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Environment & Remediation Support Services

Standard Operating Procedure

for **FIELD QUALITY CONTROL SAMPLES**

APPROVAL SIGNATURES:

Subject Matter Expert:	**Organization**	**Signature**	**Date**
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1.0 PURPOSE AND SCOPE

This purpose of this procedure is to describe the process of collection of field quality control (QC) samples to ensure reliability and validity of field and laboratory data. This procedure is applicable to all Environment & Remediation Support Services (ERSS) sampling and analytical activities.

2.0 BACKGROUND AND PRECAUTIONS

2.1 Background

This procedure is to be used in conjunction with an approved Site-Specific Health and Safety Plan (SSHASP). Also, consult the SSHASP for information on and use of all Personal Protective Equipment (PPE).

- Data quality objectives (DQOs) for the data collection activity describe the overall level of uncertainty that a decision-maker is willing to accept in the results derived from environmental data. It is imperative that the DQOs be defined in the SAP prior to the initiation of field and analytical laboratory work as required by the Installation Work Plan, Chapter 3 (LANL, March 2000). The responsible parties performing the work must be aware of the DQOs so that informed decisions during the course of the project can be made to attain those DQOs.

- All proposed Sampling and Analysis Plans (SAPs) are reviewed and approved through the LANL Peer Review process. The Field Technical Leader (FTL) is responsible for coordination of all activities. These include, but are not limited to, adhering to SAP requirements, ordering the correct analytical methods and paperwork through the SMO (i.e., sample collection logs and chain-of-custody forms); obtaining the correct bottles, labels, and coolers; arranging the field team efforts and providing the screening results for shipment/transport requirements. The FTL is also responsible for adherence to sampling protocols mandated by all applicable federal and state regulatory requirements and analytical methods as described in the SAP. When ordering field paperwork, the FTL shall ensure that the field QC sample requirements are included.

- Adherence to properly documented field procedures will ensure that samples do not become contaminated through sampling activities.

- All waste generated from sampling must be handled in accordance with EP-ERSS-SOP-5022, Management of ER Project Waste.

- Sampling procedures outlined in the SAPs are applied to field QC samples in the same way they are applied to regular field samples.

- Field QC sample containers must be labeled and transported, and the samples analyzed, in a manner identical to all other samples taken at a site.

2.2 Precautions

None.

3.0 EQUIPMENT AND TOOLS

• Narrow-mouth amber glass bottles with Teflon-lined caps (0.5, 1.0, and 2.0 liters) • Amber glass vials with Teflon septa (40 ml) • 250 ml sterile bottle • Wide-mouth polyethylene bottles (0.5, 1.0, and 2.0 liters) • New or cleaned polyethylene narrow-mouth bottles (1L, .10L, 500 ml, 125 ml) • Canvas bags • Parafilm • Padding for packaging of samples • Ziplock™ bags • Bubble pack • Sample labels • Custody seals or custody tape • Any PPE listed or required in the SSHASP • Other equipment specified in EPA Methods, as needed.	• Sample Collection Logs • Daily Activity Logs • Chain-of-Custody/Request for Analysis Forms • Wooden tongue depressors • Aluminum foil • Teflon tape • Paper towels • Cardboard boxes • Ice • Blue ice, or equivalent • Insulated coolers • Heavy-duty poly bags and ties • Strapping tape • Plastic trash-can liners

4.0 STEP-BY-STEP PROCESS DESCRIPTION

4.1 General Requirements

Sample Collection Personnel

1. ***Collect field duplicates sequentially or split a sample from the same sample device.***
2. ***Collect field duplicate samples at a minimum frequency of ten percent (10%) of the total number of samples submitted for analysis.***
3. ***Consider precision of no more than twenty percent (20%) for duplicates as acceptable for soil, rock, and sediment sampling.***
4. ***Use the analytical data quality objective for precision for water duplicates.***

Sample Collection Personnel (Continued)	5.	***Establish the method reporting limits for sample analyses for each medium at the lowest level practicable for the method and analyte concentrations, and do not exceed soil, groundwater, surface water, or vapor emissions background levels, cleanup standards, and screening levels.***
	6.	***Use a maximum of twenty percent (20%) of the background, screening, or cleanup levels for method reporting detection limits.***
Field Team Leader	7.	***Ensure detection limits that exceed established soil, groundwater, surface water, or air emissions cleanup standards, screening levels, or background levels are reported as "not detected," and are considered data quality exceptions.***
	8.	***Provide an explanation for exceedance of detection limits and its acceptability for use.***

4.2 Representativeness and Comparability

Field Team Leader	1.	***Collect and analyze representative samples such as repeated measurements of the same parameter at the same location over several distinct sampling events.*** ***[NOTE: Representativeness is a qualitative parameter related to the degree to which the sample data represent the relevant specific characteristics of the media sampled.]***
	2.	***Note any procedures or variations that may affect the collection or analysis of representative samples and qualify the data.***
	3.	***Report analytical results in appropriate units for comparison with other data (e.g., past studies, comparable sites, screening levels, and cleanup standards), and implement standard collection and analytical procedures.*** ***[NOTE: Comparability is a qualitative parameter related to whether similar sample data can be compared.]***
	4.	***Note any procedure or variation that may affect comparability, and qualify the data.***

4.3 Pre-Operation Activities

Field Team Leader

1. *Evaluate the requirements for field QC samples as part of preparation of the site-specific SAP.*

2. Include QC samples in accordance with the following table:

QC Sample Type	Sample Matrix	Frequency	Purpose
Field Duplicate	Soil and Water	One per day per matrix type or 1 per 20 samples, whichever is more frequent.	To evaluate the reproducibility of the sampling technique.
Equipment Rinseate Blank	Deionized water used to rinse equipment.	One per day or 1 per 20 samples collected, whichever is more frequent.	To evaluate decontamination procedures.
Trip Blank	Volatile organic compound (VOC)-free soil or sand; or VOC-free deionized water.	One per day or 1 per 20 samples collected for VOC analysis, whichever is more frequent.	To determine contamination during storage and transport.

3. Determine the need for additional types of QC samples to be collected during the SAP preparation activities.

   [NOTE: These additional types of QC samples may be collected to obtain information concerning the sampling site (e.g., background and control samples).]

Sample Collection Personnel

4. Obtain deionized water in sealed containers appropriate for transport to the field and in sufficient quantity to prepare the required equipment rinseate blanks.

   [NOTE: Do not use tap water or drinking water purchased from a local store as these sources typically contain trihalomethanes.]

5. Prepare trip blanks at the beginning of the sampling activities and store with the regular sample containers during the entire project.

   [NOTE: Trip blanks are required for all field events that include the collection of samples for VOC analysis.]

6. Prepare trip blanks from deionized water that has been heated for at least 4 hours at 85 degrees Centigrade (85^{o} C), and purged with ultra-pure nitrogen (99.9%) for at least 20 minutes.

7. Preserve, fill, and seal sample containers.

Sample Collection Personnel (Continued)	8.	Prepare trip blanks for soil sampling activities using VOC-free soil or sand.
	9.	Refer to procedure EP-ERSS-SOP-5056, Sample Containers and Preservation, for container and preservation requirements.

4.4 Sample Collection Process

Sample Collection Personnel	1.	***Collect and prepare each type of QC sample required in the manner prescribed in the table in Section 4.3 of this procedure.***
	2.	Refer to the table in Section 4.3 of this procedure for the collection frequency of field QC samples that shall be addressed within the SAP.

4.5 Equipment Rinseate Blank

Sample Collection Personnel	1.	After decontaminating the field sampling equipment, rinse with deionized water and collect the rinseate for analysis.
	2.	Rinse all equipment surfaces that come in contact with the sampling materials (e.g., the inside of the bailer).
	3.	Collect rinseate water throughout the day and fill the sample container all at once at the end of the day's sampling activities. [NOTE: Do not collect the water used for decontaminating the field sampling equipment.]

4.6 Field Duplicate

Sample Collection Personnel	1.	Collect two separate samples from the same source and at the same location and time.
	2.	Place the samples in separate containers, follow the sample preservation procedure, label each as a unique sample, and submit both samples for the same analyses.

4.7 Trip Blank

Sample Collection Personnel	1.	Prepare trip blanks before the day's sampling events, and submit with the regular samples at the end of each day's sampling activities (when collecting samples for VOC analysis), or at the end of the project if the required frequency is maintained. [NOTE: The number of trip blanks to be prepared depends upon the number and frequency of VOC samples to be collected.]
	2.	Maintain the trip blank containers with the regular sample containers throughout the sampling event and return them to the SMO with the collected samples.

Sample Collection Personnel (Continued)	3.	Do not open the trip blank container(s) at any time during the sampling activities.

4.8 Records

Field Team Leader	1.	Submit the following records generated from this procedure to the Records Processing Facility: • Completed Daily Activity Log forms or field notebook that includes the following: deviations (if applicable), calibration information, a record of daily activities, and/or any other pertinent information; • Completed Chain-of-Custody Form/Request for Analysis Form; and • Sample Collection Log.

5.0 PROCESS FLOW CHART

Flow chart is to be included at a later date.

6.0 ATTACHMENTS

None.

7.0 REVISION HISTORY

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Revision No *[Enter current revision number, beginning with Rev.0]*	Effective Date *[DCC inserts effective date for revision]*	Description of Changes *[List specific changes made since the previous revision]*	Type of Change *[Technical (T) or Editorial (E)]*
0.0	02/09/07	Requirements from NMED Order on Consent added and new document number, Supersedes SOP-01.05	T

Using a CRYPTOCard, click here to record "self-study" training to this procedure.

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