

**ROCKY FLATS  
ENVIRONMENTAL TECHNOLOGY SITE**

**PRO-1058-ASD-005  
REVISION 1**

**ANALYTICAL SERVICES DIVISION  
ENVIRONMENTAL DATA MANAGEMENT**

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## 1. PURPOSE

This procedure establishes the administrative instructions for the collection, management, and archiving of environmental data within the Analytical Services Division (ASD) at Rocky Flats Environmental Technology Site (RFETS). Roles and responsibilities of those involved in the ASD environmental data management processes are described below.

This procedure is intended to guide environmental data users, collectors, recorders, and administrators on how to enter, organize, and obtain electronic environmental data to ensure current and future data usability. Following this procedure will greatly facilitate the timely and proper use of environmental data, provide a process to identify and correct errors in electronic environmental data, and minimize or prevent the introduction of errors into the electronic environmental data systems.

## 2. SCOPE

This procedure is applicable to all RFETS employees and subcontractors who are involved in environmental sampling activities that result in the generation of environmental data that support regulatory reporting or other regulatory requirements for long-term storage of data, or that are used as the data set for Site Closure appropriate to the *Final Rocky Flats Cleanup Agreement (RFCA)* (U.S. EPA/DOE, July 19, 1996). This procedure covers activities involving use of the following ASD environmental data systems (either current versions or successor systems):

- Analytical Services Toolkit (AST)
- EDDPlus – electronic data deliverable (EDD) checker
- Stage Result Table (SRT) and associated tables
- Data Verification and Validation Application
- Soil Water Database (SWD)
- Geographic Information System (GIS)

ASD provides management support and procures computer database support to administer and manage the RFETS Soil Water Database (SWD), Analytical Services ToolKit (AST), Geographic Information System (GIS), and other ancillary computer systems/applications used to support environmental data management. Site personnel who perform data entry for environmental sampling and field measurement activities are required to understand and follow this procedure. All Site personnel who perform activities related to environmental data management or data extraction are also required to understand the requirements set forth by this procedure.

This procedure primarily describes instructions for planning, handling, and storing electronic data collected in conjunction with environmental sampling events that include, but are not limited to, the following media: surface soil, subsurface soil, surface water; groundwater; drinking water, and sediment. This procedure does not pertain to data for waste, industrial hygiene, bioassay, Waste Isolation Pilot Plant (WIPP), or decommissioning and demolition (D&D) radiological-survey activities. The Ambient and Effluent Air-Monitoring Programs are required to follow all parts of this procedure except areas that pertain to collecting and recording field data in the ASD environmental data systems defined above. Environmental Restoration (ER) data management requirements are being determined to support ER closure activities and will be appended upon completion of the ER Data Management Plan.



## 2. SCOPE (Continued)

The Environmental Data Management procedure addresses the following topics:

- Planning environmental data collection events using ASD environmental data systems
- Setting up projects in ASD environmental data systems
- Collecting samples (as it pertains to electronic data management)
- Recording field data in ASD environmental data systems
- Adding survey coordinate and region location code data in ASD environmental data systems
- Adding electronic analytical data to ASD data systems
- Adding verification and/or validation (V&V) qualifiers to ASD electronic data
- Using ASD electronic environmental data
- Adding "user" information to SWD data
- Maintaining ASD environmental data in SWD

This document identifies the responsible parties and states the responsibilities of each party involved with the preparation, data entry, storage, and retrieval of data, and provides instructions for implementation. This procedure does not describe field-sampling protocols or methodologies, or details the specific steps involved in using and maintaining ASD environmental data systems. However, appropriate references are provided to enable the reader to refer to companion documents for additional detail when necessary. Information pertaining to field sampling is obtained from project-specific, work-control documents (e.g., technical procedures, sampling procedures, sampling and analysis plans, Integrated Work Control Program Packages, or Operations Orders), which may reference this procedure as providing supplementary/complementary information.

This procedure is written to comply with *MAN-001-SDRM*, Site Documents Requirements Manual, and *PRO-815-DM-01*, Developing and Maintaining Documents, and is controlled through *PRO-1329-DM-03*, Site Document Control.



### 3. RESPONSIBILITIES

#### 3.1. Environmental Project Manager (PM)

- 3.1.1. Implements environmental data management responsibilities as described below.
- 3.1.2. Ensures that adequate time and resources are allotted for data management.
- 3.1.3. Appoints an Environmental Project Data Management Lead (DML).
- 3.1.4. Ensures the Project DML is appropriately trained on ASD environmental data systems.
- 3.1.5. Ensures that an adequate quality control (QC) program is in place to result in accurate data entry and reporting.
- 3.1.6. Ensures that SWD location codes are captured, quality checked, and entered into the database for all environmental sample locations in accordance with this procedure.
- 3.1.7. Ensures that project field environmental (non-analytical) data are entered into the appropriate ASD data system in accordance with the requirements specified in this procedure.
- 3.1.8. Ensures that identified data errors are communicated to ASD database management (i.e., the ASD Data Systems Lead).
- 3.1.9. Ensures that all applicable project environmental sampling data are stored in SWD and appropriately coded, as applicable, prior to conclusion of the project.

**NOTE:** The RISS ER Program Manager ensures that all electronic data critical for the ER Project's decision making are submitted to SWD in a format compatible for SWD uploads.

#### 3.2. Environmental Project Data Management Lead (DML)

**NOTE:** The Environmental Project DML can assign a designee to complete portions of the Project DML's responsibilities. Regardless if a designee is assigned, the Project DML is responsible for completion of the defined activities.

- 3.2.1. Sets up and tracks the project analytical and field samples within the ASD Data Systems.
- 3.2.2. Assigns new and repeat location codes for environmental sample locations.
- 3.2.3. Performs environmental database data entry for project setup and non-analytical field data, or assigns designee to perform data entry activities, if desired.
- 3.2.4. Performs environmental database data entry for final data coding, as applicable.
- 3.2.5. Coordinates with the ASD Data Systems Lead (DSL) to ensure that all environmental data are properly loaded into ASD environmental data systems, and, if required, any corrections are made and the data are reloaded.



**3.3. Analytical Services Division Project Lead**

- 3.3.1. Interfaces with the Environmental PM, Project DML, and/or Subject Matter Experts (SMEs) to determine their environmental data needs and to follow up with the data as a point of contact for the project.
- 3.3.2. Performs responsibilities in accordance with *PRO-543-ASD-002*, Initiation, Preparation, and Implementation of Chain-of-Custody Forms.
- 3.3.3. Assigns and inputs project codes and task codes into AST in accordance with this procedure.
- 3.3.4. Coordinates electronic data corrections with the Environmental PM, Project DML, and DSL.
- 3.3.5. Examines analytical laboratory data package upon receipt from the laboratory, in accordance with ASD's *General Guidelines for Data Verification and Validation, DA-GR01*.
- 3.3.6. Acts as the primary lead with the Environmental PM and Project DML, as needed or requested, regarding the status of their data.
- 3.3.7. Reviews Data Quality Assessment Reports for problems associated with customer data and then forwards copies of the reports to customers.
- 3.3.8. Acts as lead to ensure any project analytical data issues are resolved to meet the customer's requirements.

**3.4. Analytical Services Division Data Systems Lead (DSL)**

- 3.4.1. Trains personnel on the environmental data management procedures set forth herein, with the exception of GIS processes and procedures.
- 3.4.2. Maintains this procedure. Periodic DSL review of this procedure is required at a minimum of three years from its effective date.
- 3.4.3. Administers and maintains ASD environmental data systems in accordance with *1-MAN-004-CSMM*, Computer Software Management Manual and ASD Environmental Data Systems operating procedures.
- 3.4.4. Processes, loads, and corrects EDDs in accordance with the *EDDPlus User's Guide*.
- 3.4.5. Modifies ASD environmental data systems according to user and administrator requirements.
- 3.4.6. Performs and tracks data system modifications in accordance with *1-MAN-004-CSMM*, Computer Software Management Manual and ASD Environmental Data Systems operating procedures.
- 3.4.7. Assists RFETS personnel with access and use of ASD environmental data systems.
- 3.4.8. Enhances and upgrades ASD environmental data systems as needed to maintain data integrity, improve system performance, and enhance data usability.



**3.5. Analytical Services Division Data Validator (DV)**

- 3.5.1. Performs data assessment for environmental analytical data in accordance with ASD's *General Guidelines for Data Verification and Validation, DA-GR01*.
- 3.5.2. Enters approved verification and/or validation codes into the ASD data verification/validation data system in accordance with the *Analytical Services Data Assessment Program RFEDS Data Verification and Validation Application User's Guide*.

**3.6. Geographic Information Systems (GIS) Data Lead (GDL)**

- 3.6.1. Trains RFETS personnel and subcontractors on GIS-related data management procedures set forth by this SOP.
- 3.6.2. Organizes and maintains GIS in accordance with *PRO-1130-ASD-006, Spatial Data Map Control*.
- 3.6.3. Works with the Environmental PM or Project DML and GPS/surveying personnel to generate location code survey coordinates for environmental sample locations.
- 3.6.4. Uploads into SWD the final Project DML reviewed and approved location code survey coordinates.
- 3.6.5. Works with the PM or Project DML to identify all region attributes using GIS overlay analysis for environmental sample locations.
- 3.6.6. Uploads into SWD the final Project DML-reviewed and -approved region attributes.

**3.7. Project Samplers**

- 3.7.1. Collect environmental samples in accordance with approved sampling plans or work-control documents as directed by the PM or designee.
- 3.7.2. Record field data measurements using project-approved field data recording mechanisms.
- 3.7.3. Provide final field data to the Project DML after the completion of sampling.



#### 4. DEFINITIONS AND ACRONYMS

##### 4.1. Definitions

<b>ASD</b>	Analytical Services Division – a centralized group responsible for procuring analytical services for RFETS projects and managing the ASD environmental data systems. ASD provides management support and procures computer database support to administer and manage the RFETS Soil Water Database (SWD), Analytical Services ToolKit (AST), Geographic Information System (GIS), and other ancillary computer systems/applications used to support environmental data management.
<b>AST</b>	Analytical Services Toolkit – the ASD data system that records and tracks analytical sample requests and analyses, and non-analytical field data.
<b>Attribute</b>	A characteristic feature of a map. For examples, attributes of a river might include its name, length, average depth, and so on. A desktop GIS stores attributes in tables and links them to the map features they describe.
<b>COC Form</b>	Chain-of-Custody Form (an official COC Form is maintained for any sampling event, providing a documented trail of all persons who had custody of the samples from their origin to final disposition). See <i>PRO-543-ASD-002</i> , Initiation, Preparation, and Implementation of Chain-of-Custody Forms for a complete explanation of the purpose of the COC Forms and directions on how to implement them. Instructions on how to properly fill out COC Forms are also available electronically on the ASD Intranet web site.
<b>Data Package</b>	The hard-copy or electronic version of the hard-copy record of sample analysis from the analytical laboratory [includes sample information (RIN and customer identifiers), analysis results, COC Forms, case narrative, laboratory QC documentation, etc., as specified by Program, Project, and/or Site Statement-of-Work requirements].
<b>EDD</b>	Electronic Data Deliverable – laboratory submittal of analytical results in electronic form in a specified format.
<b>GIS</b>	Geographic Information System – an organized collection of computer hardware, software, and geographic data designed for capturing, storing, updating, manipulating, analyzing, and displaying all forms of geographically referenced information in the forms of maps and reports.
<b>IA</b>	Industrial Area – defined as that area of the Site according to RFCA Attachment 2 and generally described as roughly the 350 acres at the geographic center of the Site that is occupied by 400 buildings, other structures, roads, and utilities where the bulk of the Site's mission activities occurred between 1951 and 1989.
<b>IHSS</b>	Individual Hazardous Substance Site – specific locations at RFETS where solid wastes, hazardous substances, pollutants, contaminants, hazardous wastes, or hazardous constituents may have been disposed of or released to the environment.



**4.1 Definitions (Continued)**

<b>Line Item Code</b>	A Line Item Code (LIC), included on the COC Form or other documentation received with sample(s), designates the requested analyses and analysis method requirements.
<b>NLR</b>	No Longer Representative – a code in SWD used to label sample locations that have had their contaminant sources removed, and the data are therefore no longer representative of current Site conditions.
<b>Other Location</b>	The computer field in AST used to select existing locations from a link with the SWD location table. The location table allows database users to characterize the location where an environmental sample was collected. Primarily used for mapping with the RFETS GIS.
<b>OWNER ID</b>	The OWNER ID field in AST identifies the receiver database for the electronic data deliverables (EDDs) associated with a project.
<b>PAC</b>	Potential Area of Concern – qualitative spatial representations of particular hazardous sites identified in the RFETS Historical Release Report (HRR).
<b>Pick List</b>	In the ASD environmental data systems, a drop-down list of identifiers the user can select to fill in a particular field. For example, selecting “project” in AST would result in a drop-down list of all available project names from which the user can select.
<b>Point Location</b>	A shape defined by a single set of survey coordinates. Point locations represent objects that have discrete locations and are too small to be depicted as areas (e.g., groundwater, surface water, surface soil, borehole, and sediment sample locations).
<b>Region</b>	As it relates to underlying areas below environmental sample data locations, the region attribute can include one or more of the following: IA Grouping, IHSS, PAC, underground building contamination, or “whitespace.” Region designations are subject to change and are provided for information only to data users to assist in data management and reporting. Region locations are derived from the most current update of the RFETS HRR.
<b>RIN</b>	Report Identification Number – an identifier assigned by ASD through AST for each sampling event or sampling project. May also be referred to as the Reporting Delivery Group under Basic Ordering Agreements with analytical laboratories.
<b>SARF</b>	Sampling and Analysis Request Form – a form used to initiate a sampling and/or analysis project at RFETS. See <i>PRO-543-ASD-002</i> , Initiation, Preparation, and Implementation of Chain-of-Custody Forms for a complete explanation of the purpose of the SARF and directions on how to implement it. The SARF is also available electronically on the ASD Intranet web site.
<b>SME</b>	Subject Matter Expert – a person identified by the Project Manager who is able to make determinations regarding a particular set of data, how it is stored, communicated, or reported.



#### 4.1 Definitions (Continued)

<b>Spatial Data</b>	The locations and shapes of geographic features. One of the three basic kinds of geographic data (image and tabular data are the others).
<b>SWD</b>	Soil Water Database – a database used by RFETS for long-term storage of environmental analytical and field data, primarily surface soil, subsurface soil, groundwater, sediment, and surface water sample results.
<b>UBC</b>	Underground Building Contamination – qualitative spatial representations of particular hazardous sites associated with buildings as identified in the RFETS HRR.
<b>Survey Coordinates</b>	Horizontal (northing [latitude] and easting [longitude]) coordinates using UTM and the State Plane Coordinate system, and vertical (elevation [altitude]) data in reference to NAD 27 CONUS. Also referred to as a spatial data set, point location, and/or survey coordinate data.

#### 4.2. Acronyms

<b>D&amp;D</b>	Decommissioning and Demolition
<b>DML</b>	Data Management Lead
<b>DSL</b>	Data Systems Lead
<b>DV</b>	Data Validator
<b>ER</b>	Environmental Restoration
<b>GDL</b>	Geographic Information Systems Data Lead
<b>GPS</b>	Global Positioning System
<b>HRR</b>	Historical Release Report
<b>ID</b>	Identification
<b>PM</b>	Project Manager
<b>QA</b>	Quality Assurance
<b>QC</b>	Quality Control
<b>RADMS</b>	Remedial Action Decision Management System
<b>RFEDS</b>	Rocky Flats Environmental Data System
<b>RFETS</b>	Rocky Flats Environmental Technology Site
<b>SRT</b>	Stage Result Table
<b>V&amp;V</b>	Verification and/or Validation
<b>WIPP</b>	Waste Isolation Pilot Plant



## 5. INSTRUCTIONS

**NOTE:** The instructions that follow are summarized in the ASD Environmental Data Checklist for Environmental Projects, which is available on the ASD Intranet web page and included herein as Appendix A.

### 5.1. Step 1 – Project Planning

Step 1 summarizes the project planning activities required for environmental data collection using ASD Electronic Data Systems.

#### 5.1.1. Assign Project DML

5.1.1.1. The PM assigns the Project DML.

5.1.1.2. The PM ensures the Project DML is trained in ASD environmental data systems and this procedure, and is familiar with the following documents:

- ❑ *PRO-947-LOCATION/SURVEYING*, Location Code and Surveying Control
- ❑ *PRO-543-ASD-002*, Initiation, Preparation, and Implementation of Chain-of-Custody Forms
- ❑ *PRO-908-ASD-004*, On-Site Transfer and Off-Site Shipment of Samples

#### 5.1.2. Plan Sampling and Analysis Events in AST

5.1.2.1. Based on the Project's approved work documents, the following information is entered by the Project DML or provided to the ASD Project Lead, via the ASD Intranet web SARF, and then entered into AST:

- ❑ **Project/Task Names** – The project/task name clearly defines the RFETS project/task for which the sampling is conducted. It must be clear and obvious to both project members and non-project members and is based on the RFETS charge number schema (Project Description/Cost Account Description). For example, "Engr, Environ, Safety & Quality Programs Project" and a task name of "GW – Environmental Media Management" are an acceptable project name/task name. Task names can be modified as necessary and used to sort and search for electronic data. Therefore, it is important to be accurate and consistent with the use of project/task names. Task names selection, if new, **SHALL** be coordinated with the DSL.

**NOTE:** Thoughtful use of task names can significantly help environmental data users find their data in ASD environmental data systems. Once the data are defined by project and task, they can always be found using "project" or "task" as a computer database sorting criteria.

- ❑ **Charge number** – RFETS charge number associated with analytical and/or labor services for the sampling event.
- ❑ **Administrative Information** – The responsible PM's name, building number, telephone number, and the sample manager's and/or data manager's name, building number, and telephone number.
- ❑ **Sampling Activities Scope** – To include expected analyses, projected start and end date, type of analyses and required detection limits, number of samples, and number of samples expected per week.



## 5.2. Step 2 – Project Setup

Step 2 summarizes activities required to set up environmental data collection using the ASD AST System.

### 5.2.1. Create or Select Location Codes

**NOTE:** Step 5.2.1 of this procedure does not pertain to the Air Monitoring Program, which uses its own data system to collect environmental data. Steps 5.2.1.3 and 5.2.1.4 are considered optional in the use of GIS to prepare proposed sample-location maps. They are intended to provide users with the means to more accurately control sample-location designations prior to and during the sample-collection activities.

- 5.2.1.1. The Project DML reviews proposed sampling locations and determines if any sampling locations have previously been sampled and have an existing location code (e.g., a fixed sampling location such as a groundwater well).
- 5.2.1.2. The Project DML creates new location codes for planned sample locations that do not have an existing location code. Project DML reviews and incorporates Standard Location Code Nomenclature Convention (provided in Appendix B) for any new proposed location codes.
- 5.2.1.3. The Project DML and/or GIS Data Lead creates a draft GIS map of the proposed sampling area showing proposed sampling locations.
- 5.2.1.4. The Project DML assigns location codes to proposed sample locations on proposed sample location map(s), which are provided by the GIS Department.
- 5.2.1.5. The Project DML enters each new location code to be used for the project in the AST database. The Project DML may also select an existing location code if the sample to be collected is at a fixed routine sampling location (e.g., a specific outfall or a specific well).
  - ❑ A link from the AST database to the SWD database must be in place to perform this function in accordance with the *AST User's Guide*. The SWD location code table is accessed via the lower AST Functions toolbar and selecting Location Table in accordance with the *AST User's Guide*.
  - ❑ New location codes are required by the SWD Program to be unique, and the SWD system will not allow the creation of a duplicate location code. Each new location code entry requires a physical description of the location code (e.g., SOUTHEAST CORNER B779). Each location code must be set to "active" or "inactive" via the active sampling location indicator of the AST program.
  - ❑ For each new location code, provide a sample location description, and set the indicator to "YES." The location description (e.g., NORTH OF B771) **SHALL** be filled in for each new location code. Inactive locations are considered "frozen" and no field measurement collection or sampling and analysis activity can be associated with the inactive location. The "inactive" indicator is primarily used to designate "retired" locations.



### 5.2.2. Prepare Field Measurement Templates (Optional)

**NOTE:** Field measurement templates are optional tools in AST to help users streamline field data entries. Use of the field measurement template function in AST is recommended but not required for environmental sampling events. Because the Ambient and Effluent Air-Monitoring Programs maintain a separate data system, these environmental data activities are not required to use AST's field data collection feature.

- 5.2.2.1. The Project DML or designee prepares field measurement templates in AST to meet project-specific field sampling requirements in accordance with the *AST User's Guide*. Refer to project-specific work plans and approved procedures for field data collection requirements. A Report Identification Number (RIN) and event are assigned to each field event where a field measurement is the only data collected from a location\_code. Refer to the *AST User's Guide* and *ASD-003, Identification System for Reports and Samples* for more information on descriptions and numbering of RINs and events.

**NOTE:** New SWD location codes are selected from the "other location" pick list in AST. Refer to the *AST User's Guide* for directions on selecting and using location codes.

### 5.2.3. Create Proposed Sampling Events in AST

**NOTE:** The sampling event may be created in AST by the ASD Project Lead, Project DML, or DML's designee. Regardless of the author, all required information must be entered in accordance with the *AST User's Guide*.

- 5.2.3.1. The ASD Project Lead or Project DML creates proposed sampling events in AST.
- 5.2.3.2. The ASD Project Lead or Project DML defines "media type" based on the existing AST pick list. Media type is an important parameter that identifies the type of environmental media that is sampled. Examples include: SW = surface water, GW = groundwater, SS = surface soil (in accordance with RFCA sample depth of 0-6 inches), BH = subsurface soil (in accordance with RFCA sample depth >6 inches), SED = sediment, EB = excavation boundary, and TP = tap water. For a complete list of AST pick list media types and descriptions, see SAMPLE\_TYPE in the *SWD User's Guide*.
- 5.2.3.3. **OWNER ID** identifies which site database will receive the data. For environmental samples, the OWNER ID assigned is SWD (based on the existing AST pick list).
- 5.2.3.4. The ASD Project Lead or Project DML identifies QC samples, bottle types, and preservation requirements in accordance with project sampling plans and guidance in the *AST User's Guide*.



### 5.2.3 Create Proposed Sampling Events in AST (Continued)

- 5.2.3.5. The ASD Project Lead or Project DML assigns the SWD location code to the sample event.

**NOTE:** New SWD location codes are selected from the "other location" pick list in AST. Refer to the *AST User's Guide* for directions on selecting and using location codes. Remember, if the data owner is SWD (**OWNER ID = SWD**), use the "other location" table in AST.

- 5.2.3.6. The ASD Project Lead or Project DML completes additional project-specific sample setup in accordance with requirements outlined in the *AST User's Guide*.

### 5.2.4. Prepare COC Form

- 5.2.4.1. Project DML or ASD Project Lead initiates the COC Forms and labels in accordance with *PRO-543-ASD-002*, Initiation, Preparation, and Implementation of Chain-of-Custody Forms.
- 5.2.4.2. Project DML ensures that assigned active location codes for a specific sample location are entered into the "Location" block on the COC Form.

## 5.3. Step 3 – Collecting Environmental Samples

Step 3 only addresses the electronic data management aspects of environmental field sampling using the AST System.

**NOTE:** Refer to the appropriate Project- or Program-specific procedures or work-control documents for environmental field sampling for additional guidance and instructions on project-specific field sampling.

- 5.3.1. The Project DML, DML's designee (who may be the project samplers), or ASD Project Lead prints the COC Form and sample labels from AST.
- 5.3.2. Project samplers collect samples in accordance with an approved Sampling and Analysis Plan or other work-control documents.
- 5.3.3. Project samplers record non-analytical field results on field data forms or project-supplied field data collection logs/forms. Samplers record disposition of all scheduled samples including samples that were not collected.

**NOTE:** Different RFETS Projects and Programs have developed various field data entry forms based on specific project needs. Results of environmental field data collection that are used for decision making are required to be entered in AST. Entry of ancillary field data is at the discretion of the PM.



#### 5.4. Step 4 – Recording Environmental Field Data in AST

Step 4 summarizes the necessary actions required to enter field measurement and/or sample collection data in AST in accordance with the *AST User's Guide*. Once the field measurement and sample-collection data are entered into AST and the field event information is checked for accuracy, the data are uploaded via the AST field measurement SRT into SWD.

**NOTE:** Step 4 of this procedure does not pertain to the Air-Monitoring Program, which uses its own data system to collect environmental field data. Results of environmental field data collection that are used for decision making are required to be entered in AST. If a separate data system is used to collect environmental field data, the format is required to be consistent with AST and SWD for ease of data upload.

- 5.4.1. The Project DML or designee receives completed field data forms and COC Forms from RFETS samplers at the end of field measurement and/or sampling activities.
- 5.4.2. The Project DML or designee resolves any discrepancies with field-sampling personnel and notes any changes, corrections, or insertions made as a result of the review. Discrepancies with the COC Forms are immediately communicated by the Project DML to the ASD Project Lead for correction in AST.
- 5.4.3. The Project DML or designee **SHALL** upload all applicable field data results into AST within 14 working days of sample or field measurement or sample collection. The Project DML **SHALL** ensure that all field modifications are recorded in AST and the final field event electronic information is correct based on actual reported field conditions and events. Field data results **SHALL** include identification of sample disposition, field measurement units, and equipment as defined in the *AST User's Guide*.
- 5.4.4. The Project DML **SHALL** ensure the accuracy of electronic data entry within 14 working days after initial field data entry in accordance with the *AST User's Guide*. The AST System documents that the QC has been accomplished. The QA/QC of the sample event/measurements and bottles in AST is required to allow the field event data to be uploaded into SWD.

**NOTE:** The ER Remedial Action Decision Management System (RADMS) can upload field event and field measurement data directly to SWD without going through AST.



#### 5.5. Step 5 – Adding Location Code Data in ASD Environmental Data Systems

Step 5 summarizes the necessary actions required to enter location code survey coordinate data and region data into SWD.

**NOTE:** This section describes the methodology to identify region attributes that will be added to SWD environmental data. Storing accurate location attributes for SWD environmental sample data allows data users to prepare maps and perform analysis of environmental sample data. This section does not pertain to RFETS Projects/Programs that do not store their data in SWD.

- 5.5.1. The DML or designee ensures that project environmental sampling locations are surveyed in accordance with *PRO-947-LOCATION/SURVEYING*, Location Code and Surveying Code.
- 5.5.2. The Project DML reviews surveyed sample location codes, adds media type, and revises location code descriptions, as necessary.
- 5.5.3. The Project DML submits survey results to GIS Department in electronic format.
- 5.5.4. The GDL generates point locations in GIS system based on survey coordinates provided by the Project DML. GDL creates draft location map(s) for the Project DML to review in accordance with *PRO-1130-ASD-006*, Spatial Data Map Control.
- 5.5.5. The Project DML reviews the location maps, ensures location data are accurate, and documents discrepancies or final approval in writing to the GDL.
- 5.5.6. The GDL performs computer analysis routine to identify region data associated with the survey coordinates point location.

**NOTE:** Approved region locations are qualitative descriptions of regions at RFETS. Examples of region locations include Area Designation, Industrial Area (IA) Grouping, IHSS, PAC, UBC, White Space, and other designations as needed. Region designations are subject to change and are provided for information only to environmental data users to assist in data management and reporting. Region locations are derived from the most current update of the RFETS Historical Release Report and are subject to change on an annual basis.

- 5.5.7. The GDL **SHALL** upload the final approved survey coordinate and region location code data set into SWD within five working days of project approval of the data set in accordance with *PRO-1130-ASD-006*, Spatial Data Map Control.
- 5.5.8. The GDL updates region attributes in SWD at least annually based on modifications to the RFETS HRR.

**NOTE:** The ER RADMS does not directly upload final survey coordinate data into SWD. Section 5.5 applies to all environmental data.



#### 5.6. Step 6 – Adding Electronic Analytical Data

Step 6 summarizes the necessary actions required to add electronic environmental analytical data to the ASD Data Systems (AST and SWD).

- 5.6.1. The DSL receives EDDs of analytical data from analytical laboratories according to established contractual statements of work.

**NOTE:** Analytical results from environmental data collection activities that are used for decision making are required to be entered into the ASD Data Systems (AST and SWD). If a separate data system is used to collect environmental field measurement and/or analytical data, the EDD format is required to be consistent with AST and SWD for ease of data upload.

- 5.6.2. The DSL reviews EDDs for errors using both manual and electronic means in accordance with the *EDDPlus User's Guide*.

**NOTE:** *EDDPlus* performs a preliminary check of the electronic data for format, simple errors, date anomalies, and other types of format errors. The ASD verification/validation process looks more closely at the content of the EDD to characterize the quality of the analytical data.

- 5.6.3. The DSL corrects errors if found (with written permission from the analytical laboratory) or requests resubmittal of EDDs.
- 5.6.4. The DSL loads checked EDDs into the AST field measurement SRT within 24 hours of receipt during RFETS normal business hours.
- 5.6.5. The DSL loads the EDDs (daily or more frequently as conditions warrant) from the SRT into the RFETS SWD, in accordance with the *Soil Water Database User's Guide*.
- 5.6.6. PMs using data systems other than SWD for storing data download their project data directly from the AST SRT based on defined **OWNER ID**. The download frequency for this type of transaction is determined by the individual PM and project-reporting requirements.

#### 5.7. Step 7 – Adding V&V Qualifiers to ASD Electronic Data

Step 7 summarizes the necessary actions required to add analytical data verification and/or validation (V&V) qualification codes to the ASD Data Systems (AST and SWD).

- 5.7.1. Data Validators review analytical data in accordance with the *ASD General Guidelines for Data Verification and Validation, DA-GR01* and apply verification and validation codes to EDDs in the Analytical Results SRT in accordance with the *Analytical Services Data Assessment Program RFEDS Data Verification and Validation Application User's Guide*.

**NOTE:** Verification provides a random check of less than the total number of analytical results on the EDD to the complete laboratory data package. Validation provides a complete check of the analytical results portion of the EDD to the complete laboratory data package. Verification or validation occurs on 100 percent of the environmental analytical data.



**5.7. Step 7 – Adding V&V Qualifiers to ASD Electronic Data (Continued)**

- 5.7.2. The DSL loads validation-coded EDDs to SWD on a daily basis (during normal business hours) in accordance the *Soil Water Database User's Guide*.

**NOTE:** SWD is designed to accept revisions to EDDs by overwriting the original version of the record with the current and corrected version and providing a journal copy of the original record. Periodically, SWD journal tables are archived for performance reasons; however, the journal data remain available upon request from the DSL. Refer to the documentation for the other receiver data systems for information on how they address updates to electronic analytical data records.

- 5.7.3. PMs using data systems other than SWD for storing data download their validated/verified project data directly from the SRT based on defined **OWNER ID**. The download frequency for this type of transaction is determined by the individual PM and project-reporting requirements.

**5.8. Step 8 – Using Electronic Environmental Data**

Step 8 summarizes the necessary actions required to use ASD electronic environmental data in SWD or for use with other Data Systems.

- 5.8.1. The Project DML accesses SWD or another project-specific data system.
- 5.8.2. The Project DML retrieves the project's electronic environmental data for analysis and reporting.
- 5.8.3. The Project DML identifies and inactivates (i.e., changes active indicator to NO) in AST any unused project-created location codes.

**5.9. Step 9 – Adding User Information to SWD Data**

Step 9 summarizes the necessary actions required to add project-specific user information to SWD electronic analytical data. PMs are required by RFCA (DOE, 1996) to identify data that are No Longer Representative (NLR) of current site conditions. The IA filter code is another example of project-specific user information that can be added to SWD.

**NOTE:** SWD allows specified users to apply coding to analytical environmental data to assist Projects in using data for regulatory analysis and reporting. Such coding is the responsibility of the PM/SME, and its accuracy is the responsibility of the Environmental PM. Data coding is performed in accordance with the following process. Any coding schemes must be documented and approved by the DSL before coding can take place. Individual data coding is different from application of GIS region information discussed in Section 5.5, which is the responsibility of the GDL.

- 5.9.1. The Project DML requests and subsequently receives SWD database permissions from the DSL to enter codes to SWD data.



**5.9. Step 9 – Adding User Information to SWD Data (Continued)**

- 5.9.2. The Project DML codes (or oversees coding if performed electronically by database programmers) SWD data, based on direction of the Environmental PM.

**NOTE:** SWD creates a journal entry for each record changed or updated in SWD. In addition, the journal entry also records the date and the user ID.

- 5.9.3. The Project DML ensures that all data are coded prior to completion of project and that data codes are quality checked and documented to ensure accurate coding.
- 5.9.4. The Project DML informs the DSL when the data coding is completed.
- 5.9.5. The DSL removes SWD database permissions for the Project DML to code data at the completion of the project in accordance with the *SWD User's Guide*, or, in the absence of written verification that coding is completed, the DSL will automatically rescind SWD database coding permissions 30 days after activation.

**5.10. Step 10 – Maintaining ASD Environmental Data in SWD**

Step 10 summarizes the necessary actions required to maintain the ASD Environmental Data in SWD.

- 5.10.1. The DSL maintains functionality, configuration control, data security, and access control of SWD in accordance with the *SWD User's Guide* and requirements outlined in *Computer Software Management Manual, 1-MAN-004-CSMM*.
- 5.10.2. The Project DML reviews all project-related data loaded in SWD for accuracy, completeness and errors.
- 5.10.3. The Project DML notifies the DSL in writing if errors are found in EDDs in SWD, or if data are missing from SWD.
- 5.10.4. The DSL resolves identified errors or missing EDDs according to the *SWD User's Guide*.
- 5.10.5. The DSL reloads corrected or previously missing EDD records into SWD.



## 6. RECORD PROCESSING INSTRUCTIONS

### 6.1. ASD Electronic Environmental Records

**NOTE:** Most of the ASD environmental data systems do not contain original records; rather, they contain electronic copies of hard-copy records or approved electronic data package records, which are managed under separate procedures.

- 6.1.1. The DSL ensures that ASD environmental electronic data and data systems are managed and archived in accordance with *1-V41-RM-001, Records Management Manual*.
- 6.1.2. The DSL ensures that ASD environmental data systems are properly documented and provided to designated parties in accordance with Site closure requirements.
- 6.1.3. Non-electronic ASD environmental analytical records management is not within the scope of this procedure. Refer to Source One Management, Analytical Services Group, *Procedure Manual for Non-electronic Environmental Data Records Management Requirements*).
- 6.1.4. Non-electronic field data forms/records management is not within the scope of this procedure. Refer to individual project plans for QC and record-keeping requirements.
- 6.1.5. Records associated with this procedure are processed according to the table on the following page.



**6.2. Matrix for Processing Records Associated With This Procedure**

Record Identification Determination	Record Type Methods	Protection/Storage	Processing Instructions
1. <i>AST User's Guide</i>	Non-Record	Completed non-QA Records: Responsible Managers <b>SHALL</b> implement a reasonable level of protection to prevent loss and/or degradation. Records <b>SHALL</b> be stored in standard office filing cabinets	Non-Record: when inactive (as defined in 1-V41-RM-001), transfer to Site Records Management in accordance with 1-V41-RM-001
2. <i>SWD User's Guide</i>	Non-Record	Completed non-QA Records: Responsible Managers <b>SHALL</b> implement a reasonable level of protection to prevent loss and/or degradation. Records <b>SHALL</b> be stored in standard office filing cabinets	Non-Record: when inactive (as defined in 1-V41-RM-001), transfer to Site Records Management in accordance with 1-V41-RM-001
3. <i>EDDPlus User's Guide</i>	Non-Record	Completed non-QA Records: Responsible Managers <b>SHALL</b> implement a reasonable level of protection to prevent loss and/or degradation. Records <b>SHALL</b> be stored in standard office filing cabinets	Non-Record: when inactive (as defined in 1-V41-RM-001), transfer to Site Records Management in accordance with 1-V41-RM-001
4. Procedure Development Package (Document History File), which includes: <ul style="list-style-type: none"> <li>• Master Copy of the procedure, including superseded or inactive copies</li> <li>• Review Comment Sheets with Comments Resolution</li> </ul>	QA Record	Site Document Control implements a level of protection to prevent loss and/or degradation of Master Copy and Document History File. Controlled document(s) <b>SHALL</b> be maintained by custodians in accordance with Site Document Control custody requirements.	When inactive (as defined in 1-V41-RM-001), the QA record will be transferred to Site Records Management in accordance with 1-V41-RM-001.



## 7. REFERENCES

- 1-K92-RFP-94-001*, Well Control Program
- 1-MAN-004-CSMM*, Computer Software Management Manual
- 1-V41-RM-001*, Records Management Manual
- ASD-003*, Identification System for Reports and Samples
- MAN-001-SDRM*, Site Documents Requirements Manual
- PRO-543-ASD-002*, Initiation, Preparation, and Implementation of Chain-of-Custody Forms
- PRO-815-DM-01*, Developing and Maintaining Documents
- PRO-908-ASD-004*, On-Site Transfer and Off-Site Shipment of Samples
- PRO-947-LOCATION/SURVEYING*, Location Code and Surveying Control
- PRO-1130-ASD-006*, Spatial Data Map Control
- PRO-1329-DM-03*, Site Document Control
- Kaiser-Hill, ASD, *AST User's Guide*
- Kaiser-Hill, ASD, *EDDPlus User's Guide*
- Kaiser-Hill, ASD, *General Guidelines for Data Verification and Validation, DA-GR01*
- Kaiser-Hill, ASD, *Analytical Services Data Assessment Program RFEDS Data Verification and Validation Application User's Guide*
- Kaiser-Hill, ASD, *Soil Water Database (SWD) User's Guide*
- Source One Management, Analytical Services Group, *Procedure Manual for Non-electronic Environmental Data Records Management Requirements*
- Final Rocky Flats Cleanup Agreement (RFCA)*, U.S. EPA/DOE, July 19, 1996



**APPENDIX A**

**Analytical Services Division Electronic Data Checklist for Environmental Projects**

	<b>Action Steps</b>	<b>Responsible Party</b>
<b>Step 1 – Project Planning</b>		
<input type="checkbox"/>	Assign Project Data Management Lead (DML).	Environmental PM
<input type="checkbox"/>	Request sampling events with ASD Sampling and Analysis Request Form (SARF) submitted to ASD Project Lead: Project Name Task Name Charge Number Administrative information Sampling event information	Project DML
<b>Step 2 – Project Setup</b>		
<input type="checkbox"/>	Create proposed sampling location map with assistance from the GIS Department (Optional).	Project DML and GIS Department
<input type="checkbox"/>	Assign location codes in AST and set “active indicator” to “YES”. Follow location code instructions in ASD-005 and AST to create location codes.	Project DML and/or ASD Project Lead
<input type="checkbox"/>	Prepare field templates in AST for field sampling events (Field Data Forms in AST).	Project DML and/or ASD Project Lead
<input type="checkbox"/>	Enter preliminary sample and field event information in AST in accordance with the <i>AST User’s Guide</i> . Assign database “Owner ID,” sample event “Media Type,” and SWD “location code” to the sample event.	Project DML and/or ASD Project Lead
<input type="checkbox"/>	Prepare COC Forms and sample labels in accordance with <i>PRO-543-ASD-002</i> .	Project DML and/or ASD Project Lead
<b>Step 3 – Collect Environmental Samples</b>		
<input type="checkbox"/>	Print COC Forms and sample labels.	Project DML and/or ASD Project Lead or designee
<input type="checkbox"/>	Collect samples or field measurements in accordance with an approved Sampling Analysis Plan or other work-control documents.	Project samplers



	Action Steps	Responsible Party
<b>Step 4 – Record Field Data in AST</b>		
<input type="checkbox"/>	Record field data results from completed Field Data Forms into AST within 14 working days of completion of sample collection.	Project DML or designee
<input type="checkbox"/>	Check all data entries for accuracy and “✓” the QC’d box in AST within 14 working days after initial field data entry, and allow transfer of the data to SWD.	Project DML or designee
<b>Step 5 – Record Survey Coordinate and Region Data in SWD and GIS</b>		
<input type="checkbox"/>	Arrange to have all sampled locations surveyed in accordance with <i>PRO-947-LOCATION/SURVEYING</i> , Location Code and Surveying Control.	Project DML
<input type="checkbox"/>	Survey environmental sample locations in accordance with <i>PRO-947-LOCATION/SURVEYING</i> , Location Code and Surveying Control.	Survey Contractor
<input type="checkbox"/>	Review survey locations and add media type, project and task codes, and location descriptions to survey results.	Project DML
<input type="checkbox"/>	Submit survey results to GIS Department in electronic form.	Project DML
<input type="checkbox"/>	Prepare “draft map” of project sample locations.	GIS Department
<input type="checkbox"/>	Review and approve “draft” map of project sample locations.	Project DML
<input type="checkbox"/>	Finalize location maps, and add approved “region” designations to locations (i.e., IHSS, PAC, UBC, etc).	GIS Department
<input type="checkbox"/>	Transmit final locations and region designations to SWD.	GIS Department
<b>Step 6 – Receive Electronic Analytical Data</b>		
<input type="checkbox"/>	Receive sample analytical results from laboratories as electronic data deliverables (EDDs) and hard-copy data packages.	ASD DSL ASD Project Lead
<input type="checkbox"/>	Examine hard-copy analytical data for errors in accordance with ASD’s <i>General Guidelines for Data Verification and Validation, DA-GR01</i> .	ASD Project Lead
<input type="checkbox"/>	Review, correct (if necessary), and process EDDs to the AST stage result table (SRT) within 24 hours of receipt.	ASD DSL
<input type="checkbox"/>	Load EDDs to SWD daily or more frequently as conditions warrant. <b>NOTE:</b> Non-SWD data system users are required to follow the appropriate instructions for their individual data systems.	ASD DSL



	Action Steps	Responsible Party
<b>Step 7 – Add Verification/Validation Codes to EDDs and Load to SWD</b>		
<input type="checkbox"/>	Perform data assessment in accordance with ASD's <i>General Guidelines for Data Verification and Validation, DA-GR01</i> .	ASD Data Validators
<input type="checkbox"/>	Add data qualifiers to EDD in the SRT using the <i>Analytical Services Data Assessment Program RFEDS Data Verification and Validation Application User's Guide</i> .	ASD Data Validators
<input type="checkbox"/>	Load V&V-qualified EDDs into SWD, overwriting older non-qualified EDDs in SWD daily or more frequently as conditions warrant.	ASD DSL
<input type="checkbox"/>	For non-SWD users, follow non-SWD system instructions for loading validated/verified data into the selected data system.	DML or non-SWD DSL
<b>Step 8 – Use Project Data in SWD</b>		
<input type="checkbox"/>	Access SWD (requires RFETS Oracle password).	Project DML and other data users
<input type="checkbox"/>	Download project data to desktop for analysis and reporting.	Project DML and other data users
<input type="checkbox"/>	Notify ASD DSL regarding missing EDDs or incorrect EDDs.	Project DML
<input type="checkbox"/>	Obtain missing EDDs or fix incorrect EDDs and reload data to SWD.	ASD DSL
<b>Step 9 – Add User Data to SWD/Project Closeout</b>		
<input type="checkbox"/>	Request permission in writing from the ASD DSL to add user data to SWD.	Project DML
<input type="checkbox"/>	Add codes to SWD data in accordance with PM direction (i.e., no longer representative data, or other codes as established by the <i>SWD User's Guide</i> ). Add codes for each sample event or analyte that requires coding.	Project DML
<input type="checkbox"/>	Quality review SWD user data entry, approve, and email the ASD DSL that the project is complete and data are coded.	Project DML
<input type="checkbox"/>	Remove permission for user data update in the SWD permissions table.	ASD DSL



## APPENDIX B (Page 1 of 3)

### Standard Location Code Nomenclature Convention for Environmental Data

#### LOCATION CODES – GENERAL

A location code identifies where an environmental sample was collected. All location codes are to comply with the Standard Location Code Nomenclature Conventions outlined herein. Subject Matter Experts from RISS Environmental Restoration and Environmental Media Management (Water Programs and Water Operations) should be consulted if there are any questions about naming new location codes versus existing location codes to prevent multiple location codes for the same environmental media sample location.

The following sections define the standard location code nomenclature conventions used at RFETS. Existing location codes in the soil water database (SWD) may or may not follow the nomenclature listed below, as in many cases, standards were not established on historical locations.

- (a) As established with this procedure, a location code may contain up to 15 characters, which can be a mix of alpha and numeric characters. Avoid using "0" or "O" as a prefix.
- (b) Environmental media location code should contain a two-digit suffix representing the year the location was scheduled to be sampled (i.e., sample start date). However, in cases where the two-digit identifier conflicts with current year (such as when a project extends across more than one year), either year may be selected in accordance with the Environmental Project Manager's (PM's) discretion. If the Environmental PM deems the sample start date is not acceptable for the location code, then the Environmental PM is responsible for reassignment of any location codes selected prior to sample completion. If reassignment is deemed necessary, the Project Data Management Lead (DML) must submit a list of the unused location codes to the ASD Data Systems Lead (DSL) who will remove the unused codes from AST. The DML enters the new location codes into AST.
- (c) The RADMS applies unique location codes to planned environmental sampling locations. Non-RADMS generated location codes should comply with Appendix B.

#### LOCATION CODES – NEW GROUNDWATER WELLS AND BOREHOLE LOCATION CODES

- (a) One location code number is assigned to a new borehole if a groundwater well is installed.
- (b) The groundwater well, piezometer, well point, or other monitoring device is installed in the borehole. The location code number remains the same as that of the borehole.
- (c) Multiple completion wells in the in the same borehole are numbered on a case-by-case basis, as determined by Water Operations and the Environmental PM.
- (d) The well and borehole location code numbering system consists of five to seven characters. The first three to five characters represent a number from a block of sequential numbers, followed by a two-digit suffix representing the year the borehole was scheduled to be drilled. No spaces, slashes, or dashes are permitted in borehole or well location codes.
- (e) The alphanumeric characters BH can be used to differentiate between boreholes and monitoring wells within a block of sequential numbers.
- (f) Location codes for monitoring wells are determined or approved by Environmental Media Management (Water Operations) in accordance with 1-K92-RFP-94-001, Well Control Program.



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### Standard Location Code Nomenclature Convention for Environmental Data

- (g) An example of a borehole or well location code is "60699" with a description of "EASTERN INDUSTRIAL AREA PLUME W. SIDE BLDG 707."
- (h) An example for borehole location codes: During the calendar year 2003, a sampling project requires ten boreholes to characterize and area. The PM/DML selects location code numbers 20103 to 21003. Note the suffix represents the year the borehole is proposed. The DML enters the location code numbers into AST, provides a physical description of the area where the borehole is located, and sets the AST location indicator to "YES." The project proceeds with the characterization and identifies a contaminated area that requires four more boreholes. The PM/DML can then select the next sequence of location codes numbers (e.g., 21103 to 21403), which are then entered into AST. The same methodology is used for monitoring wells. Any unused location codes must be inactivated in AST by setting the location code active indicator to "NO" within five days of fieldwork completion.

### LOCATION CODE – SURFACE SOIL LOCATIONS

- (a) One location code number is assigned to each new surface soil sample location, which is defined as the first six inches of soil.
- (b) The surface soil location code numbering system generally consists of seven to eight digits. The alphanumeric characters "SS" are used as a two-digit prefix to identify the location as a surface soil sample location. The next three to four digits represent a number from a block of sequential numbers, followed by a two-digit suffix representing the year the location was scheduled to be sampled.
- (c) No spaces, slashes, or dashes are permitted in surface soil location codes.
- (d) An example of a surface soil location code is "SS001103" with a description of "N B828 S TANK T-27."

### LOCATION CODES – SURFACE WATER

- (a) One location code number is assigned to a new surface water sample location.
- (b) The surface water location code numbering system consists of five digits. The alphanumeric characters "SW" are used as a two-digit prefix to identify the location as a surface water sample location. The next three digits represent a number from a block of sequential numbers.
- (c) Personnel from Environmental Media Management (Water Operations) are consulted prior to naming new surface water sample locations.
- (d) No spaces, slashes, or dashes are permitted in surface water location codes.
- (e) An example of a surface water sampling location code is "SW098" with the description of "EAST END OF LANDFILL POND AT CENTER OF DAM."



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**Standard Location Code Nomenclature Convention for Environmental Data**

**LOCATION CODES – SEDIMENT LOCATIONS**

- (a) One location code number is assigned to each new sediment sample location.
- (b) The sediment location code numbering system generally consists of seven digits. The alphanumeric characters "SED" are used as a three-digit prefix to identify the location as a sediment sample location. The next three digits represent a number from a block of sequential numbers, followed by a two-digit suffix representing the year the location was scheduled to be sampled.
- (c) No spaces, slashes, or dashes are permitted in sediment location codes.
- (d) An example of a sediment sample location is "SED42503" with the description of "SOUTH WALNUT CREEK."

**LOCATION CODES – SAFE DRINKING WATER SAMPLE LOCATIONS**

- (a) One location code number is assigned to each new safe drinking water sample location.
- (b) The safe drinking water sample location code numbering system generally consists of seven digits. The Building Number is used as a three-digit prefix to identify the building location where the safe drinking water sample was collected. The next three digits after a dash represent a room number to identify the location where the safe drinking water sample was collected.
- (c) No spaces or slashes are permitted in safe drinking water sample location codes.
- (d) An example of a tap water sample location is "115TAP-104" with the description of "BUILDING 115, ROOM 104 TAP WATER."

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