Montana Department of Environmental Quality

## Water Quality Planning Bureau

# Montana EQuIS Water Quality Exchange Guidance Manual

## 303(d)/305(b) Call For Water Quality Data

**Information Management & Technical Services Section**
**Data Management Group**
**Water Quality Planning Bureau**
**Planning, Prevention and Assistance Division**

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| Document History | | | |
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| 1.1 | 11/18/2010 | Jolene McQuillan | Updated Chlorophyll-a and organization-specific methods in Appendix A. Updated section 3.3. |
| 1.2 | 1/6/2011 | Jolene McQuillan | Updated Chlorophyll-a information in Appendix A |
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| 1.9 | 5/15/2018 | Jolene McQuillan | Updated DEQ logo |

| Acronyms | | |
|---|---|---|
| **File Extensions** | .txt | Text File |
| | .xls | Excel Spreadsheet |
| | .zip | Compressed File |
| **Acronyms** | DEQ | Montana Department of Environmental Quality |
| | EDD | Electronic Data Deliverable |
| | EDP | EQuIS Data Processor |
| | EPA | Environmental Protection Agency |
| | FTS | File Transfer Service |
| | MT-eWQX | Montana EQuIS Water Quality Exchange |
| | QAPP | Quality Assurance Project Plan |
| | SAP | Sampling and Analysis Plan |
| | STORET | Storage and Retrieval Database |
| | WQPB | Water Quality Planning Bureau |
| | WQX | Water Quality Exchange |

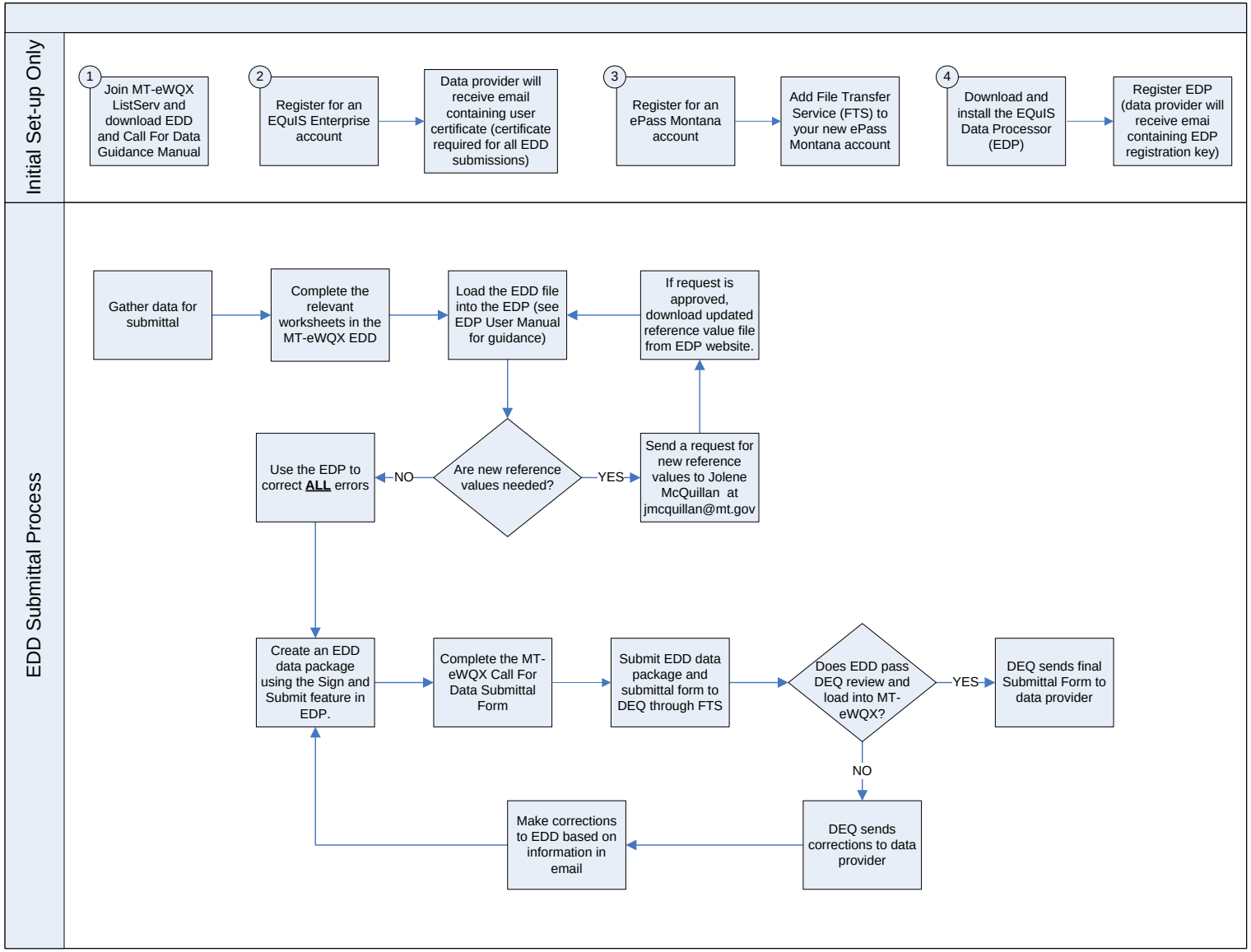
# 1.0 General Information

The purpose of this guidance manual is to provide detailed instructions on how to submit environmental data to the Montana Department of Environmental Quality (DEQ) Water Quality Planning Bureau (WQPB) for potential use in water quality assessments. Data submitted to WQPB will be stored in the Montana EQuIS Water Quality Exchange (MT-eWQX) database and will be evaluated for its use in conducting water quality assessments pursuant to sections 305(b) and 303(d) of the federal clean water act. These data will not be included in the program's data submittals to the Environmental Protection Agency's (EPA) National STORET Warehouse. This call for data fulfills federal and state law requiring the state to "assemble and evaluate all existing and readily available water quality-related data and information."

This manual describes both the procedural and formatting requirements needed to submit data to the MT-eWQX data system via the Electronic Data Deliverable (EDD) process. The first section, Initial Set-up, covers the initial steps that need to taken to get established in our database to submit data to MT-eWQX. The next section, EDD Development, focuses on formatting EDDs. It covers general reporting requirements and includes tables that describe each EDD worksheet in detail. The next section covers EDD validation and focuses on the EQuIS Data Processor (EDP), which each entity submitting data is required to use prior to submitting an EDD. The final section covers the EDD submittal process. This section introduces the MT-eWQX Submittal Form and the data package required for each submittal to MT-eWQX. An overview of the EDD submittal process is shown in Figure 1-1.

All MT-eWQX materials referenced in this guidance manual are available from DEQ's MT-eWQX Support website located at http://deq.mt.gov/Water/wqinfo/datamgmt/MTEWQX.

**Figure 1-1 Electronic Data Deliverable (EDD) Submittal Process**



# 2.0 Initial Set-up

The four steps at the top of Figure 1-1 are required for initial set-up only. These are important steps that will register you with the MT-eWQX system and save you time when you're ready to validate and submit your EDDs.

## 2.1 Join MT-eWQX ListServ (optional)

It is important to stay informed about MT-eWQX. Sign-up for the ListServ and receive important updates about MT-eWQX, including when updated reference value lists are posted, anticipated outages for maintenance, or training opportunities. To register for the MT-eWQX ListServ:

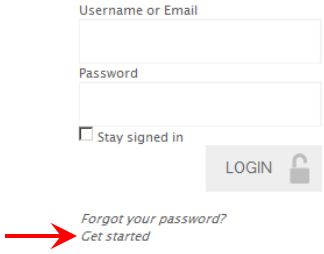
1. Click the 'MT-eWQX ListServ' link on DEQ's MT-eWQX Support website (see page 5).
2. Enter your name and email address and select 'Submit Query'.
3. Verify the box is checked on the next screen and select 'Submit Query'.
4. You should receive an email with a link to confirm your subscription. Click on the link in the email to confirm your subscription.

## 2.2 Register for an EQuIS Enterprise Account

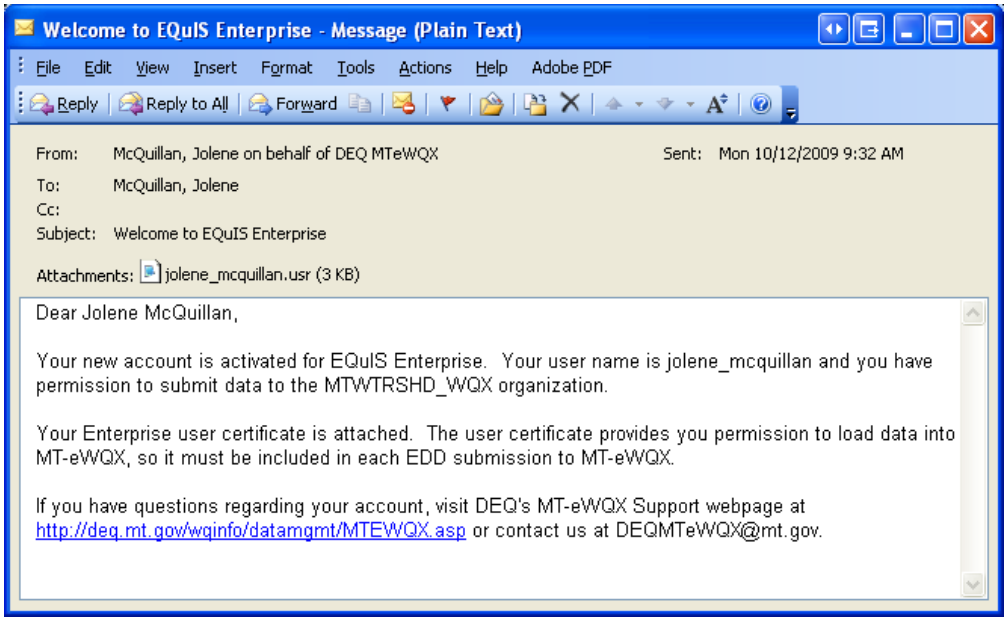
EQuIS Enterprise is a web application that tracks EDDs submitted to MT-eWQX. It is necessary to create an Enterprise user account in order to receive your user certificate, which assigns the correct permissions to the MT-eWQX database.

To request an EQuIS Enterprise account:

1. Go to EQuIS Enterprise at http://svcalt.mt.gov/deq/equis/.
2. Select 'Get started'.




3. Enter the following:
   a. Email Address
   b. Password: Create your own password. Password must be between 6 and 30 characters long, contain at least one uppercase letter, one lowercase letter, and one number.
      i. If you forget your password in the future, you can select 'Forgot your password?' on the EQuIS Enterprise homepage, enter your email address, and a new password will be sent to your email.
   c. First Name
   d. Last Name
   e. Remark: Enter "Call for data" to indicate you are submitting data in association with the Montana 303d/305b Call for Secondary Data.
4. Select 'Register'. A notification about your request will be sent to the MT-eWQX Data Manager.
5. After your account is registered, you'll receive a confirmation email from DEQ that contains your Enterprise user certificate.




### 2.2.1 User Certificate

A user certificate is emailed after an Enterprise user account has been registered and activated by DEQ. The user certificate provides the data provider permission to load data into MT-eWQX, so it must be included in each EDD submission to MT-eWQX. If the Sign and Submit feature in EDP is used to create the EDD data package, the user certificate will be automatically included. Your user certificate should be saved on your computer for easy access if it's needed.

## 2.3 Register for an ePass Montana Account

When you're ready to submit data to MT-eWQX, you must use the State of Montana's File Transfer Service (FTS). The FTS allows for easy transfer of large electronic files to and from customers of state government. The FTS is accessed via ePass Montana, the state's single login service.

If you do not yet have an ePass Montana account, you must create one.

1. Go to www.epass.mt.gov.
2. Select 'Login" under the ePass Montana Login section.
3. Select 'Create an Account.' Enter all required information including a username and password. Please note: State of Montana employees, do not create an ePass Montana account, login with your state network login credentials.
4. After setting up your account, you will be taken to your customizable ePass page.
5. Add File Transfer Service to your new ePass Montana account.
6. Enter the activation code that was emailed to you, or select the link in the email to validate your email address.
7. After your account is activated, you'll have full access to the FTS.

## 2.4 Download and Install the EQuIS Data Processor (EDP)

The EQuIS Data Processor (EDP) is a standalone application that must be used by data providers to check their EDD files prior to submission to MT-eWQX. The EDP performs a series of formatting checks on the EDD and then identifies any records that have errors.

To use the EDP application, the following four steps must be completed in the order shown:

1. Download and install the EDP application
2. Download the Montana DEQ Format
3. Download the Montana DEQ Reference Values
4. Register the EDP Application

Detailed guidance for the above four steps can be found in Section 2.0 of the EDP Guidance Manual available from the MT-eWQX Support website (see page 5).

# 3.0 EDD Development

Environmental monitoring data must be submitted to MT-eWQX in a specific format. Entities submitting data are required to download the MT-eWQX EDD and populate it with their project's data. On its most basic level, the MT-eWQX EDD is an Excel spreadsheet that contains a series of worksheets that allow data providers to submit water quality monitoring data to DEQ. The EDD is comprised of the following worksheets:

- **Project** – Describe a particular study or data collection effort.
- **Monitoring Locations** – Describes locations where samples and field measurements were collected.
- **Alternate Monitoring Locations** – Associates alternate IDs to the primary monitoring location.
- **Activity** – Describe activities conducted at monitoring locations.
- **Result** – Results of measurements collected in the field and samples analyzed in a laboratory.
- **Attached Documents** – Allows for multiple documents to be attached to projects, monitoring locations, activities, and results.
- **Biological/Habitat Index** – Allows for reporting of habitat and biological indices as a representation of water quality conditions.
- **Biological/Habitat Metric** – Allows for reporting of metric results associated with biological indices or habitat assessments.

## 3.1 General EDD Reporting Requirements

Each worksheet must be reported exactly as defined in the following sections. Any deviations will result in errors during the EDP or FTS submission process described in the following sections. It's best to include all your data in one EDD, which greatly helps when using the EDP for error-checking.

### 3.1.1 Data Management Formats

Data providers may manage their data in any acceptable software tool for editing and formatting data such as a spreadsheet or database, however, when the data is submitted to DEQ it must follow the MT-eWQX format described in this manual. The MT-eWQX EDD format is provided as an Excel spreadsheet ready for data entry on DEQ's MT-eWQX Support website (see page 5). Users of other spreadsheet or database software can either use the provided EDD for data entry or define the EDD in their own data management tool.

### 3.1.2 Valid Values

Valid values, also known as reference or domain values, govern the contents of some fields in the EDD. In other words, some fields may only be populated with data that exactly matches a value listed in the MT-eWQX list of valid values. The complete list of valid values is provided in the MT-eWQX Appendices document located on DEQ's MT-eWQX Support website (see page 5). The tables in Section 3.2 below indicate which fields require a valid value.

If data providers cannot find a value in the MT-eWQX Appendices document, they can request an addition to the valid value list by sending a Valid Value Request to DEQ's Water Quality Data Manager, Jolene McQuillan. In the email, data providers should include the field name in which the new value should be added, the proposed value name, and a brief description of the meaning of the value. If accepted, DEQ will update the appropriate reference value table and notify the data provider when an updated version of the reference value file has been posted to the EDP Download webpage. This updated reference value file will allow the EDP to recognize the new value as valid.

## 3.2 EDD Format Descriptions

This section contains tables that define the file structures for each EDD worksheet. Data providers are responsible for enforcing the requirements listed in each table. The EDP, which is described in Section 4, will assist in checking each EDD for these requirements. Any deviations from this format will result in errors during the EDP validation process.

The format description tables contain five key elements:

- **Column #:** Indicates column placement in the worksheet. It is important to not remove any columns or change the order of the columns in the EDD.
- **Column Name:** Name of the data element and column in the EDD.

- **Data Type:** Indicates what data type is required for the field. Table 2-1 describes the various data types used in the format description tables.
- **Required?:** Indicates if the data element is required, conditional, or optional. DEQ expects all fields marked as "Required" to be filled in. Fields marked as "Conditional" are required if certain business rules are met. These rules are included in the Description column. Fields marked "Optional" are not required, but data should be reported if available. When a field is not required and no data is available, the field should be left blank.
- **Description:** Provides a description of the data element and any business rules if applicable.

**Table 3-1 Data Type Descriptions**

| Type | Description | Comments |
|---|---|---|
| Date | Date format is MM/DD/YYYY. | Example: 03/20/2009 |
| Decimal | Stores decimal numbers. | Decimal precision indicated in parentheses in Data Type column. |
| Boolean | Indicates yes or no. Enter either Y or N. | |
| Integer | Whole number. | |
| Text | Stores characters and numbers. | Length restrictions are indicated in parentheses in Data Type column. |
| Time | Time is 24-hour (military) HH:MM format. | Example: "16:30" |
| Valid Value | Requires a valid value from that data elements valid value list (complete lists in MT-eWQX Appendix document). | |

### 3.2.1 Project

The project worksheet is used to establish projects in MT-eWQX. If the Project ID is already established in MT-eWQX, you do not need to resubmit it. Projects describe a particular study or data collection effort, so new projects are usually created based on a Quality Assurance Project Plan (QAPP) or subsequent Sampling and Analysis Plans (SAPs).

**Table 3-2 Project Format Description**

| Column # | Column Name | Data Type | Required? | Description |
|---|---|---|---|---|
| 1 | Project ID | Text (35) | Required | Unique identifier for a specific data collection effort. |
| 2 | Project Name | Text (120) | Required | Name assigned to the project. |
| 3 | Project Description | Text (1999) | Required | Description, which may include the project purpose or objectives. |
| 4 | Project Plan Approved Indicator | Valid Value | Required | Indicates whether a project plan has been approved for the project. |
| 5 | Project Plan Approval Agency | Valid Value | Conditional | Required if Project Plan Approved is "Y". Authority that approved plan. |

### 3.2.2 Monitoring Locations

This worksheet is used to establish monitoring locations, also known as stations. Stations describe locations were samples and field measurements are collected. The coordinates for the station are collected from the initial site for the sampling event, which is usually the middle transect ("F" site) in the reach.

When creating Station IDs, it is best to follow a standard naming convention. An example of a naming convention is the Project ID (or an abbreviation of the Project ID) followed by the Site ID, which is usually included in the project's SAP. For example, if Beaver Creek was sampled as part of a Lower Yellowstone project (LYELS), the Station ID might be LYELS-BEVR01. When stations are submitted to MT-eWQX, the Station IDs will be reviewed to make sure they are appropriate.

**Table 3-3 Monitoring Location Format Description**

| Column # | Column Name | Data Type | Required? | Description |
|---|---|---|---|---|
| 1 | Station ID | Text (20) | Required | Unique identifier for a specific monitoring location. |

| Table 3-3 Monitoring Location Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 2 | Station Name | Text (80) | Required | Name of waterbody including brief location description such as "near mouth". |
| 3 | Station Description | Text (255) | Optional | Additional description of station. |
| 4 | Assessment Unit Code | Text (50) | Optional | Assessment Unit Code associated with stream reach where site is located. |
| 5 | Travel Directions | Text (255) | Optional | Directions on how to locate station. |
| 6 | Station Type | Valid Value | Required | Type of monitoring location. |
| 7 | Station Establishment Date | Date | Optional | Date station was established. |
| 8 | Latitude | Decimal (12) | Required | Latitude in decimal degrees. |
| 9 | Longitude | Decimal (14) | Required | Longitude in decimal degrees. |
| 10 | Geopositioning Method | Valid Value | Required | Method used to determine the lat/long. |
| 11 | Geopositioning Datum | Valid Value | Required | Datum used to determine the lat/long. MT DEQ standard is NAD83. |
| 12 | Map Scale | Integer | Conditional | Required if Geopositioning Method is "INTERPOLATION-MAP". Number that represents the proportional distance on the ground for one unit on the map. |
| 13 | Elevation | Text (12) | Optional | Ground elevation of location. |
| 14 | Elevation Unit | Valid Value | Conditional | Required if Elevation is reported. Units used in measuring. Use 'ft' or 'm'. |
| 15 | Elevation Method | Valid Value | Conditional | Required if Elevation is reported. Method used to determine elevation. |
| 16 | Elevation Datum | Valid Value | Conditional | Required if Elevation is reported. Datum used to determine elevation. |
| 17 | State | Valid Value | Required | State where station is located. |
| 18 | County | Valid Value | Required | County name where station is located. |
| 19 | HUC 8-digit | Valid Value | Required | 8-digit USGS Hydrologic Unit Code where station is located. |
| 20 | HUC 12-digit | Valid Value | Optional | 12-digit USGS Hydrologic Unit Code where station is located. |
| 21 | Well Type | Valid Value | Conditional | Required if Aquifer Name or Formation Type is reported. Identifies the well type. |
| 22 | Well Aquifer Name | Text (20) | Optional | Name of aquifer well is in. |
| 23 | Well Formation Type | Valid Value | Optional | Name of primary formation well is in. |
| 24 | Well Hole Depth | Numeric (12) | Optional | Depth of well hole. |
| 25 | Well Hole Depth Unit | Valid Value | Conditional | Required if Hole Depth is reported. Units used in measuring. Use 'ft' or 'm'. |

### 3.2.3 Alternate Monitoring Locations

This worksheet is used to associate alternate monitoring locations to an established station. This is useful when sampling occurs at an established station in another organization. This worksheet requires that the Station ID also be entered in the Stations worksheet. If you would like to associate alternate Station IDs with established stations, fill out the worksheet and submit to the MT-eWQX Data Manager separately.

| Table 3-4 Alternate Monitoring Location Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 1 | Station ID | Text (20) | Required | Unique identifier for a specific monitoring location. |

| Table 3-4 Alternate Monitoring Location Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 2 | Alternate Station ID | Text (35) | Required | Alternate unique identifier used to identify the station. |
| 3 | Alternate Station Source | Text (120) | Required | Identifies the source that created/defined the Alternate Station ID, such as USGS, FWP, USEPA, etc. |

### 3.2.4 Activity

This worksheet is used to enter activities conducted at monitoring locations. Typical activities include collecting field measurements, collecting water and biological samples, or conducting habitat assessments. Activities should only be submitted to MT-eWQX if all the associated results are reported in the Result, Index, or Metric section of the same EDD.

The Activity ID is one of the most important fields because it associates the metadata entered into the Activity worksheet to the associated results in the Result worksheet. **Within the Organization ID you're loading data into, the Activity ID must be unique for each Activity Type, Medium, Date/Time, Sample Collection Method, and Depth.** Use the following naming convention to assist in making your Activity IDs unique: [Station ID]_[Activity Date]_[Activity Type]. Use an abbreviation of the Station ID if it's too long for the 35 character maximum. For example, BEAVR01_07212008_F-MSR/OBS would be the Activity ID for field measurements collected at BEAVR01 on 7/21/2008. In the case where multiple samples are collected at a site, a medium abbreviation or sequential number will need to be added to the end of the Activity ID. For example, BEAVR01_07212008_S-R would be the Activity ID for a water sample and BEAVR01_07212008_S-R_C would be the Activity ID for a chlorophyll a sample collected at the same site.

| Table 3-5 Activity Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 1 | Project ID | Text (35) | Required | Unique identifier for a specific data collection effort. |
| 2 | Station ID | Text (20) | Conditional | Required for most Activity Types. Refer to the Activity Type valid value list for activities that do not require a Station ID. Unique identifier for a specific monitoring location. |
| 3 | Activity ID | Text (35) | Required | Unique identifier that groups together measurements, observations, or samples collected at the same date, time, place, and in the same medium. |
| 4 | Activity Type | Valid Value | Required | Type of activity. |
| 5 | Activity Group ID | Text (20) | Optional | Unique identifier that groups activities within an organization together. |
| 6 | Activity Group Name | Text (50) | Optional | Name associated with Activity Group. |
| 7 | Activity Group Type | Valid Value | Conditional | Required if Activity Group ID is reported. Identifies the type of activity grouping. |
| 8 | Medium | Valid Value | Required | Environmental medium where measurements or sample was collected. |
| 9 | Medium Subdivision | Valid Value | Required | Subdivision of environmental medium. |
| 10 | Activity Start Date | Date | Required | Date measurements were taken. |
| 11 | Activity Start Time | Time | Required | Time measurements were taken. |
| 12 | Activity Start Time Zone | Valid Value | Required | Time zone where measurements were taken. Use 'MST' or 'MDT'. |
| 13 | Sample Collection Method ID | Valid Value | Conditional | Required for some Activity Types. Refer to Activity Type valid value list for activities that require a Sample Collection Method. Unique identifier of method used to collect sample. |

| Table 3-5 Activity Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 14 | Sample Collection Equipment Name | Valid Value | Conditional | Required if Sample Collection Method ID is reported. Name of equipment used to collect sample. |
| 15 | Activity Conducting Organization | Valid Value | Required | Name of organization or entity conducting the activity. |
| 16 | Personnel | Text (100) | Required | Name(s) of personnel conducting the activity. Format [First Name] [Last Name] with a slash (/) between multiple individuals. |
| 17 | Activity Comment | Text (2000) | Conditional | Required if Sample_Collection_Method_ID is "CHLPHL-CMP". Comments associated with the activity |
| 18 | Activity Relative Depth | Valid Value | Optional | Approximate location within water column where measurement occurred. |
| 19 | Activity Depth | Numeric | Optional | Depth from surface to where activity measurements were taken. |
| 20 | Activity Depth Units | Valid Value | Conditional | Required if Activity Depth is reported. Units used in measuring. Use 'ft' or 'm'. |
| 21 | Activity Upper Depth | Numeric | Conditional | Required if Activity Type is "Sample-Integrated Vertical Profile". May not exist if Activity Depth is reported. Upper vertical location of a vertical profile. |
| 22 | Activity Upper Depth Units | Valid Value | Conditional | Required if Activity Upper Depth is reported. Units used in measuring. Use 'ft' or 'm'. |
| 23 | Activity Lower Depth | Numeric | Conditional | Required if Activity Upper Depth is reported. Lower vertical location of a vertical profile. |
| 24 | Activity Lower Depth Units | Valid Value | Conditional | Required if Activity Lower Depth is reported. Units used in measuring. Use 'ft' or 'm'. |
| 25 | Assemblage | Valid Value | Conditional | Required if Medium is "Biological". Assemblage of organisms collected. |
| 26 | Biological Collection Reach Length | Numeric | Optional | Length of reach used for biological collection. |
| 27 | Biological Collection Reach Length Unit | Valid Value | Conditional | Required if Biological Collection Reach Length is reported. Units used in measuring. Use 'ft' or 'm'. |

### 3.2.5 Result

This worksheet is used to enter results of field measurements and samples analyzed in a laboratory. Results should only be submitted to MT-eWQX if the associated activity is reported in the Activity section of the same EDD. DEQ approved laboratories have been provided the MT-eWQX format and can provide analytical results in a MT-eWQX compliant EDD.

| Table 3-6 Result Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 1 | Activity ID | Text (35) | Required | Unique identifier that groups together measurements, observations, or samples collected at the same date, time, place, and in the same medium. |

| Table 3-6 Result Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 2 | Data Logger Line ID | Text (15) | Conditional | Required if Activity Type is "F-DL" or "QC-DL". Unique line identifier from a data logger result file. Normally a date/time format or enter "1". |
| 3 | Biological Intent | Valid Value | Conditional | Required if any of the Biological fields are reported. Intent of biological monitoring. If Medium is "Tissue", Intent must also be "Tissue". |
| 4 | Biological Taxonomic Name | Valid Value | Conditional | Required if Biological Intent is reported. Name of organism sampled. |
| 5 | Biological Unidentified Species Name | Text (120) | Optional | Number or name of unidentified species. Must be used with a valid genus name in Taxonomic Name field. |
| 6 | Biological Tissue Anatomy Name | Valid Value | Conditional | Required if Medium or Biological Intent is "Tissue". Name of the anatomy from which a tissue sample was taken. |
| 7 | Characteristic ID | Valid Value | Required | Unique identifier of characteristic that was measured. Identifiers will be CAS, TSN, or other unique ID. |
| 8 | Characteristic Name | Valid Value | Required | Name of the characteristic that was measured. |
| 9 | Method Speciation Name | Valid Value | Optional | Identifies the chemical speciation in which the measured result is expressed. Common for nutrients. |
| 10 | Sample Fraction | Valid Value | Required | Some Characteristics require a valid Sample Fraction. Refer to the Characteristic valid value list. If a valid Sample Fraction is not required, 'NA' can be used. Fraction of sample associated with results. |
| 11 | Result Detection Condition | Valid Value | Conditional | Required if Result Value is not reported. Textual descriptor that explains why there is no result measure value reported. 'Not Detected' is the most common reason. |
| 12 | Result Value | Text (20) <u>or</u> Valid Value | Conditional | Required if Result Detection Condition is not reported. Reportable value of measurement. Result Value must match a Choice List valid value if the Characteristic Name ends with the phrase "choice list". |
| 13 | Result Value Unit | Valid Value | Conditional | Required if Result Value is a non-text result. Units used in measuring. |
| 14 | Result Qualifier | Valid Value | Optional | Identifies any qualifying issues that affect the result. |
| 15 | Value Type | Valid Value | Required | Indicates type of value reported. |
| 16 | Method Detection Limit Value | Text (20) | Optional | Value of method detection limit that was used for analysis. |
| 17 | Lower Reporting Limit Value | Text (12) | Conditional | Required if Activity Type requires an Analtyical Method or if Result_Detection_Condition is "Not Detected". Not required is Biological_Intent is reported. Lower reporting value. |
| 18 | Detection Limit Unit | Valid Value | Conditional | Required if Lower_Reporting_Limit or Method_Deteciton_Limit are reported. Units used in measuring. |

| Table 3-6 Result Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 19 | Laboratory Name | Valid Value | Conditional | Required if Activity Type requires an Analytical Method. Refer to Activity Type valid value list for activities that require an Analytical Method. Unique ID of laboratory responsible for result. |
| 20 | Lab Sample Prep Method ID | Valid Value | Optional | Unique identifier of method used by lab to prep sample. |
| 21 | Analytical Method ID | Valid Value | Conditional | Some Activity Types require a valid Analytical Method. Refer to the Activity Type valid value list. If a valid Analytical Method is not required, 'NA' can be used. Unique identifier of method used to obtain a result. |
| 22 | Analysis Start Date | Date | Required | Date when analysis began. For field measurements, this would be the same as Activity Start Date. |
| 23 | Analysis Start Time | Time | Required | Time when analysis began. For field measurements, this would be the same as Activity Start Time. |
| 24 | Analysis Start Time Zone | Valid Value | Required | Time zone when analysis began. Use 'MST' or 'MDT'. |
| 25 | Laboratory Batch ID | Text (20) | Optional | Batch ID assigned by lab. |
| 26 | Laboratory Sample ID | Text (20) | Optional | Sample ID assigned by lab. |
| 27 | Laboratory Comment Code | Valid Value | Optional | Remarks provided by the lab. |
| 28 | Result Sampling Point | Text (12) | Optional | Sampling point associated with result. If samples are associated with a stream transect, record transect here. |
| 29 | Result Depth Height Measure | Text (12) | Optional | Depth from surface to where result measurement was taken. |
| 30 | Result Depth Height Measure Unit | Valid Value | Conditional | Required if Result Depth Height Measure is reported. Units used in measuring. Use 'ft' or 'm'. |
| 31 | Statistic Type | Valid Value | Optional | Statistical method used to calculate derived results. |
| 32 | Weight Basis | Valid Value | Optional | Name that represents the form of the sample associated with the result. Commonly used for 'Weight' results. |
| 33 | Particle Size Basis | Text (15) | Conditional | Required if Characteristic ID is like "PARTICLE*". Particle size class associated with Particle Size results. |
| 34 | Precision Value | Text (50) | Optional | Precision associated with result. |
| 35 | Dilution Factor | Numeric | Optional | Overall dilution of the substance analyzed. |
| 36 | Result Comment | Text (2000) | Optional | Comments associated with the result. |
| 37 | Result File Name | Text (255) | Optional | Complete file name, including extension, of document associated with this result. |

### 3.2.6 Attached Documents

This worksheet allows for multiple documents to be attached to projects, monitoring locations, and activities. Use the Result worksheet to associate documents to results. **The project's Quality Assurance Project Plan (QAPP) and/or Sampling and Analysis Plan (SAP) are added to this worksheet.**

| Table 3-7 Attached Documents Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 1 | File Name | Text (255) | Required | Complete file name, including file extension. |
| 2 | File Extension | Valid Value | Required | File extension (such as .pdf or .jpg). |
| 3 | File Type | Valid Value | Required | Data type file is associated with. |
| 4 | File Type ID | Text (50) | Required | Unique identifier file is associated with. |
| 5 | File Date | Date | Optional | Date file was last modified. |
| 6 | File Title | Text (255) | Optional | Title of file. |
| 7 | File Author | Text (255) | Optional | Author of file. |
| 8 | File Comment | Text (2000) | Optional | Comments associated with the file. |
| 9 | File Publisher | Text (64) | Optional | Publisher of file. |

### 3.2.7 Biological/Habitat Index

This worksheet allows for reporting of habitat and biological indices as a representation of water quality conditions.

| Table 3-8 Biological/Habitat Index Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 1 | Station ID | Text (20) | Required | Unique identifier for a specific monitoring location. |
| 2 | Index ID | Text (35) | Required | Unique identifier used to identify the index record (similar to Activity ID). |
| 3 | Index Type ID | Valid Value | Required | Unique identifier for index used to obtain score. |
| 4 | Index Score | Text (10) | Required | Score for the index. |
| 5 | Index Qualifier | Text (5) | Optional | Code used to identify qualifying issues that affect the index score. |
| 6 | Index Comment | Text (2000) | Optional | Comments associated with the index. |
| 7 | Index Calculated Date | Date | Required | Date the Index Score was calculated. |

### 3.2.8 Biological/Habitat Metric

This worksheet allows for reporting of metric results associated with biological indices or habitat assessments.

| Table 3-9 Biological/Habitat Metric Format Description | | | | |
|---|---|---|---|---|
| **Column #** | **Column Name** | **Data Type** | **Required?** | **Description** |
| 1 | Activity ID | Text (35) | Required | Unique identifier that groups together measurements, observations, or samples that is associated with the reported metric. |
| 2 | Metric Type ID | Valid Value | Required | Unique identifier for metric used to obtain score. |
| 3 | Metric Score | Text (10) | Required | Scaled or calculated score for the metric. |
| 4 | Metric Value | Text (12) | Optional | Raw value for the metric. |
| 5 | Metric Value Unit | Valid Value | Conditional | Units used in measuring. |
| 6 | Metric Comment | Text (2000) | Optional | Comments associated with metric. |
| 7 | Index ID | Text (35) | Optional | Unique identifier used to identify an index that is associated with the reported metric. An index can be associated with multiple metrics. |

## 3.3 Data Logger Results

Data logger results can be entered into MT-eWQX by uploading a text file instead of entering individual results. To enter data logger results into the MT-eWQX EDD:

1. Use the MT-eWQX Data Logger Template available on the MT-eWQX Support webpage to format your data logger results.
2. Save the "Final" worksheet in the template as a tab-delimited text file.
3. In the EDD, create one Activity for each data logger. To distinguish is as a data logger activity, the Activity Type should be "F-DL".
4. In the Result worksheet, enter one row for each Activity ID. The result should be the first results in the data logger file. Key fields in the Result worksheet to populate are:
    a. Data_Logger_Line_ID: 1
    b. Result Comment: "See attached text file for complete data logger results."
5. Populate the "Result File Name" field in the Result worksheet with the complete data logger text file name.
6. When ready to submit your data, include all the text files in your .zip file that contains your EDD and submittal form.
    a. On the MT-eWQX Data Submittal Form, the "Results (data loggers)" box should be checked in the Type of Data Submitted section.

## 3.4 Habitat Assessment Forms

Habitat assessment forms can be submitted to MT-eWQX by uploading an electronic version of the form. To enter habitat assessments into the MT-eWQX EDD:

1. Create one Activity for each habitat form. Key fields to distinguish it as a habitat activity are:
    a. Activity Type: F-HA (This activity type does NOT require a Sample Collection Method.)
    b. Medium: Habitat
    c. Medium Subdivision: NA
2. In the Attached Documents worksheet, enter the habitat form file information. Required fields are:
    a. File Name: Enter the complete habitat file name, including file extension (PDF is the preferred file type, although other file types will be accepted).
    b. File Extension: Enter the file extension, usually ".pdf".
    c. File Type: Activity_ID
    d. File Type ID: Enter the Activity ID created for the habitat form in the Activity worksheet.
3. When ready to submit your data, include all the habitat documents in your .zip file that contains your EDD and submittal form.
    a. On the MT-eWQX Data Submittal Form, the "Activities (habitat forms)" box should be checked in the Type of Data Submitted section.

# 4.0 EDD Validation

To ensure accurate data is being added to the MT-eWQX MT305b_SecondaryData organization, data providers are required to check their data prior to submittal. There are two main data checks that must occur, first a quality control step that reviews the raw data and then a validation step that verifies the EDD is formatted correctly.

## 4.1 Quality Control

Prior to import, all location metadata should be verified for correct latitude and longitudes that fall on the waterbody, as well as correct county and HUC. The raw analytical data should go through a complete quality control process to verify the EDD matches the hardcopy results and appropriate result qualifiers have been added. The minimum QC requirements to follow are:

1. Perform a QC data overview and check for obvious errors.
2. Are reported values within reason for each method?
3. Ensure reported values have the same number of decimal places as the detection limit and limit the result to three significant figures.
4. Ensure analytical units are correct.
5. Ensure detection limits are correct and reported.
6. Ensure correct analytical methods are reported.
7. Ensure analysis dates are reported.
8. Ensure results less than the detection limit reported as Not Detected. Exception is when lab uses J-flag reporting for results between the MDL and detection limit (reporting limit).
9. Check for holding time exceedance. Use H-flag for exceedances.
10. Calculate Field Duplicate precision (RPD's). J-flag associated samples with exceedances.
11. Determine if Field Blanks are reported =/> the detection limit (reporting limit). B-flag associated data that is =/< 10x the blank hit.
12. Compare lab reports to reported data.
    a. Ensure Lab Sample IDs match the Activity IDs
    b. Compare reported results with EDD results.
13. Review lab generated QC. Flag appropriate data if lab controls are exceeded.

For questions involving quality assurance and quality control of your raw data, contact Jolene McQuillan at (406) 247-4436 or jmcquillan@mt.gov.

## 4.2 The EQuIS Data Processor

After all the appropriate worksheets in the MT-eWQX EDD have been populated with data, the EDD is ready for data validation using the EQuIS Data Processor (EDP). The EDP is a standalone application that must be used by data providers to check their EDD files prior to submission to ensure they are formatted as described in this guidance manual. If the EDP detects errors, the errors will be identified and can be corrected directly within the EDP. After the errors are corrected, the EDP must be re-run to ensure that no errors remain. An EDD must have a clean validation from the EDP prior to submission to MT-eWQX.

Information on using the EDP can be found within the EDP Guidance Manual available from the MT-eWQX Support website (see page 5).

# 5.0 EDD Submittal Process

After an EDD has passed through the EDP application error-free, it is ready to be submitted to MT-eWQX. In order to submit an EDD, the EDD must be in a compressed file format and an External MT-eWQX Submittal Form must be completed. Figure 5-1 on page 24 details the actions external data providers and DEQ are responsible for when submitting and processing an EDD.

## 5.1 Organizations

Before data is submitted to MT-eWQX, the organization the data is being submitted to must be identified. Organization is a high-level grouping of data within MT-eWQX. Data submitted in response to DEQ's "Call for Data" will be submitted to the following organization:

- **Montana 303d/305b Call for Secondary Data (MT305b_SecondaryData):** The MT305b_SecondaryData organization is for data submitted to the Montana Water Quality Planning Bureau during calls for "all existing and readily available water quality-related data and information" per the federal Clean Water Act and 40 CFR 130.7 (5). These data were not collected by or explicitly for Montana DEQ's WQPB.

## 5.2 The Data Package

After an EDD has passed through the EDP with no errors, the data provider is ready to create the final data package. The data package is a single .zip file that consists of the EDD, any attached documents referenced in the EDD, and the data provider's user certificate. The easiest way to create the EDD data package is use the Sign and Submit feature in EDP, although data packages can also be created manually.

Detailed guidance for creating a data package can be found in Sections 3.7 of the EDP Guidance Manual available from the MT-eWQX Support website (see page 5).

## 5.3 MT-eWQX Call For Data Submittal Form

The MT-eWQX Call for Data Submittal Form is available from the MT-eWQX Support webpage and <u>must</u> be submitted along with each EDD to MT-eWQX. The submittal form includes information about the data submitter and about the data being submitted. The submittal form also verifies that proper quality control was followed. After the data in the EDD has been successfully migrated to MT-eWQX, DEQ will send the completed form back to the data provider as proof of submittal.

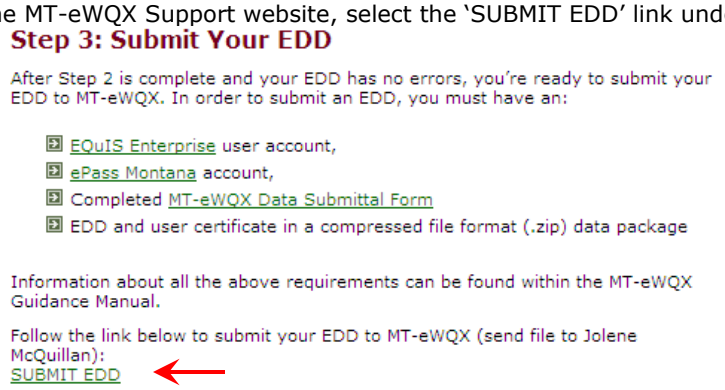
To complete the form, select the 'MT-eWQX Call for Data Submittal Form' link under Step 3 on the MT-eWQX Support website (see page 5). The form is a pdf form, so enter your information directly into the form. Save the file to your computer where you can access it for the next step, submitting your EDD to MT-eWQX.

## 5.4 Submitting EDDs to MT-eWQX (State of Montana's File Transfer Service)

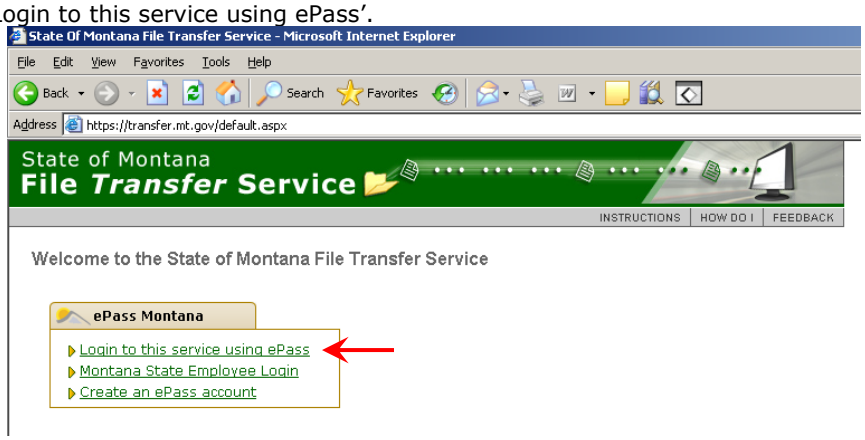
The data package and submittal form must be submitted to MT-eWQX through the State of Montana's File Transfer Service (FTS). The FTS allows for easy transfer of large electronic files to and from customers of state government. The FTS is accessed via ePass Montana, the state's single login service. Instructions for registering for ePass Montana can be found in Section 2.3.

To submit an EDD to MT-eWQX:

1. From the MT-eWQX Support website, select the 'SUBMIT EDD' link under Step 3.

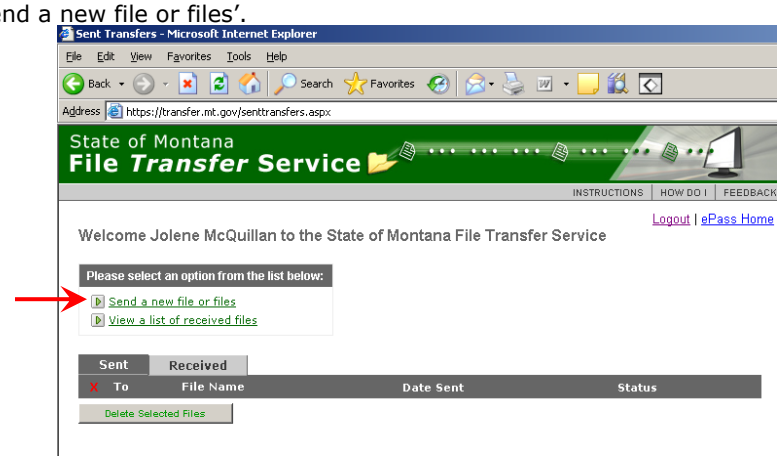


2. Select 'Login to this service using ePass'.

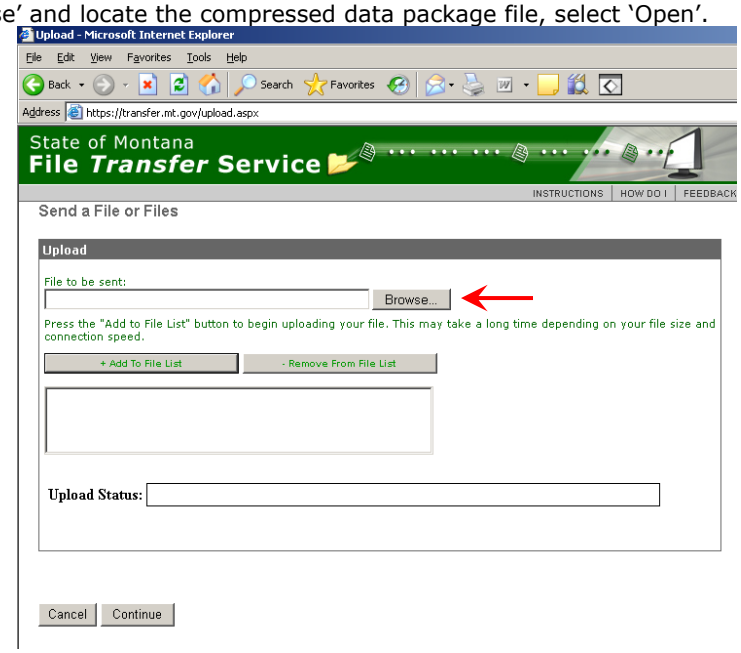



3. Enter your ePass Montana username and password. Select 'Login'. (If you're not taken directly to the File Transfer Service, you may need to select File Transfer Service from your ePass Montana account first.)

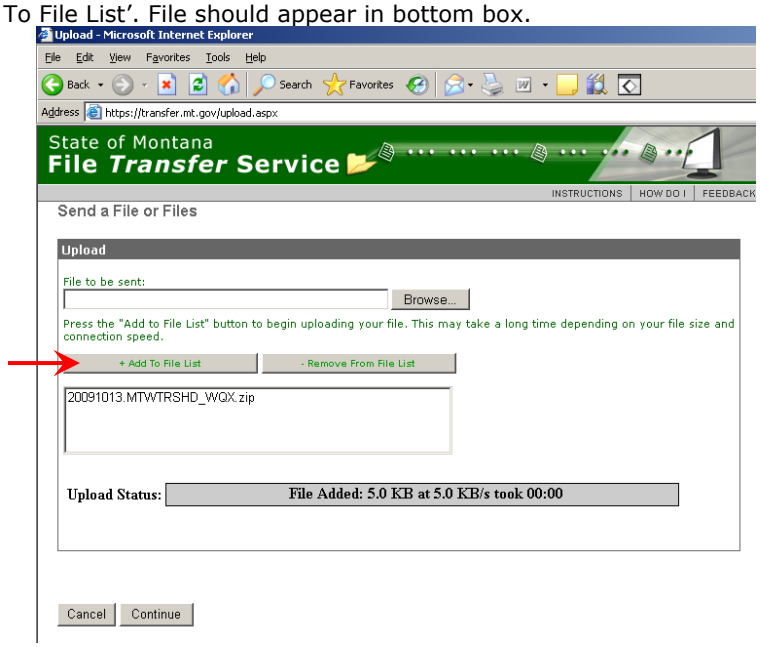
4. Select 'Send a new file or files'.



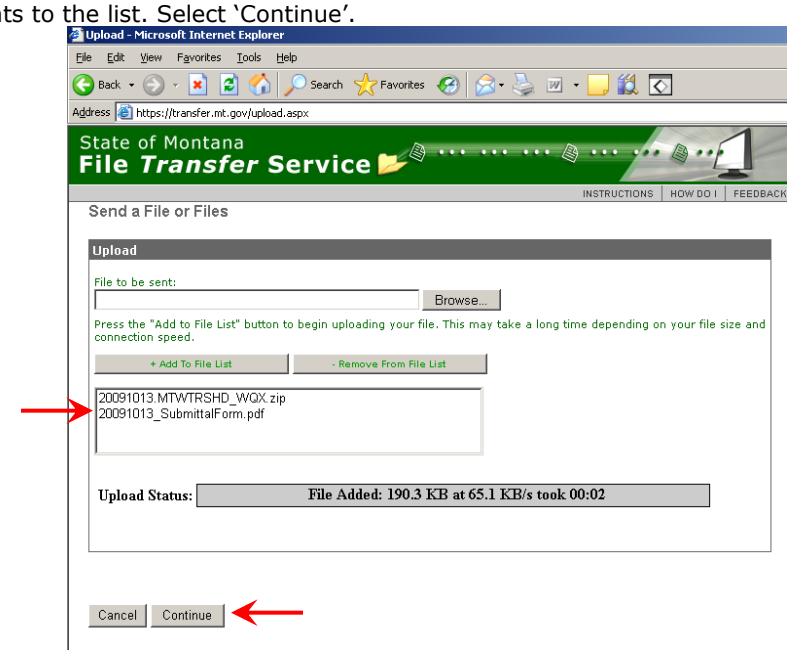
5. Select 'Browse' and locate the compressed data package file, select 'Open'.



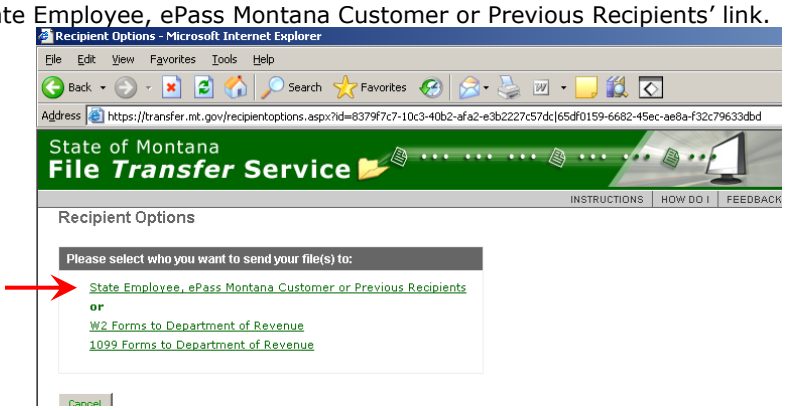

6. Select 'Add To File List'. File should appear in bottom box.



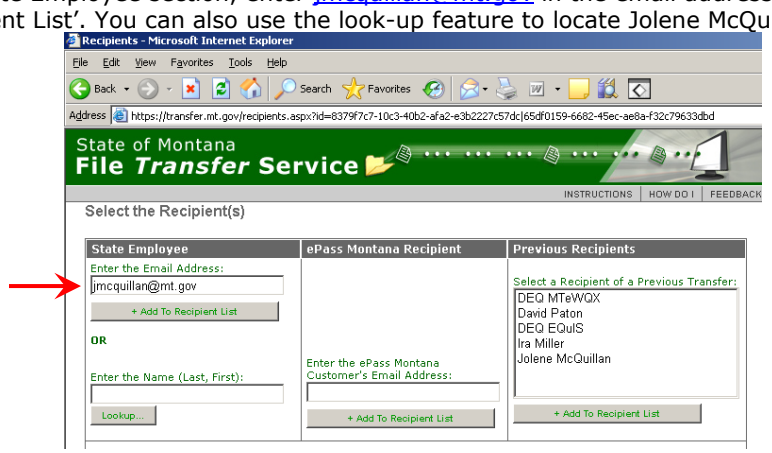
7. Repeat steps 5 and 6 to add the MT-eWQX Call for Data Submittal Form and any other associated documents to the list. Select 'Continue'.



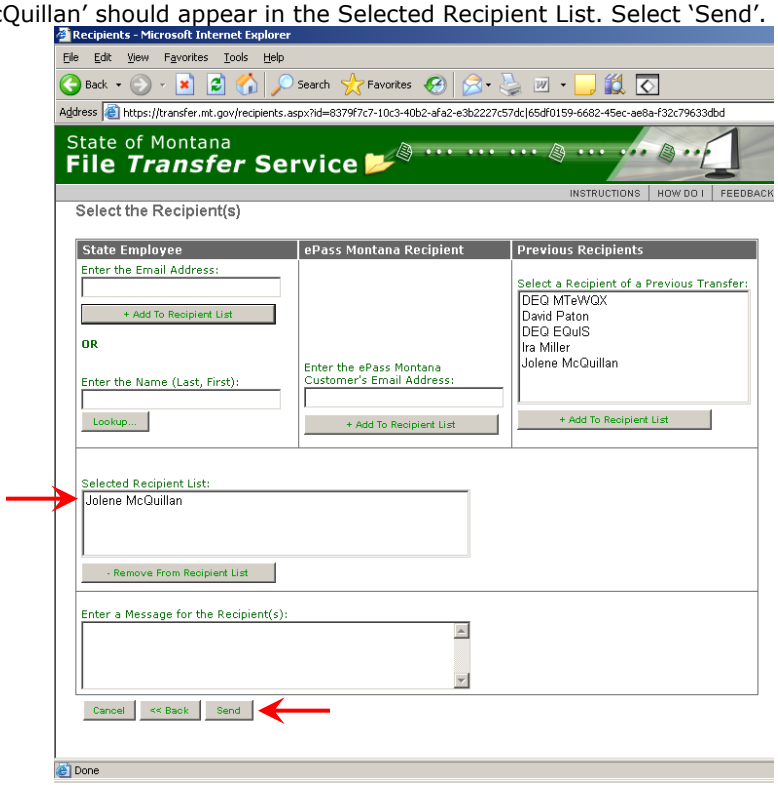

8. Select 'State Employee, ePass Montana Customer or Previous Recipients' link.




9. In the State Employee section, enter jmcquillan@mt.gov in the email address box and select 'Add To Recipient List'. You can also use the look-up feature to locate Jolene McQuillan's name.

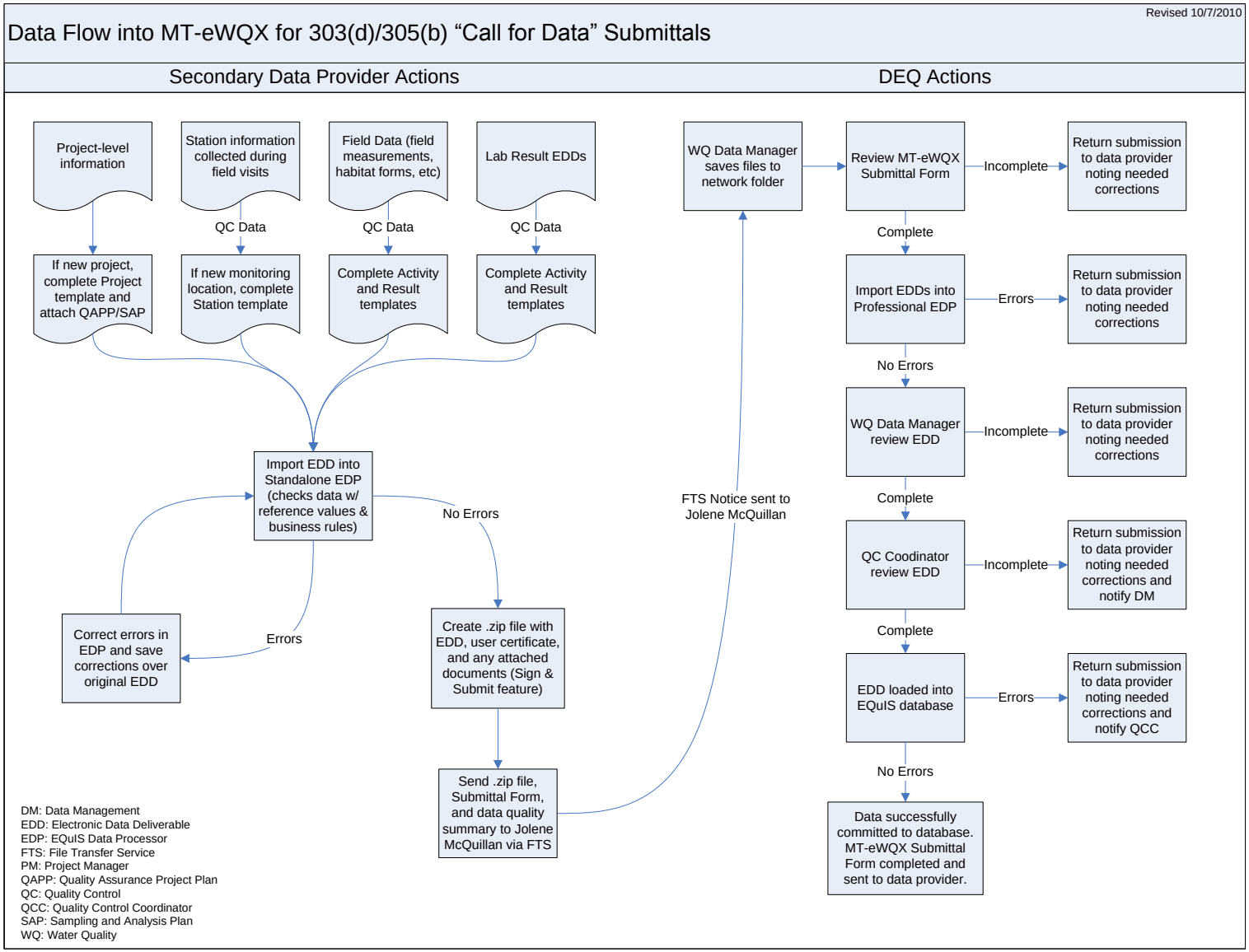


10. 'Jolene McQuillan' should appear in the Selected Recipient List. Select 'Send'.




After you send your data package through the FTS, the Water Quality Data Manager will import your EDD into the EDP application. If the EDD was checked in the EDP prior to submission, there should be no errors and the data should load into MT-eWQX successfully. The data provider will receive an email confirming successful import into the database and the final MT-eWQX Data Submittal Form will be attached. The submittal form is proof the data was loaded into MT-eWQX. If there were errors upon import into MT-eWQX, the data provider will receive an email indicating what needs to be corrected. The errors will need to be corrected and the EDD will need to be resubmitted.

**Figure 5-1 Secondary Data Provider and DEQ Actions for Submitting an EDD**



# Appendix A: MT-eWQX Valid Values for MT305b_SecondaryData

The information contained in this appendix applies strictly to the MT-eWQX Organization ID MT305b_SecondaryData. Other organization IDs may require different organization-specific valid values. This appendix provides required values for specific MT-eWQX data entry fields in accordance with DEQ approvable Sampling and Analysis Plans (SAPs) and the Analyte Checklists used by DEQ. This appendix does not provide valid values for all MT-eWQX data entry fields. For complete directions on the MT-eWQX data entry and upload process, refer to the MT-eWQX Support webpage.

**The values provided in this appendix are consistent with the parameters and analytical methods that DEQ uses in its data collection activities and are needed to allow secondary data to be combined with other data used to conduct water quality assessments. If differing analytical methods are used, data from laboratory analytical reports may require different MT-eWQX valid values. Groups or entities submitting data collected under authorities other than DEQ, for purposes of adding data to water quality assessments conducted by DEQ, must assure that data submitted is true, correct, and has been collected and managed under a quality system. Data uploaded to MT-eWQX must be consistent with the laboratory analytical reports and electronic data deliverables (EDDs).**

## Field Measurements

| Characteristic ID | Characteristic Name | Medium | Sample Fraction | Result Value | Value Type | Analytical Method ID | Analysis Start |
|---|---|---|---|---|---|---|---|
| BAR-PRESSURE | Barometric pressure | Air | NA | <value> | Actual | NA | Enter the Activity Start Date and Start Time |
| TEMP-A | Temperature, air | Air | NA | <value> | Actual | NA | |
| TEMP-W | Temperature, water | Water | NA | <value> | Actual | NA | |
| PH | pH | Water | NA | <value> | Actual | NA | |
| SC | Specific conductance | Water | NA | <value> | Actual | NA | |
| DO | Dissolved oxygen (DO) | Water | NA | <value> | Actual | NA | |
| DO-SAT | Dissolved oxygen saturation | Water | NA | <value> | Actual | NA | |
| TURB | Turbidity | Water | NA | <value> | Actual | NA | |
| RBP-TURB | RBP Turbidity Code (choice list) | Water | NA | Clear<br>Slight Turb<br>Turbid<br>Opaque | Estimated | NA | |
| FLOW | Flow | Water | NA | <value> | Actual →<br>Estimated →<br>Estimated →<br>Estimated → | FLOW-METER-MT305b<br>FLOW-EST-MT305b<br>FLOW-GAGE-MT305b<br>FLOW-FLOAT-MT305b | |

- If the FLOW-FLOAT-MT305b method is used, enter "Float Method" in the Activity Comments field.
- When flow is not measured due to a dry streambed, enter the following:
  - Result Value and Units = 0 ft3/sec
  - Value Type = Estimated
  - Analytical Method ID = FLOW-EST-MT305b
  - Both Activity Comments and Result Comments = Dry channel

## Water Chemistry Samples

| Lab Parameter | Characteristic ID | Characteristic Name | Method Speciation | Sample Fraction | Preferred Analytical Method ID | Value Type |
|---|---|---|---|---|---|---|
| **Water Sample – Bacteria** | | | | | | |
| E. Coli | ECOLI | Escherichia coli | | NA | 9223-B | Actual |
| Total Coliform | TOTAL-COLIF | Total Coliform | | Total | 9223-B | |
| **Water Sample – Common Ions and Physical Parameters** | | | | | | |
| Total Suspended Solids (TSS) | TSS | Total suspended solids | | NA | 2540-D | Actual |
| Total Dissolved Solids (TDS) | TDS | Total dissolved solids | | NA | 2540-C | |
| Volatile Suspended Solids (VSS) | TVS | Total volatile solids | | NA | 2540-E | |
| Sediment Concentration (SSC) | SSC | Suspended Sediment Concentration (SSC) | | NA | D3977 | |
| Total Alkalinity | TOTAL-ALK | Alkalinity, total | as CaCO3 | NA | 2320-B | |
| Bicarbonate | 71-52-3 | Bicarbonate | as HCO3 | Total | 2320-B | |
| Carbonate | 3812-32-6 | Carbonate | as CO3 | Total | 2320-B | |
| Sulfate | 14808-79-8 | Sulfate | | Total | 300.0 | |
| Chloride | 16887-00-6 | Chloride | | Total | 300.0 | |
| Sulfide | 18496-25-8 | Sulfide | | NA | 4500-S2(D) | |
| Turbidity | TURB | Turbidity | | NA | 180.1/2130 | |
| **Water Sample – Calculated Results** | | | | | | |
| Hardness as $CaCO_3$ | HARD-CA-MG | Hardness, Ca, Mg | as CaCO3 | NA | 2340B | Calculated |
| Sodium Absorption Ratio (SAR) | SAR | Sodium adsorption ratio [(Na)/(sq root of 1/2 Ca + Mg)] | | NA | SAR-CALC-MT305b | |
| **Water Sample – Nutrients** | | | | | | |
| Total Persulfate Nitrogen (TPN) | TN | Total nitrogen, mixed forms | as N | Unfiltered | 4500-N-C | Actual |
| Dissolved Orthophosphate as P (SRP) | 14265-44-2 | Orthophosphate | as P | Field Filt<br>Lab Filter | 365.1 | |
| Total Phosphorus as P | TP | Total Phosphorus, mixed forms | as P | Unfiltered | 365.1 | |
| Nitrate-Nitrite as N | NN | Nitrate + Nitrite | as N | Unfiltered<br>Field Filt<br>Lab Filter | 353.2 | |
| Total Ammonia as N | 7664-41-7 | Ammonia | as N | Unfiltered<br>Field Filt<br>Lab Filter | 350.1 | |
| Total Kjeldahl Nitrogen as N | TKN | Total Kjeldahl nitrogen (Organic N & NH3) | as N | Unfiltered | 351.2 | |
| **Water Sample – Dissolved Metals (0.45 um filtered)** | | | | | | |
| Aluminum | 7429-90-5 | Aluminum | | Dissolved | 200.7 | Actual |
| Antimony | 7440-36-0 | Antimony | | | 200.8 | |
| Arsenic | 7440-38-2 | Arsenic | | | 200.8 | |
| Barium | 7440-39-3 | Barium | | | 200.7 | |
| Beryllium | 7440-41-7 | Beryllium | | Dissolved | 200.7 | |

| Lab Parameter | Characteristic ID | Characteristic Name | Method Speciation | Sample Fraction | Preferred Analytical Method ID | Value Type |
|---|---|---|---|---|---|---|
| Boron | 7440-42-8 | Boron | | | 200.7 | |
| Cadmium | 7440-43-9 | Cadmium | | | 200.8 | |
| Chromium | 7440-47-3 | Chromium | | | 200.8 | |
| Copper | 7440-50-8 | Copper | | | 200.8 | |
| Iron | 7439-89-6 | Iron | | | 200.7 | |
| Lead | 7439-92-1 | Lead | | | 200.8 | |
| Manganese | 7439-96-5 | Manganese | | | 200.7 | |
| Nickel | 7440-02-0 | Nickel | | | 200.7 | |
| Silver | 7440-22-4 | Silver | | | 200.8 | |
| Thallium | 7440-28-0 | Thallium | | | 200.8 | |
| Uranium, Natural | 7440-61-1 | Uranium-238 | | | 200.8 | |
| Zinc | 7440-66-6 | Zinc | | | 200.7 | |
| **Water Sample – Total Recoverable Metals** | | | | | | |
| Antimony | 7440-36-0 | Antimony | | | 200.8 | |
| Arsenic | 7440-38-2 | Arsenic | | | 200.8 | |
| Barium | 7440-39-3 | Barium | | | 200.7 | |
| Beryllium | 7440-41-7 | Beryllium | | | 200.7 | |
| Boron | 7440-42-8 | Boron | | | 200.7 | |
| Cadmium | 7440-43-9 | Cadmium | | | 200.8 | |
| Calcium | 7440-70-2 | Calcium | | | 200.7 | |
| Chromium | 7440-47-3 | Chromium | | | 200.8 | |
| Copper | 7440-50-8 | Copper | | | 200.8 | |
| Iron | 7439-89-6 | Iron | | | 200.7 | |
| Lead | 7439-92-1 | Lead | | Total Recv | 200.8 | |
| Magnesium | 7439-95-4 | Magnesium | | | 200.7 | |
| Manganese | 7439-96-5 | Manganese | | | 200.7 | |
| Nickel | 7440-02-0 | Nickel | | | 200.7 | Actual |
| Potassium | K | Potassium | | | 200.7 | |
| Selenium | 7782-49-2 | Selenium | | | 200.8 | |
| Silver | 7440-22-4 | Silver | | | 200.8 | |
| Sodium | 7440-23-5 | Sodium | | | 200.7 | |
| Thallium | 7440-28-0 | Thallium | | | 200.8 | |
| Uranium, Natural | 7440-61-1 | Uranium-238 | | | 200.8 | |
| Zinc | 7440-66-6 | Zinc | | | 200.7 | |
| Sum of anions | ANION-SUM | Sum of anions | | Total | 1050(A)-MT305b | |
| Sum of cations | CATION-SUM | Sum of cations | | Total | 1050(A)-MT305b | |
| Anion/cation Ratio | ACRATIO | Anion/cation ratio | | Total | 1030-E | |

| Lab Parameter | Characteristic ID | Characteristic Name | Method Speciation | Sample Fraction | Preferred Analytical Method ID | Value Type |
|---|---|---|---|---|---|---|
| **Water Sample – Total Metals** | | | | | | |
| Mercury | 7439-97-6 | Mercury | | Total | 245.1 | Actual |
| Mercury, ultra low-level | 7439-97-6 | Mercury | | | 245.7 or 1631 | |
| **Water Sample – Non-metals** | | | | | | |
| Biochemical Oxygen Demand (BOD) | BOD | Biochemical oxygen demand, standard conditions | | NA | 5210-B | Actual |
| Carbonaceous Biochemical Oxygen Demand (CBOD) | CBOD | Carbonaceous biochemical oxygen demand, standard conditions | | NA | 405.1/5210-B | |
| Dissolved Organic Carbon (DOC) | ORGANIC-C | Organic carbon | | Dissolved | 5310-B (or C) | |
| Total Organic Carbon (TOC) | ORGANIC-C | Organic carbon | | Total | 5310-C | |
| Bromide | 24959-67-9 | Bromide | | Total | 300.0 | |
| Fluoride, Electrode | 16984-48-8 | Fluoride | | Total | 4500-F-C | |
| Formaldehyde | 50-00-0 | Formaldehyde | | Total | 3500 | |
| Methane | 74-82-8 | Methane | | Total | 8015M-MT305b | |
| **Water Sample – Radiochemistry** | | | | | | |
| Gross Alpha Radioactivity | 12587-46-1 | Alpha particle | | NA | 900 | Actual |
| Gross Beta Radioactivity | 12587-47-2 | Beta particle | | NA | 900 | |
| **Water Sample – Volatile Organics** | | | | | | |
| Benzene | 71-43-2 | Benzene | | Total | 602/8021B | Actual |
| Ethylbenzene | 100-41-4 | Ethylbenzene | | | | |
| Toluene | 108-88-3 | Toluene | | | | |
| Xylene | 1330-20-7 | Xylene | | | | |
| **Water Sample – Semi-volatile Organics** | | | | | | |
| PAH | 130498-29-2 | Polycyclic aromatic hydrocarbons | | Total | 625/8270C | Actual |
| **Water Sample – Other Organics** | | | | | | |
| Methanol | 67-56-1 | Methanol | | Total | 8015B | Actual |

## Sediment Chemistry Samples

| Lab Parameter | Characteristic ID | Characteristic Name | Method Speciation | Sample Fraction | Preferred Analytical Method ID | Value Type |
|---|---|---|---|---|---|---|
| **Sediment Sample – Total Metals** | | | | | | |
| Mercury | 7439-97-6 | Mercury | | Total | 7471B | Actual |
| **Sediment Sample – Total Recoverable Metals** | | | | | | |
| Arsenic | 7440-38-2 | Arsenic | | Total Recv | 200.8 | Actual |
| Cadmium | 7440-43-9 | Cadmium | | | 200.8 | |
| Chromium | 7440-47-3 | Chromium | | | 200.8 | |
| Copper | 7440-50-8 | Copper | | | 200.8 | |

| Lab Parameter | Characteristic ID | Characteristic Name | Method Speciation | Sample Fraction | Preferred Analytical Method ID | Value Type |
|---|---|---|---|---|---|---|
| Iron | 7439-89-6 | Iron | | | 200.7 | |
| Lead | 7439-92-1 | Lead | | | 200.8 | |
| Zinc | 7440-66-6 | Zinc | | | 200.7 | |

## Chlorophyll-a Samples

| Ash Free Dry Weight | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Characteristic ID** | **Characteristic Name** | **Medium** | **Sample Collection Method** | **Sample Fraction** | **Value Type** | **Analytical Method** | **Weight Basis** |
| **Weighted Average (NOTE: Include weighted average for all sites, even if only one collection method was used.)** | | | | | | | |
| WEIGHT | Weight | Same as chl-a | Same as chl-a | Organic | Calculated | CHLPHL-CALC-MT305b | Ash-free Dry |
| • Result Comment = "Weighted Average"<br>• Exclude core weights from weighted average calculation. | | | | | | | |
| **One Collection Technique Composited or Individual Samples Not Composited** | | | | | | | |
| WEIGHT | Weight | Same as chl-a | Same as chl-a | Organic | Actual | 10300-C | Ash-free Dry |

| Chlorophyll-a | | | | | | |
|---|---|---|---|---|---|---|
| **Characteristic ID** | **Characteristic Name** | **Medium** | **Sample Collection Method** | **Activity/Result Comment** | **Value Type** | **Analytical Method** |
| **Weighted Average (NOTE: Include weighted average for all sites, even if only one collection method was used.)** | | | | | | |
| CHL-A-CP | Chlorophyll a, corrected for pheophytin | Other | CHLPHL-CMP | Enter # of transects and # of samples associated with each method. Examples below. | Calculated | CHLPHL-CALC-MT305b |
| • Result Comment = "Weighted Average"<br>• Include both the calculated value of the weighted average for the entire site along with the individual composite sample result values.<br>• Example Activity Comment: "11 transects sampled: 10 templates, 1 core" | | | | | | |
| **One Collection Technique Composited or Individual Samples Not Composited** | | | | | | |
| CHL-A-CP | Chlorophyll a, corrected for pheophytin | Other –or- Sediment | See valid values below | If composited, enter # of samples composited. | Actual | 10200-H |
| ▪ Sample Collection Method Valid Values:<br>○ Template = CHLPHL-1; Template Composite = CHLPHL-1-C<br>○ Hoop = HOOP; Hoop Composite = HOOP-C<br>○ Core = SED-CORE; Core Composite = SED-CORE-C | | | | | | |
| **Visually Estimated Chlorophyll-a** | | | | | | |
| CHL-A-UP | Chlorophyll a, uncorrected for pheophytin | Other | Leave this blank | "Visual estimation; photos taken." | Estimated | CHLPHL-VISU-MT305b |
| • Activity Type = "F-MSR/OBS"<br>• Result Detection Condition = Not Reported<br>• Lower Reporting Limit = 50 (Detection Limit Units = mg/m2) | | | | | | |

# Appendix B: MT DEQ Secondary Data Criteria

The Montana Department of Environmental Quality (DEQ) is required by state and federal law to assemble and evaluate all existing and readily available data for assessing the surface water quality in Montana. In 40 CFR Part 130.7 (5), the Clean Water Act states that "each State shall assemble and evaluate all existing and readily available water quality-related data and information" to develop their impaired waters lists. Data and information submitted from outside sources must be defensible and the quality of the data known before it is considered for use in DEQ's Water Quality Assessments, i.e., Clean Water Act 303(d)/305(b) listing and reporting process.

In preparation of the state's water quality Integrated Report, DEQ solicits outside data and information from other local, state, and federal agencies, volunteer monitors, private entities, non-profit organizations, and individuals with an interest in water quality. Data submissions are screened to determine if the objectives of the original collection design allow for secondary use in a water quality assessment, the spatial and temporal representation of these data relative to a waterbody assessment unit, and the rigor of quality assurance and quality controls applied during the original collection. Data that does not meet the needs of a structured water quality assessment may not be used explicitly for justifying an impairment decision, but may still be helpful to DEQ for identifying problems that require further attention and study.

## Minimal Data Requirements

DEQ will accept a wide variety of data including (but not limited to):

- Surface water chemistry and physical parameters,
- Fisheries information,
- Chlorophyll-a,
- Periphyton,
- Macroinvertebrates, and
- Physical habitat assessments.

In order for DEQ to use data for beneficial use support decision-making activities, the data must be of documented quality. Data submitted by outside sources must include the following minimal requirements outlined below to be considered:

1. Data must be less than 10 years old.
2. Written documentation such as a Quality Assurance Project Plan (QAPP) and/or Sampling and Analysis Plan (SAP) that clearly describes the following information:
    a. Monitoring objective;
    b. Data quality objectives;
    c. Study design, including the rationale for the selection of sampling sites, water quality parameters, and sampling frequency, as well as the project controls that assured the actual sampling met the intended design;
    d. Field and laboratory sample collection and analytical methods;
    e. QA/QC requirements; and
    f. Data analysis including the verification and validation processes.
3. Written assurance or QA/QC documentation demonstrating that the procedures and methods written in the QAPP and SAP were followed to support the conclusion that the results are reproducible and that data requirements were met.

4. Any field notes, laboratory notations or summaries that indicate deviations from the QAPP or SAP and their potential impact on the data quality and objective outcome.
5. Data must be linked to a particular site on a particular waterbody and the location information (i.e., latitude/longitude) must be included with the data.

DEQ will review chemical, biological, and physical/habitat data to determine if it has adequate rigor for use in decision-making. In addition, data must be representative of the ambient water quality conditions to be useful for assessing the segment. If data are of sufficient quality, they are incorporated into Water Quality Assessments.

### All Data

To be considered, any data must be submitted to MT-eWQX in a specific format using the data submittal process. At a minimum all data submitted must establish the project and the monitoring locations where the data was collected, and attach associated quality documentation (i.e., QAPP, SAP).

### Chemical Data

To be considered, chemical data must include all of the fields that are indicated in the example MT-eWQX compatible EDD template: MT-eWQX EDD Chemistry Example.

### Biological Data

To be considered, biological data must include:

- Raw counts;
- Interpretative report (optional, interpretive reports would be included in FTS transmission as a file separate from the EDD zip file)

An example of the required fields that would be included in a biological data submission into the Montana DEQ's MT-eWQX database is provided in the following template: MT-eWQX EDD Biology Example.

### Physical/Habitat Data

To be considered, physical/habitat data must include:

- Field forms (in pdf format);
- Interpretative report (optional, interpretive reports would be included in FTS transmission as a file separate from the EDD zip file)

### Data Submittal Process

Montana DEQ will accept chemical, biological, and physical/habitat data that can be submitted to DEQ Water Quality Planning Bureau using its established Electronic Data Deliverable (EDD) process and can meet the requirements of its established data quality standards. Both the data deliverable process and data standards are explained in this Call for Data Guidance Manual.