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**A Department of Energy
Environmental Cleanup Program**

**Environmental Restoration Project
Standard Operating Procedure**

for:

**Transportation and Admittance of
Borehole Materials to the Field Support
Facility**

NES Approved

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Transportation and Admittance of Borehole Materials to the Field Support Facility

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Transportation and Admittance of Borehole Materials to the Field Support Facility

1.0 PURPOSE

This Standard Operating Procedure (SOP) describes the process for transportation and admittance of borehole materials to the field support facility at the Los Alamos National Laboratory (Laboratory) Environmental Restoration (ER) Project.

2.0 SCOPE

This SOP is a mandatory document and will be implemented by all ER Project participants when transporting and admitting borehole materials to the field support facility for the ER Project.

Note: Subcontractors performing work under the ER Project's quality program may follow this SOP for borehole material logging, handling and documentation or may use their own procedure(s) as long as the substitute meets the requirements prescribed by the ER Project Quality Management Plan, and have been approved by the ER Project's Quality Program Project Leader (QPPL) before the commencement of the activitie(s).

3.0 TRAINING

- 3.1 ER Project personnel using this SOP are trained by reading the procedure, and the training is documented in accordance with QP-2.2.
- 3.2 The **Field Team Leader** (FTL) will monitor the proper implementation of this procedure and ensure that relevant team members have completed all applicable training assignments in accordance with QP-2.2.

4.0 DEFINITIONS

- 4.1 *Borehole Materials* — Are anything that may emanate from the subsurface during a drilling project, and typically consist of soil, core, cuttings, rubble, rock chips, groundwater, and drilling fluids (gas, vapor, and liquid).
- 4.2 *Borehole Material Management* — The collection, documentation, storage and control of borehole materials and records. The Drilling and Field Support Teams are responsible for implementing borehole material management activities at the drill site under the oversight and support of the Subsurface Technologies Team. All borehole materials are managed as waste materials pursuant to SOP-1.06. As such, borehole materials management is

subject to a site specific and ER approved Waste Characterization Strategy Form (WCSF) for each drilling project.

- 4.3 Core — Is a cylindrical section of rock, or fragment thereof, that is taken as a sample of the interval penetrated by a core bit and that is brought to the surface for examination and/or analysis.
- 4.4 Curation/Disposal Strategy — A strategy summarizing a specific project's plans for borehole material handling, curation and disposal. Includes planned depth of boreholes, number of samples to be removed, and a schedule for these activities. The curation strategy also allows the Field Team a place to describe options in borehole material curation (See Attachment H of ER-SOP-12.01).
- 4.5 Cuttings — Are materials produced during drilling that are removed from the borehole.
- 4.6 Drilling Documents — Consist of the following: Equipment and Supplies Checklist, Photographic Log (when necessary), Field Borehole Analytical Sample Removal Checklist, Field Screening Log, Borehole Log, Curation/Disposal Strategy, and drilling guidance documents.
- 4.7 Drilling Guidance Document — A document summarizing the location, objectives and operation guidelines for a specific borehole. Included are details and exceptions relevant to the logging, handling, documentation and curation/disposal strategy of borehole materials for the borehole [e.g. a Field Implementation Plan (FIP) or Scope of Work (SOW)].
- 4.8 Field Support Facility — is located at Building TA-3-271 and houses the Field Support Facility (FSF). The FSF consists of equipment designed to effectively process and preserve borehole materials.
- 4.9 4.9 Information Block — An object placed in a borehole material container. The block represents a depth interval and provides information pertaining to the status of that interval.
- 4.10 Sample — A physical entity, collected in the field that is the original source material for all-subsequent analyses and testing activities.
- 4.11 Sample Type — Sample type designates the type of material that makes up a sample (i.e., core or cuttings).
- 4.12 Site-Specific Health and Safety Plan (SSHASP) — A health and safety plan that is specific to a site or ER-related field activity that has been approved by an ER health and safety representative. This document contains information specific to the project including scope of work, relevant history, descriptions of hazards by activity associated with the project site(s), and techniques for exposure mitigation (e.g., personal protective equipment [PPE]) and hazard mitigation.

- 4.13 *Subsample* — A selection or aliquot from a sample that may or may not be representative of the sample.
- 4.14 *Waste Characterization Strategy Form (WCSF)* — A document that presents the Acceptable Knowledge (AK) for waste to be generated during a project. AK incorporates the history of releases and known contaminant in the vicinity of the site and from upgradient locations that could potentially impact the project site. Using the AK and anticipated waste forms to be generated, a preliminary waste determination is done (e.g., radioactive waste, NM Special Waste). Based on the waste determination, the analytical suite for waste characterization sampling is developed. The document also outlines on-site waste management procedures such as storage areas and segregation.

5.0 BACKGROUND AND PRECAUTIONS

This SOP will be used in conjunction with an approved SSHASP. Also, consult the SSHASP for information on and use of all Personal Protective Equipment. This procedure is limited to the activities necessary to transport borehole materials from drill sites to the FSF where they are curated and archived.

Borehole materials exhibiting hazardous properties at levels above the FSF acceptance criteria (Table 1 of ER-SOP-12.01) cannot be transported to the FSF.

6.0 RESPONSIBLE PERSONNEL

The following personnel are responsible for activities identified in this procedure.

- 6.1 Courier
- 6.2 ER Project Personnel
- 6.3 Field Support Facility Curatorial Staff
- 6.4 Field Team Leader
- 6.5 Subcontractors

7.0 EQUIPMENT

This section is not applicable.

8.0 PROCEDURE

Note: ER Project personnel may produce paper copies of this procedure printed from the controlled-document electronic file located at http://erinternal.lanl.gov/home_links/Library_proc.htm. However, it is their responsibility to ensure that they are trained to and utilizing the current version

of this procedure. The author may be contacted if text is unclear. Contact the Document Control Coordinator if the author cannot be located.

Note: Deviations from SOPs are made in accordance with QP-4.2 and documented in accordance with QP-5.7.

8.1 General

Borehole materials that are collected and temporarily stored need to be transferred to the FSF for archival. This procedure describes the methods necessary to ensure that materials are correctly packaged, shipped, and documented as to facilitate processing. They must arrive at the FSF in acceptable condition and correctly prepared for storage. *If materials are not correctly prepared they will not be accepted at the FSF.* This procedure is designed to minimize the occurrence of discrepancies and errors and to prevent errors from becoming part of the permanent record. Common errors that will prevent acceptance include clerical and handling discrepancies and unsuitable packaging and labeling of materials.

8.2 Preparation of Materials and Documentation for Transmittal

- 8.2.1 Before transporting material, labels for material containers must be obtained from the FSF. The FSF must be contacted with site specific information which will allow FSF personnel to create labels for the project material. A Field Container Labels and Transmittal Documentation Checklist (Attachment A) shall be completed to assist compilation of the needed data.
- 8.2.2 Requests must include the number of boxes, the number of containers, the number of samples removed, the number of runs, and the number of missing intervals as well as the information requested on Attachment A.
- 8.2.3 Missing intervals are defined as unrecovered (UNREC), not attempted (NAT), lost (LOST), and destroyed (DEST). The Field Container Summary and Transmittal Form (Attachment B), when completed will summarize this information.
- 8.2.4 Documentation listed in Attachment A must be compiled prior to transportation.
- 8.2.5 Material transported and submitted to the FSF shall be certified non-hazardous. This fact must be documented by on-site screening as per ER-SOP-12.01. At sites where collection of hazardous samples is not a concern, a Field Screen Log (ER-SOP-12.01, Attachment G) shall be completed by a qualified individual noting that material does not exhibit hazardous properties.

- 8.2.6 If borehole material is obtained in an area with hazard concerns, certified on-site monitoring personnel must sign site specific documentation stating that levels of radiological and non-radiological contaminants of the material are within the FSF acceptance criteria (Table 1 of ER-SOP-12.01). This may also include analytical laboratory results. Only materials that have been certified to be within acceptable levels can be transported to the FSF.
 - 8.2.7 Field labels need to be obtained from FSF curatorial staff and applied appropriately to boxes and index cards (see Section 8 of ER-SOP-12.01)
 - 8.2.8 Delivery time for borehole materials must be scheduled with FSF Curator. Once a delivery time is set, containers will be loaded to ensure against shifting of contents.
 - 8.2.9 The **courier** shall inventory the containers and documents being loaded into the transport vehicle and check them against the Field Container Summary and Transmittal Form. When the inventory is complete, the individual taking the borehole material from the site must sign the “Person Accepting Custody” field, and place the date and time of the transfer in the spaced provided.
- 8.3 Transport and Admittance of Borehole Material and Documents
- 8.3.1 The **courier** shall then transport the containers and documents to the FSF. Upon arrival at the FSF, the **courier** submits the appropriate documentation (see Attachment A) to FSF curatorial staff. Upon **FSF curatorial staff** approval of the documentation, the **courier** shall remove the containers from the vehicle and place them in an available receiving area.
 - 8.3.2 **FSF curatorial staff** shall inventory the containers in accordance with ER-SOP-12.04 and validate the Field Container Summary and Transmittal Form (Attachment B).
 - 8.3.3 If valid, **FSF curatorial staff** shall have the courier sign the “Person Releasing Custody” field and place the date and time of the transfer in the spaces provided. The **FSF curatorial staff** shall then sign the “Person Accepting Custody” field and place the date and time of transfer in the space provided. Any discrepancies will be noted on this Transmittal Form.
- 8.4 Assessment of Screening
- 8.4.1 Periodic re-surveying of incoming borehole material may be performed. The frequency is dependent upon historical site information, field monitoring results, and analytical laboratory results.

This determination will serve as a quality control check to ensure that no borehole material exceeding health and safety based acceptance criteria are admitted for curation and archival.

8.5 Perform Lessons Learned

During the performance of work, **ER Project personnel** shall identify, document and submit lessons learned, as appropriate in accordance with QP-3.2, located at: http://erinternal.lanl.gov/home_links/Library_proc.htm.

9.0 REFERENCES

ER Project personnel using this procedure should become familiar with the contents of the following documents to properly implement this SOP.

- ER Project Quality Management Plan, located at http://erinternal.lanl.gov/home_links/Library_proc.htm.
- QP-2.2, Personnel Orientation and Training
- QP-3.2, Lessons Learned
- QP-4.2, Standard Operating Procedure Development
- QP-4.4, Records Transmittal to the Records Processing Facility
- QP-5.7, Notebook Documentation for Environmental Restoration Technical Activities
- SOP-12.01, Field Logging, Handling, and Documentation of Borehole Materials
- SOP-12.04, Physical Processing, Storage, and Examination of Borehole Materials at the Field Support Facility

10.0 RECORDS

The **FTL** is responsible for submitting the following records (processed in accordance with QP-4.4, Record Transmittal to the Records Processing Facility) to the Records Processing Facility.

10.1 Field Container Summary and Transmittal Form

11.0 ATTACHMENTS

Attachment A: Field Labels and Transmittal Documentation Checklist and Completion Instructions (2 pages), located at <http://erinternal.lanl.gov/Quality/forms.htm>.

Attachment B: Field Container Summary and Transmittal Form (1 page), located at <http://erinternal.lanl.gov/Quality/forms.htm>.

[Using a token card, click here to record "self-study" training to this procedure.](#)

If you do not possess a token card or encounter problems, contact the RRES-FCR training specialist.

Field Labels and Transmittal Documentation Checklist for the Field Support Facility

(Additional pages may be utilized as necessary for completion of various sections of this report. Refer to Attachment B for instructions.)

Page 1 of

Part I – Initiation: (Initiator completes.) Provide the FSF Curator Staff the following information to obtain field labels for your borehole materials, **Note:** An entered check mark (✓) indicates the requirement has been met. (If the statement does not apply enter: n/a.)

1. Borehole Name/ID No.:	2. Initiator: _____ (print name, then sign) _____ (date)	✓ Block
3. Field Team Leader::		<input type="checkbox"/>
4. Borehole Date Started and/or Completion Date:		<input type="checkbox"/>
5. Labels Required (Type/Amount):		<input type="checkbox"/>
6. Borehole Total Depth:		<input type="checkbox"/>
7. FIMAD/Location Identification No.:		<input type="checkbox"/>

Part II – Documentation Required for Acceptance of Borehole Materials:	Delivered to FSF (date)
8. Field Screening Log (Attachment H of ER SOP-12.01):	
9. Transmittal Form (Attachment B of ER SOP-12.02):	
10. Curation/Disposal Strategy Document:	
11. Borehole Field Log (Attachment D of ER SOP-12.01):	
12. Field Borehole Analytical Sample Removal Checklist (Attachment B of ER SOP-12.01):	
13. Chip Field Log:	
14. Field Photographic Log:	

Part III – Verification: (Completed by the Field Support Facility Curator Staff.)

15. Verified by FSF Curator: _____
(print name, then sign) _____ (date)

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Completion Instructions for the Field Support Facility Field Labels and Transmittal Document Checklist

The numbered steps represent the numbered blocks on the report. Complete only the applicable information. Mark blocks that are not applicable "n/a". **Note: Use a continuation page or reference attachments if additional space is required.**

Part I (to be completed by the Initiator)

1. Enter the borehole name and identification number.
2. The initiator prints his or her name, signs and dates.
3. Enter the name of the Field Task Leader responsible for the borehole.
4. Enter the date the borehole was started and/or completed.
5. Enter the type and the amount of labels you require (e.g., Specimen, Sample, Container/Box, Run, Missing etc., 10 each).
6. Enter the total depth of the borehole in feet.
7. Enter the FIMAD and location identification number.

Part II (to be completed by the Initiator)

Enter the type of documentation you will need to present to the FSF curator staff in order to get your borehole materials accepted into the FSF Borehole Storage Facility. Enter the appropriate justification and/or comments as necessary:

8. Enter the title and document catalog number of the Field Screening Log. Ensure that there is no count >400 cpm. Refer to Attachment H of ER SOP-12.01.
9. Ensure the transmittal form is correctly and completely filled out. Refer to Attachment B of ER SOP-12.02.
10. Enter the title and document catalog number of the Curation/Disposal Strategy document.
11. Enter the title and document catalog number of the Borehole Field Log. Refer to Attachment D of ER SOP-12.01.
12. If samples were removed for analysis (refer to Attachment B of ER SOP-12.01), enter the date and the name of the person who completed the Field Borehole Analytical Sample Removal Checklist.
13. If chips were obtained, enter the title and document catalog number of the Field Chip Log.
14. If photographs are taken, enter the title and document catalog number of the Field Photographic Log.

Part III (to be completed by the FSF Curator Staff)

15. The responsible FSF Curator Staff prints his or her name, signs and dates.

FIELD CONTAINER SUMMARY AND TRANSMITTAL FORM

Field Support Facility

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FIELD SITE TO TRANSPORT

TRANSPORT TO FSF

Person Releasing Custody:

 (print name, then sign) (date)

Person Accepting Custody:

 (print name, then sign) (date)

Checked By:

 (print name, then sign) (date)

Person Releasing Custody:

 (print name, then sign) (date)

Person Accepting Custody:

 (print name, then sign) (date)

Borehole ID:
 TA/OU:
 Shipment Container Total:

DOCUMENTATION

RECEIVED AT FSF

Borehole Material Type	FCT Bar Code Number	Existence Code	Container or Borehole Material Interval	Received	Borehole Material Type	FCT Bar Code Number	Existence Code	Container or Borehole Material Interval	Received 4

Existence Codes: *REC* – Recovered *UNREC* – Unrecovered *NAT* – Not Attempted *WCR* – Whole Core Removed *LOST* – Lost *DEST* - Destroyed

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