export format.
    - Archive format (includes all fields internal to EEPT) as a text file (.txt) only

The Ecology EDD Export format can be saved as one of three different file types: text file (.txt), Excel Spreadsheet (.xls), or an Access database file containing a table with the EDD (.mdb).

4. You can set the export default file type and location where you want the file saved. The default options apply to the Ecology format. The archive format is always exported as a text file and saved to C:\Ecology_1_0\ADVFiles. You can choose to save or not to save an archive EDD file when creating an Ecology EDD export file.
5. Click the "Next" button to open a dialog box for selecting the file type and location for the exported Ecology EDD format.

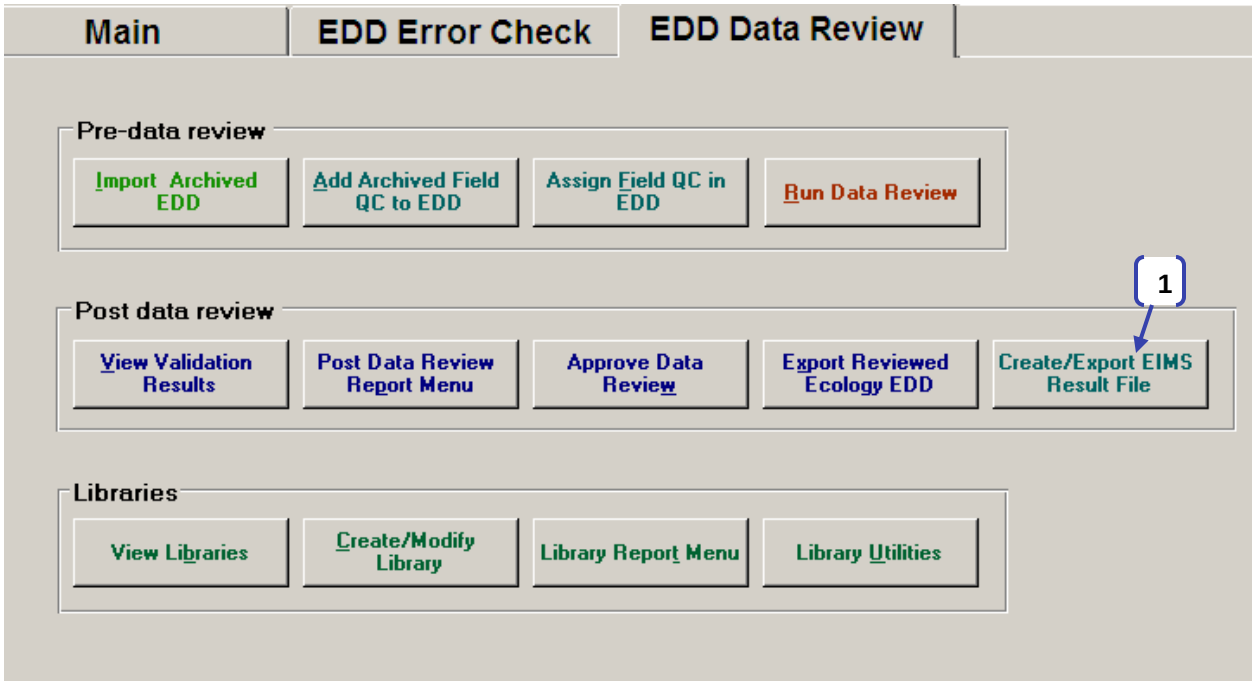
7.3 Exporting Results for Upload to EIM

The Environmental Information Management (EIM) system is a database containing data collected by the Washington State Department of Ecology and affiliates such as local governments and cleanup sites.

The EEPT has a function for helping you insert your chemistry data into the ***EIM Results Data Spreadsheet*** for submittal to EIM. EEPT will not be able to assist with the formation of any of the other required EIM submittal sheets. For information regarding EIM, please go to www.ecy.wa.gov/EIM. For more information concerning the requirements of Phase 1 permitting, contact the Department of Ecology www.ecy.wa.gov.

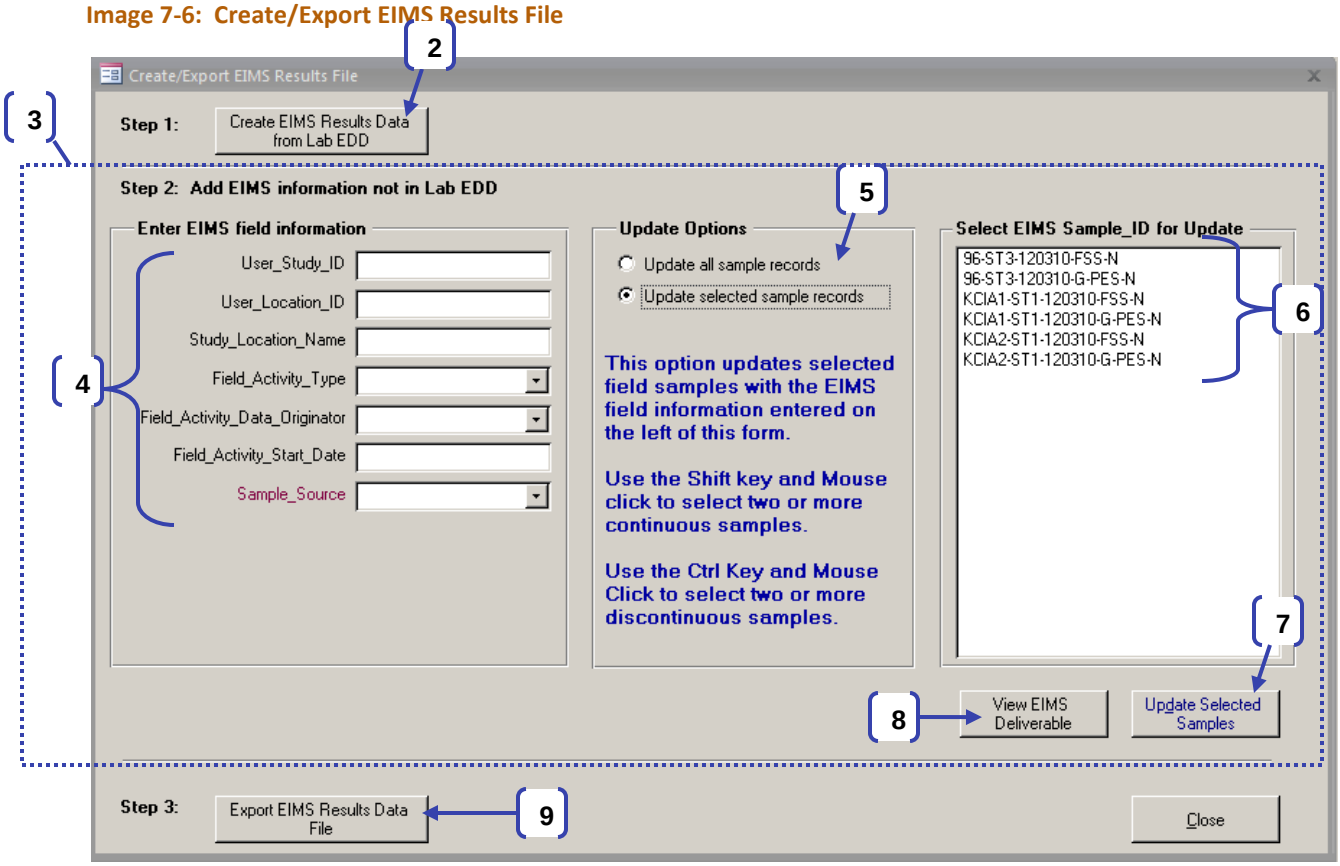
Please be aware that the EIMS import requirements may change, and that it is important to check any exports from EEPT against the latest version of the EIM documentation to be certain all data are correctly represented.

Image 7-5: EDD Data Review – Create/Export EIMS Result File



1. After the validation review process is completed and the data review approved the results can be exported in an EIM Results Upload Format file.

Image 7-6: Create/Export EIMS Results File



2. "Step 1" sets-up a temporary table (internal to EEPT) in the EIMS format and populates it with data from the currently loaded EDD. A notice will pop-up to ask the user if they are sure, because doing so will replace any earlier instance of the temporary table.
3. Not all data required by the EIM format is included in the EDD. "Step 2" is the process of adding the required information to either all samples or selected samples. The "Step 2" process [numbers] will need to be performed in several iterations.
4. These are the fields that will need to have information added to them. Some, such as User_Study_ID, will need to be applied to all samples. Others, such as User_Location_ID, will need to be applied to only one or two samples.
5. Select whether the field value should be applied to all samples, or just those selected.
6. Sample ID currently in the EDD. If "Update selected sample records" [5] is clicked, the update will only apply to the samples selected here.
7. Click the "Update Selected Samples" button to enter the data from [4] to the selected sample results [5 & 6].
8. Click the "View EIMS Deliverable" to view the values currently entered in the EIMS format temporary table.
9. Once all of the extra field information has been applied to the temporary table, it can be exported using the "Export EIMS Results Data File" button in "Step 3". This file can be

exported as a comma-delimited text file (*.txt), an Excel file (*.xls) or as a table in an Access database file (*.mdb).

Appendix A – Full EDD Specification

Field Order	Field Name	Data Type*	Source	Format Rules	Description	Example
1	PROJECT_NAME	Text	COC	● As on COC	Pre-assigned project name, as appears on COC.	NPDES SWC
2	PROJECT_CODE	Text(6)	COC	● As on COC	Pre-assigned project ID code, as appears on COC.	000124
3	SAMPLING_ORG_NAME	Text(16)	COC	Not Null ● Valid Value List	Identification of the organization performing the sample collection. For laboratory QC, this field should contain the same value as for associated samples. Only values from the Valid Value List are acceptable entries for this field.	TAYLOR
4	SAMPLE_ID	Text(16)	COC	● Not Null	Sample IDs from samples should be entered as they appear on the chain-of-custody. Example: R1 For lab QC samples such as blanks and controls, enter the unique LabSampleID value in this field. Example: 200912151600-LCS	R1
5	SAMPLE_DATE_TIME	Date(16)	COC	●Null for Lab QC ● Format: MM/DD/YYYY HH:MM	Enter the date and time the sample was collected, as provided by the chain-of-custody.	9/23/2008 15:14
6	SAMTYP_CODE	Text(5)	COC	●Null for Lab QC ● Valid Value List	Code to distinguish between primary environmental sample, field QC and lab QC types. Only values from the Valid Value List are acceptable entries for this field.	PES
7	SAMMETHTYP_CODE	Text(5)	COC	● Null for Lab QC	Code to designate sampling method used to collect the	GRB-M

Field Order	Field Name	Data Type*	Source	Format Rules	Description	Example
				● Valid Values List	sample. This value should be null for laboratory QC. Only values from the Valid Value List are acceptable entries for this field.	
8	LABORATORY _NAME	Text(16)	Lab	● Not Null ● Valid Value List	Identification of the laboratory performing the analysis. If the analysis has been sub-contracted, this field should contain the name of the sub-contracted laboratory. Only values from the Valid Value List are acceptable entries for this field.	ARI
9	RECEIPT_DATE_TIME	Date(16)	COC	● Null for Lab QC Only ● Format: MM/DD/YYYY HH:MM	Date and time the sample was received at the laboratory. Required for all samples except laboratory QC.	9/23/2008 15:14
10	LAB_SAMPLE_ID	Text(32)	Lab	● Not Null ● Must be unique per sample	Unique identifier for each sample, including laboratory QC. This ID is generated by the laboratory.	QB53
11	LAB_BATCH	Text(30)	Lab	● Not Null (if sample was analyzed)	Laboratory Analysis Batch ID. Unique laboratory identifier for a batch of samples analyzed together on the same instrument and referencing the same instrument QC. (SEE PREP_BATCH_ID). This field should only be Null if the sample was not analyzed.	ICP-20091218
12	MATRIX_TYPE	Text(16)	COC	● Not Null	Code indicating the sample matrix for the reported	SURFW

Field Order	Field Name	Data Type*	Source	Format Rules	Description	Example
				• Valid Values List	analyte. Sometimes referred to as Material Type Code. Only values from the Valid Value List are acceptable entries for this field.	
13	PARAMETER_NAME	Text(100)	Lab	• Not Null • Valid Value List	Name for the reported analyte. Only values from the Valid Value List are acceptable entries for this field.	1-Methylnaphthalene
14	FRACTION	Text(16)	Lab	• Null if not applicable • Values: "Total", "Dissolved", Null	Indicates if the result reported is for the total or dissolved sample fraction. Only applies to aqueous matrices, and to a sub-set of analyses.	Total
15	FILTER_DATE_TIME	Date(16)	Lab	• May be Null • Format: MM/DD/YYYY HH:MM	Date and time at which the sample was filtered. Not required for samples that are not filtered.	9/23/2008 15:14
16	CAS_NUMBER	Text(16)	Lab	• Valid Value List	Chemical Abstracts Registry Number for the parameter (analyte), if available.	90-12-0
17	METHOD_CODE	Text(16)	Lab	• Not Null • Valid Value List	Laboratory analytic method name. Only values from the Valid Value List are acceptable entries for this field.	EPA120.1
18	RESULT_TYPE	Text(3)	Lab	• Not Null • Valid Value List	Code to distinguish intended function of an analyte result, (e.g., target analyte, surrogate analyte, etc.) Only values from the Valid Value List are acceptable for this field.	TRG
19	ANALYSIS_TYPE	Text(8)	Lab	• Not Null	Code to identify the type of lab sample reported, (e.g.,	MS

Field Order	Field Name	Data Type*	Source	Format Rules	Description	Example
				● Valid Value List	normal sample, matrix spike, etc.) Only values from the Valid Value List are acceptable for this field.	
20	ANALYSIS_RUN	Text(20)	Lab	● Not Null -	Distinguishes results reported for the same sample, method, and analyte when multiple results are submitted (i.e. dilutions, re-analyses, re-extracts, etc.)	RE, DL, RE2, DL2, etc. Enter RES for initial result
21	REPORTED_RESULT	Number(10)	Lab	● Numeric Values Only ● May be Null for Surrogates	Analytical result reported to an appropriate number of significant figures. No non-numeric characters are allowed for this field. If result is "non-detect" this field should equal the reporting limit. This field may only be null for results without a reporting limit, such as surrogates.	5.243
22	RESULT_UNITS	Text(16)	Lab	● Preferred Value List	Units of measurement applicable to the value in the REPORTED_RESULT field.	mg/L
23	BASIS	Text(3)	Lab	● May be Null ● Values: "WET", "DRY", Null	Indicates whether results are reported based on wet-weight or dry-weight.	WET
24	LAB_QUALIFIER	Text(8)	Lab	● Non-detects need to be "U" flagged. ● If there are no flags assigned, the field may be	Qualifier flags assigned by the laboratory. Required to contain "U" for results below the detection limit. Other laboratory flags are determined by the laboratory. All laboratory flags (except "U") require an explanation in the LAB_COMMENT field.	UJ

Field Order	Field Name	Data Type*	Source	Format Rules	Description	Example
				Null		
25	DILUTION_FACTOR	Number(10)	Lab	● Not Null ● Default Value =1 ● Numeric Values Only	Effective test dilution factor (at bench level) of the reported result. For example, if the sample has been diluted to one-tenth of its original concentration for analysis, the dilution factor entered in this field should be 10.	10
26	DETECTION_LIMIT	Number(10)	Lab	● Numeric Values Only ● Same units as reported result ● May be Null for non-target analytes	Laboratory method detection limit (MDL). The minimum concentration of a substance that can be measured and reported with 99% accuracy that the analyte concentration is greater than zero and is determined from the analysis of a sample in a given matrix containing the analyte. Required for target analyte results. Units should match RESULT_UNITS.	0.25
27	REPORTING_LIMIT	Number(10)	Lab	● Numeric Value Only ● Same units as reported result ● May be Null for non-target analytes	Laboratory practical quantitation limit (PQL). Units should match RESULT_UNITS.	0.5
28	ANALYSIS_DATE_TIME	Date(16)	Lab	● Not Null ● Format:	Date and time of sample analysis.	9/23/2008 15:14

Field Order	Field Name	Data Type*	Source	Format Rules	Description	Example
				MM/DD/YYYY HH:MM		
29	PREP_BATCH_ID	Text(20)	Lab	● Links sample analysis results with laboratory QC	Unique laboratory identifier for a batch of samples of similar matrix prepared together for analysis by one method and treated as a group for method blank, LCS, matrix spike and laboratory duplicate association.	EPA 405.1-20091216
				● Not Null (unless sample was neither prepped nor analyzed)	For analyses without a designated prep stage, (e.g., pH), the PREP-BATCH_ID should be the same as the LAB_BATCH.	
30	PREP_METHOD	Text(30)	Lab	● May be Null if no prep was performed	Method code indicating the preparation method used to prepare the samples for analysis.	EPA 3510C
31	PREP_DATE_TIME	Date(16)	Lab	● Not Null (unless sample was neither prepped nor analyzed)	For analyses without a designated prep stage, (e.g., pH), the PREP-DATE_TIME should be the same as the ANALYSIS_DATE_TIME.	9/23/2008 15:14
				● Format:		
				MM/DD/YYYY HH:MM		
32	SPIKE	Number(10)	Lab	● Required for all	Numeric value indicating the amount of analyte	2.5

Field Order	Field Name	Data Type*	Source	Format Rules	Description	Example
				spiked results ● Numeric Values Only ● May be Null for non-spiked results ONLY ● Same units as reported result	added to a sample. This is required for surrogates as well as matrix spike, LCS, etc. Units should match RESULT_UNITS.	
33	RECOVERY	Number(10)	Lab	● Numeric Values Only ● Required for spiked results ● 75% reported as 75 ● May be Null for non-spiked results ONLY	The percent recovery of a spiked analyte calculated by the laboratory. Required for spikes, surrogates, and any other spiked sample. Report as percentage multiplied by 100 (e.g., 75% should be reported as 75).	90
34	RPD	Number(10)	Lab	● Numeric Values Only ● Required for duplicate results ● 75% reported	Relative percent different calculated by the laboratory. Required for duplicate samples and QC as appropriate. Report as percentage multiplied by 100 (e.g., 75% should be reported as 75).	4

Field Order	Field Name	Data Type*	Source	Format Rules	Description	Example
				as 75 ● May be Null for non-duplicate results ONLY		
35	LOWLIMIT	Number(10)	Lab	● Numeric Values Only ● Required for spiked results ● 75% reported as 75 ● May be Null for non-spiked results ONLY	Lower control limit for percent recovery of known values. Required for spikes, surrogates, and any other spiked sample. Report as percentage multiplied by 100 (e.g., 75% should be reported as 75).	75
39	UPPLIMIT	Number(10)	Lab	● Numeric Values Only ● Required for spiked results ● 75% reported as 75 ● May be Null for non-spiked results ONLY	Upper control limit for percent recovery for known values. Required for spikes, surrogates, and any other spiked sample. Report as percentage multiplied by 100 (e.g., 75% should be reported as 75).	125
37	RPDLIMIT	Number(	Lab	● Numeric	Relative percent difference	20

Field Order	Field Name	Data Type*	Source	Format Rules	Description	Example
		10)		Values Only ● Required for duplicate results ● 75% reported as 75 ● May be Null for non-duplicate results ONLY	control limit. Required for duplicate samples and QC as appropriate. Report as percentage multiplied by 100 (e.g., 75% should be reported as 75).	
38	SAMPLE_QTY	Number(10)	Lab	● Required for non-aqueous samples ● Numeric Values Only ● Null for aqueous samples	An amount of a sample by weight used to perform analysis. This field applies only to non-aqueous samples, and should be Null for all aqueous samples.	5
39	SAMPLE_QTY_UNIT	Text(16)	Lab	● May be Null ● Preferred Value List	Units for the value in the SAMPLE_QTY field. Required when SAMPLE_QTY is not Null.	g
40	LAB_COMMENT	Text(240)	Lab	● Required for flagged results (other than "U").	Field for additional laboratory comments or parameter related comments. This should include explanations for situations such as why a sample was collected but not analyzed.	Insufficient quantity of sample for MS/MSD analysis.
41	LAB_REPORTING_BATCH	Text(50)	Lab	● Not Null	Laboratory identifier for a group of samples and	SDG081310

Field Order	Field Name	Data Type*	Source	Format Rules	Description	Example
					laboratory QC all reported within one EDD. This value would be the same in each record of a particular EDD.	

* Regarding Data Type:

Number() refers in most instances to a Floating Point variable, with "." used as the decimal and no commas.

Text() refers to a Unicode or ASCII String variable.

Date() may be either a date/time variable type or a text string.

The number contained in () is an estimate of the smallest recommended field size (as # of characters).

Appendix B – Required Field Checks

Field Order	Field Name	Not Required	Always Required	Conditionally Required	Conditional Requirement	Comments
1	PROJECT_NAME	X				
2	PROJECT_CODE	X				
3	SAMPLING_ORG_NAME		X			
4	SAMPLE_DATE_TIME			X	Required (if SAMTYPE_CODE = LQC and ANALYSIS_TYPE = LR, MS, or MSD) OR (if SAMTYP_CODE <> LQC)	
5	SAMTYP_CODE		X			
6	SAMPLE_ID		X			
7	SAMMETHTYP_CODE			X	Required (if SAMTYP_CODE <> LQC) OR (if SAMTYP_CODE = LQC and ANALYSIS_TYPE = LR, MS, or MSD)	Required for LR,MS, and MSD because these are field collected samples even though they are lab QC samples
8	LABORATORY_NAME		X			
9	RECEIPT_DATE_TIME			X	Required (if SAMTYP_CODE <> LQC) OR (if SAMTYP_CODE = LQC and ANALYSIS_TYPE = LR, MS, or MSD)	Required for LR,MS, and MSD because these are field collected samples even though they are lab QC samples
10	LAB_SAMPLE_ID		X			
11	LAB_BATCH	X				
12	MATRIX_TYPE		X			
13	PARAMETER_NAME		X			
14	FRACTION			X	Required if MATRIX_TYPE = DRW, SURFW, WASTEW, GRW, STORMW, CSO, SALTW, or DI and METHOD_CODE Category = Metals	
15	FILTER_DATE_TIME			X	Required if FRACTION = Dissolved	
16	CAS_NUMBER		X			
17	METHOD_CODE		X			

Field Order	Field Name	Not Required	Always Required	Conditionally Required	Conditional Requirement	Comments
18	RESULT_TYPE		X			
19	ANALYSIS_TYPE		X			
20	ANALYSIS_RUN		X			
21	REPORTED_RESULT			X	Required if RESULT_TYPE <> SUR	
22	RESULT_UNITS			X	Required if REPORTED_RESULT <> Null	
23	BASIS			X	Required if MATRIX_TYPE = SOIL or SED	
24	LAB_QUALIFIER	X				
25	DILUTION_FACTOR		X			
26	DETECTION_LIMIT			X	Required if RESULT_TYPE = TRG AND ANALYSIS_TYPE = RM, LR, CRM, MS, MSD, or N	
27	REPORTING_LIMIT			X	Required if RESULT_TYPE = TRG AND ANALYSIS_TYPE = RM, LR, CRM, MS, MSD, or N	
28	ANALYSIS_DATE_TIME		X			
29	PREP_BATCH_ID		X			
30	PREP_METHOD			X	Required if METHOD_CODE category = Metals or SVOA	
31	PREP_DATE_TIME			X	Required if PREP_METHOD <> Null	
32	SPIKE			X	Required if RESULT_TYPE = SC or SUR	
33	RECOVERY			X	Required (If RESULT_TYPE = SUR AND ANALYSIS_TYPE = LR, MS, MSD, or N) OR (if RESULT_TYPE = SC AND ANALYSIS_TYPE = BS, LCS, LCSD, MS, or MSD)	Surrogate Recovery not required for BS, LB, LCS, or LCSD because surrogates not evaluated on these Lab QC samples.

Field Order	Field Name	Not Required	Always Required	Conditionally Required	Conditional Requirement	Comments
34	RPD			X	Required (if RESULT_TYPE = SC and ANAYSIS_TYPE = LCSD or MSD) OR (if RESULT_TYPE = TRG and ANALYSIS_TYPE = LR)	
35	LOWLIMIT	X				Not used by application
36	UPPLIMIT	X				Not used by application
37	RPDLIMIT	X				Not used by application
38	SAMPLE_QTY	X				Not used by application
39	SAMPLE_QTY_UNIT	X				Not used by application
40	LAB_COMMENT			X	Required if LAB_QUALIFIER <> Null and LAB_QUALIFIER <> U	
41	LAB_REPORTING_BATCH		X			

Appendix C – Valid Value List (at time of install)

7.4 METHOD_CODE

Method Class	METHOD_CODE	Method Name	Description
MISC	ASTMD422	Standard Test Method for Particle/Grain Size Analysis of Soils by Sieve and Hydrometer	ASTM International - Standard Test Method for Particle-Size Analysis of Soils
MISC	ASTMD2937	WETDENSITY	ASTM International - Standard Test Method for Particle-Size Analysis of Soils
MISC	ASTMD3977C	Standard Test Methods for Determining Sediment Concentrations in Water Samples (C)	Standard Test Methods for Determining Sediment Concentration in Water Samples
MISC	CalcDD	DRYDENSITY	
CONVENT	EPA120.1	Specific conductivity (conductance) by conductivity meter @ 25 deg C	Specific conductivity (conductance) by conductivity meter @ 25 deg C
CONVENT	EPA150.1	pH, Electrometric	U.S. EPA, 1979, 1983. Methods for the Chemical Analysis of Water and Wastes. Environmental Monitoring and Support Laboratory, Office of Research and Development, Cincinnati, OH. (EPA/600/4-79/020).
CONVENT	EPA160.2	Residue, Non-Filterable, Gravimetric, Dried at 103-105 Deg-C	
CONVENT	EPA160.3	Residue, Total, Gravimetric, Dried at 103-105 Deg-C	U.S. EPA, Methods for the Chemical Analysis of Water and Wastes (MCAWW) (EPA/600/4-79/020)
CONVENT	EPA160.4	Residue, Volatile, Muffle Furnace, Gravimetric, Ignition at 550 Deg-C	U.S.EPA National Exposure Research Laboratory (NERL), Methods for the Chemical Analysis of Water and Wastes (MCAWW) (EPA/600/4-79/020)
METAL	EPA1631E	mercury (Hg) in filtered and unfiltered water by oxidation, purge and trap, desorption, and cold-vapor atomic fluorescence spectrometry (CVAFS)	
TPH	EPA1664A	Silica Gel Treated N-Hexane Extractable Material (SGT-HEM)	Silica Gel Treated N-Hexane Extractable Material (SGT-HEM)

Method Class	METHOD_CODE	Method Name	Description
CONVENT	EPA180.1	Turbidity, Nephelometric (180.1)	Turbidity, Nephelometric (180.1)
METAL	EPA200.8	Metals and Trace Elements in Waters by ICP-MS	U.S.EPA National Exposure Research Laboratory (NERL), Methods for the Determination of Metals in Environmental Samples, Supplement 1 (EPA/600/R-94/111)
CONVENT	EPA335.4	Cyanide, Total - Colorimetric	Cyanide, Total - Colorimetric
NUTRIENT	EPA350.1M	Ammonia Spectrometry	Nitrogen as Ammonia, Colorimetric, Automated Phenate, Modified for Solids
NUTRIENT	EPA351.2	Total Kjeldahl Nitrogen Colorimetric, Semi-Automated Block Digester	Total Kjeldahl Nitrogen Colorimetric, Semi-Automated Block Digester
NUTRIENT	EPA351.4	Total Kjeldahl Nitrogen Potentiometric, Ion Selective Electrode	
NUTRIENT	EPA353.2	Nitrogen, Nitrate-Nitrite (Colorimetric, Automated Cadmium Reduction)	U.S.EPA National Exposure Research Laboratory (NERL), Microbiological and Chemical Exposure Assessment Research Division, Cincinnati, Ohio
NUTRIENT	EPA365.2	Phosphorus, (All Forms), Colorimetric, Ascorbic Acid, Single Reage	
	EPA405.1	Biochemical Oxygen Demand (405.1)	
MSC_ORG	EPA8270DM	Modified EPA 8270D (GC-MS SIM)	Modified EPA 8270D (GC-MS SIM)
	EPA8321B	EPA Method 8321B (HPLC-MS)	
TPH	NWTPH-DX	Semivolatile Petroleum Products Method for Soil and Water	Washington Department of Ecology, 1997. Analytical Methods for Petroleum Hydrocarbons. Ecology Publication No. 97-602. Based on/replaces Ecology's WTPH and Oregon DEQ's TPH methods.
TPH	NWTPH-GX	Volatile Petroleum Products Method for Soil and Water	Washington Department of Ecology, 1997. Analytical Methods for Petroleum Hydrocarbons. Ecology Publication No. 97-602. Based on/replaces Ecology's WTPH and Oregon DEQ's TPH methods.
MISC	PLUMB81PS	Sediment Grain/Particle Size by Sieve/Electronic Counter or Sieve/Pipet, Plumb, 1981 (EPA/CE-81-1)	Plumb, R.H. 1981. Procedures for handling and chemical analysis of sediment and water samples. Technical Report EPA/CE-81-1, Section 3, Analytical

Method Class	METHOD_CODE	Method Name	Description
			Methods. U.S. Army Corps of Engineers, Vicksburg, MS.
CONVENT	PLUMB81TC	Total Organic & Inorganic Carbon, Infrared (Water), Ignition or Diff Combustion (Soil), Plumb, 1981 (EPA/CE-81-1)	Plumb, R.H. 1981. Procedures for handling and chemical analysis of sediment and water samples. Technical Report EPA/CE-81-1. U.S. Army Corps of Engineers, Vicksburg, MS
MISC	PSEP-PS	Puget Sound Estuary Protocols, Conventional Sediment Variables, Particle/Grain Size by Sieve-Pipette, 1986, Minor Rev. 2003	Puget Sound Estuary Program (PSEP), 1986, Minor Rev. 2003. Recommended Protocols for Measuring Conventional Sediment Variables in Puget Sound. Prepared by Tetra Tech, Inc. for US EPA Region 10 and Puget Sound Water Quality Authority, Olympia, WA.
CONVENT	SM2130	Turbidity, Nephelometric	Turbidity, Nephelometric
CONVENT	SM2540D	Total Suspended Solids (TSS) Dried at 103 -105 deg C	
CONVENT	SM4110B	Chloride by Automated Colorimetry (Ferricyanide)	Methods for the Chemical Analysis of Water and Wastes (MCAWW) (EPA/600/4-79/020)
CONVENT	SM4500HB	Electrometric pH (150.1)	Electrometric
NUTRIENT	SM4500PE	Phosphorus/Orthophosphate by Ascorbic Acid Method	Phosphorus/Orthophosphate by Ascorbic Acid Method
NUTRIENT	SM4500PF	Phosphorus/Orthophosphate by Automated Ascorbic Acid Reduction Method	Phosphorus/Orthophosphate by Automated Ascorbic Acid Reduction Method
CONVENT	SM5210B	Biochemical Oxygen Demand (BOD), 5 day at 20 deg C	
CONVENT	SM5540C	Anionic Surfactants as MBAS (methylene blue active substances)	18th, 19th, 20th ed. Standard Methods for the Examination of Water and Wastewater, ALPHA-AWWA-WPCF, 1992, 1995, 1998.
BACTERIA	SM9221E	Fecal Coliform by Membrane Filtration using mFC Medium	18th, 19th, 20th ed. Standard Methods for the Examination of Water and Wastewater, ALPHA-AWWA-WPCF, 1992, 1995, 1998.
METAL	SW6010B	Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES) for Metals & Trace	EPA Office of Solid Waste SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical

Method Class	METHOD_CODE	Method Name	Description
		Elements, Rev 2	Methods.
METAL	SW6020	Inductively Coupled Plasma-Mass Spectrometry (EPA SW6020)	Inductively Coupled Plasma-Mass Spectrometry (EPA SW6020)
METAL	SW7470A	Mercury in Liquid Waste by Manual Cold Vapor Atomic Absorption (CVAA), Revision 1	
METAL	SW7471A	Mercury in Solid/Semisolid Waste by Manual Cold Vapor Atomic Absorption (CVAA), Revision 1	EPA Office of Solid Waste SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Revision 1, September 1994.
METAL	SW7471B	Mercury in Solid/Semisolid Waste by Manual Cold Vapor Atomic Absorption (CVAA), Revision 2	EPA Office of Solid Waste SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Revision 2, February 2007
PCB	SW8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography (GC)	EPA Office of Solid Waste SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.
MSC_ORG	SW8151A	Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzylation Derivatization, Revision 1	EPA Office of Solid Waste SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.
VOC	SW8260B	VOCs by GC/MS Capillary Column Technique	VOCs by GC/MS Capillary Column Technique
SVOC	SW8270D	Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), Revision 4	EPA Office of Solid Waste SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. January 1998, Revision 4.
SVOC	SW8270DSIM	Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), Selective Ion Monitoring, Revision 4	EPA Office of Solid Waste SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. January 1998, Revision 4.
MSC_ORG	SW8321	Solvent Extractable Nonvolatile Compounds by HPLC/TS/MS or Ultraviolet (UV) Detection	EPA Office of Solid Waste SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

7.5 RESULT_TYPE

RESULT_TYPE	Result Type Name
TRG	Target compound
TIC	Tentatively Identified Compound
SUR	Surrogate
IS	Internal Standard
SC	Spiked Compound

7.6 PARAMETER_NAME AND CAS_NUMBER

Parameter Name	CAS Number
> 10 Phi Clay	GS_FCLAY
1-Methylnaphthalene	90-12-0
2,4,5-Trichlorophenol	95-95-4
2,4,6-Tribromophenol	118-79-6
2,4,6-Trichlorophenol	88-06-2
2,4-D	94-75-7
2,4-Dichlorophenol	120-83-2
2,4-Dichlorophenylacetic Acid	19719-28-9
2,4-Dimethylphenol	105-67-9
2,4-Dinitrophenol	51-28-5
2-Chlorophenol	95-57-8
2-Fluorobiphenyl	321-60-8
2-Fluorophenol	367-12-4
2-Methylnaphthalene	91-57-6
2-Methylphenol	95-48-7
2-Nitrophenol	88-75-5
4,6-Dinitro-2-Methylphenol	534-52-1
4-Chloro-3-methylphenol	59-50-7
4-Methylphenol	106-44-5
4-Nitrophenol	100-02-7
8-9 Phi Clay	GS_CCLAY
9-10 Phi Clay	GS_MCLAY
Acenaphthene	83-32-9
Acenaphthylene	208-96-8
Ammonia	7664-41-7
Anthracene	120-12-7
Antimony	7440-36-0
Antimony, Dissolved	7440-36-0
Antimony, Total	7440-36-0
Aroclor 1016	12674-11-2
Aroclor 1221	11104-28-2
Aroclor 1232	11141-16-5
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Aroclor 1260	11096-82-5
Arsenic	7440-38-2
Arsenic, Dissolved	7440-38-2

Parameter Name	CAS Number
Arsenic, Total	7440-38-2
Benzo(a)anthracene	56-55-3
Benzo(a)pyrene	50-32-8
Benzo(b)fluoranthene	205-99-2
Benzo(g,h,i)perylene	191-24-2
Benzo(k)fluoranthene	207-08-9
Benzofluoranthenes, Total	TOTBFA
Beryllium	7440-41-7
Beryllium, Dissolved	7440-41-7
Beryllium, Total	7440-41-7
Biological Oxygen Demand	BOD
bis(2-Ethylhexyl)phthalate	117-81-7
Bromobenzene	108-86-1
Butylbenzylphthalate	85-68-7
Cadmium	7440-43-9
Cadmium, Dissolved	7440-43-9
Cadmium, Total	7440-43-9
Calcium	7440-70-2
Calcium, Dissolved	7440-70-2
Calcium, Total	7440-70-2
Chloride	16887-00-6
Chlorpyrifos	2921-88-2
Chromium	7440-47-3
Chromium, Dissolved	7440-47-3
Chromium, Total	7440-47-3
Chrysene	218-01-9
Coarse Sand	GS_CS
Coarse Silt	GS_CSILT
Conductivity	CONDUCTANCE
Copper	7440-50-8
Copper, Dissolved	7440-50-8
Copper, Total	7440-50-8
d10-2-Methylnaphthalene	7297-45-2
d14-Dibenzo(a,h)anthracene	D14-53-70-3
d14-p-Terphenyl	1718-51-0
d4-1,2-Dichlorobenzene	2199-69-1
d4-2-Chlorophenol	93951-73-6
d5-Nitrobenzene	4165-60-0
d5-Phenol	4165-62-2
Decachlorobiphenyl	2051-24-3

Parameter Name	CAS Number
Diazinon	333-41-5
Dibenz(a,h)anthracene	53-70-3
Dibenzofuran	132-64-9
Dichlobenil	1194-65-6
Diesel Range Hydrocarbons	68476-34-6
Diethylphthalate	84-66-2
Dimethylphthalate	131-11-3
Di-n-Butylphthalate	84-74-2
Di-n-Octyl phthalate	117-84-0
Dry Density	DRYDENSITY
Fecal Coliform	F-COLIFORM
Fine Sand	GS_FS
Fine Silt	GS_FSILT
Fluoranthene	206-44-0
Fluorene	86-73-7
Gasoline Range Hydrocarbons	86290-81-5
Gravel	GS_GRAVEL
Hardness	HARDNESS
Indeno(1,2,3-cd)pyrene	193-39-5
Lead	7439-92-1
Lead, Dissolved	7439-92-1
Lead, Total	7439-92-1
Magnesium	7439-95-4
Magnesium, Dissolved	7439-95-4
Magnesium, Total	7439-95-4
Malathion	121-75-5
MCPP	93-65-2
Medium Sand	GS_MS
Medium Silt	GS_MSILT
Mercury	7439-97-6
Mercury, Dissolved	7439-97-6
Mercury, Total	7439-97-6
Motor Oil	MOTOROIL
Naphthalene	91-20-3
Nickel	7440-02-0
Nickel, Dissolved	7440-02-0
Nickel, Total	7440-02-0
Nitrate + Nitrite	NITRATE-NITRITE
Nitrogen, Total Kjeldahl	7727-37-9
Ortho-Phosphate	14265-44-2

Parameter Name	CAS Number
o-Terphenyl	84-15-1
Pentachlorophenol	87-86-5
pH	PH
Phenanthrene	85-01-8
Phenol	108-95-2
Phosphorus, Total	7723-14-0
Prometon	1610-18-0
Pyrene	129-00-0
Sediment Conc. < 1 um	SC_<1
Sediment Conc. > 500 um	SC_>500
Sediment Conc. 125 to 62.5 um	SC_125-62.5
Sediment Conc. 250 to 125 um	SC_250-125
Sediment Conc. 3.9 to 1 um	SC_3.9-1
Sediment Conc. 500 to 250 um	SC_500-250
Sediment Conc. 62.5 to 3.9 um	SC_62.5-3.9
Selenium	7782-49-2
Selenium, Dissolved	7782-49-2
Selenium, Total	7782-49-2
Silver	7440-22-4
Silver, Dissolved	7440-22-4
Silver, Total	7440-22-4
Solids, Total	TS
Solids, Total Suspended	TSS
Solids, Total Volatile	TVS
Surfactants	SURFACTANT
Tetrachlorometaxylene	877-09-8
Thallium	7440-28-0
Thallium, Dissolved	7440-28-0
Thallium, Total	7440-28-0
Total Fines	GS_TOTFINES
Total Organic Carbon	TOC
Tributyl Phosphate	126-73-8
Triclopyr	55335-06-3
Trifluorotoluene	98-08-8
Triphenyl Phosphate	115-86-6
Turbidity	TURBIDITY
Very Coarse Sand	GS_VCS
Very Fine Sand	GS_VFS
Very Fine Silt	GS_VFSILT
Wet Density	WETDENSITY

Parameter Name	CAS Number
Zinc	7440-66-6
Zinc, Dissolved	7440-66-6
Zinc, Total	7440-66-6

7.7 MATRIX_TYPE

MATRIX_TYPE	Matrix Name
DRW	Drinking Water
SURFW	Surface Water
WASTEW	Wastewater
GRW	Ground water
STORMW	Stormwater
CSO	Combined Sewage Overflow
SALTW	Saltwater
DI	Dionized water
SOLID	Solid
SOIL	Soil
SED	Sediment

7.8 SAMMETHTYP_CODE

SAMMETHTYP_CODE	Sample Method Type
GRB-M	Grab - manual
GRB-A	Grab - automatic
FWC-M	Flow-weighted composite - manual
FWC-A	Flow-weighted composite - automatic
TWC-M	Time-weighted composite - manual
TWC-A	Time-weighted composite - automatic
SDG-M	Sediment grab - manual
SDC-M	Sediment composite - manual
SED-T	Sediment trap

7.9 SAMPTYP_CODE

SAMPTYP_CODE	SampleType	Description
PES	Primary Environmental Sample	Primary environmental sample (non-QC sample)
FDS	Field Duplicate Sample	Two PES collected simultaneously at the same location by field staff. The objective is to assess sampling precision and variability.
FSS	Field Split Sample	One PES is split in the field into two separate containers and each can be delivered to a different laboratory or one can be received by a separate agency. Ex. Ecology takes a split . The objective is for confirmation of analytical precision.
FBS	Field Blank Sample	Blank water passed through deconned (decon can occur in field or lab) equipment in field (Purpose/info - tests both cleaning and evaluates contamination from field sampling activities)
EBS	Equipment Decon Blank Sample	Blank water passed through deconned or new equipment in lab (Purpose - tests cleaning procedures or cleanliness of new, disposable equipment in a controlled environment)
FEB	Field Environment Blank (Transfer Blank)	Prepared by filling a sample container with pure water during routine sample collection to check for possible contamination from the surroundings. The transfer blank will also detect contamination from the containers or from cross-contamination during transportation and storage of the samples.
FRB	Field Residual Blank	Blank water passed through equipment after sampling but without decon (Purpose/info - quantifies cross-contamination between sampling events and quantifies contamination from field sampling activities)
TRB	Trip Blank (Transit Blank)	A container of pure water, which is prepared at the lab and carried unopened to the field and back with the other sample containers to check for possible contamination in the containers or for cross-contamination during transportation and storage of the samples .
FTB	Filter Blank	Blank water passed through new filter to detect constituent contribution from the filter or filtration apparatus.
LQC	Lab Quality Control	QC sample prepared in lab by lab staff (method blanks, spikes, duplicates, etc.)

7.10 ANALYSIS_TYPE

Analysis Type	Name	Description
RE	Reanalysis	Results from a reanalysis of the sample due to factors such as dilution, or instrument failure. Only applies to result analyses which would otherwise be "N".
RM	Reference material	A material of representative matrix and composition containing a known quantity of analyte.
DUP	Laboratory Replicate	Duplicate (Lab dups only; field duplicated will have a unique sample id)
CRM	Certified Reference Material	Reference material that has been certified by a third party.
MB	Laboratory Method Blank	A blank generated by the laboratory.
MS	Matrix Spike	An aliquot of sample deemed to be representative of the matrix of the batch, spiked with a known quantity of analyte, and processed through the same preparation as the associated samples.
MSD	Matrix Spike Duplicate	A laboratory generated replicate of the matrix spike.
N	Normal	A non-QC sample. Also known as a Field Sample or Environmental Sample.
LCS	Laboratory Control Sample	A laboratory made control composed of a blank (reagent water, fired sand, etc), spiked with a known quantity of analyte, and processed through the same preparation as the associated samples.
LCSD	Laboratory Control Sample Duplicate	A duplicate of a laboratory control sample.
ICV	Initial Calibration Verification	Instrument level QC. An instrument blank, spiked with a known quantity of analyte from a different source than that used to calibrate the instrument. Serves as a second-source verification of calibration.
CCV	Continuing Calibration Verification	Instrument level QC. An instrument blank, spiked with a known quantity of analyte. Usually a mid-point calibration standard. Used to confirm consistency of calibration throughout an analysis.

7.11 RESULT_UNITS

Preferred Units Code	Unit Name	Description
SU	Standard Unit	
std units	Standard Units	
NONE	No units (counts and ratios)	
NA	Not Applicable (codes and text)	
ml/L	millilitres per Liter	
%	Percent	
pH	pH	acidity
ug/kg	micrograms per kilogram	concentration by mass
ng/kg	nanograms per kilogram	concentration by mass
mg/kg	milligrams per kilogram	concentration by mass
ug/L	micrograms per litre	concentration by volume
ng/L	nanograms per Liter	concentration by volume
mg/L	milligrams per litre	concentration by volume
mg/L CaCO3	milligrams per litre Calcium Carbonate	concentration by volume adjusted for hardness
mg-N/kg	milligrams N per kilogram	concentration of Nitrogen per kilogram
mg-N/L	milligrams N per Litre	concentration of Nitrogen per litre
mg-P/L	milligrams P per litre	concentration of Phosphorus per litre
umhos/cm		conductance
mm	millimetres	length
m	meter	length
mg	milligram	mass
Kg	Kilogram	mass
DEGC	Degrees Celsius	Temperature
seconds	seconds	time duration
HOUR	Hour	time duration
NTU	NTU	turbidity
L	Liter	volume

7.12 LAB_CODES

Valid Value	Organization Name
AMTEST	Amtest Incorporated
ARI	Analytical Resources, Inc.
KC	King County Lab
PAG	Pacific Agricultural Laboratory
SPU-LAB	SPU Laboratory

7.13 SAMPLING_ORG_CODES

Valid Value	Organization Name
CRW	Cedar River Watershed
FWS	Fish and Wildlife Service
HERRERA	Herrera Environmental
SPU-LAB	SPU Laboratory
SPU	Seattle Public Utilities
TAYLOR	Taylor Consultants
URS	URS Corporation
UNKNOWN	Unknown

Appendix D – Validation Scheme

Ecology Qualification Summary for Metals and WetChem Methods					
QUALITY CONTROL ITEM	ASSIGNABLE LIBRARY SETTINGS	EVALUATION	DATA QUALIFIER FLAGS		SAMPLE(S) QUALIFIED
			DETECTS	NON DETECTS	
HOLDING TIMES	X=Holding Time Rejection Factor	Holding time exceeded by X times or less	J	UJ	Sample
		Holding time exceeded by greater than X times	J	R	
METHOD BLANK CONTAMINATION	10x Rule	Common lab contaminant results less than or equal to 10 times the blank contamination	U	None	All samples in the same Preparation Batch as the method blank
	5x Rule	Other compound results less than or equal to 5 times blank contamination	U	None	
MATRIX SPIKE RECOVERY	X=MS Rejection Point	% Recovery < Y but ≥ X	J	UJ	All samples in the same Method Batch (Same as EDD Prep_Batch_ID) as the MS/MSD
	Y=MS %R Lower Limit	% Recovery < X	J	R	
	Z=MS %R Uppper Limit	% Recovery > Z	J	None	
	A=MS/MSD RPD Limit	RPD > A	J	UJ	
LABORATORY CONTROL SAMPLE RECOVERY	X=LCS Rejection Point	% Recovery < Y but ≥ X	J	UJ	All samples in the same Preparation Batch as the LCS
	Y=LCS %R Lower Limit	% Recovery <X	J	R	
	Z=LCS %R Uppper Limit	% Recovery > Z	J	None	
	A=LCS/LCSD RPD Limit	RPD > A	J	UJ	

Ecology Qualification Summary for Metals and WetChem Methods					
QUALITY CONTROL ITEM	ASSIGNABLE LIBRARY SETTINGS	EVALUATION	DATA QUALIFIER FLAGS		SAMPLE(S) QUALIFIED
			DETECTS	NON DETECTS	
FIELD DUPLICATES	A=Field Dup RPD Limit	RPD > A	None	None	Non-compliant results listed in the ECOLOGY outlier report
FIELD BLANKS / EQUIPMENT BLANKS	10x Rule	Common lab contaminant results less than or equal to 10 times the blank contamination	U	None	All samples associated to the Field or Equipment Blanks
	5x Rule	Other lab contaminant results less than or equal to 5 times blank contamination	U	None	

Ecology Qualification Summary for GC/HPLC Methods					
QUALITY CONTROL ITEM	ASSIGNABLE LIBRARY SETTINGS	EVALUATION	DATA QUALIFIER FLAGS		SAMPLE(S) QUALIFIED
			DETECTS	NON DETECTS	
HOLDING TIMES	X=Holding Time Rejection Factor	Holding time exceeded by X times or less	J	UJ	Sample
		Holding time exceeded by greater than X times	J	R	
METHOD BLANK CONTAMINATION	10x Rule	Common lab contaminant results less than or equal to 10 times the blank contamination	U	None	All samples in the same Preparation Batch as the method blank
	5x Rule	Other compound results less than or equal to 5 times blank contamination	U	None	
SURROGATE RECOVERY	X=Surrogate Rejection Point	% Recovery < Y but ≥ X	J	UJ	Sample

Ecology Qualification Summary for GC/HPLC Methods					
QUALITY CONTROL ITEM	**ASSIGNABLE LIBRARY SETTINGS**	**EVALUATION**	**DATA QUALIFIER FLAGS**		**SAMPLE(S) QUALIFIED**
	Y=Surrogate %R Lower Limit	% Recovery <X	J	R	
	Z=Surrogate %R Upper Limit	% Recovery > Z	J	None	
MATRIX SPIKE RECOVERY	X=MS Rejection Point	% Recovery < Y but ≥ X	J	UJ	All samples in the same Method Batch (Same as EDD Prep_Batch_ID) as the MS/MSD
	Y=MS %R Lower Limit	% Recovery < X	J	R	
	Z=MS %R Uppper Limit	% Recovery > Z	J	None	
	A=MS/MSD RPD Limit	RPD > A	J	UJ	
LABORATORY CONTROL SAMPLE RECOVERY	X=LCS Rejection Point	% Recovery < Y but ≥ X	J	UJ	All samples in the same Preparation Batch as the LCS
	Y=LCS %R Lower Limit	% Recovery <X	J	R	
	Z=LCS %R Uppper Limit	% Recovery > Z	J	None	
	A=LCS/LCSD RPD Limit	RPD > A	J	UJ	
FIELD DUPLICATES	A=Field Dup RPD Limit	RPD > A	None.	None	Non-compliant results listed in the ECOLOGY outlier report
FIELD BLANKS / EQUIPMENT BLANKS	10x Rule	Common lab contaminant results less than or equal to 10 times the blank contamination	U	None	All samples associated to the Field or Equipment Blanks
	5x Rule	Other lab contaminant results less than or equal to 5 times blank contamination	U	None	
TRIP BLANKS	10x Rule	Common lab contaminant results less than or equal to 10 times the blank contamination	U	None	All samples associated to the Trip Blank

Ecology Qualification Summary for GC/HPLC Methods					
QUALITY CONTROL ITEM	ASSIGNABLE LIBRARY SETTINGS	EVALUATION	DATA QUALIFIER FLAGS		SAMPLE(S) QUALIFIED
	5x Rule	Other lab contaminant results less than or equal to 5 times blank contamination	U	None	

Ecology Qualification Summary for GC/MS Methods					
QUALITY CONTROL ITEM	ASSIGNABLE LIBRARY SETTINGS	EVALUATION	DATA QUALIFIER FLAGS		SAMPLE(S) QUALIFIED
			DETECTS	NON DETECTS	
HOLDING TIMES	X=Holding Time Rejection Factor	Holding time exceeded by X times or less	J	UJ	Sample
		Holding time exceeded by greater than X times	J	R	
METHOD BLANK	10x Rule	Common lab contaminant and tentatively identified compound (TIC) results less than or equal to 10 times blank contamination	U	None	All samples in the same Preparation Batch as the method blank
	5x Rule	Other compound results less than or equal to 5 times blank contamination	U	None	
SURROGATE RECOVERY	X=Surrogate Rejection Point Y=Surrogate %R Lower Limit	% Recovery < Y but ≥ X	J	UJ	Sample
		% Recovery <X	J	R	

Ecology Qualification Summary for GC/MS Methods

QUALITY CONTROL ITEM	ASSIGNABLE LIBRARY SETTINGS	EVALUATION	DATA QUALIFIER FLAGS		SAMPLE(S) QUALIFIED
			DETECTS	NON DETECTS	
	Z=Surrogate %R Upper Limit	% Recovery > Z	J	None	
		Note: For semivolatile analysis, two or more surrogates in a fraction must be out of criteria for qualification unless recovery < X.			
MATRIX SPIKE RECOVERY	X=MS Rejection Point	% Recovery < Y but ≥ X	J	UJ	All samples in the same Method Batch (Same as EDD Prep_Batch_ID) as the MS/MSD
	Y=MS %R Lower Limit	% Recovery < X	J	R	
	Z=MS %R Uppper Limit	% Recovery > Z	J	None	
	A=MS/MSD RPD Limit	RPD > A	J	UJ	
LABORATORY CONTROL	X=LCS Rejection Point	% Recovery < Y but ≥ X	J	UJ	All samples in the same Preparation Batch as the LCS
	Y=LCS %R Lower Limit	% Recovery <X	J	R	
	Z=LCS %R Uppper Limit	% Recovery > Z	J	None	
	A=LCS/LCSD RPD Limit	RPD > A	J	UJ	
FIELD DUPLICATES	A=Field Dup RPD Limit	RPD > A	None	None	Non-compliant results listed in the ECOLOGY outlier report
FIELD BLANKS / EQUIPMENT BLANKS	10x Rule	Common lab contaminants and tentatively identified compound (TIC) results less than or	U	None	All samples associated to the Field or Equipment Blanks

Ecology Qualification Summary for GC/MS Methods					
QUALITY CONTROL ITEM	ASSIGNABLE LIBRARY SETTINGS	EVALUATION	DATA QUALIFIER FLAGS		SAMPLE(S) QUALIFIED
			DETECTS	NON DETECTS	
		equal to 10 times blank contamination			
	5x Rule	Other lab contaminant results less than or equal to 5 times blank contamination	U	None	
TRIP BLANKS	10x Rule	Common lab contaminants and tentatively identified compound (TIC) results less than or equal to 10 times blank contamination	U	None	All samples associated to the Trip Blank
	5x Rule	Other lab contaminant results less than or equal to 5 times blank contamination	U	None	