TETRA TECH

September 9, 2021

Ms. Shari Kolak
Task Order Contracting Officer's Representative
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3507

Subject: **Final Data Management Plan**
East Troy Contaminated Aquifer Site, Troy, Miami County, Ohio
DES Contract 68HE0318D0014
Task Order 68HE0521F0054

Dear Ms. Kolak:

Tetra Tech, Inc. prepared the enclosed final data management plan (DMP) for the East Troy Contaminated Aquifer (ETCA) Superfund site, in Troy, Miami County, Ohio, under the U.S. Environmental Protection Agency (EPA) CLIN2 Contract for Region 5, Contract No. 68HE0318D0014, Task Order (TO) No. 68HE0521F0054. Under this TO, Tetra Tech will perform remedial design (RD) activities at the ETCA site in accordance with EPA's Task Order Request.

If you have any questions about this submittal, please call me at (312) 201-7748.

Sincerely,

R. Mastrolonardo

Ray Mastrolonardo, PG
Project Manager

Enclosure

cc: Shelia Dolan, EPA Task Order Contracting Officer
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DESIGN AND ENGINEERING SERVICES
CONTRACT LINE ITEM NUMBER 2 (CLIN2)

FINAL
DATA MANAGEMENT PLAN
EAST TROY CONTAMINATED AQUIFER SITE
TROY, MIAMI COUNTY, OHIO

Prepared for
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604

Date Submitted:	September 9, 2021
US EPA Region:	5
Task Order No:	68HE0521F0054
Contract No:	68HE0318D0014
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TABLE OF CONTENTS

Section **Page**

1.0 INTRODUCTION 1
2.0 SITE BACKGROUND 1
3.0 FIELD TASKS 4
4.0 SITE-SPECIFIC DATA MANAGEMENT PLAN OBJECTIVES 5
5.0 SPECIAL CONSIDERATIONS RELATING TO THE SITE 6
6.0 DATA MANAGEMENT WORKFLOW 6
6.1 WORKFLOW SETUP 6
6.2 GENERAL WORKFLOW OVERVIEW 7
6.3 DATA STREAMS BY ACTIVITY 8
6.3.1 Survey Data 9
6.3.2 Real-Time Field Data 11
6.3.3 Processed Field Data 12
6.3.4 Laboratory Data 13
6.3.5 VI Mitigation System Data 15
7.0 DATA ACCESS AND DISTRIBUTION 16
7.1 TABULAR DATA ACCESS AND OVERVIEW 16
7.2 GEOSPATIAL DATA ACCESS AND OVERVIEW 17
7.3 NON-TABULAR DATA ACCESS AND OVERVIEW 18
8.0 DATA SECURITY CONSIDERATIONS 18
9.0 REFERENCES 20

APPENDIX

A FIGURES

ATTACHMENT

1 REGION 5 ELECTRONIC DATA DELIVERABLE COMPREHENSIVE MANUAL

1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) prepared this data management plan (DMP) to support the remedial design (RD) activities for the East Troy Contaminated Aquifer (ETCA) site in Troy, Miami County, Ohio. The RD is being conducted under the U.S. Environmental Protection Agency (EPA) Design and Engineering Services (DES) Contract Line Item Number 2 (CLIN2) Contract No. 68HE0318D0014, Task Order (TO) No. 68HE0521F0054. For the ETCA site, two separate designs will be prepared under this task order – one design for soil excavation and off-site disposal, and one design for vapor intrusion (VI) mitigation systems. This DMP describes the standard processes, procedures, and tools that will be used to support remedial activities and includes requirements for all EPA data deliverables.

2.0 SITE BACKGROUND

The ETCA site is located in the City of Troy, Miami County, Ohio (see Figure 1). The site contains contaminated groundwater, which has impaired water quality in the local sand and gravel aquifer. The contamination is present in two separate volatile organic compound (VOC) plumes that likely have originated from different sources:

- The "Residential plume" originates near Walnut Street (adjacent to the former Troy One Hour Cleaners) and trends southeastward, parallel to and eventually comingling with the East Water Street Plume.
- The "East Water Street plume" originates in the vicinity of the former Hobart Brothers Cabinet Company and trends southeastward.

The aquifer is the sole source of drinking water in the area. The groundwater contamination has also impaired indoor air quality in structures above the groundwater contaminant plumes, through VI. Contaminated soils are present in and adjacent to the suspected source areas of the East Water Street plume. The original sources of the Residential plume no longer exist, and the source area has been extensively reworked and is covered by more recent construction. It is unknown if contaminated soil remains in the vadose zone at that location. Groundwater in the saturated zone in the vicinity or the Residential plume source area contains concentrations of PCE in parts per million (ppm) levels, with the highest concentrations approximately 20 to 40 feet below the water table, suggesting that back diffusion of PCE from fine-grained materials in the saturated zone may be acting as a secondary, ongoing source of contamination.

The site overlies a prolific sand and gravel aquifer that is considered a sole source aquifer system. The term "sole-source aquifer" is a federal designation used to protect drinking water supplies in areas with few or no alternative sources of drinking water. The City of Troy obtains its public water supply, which serves approximately 25,000 residents, from two wellfields that draw from this aquifer, located on the east side of the Great Miami River (GMR). The West wellfield is located about 0.75 mile north of the ETCA site and impacts to the West wellfield originate from other suspected sources and are being addressed as a separate site (West Troy Contaminated Aquifer site). The East wellfield is located at the southeastern boundary of the ETCA site and includes five production wells. The chlorinated VOC, cis-1,2-dichoroethene (cDCE), has been detected at low concentrations (below the EPA Maximum Contaminant Levels [MCL]) in water samples collected from several wells in the East wellfield, most frequently in Well P-18. The origin of the cDCE is suspected to be from the breakdown of low concentrations of tetrachloroethene (PCE) and trichloroethene (TCE) from an area west of the river, which are then being drawn beneath the GMR through deeper portions of the aquifer near the East wellfield. The overall direction of groundwater flow is to the southeast (generally parallel to the GMR) but is locally affected by pumping in the East wellfield. The entire ETCA site lies within the modeled 5-year time of travel (TOT) for the East wellfield production wells. At the time of the 2015 remedial investigation (RI), some local residents in Troy were using non-potable water from private wells installed in the aquifer. However, a City of Troy ordinance now restricts use of private potable water supply wells within the city and none are known to be in use within the site.

The Residential plume is located within a predominantly residential area southwest of East Main Street. This plume primarily contains PCE at concentrations greater than 1,000 micrograms per liter (µg/L) in the source area, with TCE and cDCE occasionally detected at lower concentrations. The Residential plume flows beneath an area of mainly older, single-family residences mixed with a few businesses, churches, and schools. Figure 2 shows the area being considered for VI mitigation systems.

The second primary area of contamination, referred to as the East Water Street plume, extends from behind the former Hobart Cabinet Company (Hobart) building at 301 East Water Street, extends beneath the Hobart building (which remains), and then continues to the southeast beneath and parallel to East Water Street. The area above the plume is a mixed industrial, residential, and institutional use area. PCE, TCE, and cDCE are present in this plume. Total VOC concentrations in this plume are generally lower than those detected in the Residential plume. Soil and groundwater contamination have been detected on the Hobart property, with the highest VOC concentrations in soil detected in an apparent source area in the rear of the property in an open area between the building and the GMR (see Figure 3).

Adjacent to and downgradient of the Hobart facility is a second industrial facility, formerly Brown-Bridge Industries (now owned by Kimberly Clark) and currently being operated by Spinnaker Coatings LLC (Spinnaker), where chlorinated VOCs, including the same VOCs present on the Hobart property, have also been detected in both soil and groundwater. Soil contamination at this property is being addressed by the potentially responsible party (PRP); therefore, RD activities at the Spinnaker facility are not within the scope of Tetra Tech's RD.

The RI was completed for the ETCA site in January 2015. The RI determined that the site contained multiple contaminant sources, two groundwater contaminant plumes (the "Residential" plume and "East Water Street" plume), and multiple exposure pathways, in a complex hydrogeologic setting. In 2015, an initial set of remedial action objectives (RAOs) and potential remedial alternatives were developed by EPA, with input from the Ohio Environmental Protection Agency (Ohio EPA). The nature and extent of contamination, site complexity, and constraints caused by the site setting have significant influence on the estimated timeframes that will be required for remediation of this site to achieve the full list of potential RAOs for all areas and exposure pathways. For this reason, EPA elected to conduct a focused feasibility study (FFS) to address a focused group of RAOs and to evaluate remedial alternatives that are directly related to meeting the focused RAOs. The focused RAOs prioritize reduction of exposure risk and reduction of contaminant mass in the source areas of groundwater contamination.

The FFS led to an interim action Record of Decision (ROD) issued by EPA in 2018 (EPA 2018). The interim action ROD does not replace a final, site-wide remedy ultimately required for this site. The scope of the interim action also does not include complete restoration of the aquifer to "beneficial use" (removal of all manmade contaminants to below EPA MCL. For the interim action ROD, EPA is specifically addressing (1) areas of soil contamination that exceed human health risk standards and that coincide with apparent groundwater contaminant source areas, (2) the Residential plume groundwater source area, and (3) potential VI in areas overlying the Residential plume. The proposed VI mitigation area was determined through discussion with Ohio EPA and is based on a combination of past site VI data, the groundwater contaminant plume boundaries and concentrations, the conceptual targeted groundwater treatment area identified in the FFS, and designated "buffer" zones extending beyond the identified plume boundaries.

This RD addresses only the East Water Street soil source area and VI. It does not address the Residential plume groundwater source area. The RAOs and remedial action levels (RAL) specified in the interim action ROD for the East Water Street plume source area are listed below.

RAOs:

- Prevent exposure to TCE in soil that poses unacceptable non-cancer hazards to future residents and future industrial/commercial workers in Exposure Area (EA)-1 (Hobart) and to future residents in EA-6 (western part of Spinnaker parking lot)
- Minimize leaching of PCE and TCE from soil to groundwater in the EAs where unacceptable non-cancer hazards exist (EA-1 and EA-6)

RALs:

- PCE: 44 micrograms per kilogram (µg/kg)
- TCE: 34 µg/kg

The RAO and RALs that were specified in the interim action ROD for VI are as follows:

RAO:

- Mitigate potential VI into buildings overlying the targeted groundwater treatment area plus an additional buffer area extending three blocks beyond the downgradient end of the targeted treatment area to Frank Street

Because the RAO will preemptively address potential VI within a predetermined area, RALs were calculated only for the purpose of confirmatory sampling to demonstrate that the proposed treatment system is effective at structures where it is implemented. The following RALs will be used to confirm the effectiveness of the interim action:

Contaminant	Residential RAL ($\mu g/m^3$)	Industrial/Commercial RAL ($\mu g/m^3$)
Tetrachloroethene (PCE)	42	180
Trichloroethene (TCE)	2.1	8.8

Note:
$\mu g/m^3$ - micrograms per cubic meter

3.0 FIELD TASKS

The following field activities will be performed as part of RD:

- Geophysical survey – As part of the East Water Street soil source area predesign investigation (PDI), a geophysical survey will be conducted by a geophysical subcontractor to further locate utilities on private property, and to look for anomalies and buried objects in the investigation area. Soil sampling locations may be modified based on the geophysical survey results in order to avoid underground utilities. The geophysical survey will be conducted using ground-penetrating radar (GPR) and electromagnetic (EM) methods (Figure 4).

- East Water Street source area soil investigation (PCE and TCE sampling) – Using direct-push drilling methods, Tetra Tech will advance up to 31 soil borings within the excavation area identified in the ROD. Soil samples will be collected at up to four depths at each boring location and analyzed for PCE and TCE. Soil sample results will be compared to site RALs established in the ROD. These data will be used to further delineate the excavation boundaries and results will be incorporated into the RD.
- East Water Street source area soil investigation (geotechnical sampling) – Using hollow-stem auger drilling methods, Tetra Tech will advance three soil borings within the excavation area identified in the ROD. Soil samples will be collected at up to two depths at each boring location and will be analyzed for geotechnical parameters, including Atterberg limits, particle size, and moisture content. Soil samples will also be tested using American Society for Testing Materials (ASTM) Standard Method for Consolidated Drained Triaxial Compression Test for Soils. These data will be used to further estimate the proper disposal of soil to be excavated and results will be incorporated into the RD. Geotechnical sampling will be performed to gather information needed for the RD to assess soil stability and design proper sloping of sidewalls.
- East Water Street source area investigation (waste characterization sampling) - Soil samples will be collected from drummed soil cuttings generated during the PDI to determine proper disposal of investigation-derived waste (IDW). Up to three composite samples will be collected from the drummed soil and analyzed for the same suite of waste characterization parameters.
- VI mitigation system database development – To assist in tracking the status of access agreements and property-specific information, Tetra Tech will develop a spreadsheet/database that includes property addresses, property owner name and contact information, parcel identification numbers, zoning categories, legal description, occupancy status (owner occupied/ renter), address to which access agreements were mailed, property access status, record of communications with residents, information (provided by residents on their access agreements) regarding underground utilities and types of foundation (dirt floors vs concrete sub slab), number of attempts to gain access and notes about attempts, and utility locate status.

Geophysical survey results will be processed by the subcontractor and submitted in a written report to Tetra Tech. Soil samples will be sent to the EPA Regional Laboratory to be analyzed for PCE, TCE, and waste characterization parameters. Soil samples to be analyzed for geotechnical parameters will be sent to a subcontracted laboratory.

4.0 SITE-SPECIFIC DATA MANAGEMENT PLAN OBJECTIVES

The objective of this DMP is to provide a clear understanding of the data collection, management, reporting, and visualization practices used during field activities. The documentation of these practices is intended to meet EPA's site documentation requirements. This plan includes procedures for sharing data between stakeholder agencies and procedures for producing electronic deliverables of specific data types. This plan is also intended to promote consistent use and distribution of project data by internal and external parties.

5.0 SPECIAL CONSIDERATIONS RELATING TO THE SITE

All data captured on and relating to the ETCA site are for internal use by EPA. Data collected during site activities may contain personally identifiable information (PII) and thus will be secured and managed according to EPA standards. The EPA Task Order Contracting Office Representative (TOCOR) or other representative will determine which agencies or individuals may have access to data and which data will be released to the public. The data collection, management, and display processes outlined in this plan use secured systems that require pre-authorized access or the use of Virtual Private Network (VPN) software.

6.0 DATA MANAGEMENT WORKFLOW

Data collected at the ETCA site can be grouped into five data streams: (1) survey data, (2) real-time field data, (3) processed field data, (4) laboratory data, and (5) VI mitigation system data. These data streams are generated by EPA and its contractors using electronic and paper collection tools and are housed in databases and file management systems specific to the site. Data collected during field operations and from monitoring and sampling devices undergo systematic quality control prior to release for viewing in geospatial and report products. The general ETCA site workflows, including setup procedures and detailed data stream workflows, are defined in the subsections below.

6.1 WORKFLOW SETUP

The first step in the data management workflow consists of setting up base layers and information about the site, which will be used to support further data collection activities; and gathering relevant historical data. For the ETCA site, the general workflow set-up started by acquiring prior site data collected during the RI/FFS and by acquiring publicly available datasets, such as parcel boundaries and related information for the properties included in the site. These data were provided by EPA. Parcels will be assigned random property identification (ID) numbers to protect PII. Parcel boundaries will be modified as needed based on in-field observations (for example, combining multiple parcels into one property).

The resulting dataset consists of the geospatial boundaries of parcels paired with parcel information and a property ID number. These data will be uploaded into the project Scribe database, as well as configured as a hosted feature service on EPA's GeoPlatform. All PII will be removed prior to publishing the hosted feature service, with random property ID as the data linkage between the feature service and the full dataset contained in the Scribe database. The hosted feature service and Scribe database feed the data

streams described below. The hosted feature service will be used as the primary data source for field deployments of ArcGIS Survey123 (Survey123) and ArcGIS Field Maps (Field Maps) applications. Survey123 is a form-based digital data collection application, available for iOS and Android tablet computers, which will be used for field data collection. Field Maps is a map-based data collection application available for iOS and Android devices, which will be used in tandem with Survey123 for field data collection. Scribe is a software tool developed by EPA's Environmental Response Team (ERT) to assist in the process of managing environmental data (EPA 2021). Data stored in a Scribe database can be accessed and distributed through Scribe.net subscription services. Upon completion of field activities, Tetra Tech will work collaboratively with EPA to transmit data stored in the Scribe database to the EPA Region 5 EQuIS database in accordance with EPA Region 5 guidance (EPA 2021).

6.2 GENERAL WORKFLOW OVERVIEW

Data generated during field activities follow a common workflow: once collected and quality control (QC) checked, data are processed and loaded into the project Scribe database. Data can be published online from the local database to Scribe.net. Databases stored on Scribe.net can be accessed via subscription services. Data can then be further processed and loaded onto the EPA GeoPlatform and made available for viewing in a site-specific dashboard. The site-specific dashboard includes web-based mapping applications (WMA), and is housed on the EPA GeoPlatform. The site dashboard visualizes the data generated from the first three data streams (survey data, real-time field data, and laboratory data) detailed in Section 5.3 as feature services. Alternatively, data formats that cannot be stored in the Scribe database (photographs, portable document format [PDF] files, videos, etc.) can be collected, QC checked, and uploaded directly to a virtual storage server, such as OneDrive, or a secure Tetra Tech file server. Data generated from the fourth data stream (VI mitigation system data) will be collected, QC checked, uploaded into a Microsoft Access database, and uploaded directly to OneDrive or a secure Tetra Tech file server. OneDrive is a data storage server that is accessible remotely via an online interface. Data stored on the OneDrive server or secure Tetra Tech file servers can be published to the EPA GeoPlatform, as needed for inclusion in the site dashboard. No PII will be included in any data hosted directly on the EPA GeoPlatform.

Deviations from the general workflow may include development of on-site geographic information system (GIS) products, such as hard-copy maps and reports, for use during field activities.

Figure 5a depicts the generalized workflow of the five data streams mentioned above. Each of the five data streams is explained further in the following section.

6.3 DATA STREAMS BY ACTIVITY

Each data stream for the ETCA site follows a specific workflow detailing data management steps from data collection through QC checking, processing, storing, and displaying the data. Data collected at the site are grouped into data streams that follow a similar workflow. In total, five data streams were identified: (1) survey data, (2) real-time field data, (3) processed field data, (4) laboratory data, and (5) VI mitigation system data (Figures 5b, 5c, 5d, and 5e). Additional data streams may be added as the site progresses if new data do not fit into the present categories. Table 1 presents a summary of the data streams.

EPA, Tetra Tech, and multiple subcontractors, including the geophysical subcontractor, are responsible for generating data in one or more of the data streams described above. Data management procedures may vary resulting from idiosyncrasies in generating data; however, the documentation below provides standards on collecting and processing data. Substantial deviations will be documented in contractor-specific standard operating procedures (SOPs) and alternative workflows. Contractor-specific documentation will be added to future DMP revisions as necessary.

Table 1: Summary of Data Streams by Activity

Data Stream	Description	Data
Survey Data	Data generated on site using survey equipment that result in a geographical location at one sample point.	-GPS Data
Real-Time Field Data	Data generated from field activities conducted on site.	-Site Documentation Data -Soil Sample Collection Data -Soil Boring Geology Data -IDW Sample Collection Data -Geotechnical Sample Collection Data
Processed Field Data	Data generated from field activities that requires post-processing to produce meaningful results or data products.	-GPR Survey Data -EM Survey Data
Laboratory Data	Data generated off site that results from a laboratory determination of geotechnical characteristics or a chemical concentration of a particular sample.	-Soil Analytical Data -IDW Analytical Data -Geotechnical Data

Data Stream	Description	Data
VI Mitigation System Data	Data generated from field activities relating to tracking access agreements and property-specific information.	-Property Owner and Contact Information Data -Parcel Identification and Classification Data -Housing Composition and Characteristics Data -Access Agreement Data

6.3.1 Survey Data

The survey data stream is defined as data generated on site using real-time survey equipment that results in a geographical location at one point. Activities at the ETCA site associated with this data stream include recording the locations for key site features. The general data flow for the survey data is described below and shown on Figure 5b.

Trimble GeoXT hand-held GPS units or Bluetooth GPS units, such as an EOS Arrow 100 Global Navigation Satellite System (GNSS), with sub-meter accuracy will be used in the field for data collection. Trimble GeoXT units have preloaded Trimble's GPS Correct Software to ensure differential correction of data captured, as well as Terrasync software, which will use basemap features such as aerial photography, utilities, and parcel boundaries. Bluetooth GPS units can be utilized with the Field Maps application running on a tablet computer. Tetra Tech will load the GIS layers onto the GPS units or into the Esri Field Maps application for reference by the field team before field activities begin.

Most GPS units, including the Trimble GeoXT, offer several settings that also serve as quality checks during data acquisition. For example, a minimum number of visible satellites (typically four) can be specified, thereby signaling a warning to the field team if a feature is to be captured when fewer than the minimum four satellites are available. In addition, GPS units can calculate a position dilution of precision (PDOP) value, with lower values leading to more accurate locations of features. Typically, a PDOP value of 6 or less is desirable for accurate data acquisition. These settings will be adjusted accordingly on the GPS units before field work begins to ensure the highest quality data capture. The data fields captured by the GPS unit will include the Location ID and the northing and easting coordinates of each sample point. The location ID will be labeled to match the sampling location ID generated during field sampling activities to ensure the GPS coordinates correlate to the correct sample point. Post-processing of GPS data using Trimble Pathfinder or Esri software will allow for the inclusion of key data quality metrics (PDOP, horizontal accuracy, etc.) in GPS data attribute tables. Processed GPS data will be uploaded to

the site-specific Scribe database as location data and will be linked to sample data contained in the Scribe database using the location ID attribute. If any GPS data points cannot be tied to a sample within the Scribe database based on the location ID, GIS software will be used to review all pertinent information for the GPS data point to ensure it is assigned to the correct sample data. Using GIS and GPS technology will ensure sound data collection at sampling locations and provide quality data to be processed after completion of field work. GPS data that cannot be loaded into the Scribe database (polyline or polygon data) will be included in the site geodatabase, and as needed can be published to GeoPlatform for inclusion in the site dashboard.

Professional surveying services may be used to obtain ground surface or permanent feature elevations. A subcontractor will survey elevations to a common reference datum at the site, and all data collected by the subcontractor will adhere to standards set by the survey license. The survey datum to be used at the site is the Ohio State Plane Coordinate System (North American Datum of 1983 [NAD 83]) and the vertical datum will be the North American Vertical Datum 1988. Horizontal and vertical survey measurements will be to an accuracy of 0.1 and 0.01 foot, respectively. Survey data received by Tetra Tech will be processed in the same manner as GPS data.

After elevation and XY location data has been QC reviewed, the data will be sent to the Database Administrator (DBA) for import into Scribe. After the data are uploaded to Scribe, the DBA will conduct an additional QC check. Finally, the database will be published to Scribe.net, where it can be accessed using subscription services. Geospatial data or features, such as polylines and polygons, will be stored in a site-specific geodatabase file.

Data that have successfully been published to Scribe.net may be used to develop WMAs for inclusion in the site dashboard on the EPA GeoPlatform. To include Scribe data on the GeoPlatform, SQL queries will be used to construct static data exports, including a spatial data element. These static data exports will then be uploaded to the EPA GeoPlatform as a hosted feature service. WMAs will be developed in the EPA GeoPlatform to visualize and disseminate data to key internal project stakeholders, as well as the public. These WMAs will be developed for both internal and public use. WMAs created for the public will not contain any PII, as described in Section 7.0.

Table 2 describes the activities, collection tools, and data generators associated with the Survey Data stream.

Table 2: Summary of Survey Data Stream

Activity	Collection Tool	Data Generator
Soil Boring Location Mapping	Trimble GeoTX GPS Unit or EOS Arrow Unit	Tetra Tech

Note:
GPS – Global Positioning System

6.3.2 Real-Time Field Data

The real-time field data stream is defined as data generated from field sampling and site documentation activities conducted on site that is captured in real-time and can be made available for remote viewing/review in near real-time. Real-time data generated on site will use digital data capture technology to document quantitative sample characteristics, as well as qualitative or observational data. The activities at the ETCA site associated with this data stream are soil boring, soil sampling, geotechnical sampling, and IDW sampling.

Real-time field data collection begins in the field using a digital data collection application. The field teams will be equipped with tablet computers with access to Survey123 and Field Maps applications. Activity-specific digital data forms will be created for entering information into the Survey123 application. When a Survey123 form is configured, it will be linked to an editable feature service. The feature service is typically either a hosted feature service or an enterprise geodatabase. For the ETCA site, Survey123 forms will be linked to hosted feature services on the EPA GeoPlatform. Because the feature services will be hosted on the EPA GeoPlatform, PII will not be collected in any Survey123 forms. When data are collected in the Survey123 application, the linked feature service is programmatically edited by Survey123, resulting in near real-time updates of the feature service as field crews submit individual forms. Data collected using the Survey123 application can then be accessed directly via the linked feature service, or via the Survey123 website. The Survey123 website will provide a user-friendly interface for interacting with the data and simple tools for exporting data in a variety of formats. When data is ready to be uploaded to Scribe, the field crew will download the data using the Survey123 website and perform a QC review. The Field Data Manager can then import the data into the Scribe database and generate a chain of custody (COC) form. Once a COC is created, the data will be sent to the DBA, where the data will be uploaded to the project-specific Scribe database, and a quality assurance/quality control (QA/QC) check performed (via built-in Auditor tool in Scribe). This Scribe database can then be published to Scribe.net.

Photographs collected during sampling activities can be captured in the Survey123 application using the tablet computer's camera feature. These photos will then sync with the Survey123 website and can be downloaded locally and uploaded to OneDrive or a similar centralized storage location. General site photographs will be captured in the field using cameras, then downloaded locally and uploaded to OneDrive or a similar centralized storage location.

Table 3 describes the sampling activities, collection tools, form names, and contractors generating data associated with the real-time field data stream. Forms will be created to standardize some data collection and these forms are documented in Table 3. Specific form information such as the form name, data fields, and field type are subject to change. Figure 5b depicts the step-by-step process for the survey and real-time field data management.

Table 3: Summary of Real-Time Field Data Stream

Activity	Collection Tool	Form Name	Data Generator
Site Documentation	Survey123/Logbook	ETCA – Site Documentation/Logbook	Tetra Tech
Soil Boring	Survey123	ETCA – Soil Boring Form	Tetra Tech
Soil Sampling	Survey123	ETCA – Soil Sampling Form	Tetra Tech
Geotechnical Sampling	Survey123	ETCA – Geotechnical Sampling Form	Tetra Tech
IDW Sampling	Survey123	ETCA – IDW Sampling Form	Tetra Tech
Site Photos	Camera	Not Applicable	Tetra Tech

Notes:
ETCA – East Troy Contaminated Aquifer
IDW – Investigation-derived waste

6.3.3 Processed Field Data

The processed Field Data stream is defined as data that is collected in the field requiring post-processing before a useful data product can be delivered. The data that will be collected on site that falls within the Processed Field Data stream primarily consists of geophysical survey data. A geophysical survey will be conducted in the sampling area to (1) evaluate the potential presence of features, such as underground storage tanks, sewer lines, or other features that may be contaminant sources; (2) confirm that areas proposed for drilling activities are free of utilities; and (3) confirm and document the locations of on-site utilities, such as water and sewer lines, so that this information can be incorporated into the RD. The geophysical services subcontractor will conduct GPR and electromagnetic (EM) surveys, mark anomalies detected, process all GPR and EM data, and prepare a report of findings. GIS-compatible files of the

survey area and anomalies will be included with the final deliverable. The surveys will be conducted over the planned sampling area identified by Tetra Tech, which encompasses about 17,000 square feet (see Figure 4). Spacing of individual survey lines will be at the discretion of the geophysical survey contractor to provide the resolution necessary to meet the survey objectives, based on the capabilities of the specific equipment selected. Instrumentation will consist of a Geophex GEM-2 EM instrument and Noggin 250 MHz GPR system, or similar. Data will be collected in continuous reading mode over the entire grid area.

Data deliverables from geophysical surveys typically consist of (1) a processed output that displays continuous geophysical sensor readings; and (2) a processed output that displays the locations of anomalies or key site features determined by the geophysical surveyor. These data deliverables are typically generated in two different formats. Continuous geophysical sensor readings are displayed as a georeferenced image or similar georeferenced raster format. Alternatively, the display of locations of anomalies or key site features is displayed as a spatially enabled vector file, such as a feature layer or shapefile. Both georeferenced image/raster and feature layer/shapefile data products will be stored in the site-specific file geodatabase. Any other electronic deliverables, including PDF reports, will be uploaded to OneDrive or alternative secure file server location. Files may also be uploaded to the EPA Geoplatform and used in the site-specific WMAs. Figure 5c depicts the step-by-step process for the processed field data management.

Table 4: Summary of Processed Field Data Stream

Activity	Collection Tool	Data Generator
Geophysical (GPR and EM) Surveys	Geophex GEM-2 EM instrument and Noggin 250MHz GPR system or similar	Survey Subcontractor
Ground Surface Elevation Surveys	RTK-enabled survey equipment	Survey Subcontractor

Notes:
EM – Electromagnetic
GPR – Ground-penetrating radar
RTK – Real-time kinetic

6.3.4 Laboratory Data

The laboratory data stream is defined as data generated off site that results from a laboratory determination of the geotechnical properties or a chemical concentration in a particular sample. Data generated off site includes reports generated by an accredited laboratory, which typically consists of

analytical reports and electronic data deliverables (EDDs). EDDs are used to (1) provide a chemical concentration or geotechnical characteristic for the sample and (2) provide detailed QA/QC data to facilitate the validation of laboratory data. The activities at the ETCA site associated with this data stream are soil sample results, IDW sample results, and geotechnical sample results.

In accordance with EPA policy, Tetra Tech will use analytical services provided by the government to the extent possible. Therefore, all environmental samples collected during soil sampling and IDW sampling activities will be submitted to the EPA Regional Laboratory or a Contract Laboratory Program (CLP) laboratory. The laboratory will prepare a data package that includes a summary of sample analytical results (including QC results), the COC record, raw data, and a summary report, as well as an EQuIS-compatible EDD. If the laboratory is unable to produce an EQuIS-compatible EDD, Tetra Tech will reformat the EDD to the extent possible to meet both Scribe and EQuIS EDD format requirements. Data package deliverables will be consistent with the Regional Laboratory or CLP laboratory scope of work.

Because government analytical services are not available for analysis of reactive cyanide and sulfide and geotechnical parameters, Tetra Tech will procure private laboratories to perform these analyses. Data packages will be prepared in accordance with the requirements specified in the Quality Assurance Project Plan (QAPP) (Tetra Tech 2021). The subcontracted laboratories will use standard data reporting techniques and will provide results in an EQuIS-compatible EDD. If the subcontracted laboratories are unable to produce an EQuIS-compatible EDD, Tetra Tech will reformat the EDD to the extent possible to meet both Scribe and EQuIS EDD format requirements.

When an EDD is received from the laboratory, preliminary data will be sent to the DBA to be imported into the project Scribe database. Tetra Tech will require laboratories to provide EDDs in the EQuIS EDD format, where possible, and will customize the Scribe database to accommodate EQuIS-specific field requirements. The EQuIS EDD format and field descriptions are included in Attachment 1.

A chemist will routinely screen analytical data for accuracy using pre-formatted analytical result forms as the data are received from the laboratory. EPA Regional Laboratory-generated analytical data from this investigation will undergo data evaluation via computer-aided data review and evaluation (CADRE) processes only. This review will be completed by the EPA Region 5 Environmental Services Assistance Team (ESAT) contractor, who will provide Tetra Tech with a case narrative and a copy of the analytical results. The Tetra Tech analytical coordinator and project manager will review the case narrative to ensure that project-required criteria have been achieved. Any data quality issues identified by CADRE or

during Tetra Tech's review will be communicated to the EPA work assignment manager in the data validation report prepared for each sampling event.

Table 5 describes the sampling activities, collection tools, form names, and data generators associated with the laboratory data stream. Figure 5d depicts the step-by-step process for laboratory data management.

Table 5: Summary of Laboratory Data Stream

Activity	Analytical Parameters	Data Generator
Soil Sampling	PCE and TCE	CLP or EPA Regional Laboratory
IDW Sampling	Total and TCLP VOCs, Total and TCLP Metals, TCLP SVOCs, Ignitability, Corrosivity, and Paint Filter	CLP or EPA Regional Laboratory
IDW Sampling	Reactive Cyanide/Sulfide	Subcontracted Laboratory
Geotechnical Sampling	Atterberg limits, particle size, moisture, and Consolidated Drained Triaxial Compression Test for Soils	Subcontracted Laboratory

Notes:
CLP – Contract Laboratory Program
IDW – Investigation-derived waste
PCE – Tetrachloroethene
SVOC – Semivolatile organic compound
TCE - Trichloroethene
TCLP – Toxicity Characteristic Leaching Procedure
VOC – Volatile organic compound

6.3.5 VI Mitigation System Data

The VI mitigation system data stream is defined as data generated from field activities relating to tracking access agreements and property-specific information. The general data flow for this data stream is described below and shown on Figure 5e. Activities at the ETCA site associated with this data stream include collecting property owner and contact information data, parcel identification and classification data, housing composition and characteristics data, and access agreement data.

Tetra Tech will assist EPA in completing access agreements with property owners within the identified vapor mitigation area to support the implementation of the RA. EPA will work with Tetra Tech to prioritize the properties requiring access based on the RA schedule. For each property, Tetra Tech will conduct door to door canvassing and any other method deemed appropriate to support the effort to obtain access agreements.

Tetra Tech will maintain a custom Microsoft Access database that tracks efforts to obtain access agreements. Once an access agreement is obtained, Tetra Tech will update the Access database with information provided by the property owner or tenant, including property owner name and contact information, parcel identification numbers, zoning categories, legal description, occupancy status, record of communications with residents, information provided by residents regarding underground utilities and types of foundation, and utility locate status. In addition to updating the Access database, the completed access agreement will be uploaded to a OneDrive server. The Access database will also be uploaded monthly to a OneDrive server, which can then be linked to the EPA GeoPlatform. Tetra Tech will provide a status update of access agreements to EPA in a monthly technical memorandum, which will include all obtained access agreements.

Table 6 describes the activities, collection tools, and contractors associated with the VI mitigation system data stream. Any changes to the data stream will be documented in a subsequent revision to this DMP. Figure 5e depicts the step-by-step process for VI mitigation system data management.

Table 6: VI Mitigation System Data Stream

Activity	Collection Tool	Data Generator
Tracking Access Agreements and Property-Specific Information	Microsoft Access	Tetra Tech

7.0 DATA ACCESS AND DISTRIBUTION

The following subsections summarize access instructions and distribution methods for the data generated at the ETCA site. The data are made up of three types: tabular data, geospatial data, and non-tabular data. Tabular data will be housed within Scribe or Access databases and distributed with Scribe.net or via local access. Geospatial data that cannot be hosted in the Scribe database will be hosted in a site-specific geodatabase and will be distributed as hosted services on the EPA GeoPlatform. Non-tabular data will be housed within OneDrive or a similar centralized storage location. Upon completion of field activities, Tetra Tech will work collaboratively with EPA to transmit data stored in the Scribe database to the EPA Region 5 EQuIS database in accordance with the Region 5 guidance (EPA 2020).

7.1 TABULAR DATA ACCESS AND OVERVIEW

Tabular data consists of field data generated using a digital data collection application, laboratory analytical data, and VI mitigation system data. At the ETCA site, the Scribe database captures sampling,

observational field data, and analytical laboratory data. The field data collected and imported to Scribe includes soil boring geology, soil samples, geotechnical samples, and IDW samples. Observational data, including property information, sampling locations, analyses, samplers, instrument, and remarks, are associated with each of these field data inputs.

The analytical data provided from EDDs will consist of preliminary and validated laboratory results from sampling events. Tetra Tech anticipates that all Scribe data will be published to Scribe.net and accessed through Scribe.net subscription services. Users who need to access specific published Scribe projects are provided with a secure user account and password that will allow Scribe data to be downloaded for use in proprietary database applications, such as local versions of Scribe software. EPA's Environmental Response Team (ERT) Software Support controls the setup of user accounts and subscription identifications with passwords.

VI mitigation system data will be uploaded and stored on a OneDrive server, which can then be linked to the EPA GeoPlatform. Users can access data via internet connection. Access to OneDrive or a similar storage location will be secured via Office365 password credentialing or a VPN service.

7.2 GEOSPATIAL DATA ACCESS AND OVERVIEW

Geospatial data consists of point-based data contained in Scribe.net, polyline/polygon geospatial data stored in the site geodatabase, and raster data stored in the site geodatabase. Geospatial data contained in Scribe can be used to publish hosted services on the EPA GeoPlatform. Similarly, data stored in the site geodatabase can be published to the EPA GeoPlatform as hosted services for inclusion in the site dashboard. Geospatial data that contains PII will not be hosted on GeoPlatform. If PII needs to be included in the site dashboard, Tetra Tech will work collaboratively with EPA to identify alternative hosting locations for the dataset(s) containing PII, and will deliver those datasets to the GeoPlatform as a GIS-compatible representational state transfer (REST) service.

Users who need to access the dashboard must log into the EPA GeoPlatform with either an EPA Enterprise account or ArcGIS Online account. Within the EPA GeoPlatform, users will be invited to the "internal" East Troy Contaminated Aquifer group made available to key project stakeholders, as determined by EPA. Project members can then view data made available on an East Troy Contaminated Aquifer internal viewer. The EPA may also utilize an East Troy Contaminated Aquifer public viewer

housed on a separate dashboard within EPA GeoPlatform to distribute data for public viewing. If a public viewer is implemented, it will be designed to remove all PII before it becomes available to the public.

Tetra Tech currently uses Esri software for most projects that incorporate GIS data. Tetra Tech will manage the GIS data acquired during the predesign sampling event within an Esri ArcGIS geodatabase built and designed for the project, as well as the EPA GeoPlatform. GPS technology will also be used to accurately navigate to locations and capture sampling activities.

Using a site-specific geodatabase will ease delivery in GIS format of sampling features for EPA use and examination. A geodatabase contains certain tables, columns, and relationships among tables in a single file that allows use of the database by Esri applications. Site figures and advanced data analysis and visualization processes for East Troy Contaminated Aquifer will be performed using Esri ArcMap or ArcGIS Pro software.

7.3 NON-TABULAR DATA ACCESS AND OVERVIEW

Non-tabular data consist of field data generated that are not tabular in nature and cannot be stored within the project-specific Scribe database. These data include photographs, PDF files (including access agreements), videos, and other forms of non-tabular documentation. The files will be stored so they can be accessed via a OneDrive account or a similar centralized storage location.

Tetra Tech anticipates all photos generated using a digital data collection application will be downloaded directly from the Survey123 website and uploaded to OneDrive or a similar centralized storage location.

The files housed on OneDrive or a similar centralized storage location will be accessible from anywhere with internet access. Access to OneDrive or a similar storage location will be secured via password-credentialing Office365 or a VPN service.

8.0 DATA SECURITY CONSIDERATIONS

Data collected on site includes PII. PII is information that can be used to identify, contact, or locate a single person or identify an individual in context. PII includes names, phone numbers, and addresses of both adults and minors. Table 7 details PII data to be collected at the ETCA site and how this information will be protected.

Table 7: East Troy Contaminated Aquifer Site Data Security Measures

Example Data Containing PII	Where Data are Collected/Available	How Data are Protected
• Names (First and Last name of adults and/or minors at households) • Ages (Ages of adults and/or minors at households) • Phone Numbers (Contact information of households) • Addresses (Location information of households) • Access Agreements (includes names and participation status in site) • Photographs (Can include PII)	Mobile data collection on tablet computers	Password-protected tablet computers with automatic screen lock. Password-protected data collection applications with ability to remotely wipe device if lost or stolen.
	On-site server and personal computers	Site office will be locked at all times. Only approved personnel will be allowed key access. All personal computers require authorized user accounts and passwords. Remote access to servers is provided via secured VPN.
	Scribe.net subscriptions	Password-protected subscription service with log-in credentials provided by ERT.
	OneDrive	Password-protected service with access granted by EPA personnel
	Site-specific internal dashboard	Password protected log-in into EPA GeoPlatform.
	Site-specific public viewer (if necessary)	Sample results will be published in a street block fashion as to not link results with a specific address.

Notes:
ERT – Environmental Response Team
PII – Personally Identifiable Information
TBD – To be determined

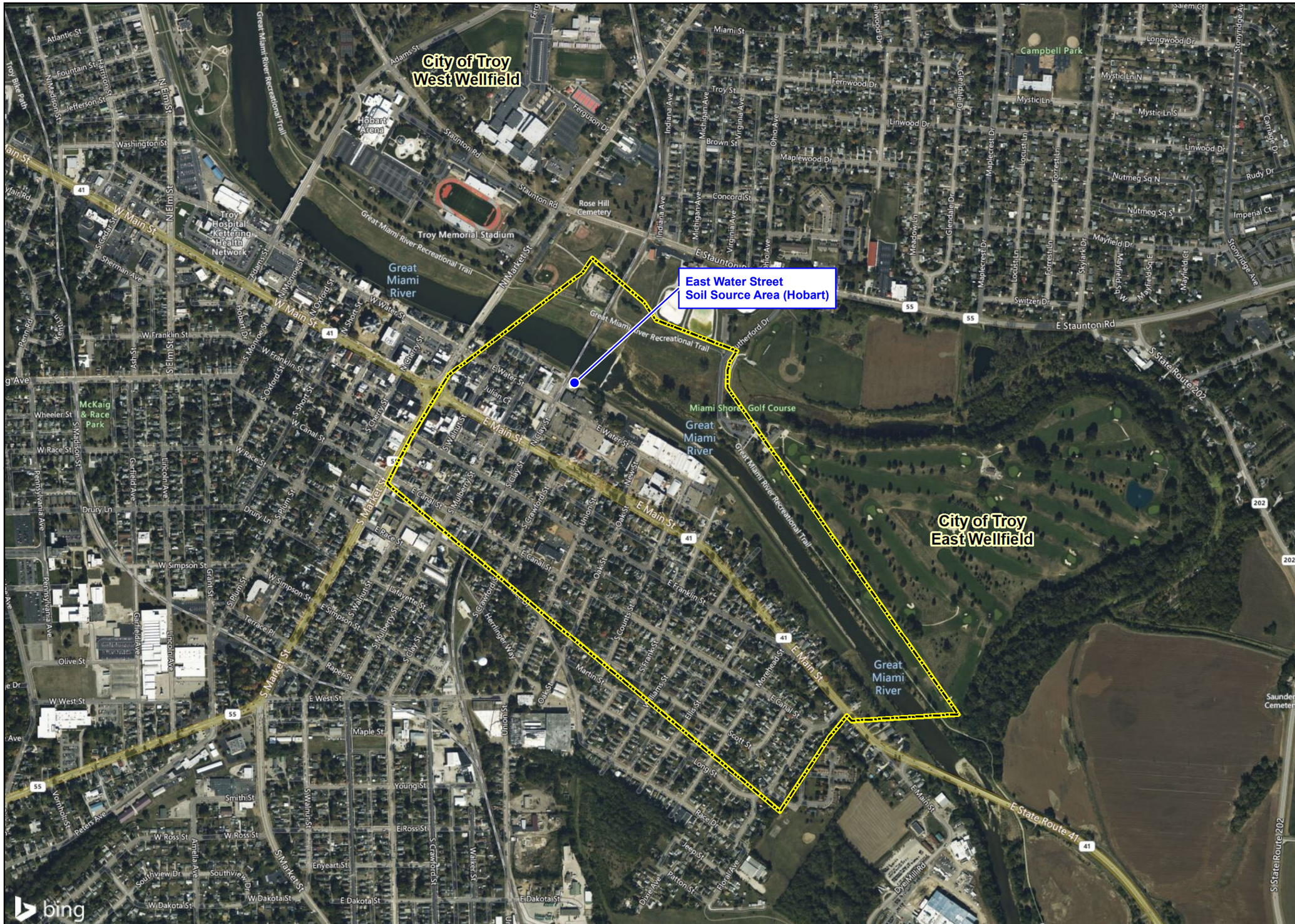
9.0 REFERENCES

Tetra Tech. 2021. Quality Assurance Project Plan for Remedial Design, East Troy Contaminated Aquifer Site." September 9.

U.S. Environmental Protection Agency (EPA). 2020. Region 5 Electronic Data Deliverable (EDD) Comprehensive Manual Version 4.3. October.

U.S. EPA. 2021. Scribe. US EPA Environmental Response Team. Accessed June 9. Retrieved from: https://response.epa.gov/site/site_profile.aspx?site_id=ScribeGIS

APPENDIX A
FIGURES



Legend

Remedial Investigation Study Area

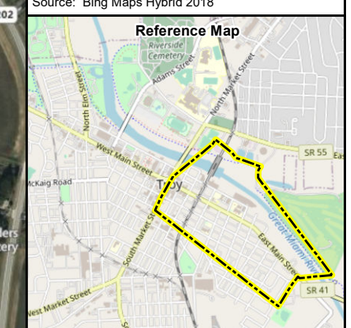
N

0 500 1,000

Feet

Source: Bing Maps Hybrid 2018

Reference Map



EAST TROY CONTAMINATED AQUIFER SITE
TROY, OHIO

FIGURE 1
SITE LOCATION MAP

TETRA TECH

6/14/2021 G:\G\103G6401001 East Troy\mxd\Fig1-SiteLocation.mxd

Legend

Estimated Area for Sub-slab Depressurization Systems

Total Chlorinated VOCs

- 5 (ppb)
- 100 (ppb)
- 500 (ppb)
- 1,000 (ppb)

ppb - Parts per billion
VOC - Volatile Organic Compound

N

0 200 400
Feet

EAST TROY CONTAMINATED AQUIFER SITE
TROY, OHIO

FIGURE 2
AREA CONSIDERED FOR VAPOR INTRUSION MITIGATION SYSTEMS

TETRA TECH

6/14/2021 G:\G\103G6401001 East Troy\mxd\Fig2-EstiamtedVIMitigationArea.mxd

Legend

- Phase I Soil Sample (May-June 2012)
- Phase II Soil Sample (February 2013)
- Additional Phase II Soil Sample (December 2013 and January 2014)
- Approximate Extent of Soil Exceeding Industrial Screening Levels
- Approximate Extent of Soil Exceeding Residential Screening Levels

Soil sample concentrations in micrograms per kilogram (µg/kg).

Sampling locations shown without associated analytical results indicate that samples were collected; however, all results were below site screening levels.

N

0 30 60
Feet

Notes:
1,1,2-TCA - 1,1,2-Trichloroethane
cis-1,2-DCE - cis-1,2-Dichloroethene
HOB - Hobart
J - Estimated value
PCE - Tetrachloroethene
SB - Soil Boring
SS - Surface Soil
STP - St. Patrick Parking Lot
TCE - Trichloroethene

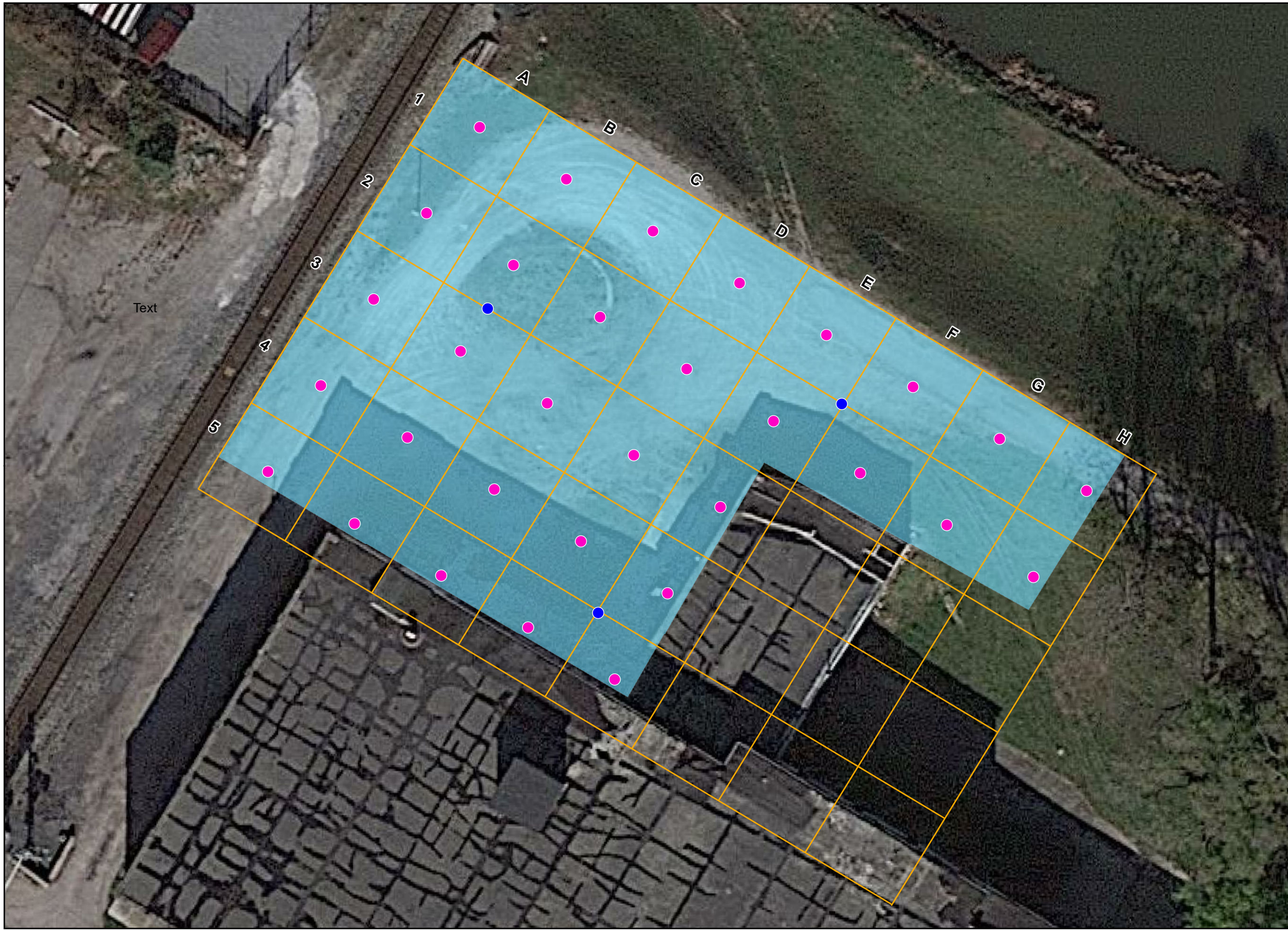
EAST TROY CONTAMINATED AQUIFER SITE
TROY, OHIO

FIGURE 3

HOBART AREA
SOIL SAMPLING RESULTS

TETRA TECH

Date Saved: 2/12/2015 5:47:25 PM User: dale.vonbusch Path: L:\CinciProjects\Troy\Remedial_Alt_Tech_Memo\MXDs\Phase_I_and_II_Soil_Hobart_021215.mxd



Legend

- Soil Sampling Locations for Tetrachloroethene and Trichloroethene Analysis
- Soil Sampling Locations for Waste Characterization and Geotechnical Analyses
- 25' x 25' Grid
- Estimated Area of Geophysical Survey

N

0 20 40
Feet

EAST TROY CONTAMINATED AQUIFER SITE
TROY, OHIO

FIGURE 4
PREDESIGN INVESTIGATION SAMPLING LOCATIONS

TETRA TECH

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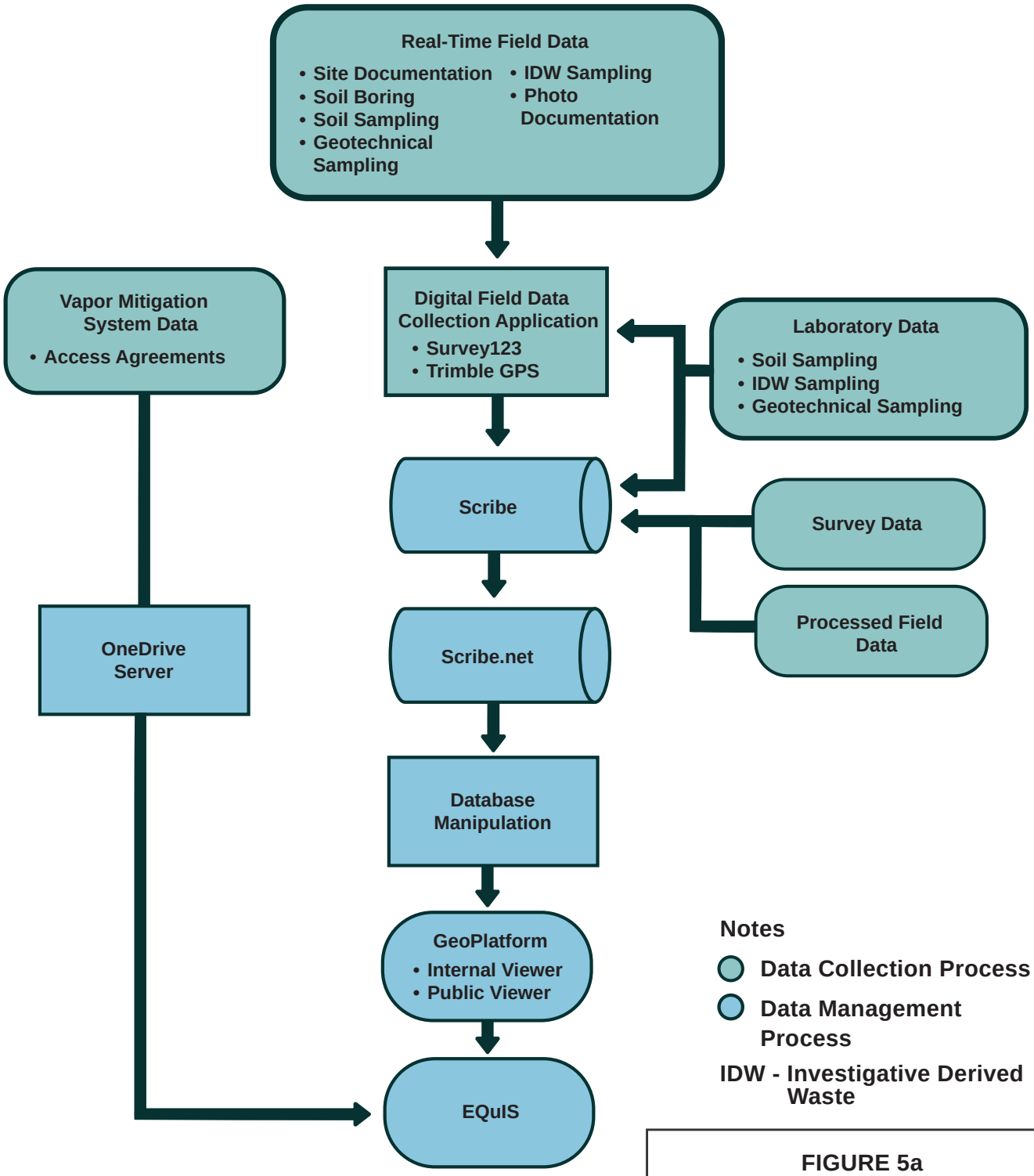


Notes

- Data Collection Process
- Data Management Process

IDW - Investigative Derived Waste

FIGURE 5a

DATA COLLECTION WORKFLOW DIAGRAM

EAST TROY CONTAMINATED AQUIFER SITE

TROY, MIAMI COUNTY, OHIO

TETRA TECH

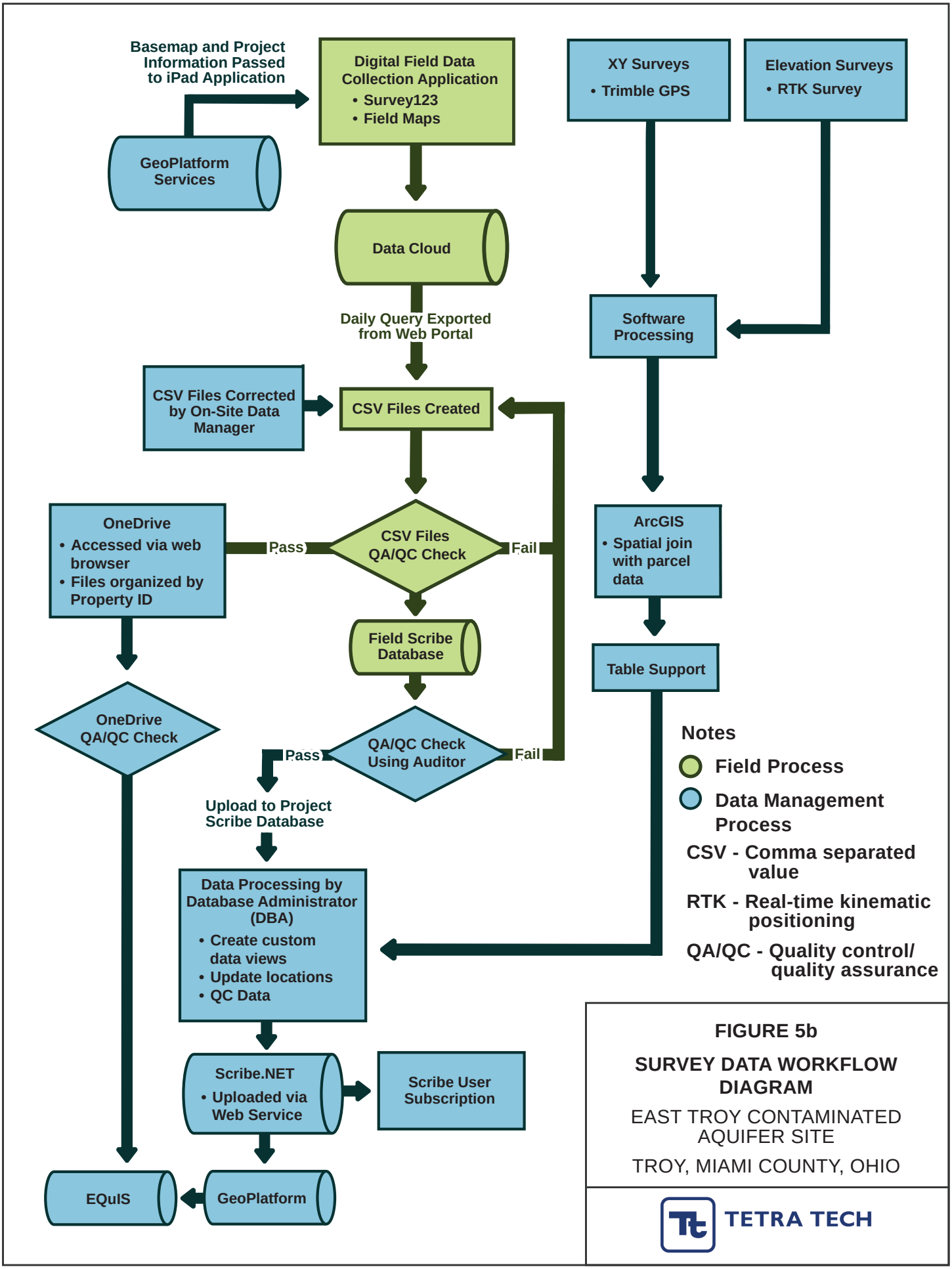


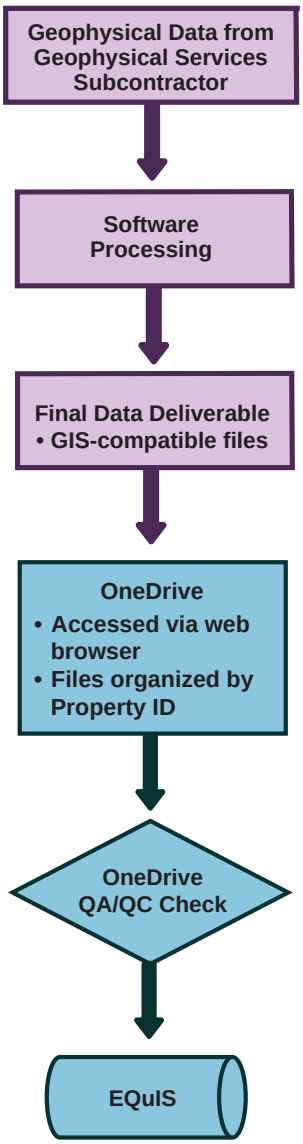
FIGURE 5b

SURVEY DATA WORKFLOW DIAGRAM

EAST TROY CONTAMINATED AQUIFER SITE

TROY, MIAMI COUNTY, OHIO

TETRA TECH



Notes

- Processed Field Data Process
- Data Management Process

FIGURE 5c

PROCESSED FIELD DATA WORK-FLOW DIAGRAM

EAST TROY CONTAMINATED AQUIFER SITE

TROY, MIAMI COUNTY, OHIO

TETRA TECH

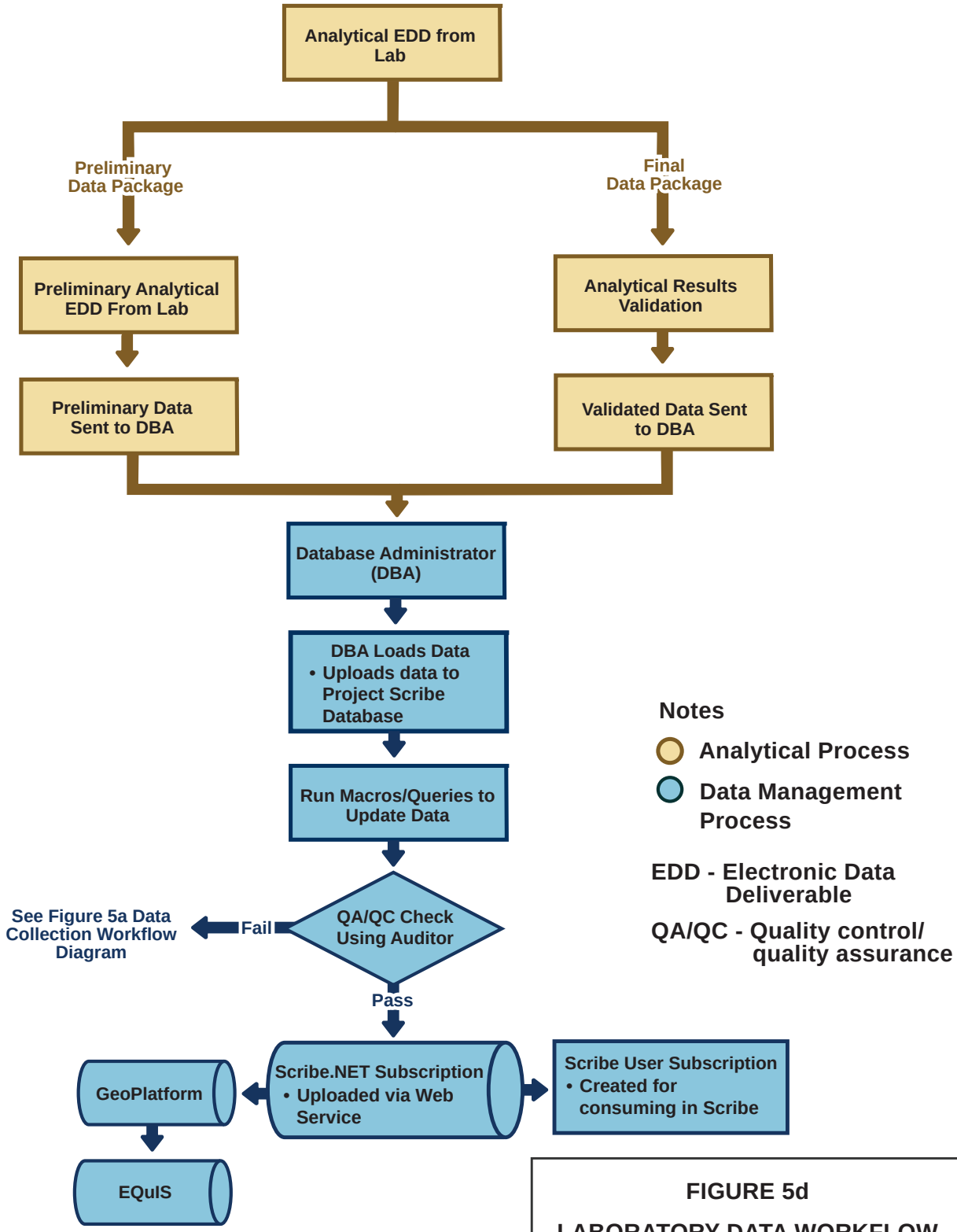


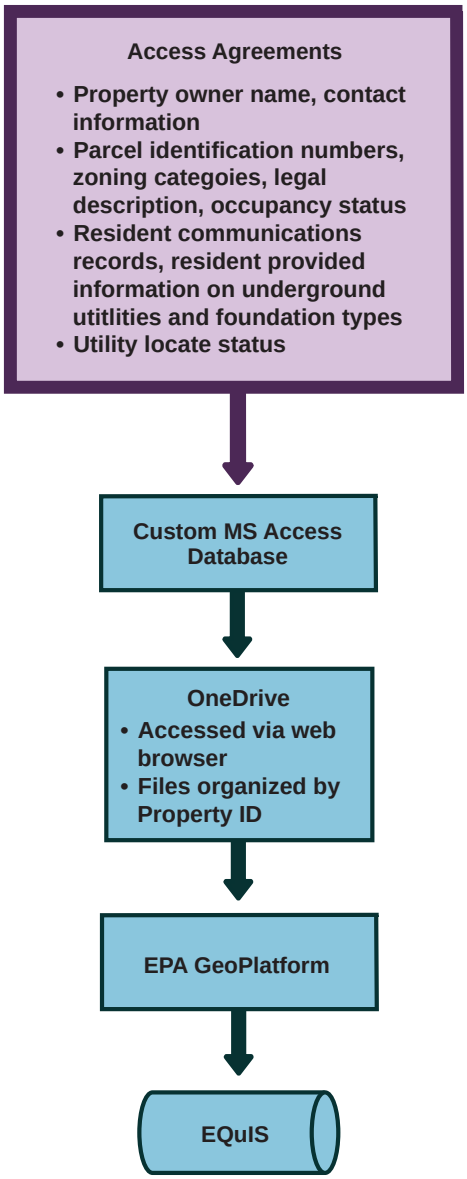
FIGURE 5d

LABORATORY DATA WORKFLOW DIAGRAM

EAST TROY CONTAMINATED AQUIFER SITE

TROY, MIAMI COUNTY, OHIO

TETRA TECH



Notes

- Access Agreement Data Process
- Data Management Process

FIGURE 5e

VAPOR MITIGATION SYSTEM DATA WORKFLOW DIAGRAM

EAST TROY CONTAMINATED AQUIFER SITE

TROY, MIAMI COUNTY, OHIO

TETRA TECH

ATTACHMENT 1
REGION 5 EQUIS REGIONAL GUIDANCE

EPA Region 5

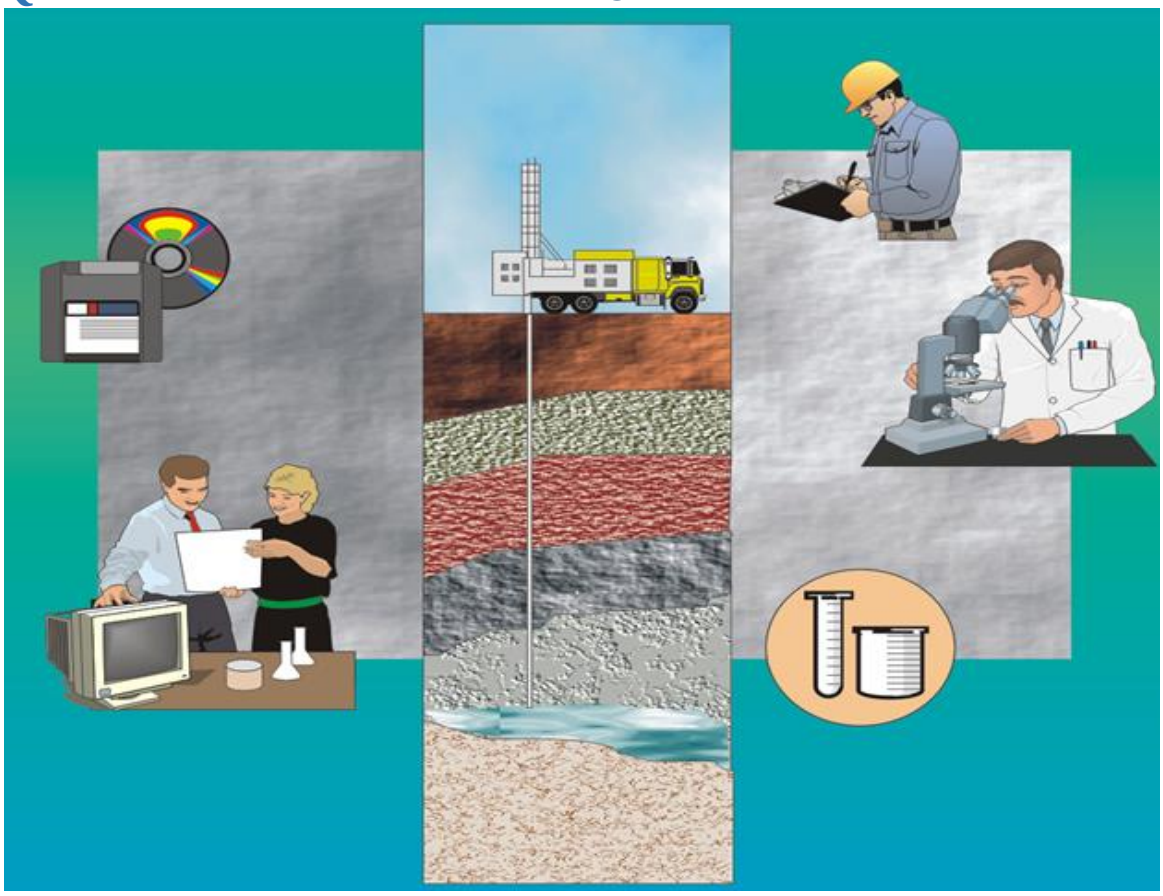
77 West Jackson Blvd. Chicago, IL 60604

Electronic Data Deliverable (EDD)

Comprehensive Manual Version 4.3

October, 2020

EQuIS Professional version 7 • EDD format version 3.0.17



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ACKNOWLEDGEMENTS

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EarthSoft Inc. developed the Electronic Data Processor (EDP) and reviewed the EDD format to assure its technical accuracy.

This documentation was reviewed and updated by Diann Cox-Tramel (Region 2), and John Canar, Region 5 and updated on January, 2020 to meet the standards and requirements of EPA Region 5.

DISCLAIMER OF ENDORSEMENT

Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government, and shall not be used for advertising or product endorsement purposes.

EXECUTIVE SUMMARY

The purpose of this specification manual is to provide detailed instructions on how to report environmental data electronically to the United States Environmental Protection Agency (EPA) Region 5. The types of data can be reported electronically include, for example, data generated during site characterization and investigation phases, data recorded when installing monitoring wells, and monitoring data that is routinely collected from a variety of media. This manual describes the procedural and formatting requirements you need to know to submit your Electronic Data Deliverable (EDD) to the EPA Region 5 Superfund Division.

This EDD Comprehensive Specification manual describes the requirements for reporting all **current** and **future** environmental data to EPA Region 5. EPA recognizes that some information about data collected in the past may not be readily available and, by reducing the requirements for electronic basic data, is endeavoring to strike a balance between minimizing the amount of effort involved in inputting information and maximizing the ability to document remedy progress. Environmental data collected and analyzed **prior** to the initial use of this EDD Comprehensive specification manual should be reported using the EPA Region 5 "Basic Manual for Historic Electronic Data". The reporting requirements of the "Basic Manual for Historic Electronic Data" are a subset of this comprehensive EDD Comprehensive specification manual.

The EPA Region 5 EDD is comprised of five groups: **Field, Lab, Basic, Vapor Intrusion and Facility.**

The first group of the EDD is the Field, which contains the data for the point of contact, site information, Locations, alternation Position for locations, Location Parameter, as well as drilling activities, lithology, well installation, well construction and well segment, geotechnical sample information, water levels, water table, downhole logging methods, Extraction and Injection wells, Soil Gas survey data, and a Sample Parameter. Those files are:

Field- the folloing **three** files can be submitted once unless there are new/ additional locations to the site

- Data Provider (named as "EPAR5DATAPROVIDER_v3" is the point of contact for EDD and file providing the information)
- Subfacility (named as "EPAR5SUBFACILITY_v3", which is the general information about the site)
- Location (named as "EPAR5LOC_v3", which is the information regarding the sampling locations)
  This time we added two optional sections below the EPAR5LOC_v3 section: EPAR5AlternatePosition_v3 and EPAR5LocParam_v3.
- Alternate position (named as "EPAR5AlternatePosition_v3", which is the alternate position of the sampling locations).
- Location Parameter (named as "EPAR5LOCPARAM_V3", which is the location parameter of the sampling locations).

The following files are included in the **Field section**, which contains the field data, please submit the data when they are available:

- Drilling Activity (named as "EPAR5DRA_v3", which is the information about drilling activities resulting form the soil borings.)
- Lithology (named as "EPAR5LTH_v3", which is the lithology information for the borings.)
- Well (named as "EPAR5EPAR5WEL_v3", which contains the monitoring well information related to well instruction)
- Well Construction (named as "EPAR5WSG_v3", which contains the well construction details and well segment data.)

- Geology Sample (named as “EPAR5GSMP_v3”, which contains the geotechnical sample information)
- Water Level (named as “EPAR5GWTR_v3”, which contains the information on water levels measured from the soil borings or wells.)
- Water Table (named as “EPAR5TBL_v3”, which contains the information pertaining the water table)
- Downhole Logging (named as “EPAR5DHP_v3”, which contains the data from downhole logging methods such as Cone Penetrometer Tests and geophysics.)
- Extraction and Injection Wells (named as “EPAR5EIW_v3”, which contains the data about extraction and Injection wells)
- Soil Gas (named as “EPAR5EPAR5SoilGas_v3”, which contains the imports soil gas survey data.)
- Sample Parameter (named as “EPAR5SAMPLEPARAM_v3”, which contains the samples information.)

In most cases, the vast majority of the electronic data submitted over the life of the project, and that will be submitted on a reoccurring, routine basis, will be lab data.

Lab

The Lab EDD files contain data related to chemistry field measurements, sample collection information, sample tests and result QC. The Lab EDD files are the:

- Sample (named as “EPAR5SMP_v3”, which contains the information about sample collection)
- Test Result (named as “EPAR5TRS_v3”, which contains the information concerning analytical tests and lab results performed on samples.)
- Test Result QC (named as “EPAR5TRSQC_v3”, which contains the information about the analytical test performed on samples with quality control data elements)
- Batch (named as “EPAR5BAT_v3”, which contains the data that related the individual samples to the batch identifier.)

Basic Submittals

The Basic EDD files contain historical operation and maintenance (O&M) data. The EDD files are the:

- Basic Location (named as “EPAR5_BasicLOC_v3”, which contains the information about sampling locations from historical data)
- Basic Water Level (named as “EPAR5_BasicWTR_v3”, which contains the information regarding groundwater level measurements)
- Basic Chemistry Sample (named as “EPAR5_BasicChem_v3”, which contains the information about sample collection)
- Basic Geology (named as “EPAR5_BasicGEO_v3”, which contains the information about geology data)

Vapor Intrusion

- Building Address (EPAR5_VI_BLDG_Address_v3)
- Building Inspection (EPAR5_VI_Bldg_Inspection_v3)
- Building Parameter (EPAR5_VI_Bldg_Parameter_v3)
- Vapor Intrusion Location (EPAR5_VI_LOCATIONS_V3)
- Vapor Intrusion Outdoor Locations (EPAR5_VI_Outdoor_Locations_v3)
- Vapor Intrusion Samples (EPAR5_VI_Samples_V3)
- Vapor Instrusion Test Results (EPAR5_VI_TestResultsQC_v3)
- Vapor Instrusion Batches (EPAR5_VI_Batches_v3)

Faciltiy

The facility data includes an electronic base map of the site property, one file containing general information about the site and about the point of contact for the EDD, and a file containing data pertaining to site sampling locations.

- Files (named as "Files_v3", which contains any supplementary information about site such as a base map, a cover letter about the data, data provider, or the site sampling information.)

Of the files listed above, the Lab and Field files that most data providers will submit will be the Well, Water Level, Extraction Injection Wells, Sample, Test/Result QC files. The Test Result with QC and Batch files will only be submitted in those rare cases where EPA requires QA/QC data in electronic format. The Extraction/Injection Well file will only need to be submitted for sites with extraction or injection wells.

The process for creating Field, Lab, and/or Facility EDDs are shown in Figures E-1 and E-2, respectively. The process begins by identifying the software tool that will be used. Many software tools, such as text editors, word processors, spreadsheets, and databases, are capable of creating EDDs. Because spreadsheets and databases are designed to enter and manage data, however, they are generally preferred for creating EDDs. The production of the data tables will normally be a collaborative effort between laboratories and environmental contractors. The laboratories will typically produce the test/result tables while the contractors normally will produce all of the other tables.

As shown in Figures E-1 and E-2, decision points are included in the EDD creation process to ensure that Field EDD files have been submitted for a site, as well as to prevent redundancy when getting ready to submit Lab EDDs. For example, one of the Field EDDs called the SUBFACILITY file, which contains data describing the site and site contact information, should generally only be reported once (unless, as previously noted, a change occurs). Similarly, another Field EDD file, the Location file, which contains locational data, typically only needs to be reported once. The only time a Location EDD file would be resubmitted is if **the data changed in some way**. For example, if settling occurs at a site over time, a resurvey of site monitoring wells may be warranted. If the survey results show changes in the elevations of the monitoring wells, the Location file would have to be resubmitted.

The final step before submitting an EDD to EPA Region 5 is to check it using the Electronic Data Processor (EDP) software application that is currently provided on the EPA Region 5 website (located at **https://www.epa.gov/superfund/region-5-superfund-electronic-data-submission**). This software application will identify any formatting errors in the files that must be corrected prior to submitting the EDD.

Figure E-1 Process flow diagram for the creation and checking of Field, and Lab EDD files

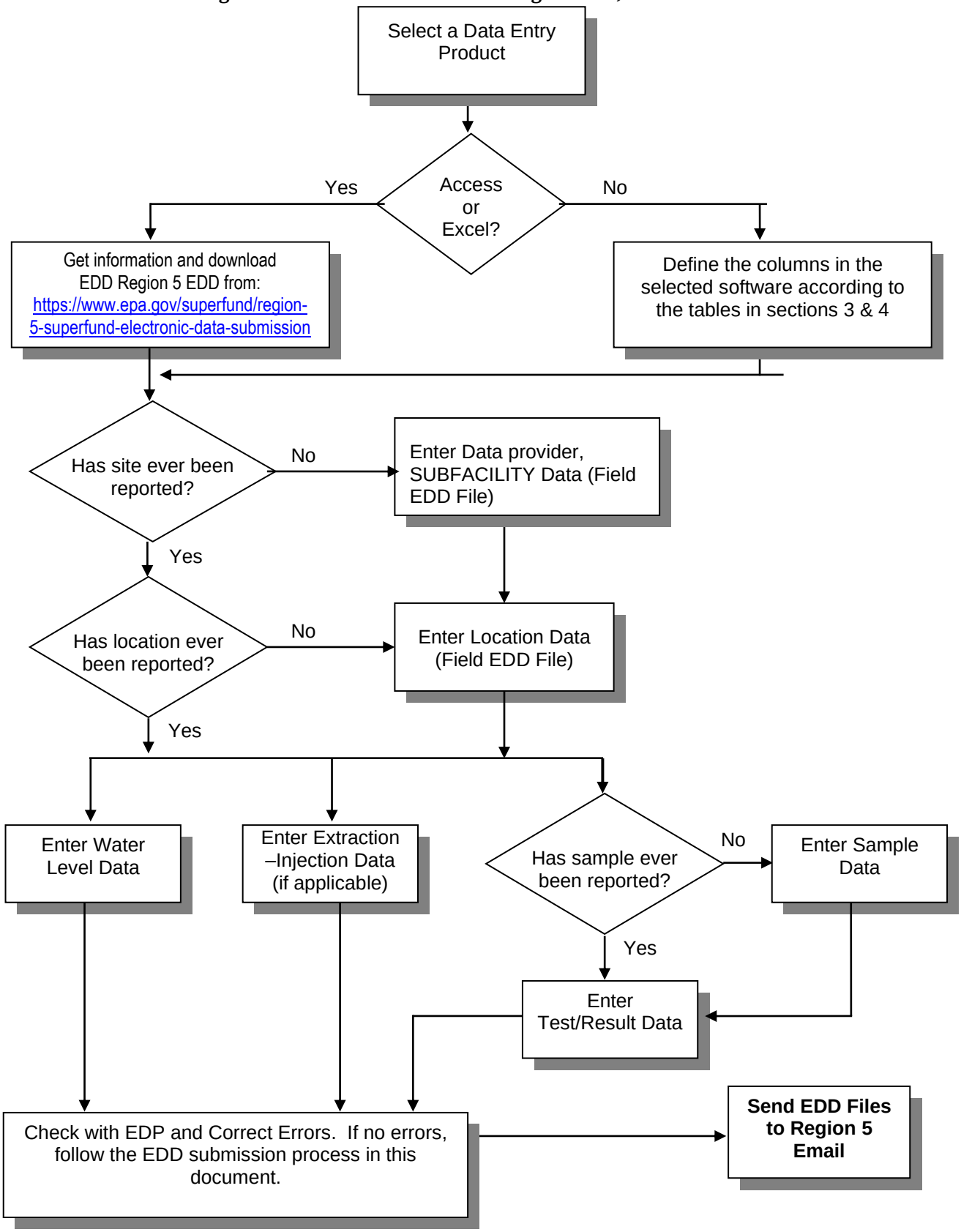

Figure E-2 Process flow diagram for the creation and checking of Field EDD files

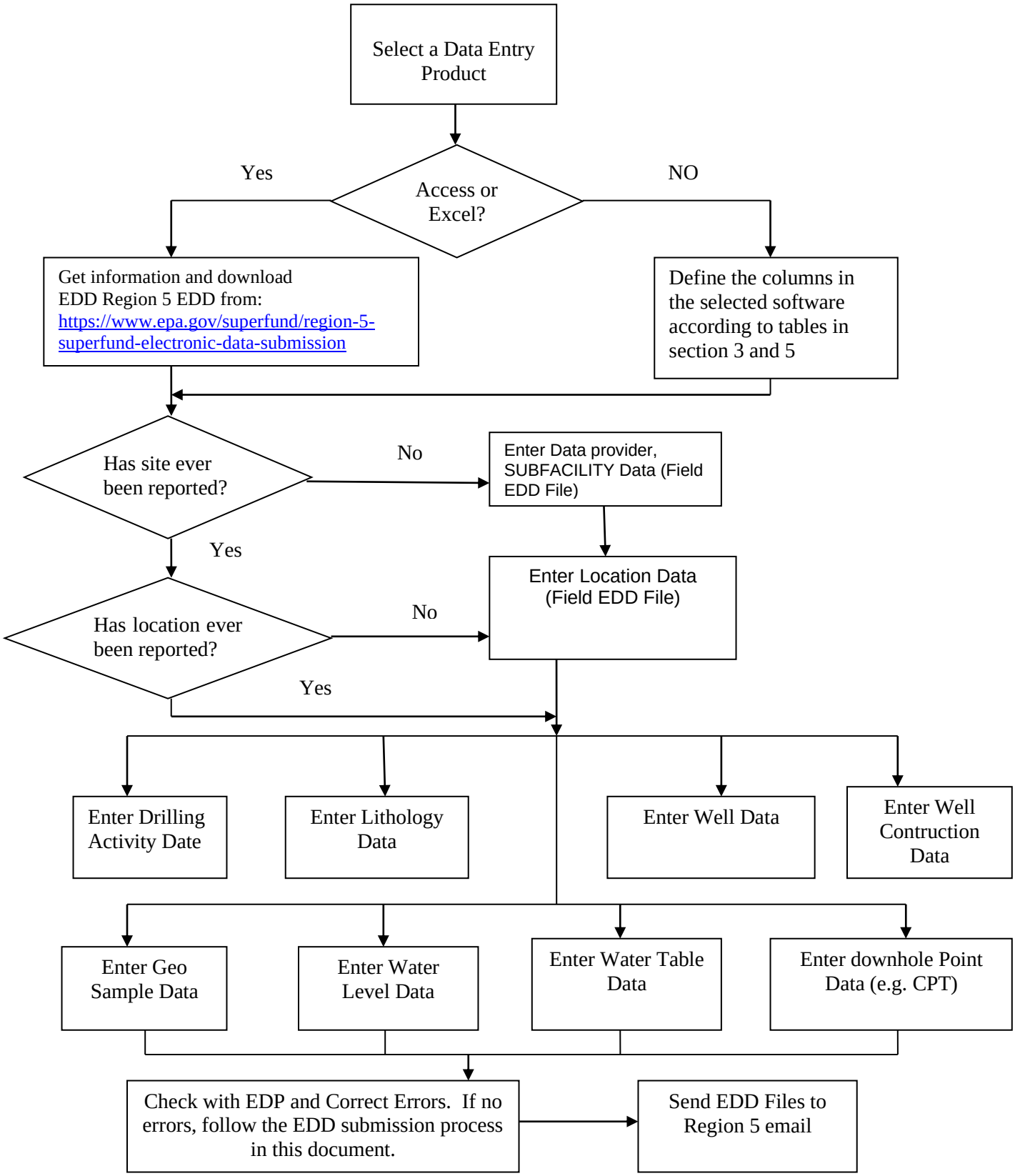

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TABLE OF CONTENTS

EXECUTIVE SUMMARY iii
1. INTRODUCTION TO THE EPA REGION 5 ELECTRONIC DATA DELIVERABLE (EDD) 1
2. GENERAL EDD REPORTING REQUIREMENTS 3
2.1 File Formats 3
2.2 Field Data Submittals 3
2.3 Lab Data Submittals 7
2.4 Vapor Intrusion 7
2.7 File Naming Convention 9
2.8 Data Integrity Rules 12
2.9 Definition of a Facility, Site, and Location 14
2.10 Reporting Null Values 14
2.11 Valid Values 15
2.12 Reporting Re-Tests 16
2.13 Reporting Non-Detects 16
2.14 Reporting Tentatively Identified Compounds 17
2.15 Data Types 17
2.16 Data Entry Tools Provided to Create the EDD Files 18
2.17 Using the Electronic Data Processor to Check EDD Formatting 20
2.18 Submitting Your EDD to EPA Region 5 20
2.19 Examples of Field, and Lab EDD Files 23
3. FORMATS FOR Facility Files and Field Files 30
3.1 Facility EDD Files 30
3.2. Field Files-DATAPROVIDER 31
3.3 SUBFACILITY EDD File 31
3.4 Location EDD File (EPAR5LOC_v3) 32
3.5 Alternate Position 37
3.6 Location Parameter 39
3.7 Drill Activity EDD File 40
3.8 Lithology EDD File 41
3.9 Well EDD File 42
3.10 Well Construction EDD File 44
3.11 Geology Samples EDD File 46
3.12 Water Levels 48
3.13 Water Table EDD Files 51
3.14 Geology Down Hole Point Data EDD File 53
3.15 Extraction – Injection Well (EPAR5EIW_v3) EDD File 53
3.16 Soil Gas Data EDD File 55
3.17 SAMPLE PARAMETER 56
4. FORMATS FOR LAB FILES 57
4.1 Lab Sample EDD File 57
4.2 Lab Test Results EDD Files 60
4.3 Lab Test/Result with QC Data EDD File 64
4.4 Lab Batch Data (EPAR5BAT_v3) EDD File 71
5. VAPOR INTRUSION 72
5.1 Vapor Intrusion Building Address EDD File 72
5.2 Vapor Intrusion Building EDD Files 73
5.3 Vapor Intrusion Building Parameters EDD File 75
5.4 Vapor Intrusion Locations EDD file 76
5.5 Vapor Intrusion Outdoor Locations EDD file 79

5.6 Vapor Intrusion Sample EDD file 79
5.7 Vapor Intrusion Test Result QC 82
5.8 Vapor Intrusion Batch EDD File 90
6. TECHNICAL SUPPORT 92

LIST OF TABLES

Table 2-1 General information on the files that comprise the first three files in the Field EDD section..... 3
Table 2-2 General information on the files that comprise the field files in the Field EDD section..... 5
Table 2-3 General information on the files that comprise the Chemistry EDD..... 7
Table 2-4 General information on the files that comprise the Vapor Intrusion EDD 8
Table 2-5 EDD File Naming Formats..... 11
Table 2-6 Examples of how to report null values 14
Table 2-7 Cross-reference between the valid value tables in appendix and the EDD files 15
Table 2-8 Example of reporting re-tests 16
Table 2-9 Example of reporting non-detects..... 17
Table 2-10 Example nomenclature for TIC reporting..... 17
Table 2-11 Data type descriptions 17
Table 2-12 Instructions for producing tab-delimited text files from some software packages..... 19
Table 3-1 Files (Files_v3) structure 30
Table 3-2 Data Provider (EPAR5DataProvider_v3) File Structure 31
Table 3-3 SUBFACILITY (EPAR5SUBFACILITY_v3) data file structure..... 32
Table 3-4 Location Data (EPAR5LOC_v3) File Structure..... 33
Table 3-5 Alternate Position (EPAR5AlternatePosition_v3) file data structure..... 37
Table 3-6 Location Parameter..... 39
Table 3-7 Drill activity (EPAR5DRA_v3) file data structure 40
Table 3-8 Lithology (EPAR5LTH_v3) file data structure..... 41
Table 3-9 Well (EPAR5WEL_v3) file data structure 42
Table 3-10 Well construction (EPAR5WSG_v3) file data structure 44
Table 3-11 Geology samples (EPAR5GSMP_v3) file data structure 46
Table 3-12 Water Level (EPAR5GWTR_v3) file data structure..... 49
Table 3-13 Water table (EPAR5TBL_v3) file data structure 52
Table 3-14 Geology Downhole Point (EPAR5DHP_v3) File Data Structure 53
Table 3.14a Example of downhole point data file 53
Table 3-15 Extraction-Injection Well (EPAR5EIW_v3) file data structure 54
Table 3-16 Soil Gas (EPAR5SoilGas_v3) Survey file data structure..... 55
Table 3-17 Sample Parameter (EPAR5SAMPLEPARAM_v3) Survey file data structure 56
Table 4-1 Lab sample (EPAR5SMP_v3) file data structure..... 57
Table 4-2 Lab Test Results (EPAR5TRS_v3) EDD file data structure 60
Table 4-3 Chemistry test/results with QC (EPAR5TRSQC_v3) data file structure 65
Table 4-4 Lab batch file (EPAR5BAT_v3) data structure..... 71
Table 5-1 Vapor Intrusion Building Address data structure 72
Table 5-2 Vapor Intrusion Building data structure 74
Table 5-3 Vapor Intrusion Building Parameters data structure 75
Table 5-4 Vapor Intrusion Location data structure..... 76
Table 5-5 Vapor Intrusion Outdoor Locations data structure 79
Table 5-6 Vapor Intrusion Samples data structure..... 79
Table 5-7 Vapor Intrusion Test Result QC file data structure 82
Table 5-8 Vapor Intrusion Batches file data structure 90

LIST OF FIGURES

Figure E-1 Process flow diagram for the creation and checking of Field, and Lab EDD files.....vi
Figure E-2 Process flow diagram for the creation and checking of Field EDD files.....vi

Figure 2-1 Relationships between Lab file data structures. 13
Figure 2-2 Facility component definitions 14
Figure 2-3. Example Field EDD ready for conversion to text file 23
Figure 2-4. Example Lab EDD ready for conversion to text file 23
Figure 2-5. Examples of QC data fields in a Chemistry EDD 24
Figure 2-5. Examples of QC data fields in a Chemistry EDD (continued) 26
Figure 2-6. Example Field EDD ready for conversion to text file 27
Extraction Injection Wells 29

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1. INTRODUCTION TO THE EPA REGION 5 ELECTRONIC DATA DELIVERABLE (EDD)

The EPA Region 5 Superfund Division has developed an electronic data management system to improve how environmental data from Superfund sites are acquired and managed. The system will accelerate the review of environmental data submittals, improve service to the regulated community, and enhance the protection of the environment and the public. A vital element in the electronic transfer of environmental data is the submittal of data in a standardized, "computer-friendly" format. The specifications and formatting requirements for the EPA Region 5 EDD were developed to facilitate the transfer of data from data providers to the EPA.

NOTE: This EDD Comprehensive Specification manual describes the requirements for reporting all **current** and **future** environmental data to EPA Region 5. Environmental data collected and analyzed **prior** to the initial use of this EDD specification manual should be reported using the EPA Region 5 "Basic Manual for Electronic Data". EPA recognizes that some information about data collected in the past may not be readily available and, by reducing the requirements for electronic historical data, is endeavoring to strike a balance between minimizing the amount of effort involved in inputting information and maximizing the ability to document remedy progress.

The EPA Region 5 EDD is in part based on standard EDDs used in applications developed by EarthSoft, Inc. However, the format is designed to be software-independent and easy to achieve. Any spreadsheet, database, or text editor can be used to create the EDD files. Examples of applications that can be used to create Region 5 EDDs include Access, FoxPro®, Excel, and Notepad.

Basically, the EDD is a series of files used to report data. For example, one file is used to report location data while another is used to report samples collected at a location. Multiple files are used to eliminate the need to report redundant data. For example, the data for a location (e.g., coordinates and elevations) are reported once in the location (EPAR5LOC_v3) file. Many years of sampling and analytical data may be reported for that location without having to submit the LOC file again.

This specification manual includes examples of EDD files populated with data. In addition, several EDD templates are currently available on the EPA Region 5 E-Data website (https://www.epa.gov/superfund/region-5-superfund-electronic-data-submission) for loading data into the EDD format. The website also contains a no-cost software program, the Electronic Data Processor (EDP) that needs to be used to check EDD files before they are submitted to EPA Region 5. The EDP is a single application that checks all EDD files and provides a much easier user interface for identifying and correcting errors.

This EDD Comprehensive Specification Manual discusses EDD submittals in three separate sections:

- General reporting requirements and submission process are discussed in Section 2.
- The Facility and Field file structures (i.e.data provider, subfacility, location, water level) are defined in Section 3.
- The Lab file structures are defined in Section 4. In most cases, lab data accounts for the majority of data that is reported.

Each file must be reported exactly as defined in these sections. Any deviations will result in loading errors.

EPA Region 5 expects all fields referred to as “Required”, “Not required” or “If available” to be filled in. If data for fields referred to as “If available” meaning the data can be reported when available, such as the result values and the unit. If users reported the result values, it is preferred to repor the unit as well. Data fields indicated as “Not required” meaning the fields are not required fields. These fields were only included so that other EPA regions or states could use the same EDD but have slightly different data type requirements.

Currently, EPA is working to finalize EDD requirements that would be national standards for Superfund data for all 10 EPA Regional offices. When this national Superfund EDD is finalized, data providers who have already begun submitting data according to the EPA Region 5 format will be given time to transition to any national format changes.

2. GENERAL EDD REPORTING REQUIREMENTS

2.1 File Formats

With the exception of the electronic base map, all data from the EPA Region 5 data providers must be reported as **text files**. Each data field must be separated either by tabs (tab-delimited) (indicated by the suffix "txt" on the file name) or comma-delimited (indicated by the suffix "csv" on the file name). One other option is to enclose each field in double quotation marks (") (indicated by the suffix "txt" on the file name). However, because using double quotation marks to delineate fields is typically more time consuming (unless the data are already in this format), it is anticipated that this method will not be widely used. Data fields containing no information should not be simply omitted. Instead they should be represented by the delimiter of choice, e.g., by two tabs in tab-delimited files or two commas in comma-delimited files (see example in Section 2.16). The maximum length of each text field is indicated in parentheses in the EDD tables shown in Sections 3 and 4. If the information is less than the maximum length, there is no need to add spaces to the record to ensure that all spaces are used. Maximum length requirements imply that the field can be no longer than the specified number of characters. However, it is completely acceptable to fill the field with fewer characters than the maximum number. Each record -- which is the term used for each line of information -- must be terminated with a carriage return/line feed (created by pressing the "Enter "key in a text editor).

2.2 Field Data Submittals

The Field data submittal consists of the initial data submittal and the field data including: Data Provider (DataProvider), Subfacility, and the Location (Location) file including facility center point in latitude longitude coordinate, and the field data including drilling activities, lithology, well installation, well construction and well segments, geotechnical sample information, water levels, water table, downhole logging methods, extraction and injections wells, and Soil gas survey data. The first three files in the Field submittals provide information pertaining to the site, the site EDD contact, and site sampling locations. These files generally only need to be submitted once at the beginning of the project. These files only need to be resubmitted if any changes occur. Examples of changes that would require resubmittal include changes in site contact information or location data that changes after being resurveyed. New sampling locations established after the initial Location file submittal will require a new submittal with data only pertaining to the new locations. Table 2-1 provides general information on the first three files in the Field EDD section, sometimes; data provider will submit a cover letter or base maps in the Files_v3 in the Facility secion. Table 2-2 provides general information on the field data files in the Field EDD section.

Table 2-1 General information on the files that comprise the first three files in the Field EDD section

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Data Provider	EPAR5DATAPROVIDER_v3.txt (or csv)	Data Provider	Information about the data provider	Data_Provider	Not applicable

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Subfacility (Section 3.3)	EPAR5SUBFACILITY_v3.txt (or csv)	Data provider	One-time definition of site including EPA Region 5 data providers' contact information.	Facility_code, subfacility_name, subfacility_task_code…etc	The location file cannot be loaded without properly referenced subfacility (facility_code).
Location (Section 3.4)	EPAR5LOC_v3.txt (or csv)	Data provider's surveyor	One entry for each location on a site including a facility center point. Contains elevation, coordinate and general locational data. Facility center point is required for the initial submittal. Data should only be reported once for a location.	sys_loc_code	Sample, water levels, field measurements, and extraction well data can only be reported for locations that are defined in this file.
Alternate Position	EPAR5AlternatePosition_v3	Data Provider's surveyor	The entries for the alternate coordinates from EPAR5LOC_v3 are moved to this section, and it is an optional section.	Sys_loc_code	
Location Parameter	EPAR5LOCPARAM_V3	Data Provider's surveyor	Location parameter entries, optional	Sys_loc_code	

Data provider, Subfacility, and location files are generally only need to be submitted once at the beginning of the project, along with the **Files_v3 file** in the **Facility** section.

File Type	File Name	Created by	Contents	What makes a row of data unique?	Dependence of other files on these data

File Type	File Name	Created by	Contents	What makes a row of data unique?	Dependence of other files on these data
File_v3	The site's base map in Lat/Long and the file format must be in .dxf or drawing (.dwg) or ArcGIS Shape files. Another file type can be documents or pdf, such as cover letter or any kind of documents.	Data provider	#1. Basemap of sites in (.dxf), drawing (.dwg), or ArcGIS Shape File. #2. Cover letter or any documents in .pdf or doc files	Not applicable	Not applicable.

Field EDD submittals contain data obtained during subsurface investigations at the site. When submitting the Field EDD, all field EDD files for which information is available should be submitted. The Field EDD includes files for Drilling Activity (EPAR5DRA_v3), lithology data (EPAR5LTH_v3), general well information (EPAR5EPAR5WEL_v3), well construction information (EPAR5WSG_v3), geology sample data (EPAR5GSMP_v3), general information about the water table (EPAR5GWTR_v3), Water Table (EPAR5TBL_v3), downhole logging methods point data (EPAR5DHP_v3), extraction and injection well (ExtractionInjectionWells), soil gas survey data (SoilGas). Unlike the Lab EDD, where submittals are typically submitted on a cyclic basis, in most cases the Geology EDD is submitted only once. Additional Geology EDDs are submitted only if new geology data are collected.

Sites reporting data from monitoring wells installed or from geology-related activities completed more than one year prior to the date of data submittal are not required to submit the Field EDD files – unless the monitoring wells are being used for operation and maintenance (O&M) monitoring. However, for all newly installed monitoring wells or current geology data collection efforts (i.e., within one year from the date of data submittal), data providers must submit all applicable Field files as detailed in Section 3.

Table 2-2 provides general information on the files that make up the field files in the Field EDD. Detailed instructions for creating the Field EDD files are provided in Section 3, "Formats for Field Files". Instructions for submitting your EDDs to EPA Region 5 are presented in Section 2.15.

Table 2-2 General information on the files that comprise the field files in the Field EDD section

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Drilling Activity (Section 3.5)	EPAR5DRA_v3.txt (or csv)	Data provider's geologist	General Information regarding soil borings.	sys_loc_code drill_event	None.
Lithology (Section 3.6)	EPAR5LTH_v3.txt (or csv)	Data provider's geologist	Lithology data for the borings.	sys_loc_code start_depth	None.

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Well (Section 3.7)	EPAR5WEL_v3. txt (or csv)	Data provider's geologist	General information regarding well installation.	sys_loc_code	Well construction and water level data can only be reported for wells that are defined in this file.
Well Construction (Section 3.8)	EPAR5WSG_v3.txt (or csv)	Data provider's geologist	Well construction details recorded during well construction and well segments.	sys_loc_code segment_type start_depth end_depth material_type_ code depth_unit	None.
Geology Samples (Section 3.9)	EPAR5GSMP_v3. txt (or csv)	Data provider's geologist or laboratory	Contains geotechnical sample information	Sys_loc_code, geo_sample_code	None.
Water Level (Section 3.10)	EPAR5GWTR_v3.tx t (or csv)	Data provider's field sampling team(s)	Contains water levels measured from he soil borings or wells	sys_loc_code measurement_date	None.
Water Table (Section 3.11)	EPAR5TBL_v3. txt (or csv)	Data provider's geologist	General information pertaining to water table.	sys_loc_code type	None.
Downhole Point (CPT) Data (Section 3.12)	EPAR5DHP_v3. txt (or csv)	Data provider's geologist	Results of all downhole logging such as CPT, resistivity, or other geophysical logs.	sys_loc_code depth param	None.
Extraction-Injection Well (Section 3.13)	EPAR5EIW_v3. Txt (or csv)	Data provider's field sampling team(s)	Data that relates to any extraction wells that are operating as part of the remedial action and injection wells.	sys_loc_code start_measurement_date end_measurement_date	None.
Soil Gas (Section 3.14)	EPAR5SoilGas_v3. Txt (or csv)	Data Provider's geologist	Results of information regarding the soil gas	sys_loc_code	None
Sample parameter	EPAR5SAMPLEPA RAM_V3	Data Provide's sampling team(s)	Define the sample parameter	Sys_sample_code	

2.3 Lab Data Submittals

Lab EDDs are submitted after each round of sampling and include the following types of files: chemistry sample information (EPAR5SMP_v3), Test Result (EPAR5TRS_v3), test/results with QC (EPAR5TRSQC_v3), batch information (EPAR5BAT_v3).

Table 2-3 provides general information on the files that make up the Lab EDD files. Detailed instructions for creating the Lab EDD files are provided in Section 4, "Formats for Lab EDD Files". Instructions for submitting your EDDs to EPA Region 5 are presented in Section 2.15.

Table 2-3 General information on the files that comprise the Chemistry EDD

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Sample (Section 4.1)	EPAR5SMP_v3. txt (or csv)	Data provider's field sampling team(s)	One row for each sample collected at the site.	sys_sample_code sample_matrix_code sample_type_code sample_source sample_date	Tests/results QC and batch data can only be reported for samples that are defined in this file.
Test Result (Section 4.2)	EPAR5TRS_v3.txt (or csv)	Data provider's field sampling team (s)	Contains data concerning analytical tests and results performed on samples.	Sys_sample_code Lab_anl_method_name Analysis_date	None
Test/ Result with QC Data (Section 4.3)	EPAR5TRSQC_v3.txt (or csv)	Data provider's contractor lab(s)	Test/Result file with additional fields for QC data.	sys_sample_code lab_anl_method_name analysis_date analysis_time total_or_dissolved test_type cas_rn	None.
Batch (Section 4.4)	EPAR5BAT_v3. txt (or csv)	Data provider's contractor lab(s)	Data that relate the individual samples to the batch identifier	sys_sample_code lab_anl_method_name analysis_date analysis_time total_or_dissolved test_type test_batch_type	None.

2.4 Vapor Intrusion

Test Result QC (VI_TestResultQC), and Batch (VI_Batch) data are only for Vapor Intrusion data. If the data is collected for Vapor Intrusion, then it is not required to submit the same Sample (Sample), Test Result QC (TestResultQC), and Batch (Batch) data in the Chemistry group. Table 2-4 provides general information on the Vapor Intrusion EDD files. Detailed instructions for creating the Vapor Intrusion EDD files are provided in Section 5, "Format for Vapro Intrusion Files".

Table 2-4 General information on the files that comprise the Vapor Intrusion EDD

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Vapor Intrusion Building Address	EPAR5_VI_Bldg_Address_v3	Data provider's Vapor Intrusion team (s)	Address and contact information for the building	Building_code Building_name	None
Building data	EPAR5_VI_Bldg_Inspection_v3	Data Provider's Vapor Intrusion team (s)	Building specific data	Building_code Building_name	None
Vapor Intrusion Task Parameters	EPAR5_VI_Bldg_Parameters_v3	Data Provider's Vapor Intrusion team (s)	Additional Sampling parameters collected in the field and not analized in the lab	Task_code Param_code	None
Vapor intrusion Locations	EPAR5_VI_Locations_v3	Data Provider's Vapor Intrusion team (s)	Sampling location data	Sys_loc_code	
Vapor intrusion Outdoor location	EPAR5_VI_outdoor_locations_v3	Data Provider's Vapor Intrusion team (s)	Outdoor location data	Sys_loc_code	
Vapor Intrusion Samples	EPAR5_VI_Samples_v3	Data Provider's Vapor Intrusion team (s)	Sampling Information for Vapor Intrusion	Data_provider Sys_loc_code Sys_sample_code Sample_matrix_code Task_code Sampling_company_code Sample_start_date	Tests/results QC and batch data can only be reported for samples that are defined in this file.
Vapor Intrusion Test Result QC	EPAR5_VI_TestResultsQC_v3	**Data Provider's Vapor Intrusion team (s)**	Test Result	Sys_sample_code Lab_anl_method_name Analysis_date Total_or_dissolved Column_number Test_type	None
Vapor Intrusion Batches	EPAR5_VI_BATCHES_V3	**Data Provider's Vapor Intrusion team (s)**	Batches	Sys_sample_code Lab_anl_method_name Analysis_date Total_or_dissolved Column_number Test_type Test_batch_type Test_batch_id	None

2.7 File Naming Convention

-Sign and Submit

After using the tools outlined above to resolve all of the issues in a set of Data Files the data is ready to be submitted for loading into the EQuIS 7 database. The Sign and Submit tool was designed to facilitate submittal of data to EQuIS Enterprise EDP. Sign and Submit option packages the data files with the correct naming convention which allows easy submittal of data packages. Use of the Sign and Submit feature requires a user name and password which can be obtained from the EPA Region 5 database administrator. Please email to canar.john@epa.gov for the information.

To use the "Sign and Submit" feature, after data files have been loaded and all of the errors have been resolved,

1. Select Sign and Submit from the Application Menu. This will open the Sign and Submit window.

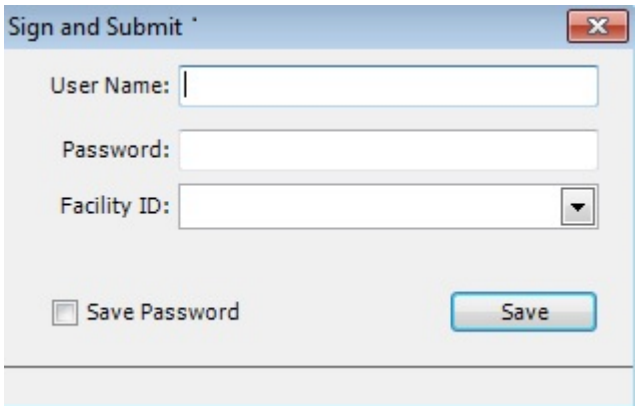


Figure 13: Sign and Submit Window

2. Enter your User Name and Password, and select the facility ID from the drop down that applies to the data package being submitted. If the Facilty ID does not exist, users can send a request to Region 5 contact to add it to the list.

3. Click the Save button, and verify if the facility you selected is corrected:

Figure 14: verify the facility

4. Click "Yes". Users will be prompted to provide a filename and location where you would like to save the file. The Sign and Submit feature will save an archived ("zipped") **file named with the current date, a period, the Facility ID, a period and the Format File name used to create the EDDs**. (Example file name: '20160811. MID000000001.EPAR5.zip'). The contents of the Zipped file include text files named for the sections of the format used to create them.

5. Select Save. Once the zipped EDD Package has been saved the following screen will appear.

Figure 15: saved the EDD file

6. Select OK

After the zipped file has been created the EDD Package is ready to be submitted to your regulator for loading into EQuIS Professional EDP or EQuIS Enterprise EDP.

-Each EDD file naming convention

Each file, except the base map file, must be named according to the following convention:

EDDFileFormat_v3.txt (or .csv)

This is the same file name as it is shown in th EPA Region 5 EDD fomat. The name of the site base map file should include the site name and EPAID and be saved in .dxf format.

Table 2-4 describes the naming formats and for the various Initial, Chemistry and Geology EDD files.

Table 2-5 EDD File Naming Formats

File Type	File Contents	EDD File Name	Submittal Type
Facility	File	Sitename.DXF, *.dwg, or shape files from ArcGIS, or Sitename.doc files from MS WORD for cover letters	Non-Recurring
Field	Data Provider	EPAR5DataProvider_v3.txt	Initial
Field	Subfacility	EPAR5Subfacility_v3.txt	Initial
Field	Location	EPAR5LOC_v3.txt	Initial
Field	Drill Activity	EPAR5DRA_v3.txt	Non-Recurring
Field	Lithology	EPAR5LTH_v3.txt	Non-Recurring
Field	Well	Wel_v3.txt	Non-Recurring
Field	Well Construction	EPAR5WSG_v3.txt	Non-Recurring
Field	Geotechnical Sample	EPAR5GSMP_v3.txt	Non-Recurring
Field	Water Level	EPAR5GWTR_v3.txt	Recurring
Field	Water Table	EPAR5TBL_v3.txt	Non-Recurring
Field	Down Hole Point (CPT) Data	EPAR5DHP_v3.txt	Non-Recurring
Field	Extraction – Injection Well	EPAR5EIW_v3.txt	Recurring
Field	Soil Gas Data	EPAR5SoilGas_v3.txt	Non Recurring
Lab	Sample	EPAR5SMP_v3.txt	Recurring
Lab	Test Result	EPAR5TRS_v3.txt	Recurring
Lab	Test/Results QC	EPAR5TRSQC_v3.txt	Recurring
Lab	Batch	EPAR5BAT_v3.txt	Recurring
Vapor Intrusion	VI Bldg address	EPAR5_VI_BLDG_ADDRESS_V3	Non Recurring
Vapor Intrusion	VI Bldg Inspection	EPAR5_VI_BLDG_INSPETION_V3	Non Recurring
Vapor Intrusion	VI Bldg Parameters	EPAR5_VI_BLDG_PARAMETERS_V3	Non Recurring
Vapor Intrusion	VI Locations	EPAR5_VI_LOCATIONS_V3	Non Recurring
Vapor Intrusion	VI Outdoor Locations	EPAR5_VI_OUTDOOR_LOCATIONS_V3	Non Recurring
Vapor Intrusion	VI Samples	EPAR5_VI_SAMPLES_V3	Non Recurring

Table 2-5 EDD File Naming Formats

File Type	File Contents	EDD File Name	Submittal Type
Vapor Intrusion	VI Test Results QC	EPAR5_VI_TestResultsQC_v3	Non Recurring
Vapor Intrusion	VI Batches	EPAR5_VI_Batches_v3	Non Recurring

2.8 Data Integrity Rules

Data providers are responsible for running three types of integrity checks on their data.

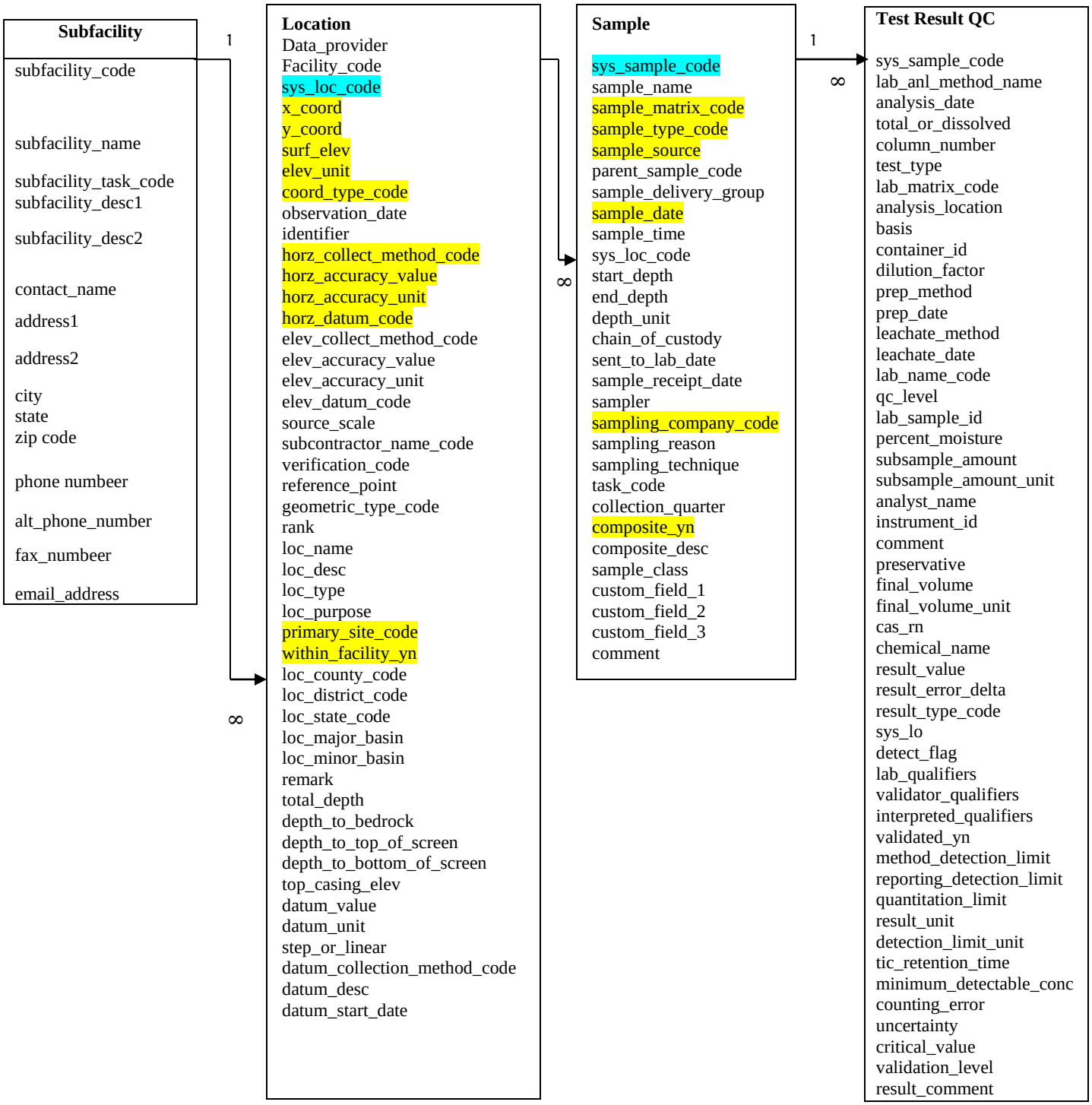
- **Validity:** All codes used in a data set must be valid. Valid values for all coded fields are either provided in the description columns of the tables in Sections 3, and 4 or in the tables in the Appendix of this manual. For example, sample matrix information is inputted in the sample_matrix_code field of the sample file and must be reported using one of the values provided in Table A-1 in the Appendix.

- **Row Uniqueness:** Row uniqueness must be verified using the guidance provided in Tables 2-1, 2-2, and 2-3. Row uniqueness is assured when no two rows in a file contain the same values for all the fields listed under the heading "What makes a row of data unique?" In database terminology this is called a primary key. For example, no two rows in the sample file can contain the same sys_sample_code (commonly called a sample identifier). In addition, no two rows ever reported for a single site can contain the same sys_sample_code. Each sys_sample_code must be unique for a site.

  Files that have a primary key consisting of multiple fields, such as the water level file, must have a different value in at least one of the prmary key fields. For example, no two rows in the water level file can have the same sys_loc_code, measurement_date. For example, two rows with sys_loc_code of "SB-01", measurement_date of "05/02/2000 00:00:00" would violate row uniqueness. However, row uniqueness would not be violated if one row had a sys_loc_code of "SB-01", measurement_date of "05/02/2000 00:00:00" and the other row had sys_loc_code of "SB-01", measurement_date of "06/12/2000 00:00:00".

- **Row Integrity:** The relationship between rows within the files of the EDD must be assured by enforcing the "referential integrity" rules discussed in Tables 2-1, 2-2, and 2-3 under the column labeled "Dependence of other files on these data." For example, the values in the sys_sample_code field in the Test/Result file must match with the corresponding fields in the Sample file. Logical relationships between the various Lab EDD files are shown in Figure 2-1. The lines connecting the files show which column(s) (or field(s)) are related in the two files. The file on the side with the "1" at the end of the connecting line contains one row that is related to more than one row in the related file on the other side. For example, one row in a SUBFACILTY EDD file may correspond to many rows in a LOCATION EDD file because there are always more than one, and in most cases many locations, designated at a site. The logical relationship between the FIELD EDD files is limited to the requirement that all entries in the sys_loc_code fields appear in the LOCATION EDD file.

Figure 2-1 Relationships between Lab file data structures.

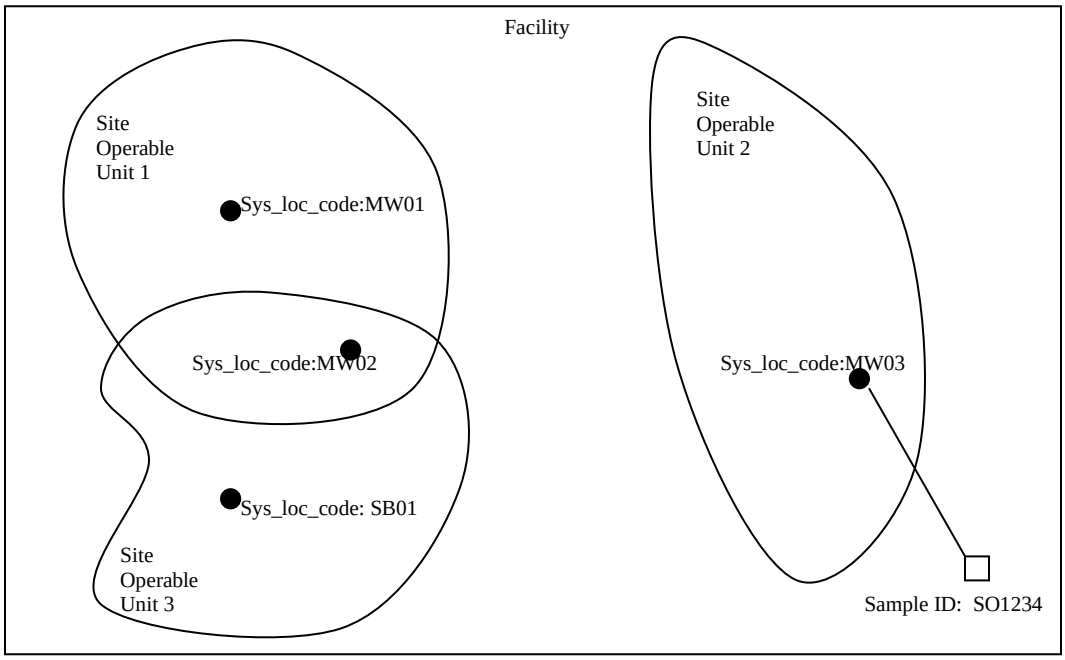


Shaded fields are required to have data. Blue fields define row uniqueness for the specified file.

2.9 Definition of a Facility, Site, and Location

To submit and error-free EDD, it is important to understand how EPA Region 5 defines facility, site, and location for the purposes of this EDD Specification Manual. Each facility (facility_id) will be identified with its EPA ID number (see Table A-22 in the Appendix.) As EPA requirement, a facility center point must be populated with the latitude and longitude centroid of the facility (*). The site (site_code) will be the operable unit identifier. There will always be at least one operable unit per facility. The way the location term is used is that each site can contain one or more locations, as long as they are distinct points defined by X and Y universal transverse Mercator (UTM) coordinates Examples of locations include soil borings, monitoring wells, and sampling locations. Each location identifier (sys_loc_code) must be unique for a facility.
Figure 2-2 provides a diagram of the facility components.

Figure 2-2 Facility component definitions



Facility ID = EPA ID #
Site = Site Operable Unit = site_code *Must be unique at a Facility*
Location= sample location = sys_loc_code Must *be unique at a Facility*

2.10 Reporting Null Values

When a field is not listed as required in Sections 3, and 4 and the data is not available or applicable, a null or blank may be appropriate. However, tabs or commas must still delimit the blank value. In other words, the number of fields is always the same, whether or not the fields include data. So a blank field in a tab-delimited file would appear as "<TAB><TAB>" and a blank field in a comma-delimited file would appear as ",,".Table 2-5 shows a number of examples.

Table 2-6 Examples of how to report null values

Example	Comment
"data_one"<tab>"data_two" <tab>"data_three" "data_one","data_two","data_three"	**O.K.** All fields populated, one tab or comma between fields.

Table 2-6 Examples of how to report null values

Example	Comment
"data_one" <tab><tab>"data_three" "data_one",,"data_three"	**O.K.** Optional field not populated, 2 tabs or 2 commas between first and third field.
"data_one" <tab>"data_three" "data_one","data_three"	**Not O.K**. Optional field omitted, only 1 tab or comma between first and third field.

2.11 Valid Values

Valid values, also known as reference values or code lists, govern the contents of some fields in the EDDs. In other words, some fields may only be populated with data that matches a value listed in the EPA Region 5 list of valid values. The lists of valid values are provided in the "Valid Values Table Reference Manual". A list of all the data fields that must contain valid values is presented in Table 2-6 (below). This list is also cross-referenced to the EDD file(s) the field appears in. If data providers need to enter a value not already in the Region 5 list in the Appendix, they can request the proposed addition to the valid value list in the EDD cover letter. The data provider should explicitly state the valid value that she/he would like added, provide a description of the value, and explain why the addition is necessary. In the case of requesting a new aboratory code, the data provider should include the full name of the laboratory and its address. When requesting an addition of an analyte, the data provider must include the appropriate CAS number or ERPMS code along with a description of the analyte.

Table 2-7 Cross-reference between the valid value tables in appendix and the EDD files

Valid Value Table Name	Table Number	Field Name	EDD File
Matrix	A-1	sample_matrix_code, lab_matrix_code	Chemistry Samples, Test/Results
Geometric type	A-2	Geometric_type_code	Location
Horizontal Collection Method	A-3	horz_collection_method_code	Location
Horizontal Accuracy Unit	A-4	horz_accuracy_unit	Location
Horizontal Datum	A-5	horz_datum_code	Location
Elevation Collection Method	A-6	elev_collect_method_code	Location
Elevation Datum	A-7	elev_datum_code	Location
Material	A-8	Material_type	Basic Geology
Location Type	A-9	loc_type	Location
Qualifier	A-10	lab_qualifiers, validator_qualifiers	Test/Results
Result Type	A-11	result_type_code	Test/Results
Sample Type	A-12	sample_type_code	Chemistry Samples
Geologic Unit	A-13	Geologic_unit_code	Geotechnical Samples
Standard Preparation Method	A-14	lab_prep_meth	Test/Results
Analyte	A-15	cas_rn, chemical_name	Test/Results
Lab Analysis Method Name	A-16	lab_anl_method_name	Test/ Results

Valid Value Table Name	Table Number	Field Name	EDD File
Laboratory	A-17	lab_name_code	Test/Results
Unit	A-18	various_unit fields throughout all files	All Files
Geology Soil Materials	A-19	material_type	Lithology, Geology Samples
Well Segment and Materials	A-20	segment_type, material_type_code	Well Construction
Hydrologic Unit Codes (HUC)-Basin	A-21	loc_major_basin	Location
EPA Facility IDs	A-22	facility_id, site_name	Site
Company code	A-23	Data_provider	Location, Sample, Test Result, Data Provider
Total or dissolved	A-24	Total_or_dissolved	Test Result, Test Result QC, Batch
Test Type	A-25	Test_type	Test Result, Test Result QC, Batch
Test Batch Type	A-26	Test_batch_type	Batch
Reference Point	A-31	reference_point	Location
Source_scale	A-32	Source_scale	Location

2.12 Reporting Re-Tests

For initial tests, all analytes should be reported. In the case where retests are performed on a sample, the result that is considered the reportable result should indicate a “Y” (for “yes”) in the reportable_result field. The initial test, and any retest result not considered reportable will have reportable_result set to "No". Table 2-7 provides examples of reporting re-tests.

Table 2-8 Example of reporting re-tests

Test Type	Chem Name	Cas rn	Result Value	Detect Flag	Lab Qualifiers	Reportable Result	Result_Comment
Initial	Benzene	71-43-2	1000	Y	E	No	too concentrated to quantitate
Initial	Toluene	108-88-3	5	N	U	Yes	not detected
Initial	Xylenes	1330-20-7	5	N	U	Yes	not detected
dilution1	Benzene	71-43-2	780	Y		Yes	Quantitated

2.13 Reporting Non-Detects

Non-detects must be reported as shown in the example below. Each non-detect row must show an “N” in the detect_flag field, must have an actual value entered in the reporting_detection_limit and detection_limit_unit fields, and must contain a null in the result_value_field. The reporting_detection_limit cannot be negative unless one of the radiological fields (including minimum_detectable_conc, counting_error, uncertainty, critical_value) are populated. Table 2-8 presents examples of how to report non-detects.

Table 2-9 Example of reporting non-detects

Cas rn	Result Value	Detect Flag	Reporting Detection Limit	Detection Limit Unit	Result_comment	Laboratory_ qualifiers
108-88-3	.15	Y	.005	ug/ml		U
108-88-3		N	.005	ug/ml	not detected	U

2.14 Reporting Tentatively Identified Compounds

Tentatively Identified Compounds (TICs) should be reported when available. The naming of TICs should be applied in a cascade fashion. The TIC should be identified to analyte name if possible. If this is not possible, then the class of the TIC should be entered. If neither an analyte name nor a class can be identified, the TIC should be identified as Unknown. The EPA Region 5 EDD only allows for reporting up to 10 TICs. Only the 10 most concentrated or most relevant TICs should be reported. Table 2-9 shows examples of the nomenclature for TICs. As an example, if a sample has three Unknown Hydrocarbons, then the TICs are labeled UnkHydrocarb1, UnkHydrocarb2, and UnkHydrocarb3. TIC names are to be reported in the cas_rn field, Pos #31, of the Test/Result file (Tables 4-3 and Table 4-4). In addition, the result_type_code, Pos # 35 in the Test/Result file should have "TIC" for all TIC records.

Table 2-10 Example nomenclature for TIC reporting

TIC Name	Number for TIC	Reported Name in cas_rn
Unknown	1-10	Unknown1 – Unknown10
Unknown Hydrocarbon	1-10	UnkHydrocarb1 - UnkHydrocarb10
Unknown PAHs	1-10	UnkPAH1 - UnkPAH10
Unknown Aromatics	1-10	UnkAromatic1 - UnkAromatic10
Unknown VOA	1-10	UnkVOA1 - UnkVOA10
Unknown SV	1-10	UnkSV1 - UnkSV10

2.15 Data Types

The table below describes the data types used in the chemistry and geology file descriptions. In addition to the types listed below, certain fields have single and double data types. The single data type stores numbers from -3.402823×10^{38} to $-1.401298 \times 10^{-45}$ for negative values and from 1.401298×10^{45} to 3.402823×10^{38} for positive values, with a decimal precision of up to 7 digits. The double data type stores numbers from $-1.79769313486231 \times 10^{308}$ to $-4.94065645841247 \times 10^{-324}$ for negative values and from $1.79769313486231 \times 10^{308}$ to $4.94065645841247 \times 10^{-324}$ for positive values, with a decimal precision of up to 15 digits.

Table 2-11 Data type descriptions

Type	Description	Decimal Precision	Comments
Integer	Stores numbers from –32,768 to 32,767 (no fractions).	None	
'Y' or 'N'	Boolean field used to indicate yes or no to a question. Enter either Y or N.	NA	
Time	Time in 24-hr (military) HH:MM:SS format.	NA	Text (8) is standard length for time.
Date	Date format is MM/DD/YYYY.	NA	

Type	Description	Decimal Precision	Comments
Text	Stores characters and numbers.	NA	Length restrictions are indicated in parentheses.

2.16 Data Entry Tools Provided to Create the EDD Files

EDD files can be produced using any software with the capability to create text files. These files are especially easy to create using spreadsheet or database software packages. However, if these are unavailable, the files can be created using a word processor or text editor. Table 2-12 provides instructions for creating tab-delimited text files from some widely-used software packages.

Table 2-12 Instructions for producing tab-delimited text files from some software packages

Package	Type	Instructions
Access	Database	1. Create tables using file structures in Sections 3 and 4. 2. After data are entered, close table. 3. Click on table name (under table tab) and then select "File," "Save As," from the top menu. Save to an external file or database. Change "Save as Type" to a text file. Change the file extension from "txt" to "tab." Press OK. This will start the export wizard. 4. In the export wizard, select "Delimited," then press the "Next" button. Select "Tab" as the delimiter type and " as the text qualifier. Press the "Next" button. Select a destination and name for the file. Press the "Finish" button.
Excel	Spreadsheet	1. Select "File," "Save As," from the top menu. Change "Save as Type" to a "Text (Tab Delimited)" file. Press the "Save" button.
Quattro® v8	Spreadsheet	1. Select "File," "Save As," from the top menu. Change the "File Type" to "ASCII Text (Tab Delimited)." Press the "Save Button."
Word	Word Processor	[Note: A word processor is not the best tool for the job! A large paper size will have to be selected to prevent wrapping for most files.] [wrapping?] 1. Enter data into a table in Word. Any text entered must be contained within double quotes. 2. Select "Table," "Select Table," from the top menu. When the table is highlighted, select "Table," "Convert to Text," "Separate Text with Tabs." 3. Select "File," "Save As," from the top menu. Change "Save as Type" to "MS DOS Text (*.txt).
Lotus 1-2-3	Spreadsheet	1. Select "File," "Save As," from the top menu. Change "Save as Type" to a "Comma Separated Value (CSV)" file. Provide file name. Press the "Save" button.

2.17 Using the Electronic Data Processor to Check EDD Formatting

The Electronic Data Processor (EDP) can be used by Data Providers to check EDD files prior to submittal to EPA Region 5. The EDP is a no-cost application that performs a series of formatting checks on the files and then identifies any records that have errors along with a description of the errors. This allows the Data Provider to correct the errors before sending the files to EPA Region 5. EDD files that pass through the EDP error-free should also result in error-free import at EPA Region 5.

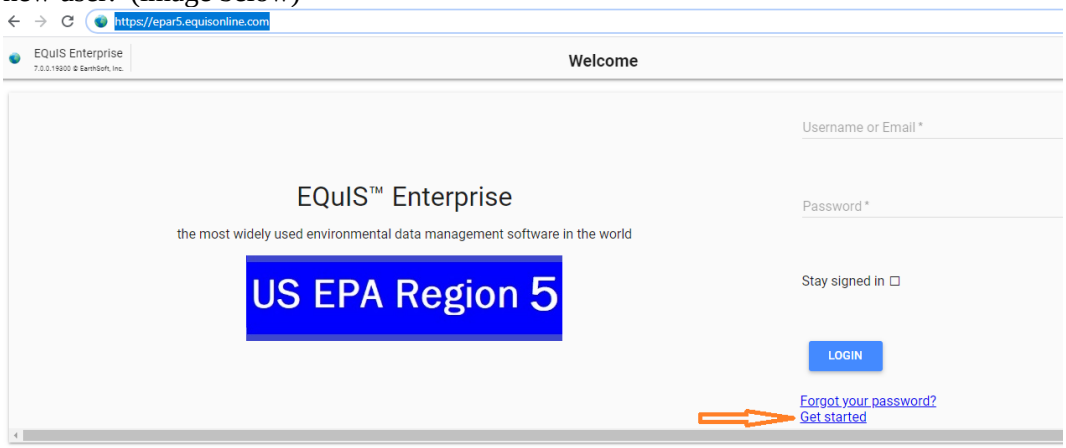
EDP is currently available as a no-cost download from the EPA Region 5 website located at at https://www.epa.gov/superfund/region-5-superfund-electronic-data-submission. Instructions on how to install and use the EDP are also provided on the website.

2.18 Submitting Your EDD to EPA Region 5

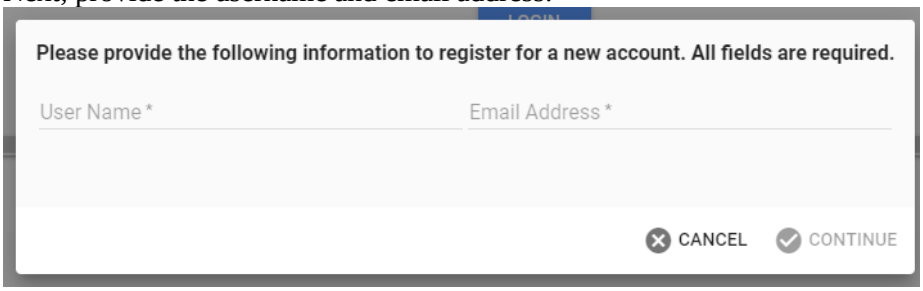
Each EDD must be checked using the EDP and the most updated EDD format before submitting to EPA Region 5. Please follow the three steps below to submit your EDD data:

Got to EQuIS enterprise to set up your own username and password:
In order to use the **Sign and Submit** process in the EDP to create a EDD zip data package, you need to go to EQuIS Enterprise https://epar5.equisonline.com/ , then follow the steps below to set up your username and password:

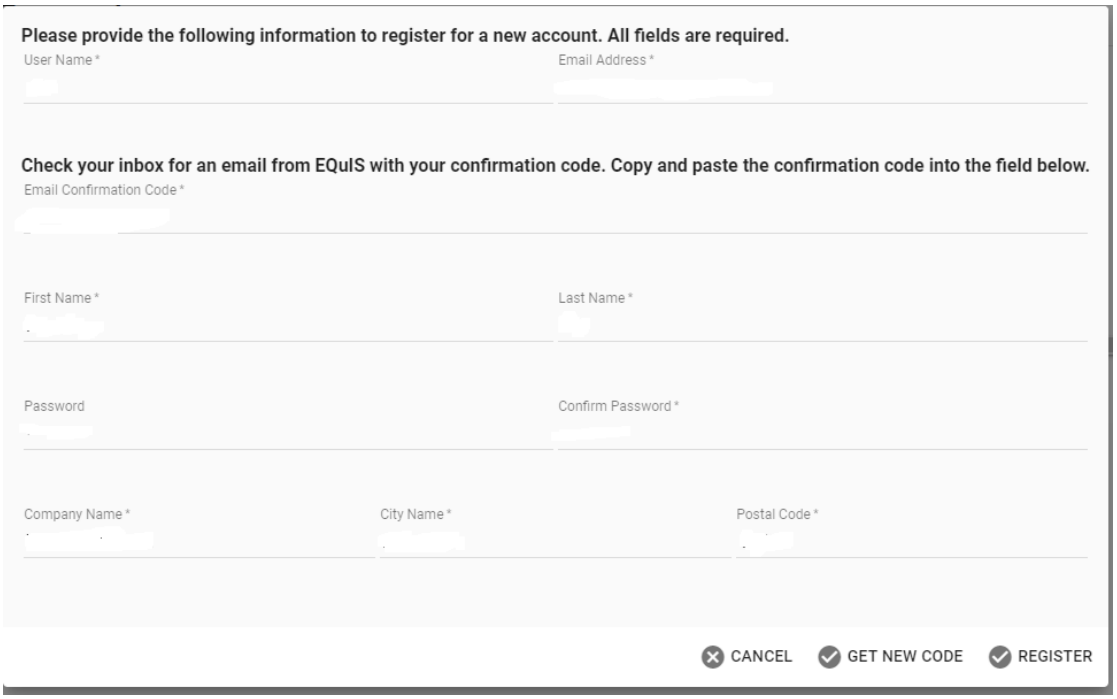
1. Select the "**Get Started**" link below the "Forgot your password?" link to register yourself as a new user. (image below)



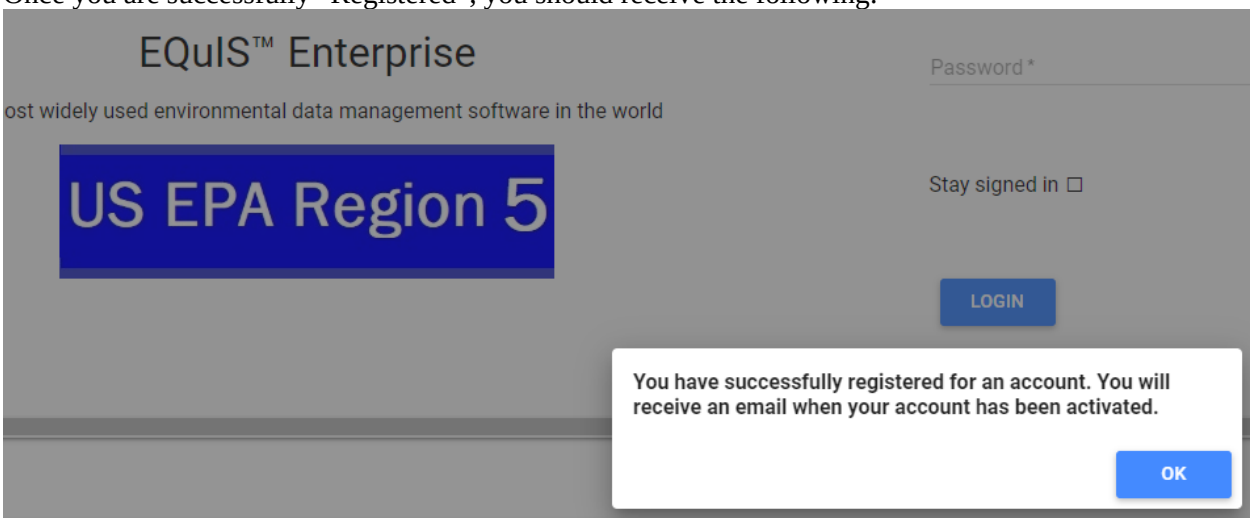
2. Next, provide the username and email address:



3. Click "Continue"
4. If you enter your email address correctly, you should receive a "confirmation code", enter the confirmation code in the next screen:



5. Fill in the form with your First Name, Last Name, Password, Cofirm Password, Company Name, City Name, and Postal Code
6. Click "Register" or if you don't receive your confirmation code, click "GET New Code"
7. Once you are successfully "Registered", you should receive the following:



8. EPA Region 5 database manager John Canar (canar.john@epa.gov) will receive your registeration request, and assign your role and approve your request.
9. Once you are approved with your assigned role, you should receive a email to ask about the site(s) names that you are going to submit data for.
10. Then, you will receive a confirmation email to tell you that you can use your username and password to zip up your EDD in **Sign and Submit.**

The Sign and Submit process allows data provider to save the EDD in their preferred folder or directory. The EDD zip package should be named using the naming convention that was shown in **section 2.4**.

Email to EPA Region 5 EQuIS Enterprise Database:

- Once the EDD zip file has been created, the EDD is ready to be emailed to EPA EQuIS Enterprise processor. Please follow the following 2 steps:

1. Change the file extention from ".zip" to ".edd". In other words, your EDD is zipped in EDP, such as "20190811. MID000000001.EPAR5.zip", you need to change the file extention to ".edd", meaning the file name will become "20160811. MID000000001.EPAR5.edd"

2. Send the ".edd" file to to EPAR5@EQuISOnline.com

Notify EPA Region 5 when the data is sent to the EPA Region 5 EQuIS Enterprise database:

Please notify the EDD database adminstrator canar.john@epa.gov for each EDD that has been emailed to the EPA Region 5 EQuIS Enterprise database.

EDD submittal types

There are three possible EDD submittal types: an original submittal, an error correction resubmittal, and an update submittal. These three EDD types are described below.

- **Original Submittal**: An original EDD submittal contains data being submitted for the first time to EPA Region 5. EPA Region 5 will process and check the EDD. If there are no errors in any of the EDD files, EPA will import the data to the permanent database. EPA Region 5 can only import and accept the EDD submittal if all files in the submittal are error-free. If any of the files on the EDD contain errors, EPA will send the data provider a letter specifying the errors that need to be corrected.

- **Correction Resubmittal**: In the case where an original EDD submittal contains errors, the entire EDD submittal will be returned to the data provider along with an error report explaining the problems identified. The data provider should then correct the errors, check the files again with the EDP, and then resubmit the entire EDD. A response is required within 30 days. It is important that the resubmitted EDD contain all of the files and the SAME FILE NAMES (i.e., use the same site name and submittal date in the file name as was used in the original submittal) as those in the original submittal. Thus, the EDD resubmittal will be identical to the original submittal in everyway except the errors are corrected.

- **Update Submittal:** This type of submittal updates data that has previously been accepted by EPA Region 5. The files of an update submittal should contain only data for the records being updated. For example, say a data provider submits an EDD in 2014 that includes a location file (e.g., EPAR5LOC_v3.txt) that contains ten locations, and the EDD is accepted by EPA Region 5 and loaded into the EPA database. If, in 2016, the site is resurveyed, and it is discovered that three of the locations' coordinate information has changed due to increased accuracy, a new location file containing data for only those three locations would need to be submitted as an update submittal. The update submittal would be included in a cover letter and name the file correctly. Note: All required fields need to be populated for the three locations regardless of whether or not these fields were updated. The reason for the update submittal and the records that have been changed must be clearly indicated in the cover letter accompanying the updated EDD.

2.19 Examples of Field, and Lab EDD Files

Examples of Field and Lab EDD files with the first few rows of the EDD populated with a typical data set are presented in Figures 2-3, 2-4, 2-5, and 2-6. These examples were produced using Excel worksheets. To submit these files, the data provider would save the files as text delimited files (txt) or comma separated files (csv), check the files using the EDP, and then send the error free files to Region 5. In order to fit the examples on one page, not all of the fields (i.e., columns) were included for certain files (e.g., Subfacility, Location, and Sample). The notation "*Additional Fields"* has been inserted where, for purposes of these examples, one or more fields have been omitted. It should be noted that all fields must appear in the EDD files you submit regardless of whether or not the field is populated (see Section 2.7 regarding reporting blanks, or "null" values). Special cases discussed in previous sections of this manual, as well as more standard types of data, are illustrated below.

Figure 2-3. Example Field EDD ready for conversion to text file

Subfacilty File (EPAR5SUBFACILITY_v3):

subfacility_code	subfacility_name	subfacility_task_code	subfacility_desc1	subfacility_desc2	contact_name	address1	*Additional Fields*	email_address
01	Facility Name				John Smith	23 Main Street		abc@abd.com

Location File (EPAR5LOC_v3):

Data_provider	Facility_code	sys_loc_code	X_coord	Y_coord	surf_elev	elev_unit	coord_type_code	observation_date	*Additional Fields*	comment
ABD	MID0000001	MW01	573535.16	46185.25	120.2	ft	UTM Zone 16	02/21/2015		
ABD	MID0000001	SB-01	571535.28	46185.22	126.3	ft	UTM Zone 16	02/23/2015 9		
ABD	MID0000001	MW03	571525.28	47558.33	130.1	ft	UTM Zone 16	02/22/2015		
ABD	MID0000001	MW04	561528.33	46004.25	130.1	ft	UTM Zone 16	02/22/2015		

Figure 2-4. Example Lab EDD ready for conversion to text file

Sample File (EPAR5SMP_v3):

Data_provider	sys_sample_code	sample_name	sample_matrix_code	sample_type_code	sample_source	parent_sample_code	sample_delivery_group	sample_date	sys_loc_code	*Additional Fields*	comment
ABD	MW-01_20150401		WG	N	Field			04/01/201512:00:00	MW01		
ABDE	MW-02_20150401		WG	N	Field			04/01/2015 12:00:00	MW02		

Test Result QC File (EPAR5TRSQC_v3):

sys_sample_ code	lab_anl_ method_ name	*Additional Fields*	total_or_ dissolved	column_ number	test_ type	lab_matrix _code	analysis_ location	basis	*Additional Fields*	dilution_ factor	lab_ name_ code	qc_ level	lab_ sample id_	*Additional Fields*
MW-01_20150401	SW8240		T		Initial	WG	LB	Wet		1.0	ABC	quant	LAB01	
MW-01_20150401	SW8240		T		Initial	WG	LB	Wet		1.0	ABC	quant	LAB02	
MW-01_20150401	SW8240		T		Reanalysis	WG	LB	Wet		10.0	ABC	quant	LAB02R	

Test Result QC (EPAR5TRSQC_v3) (Continue):

cas_rn	chemical_ name	result_ value	result_ error_ delta	result_ type_ code	reportable _result	detect_flag	lab_ qualifiers	Validated_yn	Method_detection_limit	reporting_ detection _limit	Quantitation _limit	result_ units	*Additional Fields*	result_ comment
71-43-2	BENZENE	12		TRG	Yes	Y		Y		10		ug/ml		
108-88-3	TOLUENE			TRG	Yes	N		Y		10		ug/ml		
1330-20-7	XYLENES			TRG	Yes	N		Y		10		ug/ml		

Figure 2-5. Examples of QC data fields in a Chemistry EDD

QC fields in a normal field sample (i.e., sample_type_code = N, TB, etc.)

The following table shows some of the fields in the test/result (TRS) file for a normal field sample. Notice that all QC fields are blank.

cas_rn	result_value	qc_original _conc	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	qc_dup_ original_ conc	qc_dup_ spike_ added	qc_dup_ spike_ measured	qc_dup_ spike_ recovery
93-76-5	1.56								
94-75-7	3.17								
94-82-6	2.31								

QC fields in a normal field sample with surrogates (i.e., sample_type_code = N, TB, etc.)

The following table shows some of the fields in the test/result file (TRS) for a normal field sample. Notice that QC fields are blank except in rows related to surrogate samples. . Many data providers will only need to populate the recovery field data; the spike-added and spike-measured fields will not be needed in most situations.

Cas_rn	result_value	result_unit	result_type_ code	qc_original_ conc	qc_spike_added	qc_spike_ measured	qc_spike_ recovery
93-76-5	1.56	mg/l	TRG				
94-75-7	3.17	mg/l	TRG				
PHEN2F		mg/l	SUR		12.5	12.9	103

QC fields in a laboratory method blank sample (i.e., sample_type_code = LB)

The following table shows some of the fields in the test/result file for a laboratory method blank sample. Notice that all QC fields are blank.

cas_rn	result_ value	lab_ qualifier	qc_ original_ conc	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	qc_dup_ original_ conc	qc_dup_ spike_ added	qc_dup_ spike_ measured	qc_dup_ spike_ recovery
93-76-5		U								
94-75-7		U								
94-82-6	0.01									

Figure 2-5. Examples of QC data fields in a Chemistry EDD (continued)

QC fields in a matrix spike (i.e., sample_type_code = MS*)*

The following table shows some of the fields in the test/result file for a matrix spike sample. Notice that all "dup" QC fields are blank and that the result_value field is not needed. Also, the qc_rpd field would be blank for these rows. Many data providers will only need to populate the calculated recovery field (qc_spike_recovery).

cas_rn	result_ value	qc_ original_ conc	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	Qc_rpd	qc_dup_ original_ conc	qc_dup_ spike_ added	qc_dup_ spike_ measured	qc_dup_ spike_ recovery
93-76-5		1.56	4.18	5.36	90.9					
94-75-7		3.17	4.18	7.15	95.2					
94-82-6		2.31	4.22	5.66	79.3					

QC fields in a matrix spike duplicate (i.e., sample_type_code = SD*)*

The following table shows some of the fields in the test/result file for a matrix spike duplicate sample. Notice that all "dup" QC fields are filled in and that the result_value field is not needed. Also, the qc_rpd field would be completed for these rows. Many data providers will only need to populate the calculated recovery field (qc_dup_spike_recovery).

cas_rn	result_ value	qc_ original_ conc	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	Qc_rpd	qc_dup_ original_ conc	qc_dup_ spike_ added	qc_dup_ spike_ measured	qc_dup_ spike_ recovery
93-76-5						10	1.56	4.23	5.70	97.8
94-75-7						12	3.17	4.23	7.62	105
94-82-6						15	2.31	4.13	5.33	73.1

QC fields in a matrix spike/matrix spike duplicate (i.e., sample_type_code = MSD)

The following table shows some of the fields in the test/result file for a matrix spike/matrix spike duplicate considered as a single sample . (Note: Matrix spike and matrix spike duplicate samples can be reported either this way or as two separate samples as shown above). Notice that all QC fields are filled in and the result_value field is not needed. Also, the qc_rpd field would be completed for these rows. Many data providers will only need to populate the calculated recovery fields (qc_spike_recovery and qc_dup_spike_recovery).

cas_rn	result_ value	qc_ original_ conc	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	Qc_rpd	qc_dup_ original_ conc	qc_dup spike_ added	qc_dup spike_ measured	qc_dup spike_ recovery
93-76-5		1.56	4.18	5.36	90.9	7	1.56	4.23	5.70	97.8
94-75-7		3.17	4.18	7.15	95.2	10	3.17	4.23	7.62	105
94-82-6		2.31	4.22	5.66	79.3	8	2.31	4.13	5.33	73.1

QC fields in a LCS (i.e., laboratory control sample, blank spike, sample_type_code = BS)

The following table shows some of the fields in the test/result file for an LCS sample. The qc_rpd field would be blank for these rows. Many data providers will only need to populate the calculated recovery field (qc_spike_recovery). LCS duplicate samples (i.e., sample_type_code = BD) and LCS/LCSD samples (i.e., sample_type_code = BSD) follow the patterns similar to the SD and MSD samples described above.

cas_rn	result _value	qc_original _conc	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	qc_dup_ original_ conc	qc_dup_ spike_ added	qc_dup_ spike_ measured	qc_dup_ spike_ recovery
93-76-5			5.00	5.26	105				
94-75-7			1.00	1.02	102				
94-82-6			12.5	12.9	103				

Figure 2-6. Example Field EDD ready for conversion to text file

Drill Activity File:

sys_loc_code	drill_event	start_depth	end_depth	drill_date	diameter	*Additional Fields*	purpose
W-4A	1a	40	80	07/12/1999	8		Advanced well additional 40 feet to reach lower aquifer
W-6B	2c	45	110	07/14/1999	8		Advanced well 55 feet to reach bedrock.

Lithology File:

sys_loc_ code	start_ depth	material_ type	geo_unit_1	*Additional Fields*	Remark_1	*Additional Fields*	odor
W-1A	0	CL	Glacial		grayish brown clay, trace fine sand, med strength, med plastic, rapid dilatancy ,some brick fragments		
W-1A	10	SW	Outwash		med dense, 50% fine to coarse brown sand, 30% gravel, dry, trace clay		
W-1A	23	SP	Outwash		dense, 70% coarse brown sand, 20% gravel, poorly graded, rounded, moist		
W-2A	0	ML	Alluvial		Dark brown silt with little fine sand, low strength, nonplastic, rapid dilatancy		

Well File:

sys_loc_code	*Additional Fields*	top_casing_elev	datum_value	datum_unit	datum_desc	*Additional Fields*	geologic_unit_ code	remark
W-1A		122.0	122.0	ft	top of casing of well		outwash	
W-2A		122.3	122.3	ft	top of casing of well		alluvial	

Figure 2-6. Example Field EDD for new monitoring wells or direct push samples ready for conversion to text file (continued)

Well Construction File

sys_loc_code	segment_type	material_type_code	start_depth	end_depth	depth_unit	inside_diameter	*Additional Fields*	remark
W-1A	surface plug	concrete	0	1.5	ft	4.5		
W-1A	annular backfill	neat cement grout	1.5	8	ft	2.375		
W-1A	annular Seal	Bentonite pellets	8	8	ft	2.375		
W-1A	Filter Pack	sand pack	8	23.1	ft	2.375		
W-1A	Protective Casing	steel	-2.2	3.2	ft	4		
W-1A	Casing	stainless steel 304	-2.1	24	ft	2		
W-1A	Screen	stainless steel 304	24	29	ft	2		
W-2A	protective casing	steel	-2.0	3.0	ft	2		
W-2A	surface plug	concrete	0	1.5	ft	4.5		
W-2A	annular backfill	neat cement grout	1.5	10	ft	2.375		

Geology Sample File:

sys_loc_code	Geo_sample_code	sample_name	sample_top	sample_bottom	sample_date	*Additional Fields*	sample_method	material_type	*Additional Fields*	organic_carbon _units
W-1A	ABCD-1		4	6	04/23/1999 00:00:00		split spoon	SW		
W-1A	ABCD-2		14	16	04/23/1999 00:00:00		split spoon	SW		
W-2A	DEFG-1		5	7	04/24/1999		split spoon	SP		

Figure 2-6. Example Geology EDD for new monitoring wells or direct push samples ready for conversion to text file (continued)

Water Table File:

sys_loc_code	Type	sequence	Depth	flowing_yn	measurement_method	capped_pressure	capped_pressure _unit	*Additional Fields*	temperature _unit
MW01	Unconfined	stable	21.2	y	electric sensor				
MW02	Unconfined	stable	21.0	y	electric sensor				

Downhole Point File:

sys_loc_code	Depth	param	param_value
MW01	10.8	Tip Stress	612
MW01	11.2	Tip Stress	624
MW01	10.8	Sleeve Stress	6.1
MW01	11.2	Sleeve stress	5.8
MW02	9.5	Resistivity	510
MW02	10.1	Resistivity	521
MW02	11.0	Resistivity	489

Water Level File:

sys_loc_code	measurement _date	historical_ref_elev	water_level_depth	water_level_elev	corrected_elev	*Additional Fields*	remark
MW01	05/10/1999 13:10:00		31.1	89.1			
MW02	05/10/1999 13:45:00		34.1	89.0			

Extraction Injection Wells

sys_loc _code	Start_ measurement _date	end_measure _date	avg_pump_rate	pump_rate_unit	*Additional Fields*	remark
EX-01	05/12/2000 11:23:00	06/12/2000 11:30:00	2.5	mgd		
EX-02	11/12/2000 12:00:00	12/12/2000 13:10:00	1.75	mgd		

3. FORMATS FOR Facility Files and Field Files

This section contains information regarding the base map and the two files included in the Facility EDD. These files need to be submitted prior to, or in conjunction with, the first Field EDD submittals These files only need to be submitted once unless information in the files changes or additional information, such a new sampling location, needs to be added. Columns marked "Required" must be reported for each row in the file. If these fields are not reported, errors will be identified in the EDD and the EDD will need to be resubmitted. Columns marked "If available" should also be reported if possible.

3.1 Facility EDD Files

Site Base Maps in the file section (Files_v3)
Site base maps can be submitted in CAD files in a DXF interchange format, or drawing (.dwg) file, or Shapfiles generated from ArcGIS. The maps should include all well locations, waste management units, landfills, buildings, and roads. **Do not include any groundwater contours, contaminant contours, or other temporal type information.** If the CAD file is available in real world locational coordinates, provide the coordinates along with a brief text description of the type of projection and datum used. (Note: UTM NAD 83 is the data type preferred by EPA Region 5). Also include text descriptions of the units and scale of the base map. The site base map file should be named according to the following example:

SiteName.DXF (or dwg, or shape files)

The file section allows you to load supplementary information into EQuIS, such as Map, drawing files. The naming convention of the File_v3 is:

File_v3.txt (or .csv)

Table 3-1 Files (Files_v3) structure

Pos#	Column Name	Data type	Required	Description	Valid Values In Appendix
1	File_name	Text (255)	Yes	Name of the file	No
2	File_type	Text (20)	Yes	Type of the file	No
3	File_date	Date time	If available	Date of the file	No
4	Title	Text (255)	If available	Title of the file	No
5	Author	Text (255)	If available	Author of the file	No
6	Confidential _yn	Text (1)	If available	Whether or not the file is confidential	No
7	Remark	Text (255)	If available	Remark for the file	No
8	Place_type	Text (50)	If available	Type of the place tis file is associated with	No
9	Place_code	Text (50)	If available	Code/identifier of the place this file is associate with	No
10	Place_subcode	Text (50)	If available	Subcode/ identifier of the place this file is associated with	No
11	Content			Content of the file	No

3.2. Field Files-DATAPROVIDER

This section contains tables that define the file structures for the FIELD EDD. The file structures include the first three initial EDD files: Data Provier, Subfacility, and Locations, also the drilling activity, lithology, well, well construction, geotechnical samples, water levels, Water Table, downhole point, extraction injection wells, and Soil Gas data. The columns marked "Required" must be reported for each row in the file. If an EDD is submitted with one or more "Required" fields not filled in, EPA will not be able to load the EDD into its database, and the EDD will have to be returned to the data provider for correction(s). The columns marked "If available" should also be reported whenever possible. Examples of the EDD files that make up the Field EDDs are provided in Figure 2-6, section 2.16.

Data Provider (EPAR5DATAPROVIDER_v3)

The Data Provider EDD file provides general information about the data provider who is the contact for the data on the site.

EPAR5DataProvider_v3.txt (or .csv)

Table 3-2 Data Provider (EPAR5DataProvider_v3) File Structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	Data_Provider	Text(20)	Required	This is the name of the company who is responsible for providing the site data.	A-23
2	Data_Contact _Person	Text(30)	Not Required	This is the name of the contact person who is responsible for providing the site data.	No
3	Data_Contact _Address1	Text (40)	Not required	Data Provider address 1	No
4	Data_Contact _Address2	Text (40)	Not required	Data Provider address 2	No
5	Data_Contact _City	Text (30)	Not required	Data Provider city	No
6	Data_Contact _State	Text(5)	If Available	Contact state	No
7	Data_Contact_zi pcode	Text(10)	Not required	Contact zip	No
8	Data_Contact _email	Text(60)	Required	Contact email address	No
9	Data_Contact _Phone	Text(30)	Not Required	Contact phone number	No

3.3 SUBFACILITY EDD File

The SUBFACILITY EDD file provides general information about a site and provides the name, e-mail address, and other contact information for the main EDD data contact for the site. An example of a Subfacility file is provided in Figure 2-3, section 2.16. **NOTE**: If the SUBFACILITY EDD file was previously submitted, including as part of a "Historic Data EDD", as described in the Region 5 "EDD Manual for Historical Data", you DO NOT need to resubmit the file again.
Each SUBFACILITY file must be named according to the following convention:

EPAR5SUBFACILITY_v3.txt (or .csv)

Table 3-3 SUBFACILITY (EPAR5SUBFACILITY_v3) data file structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	SUBFACILITY_code	Text(20)	Required	Code indicating the site operable unit for which the data is collected, or area of concern (AOC). Typically the code is "01" unless there is a second or third operable unit at facility. Codes of "02" and "03" should be used for second and third operable units, respectively. Contact the EPA RPM if unsure of proper code.	No
2	subfacility_name	Text(60)	Required	Name of site	Table A-22
3	site_task_code	Text(40)	Required	Code used to associate individual samples to a specific sampling event. The format for this field is XX-P#, XX is the type of task required and P# is the phase.	No
4	subfacility_desc1	Text(255)	If available	General description of the site.	No
5	subfacility_desc2	Text(255)	If available	Additional description of site, if necessary.	No
6	contact_name	Text(50)	Required	Name of person to contact if EPA Region 5 has any questions about the EDD.	No
7	address1	Text(40)	Required	Site address, part one.	No
8	address2	Text(40)	Not required	Site address, part two. Default to null if information is not needed	No
9	City	Text(30)	Required	Site city.	No
10	State	Text(2)	Required	Site state.	No
11	Zipcode	Text(10)	Required	Site zip code.	No
12	phone_number	Text(30)	Required	Site contact phone number.	No
13	alt_phone_number	Text(30)	If available	Alternate phone number for site contact. Default to null where the data are not available.	No
14	fax_number	Text(30)	If available	Fax number of site contact. Default to null where the data is not available.	No
15	email_address	Text(100)	Required	Site contact e-mail address.	No

3.4 Location EDD File (EPAR5LOC_v3)

The primary purpose of the Location EDD file is to define the sampling locations for a site. Each EPA ID must have a center point identified. The location section will be used to enter the center point. This file is referred to as one of the Initial EDD files because it needs to be submitted -- and error-free -- before EDD files that contain chemistry and geology data can be used. Each row of the Location file contains the definition of a unique sampling location. Do not create any records (i.e., rows) for any samples not associated with a specific sampling location, such as field blanks and trip blanks. In the case of multiple wells located in one borehole, each well in the borehole must have a unique sampling location identifier (sys_loc_code).

Each sampling location should only be reported once for a site. The only time data a previously reported location should be resubmitted is if some information about the location changes, such as when a location

is resurveyed after settling has occurred or after a resurvey using an instrument or methodology with higher accuracy. When resubmitting changes to the Location file, the file should contain rows pertaining to the affected locations only. As in a typical EDD submittal, all "required" fields should be populated when updating data. Changes in the resubmittal should be described in the cover letter accompanying the EDD, and the EPA RPM should receive a copy of the letter or should be otherwise notified. See section 2.15 "Submitting Your EDD to EPA" for more information regarding submitting updated data files.

The data structure of the LOCATION EDD file includes fields (Table 3-4 below) to collect data requirements of EPA's Locational Data Policy (LDP). LDP requires geographic coordinates and associated method, accuracy, and description (MAD) codes for all environmental measurements collected by EPA employees, contractors, and grantees. A key premise of the LDP policy is that secondary use of these data in geographic information systems (GIS) and statistical mapping programs are significant to the overall mission of the Agency. To facilitate the integration of data, EPA has established the LDP to standardize the coding of geologic coordinates and associated attributes. Therefore, in addition to location coordinates being reported in UTM meters, Region 5 requests that coordinates be reported in latitude and longitude, along with associated attributes, if the data is available. An example of a Location file is provided in Figure 2-3, section 2.16.

Each Location file must be named according to the following convention:

EPAR5LOC_v3.txt (or .csv)

Table 3-4 Location Data (EPAR5LOC_v3) File Structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	Data Provider	Text(20)	Required	Data Prodiver company code	A-23
2	Facility_code	Text (20)	Required	Facility ID	A-22
3	sys_loc_code	Text(20)	Required	Location identifier of sample collection, soil boring, or well installation. Location ID, such as MW-01, A24, SW12, or SB-2S, for all samples collected, including groundwater samples, hydropunch samples, surface water/sediment samples, and soil samples. For facility center point, sys_loc_code = "FAC CENTER POINT"	No
4	X_coord	Number w/decimal precision up to 15	Required	Sampling location numeric x UTM NAD83 coordinate in meters.	No
5	Y_coord	Number w/decimal precision up to 15	Required	Sampling location numeric y UTM NAD83 coordinate in meters.	No

Table 3-4 Location Data (EPAR5LOC_v3) File Structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
6	surf_elev	Number w/decimal precision up to 15	Not Required	Elevation of the ground surface, or if location is for surface water samples, water surface elevation. For water surface elevation, use the average annual elevation. Note: Subsequent water surface elevations should be obtained during the surface water sampling period and reported in the Water Level EDD file (see sections 4.2 and 4.4).	No
7	elev_unit	Text(15)	If available	Unit of measurement for elevations.	Units must be in ft/m
8	coord_type_code	Text(20)	Required	Sampling location coordinate system description . Must be 'UTM Zone nn'	No
9	observation_date	DateTime	Not required	Date observation or site survey was made.	*No*
10	Identifier	Text (20)	Required	Use "Primary". If this is for an additional set of the same coordinate type, use "Secondary"	*No*
10	horz_collect_method_code	Text(2)	Required	Use codes in horizontal collection method valid value table in appendix. Method used to determine the X/Y.	Table A-3
11	horz_accuracy_value	Text(20)	Required	Accuracy range (+/-) of the latitude and longitude.	No
12	horz_accuracy_unit	Text(15)	Required	Unit of the horizontal accuracy value.	Table A-4. Enumeration list contains the codes and description
13	horz_datum_code	Text(1)	Required	Use codes in horizontal datum code. Reference datum of the x_coord and y_coord	Table A-5
14	elev_collect_method_code	Text(3)	If available	Use codes in elevation collection method valid value table in appendix. Method used to determine the ground elevation of the sampling location.	Table A-6
15	elev_accuracy_value	Text(20)	Not required	Accuracy range (+/-) of the elevation measurement.	
16	elev_accuracy_unit	Text(8)	Not required	Unit of the elevation accuracy value.	Table A-18. Enumberation list contains the codes and description.

Table 3-4 Location Data (EPAR5LOC_v3) File Structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
17	elev_datum_code	Text(3)	If available	Reference datum for the elevation measurement	Table A-7
18	source_scale	Text(2)	Not required	Scale of source used to determine the x_coord and y_coord.	Table A-32
19	subcontractor_name_code	Text(20)	If available	Code used to distinguish subcontractor name.	Table A-23
20	verification_code	Text(20)	If available	Enter accuracy of the coordinates.	Table A-32
21	reference_point	Text(2)	Not required	Describes the place at which coordinates were established. Use codes from Table A-2 in the Appendix.	Tabel A-31 Enumeration list is available in this field.
22	geometric_type_code	Text(20)	If available	Value: 'POINT'	A-2
23	Rank	Numeric	Not required	Ebtner a rank if you are or have submitted more than one set of coordinates.	No
24	loc_name	Text(40)	Not required	Sampling location name.	No
25	loc_desc	Text(255)	Not required	Sampling location description.	No
26	loc_type	**Text(10)**	If available	Description of sampling type, such as direct push, extraction well, or sediment. Use "CENTROID" to identify facility center point. Use codes from Table A-9 in the Appendix.	Table A-9
27	loc_purpose	**Text(20)**	Not required	Sampling location purpose.	No
28	Primary_subfacility_code	**Text(20)**	Required	Unique code for site or area. Must match subfacility_code field from Table 3-3: Subfacility File Data Structure.	No
29	within_facility_yn	Text(1)	Required	Indicates whether this sampling location is within facility boundaries, "Y" for yes or "N" for no.	No
30	loc_county_code	Text(20)	Not required	Location county code; controlled vocabulary using FIPS (Federal Information Processing Standard) codes. FIPS codes can be found via the internet at https://www.epa.gov/envirо/state-fips-code-listing	No
31	loc_district_code	Text(20)	Not required	Use the EPA region code '005'	No

Table 3-4 Location Data (EPAR5LOC_v3) File Structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
32	loc_state_code	Text(10)	If available	Location state code; controlled vocabulary using FIPS codes.	Look up the drop down
33	loc_major_basin	Text(8)	If available	Location major basin; controlled vocabulary using HUC (hydrologic unit codes	Table A-21
34	loc_minor_basin	Text(20)	Not required	Location minor basin; controlled vocabulary using HUC codes. Any digits after the 8th (first 8 are reported in loc_major_basin) should be reported here.	No
35	Remarks	Text(255)	Not required	Location specific comment.	No
36	total_depth	Numeric	Not required	Total depth below ground surface of boring, in feet.	No
37	depth_to_bedrock	**Numeric**	Not required	Depth below ground surface of bedrock in feet.	No
38	depth_to top_of_screen	**Numeric**	Not required	Depth in feet below ground surface to the top of the well screen. This information is required to obtain the vertical location from which the groundwater sample was taken. Leave null if well is not at this location.	No
39	depth_to_bottom_of_screen	**Numeric**	Not required	Depth in feet below ground surface to bottom of well screen. This information is required to obtain the vertical location from which the groundwater sample was taken. Leave null if well is not at this location.	No
40	top_casing_elev	Number w/decimal precision up to 15	Not required	Elevation of the top of casing in feet. Leave null if well is not at this location.	No
41	datum_value	Number w/decimal precision up to 15	Not required	Datum value	No
42	datum_unit	Text (15)	If available	Datum unit	Table A-18

Table 3-4 Location Data (EPAR5LOC_v3) File Structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
43	step_or_linear	Text (6)	Not required	This field is for by EPA Region 5 future use. Please leave null. Value: 'Step', 'Linear'	No
44	datum_collect_method_ code	**Text (2)**	Not required	Datum collect method	No
45	datum_desc	**Text(70)**	Not required	Datum description	No
46	Datum_start_date	DateTime	Not required	Datum start date	No

3.5 Alternate Position

Table 3-5 Alternate Position (EPAR5AlternatePosition_v3) file data structure

EPAR5AlternatePosition (EPAR5AlternatePosition_v3.txt (or .csv)

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	Sys_loc_code	Text(20)	Required	Unique Station or Well ID. Required for mapping.	
2	Coord_type_code	Text (20)	Required	Unique identifier describing coordinate system in which this location is referenced (WGS 1984).	
3	Identifier	Text(20)	Required	Text identifier that facilitates unique representation of the coordinate system. Unless this is a second set of LAT LONG coordinates, enter "PRIMARY".	
4	observation_date	Date		Date observation or subfacility survey was made.	
5	Alt_x_coord	Text(20)		Longitude of sampling location in decimal degrees. (dd.xxxxxxxx). Eight decimal places are desired but must have at least 6 decimal places.	
6	Alt_y_coord	Text(20)		Latitude of sampling location in decimal degrees. (dd.xxxxxxxx) Eight decimal places are desired but must have at least 6 decimal places.	
7	Elev	Text(20)		Alternate elevation.	

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
8	Elev_unit	Text(15)		Unit of measurement for elevations. Units must be f for feet or m for meters.	
9	Horz_collect_method _code	Text(20)		Use codes in horizontal collection method valid value table in appendix. Method used to determine the latitude/longitude.	
10	Horz_accuracy_value	Text(20)		Accuracy range (+/-) of the latitude and longitude. Only the least accurate measurement should be reported, regardless if it is for latitude or longitude.	
11	Horz_accuracy_unit	Text(15)		Use values in unit valid value table in appendix. Unit of the horizontal accuracy value.	
12	Horz_datum_code	Text(20)		Use codes in horizontal datum valid value table in appendix. Reference datum of the latitude and longitude.	
13	Elev_collect_method_ code	Text(20)		Use codes in elevation collection method valid value table in appendix. Method used to determine the ground elevation of the sampling location.	
14	Elev_accuracy_value	Text(20)		Accuracy range (+/-) of the elevation measurement.	
15	Elev_accuracy_unit	Text(8)		Use values in unit valid value table in appendix. Unit of the elevation accuracy value.	
16	Elev_datum_code	Text(20)		Reference datum for the elevation measurement. Must use valid value from elev_datum table in appendix.	
17	Source_scale	Text(2)		Scale of the source used to determine the latitude and longitude. Must be a valid code from the source_code table from appendix. If GPS is used scale does not apply and 'N' should be entered.	

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
18	Subcontractor_name_code	Text(20)		Code used to represent the subcontractor or party responsible for providing coordinate information.	
19	Verification_code	Text(20)		Code that represents the process used to verify the coordinate information.	Table A-32
20	Reference_point	Text(2)		Use codes in Reference point valid value table in appendix. Describes the place at which geologic coordinates were established.	
21	Geometric_type_code	Text(20)		Please enter POINT. If you have coordinates that are not specific to a point, please email EPA for an addition.	
22	Remark	Text(255)		remark.	
23	Rank	Numeric		Enter a rank if you are or have submitted more than one set of coordinates.	

3.6 Location Parameter

Table 3-6 Location Parameter

EPAR5LOCPARAM_V3

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text(20)	Y	Unique Location Name	
2	parameter_code	Text(20)	Y	Code used to identify parameter being measured, observed, or attribute being described	
3	parameter_value	Text(255)		Value of parameter	
4	parameter_unit	Text(15)		Parameter unit	
5	measurement_date	DateTime		Date of parameter measurement or observation	
6	measurement_method	Text(20)		Measurement method	
7	remark	Text(2000)		Remark	
8	task_code	Text(40)		Code used to identify the task under which the field sample was taken.	
9	activity_type	Text(40)		required for EDGE	

3.7 Drill Activity EDD File

The drill activity (DRA) EDD file contains general information pertaining to the drilling activities resulting from the soil boring. Each drill activity file must be named according to the following convention:

EPAR5DRA_v3.txt (or .csv)

Table 3-7 Drill activity (EPAR5DRA_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text (20)	Required	Soil boring or well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-4) submitted in the current or previous EDD.	No
2	drill_event	Text (20)	Required	Used to identify drilling event. Examples of drilling events could be "initial" for initial drilling or "second" for a subsequent drilling at the same sys_loc_code.	No
3	start_depth	Number w/decimal precision up to 7	Not required	The start depth, in feet below ground surface, of the drilling.	No
4	end_depth	Number w/decimal precision up to 7	Not required	End depth, in feet below ground surface of the drilling.	No
5	drill_date	Date Time	Not required	Date drilling began	MM/DD/YYYY format.
6	Diameter	Number w/decimal precision up to 7	Not required	Diameter of boring.	No
7	diameter_unit	Text (15)	If available	Unit corresponding to measured diameter. See Table A-18 in the Appendix for appropriate value.	Table A-18
8	drill_method	Text (50)	Not required	Method used to drill boring.	No
9	fluid	Text (50)	Not required	Description of fluid used during drilling.	No
10	viscosity	Text (50)	Not required	Viscosity of drilling fluid.	No
11	hammer_wt	Text (50)	Not required	Weight of hammer, in pounds, used for sampling.	No
12	hammer_fall	Text (50)	Not required	Distance of hammer fall during sampling in inches.	No
13	lift_mechanism	Text (50)	Not required	Type of mechanism used to lift hammer.	No
14	new_yn	Text (1)	Not required	This field is to indicate whether this is a new boring. Enter "Y" for yes or "N" for no.	Y = yes N= no

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
15	repair_yn	Text (1)	Not required	Is this drilling event to repair an existing boring? "Y" for yes or "N" for no.	Y = yes N= no
16	deepen_yn	Text (1)	Not required	Is this drilling event to deepen an existing boring? "Y" for yes or "N" for no.	Y = yes N= no
17	abandon_yn	Text (1)	Not required	Has the boring been abandoned? "Y" for yes or "N" for no.	Y = yes N= no
18	replace_yn	Text (1)	Not required	Is this boring event to replace an existing boring? "Y" for yes or "N" for no.	Y = yes N= no
19	public_yn	Text (1)	Not required	Is well being install for a public use? "Y" for yes or "N" for no.	Y = yes N= no
20	Purpose	Text (70)	Not required	Describe the purpose of the boring event.	No

3.8 Lithology EDD File

The lithology (LTH) EDD file contains all the lithology data for soil borings. For each lithologic unit, 16 fields are available for populating with data about the boring. Optional comments can be recorded in the remark1 and remark2 fields to describe depth-specific observations within a lithologic unit. Each lithology EDD file must be named according to the following convention:

EPAR5LTH_v3.txt (or .csv)

Table 3-8 Lithology (EPAR5LTH_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Valued In Appendix
1	sys_loc_code	Text(20)	Required	Soil boring or well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-4) submitted in the current or previous EDD.	No
2	start_depth	Number w/decimal precision up to 15	Required	The start depth, in feet below ground surface, of the lithologic unit.	No
3	material_type	Text(40)	If available	The type of material that composes the lithologic unit. See Table A-19 in the Appendix for appropriate values.	Table A-19
4	geo_unit_code_1	Text(20)	If available	The data provider's interpretation of the hydrogeologic unit present at this lithologic unit, e.g., aquifer 1, aquitard 1, aquifer 2, upper clay unit. See Figure A-2 in the Appendix for examples.	No
5	geo_unit_code_2	Text(20)	If available	Alternate geologic unit grouping. This can be a sub-classification of geologic_unit_code_1 or a layer used for groundwater flow/transport computer modeling that contains the lithologic unit. See Figure A-2 in the Appendix for examples.	No
6	remark_1	Text(255)	Not required	Comments (if any) on the lithologic unit.	No

Table 3-8 Lithology (EPAR5LTH_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Valued In Appendix
7	remark_2	Text(255)	Not required	Additional comments on the lithologic unit.	No
8	Moisture	Text(1)	Not required	Was any moisture detected within the lithologic unit? "Y" for yes or "N" for no.	Y = yes N=No
9	Permeable	Text(20)	Not required	Description of the permeability of the lithologic unit such as "impervious," "semi," "pervious," or "very."	No
10	consolidated_yn	Text(1)	Not required	Was lithologic unit consolidated? "Y" for yes or "N" for no.	Y=yes N=no
11	Color	Text(20)	Not required	Color of the lithologic unit.	No
12	Observation	Text(255)	Not required	General field observations of the lithologic unit.	No
13	Consistency	Text(20)	Not required	Description of the consistency of the soil, such as "very soft," "soft," "firm," "hard" or "very hard."	No
14	Sorting	Text(20)	Not required	Geologic description of the grain size distribution of the lithologic unit. Use "poor" for soil with a wide range of particle sizes or "well" for soil with a narrow range of particle sizes.	No
15	Grainsize	Text(20)	Not required	Description of grain size.	No
16	Odor	Text(20)	Not required	Description of odor from the soil.	No

3.9 Well EDD File

The well (EPAR5WEL_v3) EDD file contains general information relating to well installation. Each well file must be named according to the following convention:

EPAR5WEL_v3.txt (or .csv)

Table 3-9 Well (EPAR5WEL_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Value In Appendix
1	sys_loc_code	Text(20)	Required	Well installation location Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-4) submitted in the current or previous EDD.	No
2	Alternate_Well_id	Text(30)	Not required	Well identification number	No
3	well_description	Text(30)	Not required	Used for additional well description if necessary.	No
4	well_owner	Text(30)	Not required	Name of entity that owns the well.	No
5	well_purpose	Text (20)	Not required	Purpose of well.	No
6	well_status	Text (20)	Not required	Current status of well.	No

Table 3-9 Well (EPAR5WEL_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Value In Appendix
7	top_casing_ elev	Number w/decimal precision up to 15	Not required	Elevation of the top of well casing. Elevation must be in feet.	No
8	datum_value	Number w/decimal precision up to 15	Required	Elevation of datum used to reference measurement of water level depths. (EPA normally uses top of well casing for datum.)	No
9	datum_unit	Text(15)	Required	Unit of measure for the well datum..	Table A-18
10	datum_desc	Text (70)	Required	Description of the datum, such as "top of well casing."	No
11	step_or_linear	Text (6)	Not required	Use only for re-surveys of well elevations. If a section of the well casing was removed or added use "step" as the value. If nothing was added or removed from the last survey, use "linear" as the value.	No
12	Datum_start_date	DateTime	Required	Date that datum was first used to take measurements.	MM/DD/YYYY format.
13	datum_collect_ method_code	Text (2)	If available	Method used to determine the datum elevation. Use codes from Table A-6 in the Appendix	Table A-6
14	depth_of_well	Number w/decimal precision up to 15	Not required	Depth below ground surface of the well bottom.	No
15	depth_unit	Text (15)	If available	Unit of measurement for depth.	Table A-18
16	depth_measure_ method	Text (20)	Not required	Method of measuring depth of well.	No
17	stickup_height	Text (8)	Not required	Height of casing above ground surface.	No
18	stickup_unit	Text (15)	If available	Unit of measure for the stickup height	Table A-18
19	sump_length	Text (20)	Not required	Length of sump.	No
20	sump_unit	Text (15)	If available	Unit of measure for the sump length.	Table A-18
21	Installation_date	Date	Not required	Date of well installation	MM/DD/YYYY format.
22	construct_start_ date	DateTime	Not required	Date well construction began	MM/DD/YYYY format.
23	construct_complete_date	DateTime	Not required	Date well construction was completed	MM/DD/YYYY format.
24	construct_ contractor	Text (20)	If available	Name of contractor that installed well.	No
25	pump_type	Text (20)	Not required	Type of pump used at well such as centrifugal, propeller, jet, helical, rotary, etc.	No
26	pump_capacity	Text (6)	Not required	Capacity of pump.	No
27	pump_unit	Text (15)	If available	Unit of measure for the pump capacity and yield.	Table A-18
28	pump_yield	Text (6)	Not required	The yield of the pump.	No

Table 3-9 Well (EPAR5WEL_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Value In Appendix
29	pump_yield_ method	Text (20)	Not required	Method used for pump yield.	No
30	weep_hole	Text (1)	Not required	Is there a weep hole? "Y" for yes or "N" for no.	Y=yes N=No
31	head_configurat ion	Text (50)	Not required	Description of the well-head.	No
32	access_port_yn	Text (1)	Not required	Is there an access port? "Y" for yes or "N" for no.	Y=yes N=No
33	casing_joint_ty pe	Text (50)	Not required	Type of casing joint, such as "threaded," "flush," or "solvent-welded."	No
34	Perforator_used	Text (50)	Not required	Description of well perforation, such as "slotted," "drilled," or "wound."	No
35	intake_depth	Number w/decim al precision up to 15	Not required	Depth in feet below ground surface of the well intake.	Feet
36	Disinfected_yn	Text (1)	Not required	Was well disinfected? "Y" for yes or "N" for no.	Y=yes N=No
37	historical_ reference_elev	Number w/decim al precision up to 15	Not required	Leave null.	No
38	geologic_unit_c ode	Text (20)	If available	Geologic unit in which the well intake is installed.	No
39	Remark	Text (255)	Not required	Available for general remarks.	No

3.10 Well Construction EDD File

The well construction (WSG) file contains information relating to well construction and well segments. Information is required for all well segments within each well, including surface plug, protective casing, well casing, annular backfill, annular seal, screen, and filter pack. In order to obtain the depth of groundwater samples, it is particularly important that the depths of the top and bottom of the well screen be submitted for each well. Each well construction EDD file must be named according to the following convention:

EPAR5WSG_v3.txt (or .csv)

Table 3-10 Well construction (EPAR5WSG_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Value In Appendix
1	sys_loc_code	Text(20)	Required	Well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-4) submitted in the current or previous EDD.	No

Table 3-10 Well construction (EPAR5WSG_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Value In Appendix
2	segment_type	Text(20)	Required	Type of segment within well (e.g., protective casing, well casing, screen, etc.).	Table A-20
3	material_type_code	Text(20)	Required	Material description of well segment. Use values.	Table A-20
4	start_depth	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, of the top of the described segment.	No
5	end_depth	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, of the bottom of the described segment.	No
6	depth_unit	Text(15)	Required	The unit of depth measurements.	Table A-18
7	inner_diameter	Number w/decimal precision up to 15	Not required	The inside diameter of the described segment.	No
8	outer_diameter	Number w/decimal precision up to 15	Not required	The outside diameter of the described segment.	No
9	diameter_unit	Text(15)	If available.	The unit of diameter measurements	Table A-18
10	Thickness	Number w/decimal precision up to 15	Not required	Thickness of the described well segment.	No
11	thickness_unit	Text(15)	If available	The unit of measurement for thickness.	Table A-18
12	slot_type	Text(20)	Not required	Type of slots in screen segment such as bridge, shutter, and continuous.	No
13	slot_size	Number w/decimal precision up to 15	Not required	Width of slots.	No
14	slot_size_unit	Text(15)	If available	The unit of measurement for slot size..	Table A-18
15	perf_length	Number w/decimal precision up to 15	Not required	Length of perforated portion of screen in feet.	No
16	screen_type	Text(15)	Not required	Type of screen.	No
17	material_quantity	Text(20)	Not required	Quantity of material used in pounds. Applicable to annular seal/fill material.	No
18	material_density	Text(20)	Not required	Density of the annular seal material in lbs/ft^3.	No
19	Remark	Text(255)	Not required	Remarks regarding the segment.	No

3.11 Geology Samples EDD File

The Geology Samples (GSMP) EDD file contains geotechnical sample information. (Samples results related to chemical analyses should be reported using the Lab EDD.) Each Geology sample EDD file must be named according to the following convention:

EPAR5GSMP_v3.txt (or .csv)

Table 3-11 Geology samples (EPAR5GSMP_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text(20)	Required	Sample collection location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-4) submitted in the current or previous EDD.	No
2	geo_sample_ code	Text(40)	Required	Unique sample identifier. Considerable flexibility is given in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced.	No
3	sample_name	Text(50)	Not required	Use to provide a name or description of sample. Does not have to be a unique throughout database.	No
4	sample_top	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, to top of sample.	No
5	sample_ bottom	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, to bottom of sample.	No
6	Sample_date	DateTime	Not required	Date sample was collected.	MM/DD/YYYY HH:MM:SS format
7	sample_ method	Text(30)	If available	Method used to obtain sample, e.g., split spoon or Shelby tube.	No
8	material_type	Text(40)	If available	Material type of geologic sample. .	Table A-8
9	sample_desc	Text(255)	Not required	General description of the sample or sampling activities.	No
10	geologic_ unit_code	Text(20)	If available	Code used to identify the geologic unit of the sample.	No
11	liquid_limit	Number w/decimal precision up to 7	Not required	Liquid limit (LL) of the sample.	No
12	plastic_limit	Number w/decimal precision up to 7	Not required	Plastic Limit (PL) of the sample.	No

Table 3-11 Geology samples (EPAR5GSMP_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
13	shrinkage_ limit	Number w/decimal precision up to 7	Not required	Shrinkage limit of the sample.	No
14	flow_index	Number w/decimal precision up to 7	Not required	Flow index of the sample.	No
15	plasticity_ index	Number w/decimal precision up to 7	Not required	Plasticity index of the sample.	No
16	Activity	Number w/decimal precision up to 7	Not required	Activity of the sample.	No
17	E	Number w/decimal precision up to 7	Not required	Void ratio of the sample.	No
18	e_max	Number w/decimal precision up to 7	Not required	Maximum void ratio of the sample.	No
19	e_min	Number w/decimal precision up to 7	Not required	Minimum void ratio of the sample.	No
20	N	Number w/decimal precision up to 7	Not required	Porosity of the sample.	No
21	specific_ gravity	Number w/decimal precision up to 7	Not required	Specific gravity of the sample.	No
22	W	Number w/decimal precision up to 7	Not required	Water content of the sample.	No
23	opt_w	Number w/decimal precision up to 7	Not required	Optimum water content.	No
24	S	Number w/decimal precision up to 7	Not required	Degree of saturation of the sample.	No
25	K	Number w/decimal precision up to 7	Not required	Hydraulic conductivity of the sample.	No

Table 3-11 Geology samples (EPAR5GSMP_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
26	K_unit	Text(15)	If available.	Unit of measure for K.	Table A-18
27	unit_wt	Number w/decimal precision up to 7	Not required	Unit weight of the sample.	No
28	sat_unit_wt	Number w/decimal precision up to 7	Not required	Saturated unit weight of the sample.	No
29	dry_unit_wt	Number w/decimal precision up to 7	Not required	Dry unit weight of the sample.	No
30	dry_unit_wt_ max	Number w/decimal precision up to 7	Not required	Maximum dry unit weight of the sample.	No
31	dry_unit_wt_ min	Number w/decimal precision up to 7	Not required	Minimum dry unit weight of the sample.	No
32	density_unit	Text(15)	If available	Unit of measure for the densities of the sample.	Table A-18
33	rel_density	Number w/decimal precision up to 7	Not required	Relative density of the sample.	No
34	rel_ compaction	Number w/decimal precision up to 7	Not required	Relative compaction of the sample.	No
35	Consistency	Text (20)	Not required	Description of the consistency of the soil sample such as very soft, soft, firm, hard or very hard.	No
36	organic_ carbon	Number w/decimal precision up to 7	Not required	Organic carbon content of sample.	No
37	organic_ carbon_unit	Text (15)	If available	Unit of measurement of organic content. Use values from Table A-18 of the Appendix.	No

3.12 Water Levels

The Water Level (EPAR5GWTR_v3) EDD file contains information on water levels measured during sampling activities. Groundwater levels and surface water elevations should be reported using this file; however, in most cases, the file will be used to report groundwater levels. When surface water samples are collected, however, this EDD file should be used to record water surface elevations at the time the samples were collected. Surface water elevations reported in this file will be used as the reference elevation for surface water sample depths (i.e., start_depth, field 11, and end_depth, field 12 in the lab Sample (EPAR5SMP_v3) EDD file. See Table 4-1). When using the Water Level EDD file for reporting surface water data, only the first six fields (fields 1 through 6) and the "remark" field (field 17) should be populated. All fields in the Water Level EDD file, however, should be populated for groundwater elevation data (if data is available). An example of a Water Level file is provided in Figure 2-4, section 2.16. Each water level file must be named according to the following convention:

EPAR5GWTR_v3.txt (or .csv)

Table 3-12 Water Level (EPAR5GWTR_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text(20)	Required	Water level measurement location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-4) submitted in the current or previous EDD.	No
2	Measurement_ date	DateTime	Required	Date of water level measurement If exact date is not known, enter the best estimate for the date of sampling. If an estimated date is entered, note this and provide an explanation for how the estimate was made in both the EDD cover letter and in the comment field in this file (field 10).	MM/DD/YYYY HH:MM:SS format

Table 3-12 Water Level (EPAR5GWTR_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
3	historical_ reference_elev	Number w/decimal precision up to 15	Required	For groundwater samples, the value in this field should be the elevation, in feet above mean sea level, of the reference point used to take measurements of the water level depth. Typically the reference point for groundwater measurements is the top of the well casing. For surface water samples, the value in this field should be the elevation of the surface water in feet above mean sea level. If elevation is given in units other than feet above mean sea level, please indicate the unit used in the remarks field (field 17).	No
4	water_level_depth	Number w/decimal precision up to 7	Required	For groundwater, the value in this field should be the depth of ground water below the elevation defined in historical_reference_elev field (field 5). For surface water, the value in this field should be the default value of "0"	No
5	water_level_elev	Number w/decimal precision up to 7	Not required	Elevation of water level. Elevation must be in feet.	Feet
6	corrected_depth	Number w/decimal precision up to 7	Not required	Depth of water level after any necessary corrections, e.g., if free product was encountered.	No
7	corrected_elev	Number w/decimal precision up to 7	Not required	Corrected water level elevation that corresponds to the corrected depth. Elevation must be in feet.	feet
8	measured_depth_ of_well	Number w/decimal precision up to 7	Not required	The depth below ground surface to the bottom of the well.	No
9	depth_unit	Text (15)	If available	Unit used for depth measurements. See Table A-18 in the Appendix for appropriate values.	Table A-18

Table 3-12 Water Level (EPAR5GWTR_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
10	Technician	Text (30)	Not required	Name of technician measuring water level	No
11	dry_indicator_yn	Text (1)	Not required	This field is used to indicate whether or not a well is dry -- "Y" for yes or "N" for no.	Y= yes N=No
12	measurement_method	Text (20)	Not required	Method used to make water level measurements.	No
13	batch_number	Text (10)	Not required	Batch number of group of measurements.	No
14	dip_or_elevation	Text (10)	Not required	Use either "elevation" or "dip." Use "elevation" if water level measurement is above the datum (i.e., artesian well) or "dip" if water level is below datum.	Elevation Dip
15	Remark	Text (255)	Not required	Any necessary remarks related to groundwater or surface water information provided in this EDD file.	No
16	Lnapl_cas_rn	Text (15)	If applicable	Analyte code of the light non-aqueous phase liquid (lnapl) present in the well. Use appropriate valid value from Table A-15 in the EDD Specification Manual Valid Value Appendix.	Table A-15
17	Lnapl_depth	Text Number with precision of up to 7	Not required	Depth to the top surface of the lnapl in feet below the reference elevation.	No
18	Dnapl_cas_rn	Text (15)	If applicable	Analyte code of the dense non-aqueous phase liquid (dnalp) present in the well..	Table A-15
19	Dnaple_depth	Number with precision of up to 7	Not required	Depth to the top surface of the dnapl in feet below the reference elevation	No
20	Task_code	Text(40)	Required	Code used to associate individual samples to a specific sampling event. The format for this field is XX-P#, XX is the type of task required and P# is the phase.	No

3.13 Water Table EDD Files

The water table (EPAR5TBL_v3) EDD file stores data pertaining the water table and is used to record groundwater data during drilling activities. Each water table EDD file must be named according to the following convention:

EPAR5TBL_v3.txt (or .csv)

Table 3-13 Water table (EPAR5TBL_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text (20)	Required	Soil boring or well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-4) submitted in the current or previous EDD.	No
2	Type	Text (20)	Required	Aquifer designation, such as unconfined1, confined1, or confined2.	No
3	Sequence	Text (20)	Required	Designation of when water level measurement was taken. Use "unstabilized" if measurement was taken before water stabilized and use "stabilized" if measurement taken after stabilization.	No
4	Depth	Number w/decimal precision up to 15	Required	Depth of water table, in feet, below reference point.	Feet
5	flowing_yn	Text (1)	Not Required	Is the water table flowing? "Y" for yes or "N" for no.	Y=yes N=No
6	measurement_method	Text (50)	Not required	Method of measuring water table depth.	No
7	capped_pressure	Number w/decimal precision up to 15	Not required	Hydrostatic pressure of confined aquifer.	No
8	capped_pressure_unit	Text (15)	If available	Unit of measure for capped pressure. Use values from Table A-18 in the Appendix.	Table A-18
9	reference_point	Text (50)	Not required	Description of reference point from which depth measurements were taken.	No
10	reference_elevation	Number w/decimal precision up to 15	Required	Elevation of the reference point from which depth measurement were taken. Elevation must be in feet.	No
11	Temperature	Number w/decimal precision up to 15	Not required	Temperature of water in the water table.	No
12	temperature_unit	Text (15)	If available	Unit of temperature. Use values from Table A-18 in the Appendix.	Table A-18

3.14 Geology Down Hole Point Data EDD File

The Geology downhole point data (DHP) EDD file stores data from down hole logging methods such as Cone Penetrometer Tests and geophysics. All down hole logging data should be submitted electronically. Report the parameter being measured in the "param" field, such as resistivity, and report the measured value at the depth of the measurement. Table 3.14a presents the DHP EDD file structure.

Each Geology downhole point data EDD file must be named according to the following convention:

EPAR5DHP_v3.txt (or .csv)

Table 3-14 Geology Downhole Point (EPAR5DHP_v3) File Data Structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text(20)	Required	Sample collection location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-4) submitted in the current or previous EDD.	No
2	Depth	Number w/decimal precision up to 15	Required	Depth of measurement below ground surface in feet.	No
3	Param	Text(20)	Required	The parameter being measured, such as tip stress, resistivity, or pore pressure.	No
4	param_value	Number w/decimal precision up to 15	Required	The measured value of the parameter.	No
5	Param_unit	Text(15)	Required	Measured unit of the parameter	No

Table 3.14a Example of downhole point data file

Sys_loc_code	Depth	Param	Param_Value
MW01	10.8	Tip Stress	612
MW01	11.2	Tip Stress	624
MW01	10.8	Sleeve Stress	6.1
MW01	11.2	Sleeve stress	5.8
MW02	9.5	Resistivity	510
MW02	10.1	Resistivity	521
MW02	11.0	Resistivity	889

3.15 Extraction – Injection Well (EPAR5EIW_v3) EDD File

The Extraction-Injection Well (EIW) EDD file should be submitted on a regular (e.g., quarterly) basis for all sites where extraction and/or injection wells are a part of the remedial action at the site. The purpose of the EIW EDD file is to provide EPA Region 5 with designed pumping rates as well as the actual pumping rates for each well during a particular reporting period. This information will be useful for determining if the remedial system is successfully capturing the contaminant plume. An example of an

Extraction-Injection Well file is provided in Figure 2-4, section 2.16. Each Extraction-Injection Well EDD file must be named according to the following convention:

EPAR5EIW_v3.txt (or .csv)

Table 3-15 Extraction-Injection Well (EPAR5EIW_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text(20)	Required	Well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-4) submitted in the current or previous EDD.	No
2	start_measure_date	DateTime	Required	Date that the pumping rate measurements began.	MM/DD/YYYY HH:MM:SS format
3	end_measure_date	DateTime	Required	Date that the pumping rate measurements concluded in MM/DD/YYYY HH:MM:SS format.	MM/DD/YYYY HH:MM:SS format
4	avg_pump_rate	Number w/decimal precision up to 15	Required	Average pumping rate. Recommended method is to use volume pumped divided by the reported date span. i.e., from the (start_measurement_date to end_measurement_date)	No
5	pump_rate_unit	Text(15)	Required	Unit of measure for the pumping rate. Use values from Table A-18 in the Appendix.	Table A-18
6	pct_operating_time	Text(3)	Not required	Percentage of the measurement time interval during which the well was operating. Use a value from 0 to 100 (do not include the percent symbol, "%").	No
7	operating_ mode	Text(14)	Required	Mode in which well was operating during the reported interval.	EXTRACTION, INJECTION, RECIRCULATION, PULSE, DEVEL, UNUSE.
8	design_rate	Text(14)	Required	Pumping rate as specified in the approved remedial design report for fully capturing site groundwater contamination.	No
9	design_rate_unit	Text(14)	Required	Unit of measure for the design pumping rate. Use values from Table A-18 in the Appendix.	Table A-18
10	rate_measurement_type	Text(14)	Not required	Type of measurements used for averaging.	TOTALIZER (totalizing flow meter), MANIFOLD (estimated from total manifold flow), ESTIMATE (estimate from prior values), AVERAGE (average of instantaneous measurements

Table 3-15 Extraction-Injection Well (EPAR5EIW_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
11	suction	Text(14)	Not required	Vacuum in well (e.g., wellpoint vacuum) or well casing (e.g., vacuum well), reported in equivalent feet of water.	No
12	remark	Text(255)	Not required	Remarks regarding the pumping rate measurements.	No

3.16 Soil Gas Data EDD File

The soil gas (EPAR5SoilGas_v3) data file contains soil gas survey data.

Each Soil Gas data EDD file must be named according to the following convention:

EPAR5SoilGas_v3.txt (or .csv)

Table 3-16 Soil Gas (EPAR5SoilGas_v3) Survey file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text(20)	Required	Sample collection location	N/A
2	survey date	Datetime	Required	Sample survay date	N/A
3	Parameter_code	Text(20)	Required	Parameter measured by soil gas survey	N/A
4	Reading_depth	Text(8)	Not required	Depth of soil gas survey measurement	N/A
5	Reading unit	Text(15)	If available	Parameter measured by soil gas survey	N/A
6	Reading	Text(8)	Not required	Soil gas survey measurement	N/A
7	Depth_unit	Text(15)	If Available	Unit of measure of soil gas survey measurement	N/A
8	Sampling_method	Text(10)	Not required	Sampling method	N/A
9	Instrument_type	Text(15)	Not required	Instrument type	N/A
10	East	Text(14)	Not required	Easting coordinate of soil gas survey measurement	N/A
11	North	Text(14)	Not required	Northing coordinate of soil gas survey measurement	N/A
12	Secondary_east	Text(14)	Not required	Secondary easting coordinate of soil gas survey measurement	N/A
13	Secondary north	Text(14)	Not required	Secondary easting coordinate of soil gas survey measurement	N/A
14	Lithology_code	Text(10)	Not required	Lithology code	N/A
15	Area_desc	Text(70)	Not required	Discription of area	N/A
16	Equipment_code	Text(60)	Not required	Equipment_code	N/A
17	Borehole_drill_method	Text(10)	Not required	Drilling method	N/A
18	Technician	Text(50)	Not required	Technician	N/A
19	Remark	Text(255)	Not required	remark	N/A

3.17 SAMPLE PARAMETER

EPAR5SAMPLEPARAM_v3.txt (or .csv)

Table 3-17 Sample Parameter (EPAR5SAMPLEPARAM_v3) Survey file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_sample_code	Text(40)	Y	Unique sample identifier. Each sample must have a unique value, including spikes and duplicates. Laboratory QC samples must also have unique identifiers. The laboratory and the EQuIS user have considerable flexibility in the methods they use to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQuIS.	N/A
2	measurement_date	DateTime		Measurement date and time	N/A
3	param_code	Text(20)	Y	Parameter code	N/A
4	param_value	Text(255)		Parameter value	
5	param_unit	Text(15)		Unit of measure for parameter value	
6	measurement_method	Text(20)		Measurement method	
7	remark	Text(2000)		Remark	

4. FORMATS FOR LAB FILES

This section contains tables that define the file structures for the Chemistry EDD. The file structures include chemistry sample, sample parameter, test/result QC, and Batch file. Please notice that some columns are labeled as "Reserved for future use." These columns should simply be reported as null values and are only needed to comply with standard EQuIS® reporting formats. Columns marked "Required" must be reported for each row. If an EDD is submitted with one or more "Required" fields not filled in, EPA will not be able to load the EDD into its database, and the EDD will have to be returned to the data provider for correction(s). Columns marked "If available" should be filled in if at all possible.

4.1 Lab Sample EDD File

The Chemistry Sample EDD file contains data for samples collected at a site and location. The unique identifier for each sample is recorded in the sys_sample_code. For trip blank samples, please record the sys_sample_code as "TB" plus the date on which the sample was collected in MMDDYY format. For example a trip blank collected on April 5, 2000 would have a sys_sample_code of TB040500. A sys_sample_code of 'Trip Blank' is unacceptable because it cannot be distinguished from another trip blank labeled the same way. For samples that are not associated with a specific sampling location, such as trip blanks or field blanks, leave the sys_loc_code field (field 10) null. For surface water samples, record the sample depths, start_depth (field 11) and end_depth (field 12), as depth below the water surface elevation. The water surface elevation at the time of the sampling should be recorded in the Water Level file (see Section 4.3). An example of a Lab Sample file is provided in Figure 2-4, section 2.16.

Each Lab Sample file must be named according to the following convention:

EPAR5SMP_v3.txt (or .csv)

Table 4-1 Lab sample (EPAR5SMP_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	Data_provider	Text (20)	Required	Date provider company code	A-23
2	sys_sample_code	Text(40)	Required	**Unique sample identifier**. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers; however, uniqueness throughout the database is required.	No
3	sample_name	Text(50)	Not required	Additional sample identification information as necessary. Is not required to be unique (i.e., duplicates are OK). Can be the same value as in the sys_sample_code field.	No
4	sample_matrix_code	Text(3)	Required	Code that identifies the matrix being sampled, such as soil, groundwater, or sediment. For acceptable valid values, see Table A-1 in the Appendix.	Table A-1

Table 4-1 Lab sample (EPAR5SMP_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
5	sample_type_code	Text(3)	Required	Code that distinguishes between different types of samples, such as normal field samples versus laboratory method blank samples. For acceptable valid values see Table A-12 in the Appendix.	Table A-12
6	sample_source	Text(10)	Required	Identifies where the sample originated. Use either "Field" or "Lab". Use "Field" for all samples originating from the field and use "Lab" if sample originated from the laboratory.	Field Lab
7	parent_sample_code	Text(40)	Required for field duplicate samples	Unique identifier of the original sample from which the current sample was derived, i.e. the "parent" sample. Required for samples with a sample_type_code of "BD", "FD", "FR", "FS", "LR", "MS", "MSD" or "SD."	No
8	sample_delivery_ group	Text(10)	Not required	EPA and most EPA Reigon 5 data providers are accustomed to using the Contract Laboratory Program (CLP) document definition of the sample delivery group (SDG). However, the CLP definition of an SDG relates to a lab payment group which is not what is being asked for in this field. For the purposes of this field in this EDD, the value entered should correspond more to the "sampling event/ matrix" with which the sample is associated. For example, the SDG for ground water samples should be different from that for surface water samples. This will prevent flags associated with surface water matrix effects from being propagated to ground water results	No
9	sample_date	DateTime	Required	Date sample was collected in MM/DD/YYYY HH:MM:SS format.	MM/DD/YYYY HH:MM:SS format.
10	sys_loc_code	Text(20)	Required*	Sample collection location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-4) submitted in the current or previous EDD. * Field should be null if sample is not associated with a specific location, such as QC samples (e.g., field blank, trip blank) and this code cannot be the same as sys_sample_code	No
11	start_depth	Number w/decimal precision up to 15	Not required	Beginning depth (top) of sample in feet below ground surface for Soil or Groundwater sample. Only use for groundwater samples if discrete samples are taken at different depth elevations from a single well, i.e. multiple well packer samples.	No

Table 4-1 Lab sample (EPAR5SMP_v3) file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
12	end_depth	Number w/decimal precision up to 15	Not required	Ending depth (bottom) of sample in feet below ground surface for Soil or Groundwater sample. Only use for groundwater samples if discrete samples are taken at different depth elevations from a single well, i.e. multiple well packer samples.	No
13	depth_unit	Text(15)	If available	Unit of measurement for the sample beginning and end depths. For valid values, see Table A-18 in the Appendix.	Table A-18
14	chain_of_custody	Text(15)	Not required	Chain of custody identifier. A single sample may be assigned to only one chain of custody.	No
15	sent_to_lab_date	DateTime	Not required	Date sample was sent to lab in MM/DD/YYYY format.	No
16	sample_receipt_date	DateTime	Not required	Date that sample was received at laboratory in MM/DD/YYYY format.	No
17	sampler	Text(30)	Not required	Name or initials of sampler.	No
18	sampling_company_code	Text(10)	Required	Name or initials of consulting company performing sampling. (This field does not have a controlled vocabulary, i.e., there is no table of valid values for this field.)	No
19	sampling_reason	Text(30)	Not required	Reason for Sampling	No
20	sampling_technique	Text(40)	If available	Sampling technique.	No
21	task_code	Text(40)	Required	Code used to associate individual samples to a specific sampling event. The format for this field is XX-P#, XX is the type of task required and P# is the phase.	No
22	collection_quarter	Text(5)	Not required	Report as null.	No
23	composite_yn	Text(1)	Required	Is sample a composite sample? Enter “Y” for yes or “N” for no.	Y= Yes N=No
24	composite_desc	Text(255)	Not required	Description of composite sample. If sample is not a composite, leave this field null.	No
25	sample_class	Text(10)	Not required	Report as null.	No
26	custom_field_1	Text (20)	Not required	Report as null.	No
27	custom_field_2	Text(50)	Not required	Report as null.	No
28	custom_field_3	Text(50)	Not required	Report as null.	No
29	comment	Text(255)	Not required	Any comments regarding the sample.	No

4.2 Lab Test Results EDD Files

The Lab Test Results EDD files contain data relating data concerning analytical tests and results performed on samples.

Each Lab Test Results EDD file must be named according to the following convention:

EPAR5TRS_v3.txt (or .csv)

Table 4-2 Lab Test Results (EPAR5TRS_v3) EDD file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_sample_code	Text(40)	Required	Sample identifier of the sample that was tested and analyzed. Must match one of the reported values in the sys_sample_code field of the EPAR5SMP_v3 file submitted in the current or previous EDD.	No
2	lab_anl_method_ name	Text(20)	Required	Laboratory analytical method name or description. For acceptable valid values, see Table A-16 in the Appendix. Default to “Unknown” if data is unavailable.	Table A-16
3	analysis_date	DateTim e	Required	Date of sample analysis in MM/DD/YYYY HH:MM:SS format. May refer to either beginning or end of the analysis. For measurements taken in the field (e.g., pH, dissolved oxygen), use the same date as sample date	No
4	total_or_dissolved	Text(1)	Required	Must be either "D" for dissolved or filtered [metal] concentrations, and “T” for every other case.	A-24
5	column_number	Text(2)	Not required	Report as null.	No
6	test_type	Text(10)	Required	Type of test	A-25
7	lab_matrix_code	Text(3)	If available	Code that identifies the matrix, such as soil, groundwater, and sediment, being sampled... The matrix of the sample as analyzed may be different from the matrix of the sample as retrieved (e.g., leachates), so this field is available at both the sample and test level.	Table A-1
8	analysis_location	Text(2)	Required	Must be either "FI" for field instrument or probe (i.e, “in the field” measurements such as pH, temperature, conductivity, and dissolved oxygen), "FL" for mobile field laboratory analysis, or "LB" for an analysis done at a fixed-based laboratory.	FI = Field Instrument FL = Mobile Field lab LB = Fixed based lab

Table 4-2 Lab Test Results (EPAR5TRS_v3) EDD file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
9	Basis	Text(10)	Required	Must be "Wet" for wet-weight basis reporting, "Dry" for dry-weight basis reporting, or "NA" for tests for which this distinction is not applicable. EPA prefers that results are reported on the basis of dry weight where applicable.	Wet= wet-weight Dry= dry weight N/A = not applicable
10	container_id	Text(30)	Not required	Report as null.	No
11	dilution_factor	Number w/decimal precision up to 7	Not required	Effective test dilution factor.	No
12	prep_method	Text(20)	If available	Laboratory sample preparation method name or description. Must use valid value from Table A-14 in the Appendix.	Table A-14
13	prep_date	DateTime	Not required	Beginning date of sample preparation	MM/DD/YYYY HH:MM:SS format
14	leachate_method	Text(15)	Not required	Laboratory leachate generation method name or description. The method name should be sufficient to reflect the operation methodology used by the laboratory (see analysis method discussion).	No
15	leachate_date	DateTime	Not required	Beginning date of leachate preparation	MM/DD/YYYY HH:MM:SS format
16	lab_name_code	Text(20)	If available	Unique identifier of the laboratory as defined by the EPA. Controlled vocabulary.. [Note: If the lab you are using does not appear in Table A-17, you may propose a valid value for the lab for addition to the EPA Region 5 list. Please provide information about the lab in the cover letter accompanying your EDD submittal.]	Table A-17
17	qc_level	Text(10)	Not required	Not limit to “Screen” or “Quant”, visit Appendix B in the https://semspub.epa.gov/work/HQ/176101.pdf for more values	No
18	lab_sample_id	Text(20)	Not required	Laboratory LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab_sample_id (maximum one per each test event).	No

Table 4-2 Lab Test Results (EPAR5TRS_v3) EDD file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
19	percent_moisture	Text(5)	Not required	Percent moisture of the sample portion used in this test; this value may vary from test to test for any sample. Numeric format is "NN.MM," i.e., 70.1% could be reported as "70.1" but not as "70.1%."	No
20	subsample_ amount	Text(14)	Not required	Amount of sample used for test.	No
21	subsample_ amount_unit	Text(15)	If available	Unit of measurement for subsample amount. Must use valid value from Table A-18 in the Appendix.	Table A-18
22	analyst_name	Text(30)	Not required	Report as null.	No
23	instrument_id	Text(50)	Not required	Report as null.	No
24	comment	Text(255)	Not required	Comments about the test as necessary.	No
25	preservative	Text(20)	If available	Sample preservative used.	No
26	final_volume	Numeric	Not required	The final volume of the sample after sample preparation. Include all dilution factors.	No
27	final_volume_unit	Text(15)	If available	The unit of measure that corresponds to the final_amount.	No
28	cas_rn	Text(15)	Required	Analyte code..	Table A-15
29	chemical_name	Text(75)	Required	Chemical name..	Table A-15
30	result_value	Numeric	Not required	Analytical result reported at an appropriate number of significant digits.	No
31	result_error_delta	Text(20)	Not required	Error range applicable to the result value; typically used only for radiochemistry results.	No
32	result_type_code	Text(3)	Required	Must be either "TRG" for a target or regular result, "TIC" for a tentatively identified compound. Use “TRG” for measurements taken from the field (e.g., pH, dissolved oxygen)	TRG = Target or regular TIC = Tentative identified
33	reportable_result	Text(10)	Required	Must be either "Yes" for results that are considered to be reportable, or "No" for other results. This field has many purposes. For example, it can be used to distinguish between multiple results where a sample is retested after dilution. It can also be used to indicate which of the first or second column result should be considered primary. The proper value of this field in both of these two examples should be provided by the laboratory (only one result should be flagged as reportable).	Yes No

Table 4-2 Lab Test Results (EPAR5TRS_v3) EDD file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
34	detect_flag	Text(2)	Required	Maybe either "Y" for detected analytes or "N" for non-detects. “Y” should be used for detected target compounds and TICs only (i.e. result_type_code is “TRG” or “TIC”). Also use "Y" for estimated (above detection limit but below the quantitation limit) or ">" and "<" for tests such as flash point. Note that "<" must not be used to indicate non-detects.	Y = detected N = non-detects
35	lab_qualifiers	Text(10)	Not required	Qualifier flags assigned by the laboratory.	No
36	validator_qualifiers	Text(10)	Not required	Qualifier flags assigned by the person who validates the laboratory data. The interpret qualifier is required if lap_qualifer or validator _qualifier are populated	No
37	Interpreted_qualifier	Text(20)	If available/ Required	Interpreted qualifier flag assigned by the data provider. The interpret qualifier is required if lap_qualifer or validator _qualifier are populated	Table A-10
38	Validated_yn	Text (1)	Required	Indicates if the result has been validated	
39	organic_yn	Text(1)	Required	Must be either "Y" for organic constituents or "N" for inorganic constituents. Use “Y” for measurements taken from the field (e.g., pH, dissolved oxygen)	Y= organic N= inorganic
40	method_detection_ limit	Text(20)	Not required	Report as null. The minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as determined for a specific procedure.	No
41	reporting_detection_ limit	Numeric	Not required	Must be reported if sample result is “non-detect.” The minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as determined for a specific procedure, which is equal to or greater than the MDL.	No
42	quantitation_limit	Text(20)	Not required	Concentration level above which results can be quantified with confidence. The value must reflect conditions such as dilution factors and moisture content, and must be sample-specific.	No
43	result_unit	Text(15)	If available	Units of measurement for the result. Must use valid values from Table A-18 in the Appendix.	Table A-18

Table 4-2 Lab Test Results (EPAR5TRS_v3) EDD file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
44	detection_limit_unit	Text(15)	If available	Units of measurement for the detection limit(s). Must use valid value from Table A-18 in the Appendix.	Table A-18
45	tic_retention_time	Text(8)	Not required	Report as null.	No
46	result_comment	Text(255)	Not required	Result specific comments.	No

4.3 Lab Test/Result with QC Data EDD File

The Lab test/results with QC (TRSQC) EDD file contains data from analytical tests performed on samples along with quality control data.

Each Chemistry test/results with QC EDD file must be named according to the following convention:

EPAR5TRSQC_v3.txt (or .csv)

Table 4-3 Chemistry test/results with QC (EPAR5TRSQC_v3) data file structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_sample_code	Text(40)	Required	Sample identifier of the sample that was tested and analyzed. Must match one of the reported values in the sys_sample_code field of the EPAR5SMP_v3 file submitted in the current or previous EDD.	
2	lab_anl_method_name	Text(20)	Required	Laboratory analytical method name or description. For acceptable valid values. Default to "Unknown" if data is unavailable.	Table A-16
3	analysis_date	DateTime	Required	Date of sample analysis in MM/DD/YYYY HH:MM:SS format. May refer to either beginning or end of the analysis. For measurements taken in the field (e.g., pH, dissolved oxygen), use the same date as sample date	
4	Total_or_dissolved	Text(1)	Required	Enumeration list contains the values	A-24
5	column_number	Text(2)	Not required	Column number, if null, "NA" will be placed in this field	No
6	test_type	Text(10)	Required	Type of test.	A-25
7	lab_matrix_code	Text(3)	If available	Code that identifies the matrix, such as soil, groundwater, and sediment. The matrix of the sample when it is analyzed may be different from the matrix of the sample when it is collected (e.g. leachates), so this field is available at both the sample and test level.	Table A-1
8	analysis_location	Text(2)	Required	Must be either "FI" for field instrument or probe (i.e, "in the field" measurements such as pH, temperature, conductivity, and dissolved oxygen), "FL" for mobile field laboratory analysis, or "LB" for an analysis done at a fixed-based laboratory.	FI = Field Instrument FL = Mobile Field lab LB = Fixed based lab
9	Basis	Text(10)	Required	Must be either "Wet" for wet-weight basis reporting, "Dry" for dry-weight basis reporting, or "NA" for tests for which this distinction is not applicable. EPA prefers that results are reported on the basis of dry weight where applicable.	Wet= wet-weight Dry= dry weight N/A = not applicable
10	container_id	Text(30)	Not required	Report as null.	No

Table 4-3 Chemistry test/results with QC (EPAR5TRSQC_v3) data file structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
11	dilution_factor	Numeric	Not required	Effective test dilution factor.	No
12	prep_method	Text(20)	If available	Laboratory sample preparation method name or description. Must use valid value from Table A-14 in the Appendix.	Table A-14
13	prep_date	DateTime	Not required	Beginning date of sample preparation.	MM/DD/YYYY HH:MM:SS format
14	leachate_method	Text(15)	Not required	Laboratory leachate generation method name or description. The method name should be sufficient to reflect the operation methodology used by the laboratory (see analysis method discussion).	No
15	leachate_date	DateTime	Not required	Beginning date of leachate preparation	MM/DD/YYYY HH:MM:SS format
16	lab_name_code	Text(20)	If available	Unique identifier of the laboratory as defined by the EPA. Controlled vocabulary; see the lab valid value table in appendix.	Table A-17
17	qc_level	Text(10)	Not required	**Not limit to "Screen" or "Quant", visit Appendix B in the https://semspub.epa.gov/work/HQ/176101.pdf for more values**	No
18	lab_sample_id	Text(20)	Not required	Laboratory LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab_sample_id (maximum one per each test event).	No
19	percent_moisture	Text(5)	Not required	Percent moisture of the sample portion used in this test; this value may vary from test to test for any sample. Numeric format is "NN.MM," i.e., 70.1% could be reported as "70.1" but not as "70.1%."	No
20	subsample_amount	Text(14)	Not required	Amount of sample used for test.	No
21	subsample_amount_unit	Text(15)	If available	Unit of measurement for subsample amount. Must use valid value from Table A-18 in the Appendix.	Table A-18
22	analyst_name	Text(30)	Not required	Report as null.	No
23	instrument_id	Text(50)	Not required	Report as null.	No
24	Comment	Text(255)	Not required	Comments about the test, if necessary.	No
25	Preservative	Text(20)	If available	Sample preservative used.	Table A-27

Table 4-3 Chemistry test/results with QC (EPAR5TRSQC_v3) data file structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
26	final_volume	Numeric	Not required	The final volume of the sample after sample preparation. Include all dilution factors.	No
27	final_volume_unit	Text(15)	If available	The unit of measure that corresponds to the final_amount.	Table A-18
28	cas_rn	Text(15)	Required	Analyte code..	Table A-15
29	chemical_name	Text(75)	Required	Chemical name.	Table A-15
30	Result_value	Numeric	Not required	Analytical result reported at an appropriate number of significant digits. May be blank for non-detect results.	No
31	Result_error_delta	Text(20)	If available	Error range applicable to the result value; typically used only for radiochemistry results.	No
32	Result_type_code	Text(10)	Required	Must be either "TRG" for a target or regular result, "TIC" for a tentatively identified compound, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds. Use "TRG" for measurements taken from the field (e.g., pH, dissolved oxygen). 'CAL' for calculated pore water concentrations.	Table A-11
33	reportable_result	Text(10)	Required	Must be either "Yes" for results that are considered to be reportable, or "No" for other results. This field has many purposes. For example, it can be used to distinguish between multiple results where a sample is retested after dilution. It can also be used to indicate which of the first or second column result should be considered primary. The proper value of this field in both of these two examples should be provided by the laboratory.	Yes No Y N
34	detect_flag	Text(2)	Required	Maybe either "Y" for detected analytes or "N" for non-detects. "Y" should be used for detected target compounds and TICs only (i.e. result_type_code is "TRG" or "TIC"). Also use "Y" for estimated (above detection limit but below the quantitation limit) or ">" and "<" for tests such as flash point. Note that "<" must not be used to indicate non-detects.	Y= detected N = non-detects
35	Lab_qualifiers	Text(10)	Not required	Qualifier flags assigned by the laboratory.	No

Table 4-3 Chemistry test/results with QC (EPAR5TRSQC_v3) data file structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
36	validator_qualifiers	Text(10)	Not required	Qualifier flags assigned by the person who validates the laboratory data.	No
37	Interpreted_qualifiers	Text(10)	If available	Interpreted qualifier flag assigned by the validator. When the validated_yn = N (no, meaning the data is not validated by validator), the interpret qualifier is required if lab_qualifier or validator _qualifier are populated. If the validated_yn = Y (yes, meaning the data has been validated and the validator agreed witht eh lab qualifier), then they should populate the validator_qualifier and the interpreted_qualifier. If the validated_yn = Y (yes, but the validator does not agree with the lab_qualifier), then the validator will leave the qualifier NULL and the final qualifier is also NULL. When populating th e interpreted_qualifier, please use the qualifier in the Valid Value in A-10 with the description that can closely match with the lab qualifier.	A-10
38	Validated_yn	Text (1)	Required	Must be either "Y" for validate or "N" for not validate.	Indicated if the result has been validated
39	Organic_yn	Text(1)	Required	Must be either 'Y' for organic constituents or 'N' for inorganic constituents.	No
40	method_detection_limit	Text(20)	If available	Report as null. The minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as determined for a specific procedure.	No
41	reporting_detection_limit	Numeric	Not required	Must be reported if sample result is “non-detect.” The minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as determined for a specific procedure, which is equal to or greater than the MDL.	No

Table 4-3 Chemistry test/results with QC (EPAR5TRSQC_v3) data file structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
42	quantitation_limit	Text(20)	Not required	Quantitation limits refer to a minimum concentration of an analyte that can be measured within specified limits of precision and accuracy. They are generally 5-10 times the detection limit. Thus, when quantitation limits are used as reporting limits, the laboratory is saying that the analyte is not present in a sufficient amount to be reliably quantified (i.e., at a concentration above the quantitation limit). It may be present and even positively identified or "seen" at a lower concentration.	No
43	Result_unit	Text(15)	If available	Units of measurement for the result. Must use valid values from Table A-18 in the Appendix.	Table A-18
44	detection_limit_unit	Text(15)	If available	Units of measurement for the detection limit(s). Must use valid value from Table A-18 in the Appendix.	Table A-18
45	tic_retention_time	Text(8)	Not required	Report the value and time when the result type is TIC.	No
46	Result_comment	Text (255)	Not required	Result specific comments	No
47	qc_original_conc	Numeric	Not required	The concentration of the analyte in the original (unspiked) sample. Might be required for spikes and spike duplicates (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero).	No
48	qc_spike_added	Numeric	Not required	The concentration of the analyte added to the original sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs).	No
49	qc_spike_measured	Numeric	Not required	The measured concentration of the analyte. Use zero for spiked compounds that were not detected in the sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs).	No

Table 4-3 Chemistry test/results with QC (EPAR5TRSQC_v3) data file structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
50	qc_spike_recovery	Numeric	Not required	The percent recovery calculated as specified by the laboratory QC program. Always required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "120%" as "120").	No
51	qc_dup_original_conc	Numeric	Not required	The concentration of the analyte in the original (unspiked) sample. Might be required for spike or LCS duplicates only (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero).	No
52	qc_dup_spike_added	Numeric	Not required	The concentration of the analyte added to the original sample. Might be required for spike or LCS duplicates, surrogate compounds, and any spiked and duplicated sample (depending on user needs). Use zero for spiked compounds that were not detected in the sample. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Also complete the qc-spike-added field.	No
53	qc_dup_spike_measured	Numeric	Not required	The measured concentration of the analyte in the duplicate. Use zero for spiked compounds that were not detected in the sample. Might be required for spike and LCS duplicates, surrogate compounds, and any other spiked and duplicated sample (depending on user needs). Also complete the qc_spike_measured field.	No
54	qc_dup_spike_recovery	Numeric	Not required	The duplicate percent recovery calculated as specified by the laboratory QC program. Always required for spike or LCS duplicates, surrogate compounds, and any other spiked and duplicated sample. Also complete the qc_spike_recovery field. Report as percentage multiplied by 100 (e.g., report "120%" as "120").	No
55	qc_rpd	Text(8)	Not required	The relative percent difference calculated as specified by the laboratory QC program. Required for duplicate samples as appropriate. Report as percentage multiplied by 100 (e.g., report "30%" as "30").	No

Table 4-3 Chemistry test/results with QC (EPAR5TRSQC_v3) data file structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
56	qc_spike_lcl	Text(8)	Not required	Lower control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "60%" as "60").	No
57	qc_spike_ucl	Text(8)	Not required	Upper control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "120%" as "120").	No
58	qc_rpd_cl	Text(8)	Not required	Relative percent difference control limit. Required for any duplicated sample. Report as percentage multiplied by 100 (e.g., report "25%" as "25").	No
59	qc_spike_status	Text(10)	Not required	Used to indicate whether the spike recovery was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample.	No
60	qc_dup_spike_status	Text(10)	Not required	Used to indicate whether the duplicate spike recovery was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for any spiked and duplicated sample.	No
61	qc_rpd_status	Text(10)	Not required	Used to indicate whether the relative percent difference was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for any duplicated sample.	No

4.4 Lab Batch Data (EPAR5BAT_v3) EDD File

The Lab Batch (EPAR5BAT_v3) EDD file contains data that relate the individual samples to the laboratory batch identifier. For the most part, as with the TestResultQC EDD file, the BATCH EDD file will only need to be submitted by EPA contractors that are submitting quality data elements with their reports. The purpose of this EDD file is so laboratory quality control samples can be associated with the correct field samples with which they were processed and analyzed. This EDD file has been structured to allow samples to have different batch IDs for various phases of analysis (e.g., preparation phase, analysis phase). The majority of samples will only have one batch ID assigned by the laboratory. It is important that the values in the sys_sample_code, lab_anl_method_name, analysis_date, analysis_time, total_or_dissolved and test_type fields match those found in the TestResultQC EDD files. Each Chemistry batch file must be named according to the following convention:

EPAR5BAT_v3.txt (or .csv)

Table 4-4 Lab batch file (EPAR5BAT_v3) data structure

Pos#	Column Name	Data type	Required	Description	Valid Values In Appendix
1	sys_sample_code	Text(40)	Required	Sample identifier of the sample that was tested and analyzed. Must match one of the reported values in the sys_sample_code field of the EPAR5SMP_v3 file (Table 4-1) submitted in the current or previous EDD.	No
2	lab_anl_method_ name	Text(20)	Required	Laboratory analytical method name or description. For acceptable valid values, see Table A-16 in the Appendix. Default to "Unknown" if data is unavailable.	Table A-16
3	analysis_date	Datetime	Required	Date of sample analysis. May refer to either beginning or end of the analysis.	MM/DD/YYYY HH:MM:SS format.
4	total_or_dissolved	Text(1)	Required	Enumeration list contains the values	A-24
5	column_number	Text(2)	Not required	Report as null.	No
6	test_type	Text(10)	Required	Type of test.	A-25
7	test_batch_type	Text(10)	Required	Lab batch type. This is a required field for all batches.	A-26
8	test_batch_id	Text(20)	Required	Unique identifier for all lab batches.	No

5. VAPOR INTRUSION

FORMATS FOR VAPOR INTRUSION FILES

Vapor Intrusion data submittals contain data of sampling taken inside of the contaminated sites or buildings.

5.1 Vapor Intrusion Building Address EDD File

The Vapor Intrusion Building Address (EPAR5_VI_BLDG_ADDRESS_V3) contains address and contact information for the building.

Each Vapor Intrusion file must be named according to the following convention:

EPAR5_VI_BLDG_ADDRESS_V3

Table 5-1 Vapor Intrusion Building Address data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	building_code	Text (20)	Required	Unique code that identifies the building within the facility (i.e. B001, B002, etc.)	

2	Subfacility_code	Text (20)	Required	Code indicating the subfacility operable unit (OU) for which the data is collected or area of concern (AOC). Use the code 'OU1' unless there are additional operable units at a facility. In the case of additional operable units, use codes of 'OU2', 'OU3', etc., respectively.Must match the code in the Subfacility_v4 EDD file submitted in the current or previous EDDs.	
3	Task_code	Text (40)	Required	For soil vapor intrusion sampling and building inspection information enter "SVI".	
4	contact_name	Text (50)	Required	Building Contact Name: This should be populated with the EPA Project Manager name. Occupant or Owner personal information (Name, telephone numbers, and address) are NOT to be included for SVI Building Information.	
5	address1	Text (40)	Required	Building address, part one.	
6	address2	Text (40)		Building address, part two	
7	city	Text (30)	Required	Building city	
8	state	Text (2)	Required	Building state	
9	zip_code	Text (10)	Required	Building zipcode	
10	county	Text (50)	If available	Building county	
11	phone_number	Text (30)	Required	Building contact phone number	
12	alt_phone_number	Text (30)		Alternative site phone number	
13	fax_number	Text (30)		Building contact fax number.	
14	email_address	Text (100)	Required	Building contact email address.	
15	remark	Text (2017)		Remark	
16	Remark_2	Text (2017)		Remarts	

5.2 Vapor Intrusion Building Inspection EDD Files

The Vapor Intrusion Building (EPAR5_VI_BLDG_INSPECTION_V3) contains specific data about the building.

Each Vapor Intrusion building file must be named according to the following convention:

EPAR5_VI_BLDG_INSPECTION_V3

Table 5-2 Vapor Intrusion Building Inspection data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	building_code	Text (20)	Required	Unique code that identifies the building within the facility (i.e. B001, B002, etc.)	
2	Inspection_date	DateTime	Required	Enter the date the building inspection was conducted (in MM/DD/YYYY HH:MM format).	
3	Task_code	Text (40)	Required	For soil vapor intrusion sampling and building inspection information enter "SVI".	
4	building_name	Text (255)	Required	Building name (i.e. Denison Medical Building)	
5	building_type	Text (20)	Required	Type of building (i.e. Residential, Industrial, etc.)	
6	Building_use_type	Text (20)	Required	Enter the building's use type such as Dry Cleaner, Day Care if commercial or Ranch Home if Residential.	
7	building_size	Text (20)		Size of building (Small, Medium, Large)	
8	num_floors	Numeric		Number of floors in the building	
9	construct_year	Numeric		Year of construction	
10	foundation_depth	Numeric		Foundation depth (below ground surface)	
11	foundation_depth_unit	Text (15)		Foundation depth unit	
12	foundation_type	Text (20)	Required	Foundation type (i.e. Basement, crawlspace, ect.)	
13	foundation_wall_material	Text (20)		Foundation wall material	
14	foundation_floor_material	Text (20)		Foundation floor material	
15	foundation_wall_thickness	Numeric		Foundation wall thickness	
16	foundation_floor_thickness	Numeric		Foundation floor thickness	
17	foundation_thickness_unit	Text (15)		Foundation thickness units	
18	attached_garage_yn	Text (1)		Existance of an attached garage (Y/N)?	
19	radon_mitigation_yn	Text (1)		Existance of radon mitigation system (Y/N)?	
20	heat_fuel_type	Text (255)		Type of heating fuels (i.e. Natural gas)	
21	heat_system_type	Text (255)		Type of heating system (i.e. Forced hot air)	
22	central_air_yn	Text (1)		Existance of central air system (Y/N)?	

23	sump_yn	Text (1)		Existance of sump pump (Y/N)?	
24	voc_mitigation_yn	Text (1)		VOC mitigation flag (Y/N)?	
25	remark	Text (2017)		Building remarks	
26	custom_field_1	Text (255)			
27	custom_field_2	Text (255)			
28	custom_field_3	Text (255)			
29	custom_field_4	Text (255)			
30	custom_field_5	Text (255)			

5.3 Vapor Intrusion Building Parameters EDD File

The Vapor Intrusion Building Parameters (EAR5_VI_BLDG_PARAMETERS_v3) contains additional sampling parameter collected in the field and not analyized in the lab.

Each Vapor Intrusion Task Parameter file must be named according to the following convention:

EPAR5_VI_BLDG_PARAMETERS_V3

Table 5-3 Vapor Intrusion Building Parameters data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	Building_code	Text (20)	Required	Unique code that identifies the building within the facility (i.e. B001, B002, etc.) For additional information, please refer to the EDD Manual.	
2	param_code	Text (20)	Required	A unique parameter code designed for buildings such as the Soil Vapor Intrusion Building Inventory Form parameters found on rt_subfacility_parameter_type.	
3	task_code	Text (40)	Required	For soil vapor intrusion sampling and building inspection information enter "SVI."	
4	measurement_date	DateTime	Required	The specific date the measurement was collected. For Soil Vapor Intrusion form data, the date should be the building inspection date (in MM/DD/YYYY HH:MM)	
5	param_value	Text (255)	Required	The value related to the parameter code used.	
6	param_unit	Text (15)		The corresponding unit that relates to the parameter value used.	Enumeration list
7	remark	Text (2017)		A comment or other free text to further describe the parameter code or parameter value.	

5.4 Vapor Intrusion Locations EDD file

The Vapor Intrusion Location (EPAR5_VI_LOCATIONS_V3) contains locations information.

Each Vaport Intrustion Locaiton file must be named according to the following convention:

EPAR5_VI_LOCATIONS_V3

Table 5-4 Vapor Intrusion Location data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	data_provider	Text (20)	Required	Data provider for location data. Must be the valid code for the data provider for this subfacility and match the data_provider field of the DataProvider EDD file submitted in the current or previous EDDs.	**A-23**
2	sys_loc_code	Text (20)	Required	Location identifier of sample collection. Use sample location ID. Must be unique for each OU or Building. Example: RESIDENT01-BSMT for a sample location type (Basement) contained within building code RESIDENT01. Additional informaiton is provided in the EDD Manual. Non alpha-numeric characters (save for the underscore _ and the dash - characters) are prohibited in the sys_loc_code.	
3	building_code	Text (20)	Required	Must be the valid code for a building and match the building_code field in the VI_Bldg_Address_v4 EDD file submitted in the current or previous EDD.	
4	X_coord	Text (20)	Required	Sampling location numeric xUTM NAD 83 coordinate in meters.	
5	Y_coord	Text (20)	Required	Sampling location numeric y UTM NAD 83 coordinate in meters.	
6	Surf_elev	Numeric	Not Required	Sampling location surface elevation in feet	
7	Elev_unit	Text (15)	Required	Unit of measurement for elevations. Units must be f for feet or m for meters.	**Table A-18**
8	coord_sys_desc	Text (20)	Required	Sampling location coordinate system description. Must be 'UTM Zone nn'.	
9	observation_date	DateTime	Not Required	Date observation or site survey was made (in MM/DD/YYYY HH:MM format).	

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
10	Longitude	Text (20)	Not Required	Longitude of sampling location in decimal degrees.	
11	Latitude	Text (20)	Not Required	Latitude of sampling location in decimal degrees (dd.xxxxxx).	
12	Identifier	Text (20)	Not required	This field is associated with the latitude and longitude coordinates. Use "Primary". If this is for an additional set of latitude and longitude coordinates, use "Secondary".	
13	horz_collect_method_code	Text (3)	Required	Method used to determine latitude/longitude. Example: S1 is for NYS Licensed Professional Land Survey.	
14	horz_accuracy_value	Text (20)	Required	Accuracy range (+/-) of the latitude and longitude.	
15	horz_accuracy_unit	Text (15)	Required	Use values in unit valid value table in appendix.	
16	horz_datum_code	Text (3)	Required	Use codes in horizontal detum valid value table in appendix.	
17	LL_horz_collect_method_code	Text (3)	If available	Method used to determine latitude/longitude.	
18	LL_horz_accuracy_value	Text (20)	Not required	Accuracy range (+/-) of the latitude and longitude. Use "0.1" for professional survey. "100" for site centroid, or "10" for all other method	
19	LL_horz_accuracy_unit	Text (15)	Not required	Unit of the horizontal accuracy	
20	LL_horz_datum_code	Text (3)	If available	This is the reference datum for the original survey coordinates.	**A-5**
21	Elev_coollect_method_code	Text (3)	If available	Use codes in elevation colletion method valid value table in appendix.	**A-3**
22	Elev_accuracy_value	Text (20)	Not required	Accuracy range (+/-) of the elevation measurement	
23	Elev_accuracy_unit	Text (8)	Not required	Use values in unit valid value table in appendix. Unit of the elevation accuracy value.	
24	Elev_datum_code	Text (3)	If available	Reference datum for the elevation measurement.	**A-7**
25	source_scale	Text (2)	Not required	If coordinates were derived from a published map, enter the scale of the map source (e.g. 1 inch = 100 feet).	
26	subcontractor_name_code	Text (20)	If available	Code used to distinguish subcontractor name.	**A-17**
27	verification_code	Text (20)	Not required	The verification code should indicate how the survey coordinate/elevation reference point was verified.	**Table A-32**

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
28	reference_point	Text (50)	Not required	If coordinates and elevations were surveyed using a traditional survey method in the field without a GPS, a description of the reference point used as the survey benchmark. (e.g. NYSDOT bridge footing, or Hydrant at station 00+01 elevation 25).	
29	Geometric_type_code	Text (20)	If available	Please enter Point. If you have coordinates that are not specific to a point. Please email EPA for an addition.	
30	Rank	Numeric	If available	Enter a rank if you are or have submitted more than one set of coordinates	
31	loc_name	Text (40)		Provide a more detailed name for sample location. 40 characters. For example, "Laundry Room Soil Vapor Sample Location."	
32	loc_desc	Text (255)		Sampling location detailed description. Example: "Laundry room sample collected 4 feet above ground surface to capture breathing zone."	
33	loc_type	Text (20)	Requied	Sampling location type. Use codes in loc_type valid values table for Soil Vapor Intrusion. Options include: BASEMENT, CRAWLSPACE, FIRST FLOOR, OUTDOOR, SUBSLAB, and UPPER FLOOR.	**A-9**
34	loc_purpose	Text (20)		Sampling location purpose. Example: "Odors detected in basement," "Visible Floor Penetrations."	
35	within_facility_yn	Text (1)	Required	Indicates whether this sampling location is within facility boundaries, 'Y' for yes or 'N' for no.	
36	loc_county_code	Text (20)	If availabe	Location county code is found within the Valid Values Table.	**look up to the drop down**
37	loc_district_code	Text (3)		Use EPA Region number	
38	loc_state_code	Text (2)	If available	Location state code; controlled vocabulary using FIPS codes.	**A-28**
39	Loc_major_basin	Text (8)	If available	Location major basin; controlled vocabulary using HUC. HUC codes can be found vaia the internet at http://www.epa.gov/surf.	**A-21**
40	Loc_minor_basin	Text (20)	Not required	Location minor basin; controlled vocabulary using HUC codes. Any digits after the 8th (first 8 are reported in loc_major_basin) should be reported here.	

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
41	remark	Text (255)		Location specific comment.	

5.5 Vapor Intrusion Outdoor Locations EDD file

The Vapor Intrusion Outdoor Locations (EPAR5_VI_OUTDOOR_LOCATIONS_V3) contains samples information.
Each Vapor Intrusion Outdoor Locations must be named according to the following convention:

EPAR5_VI_OUTDOOR_LOCATIONS_V3

Table 5-5 Vapor Intrusion Outdoor Locations data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	**Sys_loc_code**	**Text (20)**	**Required**	Location identifier of sample collection. Use sample location ID. Must be unique for each OU or Building. Example: RESIDENT01-A for a sample location contained within building code RESIDENT01. Additional informaiton is provided in the EDD Manual.	
2	**Building_loc_type_code**	**Text (10)**	**Required**	The default building_loc_type should be OUTDOOR.	
3	**Building_code**	**Text (20)**	**Required**	Must be the valid code for a building and match the building_code field in the VI_Bldg_Address EDD file submitted in the current or previous EDD.	

5.6 Vapor Intrusion Sample EDD file

The Vapor Intrusion Sample (EPAR5_VI_SAMPLES_V3) contains samples information.

Each Vapor Intrusion Sample file must be named according to the following convention:

EPAR5_VI_SAMPLES_V3

Table 5-6 Vapor Intrusion Samples data structure

Pos #	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	data_provider	Text (20)	REQUIRED	Data provider name	

Pos #	Column Name	Data Type	Required	Description	Valid Values In Appendix
2	sys_sample_code	Text (40)	REQUIRED	Unique sample identifier	
3	Sample_name	Text (50)	Required	Additional sample identification information as necessary. Is not required to be unique (i.e., duplicates are OK). Can be the same value as in the sys_sample_code field.	
4	sample_matrix_code	Text (3)	REQUIRED	Code which distinguishes between different type of sample matrix	**Table A-1**
5	Sample_type_code	Text (20)	Rquired	Code that distinguishes between different types of samples. Use code from rt_sample_type.sample_type_code valid values table. Example: Normal field samples are coded "N", laboratory method blank samples are coded "LB", etc.	
6	Sample_source	Text (10)	Required	This field identifies where the sample originated. Samples collected in the Field are entered as "FIELD," samples originating in the Lab are entered as "LAB."	
7	Parent_sample_code	Text (40)		If the sample is a duplicate, MS/MSD, blind dup, lab dup, etc, input the parent sample "sys_sample_code." For example: A field duplicate "FD" (coded in sample_type_code) is collected for sample MW-001-20010606; therefore, MW-001-20010606 is input into this field. This field is left null for all non-duplicate samples. This field is Required when the sample_type_code contains "BD," "FD," "FR," "FS," "LR," "MS," "MSD," or "SD" entries. Additional information may be found in the EDD Manual.	
8	Sample_delivery_group	Text (20)		This is the laboratory sample delivery group.	
9	sample_start_date	DateTime	REQUIRED	Sample start date and time	
10	sys_loc_code	Text (20)		Location identifier of sample collection	
11	chain_of_custody	Text (40)		Chain of custody identifier. Note: A single sample may be assigned to only one chain of custody.	
12	sent_to_lab_date	DateTime		Shipping date sample was sent to lab (in MM/DD/YYYY HH:MM format).	

Pos #	Column Name	Data Type	Required	Description	Valid Values In Appendix
13	Sample_receipt_date	DateTime		Date that sample was received at laboratory (in MM/DD/YYYY HH:MM format).	
14	sampler	Text (50)		Person taking sample.	
15	sampling_company_code	Text (20)	REQUIRED	Name or initials of sampling company.	
16	sampling_reason	Text (30)		Reason for sampling	
17	sampling_method	Text (40)		Sampling method	
18	task_code	Text (40)		Sampling task code	
19	sample_end_date	DateTime		Sample end date and time	
20	sample_duration	Text (20)		The sampling duration	
21	sample_duration_unit	Text (15)		Sample duration units	**Table A-18**
22	floor_material	Text (20)		Lowest level floor material at sample location	
23	slab_thickness	Text (20)		Slab thickness at sample location (in inches)	
24	subfloor_material	Text (20)		Material found below the foundation floor	
25	subfloor_moisture	Text (20)		Moisture content at subslab sample location (i.e. Dry, Damp, Saturated)	
26	seal_type	Text (20)		Type of seal used during sampling (i.e. Beeswax, Clay, Teflon Tape)	
27	seal_adequate_yn	Text (1)		Did the sample probe seal pass the tracer test (Y/N)?	
28	purge_yn	Text (1)		Was the sample equipment purged in accordance with work plan (Y/N)?	
29	purge_pid	Numeric		PID instrument reading	
30	purge_pid_unit	Text (15)		PID instrument reading units (i.e. ppb)	
31	vac_gauge_initial	Numeric		Vacuum gauge reading immediately after start	
32	vac_gauge_final	Numeric		Vacuum gauge reading immediately before end	
33	vac_gauge_unit	Text (15)		Vacuum gauge instrument units (i.e. inches of water)	
34	vapor_loc_desc	Text (255)		Soil vapor intrusion location description	
35	remark	Text (2017)		Remark	
36	Tracer_test_conducted_yn	Text (1)	Required	Enter a Y to indicate that the helium tracer tests were conducted and passed for any sub slab samples.	

5.7 Vapor Intrusion Test Result QC

The Vapor Intrusion Test Result QC (EPAR5_VI_TESTRESULTSQC_V3) contains data concerning analytical tests performed on samples with quality control data elements.

Each Vapor Intrusion Test Result QC file must be named according to the following convention:

EPAR5_VI_TESTRESULTSQC_V3

Table 5-7 Vapor Intrusion Test Result QC file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_sample_code	Text (40)	REQUIRED	Unique sample identifier. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQuIS®.	
2	lab_anl_method_name	Text (35)	REQUIRED	Laboratory analytical method name or description. A controlled vocabulary column, valid values can be found in the appendix in table lab_anl_method_name.	
3	analysis_date	DateTime	REQUIRED	Date and time of sample analysis in 'MM/DD/YYYY HH:MM' format. May refer to either beginning or end of the analysis as required by EPA.	
4	fraction	Text (10)	REQUIRED	Must be either 'D' for dissolved or filtered [metal] concentration, or 'T' for everything else. If fraction = 'TCLP', then leachate_method and leachate_date is required.	
5	column_number	Text (2)	REQUIRED	Report as null.	
6	test_type	Text (10)	REQUIRED	Type of test. Valid values include 'Initial', 'Reextract1', 'Reextract2', 'Reextract3', 'Reanalysis', 'Dilution1', 'Diluton2', and 'Diluton3'.	
7	lab_matrix_code	Text (3)	REQUIRED	Code which distinguishes between different type of sample matrix. For example, soil samples must be distinguished from ground water samples, etc. See matrix valid value table in the appendix. The matrix of the sample as analyzed may be different from the matrix of the sample as retrieved (e.g. leachates), so this field is available at both the sample and test level.	

Table 5-7 Vapor Intrusion Test Result QC file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
8	analysis_location	Text (2)	REQUIRED	Must be either 'FI' for field instrument or probe, 'FL' for mobile field laboratory analysis, or 'LB' for fixed_based laboratory analysis.	
9	basis	Text (10)	REQUIRED	Must be either 'Wet' for wet_weight basis reporting, 'Dry' for dry_weight basis reporting, or 'NA' for tests for which this distinction is not applicable. The EPA prefers that results are reported on the basis of dry weight where applicable.	
10	container_id	Text (30)		Report as null.	
11	dilution_factor	Numeric	REQUIRED	Effective test dilution factor. If value is less than 1, then you need to put 'concentration factor' in the comment column.	
12	prep_method	Text (20)	IF AVAILABLE	Laboratory sample preparation method name or description. A controlled vocabulary (i.e., see Prep_mthd_var valid values in the appendix).	**Table A-14**
13	prep_date	DateTime		Beginning date and time of sample preparation in 'MM/DD/YYYY HH:MM' format.	
14	lab_name_code	Text (20)		Unique identifier of the laboratory as defined by the EPA. Controlled vocabulary, see lab valid value table in the appendix.	**Table A-23**
15	qc_level	Text (10)		May be either 'screen' or 'quant'.	
16	lab_sample_id	Text (40)		Laboratory LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab_sample_id (maximum one per each test event).	
17	percent_moisture	Text (5)		Percent moisture of the sample portion used in this test; this value may vary from test to test for any sample. Numeric format is 'NN.MM', i.e., 70.1% could be reported as '70.1' but not as '70.1%'.	
18	subsample_amount	Text (14)		Amount of sample used for test.	
19	subsample_amount _unit	Text (15)		Unit of measurement for subsample amount. Controlled vocabulary, see Unit valid values table in appendix.	
20	analyst_name	Text (30)		Report as null.	
21	instrument_id	Text (50)		Report as null.	

Table 5-7 Vapor Intrusion Test Result QC file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
22	comment	Text (255)		Comments about the test as necessary.	
23	preservative	Text (20)		Sample preservative used.	
24	final_volume	Numeric		The final volume of the sample after sample preparation. Include all dilution factors.	
25	final_volume_unit	Text (15)		The unit of measure that corresponds to the final_volume.	
26	cas_rn	Text (15)	REQUIRED	Use values in analyte valid value table.	
27	chemical_name	Text (75)	REQUIRED	Use the name in the analyte valid value table.	
28	result_value	Numeric		Analytical result reported at an appropriate number of significant digits. May be blank for non_detects.	
29	Result_unit	Text (15)	If available		
30	result_error_delta	Text (20)		Error range applicable to the result value; typically used only for radiochemistry results.	
31	result_type_code	Text (10)	REQUIRED	Must be either 'TRG' for a target or regular result, 'TIC' for tentatively identified compounds, 'SUR' for surrogates, 'IS' for internal standards, 'SC' for spiked, compounds, 'CAL' for calculated pore water concentrations.	
32	reportable_result	Text (10)	REQUIRED	Must be either 'Yes' for results which are considered to be reportable, or 'No' for other results. This field has many purposes. For example, it can be used to distinguish between multiple results where a sample is retested after dilution. It can also be used to indicate which of the first or second column result should be considered primary. The proper value of this field in both of these two examples should be provided by the laboratory .	
33	detect_flag	Text (2)	REQUIRED	Maybe either 'Y' for detected analytes or 'N' for non_detects. Use 'Y' for estimated (above detection limit but below the quantitation limit) or '<' and '>' for tests such as flash point. Note that '<' must not be used to indicate non_detects (use 'N' for non_detects instead).	

Table 5-7 Vapor Intrusion Test Result QC file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
34	lab_qualifiers	Text (10)		Qualifier flags assigned by the laboratory.	
35	validator_qualifiers	Text (10)		Qualifier flags assigned by the validation firm.	
36	interpreted_qualifiers	Text (10)		Interpreted qualifier flag assigned by the validator. When the validated_yn = N (no, meaning the data is not validated by validator), the interpret qualifier is required if lab_qualifier or validator _qualifier are populated. If the validated_yn = Y (yes, meaning the data has been validated and the validator agreed witht eh lab qualifier), then they should populate the validator_qualifier and the interpreted_qualifier. If the validated_yn = Y (yes, but the validator does not agree with the lab_qualifier), then the validator will leave the qualifier NULL and the final qualifier is also NULL. When populating th e interpreted_qualifier, please use the qualifier in the Valid Value in A-10 with the description that can closely match with the lab qualifier. EPAR region 2 is not going to add any more qualifiers.	**Table A-10**
37	validated_yn	Text (1)	REQUIRED	Indicates if the result has been validated.	**Y= "Yes"** **N= "No"**

Table 5-7 Vapor Intrusion Test Result QC file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
38	method_detection_limit	Text (20)		Lowest concentration that can be detected by an instrument with correction for the effects of sample matrix and method-specific parameters such as sample preparation. MDLs are explicitly determined as set forth in 40 CFR Part 136. They are defined as three times the standard deviation of replicate spiked analyses. This represents 99% confidence that the analyte concentration is greater than zero. The organic methods in the EPA 500 series, EPA 600 series, and Standard Methods all give typical MDLs for clean water samples. Generally these clean-water MDLs (corrected for %moisture, sample size, and dilution) are used for reporting limits, but the laboratory may use MDLs that they have generated. MDLs generated by the laboratory using the sample matrix of interest are the most reliable. If the clean-water MDLs are used, remember that they do not include all of the upward correction necessary to account for the effects of sample matrix. This is important to remember especially for risk assessments and highly contaminated samples.	
39	reporting_detection_limit	Numeric		Concentration level above which results can be quantified with confidence. It must reflect conditions such as dilution factors and moisture content. Required for all results for which such a limit is appropriate. The reporting_detection_limit column must be reported as the sample specific detection limit.	

Table 5-7 Vapor Intrusion Test Result QC file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
40	quantitation_limit	Text (20)		Quantitation limits refer to a minimum concentration of an analyte that can be measured within specified limits of precision and accuracy. They are generally 5-10 times the detection limit. Thus, when quantitation limits are used as reporting limits, the laboratory is saying that the analyte is not present in a sufficient amount to be reliably quantified (i.e., at a concentration above the quantitation limit). It may be present and even positively identified or "seen" at a lower concentration.	
41	detection_limit_unit	Text (15)		Units of measurement for the detection limit(s). Controlled vocabulary, see Units valid value table in the appendix. This field is required if a reporting_detection_limit is reported.	
42	tic_retention_time	Text (8)		Report as null.	
43	minimum_detectable_conc	Numeric		Minimum detectable concentration or activity. This value should be in the same units as the result_value.	
44	counting_error	Numeric		Counting error as reported by the laboratory. This value should be in the same units as the result_value.	
45	uncertainty	Text (10)		The uncertainty of the counting error, valid values include "1 sigma" or "2 sigma" This field is required if the counting_error field is populated.	
46	critical_value	Numeric		Critical value as reported by the laboratory.	
47	validation_level	Text (20)	If available	If Validated_yn = Yes, then validation_level is required	
48	result_comment	Text (255)		Result specific comments.	
49	qc_original_conc	Numeric		The concentration of the analyte in the original (unspiked) sample. Might be required for spikes and spike duplicates (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero).	

Table 5-7 Vapor Intrusion Test Result QC file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
50	qc_spike_added	Numeric		The concentration of the analyte added to the original sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs).	
51	qc_spike_measured	Numeric		The measured concentration of the analyte. Use zero for spiked compounds that were not detected in the sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs).	
52	qc_spike_recovery	Numeric		The percent recovery calculated as specified by the laboratory QC program. Always required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "120%" as "120").	
53	qc_dup_original_conc	Numeric		The concentration of the analyte in the original (unspiked) sample. Might be required for spike or LCS duplicates only (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero).	
54	qc_dup_spike_added	Numeric		The concentration of the analyte added to the original sample. Might be required for spike or LCS duplicates, surrogate compounds, and any spiked and duplicated sample (depending on user needs). Use zero for spiked compounds that were not detected in the sample. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Also complete the qc-spike-added field.	

Table 5-7 Vapor Intrusion Test Result QC file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
55	qc_dup_spike_measured	Numeric		The measured concentration of the analyte in the duplicate. Use zero for spiked compounds that were not detected in the sample. Might be required for spike and LCS duplicates, surrogate compounds, and any other spiked and duplicated sample (depending on user needs). Also complete the qc-spike-measured field.	
56	qc_dup_spike_recovery	Numeric		The duplicate percent recovery calculated as specified by the laboratory QC program. Always required for spike or LCS duplicates, surrogate compounds, and any other spiked and duplicated sample. Also complete the qc-spike-recovery field. Report as percentage multiplied by 100 (e.g., report "120%" as "120").	
57	qc_rpd	Text (8)		The relative percent difference calculated as specified by the laboratory QC program. Required for duplicate samples as appropriate. Report as percentage multiplied by 100 (e.g., report "30%" as "30").	
58	qc_spike_lcl	Text (8)		Lower control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "60%" as "60").	
59	qc_spike_ucl	Text (8)		Upper control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "60%" as "60").	
60	qc_rpd_cl	Text (8)		Relative percent difference control limit. Required for any duplicated sample. Report as percentage multiplied by 100 (e.g., report "25%" as "25").	

Table 5-7 Vapor Intrusion Test Result QC file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
61	qc_spike_status	Text (10)		Used to indicate whether the spike recovery was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample.	
62	qc_dup_spike_status	Text (10)		Used to indicate whether the duplicate spike recovery was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for any spiked and duplicated sample.	
63	qc_rpd_status	Text (10)		Used to indicate whether the relative percent difference was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for any duplicated sample.	
64	lab_SDG	Text (20)		Lab Sample Delivery Group (SDG) identifier. A single sample may be assigned to multiple Sample Delivery Group (SDG) based on different analysis.	

5.8 Vapor Intrusion Batch EDD File

Each Vapor Intrusion Batch file must be named according to the following convention:

EPAR5_VI_BATCHES_V3

Table 5-8 Vapor Intrusion Batches file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_sample_code	Text (40)	REQUIRED	Unique sample identifier. Each sample must have a unique value, including spikes and duplicates. Laboratory QC samples must also have unique identifiers. The laboratory and the EQuIS® Chemistry user have considerable flexibility in the methods they use to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EquIS® Chemistry.	

Table 5-8 Vapor Intrusion Batches file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
2	lab_anl_method_name	Text (35)	REQUIRED	Laboratory analytical method name or description. A controlled vocabulary column, valid values can be found in the appendix in table ab_anl_method_name.	**Table A-16**
3	analysis_date	DateTime	REQUIRED	Date and time of sample analysis in 'MM/DD/YYYY HH:MM' format. May refer to either beginning or end of the analysis as required by EPA.	
4	fraction	Text (10)	REQUIRED	For soil vapor intrusion samples, enter "NA" for 'Not Applicable.' Must match one of the reported values in the fraction field of the VI_TestResultsQC EDD table submitted in the current EDD.	
5	column_number	Text (2)	REQUIRED	Column number, if null, “NA” will be placed in this field	
6	test_type	Text (10)	REQUIRED	Type of test. Valid values include 'Initial', 'Reextract1', 'Reextract2', 'Reextract3', 'Reanalysis', 'Dilution1', 'Diluton2', and 'Diluton3'.	
7	test_batch_type	Text (10)	REQUIRED	Lab batch type. Valid values include 'Prep', 'Analysis', and 'Leach'. This is a required field for all batches.	
8	test_batch_id	Text (20)		Unique identifier for all lab batches.	

6. TECHNICAL SUPPORT

EPA Region 5 provides technical support for users of this Comprehensive EDD Specification Manual. For questions concerning data, data formats, and EDD submittal procedures, please contact EDD EQUIS Coordinator. For more general questions, relating to the site, please contact the EPA RPM assigned to the site.