

SECTION 013543.18 – ENVIRONMENTAL SPECIFICATION – SOILS

PART 1 – GENERAL

1.1 SUMMARY

- A. This specification section describes Subcontractor requirements that apply to those portions of projects at Lawrence Berkeley National Laboratory (LBNL) that involve environmental protection and environmental restoration activities associated with the excavation, grading, sampling, management, reuse, and/or disposal of soils, and to sampling soil vapor.
- B. All activities must be planned and conducted with full regard to protecting site workers, the public, and the environment, as well as complying with all applicable environmental laws and regulations.
- C. The Subcontractor is required to submit work products associated with activities covered under this specification, including but not limited to work packages, sampling and quality assurance plans, permit applications, and environmental reports to LBNL for review and approval by the LBNL Environmental Services Group (ESG) prior to initiation of the associated work activities.
- D. The Subcontractor shall provide the labor, materials, equipment, and supervision required to conduct work in accordance with all applicable federal, state, and local environmental laws and regulations, and LBNL policies protective of public health and the environment.

1.2 REGULATIONS

- A. 40 Code of Federal Regulations (CFR) §264 Resource Conservation and Recovery Act (RCRA)
 - 1. LBNL operates under a Resource Conservation and Recovery Act (RCRA) Part B Hazardous Waste Facility Permit issued by the California Environmental Protection Agency Department of Toxic Substances Control (DTSC). Section 3004 (u) of RCRA, as amended by Hazardous and Solid Waste Amendments (HSWA), requires that permits address corrective action for historical releases of contaminants to the environment. The LBNL permit requires that LBNL investigate and if necessary clean up contaminant releases throughout the entire LBNL facility under the oversight of the DTSC. The permit also has notification requirements should new areas of soil contamination be discovered.
- B. 40 CFR Subchapter R Part 761–Toxic Substances Control Act (TSCA)
 - 1. This regulation includes PCB investigation, reporting and cleanup requirements. The investigation and cleanup of releases of polychlorinated biphenyls (PCBs) to the environment at LBNL is conducted under the oversight of the United States Environmental Protection Agency (USEPA).
- C. 29 CFR §1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER)
 - 1. This regulation includes training requirements for workers engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards.
- D. Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 40 – Aeration of Contaminated Soil and Removal of Underground Storage Tanks (USTs)
 - 1. This Rule includes the requirements to limit the emission of compounds during the excavation and removal of soil that has been contaminated by organic chemical or petroleum chemical leaks or spills and requirements for the management of contaminated soil piles. Contaminated soil is defined as soil which has an organic content exceeding 50 ppm.
- E. Department of Energy (DOE) Orders
 - 1. Order 414.1D – Quality Assurance; and
 - 2. Order 458.1 – Radiation Protection of the Public and the Environment.

1.3 REFERENCES AND RELATED DOCUMENTS

This section provides a list of LBNL documents and procedures applicable or potentially applicable to activities covered by this specification section. Referenced LBNL documents can be downloaded from the links, if provided herein, and/or can be provided in electronic or hard copy format upon request. The overall applicable health and safety requirements for work conducted at LBNL are specified in the [LBNL Environmental, Health and Safety Manual, PUB-3000](#).

- A. The primary LBNL documents applicable to work conducted under this specification section are listed below. The Subcontractor shall comply with all requirements of these documents, at a minimum.
1. [The Soil Management Plan for Lawrence Berkeley National Laboratory \(SMP\)](#): The SMP establishes the requirements and specifies the process to help ensure that non-radioactively contaminated soil excavated at LBNL does not adversely impact human health or the environment and is handled, stored, reused or replaced on site, or disposed of offsite in accordance with applicable laws, regulations, and regulatory agency requirements. The SMP includes the soil screening criteria that are used to determine acceptable disposition options (i.e. onsite reuse or offsite disposal) for excavated soil.
 2. The LBNL *Soil Management Plan – Radiological Assessment* (radiological SMP): The radiological SMP establishes requirements for the management of known or potentially radiologically contaminated soil. The radiological SMP can be provided upon request.
 3. [The Import Fill Plan for Lawrence Berkeley National Laboratory \(IFP\)](#): The IFP provides the requirements and specifies the process for assessing the environmental quality and acceptability of fill imported from an off-site location to be used at LBNL. The IFP can be accessed at <https://ehs.lbl.gov/resource/documents/environmental-services/environmental-publications/>
 4. [Quality Assurance Program Plan for the Lawrence Berkeley National Laboratory Environmental Restoration Program](#): (QAPrP). The QAPrP establishes the quality assurance (QA) and quality control (QC) requirements applicable to the collection of environmental data at Lawrence Berkeley National Laboratory.
 5. [Hazardous, Mixed, and Radioactive Waste Management Specification](#): This specification provides the requirements for the onsite management and offsite disposal of hazardous, mixed, or radioactive waste soil.
- B. The following documents provide additional information potentially applicable to work conducted under this specification section associated with known or potentially radiologically contaminated soil:
1. Assessment Method for Radiological Release of Potentially Contaminated Soil and Sediment – ESG Technical Note TP5045; and
 2. Lawrence Berkeley National Laboratory Sitewide Soil Replacement Derived Concentration Guideline Levels (DCGLs) - ESG Technical Report DC-6021.
- C. Documentation of historical soil and soil vapor contamination at LBNL can be found at <https://ehs.lbl.gov/resource/environmental-restoration-program/regulatory-documents/>. These documents include the RCRA Facility Investigation (RFI) Reports, reports of environmental investigations, and Progress Reports that summarize the results of environmental activities conducted since 2004. Additional information on environmental contamination can be provided upon request.

1.4 LBNL ENVIRONMENTAL SERVICES GROUP (ESG) PROCEDURES

Following are the ESG procedures potentially applicable to work covered under this specification section:

- A. Environmental Document Preparation – Procedure 200;
- B. Drilling, Logging, Sampling, and Destroying Borings – Procedure 231;
- C. Soil Vapor Sampling and Sample Probe Installation – Procedure 238;
- D. Sample Processing, Packaging, and Transport – Procedure 254; and
- E. Environmental Sample Tracking and Data Management – Procedure 268.

1.5 SUBCONTRACTOR RESPONSIBILITIES

The Subcontractor is responsible for project oversight and execution of the work; conducting work in a safe manner, complying with regulatory agency requirements; preparing permit applications and/or notifications to

regulatory agencies, if required; and preparing and submitting documents required under this specification section to LBNL for ESG review and approval.

1.6 SUBMITTALS

This section provides a list of documents that may be required to be submitted by the Subcontractor to LBNL for ESG review and approval. Documents that will be submitted to a regulatory agency must be signed and stamped by a subcontractor's Professional Geologist (PG) in good standing with the Board of Professional Engineers, Land Surveyors, and Geologists, or other California licensed professional approved by LBNL.

A. Soil Management Report:

The Soil Management Report documents the status of soil management activities and must include the following information if applicable, at a minimum:

1. Documentation with maps, tables, and text of the locations and depths where samples were collected;
2. Documentation with maps, tables, and text of the locations, depths, and volumes where soil was excavated;
3. Documentation with maps, tables, and text of the locations and depths of any contaminated soil that was reused onsite;
4. Copies of all laboratory analytical reports, including chain-of-custody (COC) records;
5. Tables with analytical results, detection limits, soil screening levels, and acceptable options for disposition of soil;
6. Final disposition (e.g., specific disposal facility or onsite reuse location) of all excavated soil;
7. Sources of and test results for any imported backfill and figures showing locations where backfill was placed; and
8. Copies of all applicable waste profiling, waste acceptance applications and approvals, and waste manifests, along with transport and disposal documentation.

B. Environmental Release Reporting

LBNL is required to notify DTSC orally within 24 hours and provide a written report within 10 days should a previously unknown area of soil contamination be discovered that poses a potential risk to human health or the environment. If during the course of conducting work under this specification section the Subcontractor identifies an area of soil contamination meeting the notification requirement, the Subcontractor shall inform LBNL as soon as practicable. The information provided must include the location, concentrations of contaminants detected above the risk screening levels, and the laboratory analytical reports. Based on the information provided, ESG will determine whether DTSC notification is required.

If LBNL determines that DTSC notification is required, the Subcontractor shall submit a report to LBNL within 5 days of LBNL's verbal notification that includes the following information at a minimum:

1. Figures showing the locations, depths, and concentrations of all samples collected highlighting contamination detected at concentrations greater than screening levels;
2. Tables of analytical results including screening levels with concentrations above screening levels highlighted;
3. An assessment of the immediate risk to human and the environment; and
4. Text providing a summary of the activity being conducted and describing the figures and tables.

C. Soil Characterization Documents

The following is a list of documents that may be required for a project involving the assessment of potential soil contamination or characterizing the magnitude and extent of contamination. Additional or alternative documents may be required depending on the scope of the project and regulatory

requirements specific to the activity being conducted. As an example, for projects involving the assessment or cleanup of PCBs, TSCA specific reporting requirements apply. The contents of all documents must comply with the most recent regulatory agency guidance and requirements and LBNL policies.

1. **Quality Assurance Project Plan (QAPP):** The Quality Assurance Project Plan (QAPP) provides the project quality assurance requirements for collecting and analyzing environmental data associated with the investigation and cleanup, if required, of soil and soil vapor contamination. The QAPP may be a component of the Sampling and Analysis Plan (SAP). The QAPP must comply with EPA Requirements for Quality Assurance Project Plans EPA QA/R-5 and the LBNL [Quality Assurance Program Plan for the Environmental Restoration Program](#) (QAPrP) and meet the requirements of DOE Order 414.1D Quality Assurance.
2. **Sampling and Analysis Plan:** The Subcontractor shall prepare a Sampling and Analysis Plan (SAP) when excavating more than 100 cubic yards of soil or when soil characterization is conducted in situ. Guidance for preparing a SAP is provided in EPA Region 9 Sampling and Analysis Plan Guidance and Template Version 4, General Projects R9QA/009, and the DTSC Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). At a minimum, the SAP must establish data quality objectives (DQOs) and include, but not be limited to, the following:
 - a. A description of the activities that require sampling and analysis;
 - b. Identification of the contaminants of potential concern (COPCs);
 - c. Sampling design, including specification of the number, locations, and depths where samples will be collected;
 - d. Quality assurance/quality control requirements;
 - e. Figures showing planned sampling locations;
 - f. Sampling and analysis approach, including description of the sampling equipment and requirements for collecting, labeling, storing, and transporting samples to the laboratory;
 - g. Decontamination requirements; and
 - h. Sample analysis requirements, the analytical methods to be used, holding times, and the required reporting limits.
3. **Characterization Report:** The Characterization Report provides the results of the sampling conducted in compliance with SAP requirements and must include the following information, at a minimum:
 - a. Maps showing the locations where samples were collected, concentrations of analytes detected, and the extent of contamination above screening levels;
 - b. Tables of the sampling locations, depths, concentrations, and screening levels. highlighting concentrations exceeding screening levels
 - c. Historical results, as necessary, to show that the nature and extent of contamination has been adequately characterized;
 - d. Evaluation of potential data gaps and recommendations for additional work, if required;
 - e. Copies of laboratory analytical reports including COC records;
 - f. Tables with analytical results highlighting concentrations above screening levels, including laboratory reporting limits for non-detected sample results;
 - g. A discussion of deviations from SAP requirements; and
 - h. Recommendations for the final disposition (e.g., specific disposal facility) of each waste stream based on data and other information obtained during the Characterization Work.
4. **Summary Report for Attachment to ERP Annual Progress Report:** LBNL is required to submit an Annual Progress Report to the DTSC by the end of February that describes the environmental activities conducted during the previous fiscal year ending September 30. The Subcontractor's shall submit submit a summary report to LBNL of soil and/or soil vapor sampling activities conducted by the Subcontractor by December 31st for the preceding fiscal year to be included as an attachment to the Annual Progress Report. The summary report must include but is not limited to the following:
 - a. Tables and figures summarizing the sampling and analytical results; and

- b. Text describing the purpose of the sampling and discussing the sampling results.
5. Plan for the Excavation and Removal of Potentially Contaminated Underground Piping:
Subcontractors involved in excavation projects that may encounter potentially contaminated underground piping must prepare a plan for the excavation and removal of the piping. The plan must include the following requirements, at a minimum:
- a. Exposing the pipe for visual observation;
 - b. Inspecting the exposed piping for possible leak locations;
 - c. Soil screening for potential contaminants and worker safety;
 - d. Removing pipe segments using methods for preventing releases and containing leaking pipe contents;
 - e. Sampling;
 - f. Training; and
 - g. Documenting sampling locations.

1.7 GENERAL REQUIREMENTS FOR SUBCONTRACTOR SUBMITTALS

- A. Depending on the quality of the document and whether regulatory agency approval is required, an internal draft, a revised draft, a final, and a revised final document may be required.
- B. The Subcontractor shall prepare responses to LBNL and regulatory agency comments on the document, if applicable.
- C. LBNL must approve any written communication with regulatory agencies and an LBNL representative must be present for any verbal communication.
- D. Subcontractor must allow a minimum of 10 working days for review by LBNL. Incomplete submittals and/or documents may result in longer review times and/or rejection.
- E. The Subcontractor shall revise the document in accordance with LBNL comments and LBNL approved responses to regulatory agency comments.
- F. Any deviations from requirements specified in the approved document must be justified in writing and approved by LBNL prior to implementation.

1.8 SUBCONTRACTOR TRAINING

- A. Training requirements for Subcontractor personnel include, but are not limited to:
 - 1. Workers that will be potentially exposed to hazardous substances must possess a 40-hour HAZWOPER training certificate and have received a minimum of three days field experience under the direct supervision of a trained supervisor.
 - 2. Workers that are onsite only occasionally for a specific limited task (such as, but not limited to, land surveying or geophysical surveying) and who are unlikely to be exposed over permissible exposure limits (PELs) must possess a 24-hour occasional site worker HAZWOPER certificate and one day of field experience under the direct supervision of a trained, experienced supervisor as specified in 29 CFR 1910.120.
 - 3. The Supervisor of HAZWOPER personnel must have 8-hour HAZWOPER Supervisor training in addition to the 40-hour training.
 - 4. All HAZWOPER-certified personnel must also possess a current (within the last year) 8- hour HAZWOPER refresher training certification.

1.9 SUBCONTRACTOR CERTIFICATIONS

- A. Certifications required of the assigned Subcontractor and personnel include, but are not limited to:
 - 1. Environmental investigation and sampling work associated with the excavation, sampling, management, reuse, and/or disposal of soils and soil vapor sampling must be performed under the supervision of a California licensed PG or a licensed California PE-Civil in good standing with the Board of Professional Engineers, Land Surveyors, and Geologists, or licensed professional approved by LBNL with requisite training and experience in conducting environmental investigations.

2. Sample locations must be surveyed either by a licensed surveyor in good standing with the Board of Professional Engineers, Land Surveyors, and Geologists or LBNL-approved personnel with the appropriate training in surveying and mapping.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION

3.1 PERMITS AND NOTIFICATIONS

Unless otherwise specified by LBNL, permits and regulatory agency notifications will be prepared by the Subcontractor and submitted to the applicable agency by LBNL. Required permits and notifications' may include, but are not limited to, the following:

- A. City of Berkeley Toxics Management Division application for Well Construction, Installation, Destruction, or Modification Permit
 1. The Subcontractor shall repair, decommission, or replace, as LBNL determines appropriate, any groundwater monitoring well that is damaged by Subcontractor activities.
- B. BAAQMD Regulation 8, Rule 40 notification
 1. The Subcontractor must provide BAAQMD notice as early as possible upon detection of contaminated soil, to be followed by written verification not later than 30 working days after excavation is completed. Contaminated soil is defined as soil which has an organic content exceeding 50 ppm.

3.2 ANALYTICAL LABORATORY AND REPORTING REQUIREMENTS

- A. All environmental samples must be analyzed at a California Environmental Laboratory Accreditation Program (ELAP) certified laboratory under contract with LBNL. Exceptions require pre-approval by LBNL and must be ELAP certified and accredited by a third party overseen by the DOE. Laboratories analyzing samples with potential radionuclide contamination must have a radioactive materials license. Contracted laboratories must provide EDDs that are compatible with LBNL's EarthSoft EQulS database.
- B. The Subcontractor must coordinate sample planning, (e.g. sample numbering, COC preparation, and sample label preparation), with the LBNL Data Manager, in accordance with requirements of LBNL's EQulS data management system.

3.3 SURVEY REQUIREMENTS

- A. The locations of excavations, soil sampling, and soil reuse must be accurately located and determined by either a California-licensed land surveyor or other appropriate method approved by the LBNL. Coordinates and elevations of the ground surface shall be surveyed to the nearest 0.01 foot in the North American Datum of 1983 (NAD1983) coordinate system and North American Vertical Datum of 1988 (NAVD1988) vertical datum. Existing control points will be identified by LBNL. The Subcontractor shall provide the final survey data to LBNL in an Excel spreadsheet format for incorporation into LBNL's EQulS database.

END OF SECTION 013543.18

NTS: Add a change log to the end of each section. This is for internal use only and the A/E will delete this from the project set of specifications.

BUILDING NO.
PROJECT NAME

SC#

Date	Reviewer	Paragraph	Summary of update
3/18/2022	EBS		<i>Master Specifications Update</i>
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