

Procedure Change Request

Section #1 – Type of Request

Manual/Procedure No. (if known): _____ Revision: **IPC 1**

Title: **SOP-06.10,R3, Hand Auger and Thin-Wall Tube Sampler**

Detailed description of requested change (Attach additional sheets if needed. Number additional sheets): ~~Change subsurface sampling depth noted in section 1.0, Purpose, from 15 ft to 20-25 ft.~~

Delete parenthetical statement in section 1.0, Purpose, which states (up to about 15 ft)

Requestor Signature: *[Signature]* Print Name: **Becky Coel-Roback** Phone: **5-5011** Date: **4/6/07**

Section #2 – Procedure Owner Approval for Processing

New Procedure Major Revision Minor Revision Special Procedure
 IPC Deactivation Cancellation IPC Rollup

Approved Disapproved (Return to originator) Priority: _____

Procedure Owner Signature: *[Signature]* Print Name: **Becky J. Coel-Roback** Date: **4/6/07**

Section #3 – Review and Concurrence

IPC # **1** IPCs Incorporated: _____ Affected Pages: **page 4**

Other affected facilities or N/A: **N/A** Obtain Concurrence all facilities/organizations affected by this change

Review and Concurrence: Review organizations (N/A if not required); document additional review organizations, if needed, on continuation sheet. CSE approval required for all technical procedures except minor revisions, IPC Rollup, and non-AB related cancellations/deactivations. CSE approval always required for changes affecting safety basis steps.

Department:	Print Name:	Signature:	Date:

See note on previous IPC/PCR
 CSE USQ Number (As applicable): **USQD-NES-07.0231**
 Addressed by: **JCS**
 ADC: Unclassified OOU UCNI Classified
 Print Name: **Daniel Teplan** Signature: *[Signature]*

Section #4 – Final Approval by Procedure Owner

Validation Required: Yes No Low Hazard – No IWD is required: Document is Authorized to serve as Part I of the IWD: Yes No Periodic Review Requirements Satisfied?: Yes No

Training Required: Yes No Classroom/Briefing Just-in Time
 On the Job Required Reading

Approval Signature: *[Signature]* Print Name: **Becky J. Coel-Roback** Date: **4/6/07** Phone: **5-5011**

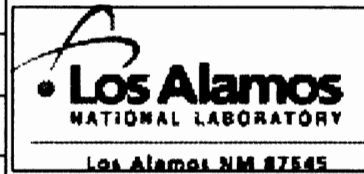
Identifier: **SOP-06.10**

Revision: **3** *IPC1*

Effective Date: **01/14/2004**

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Author: **Bill Kopp**



**Risk Reduction and Environmental Stewardship—
Remediation Services Project**

Standard Operating Procedure

for **Hand Auger and Thin-Wall Tube
Sampler**

Revision Log

Revision No.	Effective Date	Prepared By	Description of Changes	Affected Pages
0	3/16/92	S. Wagner	New Procedure	All
1	8/26/98	D. Daymon	Unknown	Unknown
2	8/9/01	Lynda Hartman	Revised SOP to new procedure format and updated all technical requirements.	All
3	01/14/2004	Bill Kopp [Mark Thacker]	"Minor Changes": new template and RRES-RS Project organization; no peer review required (QP-4.2)	All
3,1PC1	4/9/07	Recky Coel-Roback	Delete statement in section 1.0	4

Hand Auger and Thin-Wall Tube Sampler

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List of Acronyms and Abbreviations

FTL	Field Team Leader
LANL	Los Alamos National Laboratory
PPE	personal protective equipment
PTL	Project Team Leader
QP	quality procedure
QPPL	Quality Program Project Leader
RRES-RS	risk reduction and environmental stewardship—remediation services project
SOP	standard operating procedure
SSHASP	site-specific health and safety plan
VOCs	volatile organic compounds

Hand Auger and Thin-Wall Tube Sampler

1.0 PURPOSE

This standard operating procedure (SOP) states the responsibilities and describes the process for collecting surface and subsurface ~~(up to about 15 ft.)~~ soil samples with a hand auger and thin-wall tube sampler for the Los Alamos National Laboratory (LANL), Risk Reduction and Environmental Stewardship, Remediation Services (RRES-RS) Project. 4/6/07

2.0 SCOPE

2.1 All **RRES-RS Project participants** shall implement this mandatory SOP.

2.2 **Subcontractors** performing work under the RRES-RS Project's quality program shall follow this SOP.

OR

2.3 **Subcontractors** may use the subcontractor's procedure as long as the substitute meets the requirements prescribed by the RRES-RS Project Quality Management Plan, and the RRES-RS Project Quality Program Project Leader (QPPL) and a RRES-RS Project technical staff person approve the procedure before the subcontractor begins the designated activity.

3.0 TRAINING

3.1 **RRES-RS Project participants** shall train to and use the current version of this SOP; contact the author if the SOP text is unclear.

3.2 **RRES-RS Project participants** using this SOP shall document training in accordance with QP-2.2.

3.3 The responsible **Project Team Leader (PTL)** shall monitor the proper implementation of this procedure and ensure that the appropriate personnel complete all applicable training assignments.

3.4 **RRES-RS Project participants** may request any needed assistance with implementation of this procedure from RRES-RS Quality Integration and Improvement (QII).

4.0 DEFINITIONS

4.1 *Bucket auger*—A hand-held steel auger that can be used for digging or for sample collection. Most bucket augers consist of the auger bucket, shafts of various lengths, and a T-grip handle. All parts are either threaded and screwed together or held together with pins.

- 4.2 *Data management, data steward*—A steward participates as a member of the RRES-RS Project Data Management Team. Members of this team provide expertise in data management activities as they pertain to one or more RRES-RS-related scientific disciplines: chemistry, statistics, hydrology, geology, environmental science, engineering, and/or computer science. The major responsibility of the data steward is to ensure the quality, accuracy, and completeness of the ER Project technical database.
- 4.3 *Sample Management Office (SMO)*—The SMO is the organization responsible for receiving and shipping RRES-RS Project Samples. SMO staff handle the receipt, coordination, and temporary records management of ER Project analytical data record packages.
- 4.4 *Site-specific health and safety plan (SSHASP)*—Health and safety plan that is specific to a site or RRES-RS-related field activity that has been approved by an RRES-RS Project 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.
- 4.5 *Thin-wall tube sampler*—A one-piece metal tube, of thin gauge, which is forcefully driven into soil or sediment with a bucket auger's handle (or similar piece of equipment) at a particular sample location to collect an undisturbed surface soil or sediment sample. The sample is loaded into the stainless-steel tube by propelling the sampler into the soil, usually with a corkscrew action. The tube is the sample container and cannot be reused. The tube is generally used in conjunction with a bucket auger. They cannot be used in extremely hard soil.

5.0 RESPONSIBLE PERSONNEL

The following personnel are responsible for activities identified in this procedure: [Add others, as necessary, in alphabetical order.] Author

- Field Team Leader
- Field Team Member
- Project Team Leader
- Quality Program Project Leader
- RRES-RS Project Participants
- Supervisor
- User

6.0 BACKGROUND AND PRECAUTIONS

- 6.1 **RRES-RS Project participants** shall use this SOP in conjunction with an approved SSHASP.
- 6.2 This procedure describes the selection and use of sampling methods and equipment at sites that may include contamination with hazardous or radioactive materials.
- 6.3 Address health and safety hazards associated with the use of this equipment and methods in a SSHASP.
- 6.4 Use this procedure in conjunction with an approved SSHASP that addresses worker safety and the hazards associated with the use of the methods detailed in this procedure.
- 6.5 Handle all waste generated from any sampling operations in accordance with SOP-01.06.
- 6.6 Do not collect undisturbed-soil samples with a bucket auger; only collect a composite or disturbed sample with a bucket auger.
- 6.7 Do not dig with a thin-wall tube sampler.
- 6.8 Use a tube sampler to take subsurface soil or sediment samples by forcefully driving the sampler into soil or sediment. Retrieve samples, if appropriate, selected intervals, from depths obtainable by hand digging.
- 6.9 Take a subsurface-undisturbed, soil sample by digging to approximately six inches above the required sample depth with a bucket auger, then collect the sample using a tube sampler. However, if a required sample interval is zero to six inches or six to 12 inches, and if no digging is required to obtain a distance of six inches above the sample interval, at least two drives of the sampler may be needed to obtain the sample. When obtaining a shallow (0 to 6 in. or 6 to 12 in.) sample, the difficulty depends primarily upon the soil's hardness and how many pebbles, etc., are present in the soil.
- 6.10 To save time, use a manual or power post-hole digger to dig all but the last 12 inches to sample depth. Decontaminate the post-hole digger per SOP-01.08. If gasoline is used at the site, take care to avoid contaminating any samples analyzed for volatile organic compounds (VOCs).
- 6.11 Exercise proper back care when pulling a stuck auger out of a hole or when turning an auger for long periods.
- 6.12 Wear work gloves in order to prevent blisters.

- 6.13 The scope of this SOP is limited to the activities of collecting soil and sediment samples for (1) field monitoring and laboratory analysis of concentrations of hazardous and radioactive constituents, (2) soil/sediment physical characterization, or (3) geologic logging. This SOP does not address drilling activities, removal of time-sensitive geologic analytical samples, core documentation, lithologic description, packaging of core material, or temporary storage of borehole materials.

7.0 EQUIPMENT

- 7.1 Attachment A provides a checklist of suggested equipment and supplies needed to implement this procedure.
- 7.2 Section 6.0 above includes some descriptions of commonly-used pieces of equipment, their advantages, and their limitations.

8.0 PROCEDURE

Make any deviations from this SOP in accordance with QP-5.7 and/or SOP-01.01.

8.1 Perform Pre-Sampling Activities

- 8.1.1 The **field team** shall acquire all necessary documentation and label all bottles (see SOP-01.02 and SOP-01.04).
- 8.1.2 The **field team** shall ensure that all sampling equipment is properly decontaminated (SOP-01.08).
- 8.1.3 In the field notebook, the **field team** shall note the exact location and location identification number of the sampled hole.
- 8.1.4 If possible, the **field team** shall photograph the location.
- 8.1.5 The **field team** shall mark the sampling location with stakes that include the location identification number.

8.2 Perform Sampling

Note: Discuss, understand, and fully document in the field notebook and/or daily logs the collection strategy and rationale described in the relevant sampling and analysis plan, as well as the requirements for sample handling and decontamination between samples. Be prepared to manage borehole soil or rock in accordance with both the site-specific sampling plan and SOP-01.06, if necessary.

- 8.2.1 The **field team** shall dig with a Bucket Auger in the following manner:
- 8.2.1.1 Assemble the auger with a 2-, 3-, or 4-ft. shaft.

- 8.2.1.2 Apply .5-inch Teflon tape to all threads to facilitate disassembly.
 - 8.2.1.3 Press down and turn the auger, digging down six to 12 inches.
 - 8.2.1.4 Lift the auger out of the hole and remove the soil from the auger bucket.
Note: Experience shows how deep to dig with each bucket load without making the auger stick.
 - 8.2.1.5 Adding additional shaft sections, repeat steps 8.2.1.2 through 8.2.1.4 until the required depth (usually about six inches above the intended collection depth) is reached.
- 8.2.2 The **field team** shall collect a sample with a Bucket Auger in the following manner:
- 8.2.2.1 With a clean bucket, dig out enough soil for the sample.
Note: Granular soils may not stay in the bucket. There are different styles of buckets designed for clayey versus sandy soil or sediment. These buckets vary in their degree of soil containment; choose accordingly.
 - 8.2.2.2 Discard any soil that falls down the hole and, as such, did not come from the required sample depth.
 - 8.2.2.3 Put an adequate amount of sample material into a decontaminated, stainless-steel or plastic bucket and mix until the sample is homogenized.
Note: When analyzing soils for SOVCs, do not use a plastic bucket for mixing or holding the sampled soil.
 - 8.2.2.4 Fill the sample containers (see SOP-01.02).
 - 8.2.2.5 For VOC samples collected in soil (unconsolidated material), use an En Core Sampler and associated sample container to extract the VOC samples, following the current version of En Core technical manual/operating instructions.
 - 8.2.2.6 When collecting a composite sample, keep the pan of soil out of the sun and keep it covered with aluminum foil; collect all the aliquots as quickly as possible; do not decontaminate the auger between aliquots.

- 8.2.3 The **field team** shall collect a sample with a Thin-Wall Tube Sampler in the following manner:
- 8.2.3.1 Dig to the required depth using the bucket auger.
 - 8.2.3.2 Assemble the tube holder with the appropriate tube inside and attach the tube holder to the auger shaft, applying Teflon tape to the threads.
 - 8.2.3.3 Shove, twist, or pound the tube holder into the ground until it is full; when pounding, use a plastic hammer and take care not to damage the equipment.
- Note:** If the sample is taken from the surface, remove any rocks, sticks, or leaves before driving the sampler into the ground.
- 8.2.3.4 Disassemble the tube holder, being careful not to let any soil fall out of the tube.
 - 8.2.3.5 Immediately cover the ends of the sample tube with 2-inch Teflon film, then put plastic caps over the film.
- Note:** If appropriate, place tape over the caps to ensure retention before submitting the entire tube to the laboratory.
- 8.2.3.6 Label the bottom end of the tube with “*Open This End.*”
 - 8.2.3.7 For VOC samples, either seal and ship the tube intact or use an En Core sampler and associated sample container to extract the VOC samples, following the current version of En Core technical manual/operating instructions, prior to capping the tube.
 - 8.2.3.8 Place the thin-wall tube sampler on a secure bench, table, rack, or on plastic laid on the ground.
- 8.2.4 The **field team** shall label sample containers and complete documentation (reference SOP-01.04).
- 8.2.5 A **field team member** shall enter the sample information in the field notebook according to QP-5.7 and in the collection log at this time, including sample location identification number, depth interval, etc.
- 8.2.6 Whenever a sample is collected for chemical analyses, a **field team member** shall initiate a custody record via the Chain of Custody/Request for Analysis Form and affix a sample label to the sample container, according to SOP-01.04.

8.2.7 Whenever a soil sample is collected, a **field team member** shall enter a complete description of the soil in either a sample collection log (SOP-01.04) or, if several intervals of soil are collected from one location, a daily drilling summary (SOP-04.01).

8.3 Collect Field Duplicates

The **field team** shall collect field duplicates according to SOP-01.05.

8.4 Perform Post-Sampling Activities

8.4.1 The **field team** shall decontaminate the outside of sample containers.

8.4.2 The **field team** shall bag the samples in Ziploc bags.

8.4.3 The **field team** shall pack samples in a cooler at the sampling site, ensuring that the cooler contains ice, as specified by the site-specific sampling plan.

8.4.4 The **field team** shall transport the cooler full of samples to the SMO (SOP-01.03).

8.4.5 The **field team** shall decontaminate equipment according to SOP-01.08.

8.4.6 The **field team** shall refill holes and restore the sampling area according to instructions provided in the site-specific, sampling plan.

8.4.7 The **field team** shall check that all sampling locations are properly staked and that location identifications are readily visible on the location stakes.

9.0 LESSONS LEARNED

9.1 Before performing work described in this SOP, **RRES-RS Project participants** should go to the Department of Energy Lessons Learned Information Services home page, located at <http://www.tis.eh.doe.gov/ll/ll.html>, and/or to the LANL Lessons Learned Resources web page, located at http://www.lanl.gov/projects/lessons_learned/, and search for applicable lessons.

9.2 During work performance and/or after the completion of work activities, **RRES-RS Project participants**, as appropriate, shall identify, document, and submit lessons learned in accordance with the LANL, Lessons Learned System located at http://www.lanl.gov/projects/lessons_learned/.

10.0 RECORDS

The **field team leader** shall submit the following records to the Records Processing Facility, in accordance with QP-4.4:

- Daily Activity Logs
- Chain of Custody/Request for Analysis Forms
- Sample Collection Logs
- Completed Daily Drilling Summary Reports, as applicable
- Completed records from SOP-12.01 (Attachments A–J, as necessary)
- Field Notebooks (QP-5.7)

11.0 REFERENCES

To properly implement this SOP, **RRES-RS Project participants** should become familiar with the contents of the following documents located at http://erinternal.lanl.gov/home_links/Library_proc.shtml:

- RRES-RS Project, Quality Management Plan
- QP-2.2, Personnel Orientation and Training
- QP-4.4, Record Transmittal to the Records Processing Facility
- QP-5.7, Notebook Documentation for Environmental Restoration Technical Activities
- SOP-01.01, General Instructions for Field Investigations
- SOP-01.02, Sample Containers and Preservation
- SOP-01.03, Handling, Packaging, and Shipping of Samples
- SOP-01.04, Sample Control and Field Documentation
- SOP-01.05, Field Quality Control Samples
- SOP-01.06, Management of Environmental Restoration Project Wastes
- SOP-01.08, Field Decontamination of Drilling and Sampling Equipment
- SOP-04.01, Drilling Methods and Drill Site Management
- SOP-04.04, General Borehole Logging
- SOP-12.01, Field Logging, Handling, and Documentation of Borehole Materials

12.0 ATTACHMENTS

The **user** of this SOP may locate all forms associated with this procedure at <http://erinternal.lanl.gov/Quality/user/forms.asp>.

Attachment A: Equipment and Supplies Checklist for Sampling Soil with Hand Augers and Thin-Wall Tube Samplers (1 page)

Attachment B: Auger and Sampler Assembly Diagram (1 page)

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

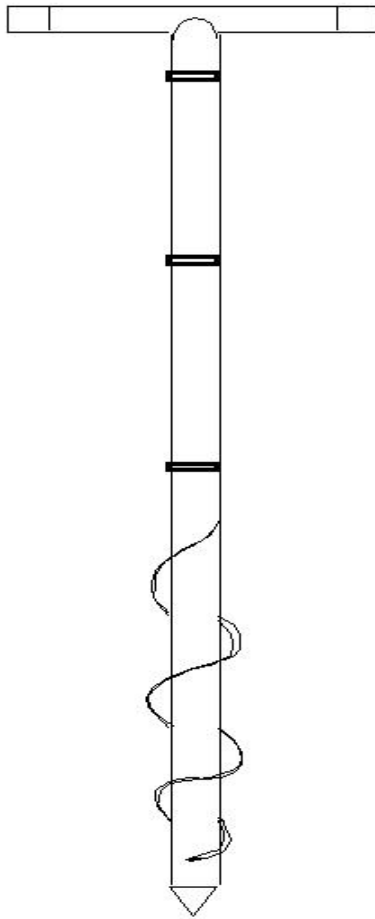
If you do not possess a token card or encounter problems, contact the RRES-ECR training specialist.

Attachment A: Equipment and Supplies Checklist for Sampling Soil with Hand Augers and Thin-Wall Tube Samplers

CHECK [✓]	ITEM DESCRIPTION	QUANTITY
<input type="checkbox"/>	Hand auger, auger bucket, T-bar handle, extensions.	
<input type="checkbox"/>	Sealing materials (plastic end caps, Teflon seals, non-adhesive silicon or Teflon tape, Ziploc bags).	
<input type="checkbox"/>	Thin-wall tube sampler.	
<input type="checkbox"/>	Work table surface.	
<input type="checkbox"/>	Knife/blade.	
<input type="checkbox"/>	Sampling tools.	
<input type="checkbox"/>	Buckets.	
<input type="checkbox"/>	Decontamination supplies.	
<input type="checkbox"/>	Deionized water.	
<input type="checkbox"/>	Chain of Custody/ Request for Analysis Forms.	
<input type="checkbox"/>	Sample Collection Logs.	
<input type="checkbox"/>	Any SSHASP-required PPE.	
<input type="checkbox"/>	Any additional supplies listed in associated procedures, as needed.	
<input type="checkbox"/>	En Core sampling tool and appropriate sample containers*.	
<input type="checkbox"/>	Current En Core sampling technical manuals/operating instructions (from SMO)*.	
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	* For VOC samples only.	

SOP-06.10, R3	Los Alamos National Laboratory RRES-Remediation Services Project
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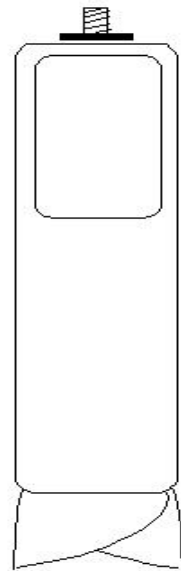
Attachment B: Auger and Sampler Assembly Diagram



Sampling Assembly



Thin-Walled Sampler



Auger Bucket

SOP-06.10, R3

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