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Electronic Data Deliverable (EDD)
Specification Manual V.2

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EarthSoft Inc. prepared the Electronic Lab Data Checker (ELDC) and Electronic Field Data Checker (EFDC) programs and reviewed the EDD document to assure its technical accuracy.

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EXECUTIVE SUMMARY

This document describes the Electronic Data Deliverable (EDD) - a combination of requirements and procedures for reporting data in electronic files throughout the sampling process. The purpose of this document is to provide detailed instructions for reporting environmental data generated by West Virginia Department of Environmental Protection (WVDEP) and others. In this section, a summary is provided to assist data providers with the preparation and understanding to guide them through the electronic data submittal process. This will be an overall guide for the agency as a whole. Program specific standard operating procedures (SOPs) will be written to meet the individual Program needs and requirements. WVDEP's goal is to expedite the transfer of information and data between WVDEP personnel and WVDEP data providers. The electronic transfer of data will assist WVDEP in making sound decisions based on a more complete picture of the environment. Other Federal and State programs employing this approach have realized significant time and cost savings. For the first time in the history of the agency, all of the environmental programs will be able to evaluate or cross reference each programs data for a given facility or project. This will increase efficiency by allowing WVDEP data providers to fully understand WVDEP requirements, and to communicate these requirements to its employees and contractors. All data can be compiled into the EDD throughout the life of any enforcement, remediation, and/or monitoring program and therefore not add a separate data management task once all data has been collected.

The EDD is comprised of three distinct sets of files: Initial, Chemistry, and Geology

1. The Initial EDD consists of a georeferenced electronic map file and two files containing data pertaining to the site and the sampling locations within a site.
2. The Chemistry EDD files contain field measurement, sample, test/result, and water level information.
3. The Geology EDD files contain data regarding drilling activities, lithology, geologic sampling, well construction not covered under §47 CSR 60, down hole point data, and groundwater levels.

1. INTRODUCTION TO THE ELECTRONIC DATA DELIVERABLE (EDD)

The State of West Virginia has established and maintains two electronic data systems: the Environmental Resource Information System (ERIS) and the West Virginia Environmental Quality Information System (WVEQuIS). The ERIS system contains regulatory information, like responsible party tracking, permit tracking, and inspection and enforcement activity. WVEQuIS will compliment ERIS data by tracking technical environmental data to visually display site characteristics, measure remediation progress, measure ambient environmental standards, and confirming compliance status. The use of WVEQuIS will accelerate the review of environmental data submissions, reduce data entry, improve service to the regulated community, and enhance the protection of human

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health and the environment. A vital element to the successful deployment of WVEQuIS is the electronic transfer of environmental data from the data providers to WVDEP in a standardized format. The EDD has been developed to facilitate that transfer of data from data providers to the WVDEP.

The WVDEP EDDs are based on standard EQUIS[®] EDDs from EarthSoft Inc. 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 these applications include Microsoft[®] Access, Microsoft[®] Excel, Microsoft[®] MSWord, and Notepad.

An EDD is a series of data files that are used to report information to the agency. Multiple electronic files are utilized to eliminate the possibility of unnecessary redundant reporting of information. For example, location (coordinates, elevation, etc.), and site data are reported once. Many years of data may be reported for a specific site and a location within the site without reporting the site and location information again.

This document provides examples that illustrate how the EDD files should look after entering your data into them. In addition, templates have been provided on the WVDEP's website: <http://www.dep.state.wv.us/wvequis/edd>. The EDDs are preformatted for utilization with Microsoft[®] Excel. The software programs, Electronic Lab Data Checker and Electronic Field Data Checker, are provided to check your initial EDD, chemistry EDD, and geology EDD files before reporting. Examples of completed EDDs can be found on WVDEP's website: <http://www.dep.state.wv.us/wvequis/eddcomp>

1.1 Data Entry Tools Provided to Create the EDD Files

The files can be produced using any software with the capability to create text files or entered through the web if applicable, or created straight from a Laboratory Information Management System (LIMS). 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 1-1 provides instructions for creating tab delimited text files from some of the more popular software packages.

Table 1-1. Instructions for producing tab delimited text files from some popular software packages

Package	Type	Instructions
Microsoft [®] Access 97	Database	<ol style="list-style-type: none">1. Create tables using file structures in Sections 2, 3, and 42. 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

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Package	Type	Instructions
		the text qualifier. Press the “Next” button. Select a destination and name for the file. Press the “Finish” button.
Microsoft® Excel 97	Spreadsheet	1. Select “File,” “Save As” from the top menu. Change “Save as Type” to a “Text (Tab Delimited)” file. Press the “Save” button.
Microsoft® Word 97	Word Processor	Warning: 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. 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).

Several files are included on the WVDEP website to assist in creating the initial, chemistry, and geology EDDs.

- Three Microsoft Excel Workbooks files named InitialEDD, ChemEDD, and GeoEDD provide electronic templates for the EDD files. To create an EDD, simply enter your data into the worksheets provided and then follow the instructions to create a tab delimited text file. The valid value tables are also included within the spreadsheets.

One Microsoft Access database file named ChemEDD provides electronic templates for the Chemistry EDD files. To create an EDD, simply enter your data into the database files provided and then follow the instructions to create a tab delimited text file. The valid value tables are also included within the database files.

2. FORMATS FOR INITIAL FILES

This section contains information regarding the base map and the two tables that define the file structures for the initial EDD. These files define the facility, site and locations that environmental data will be submitted for. They are initial files that need to be submitted to WVDEP prior to, or in conjunction with, the first Chemistry EDD or Geology EDD submission. These files need only be submitted once. The only time a site or location file would be submitted more than once is if the data had changed in some way (e.g., contact name, location resurveyed) or if the site contains a new sampling location not previously submitted (e.g., new monitoring well installation). The columns marked “Required” must be reported for each row in the file. If they are not reported, the file will not load. Columns marked “If available” should also be reported.

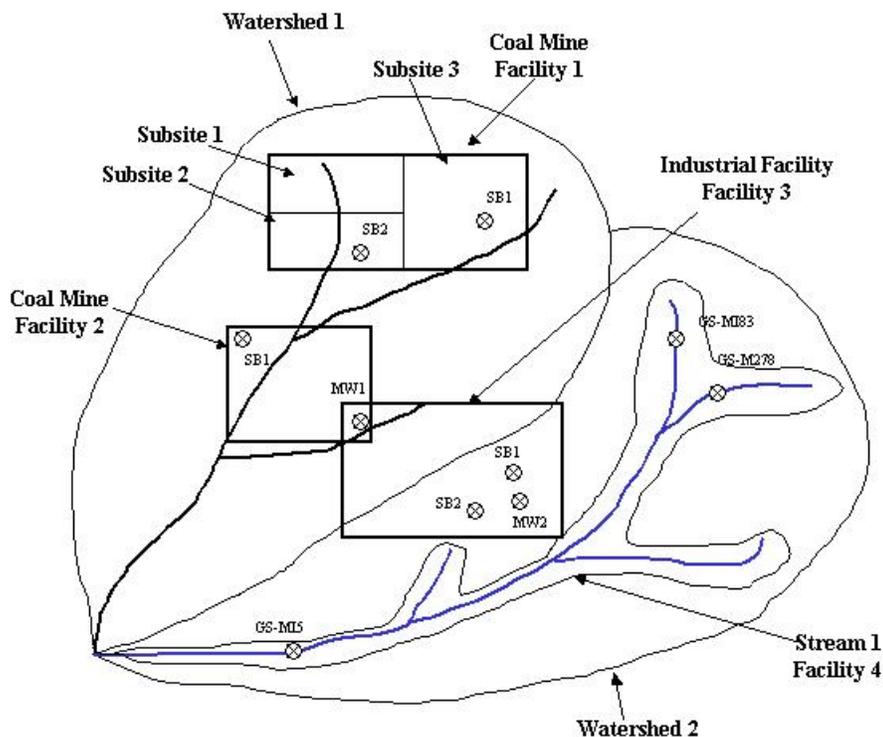
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The WVDEP will specify to each WVDEP Program which fields are to be “Required”. The WVDEP Programs will develop a Standard Operating Procedure (SOP) to determine which additional fields will be “Required” in data submission requirements due to program needs. Submitted data sets will be rejected if “Required” fields are not completed. In situations where a data provider is unable to meet program expectations, an electronic cover letter to the WVDEP GateKeeper and the program office needs to contain a description of any fields not meeting the requirements with an explanation.

2.1 Definition of a Facility, Subsite, and Location

It is important to understand how WVDEP EDD defines a facility, subsite, and location. Each facility (facility_id) will be identified by its WVDEP ID number. The Facility ID number will be issued from the WVDEP web page registration. The subsite_id will be the operable unit identifier and there is at least one per facility; the subsite will often be analogous to a permit. Each subsite can contain one or more locations that are distinct points defined by an X and Y Universal Transverse Mercator (UTM) coordinate. The Z coordinate, elevation, may be optional for some location submittals. Examples of locations include soil borings, monitoring wells, and sampling locations. Each location identifier (station_id) must be unique for a facility. Figure 1-1 provides a diagram of the facility components.

Figure 2-1. Facility component definitions



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To prevent redundant data reporting, the data describing a subsite and the subsite contact should only be reported once. When creating the EDD ask, “Does the subsite have a West Virginia Department of Environmental Protection permit or has the site ever been reported as a unit/area under investigation within the facility?” If the answer is yes, then no subsite file should be reported with the EDD. If the answer is no, the subsite EDD must be the first EDD reported. A similar decision process is followed for locations. Locations only need to be reported once for any subsite. The only time a location is reported more than once is if the coordinate data has changed. For example, the location may have been resurveyed by a more accurate method. Sample, test, and results data constitute the bulk of EDD submissions. While it is rare, it is possible that tests and results are being reported for a sample(s) that was part of an earlier EDD sample file. In this case, the sample data should not be reported again. The Test/Results file should contain new data only. If data is being resubmitted, this must be clearly documented in a electronic cover letter to assure that outdated information is removed from the database.

Table 1-2. General information on the files that comprise the Initial EDD

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Base Map	WVDEPFacilityID.Date.Map_v#.DWG (or SHP)	WVDEP data provider	Base Map of Site	Not Applicable	Not Applicable.
Site	WVDEPFacilityID.Date.SITE_v#.txt (or .csv)	WVDEP EquIS Facility Registration Page	One time definition of site including WVDEP data providers data contact information.	subsite_id	The location file cannot be loaded without properly referenced subsite.
Location	WVDEPFacilityID.Date.LOC_v#.txt (or .csv)	WVDEP data provider or surveyor if applicable	One entry for each location on a study site. Contains elevation, coordinate and general data. Data should only be reported once for a location.	station_id	Samples, water levels, and field measurements can only be reported for locations that are defined in this file.
Data Provider	WVDEPFacilityID.Date.DP_v#.txt (or .cvs)	WVDEP data provider or surveyor if applicable	Defines the contact information for an organization responsible for providing the data	data_provider	??????????????

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2.2 Subsite Base Maps

Subsite base maps must be projected in a Universal Transverse Mercator (UTM) projection system, North American Datum (NAD) 83 georeferenced electronic file(s) in a DWG/SHP format. The map(s) are to include all well locations, waste management units, landfills, buildings, roads, and other physical attributes. Do not include any groundwater contours, contaminant contours, or other temporal type information. Also include text descriptions of the units and scale of the base map. The site base map file must be named according to the following convention:

WVDEPFacilityID.Date.Map_v#.DWG (or .SHP)

Only base maps projected in a Universal Transverse Mercator (UTM) projection system, North American Datum (NAD) 83 georeferenced electronic file(s) in a DWG/SHP format will be accepted. If the map(s) do not meet these standards, it will be rejected by WVDEP.

2.3 Subsite

The Subsite EDD should be submitted once to define a site and provide the name, email address, and fax number of the main data contact. It should be noted at this point a Facility might have additional responsible parties addressing environmental issues or compliance monitoring. When completing a Subsite EDD or updating an initial submittal the row that subsite_id corresponds with shall contain the other RP contact information. This file is required to be submitted as part of the initial EDD submittal. Each Subsite file must be named according to the following convention:

WVDEPFacilityID.Date.SITE_v#.txt (or .csv)

Table 2-2. Site file data structure

Pos#	Column Name	Data Type	Required	Description
1	Site_id	Text(20)	Required	The controlling code assigned by WVDEP for each Facility/project. This unique identifier will allow the agency to track multiple permits, environmental actions, or water quality assessments at a facility or project.
2	Site_name	Text(60)	Required	The Facility name or site.
3	Site_address1	Text(40)	Required	Site address, part one. Street address.
4	Site_address2	Text(40)	If available	Site address, part two. Box number or other info.
5	Site_city	Text(20)	Required	City of site.
6	Site_State	Text(2)	Required	Postal abbreviation for State of site.
7	Site_zipcode	Text(10)	Required	Zip code of site.

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Pos#	Column Name	Data Type	Required	Description
8	subsite_id	Text(8)	Required	This is a primary key and must be unique throughout the project or facility concept. For most programs, site will correspond to the permit number. Programs that do not utilize a permit as a tracking measure will use the site name or abbreviation of the site name in this field.
9	subsite_name	Text(60)	Required	Name of site, operable unit or sub-site name designated by sub_site_code. Name to appear on maps, graphs and tables identifying this subsite.
10	subsite_purpose	Text(254)	Required	Reason for sampling at this operable unit or area.
11	subsite_desc	Text(254)	If available	Physical description of this operable unit or area.
12	program_code	Text(20)	Required	Code used to identify the program under which the operable unit or area is investigated. (See Valid Values table)
13	prp_agency	Text(60)	Required	Name of potential responsible party or equivalent.
14	prp_contact_name	Text(30)	Required	The person responsible for the data submittal, i.e. the environmental manager for a facility or site. Note it is possible that a facility could have different contacts for different sites within the facility.
15	prp_phone_number 1	Text(60)	Required	Phone number for prp_contact_name.
16	prp_fax_number	Text(60)	Required	Fax number for prp_contact_name.
17	prp_phone_number 2	Text(60)	If available	Alternative phone number for prp_contact_name.
18	prp_email	Text (60)	Required	E-mail address for prp_contact_name.

2.4 Location

A location EDD is submitted to define the sampling/monitoring location(s) for a site. This file is required to be submitted as part of the initial EDD submittal. Each row contains the definition of a unique sampling location.

Each sampling location should only be reported once for a site. The only time data for a previously reported location is to be resubmitted is if a change occurs at the location such as the location being resurveyed. If the location is resurveyed and changes result to the coordinates and datum elevations, a new location file should be submitted with the location identifier and new coordinate data, all other fields must be null. The changes must be documented in an EDD submittal cover letter.

This file data structure incorporates the requirements of WVDEP's geospatial policy :

Section 1. Purpose

Reliable and consistent locational data are critical to support agency-wide assessment, environmental analyses and modeling. Fulfilling the DEP mission to protect and restore our environment depends on the analysis of high-quality data.

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Section 2. Policy.

This policy establishes minimum standards for the collection and documentation of coordinates for all sites regulated under or within the jurisdiction of the WV Division of Environmental Protection. The goal of this policy is to increase geospatial accuracy and precision within the agency and meet standards suitable for a federal grantee. It is also intended to facilitate the integration of high-accuracy data into the agency's Geographic Information Systems (GIS), thereby promoting the enhanced use of DEP's data resources for environmental analyses and informed decision making.

This policy applies to all DEP personnel and programs including contractors and grantees that collect geospatial data. Requirements of this policy apply to all spatial data collected including, but not limited to, survey data, global positioning systems data, computer-aided design (CAD) data, and aerial photography.

2.01. Henceforth, geospatial coordinates are to be collected utilizing technology capable of a 10-meter level of accuracy. Techniques such as GPS or conventional surveying should be used to obtain positions at accuracies greater than 10 meters. GPS should be used to obtain positions at the highest possible accuracy. The recommended standard for representing and reporting geospatial data is as follows:

a. Coordinate System: Universal Transverse Mercator (UTM)

Datum: NAD 1983

Zone: 17 North

Coordinate Units: meters

Altitude: height above mean sea level (MSL) – meters

Vertical Datum: NGVD 1929

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

[WVDEPFacilityID.Date.LOC_v#.txt \(or .csv\)](#)

Table 2-3. Location file data structure

Pos#	Column Name	Data Type	Required	Description
1	data_provider	Text(60)	Required	Name of company or agency responsible for completion & submittal of any part of this EDD. Acts as a link to the Data_Provider table.

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Pos#	Column Name	Data Type	Required	Description
2	station_id	Text(20)	Required	Location identifier of sample collection, soil boring, well installation, field observations, etc. to appear on GIS maps graphs & tables, etc. The data collector will utilize the following approach for the naming convention of the samples: for monitoring wells use the well ID, all other environmental media use the matrix code-date-time and initials. Examples of possible station_id are WS0101021530tlb (this identifies a surface water sample collected on January 1, 2002 at 15:30)
3	station_name	Text (40)	If Available	Sampling location name. May be longer description of station_id for organizations using long name formats.
4	station_desc	Text (254)	If Available	Description of sampling location.
5	station_county	Text (25)	Required	Location county code; controlled vocabulary using FIPS (Federal Information Processing Standard) codes.
6	station_state_fips	Text(2)	Required	Two letter state code of the location
7	station_type1	Text(20)	Required	Primary sampling location type.
8	station_type2	Text(30)	Required	Secondary sampling location type.
9	Latitude	Num (XX.XXX XXX)	Required	Latitude of sampling location in decimal degrees (dd.xxxxx).
10	Longitude	Num (XXX.XX XXXX)	Required	Longitude of sampling location in decimal degrees. Must be negative for western hemisphere (-ddd.xxxxx).
11	source_scale	Text (10)	Required	Scale of the source (map, air photo, etc.) used to determine the lat/long coordinates.
12	horz_accuracy_unit	Text (10)	Required	Use values in unit valid value table in appendix. Unit of the horizontal accuracy value. Accuracy range (+/-) of the latitude and longitude. Only the least accurate measurement should be reported, regardless if it is for latitude or longitude.
13	horz_accuracy_value	Num (XXXX.X XXX)	Required	Accuracy range (+/-) of the latitude and longitude. Only the least accurate measurement should be reported, regardless if it is for latitude or longitude.
14	horz_datum_code	Text (3)	Required	Use values in unit valid value table in appendix. Unit of the horizontal accuracy value. Use codes in horizontal datum valid value table in appendix.

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Pos#	Column Name	Data Type	Required	Description
15	horz_collect_method_code	Text (2)	Required	Use codes valid in horizontal collection method valid value table in appendix. Method used to determine the horizontal coordinates.
16	lat/long_verification	Text(1)	Required	Indicates if the latitude and longitude has been verified by WVDEP personnel, grantees or contractors through a given process. Indicate "Y" for yes and "N" for no.
17	station_comment	Text (254)	If available	Comment about latitude, longitude and vertical elevation. Store information about the collection method, post processing of the data (if GPS were involved), or description of feature of the facility represented by the coordinates.
18	coord_sys_desc	Text(3)	Required	CART COORD 0 Cartographic sampling location coordinate system description for x_coord & y_coord. Valid Values = UTM, and SP (for State Plane).
19	x_coord	Num (XXXXXX XXXXX. XXXX)	Required	Sampling location numeric x UTM NAD 83 coordinate in meters.
20	y_coord	Num (XXXXXX XXXXX. XXXX)	Required	Sampling location numeric y UTM NAD 83 coordinate in meters.
21	coord_units	Text (10)	Required	Units for cartographic coordinate system identified by coord_sys_desc.
22	coord_datum	Text (3)	Required	Datum for cartographic xy coordinate system. May be different datum from horz_datum_code. Defaults to horz_datum_code if Null.
23	coord_zone	Text (15)	Required	Cartographic coordinate system zone. Indicate the UTM Zone or State Plane Zone.
24	surf_elev	Num (XXXXXX. XXXX)	Required	Land surface elevation (in elev_unit) at station location. For surface water samples, use elevation of water surface. For sediment samples, use elevation of top of sediment. Sampling location surface elevation in meters.
25	elev_unit	Text (2)	Required	Unit of measurement for surf_elev. Valid values: m = meters.
26	elev_datum_code	Text (3)	Required	Datum for elevation measurements. Not same as reference_point_desc or reference_point_elev.
27	elev_accuracy_unit	Text (10)	If available	Unit of the elevation accuracy value (in elev_unit). Valid values: m = meters & ft = feet.

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Pos#	Column Name	Data Type	Required	Description
28	elev_accuracy_value	Num (XXXX.X XXX)	If available	Accuracy range (+/-) of the elevation measurement (in elev_accuracy_unit).
29	elev_collect_method_code	Text (2)	Required	Use codes in elevation collection method valid value table in appendix. Typical profile leveling use "SURC". Method used to determine the ground elevation of the sampling location.
30	subsite_id	Text (8)	Required	This is a primary key and must be unique throughout the project or facility concept. For most programs, site will correspond to the permit number. Programs that do not utilize a permit as a tracking measure will use the site name or abbreviation of the site name in this field.
31	Geometric_type_code	Text (10)	If available	Usually Point for sample location data. Use Line or Area for GPS data describing road, railroad, pond edge, landfill perimeter, etc. Valid values: P = point, L = Line & A = area.
32	data_point_sequence	Num (XXX)	If available	Number indicating the sequence in which points on a line or area are connected. Null if geometric_type_code = "P", required if geometric_type_code = "A" or "L". For an area, the maximum point is connected to the first.
33	surveyor_name	Text (254)	If available	Name of surveyor company performing survey. Name of individual that collected the location data. The entity generating the geospatial data. FORMAT: COMPANY NAME, ADDRESS, CITY, STATE, ZIP CODE, SURVEYOR LASTNAME_SURVEYOR FIRSTNAME. NOTE use of "_" as a separator!
34	survey_number	Text (20)	Required	Unique identification of location survey history. Usually = 1 if location has been determined only once. May be 2 or more if location has been re-surveyed or re-determined.
35	lat/long/coord_date	Date MM/DD/ YYYY	If available	Date location coordinates were determined.
36	within_facility_Y/N	Text (1)	Required	Indicates whether this sampling location is within facility boundaries. Enter "Y" for yes or "N" for no.
37	major_basin	Text (8)	Required	Major basin; controlled vocabulary using HUC (Hydrologic Unit Codes). The first 8 digits of the HUC code should be entered here.

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Pos#	Column Name	Data Type	Required	Description
38	minor_basin	Text (6)	Required	Minor basin; controlled vocabulary using HUC codes. Any digits after the 8th (first 8 are reported in major_basin) should be reported here.

2.5 Data Provider

Submitted to define the contact information for an organization responsible for providing the data. This file is required to be submitted as part of the initial EDD submittal. If additional data providers are needed of the contact information for an existing data provider changes, this file should be resubmitted. Resubmissions should include only the new or changed records. The submittal cover letter should document the resubmission of these data. Each data provider file must be named according to the following convention:

[WVDEPFacilityID.Date.DP_V#.txt \(or .csv\)](#)

Table 2-4. Data provider file data structure

Pos#	Column Name	Data Type	Required	Description
1	data_provider	Text(60)	Required	Name of company or agency responsible for completion & submittal of any part of this EDD. Acts as a link to the Data_Provider table.
2	data_contact_name	Text (30)	Required	Name of contact associated with data_provider. FORMAT: LASTNAME_FIRSTNAME. NOTE use of “_” as a separator!
3	data_contact_address1	Text (40)	Required	Contact street address and/or box number.
4	data_contact_address2	Text (40)	If applicable	Contact address, part two. Box number of other info
5	data_contact_city	Text (20)	Required	City of contact
6	data_contact_state	Text (2)	Required	Postal abbreviation for State of contact
7	data_contact_zipcode	Text (10)	Required	Zip code of contact
8	data_contact_email	Text (60)	Required	Contact email address
9	data_contact_phone	Text (60)	Required	Contact phone number

2.6 Example of Typical Initial EDD Deliverable

Example of the Initial EDD files populated with the first few rows of a typical data set are presented in Appendix A. In order to fit the examples on one page, not all of the fields (i.e., columns) were included for certain files (e.g., Facility, Location, Chemistry Sample). *Additional Fields* is denoted where all the fields are not included. It should be

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noted that all fields are required when submitting EDD files, regardless of whether or not the field is populated. The special cases discussed in other sections are illustrated here together with standard examples

2.7 Valid Values

Valid values, also known as reference values or code lists, govern the contents of certain fields in the EDD. In other words, some fields may contain only those values within a certain predetermined range or list of codes established by WVDEP. The most current list of valid reference values can be found on the WVDEP website ([URL](http://www.dep.state.wv.us/wvequis/eldc)). If you require the addition of valid values to any of the tables, contact the data management staff using the contact information provided in the technical support section.

2.8 Using Electronic Laboratory Data Checker (ELDC) to Validate Initial EDDs

ELDC is provided on the WVDEP website www.dep.state.wv.us/wvequis/eldc as file ELDC.EXE. To install ELDC, simply double-click on the file and follow the installation instructions. Once ELDC is installed on a workstation, it may be used to check Initial and Chemistry EDD files prior to reporting to WVDEP. The files that can be checked are Facility, Location, Chemistry Sample, and Test/Results.

When ELDC starts, the user needs to select the type of file that will be checked (i.e. Site). Table 2-4 shows the correlation between ELDC “EDD file format” and the file names used in the EDD. Next the actual file is selected by using a standard browse function. Finally, the “Check” button is clicked to begin the checking process.

Table 2-5. Correlation between ELDC EDD file formats and initial EDD file names

ELDC EDD File Format	Initial EDD File Name
WVDEPDWG/SHP	WVDEPFacilityID.Date.Map_v#.DWG (or SHP)
WVDEPSite	WVDEPFacilityID.Date. SITE_v#.txt (or .csv)
WVDEPLoc	WVDEPFacilityID.Date.LOC_v#.txt (or .csv)

If there are errors or warnings an error log is created that can be viewed in detail or summary mode to gain an understanding of the problem. After the errors are corrected, ELDC can be re-run to assure that no errors remain. If error messages remain only because new codes are required, the files should be considered clean and reported to WVDEP with the new codes clearly explained in the cover letter.

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2.9 Submitting Your EDD to the WVDEP

Once the EDD files are complete and ready to submit, the following steps should be taken to assure a streamlined process. EDDs will be provided to the agency through electronic Web transfer. To transfer the electronic submittal(s) go to www.dep.state.wv.us/wvequis/submittals and follow the instruction. A clear notification must be provided if the EDD contains previously submitted data that specifies the study site, contact for technical questions, file names, any exceptions to the EDD format, and a clear notification if the EDD contains previously submitted data. **Files shall not be compressed or zipped.**

3. FORMATS FOR CHEMISTRY FILES

This section contains tables that define the file structures for the Chemistry EDD. The file structures include field measurement, chemistry sample, test/result, and water level. The columns marked “Required” must be reported for each row in the file. If they are not reported, the data will not load. Columns marked “If available” should be submitted when data is present.

The WVDEP will specify to each WVDEP Program which fields are to be “Required”. The WVDEP Programs will develop a Standard Operating Procedure (SOP) to determine which additional fields will be “Required” in data submission requirements due to program needs. Submitted data sets will be rejected if “Required” fields are not completed. In situations where a data provider is unable to meet program expectations, an electronic cover letter to the WVDEP GateKeeper and the program office needs to contain a description of any fields not meeting the requirements with an explanation. A general flow diagram showing the Chemistry EDD process is found in Figure 3-1.

Table 3-1. 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
Chemistry Field Measurement	WVDEPFacilityID.Date.CFM_v#.txt (or csv)	WVDEP data provider’s field sampling team(s).	Measurements taken in field and not associated with a sample (e.g. air temperature).	table_name sys_code param_code measurement_date	None.

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File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Chemistry Sample	WVDEPFacilityID. Date.SMP_v#.txt (or csv)	WVDEP data provider's field sampling team(s).	One row for each sample collected at the study site.	sample_id	Tests/results and batch data can only be reported for samples that are defined in this file.
Chemistry Test/Result	WVDEPFacilityID. Date.TRS_v#.txt (or csv)	WVDEP data provider's testing lab(s)	One row for each analyte reported for a given sample and test. Additional rows can be added to report total and dissolved results and to report results for re-extracts.	sample_id lab_anl_method_code fraction pram_name value_type cas_number analysis_date analysis_time	None.
Chemistry Test/Result with QC Data (use only if QC data are submitted)	WVDEPFacilityID. Date.TRSQC_v#.txt (or csv)	WVDEP contractor lab(s)	Test/Result file with additional fields for QC data.	sample_id lab_anl_method_name fraction value_type cas_number analysis_date analysis_time	None
Batch (use only if QC data are required)	WVDEPFacilityID. Date.BAT_v#.txt (or csv)	WVDEP contractor lab(s)	Data that relates laboratory quality control samples with field samples that were processed and analyzed together.	sample_id lab_anl_method_name test_batch_id	None.
Chemtry Water Level	WVDEPFacilityID. Date.CWTR_v#.txt (or csv)	WVDEP data provider's field sampling team(s)	Groundwater level data for monitoring wells	station_id sys_well_code measurement_date measurement_time sequence	None.

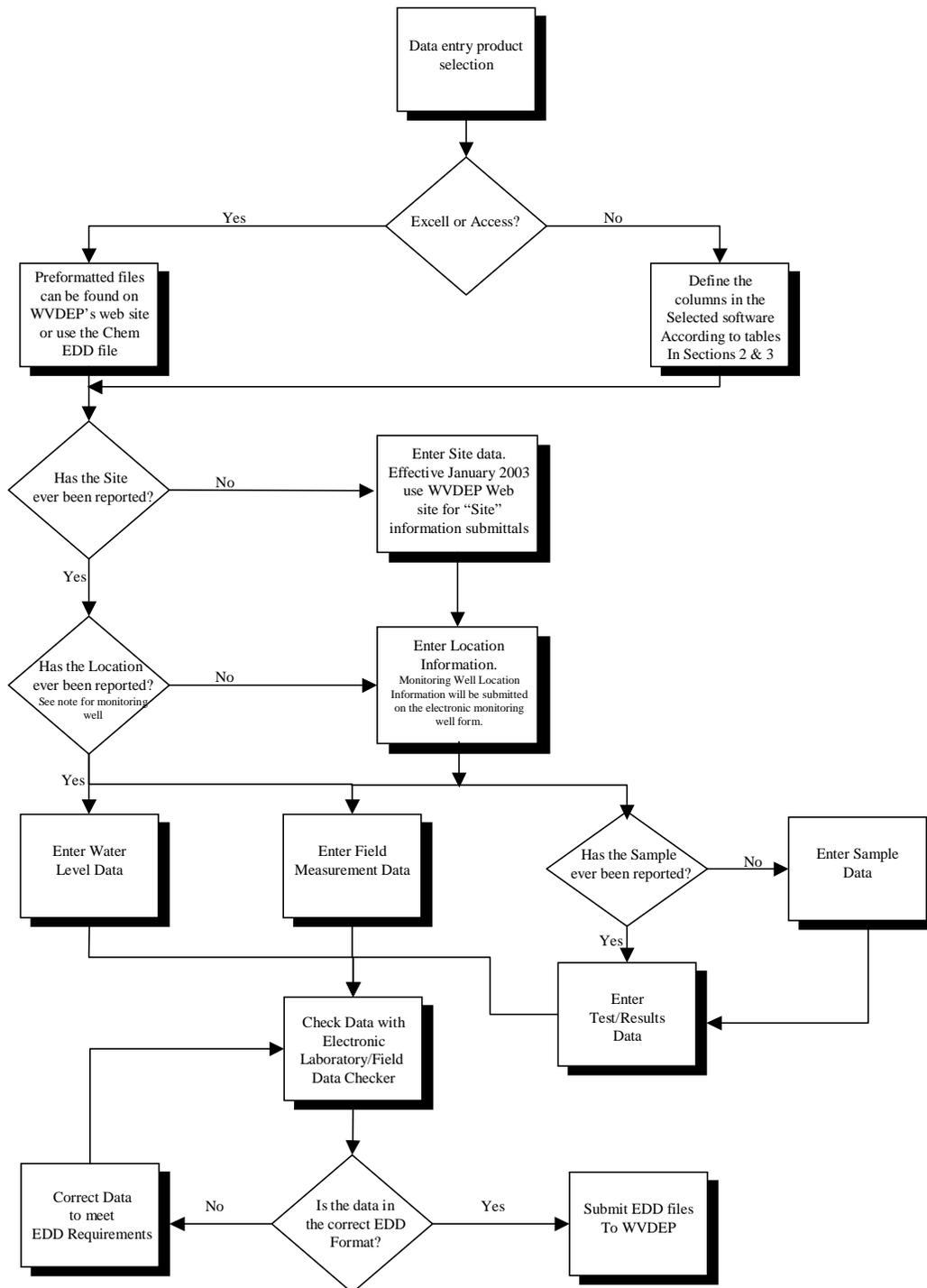
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There are two (2) types of Chemistry data submittals: Recurring and Correction.

- Recurring submittals are submitted on a cyclic basis and should include the files: Field Measurement, Chemistry Sample, Test/Results, Batch (if required), and Water Level. Data should not be reported for laboratory generated quality control samples but should be reported for field duplicates, field blanks, field spikes, and trip blanks.
- Correction Reports are those files submitted to correct previously submitted reports. Laboratory retests should be reported as discussed in Section 5.3. Correction submittals must be accompanied by a cover letter explaining the reason for the corrections and detailing the nature of the corrections

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Figure 3-1. Process flow diagram for the creation and checking of chemistry EDD files.



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3.1 Chemistry Field Measurements

This file is used for *In situ* measurements taken in the field such as pH, conductivity, Eh, and dissolved oxygen, that are not associated with a sample but are associated with either a site or location. Also include measurements such as air temperature at the site. Data collected in the field that is associated with a sample, such as on site analysis using a mobile lab, should not use this file, instead the data would be reported in the chemistry test/results file. Each Chemistry field measurement file must be named according to the following convention:

WVDEPFacilityID.Date.CFM_v#.txt (or .csv)

Table 3-2. Chemistry field measurement file data structure

Pos#	Column Name	Data Type	Required	Description
1	data_provider	Text (60)	Required	Name of company or agency responsible for completion & submittal of any part of this EDD. Acts as a link to Data_Provider table.
2	station_id or sys_code	Text (20)	Required	Enter a station_id if the measured parameter applies to a single location.or a subsite_id if the it applies to a site.
3	field_msr_id	Text (40)	Required	Unique measurement identifier. Each measurement must have a unique value constructed in the following format from measurement_date, measurement_time, and station_id: MM/DD/YYYY/HH:MM:SS/station_id.
4	field_msr_type	Text(3)	Required	Code which distinguishes between different types of measurements.
5	medium	Text (10)	Required	Medium within which this measurement was taken. Valid Values: "Soil", "Water", "Air", "Sediment", "Biological".
6	field_matrix_code	Text (2)	Required	Code which distinguishes between different types of field measurement matrix.
7	measurement_date	Date MM/DD/Y YYY	Required	Date of field chemistry measurement, water level measurement, etc.
8	measurement_time	Time (HH:MM)	Required	Time of water level measurement, field chemistry, etc in 24 hour military format.
9	upper_depth	Num (XXXX.X XXX)	Required	Depth (in depth_unit) to top of measurement below land surface (surf_elev). Use for groundwater only if discrete measurements are taken at different depths in a single well (packer tests, etc.). Required for point measurements (direct push, etc.).
10	lower_depth	Num (XXXX.X XXX)	Required if applicable	Depth (in depth_unit) to top of measurement below land surface (surf_elev). Use for groundwater only if discrete measurements are taken at different depths in a single well (packer tests, etc.). Null for point measurements (direct push, etc.).

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Pos#	Column Name	Data Type	Required	Description
11	depth_unit	Text (10)	Required	Unit of measurement for depths.
12	param_name	Text (60)	Required	Parameter names were derived from the Chemical Abstracts Registry (CAS) Number for the parameter if available. Otherwise EPA STORET codes were used.
13	value_type	Text (10)	Required	Value type reflected in result_value. Valid values: "actual", "estimated", or "calculated".
14	stat_type	Text (20)	Required	Statistic type reflected in the result_value. Max, min, mean, etc. Leave null if no statistical value was used.
15	result_value	Text (15)	Required	The measured value of the parameter, result of analysis or test reported at an appropriate number of significant digits. May be blank for non-detects.
16	result_unit	Text (15)	Required	Units of measurement for the result.
17	field_msr_equipment_type	Text (20)	Required	Type of gear used to take the measurement.
18	field_msr_equipment_name	Text (60)	Required	Name of gear used to take the measurement.
19	field_msr_comment	Text (254)	If available	Any comment regarding this field measurement.
20	worker_name	Text (30)	If available	Name of individual that took the field measurement. FORMAT: LASTNAME_FIRSTNAME. Note use of "-" as a separator in this format! Order of entry is important for sorts and searches.
21	calibration_date	Date MM/DD/Y YYY	If available	Date that the filed instrument was last calibrated.

3.2 Chemistry Sample

The Chemistry sample file contains data for samples collected at a site and location. The unique identifier for each sample is recorded in the sample_id. Trip blank samples should record the sample_id as TB+date. For example a trip blank collected on April 5, 2000 would have a sample_id of TB040500. A sample_id of 'Trip Blank' is unacceptable because it cannot be distinguished from another trip blank labeled the same way. Each Chemistry sample file must be named according to the following convention:

[WVDEPFacilityID.Date.SMP_v#.txt \(or .csv\)](#)

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Table 3-3. Chemistry sample file data structure

Pos#	Column Name	Data Type	Required	Description
1	data_provider	Text(60)	Required	Name of company or agency responsible for completion & submittal of any part of this EDD. Acts as a link to the Data_Provider table.
2	station_id	Text(20)	Required	Location identifier of sample collection, soil boring, well installation, field observations, etc. to appear on GIS maps graphs & tables, etc. The data collector will utilize the following approach for the naming convention of the samples: monitoring wells will be the well registration number assigned by the West Virginia certified well driller. For historic well reporting use the following: H for historic the month, day, year and your initials. (note: this will now be the unique well ID for that well. This will only to be reported once). All other environmental media use the matrix code-date-time and initials. Examples of possible station_id are WS0101021530tlb (this identifies a surface water sample collected on January 1, 2002 at 15:30), SB0101021530tlb, etc.
3	sample_id	Text(40)	Required	Unique sample identifier. Each sample at a facility must have a unique value, including spikes and duplicates. There can be considerable flexibility in the methods used to derive and assign unique sample identifiers is , but uniqueness throughout the database is the only restriction enforced by EQUIS®. WVDEP has developed a required convention. A sample data is required to utilize the following naming convention: Office code + Date of sample collection+time of collection + sampler initials if necessary. (DWR0101021425pmc).
4	Medium	Text(10)	Required	Medium within which this measurement was taken. Valid values: "Soil", "Water", "Air", "Sediment", "Biological".
5	sample_matrix_code	Text(2)	Required	Code which distinguishes between different types of sample matrix.
6	sample_type_code	Text(3)	Required	Code which distinguishes between different types of samples. For example, normal field samples must be distinguished from laboratory method blank samples, etc. Use sample_type valid values table. Normal samples are entered as "N"
7	sample_source	Text (5)	Required	This field identifies where the sample came from Field or fixed-base Laboratory. Valid values: "field", and "lab".
8	sample_coll_proc_id	Text (8)	Required	Sample Collection Procedure ID. References Sample_Collect_Procedures table.
9	sample_id_duplicate	Text (20)	If available	Identifies the sample_id of a duplicate sample. For example, the value in this field would be the related sample_id for a blind duplicate sample.
10	sample_group	Text(10)	If available	Special ID for group of samples from a sampling event, special collection process, unusual or specialized category of stations.

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Pos#	Column Name	Data Type	Required	Description
11	sample_date	Date MM/DD/Y YYY	Required	Date sample was collected (in MM/DD/YYYY format for EDD).
12	sample_time	Time (HH:MM:S S)	Required	Time sample collection began in 24 hour (military) format.
13	upper_depth	Num (XXXX.XX XX)	If applic- able	Beginning depth (top) of sample in feet below ground surface. Leave null for most ground water samples from monitoring wells. Database will derive this information from the start/end depth of the well screen field located in another data table. Only use for groundwater samples if discrete samples are taken at different depth elevations from a single well, i.e. multiple well packer samples.
14	lower_depth	Num (XXXX.XX XX)	If available	Ending depth (bottom) of sample in feet below ground surface. Leave null for most ground water samples from monitoring wells. Database will derive this information from the start/end depth of the well screen field located in another data table. Only use for groundwater samples if discrete samples are taken at different depth elevations from a single well, i.e. multiple well packer samples.
15	depth_unit	Text (10)	If available	Unit of measure for depths.
16	chain_of_custody	Text (15)	If available	Chain of custody identifier. A single sample may be assigned to only one chain of custody.
17	sent_to_lab_date	Date MM/DD/Y YYY	If available	Date sample was sent to lab (in MM/DD/YYYY format for EDD).
18	sample_receipt_date	Date MM/DD/Y YYY	Required	Date that sample was received at laboratory (in MM/DD/YYYY format for EDD).
19	sampler_name	Text(30)	If available	Name of individual that collected the sample. FORMAT: LASTNAME_FIRSTNAME. NOTE use of "_" as a separator!
20	task_code	Text (20)	If available	Code used to identify the task under which the field sample was retrieved.
21	qapp_approval_date	Date MM/DD/Y YYY	If available	QAPP Approval Date.
22	sample_comment	Text (254)	If available	Comments related to the sample.
23	Composite_yn	Text 1	Required	Identifies if the sample is a composite.

3.3 Chemistry Test/Results

The Chemistry Test/Results file contains data concerning analytical tests and results performed on samples. All data provided by Primary Responsible Party (PRP) is expected to be validated prior to submittal to WVDEP. Each test/results file must be named according to the following convention:

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WVDEPFacilityID.Date.TRS_v#.txt (or .csv)

Table 3-4. Chemistry test/result file data structure

Pos#	Column Name	Data Type	Required	Description
1	sample_id	Text (20)	Required	Unique sample identifier. Each sample at a facility must have a unique value, including spikes and duplicates. There can be considerable flexibility in the methods used to derive and assign unique sample identifiers is , but uniqueness throughout the database is the only restriction enforced by EQUIS®. WVDEP has developed a required convention. A sample data is required to utilize the following naming convention: Office code + Date of sample collection+time of collection + sampler initials if necessary. (DWR0101021425pmc)
2	param_name	Text (60)	Required	Parameter names were derived from the Chemical Abstracts Registry (CAS) Number for the parameter if available. Otherwise EPA STORET codes were used. See Param_name valid value table in appendix.
3	cas_number	Text (15)	Required	Analyte code derived from the Chemical Abstracts Registry (CAS) Number for the parameter if available. Otherwise EPA STORET codes are used. See Param_name valid value table in appendix.
4	fraction	Text (10)	Required	Portion of the sample or substance being analyzed. Eg. T =total, D=dissolved, etc
5	value_type	Text (10)	Required	Value type reflected in result_value. Valid values: "actual", "estimated" or "calculated".
6	stat_type	Text (20)	If Applicable	Statistic type reflected in the result_value. Max, min, mean, etc. Leave null if no statistical value was used.
7	duration_basis	Text(20)	If Applicable	Time over which test or analysis or observation was conducted. Use duration_basis valid values in appendix.
8	temperature_basis	Text(10)	If Applicable	Temperature (degrees C) at which test or analysis or observation was conducted. Not related to temperature field for groundwater or surface water temperature. Use temperature_basis valid values.
9	result_value	Text(20)	Required	The measured value of the parameter, result of analysis or test reported at an appropriate number of significant digits. May be blank for non-detects.
10	result_unit	Text(15)	Required	Units of measurement for the result.
11	container_type	Text (30)	If available	Describes the style and material of the container in which this sample was collected and transported.
12	container_size	Text (7)	If available	The volume of the container specified by container_type in the format ZZZZ.ZZ.
13	container_size_units	Text (3)	If available	Units for the volume specified in container_size.
14	container_color	Text (15)	If available	Color of the container used to collect and transport sample.
15	temp_preserve_type	Text (30)	If available	Specify the type of temperature preservation used.
16	chem_preservative	Text (10)	If available	A description of the chemical preservation used.

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Pos#	Column Name	Data Type	Required	Description
17	lab_anl_method_code	Text (35)	Required	Laboratory analytical method code. Controlled vocabulary, see the appendix for valid values.
18	analysis_date	Date MM/DD/YYYY	Required	Date of sample analysis in MM/DD/YYYY format. May refer to either beginning or end of the analysis as required by WVDEP.
19	analysis_time	Time (HH:MM:SS)	Required	Time sample analysis began in 24_hr (military) format. Note that this field, combined with the analysis_date field is used to distinguish between retests and reruns (if reported).
20	test_type	Text (10)	Required	Type of test in the laboratory. Valid values include: "initial", "reextract1", "reextract2", "reextract3", "reanalysis", "dilution1", "dilution2" and "dilution3".
21	lab_matrix_code	Text (2)	Required	Code which describes the matrix as analyzed by the lab. May differ from sample_matrix_code. See matrix valid value table in the appendix.
22	analysis_location	Text (2)	Required	Note where was sample analyzed. Valid values: FL for mobile Field Laboratory analysis, or LB for fixed based Laboratory analysis.
23	wet_or_dry_basis	Text (3)	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.
24	dilution_factor	Num (XXX.XX X)	Required	Dilution factor at which the analyte was measured effectively. Enter "1" if not diluted.
25	prep_method	Text(35)	If available	Laboratory sample preparation method code. A controlled vocabulary. See appendix for valid values.
26	prep_date	Date MM/DD/YYYY	If available	Date sample preparation began in MM/DD/YYYY format.
27	prep_time	Time (HH:MM:SS)	If available	Time sample preparation began in 24_hr (military) format. Time zone & daylight savings must be same as analysis_date.
28	lab_name_code	Text (10)	Required	Unique identifier of the laboratory as defined by the WVDEP. Controlled vocabulary, see the appendix for valid values.
29	qc_level	Text (10)	Required	Quality control level of analysis. Must be either "screen" or "definitive".
30	lab_sample_id	Text (20)	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).
31	percent_moisture_lab_calc	Text (5)	If available	Percent moisture of the sample portion used in this test; this value may vary from test to test for any sample. Report 70.1% as 70.1 not as 70.1%.
32	subsample_amount	Text (14)	If available	Amount of sample used for test.
33	subsample_amount_unit	Text (15)	If available	Unit of measurement for subsample amount. Controlled vocabulary, see the appendix for valid values.
34	test_comment	Text (254)	If available	Comments about the test, analysis, procedure, etc., as necessary.
35	final_volume	Text (15)	If available	The final volume of the sample after sample preparation. Include all dilution factors.
36	final_volume_unit	Text (15)	If available	The unit of measure that corresponds to the final_volume.

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Pos#	Column Name	Data Type	Required	Description
37	result_error_delta	Text(20)	If available	Error range applicable to the result value; typically used only for radiochemistry results.
38	result_type_code	Text (3)	Required	Must be either "TRG" for a target or regular result, "TIC" for tentatively identified compounds, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds.
39	reportable_result	Text (3)	Required	Must be "yes" for results considered to be reportable, or "no" for other results.
40	detect_flag	Text(1)	Required	Must be either "Y" for detected analytes or "N" for non_detects.
41	lab_qualifiers	Text (7)	Required if applicable	Qualifier flags assigned by the laboratory. This is a controlled vocabulary column. See valid values in the qualifiers table in the appendix.
42	Validator_qualifiers	Text (7)	Required if applicable	Qualifier flags assigned by the validation firm. This is a controlled vocabulary column. See valid values in the qualifiers table in the appendix.
43	organic_Y/N	Text (1)	Required	Must be either "Y" for organic constituents or "N" for inorganic constituents.
44	reporting_detection_limit	Text (20)	Required	Concentration level above which results can be quantified with 95% confidence limit. Must reflect conditions such as dilution factors and moisture content. Report as the sample specific detection limit.
45	quantitation_limit	Text (20)	Required	Concentration level above which results can be quantified with 98% confidence limit. Must reflect conditions such as dilution factors and moisture content. Report as the sample specific quantitation limit.
46	detection_limit_unit	Text (10)	Required	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.
47	result_comment	Text (254)	If available	Result specific comments.
48	qc_original_conc	Text (14)	If available	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.
49	qc_spike_added	Text (14)	If available	The concentration of the analyte added to the original sample. Might be required for spikes, surrogate compounds, LCS and any spiked sample (depending on user needs).
50	qc_spike_measured	Text (14)	If available	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).
51	qc_spike_recovery	Text (14)	If available	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).
52	qc_dup_original_conc	Text (14)	If available	The concentration of the analyte in the original (unspiked) sample. May be required for spike or LCS

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Pos#	Column Name	Data Type	Required	Description
				duplicates only (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero)
53	qc_dup_spike_added	Text (14)	If available	The concentration of the analyte added to the duplicate sample. Might be required for spike or LCS duplicates, surrogate compounds, and any spiked and duplicated sample (depending on user needs).
54	qc_dup_spike_measured	Text (14)	If available	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.
55	qc_dup_spike_recovery	Text (14)	If available	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. Report as percentage multiplied by 100 (e.g., 50% as 50)
56	qc_rpd	Text (8)	If available	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).
57	qc_spike_lcl	Text (8)	If available	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).
58	qc_spike_ucl	Text (8)	If available	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).
59	qc_rpd_cl	Text (8)	If available	Relative percent difference control limit. Required for any duplicated sample. Report as percentage multiplied by 100 (e.g., report 25% as 25).
60	qc_spike_status	Text (10)	If available	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.
61	qc_dup_spike_status	Text (10)	If available	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.
62	qc_rpd_status	Text (10)	If available	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
63	test_batch_type	Text (10)	Required	Lab batch type. Valid values include "Prep," "Analysis," and "Leach." This is a required field for all batches.
64	test_batch_id	Text (20)	Required	Unique identifier for all lab batches.

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3.4 Chemistry Water Level

The Chemistry water level file contains information on water levels measured during sampling activities. It contains 17 fields that can be populated for each water level reading. Each water level file must be named according to the following convention:

[WVDEPFacilityID.Date.CWTR_v#.txt \(or .csv\)](#)

Table 3-5. Chemistry water level file data structure

Pos#	Column Name	Data Type	Required	Description
1	station_id	Text20	Required	Location identifier of sample collection, soil boring, well installation, field observations, etc. to appear on GIS maps graphs & tables, etc. Examples of possible station_id are MW-01, SW-1, SB6, etc. Acts as a link to the Location table.
2	well_id	Text(20)	Required	Required if location is a well. Code is the same as that used for station_id, e.g., if station_id is MW-01 then well_id is MW-01. Leave null if location is other than a well.
3	measurement_date	Date MM/DD/ YYYY	Required	Date of field chemistry measurement, water level measurement, etc. Date of water level measurement.
4	measurement_time	Time (HH:MM: SS)	Required	Time of water level measurement, field chemistry, etc. in 24 hour (military) format.
5	water_level_historic_ref_elev	Num (XXXXX. XXXX)	If available	Historical reference elevation (in elev_unit) used calculate elevation from past water_level_depth measurements older than reference_point_start_date
6	water_level_depth	Num (XXXXX. XXXX)	Required	Depth (in depth_unit) to ground water below reference_point defined in well table.
7	water_level_elev	Num (XXXXX. XXXX)	Required	Elevation of water level (in elev_unit).
8	water_level_depth_corrected	Num (XXXXX. XXXX)	Required if applicable	Depth to water level (in depth_unit) after any necessary corrections, e.g., if corrections were necessary to water_level_depth because free product was encountered.
9	water_level_elev_corrected	Number w/decimal precision up to 7	Required if applicable	Corrected water level elevation (in elev_unit).
10	measured_depth_of_well	Num (XXXXX. XXXX)	Required if applicable	The depth below ground surface to the bottom of the well.
11	depth_unit	Text(10)	Required	Unit of measure for depths.
12	technician_name	Text (30)	If available	Name of technician measuring water level. FORMAT: LASTNAME_FIRSTNAME. NOTE use of "_" as a separator!
13	well_dry_yn	Text (1)	If	Is the well dry? "Y" for yes or "N" for no.

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Pos#	Column Name	Data Type	Required	Description
			available	
14	measurement_method	Text (20)	If available	Method used to make water level measurements.
15	dip_or_elevation	Text (10)	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.
16	water_level_remark	Text (255)	If available	Remark on measurement.

3.5 Example of Typical Chemistry EDD Deliverable

Example of the Chemistry EDD files populated with the first few rows of a typical data set are presented in Appendix A. In order to fit the examples on one page, not all of the fields (i.e., columns) were included for certain files (e.g., Site, Location, Chemistry Sample). *Additional Fields* is denoted where all the fields are not included. It should be noted that all fields are required when submitting EDD files, regardless of whether or not the field is populated. The special cases discussed in other sections are illustrated here together with standard examples

3.6 Valid Values

Valid values, also known as reference values or code lists, govern the contents of certain fields in the EDD. In other words, some fields may contain only those values within a certain predetermined range or list of codes established by WVDEP. The most current list of valid reference values can be found on the WVDEP website (URL). If you require the addition of valid values to any of the tables, contact the data management staff using the contact information provided in the technical support section.

3.7 Using Electronic Laboratory Data Checker (ELDC) to Validate Chemistry EDDs

ELDC is provided on the WVDEP website www.dep.state.wv.us/wvequis/eldc as file ELDC.EXE. To install ELDC, simply double-click on the file and follow the installation instructions. Once ELDC is installed on a workstation, it may be used to check Initial and Chemistry EDD files prior to reporting to WVDEP. The files that can be checked are Site, Location, Chemistry Sample, and Test/Results.

When ELDC starts, the user needs to select the type of file that will be checked (i.e. Site). Table 3-6 shows the correlation between ELDC "EDD file format" and the file names used in the EDD. Next the actual file is selected by using a standard browse function. Finally, the "Check" button is clicked to begin the checking process.

Table 3-6. Correlation between ELDC EDD file formats and chemistry EDD file names

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ELDC EDD File Format	Chemistry EDD File Name
WVDEPCFM	WVDEPFacilityID.Date.CFM_v#.txt (or csv)
WVDEPSMP	WVDEPFacilityID.Date.SMP_v#.txt (or csv)
WVDEPTRS	WVDEPFacilityID.Date.TRS_v#.txt (or csv)
WVDEPTRSQC	WVDEPFacilityID.Date.TRSQC_v#.txt (or csv)
WVDEPBAT	WVDEPFacilityID.Date.BAT_v#.txt (or csv)
WVDEPWTR	WVDEPFacilityID.Date.CWTR_v#.txt (or csv)

If there are errors or warnings an error log is created that can be viewed in detail or summary mode to gain an understanding of the problem. After the errors are corrected, ELDC can be re-run to assure that no errors remain. If error messages remain only because new codes are required, the files should be considered clean and reported to WVDEP with the new codes clearly explained in the cover letter.

3.8 Submitting Your Chemistry EDD to the WVDEP

Once the EDD files are complete and ready to submit, the following steps should be taken to assure a streamlined process. EDDs will be provided to the agency through electronic Web transfer. To transfer the electronic submittal(s) go to www.dep.state.wv.us/wvequis/submittals and follow the instruction. A clear notification must be provided if the EDD contains previously submitted data that specifies the study site, contact for technical questions, file names, any exceptions to the EDD format, and a clear notification if the EDD contains previously submitted data. **Files shall not be compressed or zipped.**

4. FORMATS FOR GEOLOGY FILES

This section contains tables that define the file structures for the Geology EDD. The file structures include drilling activity, lithology, well, well construction, geology samples, water level, water table, and down hole point data. The columns marked “Required” must be reported for each row in the file. If they are not reported, the data will not load. The columns marked “If available” should also be reported.

The WVDEP will specify to each WVDEP Program which fields are to be “Required”. The WVDEP Programs will develop a Standard Operating Procedure (SOP) to determine which additional fields will be “Required” in data submission requirements due to program needs. Submitted data sets will be rejected if “Required” fields are not

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completed. In situations where a data provider is unable to meet program expectations, an electronic cover letter to the WVDEP GateKeeper and the program office needs to contain a description of any fields not meeting the requirements with an explanation.

Data providers are required to submit all applicable geology files for all monitoring wells installed less than one year from the Initial EDD submittal and for any wells installed in the future. Sites submitting Chemistry EDDs with sample data obtained from existing monitoring wells (wells greater than 1 year old) are *not required* to submit any Geology files. However, it is suggested that geology files be submitted for existing wells if the data is available.

Sites reporting data from monitoring wells installed prior to 1 May 1996 are not required to submit any of the Geology tables unless specifically required by a WVDEP program. For monitoring wells installed prior to 1 May 1996 utilize the well EDD in section 4.3 Monitoring wells installed post 1 May 1996 must be submitted using the web submittal found at <http://www.dep.state.wv.us/item.cfm?ssid=11&ssid=386> (Note this information must be submitted by a West Virginia certified driller.)

There are two (2) types of Geology data submittals: Original and Correction.

- Original submittals consist of Geology data obtained during subsurface investigations. The original Geology submittal should consist of all Geology files provided the data are available. Unlike the Chemistry EDD submittals that are normally submitted on a cyclic basis, in most cases the Geology EDD is submitted only once.
- Correction submittals are those files submitted to correct errors from previously submitted EDDs. Correction submittals must be accompanied by a cover letter explaining the reason for the corrections and detailing the nature of the corrections.

A general flow diagram showing the Geology EDD process is found in figure 4-1.

Table 4-1. General information on the files that comprise the Geology EDD

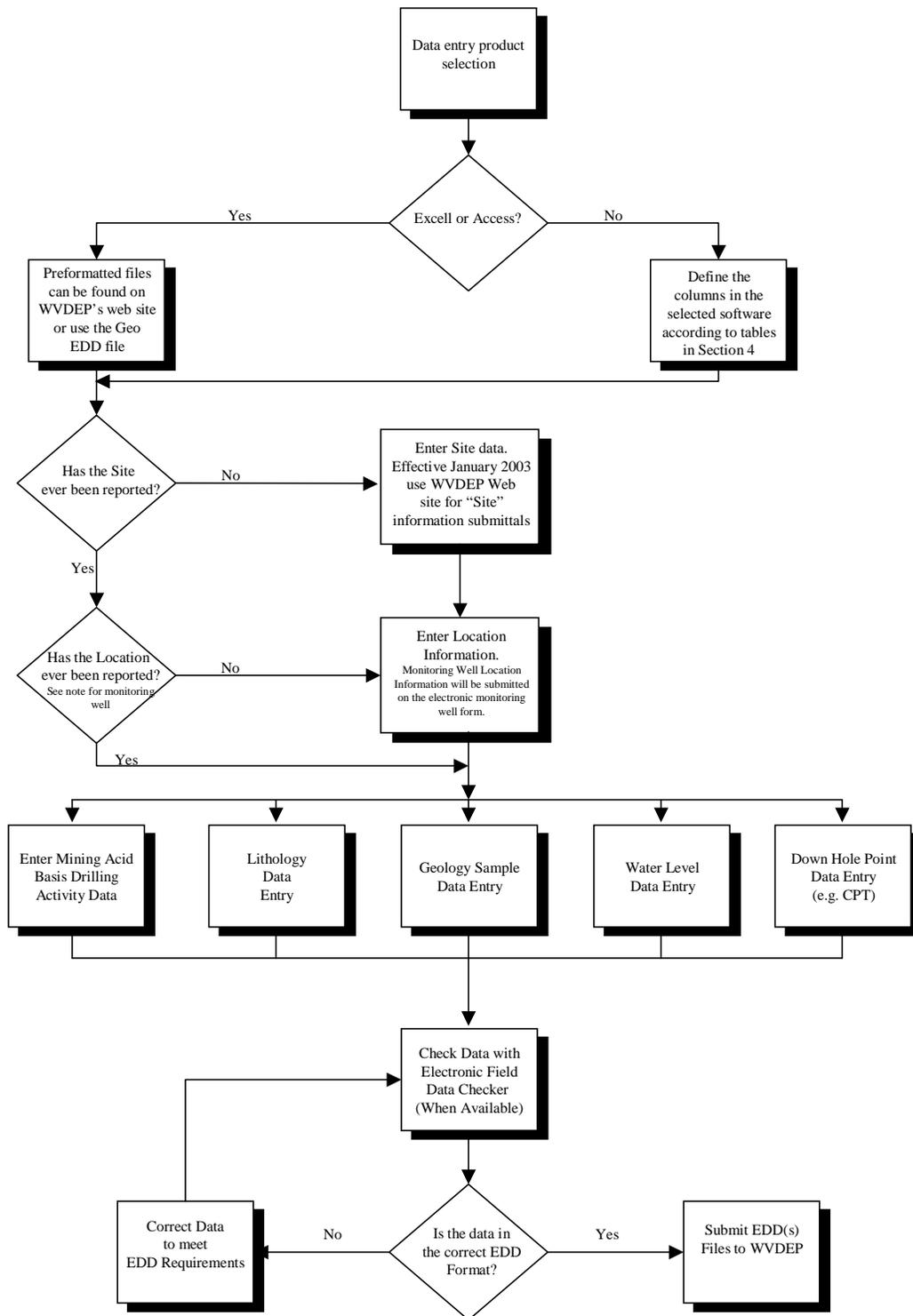
File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
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File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Drilling Activity	WVDEPFacilityID. Date.DRA_v#.txt (or csv)	WVDEP data provider or Geologist	General Information regarding soil borings	station_id event	None.
Lithology	WVDEPFacilityID. Date.LTH_v#.txt (or csv)	WVDEP data provider's Geologist	Lithology data for a borehole.	station_id start_depth	None.
Geology Samples	WVDEPFacilityID. Date.GSMP_v#.txt (or csv)	WVDEP data provider or Geologist	Results for geological, physical properties of samples.	Geo_sample_code	None.
Down Hole Point (CPT) Data	WVDEPFacilityID. Date.DHP_v#.txt (or csv)	WVDEP data provider or Geologist	Results of all down hole logging such as CPT, resistivity, or other geophysical logs.	station_id depth param	None.

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Figure 4-1. Process flow diagram for the creation and checking geology EDD file.



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4.1 Drill Activity

The drill activity 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:

[WVDEPFacilityID.Date.DRA_v#.txt \(or .csv\)](#)

Table 4-2. Drill activity file data structure

Pos#	Column Name	Data Type	Required	Description
1	station_id	Text (20)	Required	Soil boring or well installation location. Must be a valid code for the facility and reported value in the station_id field of the location file (Table 3-2).
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 station_id .
3	start_depth	Number w/decimal precision up to 7	If available	The start depth, in feet below ground surface, of the drilling.
4	end_depth	Number w/decimal precision up to 7	If available	End depth, in feet below ground surface of the drilling.
5	drill_date	Date	If available	Date drilling began.
6	Diameter	Number w/decimal precision up to 7	If available	Diameter of boring.
7	diameter_unit	Text (15)	If available	Use values from Unit valid value table. Unit of measure for diameter.
8	drill_method	Text (50)	If available	Method used to drill boring.
9	Fluid	Text (50)	If available	Description of fluid used during drilling.
10	Viscosity	Text (50)	If available	Viscosity of drilling fluid.
11	hammer_wt	Text (50)	If available	Weight of hammer, in pounds, used for sampling.
12	hammer_fall	Text (50)	If available	Distance of hammer fall during sampling in inches.
13	lift_mechanism	Text (50)	If available	Type of mechanism used to lift hammer.
14	new_yn	Text (1)	If available	Is this a new boring? “Y” for yes or “N” for no.
15	repair_yn	Text (1)	If available	Is this drilling event to repair an existing boring? “Y” for yes or “N” for no.
16	deepen_yn	Text (1)	If available	Is this drilling event to deepen an existing boring? “Y” for yes or “N” for no.
17	abandon_yn	Text (1)	If available	Has the boring been abandoned? “Y” for yes or “N” for no.
18	replace_yn	Text (1)	If available	Is this boring event to replace an existing boring? “Y” for yes or “N” for no.
19	public_yn	Text (1)	If available	Is well being install for a public use? ? “Y” for yes or “N” for no.
20	Purpose	Text (70)	If available	Describe the purpose of the boring event.

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4.2 Lithology

The lithology file contains all the lithology data for the borings. It contains 16 fields that can be populated for each lithologic unit. Optional comments can be added to describe a depth specific observation within a lithologic unit. For example, you could describe a soil fracture that was noted at a depth of 15 feet within a clay unit. First completely describe the clay unit in a row of the lithologic file. Then add a row with only the station_id, start_depth (i.e., depth below ground surface of the fracture) and the remark1 and/or remark2 fields populated. Use the remark1 and/or remark2 fields to fully describe the fracture. All other fields on that line must be reported as null. An unlimited number of optional depth specific remarks can be added for each lithologic unit. Each lithology file must be named according to the following convention:

[WVDEPFacilityID.Date.LTH_v#.txt \(or .csv\)](#)

Table 4-3. Lithology file data structure

Pos#	Column Name	Data Type	Required	Description
1	Station_id	Text(20)	Required	Soil boring or well installation location. Must be a valid code for the facility and reported in the station_id field of the location file (Table 3-2).
2	start_depth	Number w/decimal precision up to 15	Required	The start depth, in feet below ground surface, of the lithologic unit.
3	material_type	Text(40)	If applicable	The type of material that composes the lithologic unit. Controlled vocabulary, see material list in appendix. Must be used in all cases except when a depth specific comment is being made.
4	geologic_unit_code_1	Text(20)	If available	The data providers interpretation of the hydrogeologic unit present at this lithologic unit, e.g., aquifer 1, aquitard 1, aquifer 2, upper clay unit. See Appendix A.21, for example.
5	geologic_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 modelling that contains the lithologic unit. See Appendix A.21, for example.
6	Remark1	Text(255)	if applicable	Comment on the lithologic unit.
7	Remark2	Text(255)	if applicable	Comment on the geologic unit.
8	moisture	Text(1)	If available	Was any moisture detected within the lithologic unit? "Y" for yes or "N" for no.
9	permeable	Text(10)	If available	Description of the permeability of the lithologic unit such as "impervious," "semi," "pervious," or "very."
10	consolidated_y/n	Text(1)	If available	Was lithologic unit consolidated? "Y" for yes or "N" for no.
11	Color	Text(20)	If available	Color of the lithologic unit.
12	observation	Text(255)	If available	General field observations of the lithologic unit.

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Pos#	Column Name	Data Type	Required	Description
13	consistency	Text(20)	If available	Description of the consistency of the soil such as very soft, soft, firm, hard or very hard.
14	Sorting	Text(20)	If available	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.
15	grainsize	Text(20)	If available	Description of grain size.
16	Odor	Text(20)	If available	Description of odor from the soil.

4.3 Well

There are two types of well reporting, historic and wells installed after 1 May 1996. As of 1 June 2002 all monitoring wells shall be installed in accordance with §47CSR60 and will be submitted through a web form located at www.dep.state.wv.us, see Appendix B Monitoring Well reporting process. Historic monitoring well data will utilize the well file that contains general information relating to well installation. Historic well information submitted to WVDEP must utilize the appropriate EDDs.

The well file contains general information relating to historic well installation. Each well file must be named according to the following convention:

[WVDEPFacilityID.Date.WEL_v#.txt \(or .csv\)](#)

Table 4-4. Well file data structure

Pos#	Column Name	Data Type	Required	Description
1	Station_id	Text(20)	Required	Well installation location. Must be a valid code for the facility and reported in the station_id field of the location file (Table 3-2).
2	sys_well_code	Text(20)	Required	Well identifier. Code is the same as that used for station_id, e.g., if station_id is MW-01 then sys_well_code is MW-01.
3	well_description	Text(30)	If applicable	Used for additional well description if necessary.
4	well_owner	Text(30)	If available	Name of entity that owns the well.
5	well_purpose	Text (20)	If available	Purpose of well.
6	well_status	Text (20)	If available	Current status of well.
7	top_casing_elev	Number w/decimal precision up to 15	If available	Elevation of the top of well casing. Elevation must be in feet.
8	datum_value	Number w/decimal precision up to 15	Required	Value of datum used to reference water level measurements. EPA normally uses top of well casing for datum.
9	datum_unit	Text(15)	Required	Use values from Unit valid value table. Unit of measure for the well datum.

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Pos#	Column Name	Data Type	Required	Description
10	datum_desc	Text (70)	Required	Description of the datum, such as "top of well casing."
11	step_or_linear	Text (6)	If available	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.
12	start_date	Date	Required	Date that datum was first used.
13	datum_collection_method_code	Text (2)	If available	Use codes in elevation collection method valid value table in appendix. Method used to determine the datum elevation.
14	depth_of_well	Number w/decimal precision up to 15	If available	Depth below ground surface of the well bottom.
15	depth_unit	Text (15)	If available	Use values from Unit valid value table. Unit of measurement for depth.
16	depth_measure_method	Text (20)	If available	Method of measuring depth of well.
17	Stickup_height	Text (8)	If available	Height of casing above ground surface.
18	Stickup_unit	Text (15)	If available	Use values from Unit valid value table. Unit of measure for the stickup height.
19	sump_length	Text (20)	If available	Length of sump.
20	sump_unit	Text (15)	If available	Use values from Unit valid value table. Unit of measure for the sump length.
21	installation_date	Date	If available	Date of well installation.
22	construct_start_date	Date	If available	Date well construction began.
23	construct_complete_date	Date	If available	Date well construction was completed.
24	construct_contractor	Text (10)	If available	Name of contractor that installed well.
25	pump_type	Text (20)	If available	Type of pump used at well such as centrifugal, propeller, jet, helical, rotary, etc.
26	pump_capacity	Text (6)	If available	Capacity of pump.
27	pump_unit	Text (15)	If available	Use values from Unit valid value table. Unit of measure for the pump capacity and yield.
28	pump_yield	Text (6)	If available	The yield of the pump.
29	pump_yield_method	Text (20)	If available	Method used for pump yield.
30	weep_hole	Text (1)	If available	Is there a weep hole? "Y" for yes or "N" for no.
31	head_configuration	Text (50)	If available	Description of the well head.
32	access_port_yn	Text (1)	If available	Is there an access port? "Y" for yes or "N" for no.
33	casing_joint_type	Text (50)	If available	Type of casing joint such as threaded, flush, or solvent welded.
34	perforator_used	Text (50)	If available	Description of well perforation such as slotted, drilled, or wound.
35	intake_depth	Number w/decimal precision up to 15	If available	Depth in feet below ground surface of the well intake.
36	disinfected_yn	Text (1)	If available	Was well disinfected? "Y" for yes or "N" for no.

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Pos#	Column Name	Data Type	Required	Description
37	historical_reference_elev	Number w/decimal precision up to 15	If available	Historical reference value. Used for the elevation of past reference points. Elevation must be in feet. Elevation must be in feet.
38	geologic_unit_code	Text (20)	If available	Geologic unit in which the well intake is installed.
39	Remark	Text (255)	If available	Available for general remarks.

4.4 Well Construction

The well construction 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 file must be named according to the following convention:

[WVDEPFacilityID.Date.WSG_v#.txt \(or .csv\)](#)

Table 4-5. Well construction file data structure

Pos#	Column Name	Data Type	Required	Description
1	Station_id	Text20	Required	Soil boring or well installation location. Must be a valid code for the facility and reported in the location file either now or during an earlier data submission.
2	sys_well_code	Text(20)	Required	Well identifier. Code is the same as that used for station_id, e.g., if station_id is MW-01 then sys_well_code is MW-01.
3	segment_type	Text(20)	Required	Use descriptions in well segment and material valid value table in appendix. Type of segment within well (e.g., protective casing, well casing, screen, etc.).
4	material_type_code	Text(20)	Required	Use descriptions in well segment and material valid value table in appendix. Material description of well segment.
5	start_depth	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, of the top of the segment.
6	end_depth	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, of the bottom of the segment.
7	depth_unit	Text(15)	Required	The unit of depth measurements. Units must be feet.
8	inner_diameter	Number w/decimal precision up to 15	If available	The inside diameter of segment.

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Pos#	Column Name	Data Type	Required	Description
9	outer_diameter	Number w/decimal precision up to 15	If available	The outside diameter of the segment.
10	diameter_unit	Text(15)	If available	Use codes in unit valid value table in appendix. The unit of depth measurements.
11	thickness	Number w/decimal precision up to 15	If available	Thickness of the well segment.
12	thickness_unit	Text(15)	If available	Use codes in unit valid value table in appendix. The unit of measurement for thickness.
13	slot_type	Text(20)	If applicable	Type of slots such as bridge, shutter, and continuous.
14	slot_size	Number w/decimal precision up to 15	If applicable	Width of slots.
15	slot_size_unit	Text(15)	If applicable	Use codes in unit valid value table in appendix. The unit of measurement for slot size.
16	perf_length	Number w/decimal precision up to 15	If applicable	Length of perforated portion of screen.
17	screen_type	Text(15)	If applicable	Type of screen.
18	material_quantity	Text(20)	If available	Quantity of material used in lbs. Applicable to annular seal/fill material.
19	material density	Text(20)	If available	Density of the annular seal material in lbs/ft ³ .
20	Remark	Text255	If available	Remarks regarding the segment.

4.5 Geology Samples

The Geology samples file contains geotechnical sample information. Samples collected for the purpose of analyte analysis should be reported using the Chemistry EDD. Each Geology sample file must be named according to the following convention:

[WVDEPFacilityID.Date.GSMP_v#.txt \(or .csv\)](#)

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Table 4-6. Geology samples file data structure

Pos#	Column Name	Data Type	Required	Description
1	station_id	Text20	Required	Sample collection location. Must be a valid code for the facility and reported in the station_id field of the location file (Table 3-2).
2	geo_sample_code	Text(20)	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.
3	sample_name	Text(50)	If available	Use to provide a name or description of sample. Does not have to be a unique throughout database.
4	sample_top	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, to top of sample.
5	sample_bottom	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, to bottom of sample.
6	sample_date	Date	If available	Date sample was collected.
7	sample_time	Text(5)	If available	Time sample was collected in hh:mm:ss.
8	sample_method	Text(30)	If available	Method used to obtain sample.
9	material_type	Text(40)	If available	Material type of geologic sample.
10	sample_desc	Text(255)	If available	General description of the sample or sampling activities.
11	geologic_unit_code	Text(20)	If available	Code used to identify the geologic unit of sample.
12	liquid_limit (LL)	Number w/decimal precision up to 7	If available	Liquid limit of sample.
13	plastic_limit (PL)	Number w/decimal precision up to 7	If available	Plastic Limit of sample.
14	shrinkage_limit	Number w/decimal precision up to 7	If available	Shrinkage limit of sample.
15	flow_index	Number w/decimal precision up to 7	If available	Flow index of sample.
16	plasticity_index	Number w/decimal precision up to 7	If available	Plasticity index of sample.
17	activity	Number w/decimal precision up to 7	If available	Activity of sample.

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Table 4-6. Geology samples file data structure (continued)

Pos#	Column Name	Data Type	Required	Description
18	E	Number w/decimal precision up to 7	If available	Void ratio of sample.
19	e_max	Number w/decimal precision up to 7	If available	Maximum void ratio of sample.
20	e_min	Number w/decimal precision up to 7	If available	Minimum void ratio of sample.
21	N	Number w/decimal precision up to 7	If available	Porosity of sample.
22	specific_gravity	Number w/decimal precision up to 7	If available	Specific gravity of sample.
23	W	Number w/decimal precision up to 7	If available	Water content of sample.
24	opt_w	Number w/decimal precision up to 7	If available	Optimum water content.
25	S	Number w/decimal precision up to 7	If available	Degree of saturation of the sample.
26	K	Number w/decimal precision up to 7	If available	Hydraulic conductivity of sample.
27	k_unit	Number w/decimal precision up to 7	If available	Use unit valid value table in appendix. Unit of measure for K.
28	unit_wt	Number w/decimal precision up to 7	If available	Unit weight of sample.
29	sat_unit_wt	Number w/decimal precision up to 7	If available	Saturated unit weight.
30	dry_unit_wt	Number w/decimal precision up to 7	If available	Dry unit weight.
31	dry_unit_wt_max	Number w/decimal precision up to 7	If available	Maximum dry unit weight.
32	dry_unit_wt_min	Number w/decimal precision up to 7	If available	Minimum dry unit weight.
33	density_unit	Number w/decimal precision up to 7	If available	Use values from Unit valid value table. Unit of measure for the densities of the sample.
34	rel_density	Number w/decimal precision up to 7	If available	Relative density of sample.
35	rel_compaction	Number w/decimal precision up to 7	If available	Relative compaction of sample.
36	Consistency	Text (20)	If available	Description of the consistency of the soil sample such as very soft, soft, firm, hard or very hard.
37	organic_carbon	Number w/decimal precision up to 7	If available	Organic carbon content of sample.
38	organic_carbon_unit	Text (15)	if available	Use codes in unit valid value table in appendix. Unit of measurement of organic content.

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4.6 Water Table

The water table file stores data pertaining the water table. Each water table file must be named according to the following convention:

[WVDEPFacilityID.Date.TBL_v#.txt \(or .csv\)](#)

Table 4-7. Water table file data structure

Pos#	Column Name	Data Type	Required	Description
1	station_id	Text (20)	Required	Soil boring or well installation location. Must be a valid code for the facility and reported in the station_id field of the location file (Table 3-2).
2	Type	Text (20)	Required	Aquifer designation such as unconfined1, confined1, or confined2.
3	Sequence	Text (20)	Required	Designation of when water level measurement was taken. For example, measurement before water stabilized would be “unstabilized” and after stabilization would be “stabilized.”
4	Depth	Number w/decimal precision up to 15	Required	Depth of water table below reference point.
5	flowing_yn	Text (1)	If available	Is the water table flowing? “Y” for yes or “N” for no.
6	measurement_method	Text (50)	If available	Method of measuring water table depth.
7	capped_pressure	Number w/decimal precision up to 15	If available	Hydrostatic pressure of confined aquifer.
8	capped_pressure_unit	Text (15)	If available	Use values from Unit valid value table. Unit of measure for capped pressure.
9	reference_point	Text (50)	If available	Description of reference point from which depth were measured.
10	reference_elevation	Number w/decimal precision up to 15	Required	The reference point elevation. Elevation must be in feet.
11	Temperature	Number w/decimal precision up to 15	If available	Temperature of water in the water table.
12	Temperature_unit	Text (15)	If available	Use values from Unit valid value table. Unit of temperature.

4.7 Geology Down Hole Point Data

The Geology down hole point data file stores data from down hole logging methods such as Cone Penetrometer Tests and geophysics. All down hole logging data should be submitted. Report the parameter being measured in the “param” field, such as resistivity,

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and report the measured value at the depth of the measurement. Table 5-8 presents the file structure and Table 5-9 gives an example a down hole point file ready to be converted to a text file.

Each Geology down hole point data file must be named according to the following convention:

WVDEPFacilityID.DateDHP_v1.txt (or .csv)

Table 4-8. Geology Down Hole Point File Data Structure

Pos#	Column Name	Data Type	Required	Description
1	station_id	Text20	Required	Sample collection location. Must be a valid code for the facility and reported in the station_id field of the location file (Table 3-2).
2	Depth	Number w/decimal precision up to 15	Required	Depth of measurement below ground surface in feet.
3	Param	Text(20)	Required	The parameter being measured such as tip stress, resistivity, or pore pressure.
4	param_value	Number w/decimal precision up to 15	Required	The measured value of the parameter.

4.8 Example of Typical Geology EDD Deliverable

Example of the Geology EDD files populated with the first few rows of a typical data set are presented in Appendix A. In order to fit the examples on one page, not all of the fields (i.e., columns) were included for certain files (e.g., Site, Location, Chemistry Sample). *Additional Fields* is denoted where all the fields are not included. It should be noted that all fields are required when submitting EDD files, regardless of whether or not the field is populated. The special cases discussed in other sections are illustrated here together with standard examples.

4.9 Valid Values

Valid values, also known as reference values or code lists, govern the contents of certain fields in the EDD. In other words, some fields may contain only those values within a certain predetermined range or list of codes established by WVDEP. The most current list of valid reference values can be found on the WVDEP website ([URL](#)). If you require the addition of valid values to any of the tables, contact the data management staff using the contact information provided in the technical support section.

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4.10 Using Electronic Field Data Checker (EFDC) to Validate Geology EDDs

EFDC is provided on the WVDEP website www.dep.state.wv.us/wvequis/efdc as file EFDC.EXE. To install ELDC, simply double-click on the file and follow the installation instructions. Once EFDC is installed on a workstation, it may be used to check Geology EDD files prior to reporting to WVDEP.

When EFDC starts, the user needs to select the type of file that will be checked (i.e. Site). Table 2-3 shows the correlation between EFDC “EDD file format” and the file names used in the EDD. Next the actual file is selected by using a standard browse function. Finally, the “Check” button is clicked to begin the checking process.

Table 4-9. Correlation between EFDC EDD file formats and geology EDD file names

EFDC EDD File Format	Geology EDD File Name
WVDEPDRA	WVDEPFacilityID.Date.DRA_v#.txt (or csv)
WVDEPLTH	WVDEPFacilityID.Date.LTH_v#.txt (or csv)
WVDEPWEL	WVDEPFacilityID.Date.WEL_v#.txt (or cvs)
WVDEPWSG	WVDEPFacilityID.Date.WSG_v#.txt (or cvs)
WVDEPGSMP	WVDEPFacilityID.Date.GSMP_v#.txt (or csv)
WVDEPTBL	WVDEPFacilityID.Date.TBL_v#.txt (or cvs)
WVDEPDHP	WVDEPFacilityID.Date.DHP_v#.txt (or csv)

If there are errors or warnings an error log is created that can be viewed in detail or summary mode to gain an understanding of the problem. After the errors are corrected, ELDC can be re-run to assure that no errors remain. If error messages remain only because new codes are required, the files should be considered clean and reported to WVDEP with the new codes clearly explained in the cover letter.

4.11 Submitting Your Geology EDD to the WVDEP

Once the EDD files are complete and ready to submit, the following steps should be taken to assure a streamlined process. EDDs will be provided to the agency through electronic Web transfer. To transfer the electronic submittal(s) go to www.dep.state.wv.us/wvequis/submittals and follow the instruction. A clear notification must be provided if the EDD contains previously submitted data that specifies the study site, contact for technical questions, file names, any exceptions to the EDD format, and a clear notification if the EDD contains previously submitted data. **Files shall not be compressed or zipped.**

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5. SPECIAL REPORTING REQUIREMENTS FOR EDD

The following is a list of reporting requirements for the EDDs previously mentioned.

5.1 Data Integrity Rules

Data submitters are responsible for performing 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 2, 3, and 4 for more extensive lists, provided in the appendix. For example, the sample matrix is sample_matrix_code field of the sample file and must be reported using one of the values provided in the valid value tables found on the WVDEP website (URL).
- **Row Uniqueness** must be verified using the guidance provided in Tables 2-1, 3-1, and 4-1. Row uniqueness is assured when no two rows in a file contain the same values for the columns 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 sample_id (commonly called a sample identifier). In addition, no two rows ever reported for a single site can contain the same sample_id. The sample_id must be unique for a site. This is also true of the station_id (code used to identify a location e.g. MW01) in the Location table. As previously mentioned, it is anticipated that the location(s) will be reported early in the program and that information about each location including water levels and samples collected will be reported throughout the program. In this case, a row for each station_id should only be reported in the Location file with the first data submission and not with subsequent submissions.
- **Row Integrity:** The relationship between records within the files of the EDD must be assured by enforcing the “referential integrity” rules discussed in Tables 2-1, 3-1, and 4-1 under the column labeled “Dependence of other files on these data.” For example, the values of sample_id present in the Test/Result file must also be present in the Sample file. Logical relationships between the Chemistry files are shown in Figure 5-1 below. The line between files shows which column (or columns) is used to relate the two. The side with the “1” at the end of the line contains one row that may be related to many rows on the other side. For example, there is one site row for many location rows because there are many locations at each of the study sites. Logical relationships between the Geology files are limited to the requirement that all station_ids must be reported in the Location table.

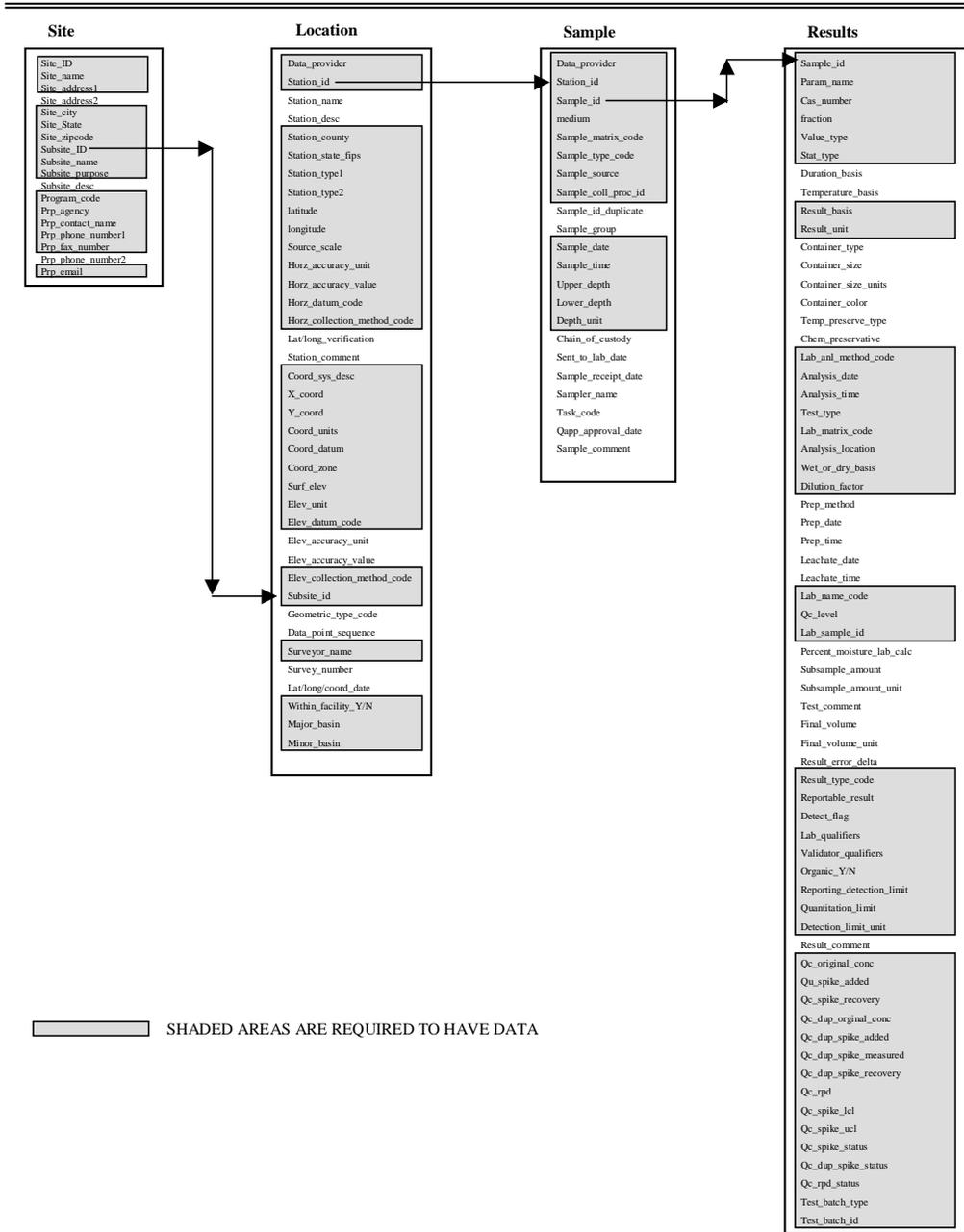
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Figure 5-1. Relationships between chemistry file data structures.

Relationships between chemistry file data structures.

Note that the field measurement table is not shown because its relationship depends on the type of measurement taken.

Shaded fields are "Required" to have data



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5.2 Reporting Null Values

Many fields are optional in the EDD. When a field is **not** listed as required in Sections 2, 3, and 4, a blank may be an appropriate value. However, a blank value needs to be surrounded by tabs or commas. In other words, the number of fields is always the same, whether or not the fields include data. Refer to Table 5-1 where the second of three fields shown is considered optional.

Table 5-1. 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.
"data_one" tabtab "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.

5.3 Reporting Re-tests

For Initial tests, all analytes regardless of results should be reported. For retests only reportable chemicals should be reported. The initial test will have reportable_result set to "No" for all chemicals that are reported in retests. Table 5-2 provides an example of reporting re-tests.

Table 5-2. Example of reporting re-tests

Test Type	Param_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

5.4 Reporting Non-detects

Non-detects must be reported as shown in the example below. Each non-detect row must have the detect_flag = N, a reporting_detection_limit, and the laboratory's equipment utilized method of detection limit in the result value field. Table 5-3 presents an example of reporting non-detects.

Table 5-3. 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

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5.5 Reporting Tentatively Identified Compounds

Tentatively Identified Compounds (TICs) should be reported where 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 TIC should be identified to class. As a final naming choice, the TIC should be identified as Unknown. For the purpose of this EDD, the valid values list assumes the laboratory will report up to 10 TICs. Only the 10 most concentrated TICs should be reported. Table 5-4 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_number field, Pos #3, of the Test/Result file. In addition, the result_type_code, Pos # 40 in the Test/Result file should have "TIC" for all TIC records.

Table 5-4. Example nomenclature for TIC reporting

TIC Name	Number for TIC	Reported Name in cas_number
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

5.6 Data Types

Table 5-5 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 number from $-3.402823E38$ to $-1.401298E-45$ for negative values and from $1.401298E-45$ to $3.402823E38$ for positive values, with decimal precision of up to 7. The double data type stores numbers from $-1.79769313486231E308$ to $-4.94065645841247E-324$ for negative values and from $1.79769313486231E308$ to $4.94065645841247E-324$ for positive values, with decimal precision of up to 15.

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Table 5-5. 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(5) is standard length for time.
Date	Date format is MM/DD/YYYY.	NA	
Text	Stores characters and numbers.	NA	Length restrictions are indicated in parenthesis.

6. TECHNICAL SUPPORT

WVDEP provides technical support for users of this EDD. For questions concerning data, data formats, and submission procedures please contact WVDEP’s Gatekeeper at gatekeeper@dep.state.wv.us or call (304) 759-0546.

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APPENDIX A

A.1 Example of a Typical Initial, Chemistry and Geology EDD Deliverable

Examples of Initial, Chemistry and Geology EDD files populated with the first few rows of a typical data set are presented in Figures 2-3, 2-4, 2-5, and 2-6. In order to fit the examples on one page, not all of the fields (i.e., columns) were included for certain files (e.g., Site, Location, Chemistry Sample). *Additional Fields* is denoted where all the fields are not included. It should be noted that all fields are required when submitting EDD files, regardless of whether or not the field is populated. The special cases discussed in previous sections are illustrated here together with standard examples.

Figure A-1. Example Initial EDD ready for conversion to text file

Site File:

Site_ID	Site_name	Site_address1	Site_address2	Site_city	Site_State	Site_zipcode	Subsite_id	Subsite_name	<i>Additional Fields</i>	email_ad
000000000001	Alloy Metals	23 Main Street	Suite 2	Boomer	WV	25031	Site 1	OU-1		abc@abd.
000000000001	Smith Inc.	2334 Street		Charleston	WV	25301	Site 2	SWMU-3		bda@stat

Location File:

Data_provider	Station_id	Station_name	Station_desc	Station_county	Station_Type1	Station_type2	X_coord	Y_coord	Source_scale	Horz_accuracy_units	Horz_zccuracy_value	<i>Additional Fields</i>	comment
Contractor	DWM0101021400tlb		Lagoon	063	Direct push	Industrial	575897.62	4731894.47		m	10		
Contractor	DWR0111021100brd		outfall	063	Waste Sewer	Drainage	57589.14	4731853.02		m	5		

Location File of Resurveyed Location

The following table shows the fields requiring data when submitting a new location file resulting from a resurvey of the datum elevation at one location. Only the station_id, sys_well_code, and the datum elevation fields are populated. All other fields in the location file are left null. In this example, the top of the well casing (TOC) was resurveyed. The elevation was found to be different

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from the originally reported elevation. The TOC was also used as the datum for the well. Therefore, a new location file needs to be submitted where only the fields shown below are populated with the new data from the resurvey. All other fields need to be null.

Data_provider	Station_id	<i>Additional Fields</i>	top_casing_elev	datum_value	datum_unit	step_or_linear	datum_collection_method_code	datum_desc	datum_start_date
contractor	WV1234-1		119.2	119.2	Ft	linear	A1	top of casing	04/12/99

Figure A-4 . Example Chemistry EDD ready for conversion to text file

Chemistry Field Measurements File:

table_name	sys_code	param_code	Measurement_date	Measurement_time	param_value	param_unit	measurement_method	param_value_background	remark	<i>Additional Fields</i>	calibration_date
Site	Example	Temp	07/12/2000	13:30	29	deg c	thermometer		Ambient air temp		
Location	MW01	pH	07/12/2000	14:20	7.2	pH units	pH probe		pH of groundwater		

Sample File:

Data_provider	Station_id	Sample_id	medium	Sample_matrix_code	Sample_type_code	Sample_source	Sample_coil_proc_id	<i>Additional Fields</i>	comment
Contractor			Soil	SO	N	Field			
Contractor			biological	TA	N	Field			

Test/Result File:

Sample_id	Param_name	Cas_number	fraction	Stat_type	<i>Additional Fields</i>	Result_value	Result_units	<i>Additional Fields</i>	Lab_anl_method_code	Analysis_date
MW02040198			Initial	WG		1.0	ABC			
MW02040198			Initial	WG		1.0	ABC			
MW02040198			Reanalysis	WG		10.0	ABC			

Test/Result file (continued):

Analysis_time	Test_type	Lab_matrix	Analysis	Wet_or_dry	Dilution	<i>Additional</i>	Lab_name	<i>Additional</i>	Result_type	Reportable	Detect_flag	<i>Additional</i>
---------------	-----------	------------	----------	------------	----------	-------------------	----------	-------------------	-------------	------------	-------------	-------------------

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		code	location	_basis	_factor	<i>Fields</i>		_code	<i>Fields</i>	_code	_result		<i>Fields</i>

Test/Result file (continued):

Organic_Y/N	<i>Additional Fields</i>	Test_batch_type

Chemistry Water Level File:

station_id	<i>Additional Fields</i>	measurement_date	measurement_time	<i>Additional Fields</i>	water_level_depth	<i>Additional Fields</i>	remark
MW01		05/10/1999	13:10		31.1		
MW02		05/10/1999	13:45		34.1		

Figure A-5. Examples of QC data fields within 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 file for a normal field sample. Notice that all QC fields are blank.

cas_number	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 for a normal field sample. Notice that QC fields are blank except on surrogate rows. Many users will need only the recovery field data; the spike added and spike measured fields will not be needed in most situations.

cas_number	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				

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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_number	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									

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 users will need only the calculated recovery field (qc_spike_recovery).

cas_number	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					

Figure A-5. Examples of QC data fields within Chemistry EDD (continued)

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 completed, and that the result_value field is not needed. Also, the qc_rpd field would be completed for these rows. Many users will need only the calculated recovery field (qc_dup_spike_recovery).

cas_number	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

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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 single sample (they can be reported this way, or as two separate samples as shown above). Notice that all QC fields are completed, and that the result_value field is not needed. Also, the qc_rpd field would be completed for these rows. Many users will need only the calculated recovery fields (qc_spike_recovery and qc_dup_spike_recovery).

cas_number	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 a LCS sample. The qc_rpd field would be blank for these rows. Many users will need only 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_number	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 A-6. Example Geology EDD for direct push, acid basis boring log, and historic monitoring wells for conversion to text file.

Station_id shall be the registration number as identified in §47CSR60.6.3.

6.3. The certified monitoring well driller shall assign each monitoring well a registration number using the following system:

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6.3.1. The first group of numbers will be the certified monitoring well drillers certification number followed by a dash (-).

6.3.2. The second group of numbers will represent the number of the monitoring well(s) installed by the driller at this site/facility (-).

Drill Activity File:

Station_id	drill_event	start_depth	End_depth	drill_date	Diameter
WV1234-1	1	40	80	07/12/1995	8
WV1234-2	2	45	110	07/14/1995	4

*Additional
Fields*

purpose
Advanced well additional 40 feet to reach lower aquifer
Advanced well 55 feet to reach bedrock.

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Lithology File:

Station_id	start_depth	end_depth	material_type	geologic_unit	Additional Fields	remark1	Additional Fields	odor
WV1234-1	0	10	CL	Clay		grayish brown clay, trace fine sand, med strength, med plastic, rapid dilatancy ,some brick fragments		
WV1234-1	10	23	SW	Outwash		med dense, 50% fine to coarse brown sand, 30% gravel, dry, trace clay		
WV1234-1	23	30	SP	Outwash		dense, 70% coarse brown sand, 20% gravel, poorly graded, rounded, moist		
WV1234-2	0	6	ML	Alluvial		Dark brown silt with little fine sand, low strength, nonplastic, rapid dilatancy		

Well File:

station_id	sys_well_code	Additional Fields	top_casing_elev	datum_value	datum_unit	datum_desc	Additional Fields	geologic_unit_code	remark
WV1234-1	MW-01		122.0	122.0	ft	top of casing of well		outwash	
WV1234-2	Well-B		122.3	122.3	ft	top of casing of well		alluvial	

Well Construction File

station_id	sys_well_code	segment_type	material_type_code	start_depth	end_depth	depth_unit	inside_diameter	Additional Fields	remark
WV1234-1	Well-A	surface plug	concrete	0	1.5	ft	4.5		
WV1234-1	Well-A	annular backfill	neat cement grout	1.5	8	ft	2.375		
WV1234-1	Well-A	annular Seal	Bentonite pellets	8	8	ft	2.375		
WV1234-1	Well-A	Filter Pack	sand pack	8	23.1	ft	2.375		
WV1234-1	Well-A	Protective Casing	steel	-2.2	3.2	ft	4		
WV1234-1	Well-A	casing	stainless steel 304	-2.1	24	ft	2		
WV1234-1	Well-A	screen	stainless steel 304	24	29	ft	2		
WV1234-2	Well-B	protective casing	steel	-2.0	3.0	ft	2		
WV1234-2	Well-B	surface plug	concrete	0	1.5	ft	4.5		
WV1234-2	Well-B	annular backfill	neat cement grout	1.5	10	ft	2.375		

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

Geology Sample File:

station_id	geo_sample_code	sample_name	sample_top	sample_bottom	sample_date	<i>Additional Fields</i>	sample_method	material_type	<i>Additional Fields</i>	organic_carbon _units
WV1234-1	ABCD-1		4	6	04/23/1999		split spoon	SW		
WV1234-1	ABCD-2		14	16	04/23/1999		split spoon	SW		
WV1234-2	DEFG-1		5	7	04/24/1999		split spoon	SP		

Water Table File:

station_id	type	sequence	Depth	flowing_yn	measurement_method	capped_pressure	capped_pressure _unit	<i>Additional Fields</i>	temperature _unit
WV1234-1	unconfined	stable	21.2	y	electric sensor				
WV1234-2	unconfined	stable	21.0	y	electric sensor				

Geology Down Hole Point File:

station_id	depth	param	param_value
WV1234-1	10.8	Tip Stress	612
WV1234-1	11.2	Tip Stress	624
WV1234-1	10.8	Sleeve Stress	6.1
WV1234-1	11.2	Sleeve stress	5.8
WV1234-2	9.5	Resistivity	510
WV1234-2	10.1	Resistivity	521
WV1234-2	11.0	Resistivity	489

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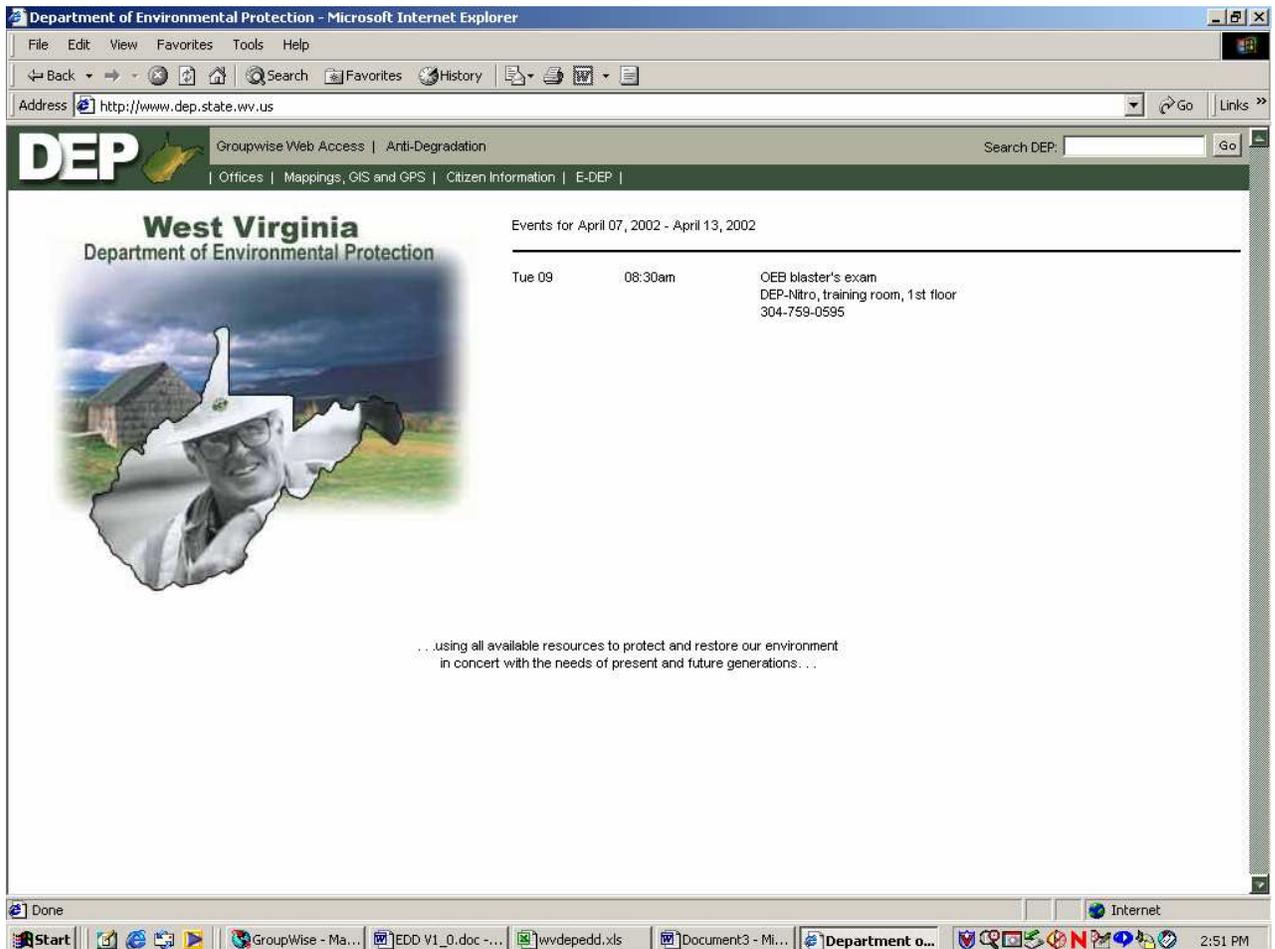
Appendix B

B.1 Monitoring well reporting process

The West Virginia Department of Environmental Protection (WVDEP) has implemented a web-based approach for the electronic submittal of well construction data as required by §47CSR60. WVDEP certified well drillers will be assigned a **Login** name and a **Password**. With this information the certified well drillers will be able to access the electronic monitoring well construction form through WVDEP's web page. If you are a certified well driller and do not have the required information contact WVDEP/ Division of Water Resources (Ellen Herndon) at (304) 558-2108.

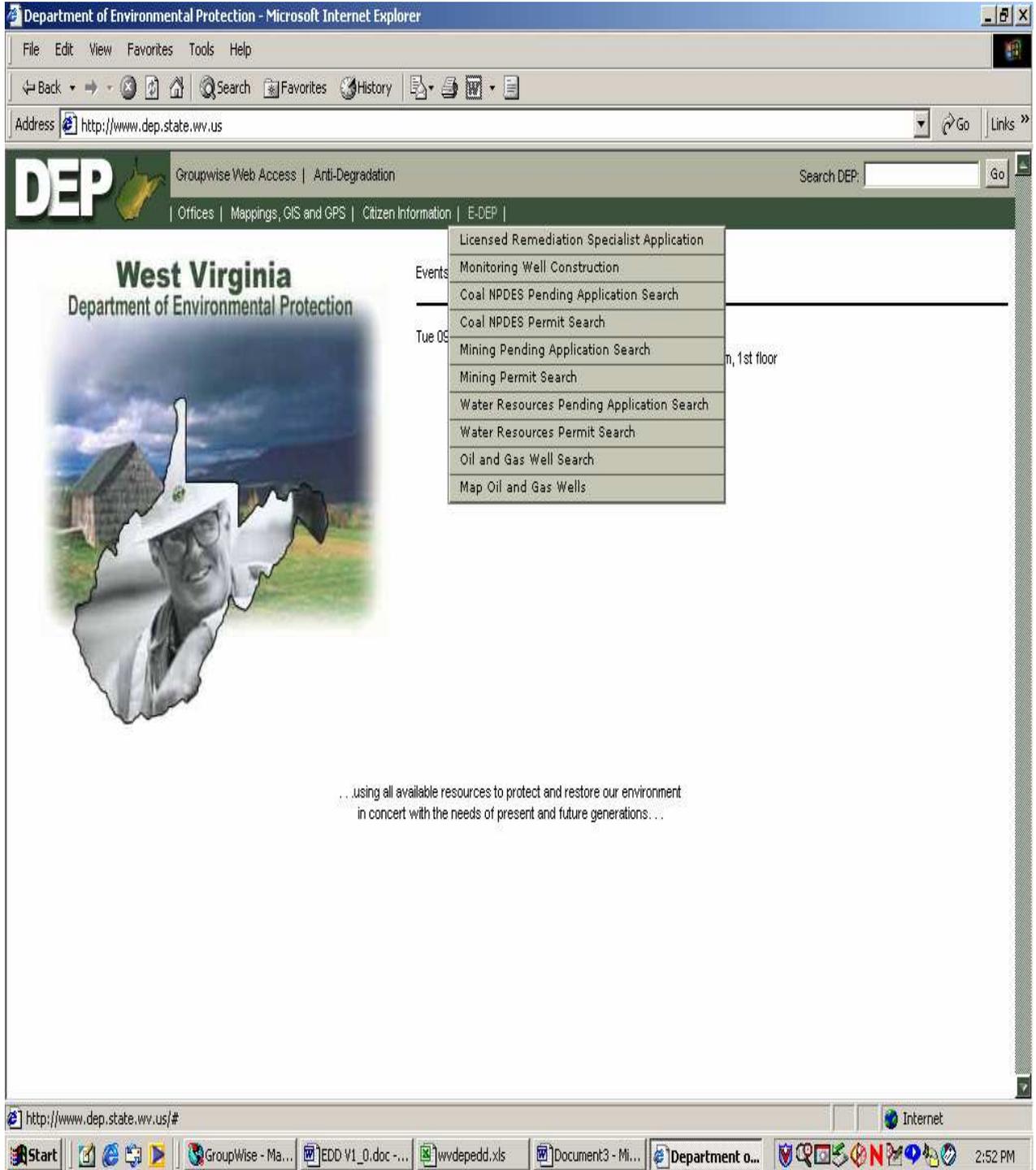
The following pages will walk you through the reporting steps:

1. Using your computers web browser go to www.dep.state.wv.us



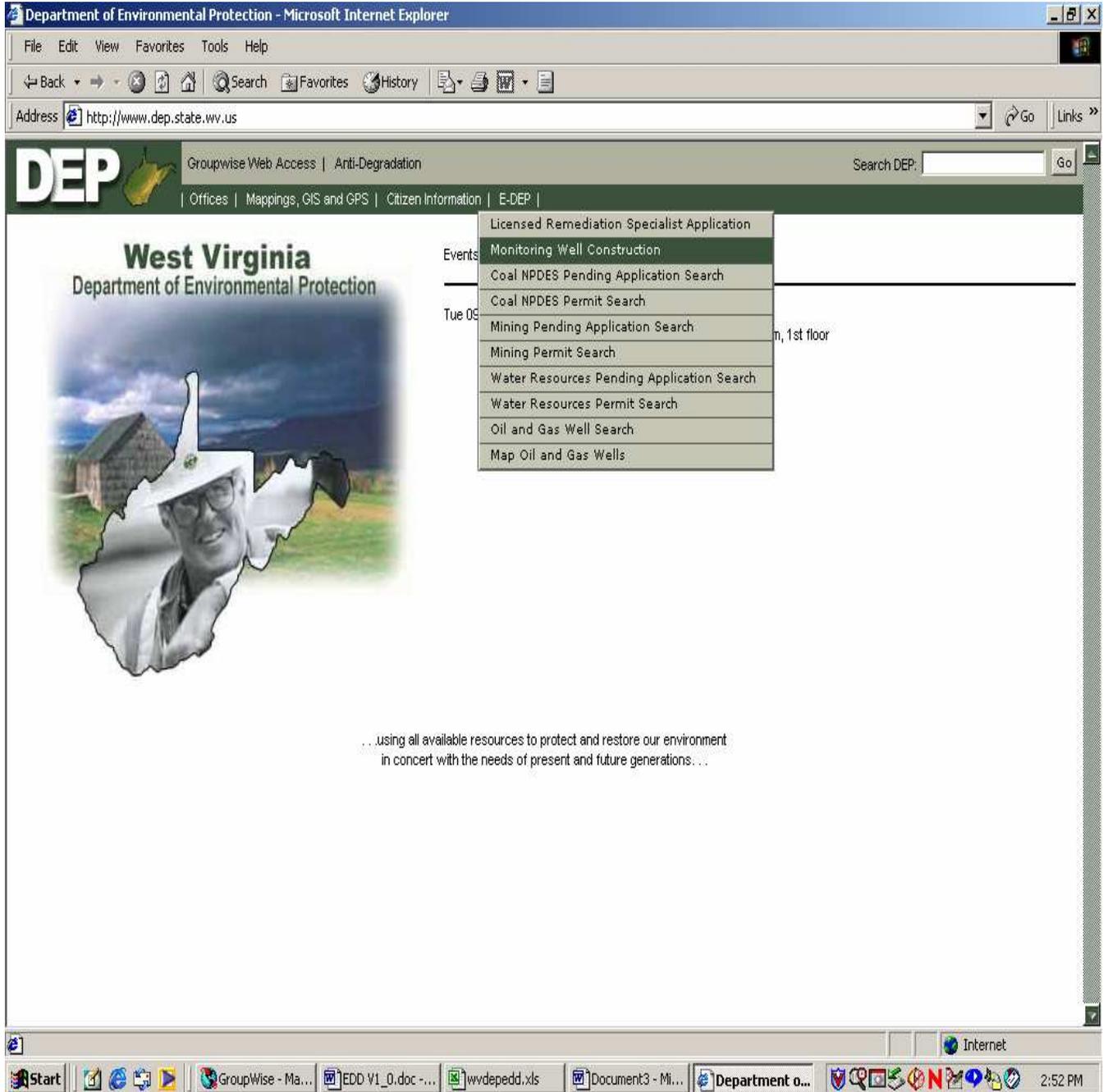
DRAFT

2. With your mouse select E-DEP



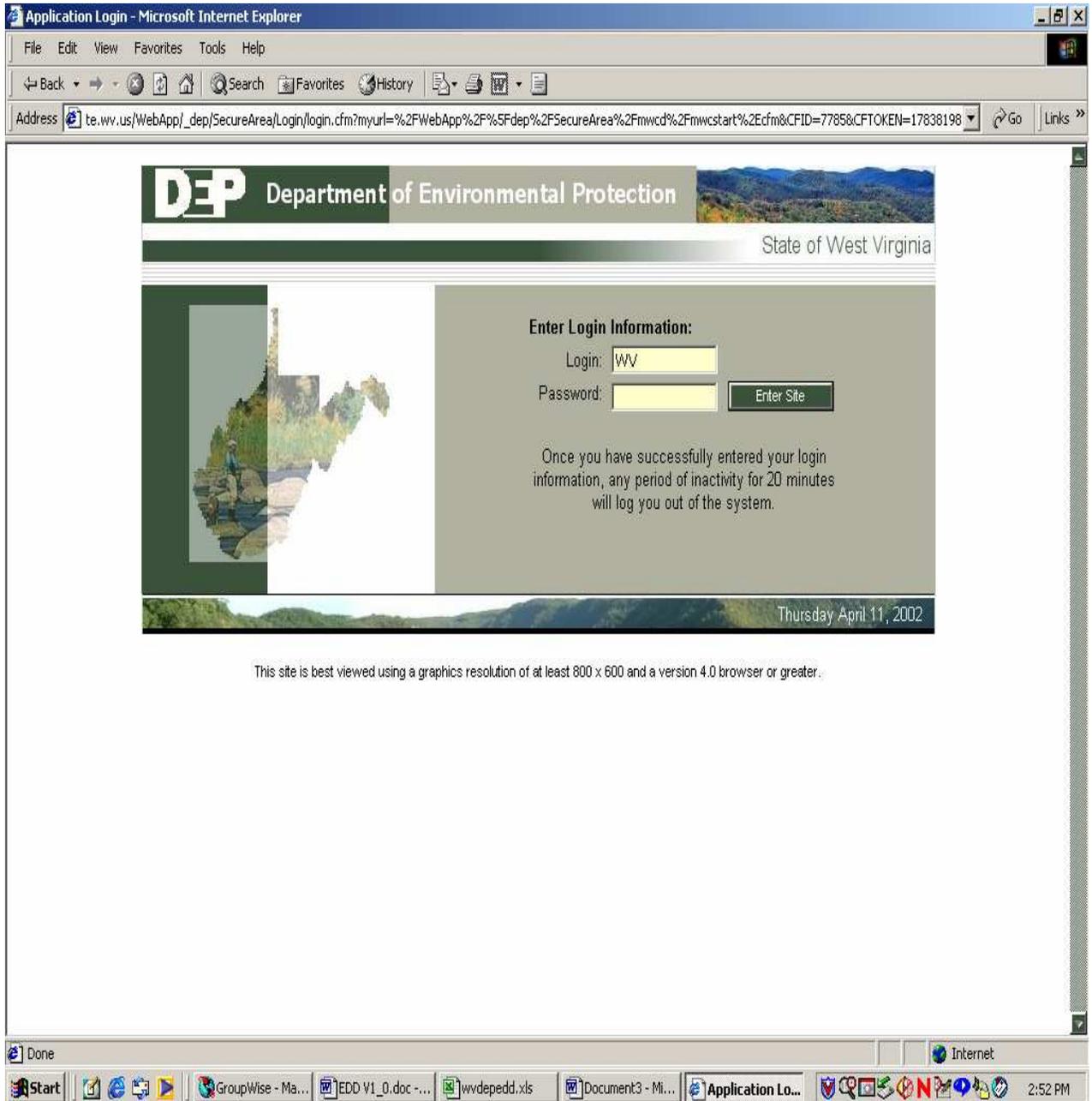
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3. Select monitoring well construction



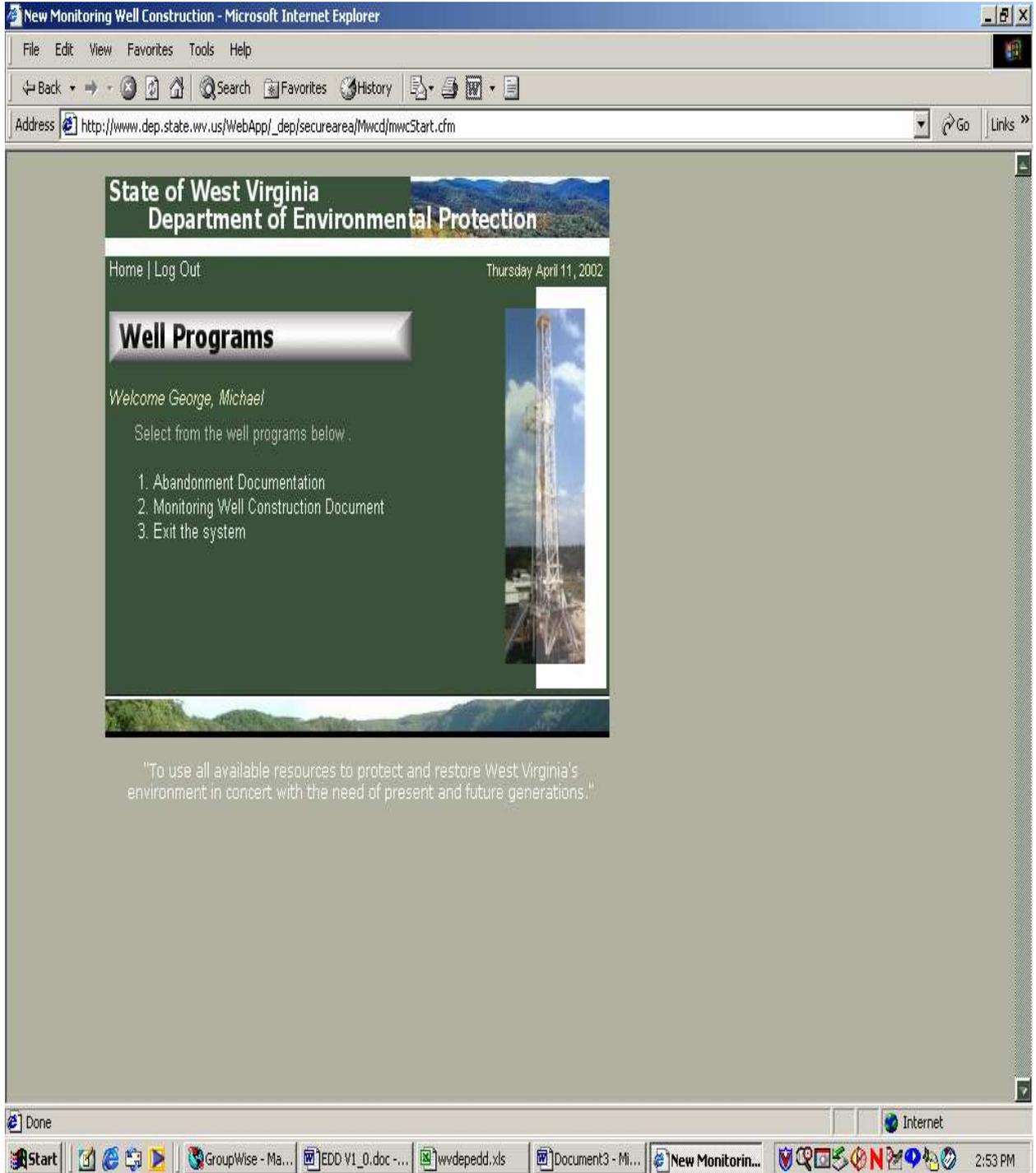
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4. Enter **YOUR** assigned Login and Password for reporting access.



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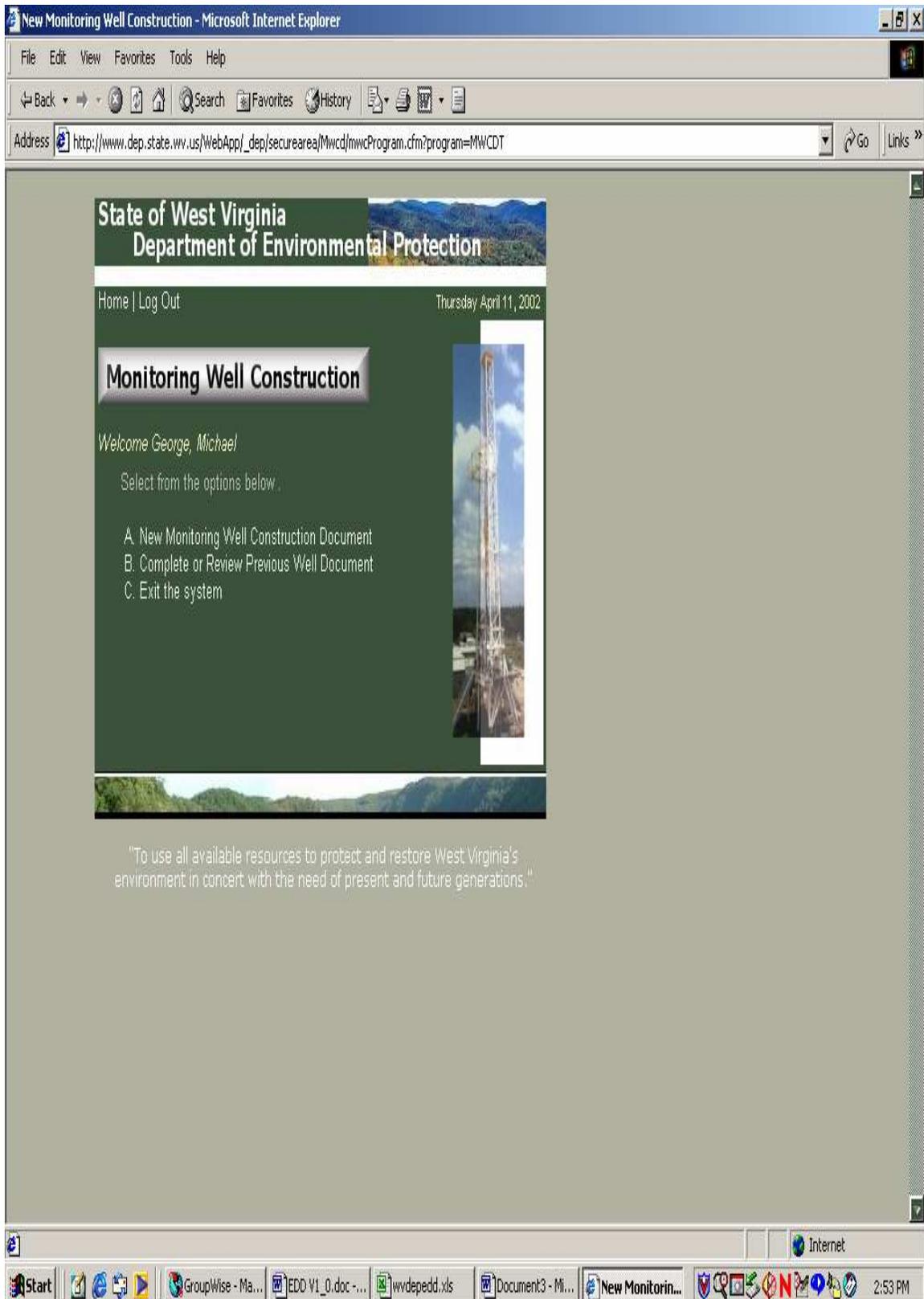
5. You are now in the reporting section. Select the appropriate action.



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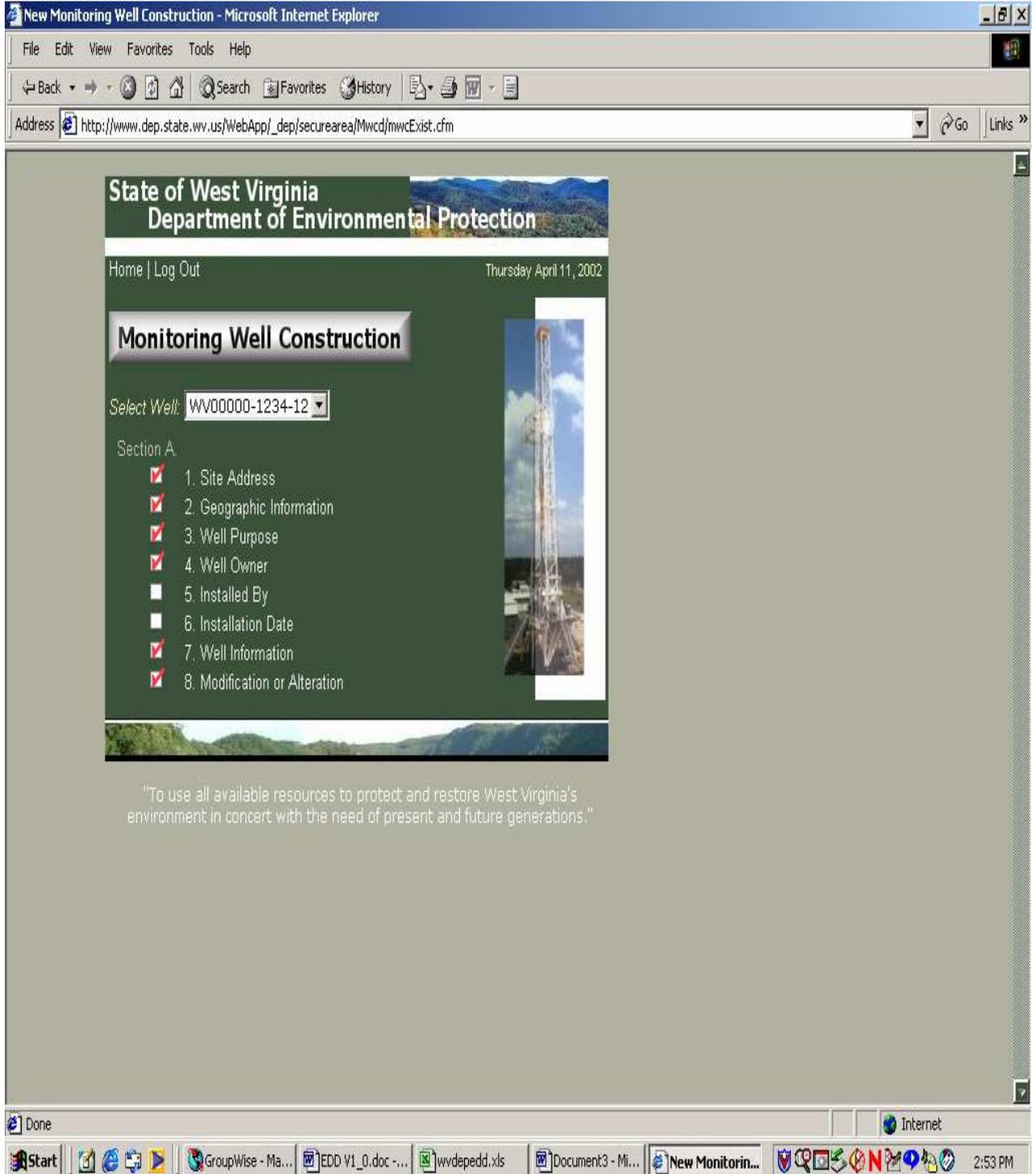
6. For this example 2. monitoring well construction was selected. Now select the task.

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7. For this example B. completed or review previous well document was selected in order for the reviewer to understand the electronic form. Now select the task.

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8. First piece of information Site.

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Site Address - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print

Address http://www.dep.state.wv.us/WebApp/_dep/securearea/Mwcd/mwcSetup.cfm?page=sectionSite&well=88§ion=1&title=Site*Address Go Links >>

DEP Monitoring Well Construction Document
Well Number: WV00000-1234-12

>> Instructions for Use: Locate Address

Site Address

Site Name/Physical Address:

Site:

Line 1:

Line 2:

City:

State:

Zip:

County:

<< Return Save Changes Home | Log Out

Done Internet

Start GroupWise - Ma... EDD V1_0.doc -... wvdepedd.xls Document3 - Mi... Site Address -... 2:54 PM

9. Location/Coordinate information.

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Geographic Information - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print

Address http://www.dep.state.wv.us/WebApp/_dep/securearea/Mwcd/mwcSetup.cfm?page=sectionWell&well=88§ion=2&title=Geographic*Information Go Links

DEP Monitoring Well Construction Document
Well Number: WV00000-1234-12

>> Instructions for Use:

Geographic Information

Well Registration No.

Grid Location:

Latitude:

Longitude:

Method Used:

Company/Project Well Number:

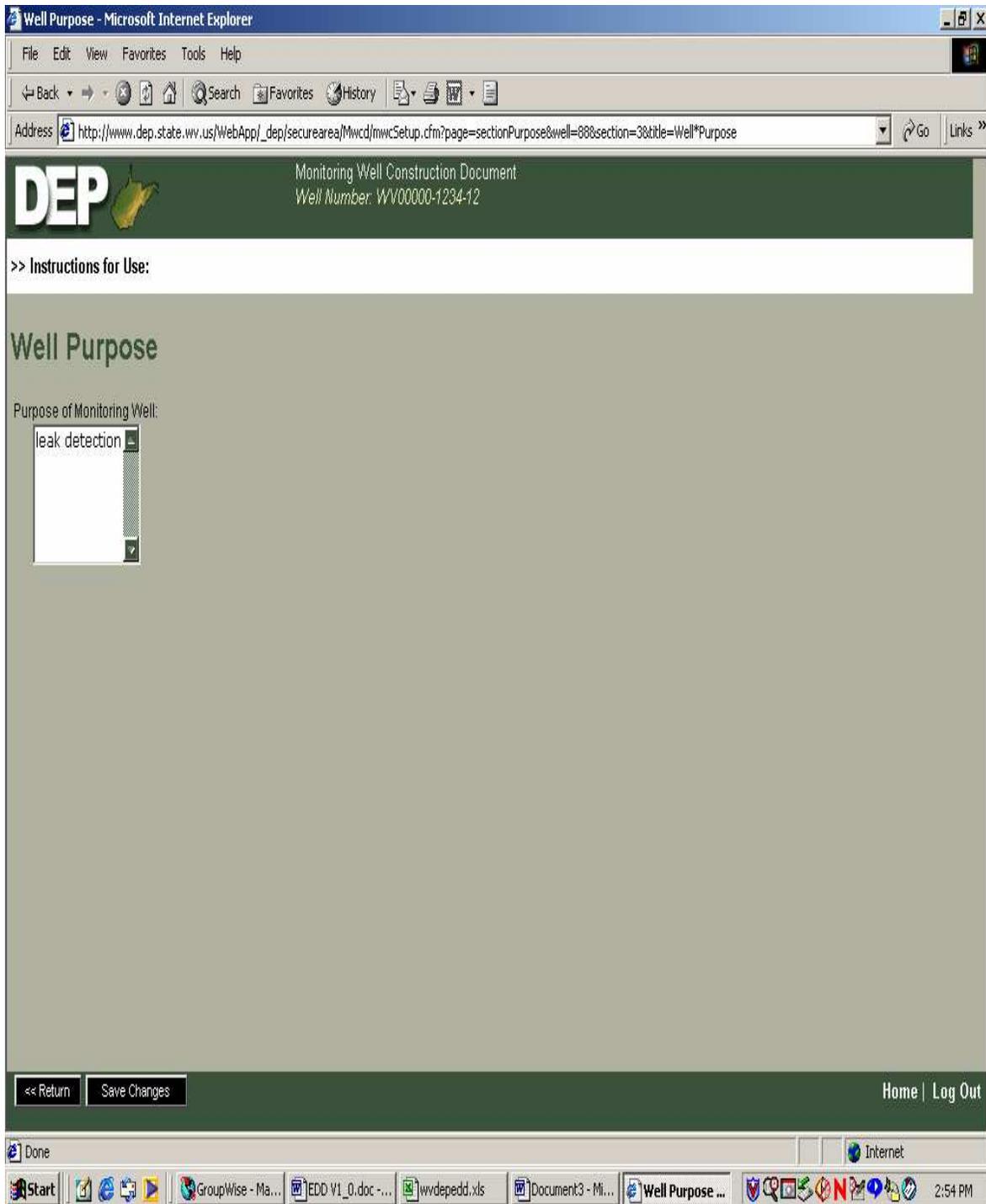
<< Return Save Changes Home | Log Out

Downloading picture http://www.dep.state.wv.us/webapp/_dep/Images/map2.gif Internet

Start GroupWise - Ma... EDD V1_0.doc -... wvdepdd.xls Document3 - Mi... Geographic In... 2:54 PM

10. Well purpose.

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11. The owner of the well. (Facility or Company)

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Well Owner - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print

Address http://www.dep.state.wv.us/WebApp/_dep/securearea/Mwcd/mwcSetup.cfm?page=sectionOwner&well=888§ion=4&title=Well*Owner Go Links

DEP Monitoring Well Construction Document
Well Number: WV00000-1234-12

>> Instructions for Use: Locate Address

Well Owner

Well Owner (Name, Firm, Address):

Owner:

Line 1:

Line 2:

City:

State:

Zip:

Phone:

<< Return Save Changes Home | Log Out

Done Internet

Start GroupWise - Ma... EDD V1_0.doc... wvdepedd.xls Document3 - Mi... Well Owner - ... 2:54 PM

12. Certified Driller information.

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Installed By - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print

Address http://www.dep.state.wv.us/WebApp/_dep/securearea/Mwcd/mwcSetup.cfm?page=sectionInstalled&well=88§ion=5&title=Installed*By Go Links >>

DEP Monitoring Well Construction Document
Well Number: WV00000-1234-12

>> Instructions for Use: Locate Address

Installed By

Installed By (Name, Firm, Address):

Installer:

Line 1:

Line 2:

City:

State:

Zip: -

Phone:

<< Return Save Changes Home | Log Out

Done Internet

Start GroupWise - Ma... EDD V1_0.doc - ... wvdepdd.xls Document3 - Mi... Installed By - ... 2:55 PM

13. Well installation date.

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The screenshot shows a Microsoft Internet Explorer browser window with the title 'Installation Date - Microsoft Internet Explorer'. The address bar contains the URL: http://www.dep.state.wv.us/WebApp/_dep/securearea/Mwcd/mwcSetup.cfm?page=sectionCert&well=88§ion=6&title=Installation*Date. The page header features the DEP logo and the text 'Monitoring Well Construction Document' and 'Well Number: WV00000-1234-12'. Below the header, there is a section titled '>> Instructions for Use:' which is currently empty. The main content area is titled 'Installation Date' and contains three input fields: 'Date Well Installed:' with a calendar icon and '(m.m/dd/yyyy)' format; 'Driller's WV Certification No.' with the value 'WV00000'; and 'WV Contractor License No.' which is empty. At the bottom of the form, there are two buttons: '<< Return' and 'Save Changes'. The bottom right corner of the page has links for 'Home' and 'Log Out'. The Windows taskbar at the bottom shows the Start button, several open applications including GroupWise, EDD V1_0.doc, jwvdepedd.xls, Document3 - Mi..., and Installation D..., and the system tray with the time 2:55 PM.

14. Well construction information. **Note all of the information fields must be completed in order to submit the information to WVDEP.**

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Well Information - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print

Address http://www.dep.state.wv.us/WebApp/dep/securearea/Mwcd/mwcSetup.cfm?page=mwcSectionB&well=88§ion=7&title=Well*Information Go Links

DEP Monitoring Well Construction Document
Well Number: WV00000-1234-12

>> Instructions for Use:

Well Information

Section B: (all number fields must be in decimal format)

1. Cap and Lock: Yes No

2. Protective Cover:

a. Protective Cover Pipe:

b. Flush Mount: c. Gas Vent:

3. Monitoring Well Reference Point: 3 ft.

4. Borehole Diameter: 3 inches.

5. Ground Surface Seal:

a. Material: neat cement grout

b. Installation Procedure: 5

6. Surface Seal Bottom/Annular Space Top: 3 ft.

7. Well Riser: a. OD Well Riser: 2 inches. b. ID Well Riser: inches.

c. Material: PVC

d. Installation Procedure: 2

8. Annular Space Seal:

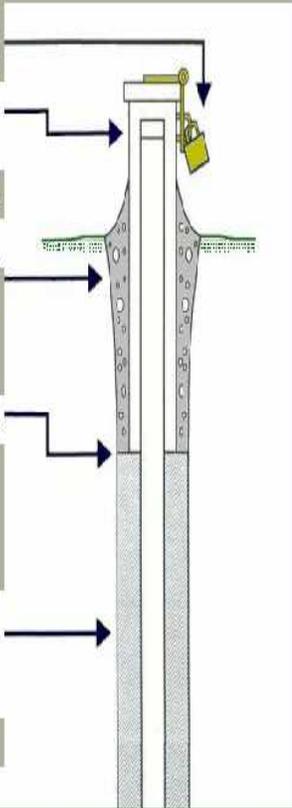
a. Material: granular slurry

b. Installation Procedure: tremie pipe-gravity

9. Well Development Procedure: surge/purge

10. Drilling Method Used: solid stem auger

<< Return Save Changes Home Log Out



Continued next page

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Well Information - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print

Address http://www.dep.state.wv.us/WebApp/_dep/securearea/Mwcd/mwcSetup.cfm?page=mwcSection8&well=888§ion=7&title=Well*Information Go Links

10. Drilling Method Used: solid stem auger

11. Annular Space Seal Bottom/Filter Pack Top: 2 ft

12. Drilling Fluid Used: Yes Source: Mud

13. Filter Pack Seal:

a. Material: bentonite chip

b. Installation Procedure: grout trap

c. Volume Added: 2 cubic feet or pounds

14. Filter Pack Seal Bottom/Filter Pack Top: 2 ft

15. Depth to Top of Screen: 2 ft

16. Screen:

a. Material: stainless steel

b. Installation Procedure: 2

c. Slot Size: 2 inches. d. Screen Length: 2 ft

17. Filter Pack:

a. Material: medium sand

b. Installation Procedure: 2

18. Well Depth: 2 ft

19. Bottom of Filter Pack: 2 ft

20. Bottom of Borehole: 2 ft

21. Backfill Material (below filter pack): 2

22. Decontamination Procedures: 2

23. Special Circumstances and Exceptions: Yes Number:

<< Return Save Changes Home | Log Out

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14. Modification or Alteration if applicable

The screenshot shows a Microsoft Internet Explorer browser window with the title 'Modification or Alteration - Microsoft Internet Explorer'. The address bar contains the URL: http://www.dep.state.wv.us/WebApp/_dep/securearea/Mwcd/mwcSetup.cfm?page=adjust&well=88§ion=88&title=Modification*or*Alteration. The page content includes the DEP logo, the text 'Monitoring Well Construction Document' and 'Well Number: WV00000-1234-12', and a section titled '>> Instructions for Use:'. Below this is the main heading 'Modification or Alteration'. A dropdown menu asks 'Did someone other than you modify or alter this well?'. Underneath is the section 'Enter who did modification or alteration:' with input fields for Contact, Line 1, Line 2, City, State, and Zip. A large text area is labeled 'Reason for modification:'. At the bottom of the form are buttons for '<< Return' and 'Save Changes', and links for 'Home' and 'Log Out'. The Windows taskbar at the bottom shows the Start button, several open applications, and the system clock at 2:56 PM.

15. Submit the information and Exit.

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