

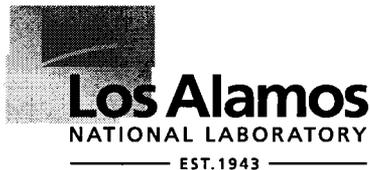
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# Field Implementation Plan for Cañon de Valle Aggregate Area Investigation, TA-14



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Prepared by the Environmental Programs Directorate

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# Field Implementation Plan for Cañon de Valle Aggregate Area Investigation, TA-14

April 2011

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## **1.0 INTRODUCTION**

This field implementation plan (FIP) describes the environmental characterization activities for implementing the Investigation Work Plan for Canon de Valle Aggregate Area at Technical Area (TA)-14 to comply with the New Mexico Environment Department (NMED) Compliance Order on Consent dated March 1, 2005. The investigation work plan (LANL 2006, 091698) identifies and describes the activities needed to complete the investigation of multiple solid waste management units (SWMUs) and areas of concern (AOCs) within the aggregate area. Since the work plan was written and approved in 2006, NMED and the Los Alamos National Laboratory's (LANL or the Laboratory) Environmental Program (EP) Directorate have revised and improved sampling activities. This FIP contains deviations to the investigation work plan that make the FIP more consistent with the current approach to collecting analytical samples.

The objective of the field activities is to define the nature and extent of releases associated with the SWMUs or AOCs by conducting sampling and data analysis of sampling results to evaluate the potential need for corrective action.

The project consists of the following tasks:

- Geodetic survey – This task involves surveying new sampling locations using a global positioning system (GPS) unit.
- Mobilization – This task involves mobilizing equipment and supplies to the site.
- Sampling of soils and tuff with a hand auger – This task involves collecting soil and tuff samples with a hand auger at locations where the sample depth is typically less than 8 ft.
- Sampling of soils and tuff with a hollow stem auger drill rig – This task involves collecting soil and tuff samples with a hollow stem auger drill rig at locations where the sample depth is typically greater than 8 ft.
- Septic tank and drainline removal – This task involves removing the septic tank and associated drainlines from SWMU 14-007.
- Waste management – This task involves the management and control of the wastes generated during field activities.
- Borehole abandonment – This task involves the abandonment of the sample boreholes.
- Equipment decontamination – This task involves the removal of any residual material adhering to the drilling and sampling equipment.
- Site restoration – This task involves the restoration of the sites, reseeding, if necessary, and patching cement/concrete, if necessary.
- Demobilization – This task involves demobilizing equipment and supplies from the site.

### **1.1 Access Control**

TA-14 is located on LANL property, requiring all personnel to have Department of Energy (DOE) badges. All of the work area is located within a limited access area, which requires all personnel to show their badges to the guards in the guard station and be escorted by L- or Q-cleared personnel who have the escorting training (LANL course 18366). All field activities will be coordinated through the Los Alamos

National Security, LLC (LANS) Subcontract Technical Representative (STR). Prior to any work, the STR will ensure the work is scheduled on the plan-of-the-day and the plan-of-the-week for the appropriate facility. At least one method of communication (two-way radio) shall be onsite whenever staff is conducting field work. All team members will check in at the TA-15 Access Control Office (ACO) prior to entering TA-14, and will follow the TA-15 ACO procedures. Team will communicate with TA-15 ACO with their radio.

All personnel conducting field work shall follow current LANL Field Services (FS) communication policy. During field activities, contact the TA-64 Operations Center via radio:

- Upon arrival at the site;
- Every two hours during the shift;
- Whenever there is a change in the number of personnel; and
- When all personnel depart the site.

## **2.0 PROPOSED INVESTIGATION ACTIVITIES**

### **2.1 AOC 14-001(a) – Inactive Pull Box**

The Cañon de Valle Aggregate Area investigation work plan recommended AOC 14-001(a) for no further action because the site had never been used for management of solid or hazardous wastes and no discharge or release of contaminants had occurred (LANL 2006, 091698). The approval with modifications did not concur with the no further action recommendation because of the potential for this site to have had releases of PCBs from the capacitor discharge units used at the site (NMED 2007, 095478). To evaluate whether releases of PCBs have occurred, two samples will be collected from one location immediately adjacent to the pull box and analyzed for PCBs. Samples will be collected at depths of 3.0 ft to 4.0 ft and 6.0 ft to 7.0 ft bgs.

### **2.2 AOC 14-001(b) – Inactive Pull Box**

The Cañon de Valle Aggregate Area investigation work plan recommended AOC 14-001(b) for no further action because the site had never been used for management of solid or hazardous wastes and no discharge or release of contaminants had occurred (LANL 2006, 091698). The approval with modifications did not concur with the no further action recommendation because of the potential for this site to have had releases of PCBs from the capacitor discharge units used at the site (NMED 2007, 095478). This pull box is no longer present at the site. To evaluate whether releases of PCBs have occurred, two samples will be collected at the location of the former pull box and analyzed for PCBs. Samples will be collected at depths of 3.0 ft to 4.0 ft and 6.0 ft to 7.0 ft bgs.

### **2.3 AOC 14-001(c) – Inactive Pull Box**

The Cañon de Valle Aggregate Area investigation work plan recommended AOC 14-001(c) for no further action because the site had never been used for management of solid or hazardous wastes and no discharge or release of contaminants had occurred (LANL 2006, 091698). The approval with modifications did not concur with the no further action recommendation because of the potential for this site to have had releases of PCBs from the capacitor discharge units used at the site (NMED 2007, 095478). To evaluate whether releases of PCBs have occurred, two samples will be collected from one location immediately adjacent to the pull box and analyzed for PCBs. Samples will be collected at depths of 3.0 ft to 4.0 ft and 6.0 ft to 7.0 ft bgs.

#### **2.4 AOC 14-001(d) – Inactive Pull Box**

The Cañon de Valle Aggregate Area investigation work plan recommended AOC 14-001(d) for no further action because the site had never been used for management of solid or hazardous wastes and no discharge or release of contaminants had occurred (LANL 2006, 091698). The approval with modifications did not concur with the no further action recommendation because of the potential for this site to have had releases of PCBs from the capacitor discharge units used at the site (NMED 2007, 095478). To evaluate whether releases of PCBs have occurred, two samples will be collected from one location immediately adjacent to the pull box and analyzed for PCBs. Samples will be collected at depths of 3.0 ft to 4.0 ft and 6.0 ft to 7.0 ft bgs.

#### **2.5 AOC 14-001(e) – Inactive Pull Box**

The Cañon de Valle Aggregate Area investigation work plan recommended AOC 14-001(e) for no further action because the site had never been used for management of solid or hazardous wastes and no discharge or release of contaminants had occurred (LANL 2006, 091698). The approval with modifications did not concur with the no further action recommendation because of the potential for this site to have had releases of PCBs from the capacitor discharge units used at the site (NMED 2007, 095478). To evaluate whether releases of PCBs have occurred, two samples will be collected from one location immediately adjacent to the pull box and analyzed for PCBs. Samples will be collected at depths of 3.0 ft to 4.0 ft and 6.0 ft to 7.0 ft bgs.

#### **2.6 AOC 14-001(g) – Active Firing Site**

The Cañon de Valle Aggregate Area investigation work plan indicated that investigation of this active firing site would not be undertaken until testing operations had ceased (LANL 2006, 091698). The approval with modifications required the proposed investigation activities in the work plan to be implemented because this site was not deferred under the Consent Order (NMED 2007, 095478). Since that time, the Laboratory has implemented an alternate approach for investigating active firing sites that are not on the Consent Order deferred sites list (e.g., AOC 36-004[c] in the approved work plan for Potrillo and Fence Canyons Aggregate Area [LANL 2009, 106657; NMED 2009, 106677] and SWMU 39-004[d] in the approved work plan for North Ancho Canyon Aggregate Area [LANL 2007, 101897; NMED 2008, 098948]). This approach involves sampling in drainages downgradient of the sites to characterize contaminant migration from the sites, but does not include nature and extent sampling within the active firing site. This approach will be implemented at AOC 14-001(g) and 30 samples will be collected from 15 locations in the four drainages downgradient of the site. Sampling intervals at each location will be 0.0 ft to 1.0 ft and 2.0 ft to 3.0 ft bgs. Consistent with more recent investigations of firing sites, more analytical suites are included than originally proposed in the investigation work plan. Additional analytical suites are nitrate, cyanide, VOCs, SVOCs, PCBs (20% of samples), isotopic uranium, and strontium-90.

#### **2.7 SWMU 14-002(f) – Former Structure**

SWMU 14-002(f) is a former 6-ft x 6-ft x 6-ft junction box shelter (structure 14-12) that was constructed in 1945 and removed in 1952. SWMU 14-002(f) is associated with SWMU 14-002(b), an active firing site whose investigation is deferred under the Consent Order. The Cañon de Valle Aggregate Area investigation work plan proposed sampling within and below the footprint of the former structure (LANL 2006, 091698). Due to the nature of potential contamination at this site, however, the investigation will be delayed until the investigation of SWMU 14-002(b). That is, the RFI Work Plan for OU 1085 does not identify any releases from SWMU 14-002(f) itself, but instead notes that the site may be contaminated because of its close proximity to other sites (LANL 1994, 034755, p. 5-3-4). Therefore, the source of potential contamination at this site appears to be the adjacent deferred firing sites, including SWMU

14-002(b). Contamination at this site will be characterized during the investigation of SWMU 14-002(b) when the firing site is no longer active.

## **2.8 SWMU 14-009 – Surface Disposal Area**

The Cañon de Valle Aggregate Area investigation work plan proposed removal of soil and debris from the surface disposal area within the footprint of SMWU 14-009 followed by collection of confirmatory samples. Sampling in the drainage area below the site was also proposed. Six sample locations were proposed in the disposal area and five in the drainage. Two depth intervals (1.5 ft to 2.5 ft and 2.5 to 3.0 ft bgs) were proposed for the disposal area and four (0.0 ft to 0.5 ft, 1.0 ft to 1.5 ft, 1.5 ft to 2.0 ft, and 2.5 ft to 3.0 ft bgs) in the drainage. Based on a recent inspection of the site, the disposal area appeared larger than depicted in the investigation work plan. Therefore, sampling is proposed at 10 locations within the disposal area, 4 locations on the bench at the bottom of the slope below the disposal area, and 3 locations in the drainage below the bench. Based on recent experience with sampling for vertical extent, sampling intervals proposed in the investigation work plan were revised to provide greater distance between samples. Sampling intervals were revised to 0.0 ft to 1.0 ft bgs and the top ft of unweathered tuff below the sand and fill. The sampling intervals for the drainage locations were revised to 0.0 ft to 1.0 ft and 2.0 ft to 3.0 ft bgs. Isotopic uranium, gamma-emitting radionuclides, strontium-90, and PCBs (20% of samples) were added to the analytical suites.

Remediation of the surface disposal area may occur during the Phase II investigation based on the results of the analytical data.

## **2.9 SWMU 14-010 – Former Sump, Drainline, and Outfall**

SWMU 14-010 is a drainline, sump, and outfall associated with former structure 14-2, which was removed in 1973 during construction of the buildings currently at the site (buildings 14-39 and 14-43). The Cañon de Valle Aggregate Area investigation work plan proposed sampling at the locations of the former sump and drainline and in the drainage below the drainline outfall (LANL 2006, 091698). Sample locations were based on locations from previous investigations. A recent review of historical engineering drawings has provided better information on the location of former structure 14-2 and the sump, drainline, and outfall. The sump and drainline appear to have been removed and the location of the sump and drainline significantly regraded during construction of the current buildings. Therefore, sump and drainline cannot be sampled and samples will be collected at the location of the former outfall and four locations in the drainage downgradient of the outfall. Based on recent experience with sampling for vertical extent, sampling intervals proposed in the investigation work plan were revised to provide greater distance between samples. Sample intervals in the drainage were revised from 0.0 ft to 0.5 ft, 1.0 ft to 1.5 ft, 1.5 ft to 2.0 ft, and 2.5 ft to 3.0 ft bgs to 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft bgs. Isotopic uranium, gamma-emitting radionuclides, strontium-90, and PCBs (20% of samples) were added to the analytical suites.

## **2.10 AOC C-14-008 – Former Storage Magazine**

The Cañon de Valle Aggregate Area investigation work plan recommended AOC C-14-008 for no further action because the site had previously been characterized and there was no indication of a release (LANL 2006, 091698). The approval with modifications did not concur with the no further action recommendation because of the recommendation was made on the basis of screening-level data (NMED 2007, 095478). Therefore, additional sampling will be performed at this site. Consistent with previous investigations at similar structures, samples will be collected at two locations within the footprint of the former structure and at four step-out locations around the footprint. At each location, samples will be collected at depth intervals of 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft bgs and analyzed for TAL metals, cyanide, nitrate, perchlorate, VOCs, SVOCs, explosive compounds, and PCBs.

### **2.11 SWMU 14-002(c) – Former Control Building**

SWMU 14-002(c) will be sampled at the locations specified in the Cañon de Valle Aggregate Area investigation work plan (LANL 2006, 091698). Based on recent experience with sampling for vertical extent, sample intervals have been revised to provide greater distance between samples. Samples within the building footprint will be collected at depth intervals of 0.0 ft to 1.0 ft and 2.0 ft to 3.0 ft bgs. Samples from the berm outside the building will be collected at depth intervals of 1.0 ft to 2.0 ft bgs and into the top ft of unweathered tuff beneath the berms. The analytical suites in the investigation work plan have been revised to add nitrate, VOCs, SVOCs, isotopic uranium, gamma-emitting radionuclides, strontium-90, and PCBs (20% of samples).

### **2.12 AOC 14-004(a) – HE Magazine**

AOC 14-004(a) will be sampled at the locations specified in the Cañon de Valle Aggregate Area investigation work plan (LANL 2006, 091698). Based on recent experience with sampling for vertical extent, sample intervals have been revised to provide greater distance between samples. Samples will be collected at depth intervals of 0.0 ft to 1.0 ft and 2.0 ft to 3.0 ft bgs. The analytical suites in the investigation work plan have been revised to add PCBs.

### **2.13 SWMU 14-006 – Inactive Sump, Drainlines, and Outfall**

The Cañon de Valle Aggregate Area investigation work plan proposed removal of the sump and drainline at this site, collection of post-excavation confirmatory samples, and collection of samples from the drainage downgradient of the drainline outfall. Two sample locations were proposed in the excavation and six in the drainage. Based on a recent inspection of the site, the sump has been filled with concrete and will not be removed. Instead, samples will be collected at two locations along the inlet drainline, where drainlines enter and exit the sump, at two locations along the outlet drainline, and at one location adjacent to the sump. Samples will also be collected at the outfall and three additional downgradient locations. Based on recent experience with sampling for vertical extent, sampling intervals proposed in the investigation work plan were revised to provide greater distance between samples. Samples will be collected 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft below the drainlines or below the bottom of the sump. Drainage samples will be collected at intervals of 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft bgs. The analytical suites in the investigation work plan have been revised to add isotopic uranium, gamma-emitting radionuclides, strontium-90, and PCBs (20% of samples).

### **2.14 SWMU 14-003 – Former Burning Ground**

The Cañon de Valle Aggregate Area investigation work plan recommended no further sampling for SWMU 14-003 because a previous no further action request had been made to NMED (LANL 2006, 091698). The approval with modifications indicated that NMED had reviewed the previous request and determined that additional investigation was needed (NMED 2007, 095478). Based on a recent inspection, it appears that grading of the site has occurred since the 1997 Voluntary Corrective Action that was the basis of the previous no further action request. Therefore, the results of the past sampling are not representative of current conditions and new sampling locations are proposed. Samples will be collected at 7 locations within the footprint of the former burning area, 4 step-out locations around the former burning area, and 2 locations downgradient of the site. Within the footprint of the former burning area, samples will be collected at depth intervals of 0.0 ft to 1.0 ft bgs and into the top ft of unweathered tuff. Samples at step-out and downgradient locations will be collected at depth intervals of 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft bgs. All samples will be analyzed for TAL metals, cyanide, nitrate, perchlorate, VOCs, SVOCs, explosive compounds, dioxins and furans, isotopic uranium, gamma-emitting radionuclides, strontium-90, and PCBs (20% of samples).

### **2.15 SWMU 14-007 – Inactive Septic Tank, Drainlines, Outfall, and Drain Field**

The Cañon de Valle Aggregate Area investigation work plan proposed removal of the septic tank and drainline at this site, collection of post-excavation confirmatory samples, and collection of samples at the drainline outfall. Two sample locations were proposed in the excavation and two at the drainline outfall. The sampling approach presented in the investigation work plan has been revised for consistency with the approach to investigating septic systems that has been used in more recent investigation work plans. The septic tank will be removed and samples will be collected at the septic tank inlet and outlet and beneath the septic tank. Samples will be collected at 2 locations along the inlet drainline and 4 locations along the outlet drainlines after removal of the drainlines. Samples will also be collected at 8 locations within and around the drain field and 4 locations at and downgradient of the outfall. Based on recent experience with sampling for vertical extent, sampling intervals proposed in the investigation work plan were revised to provide greater distance between samples. Samples will be collected 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft below the drainlines or below the bottom of the septic tank. Drain field samples will be collected 0.0 ft to 1.0 ft, 3.0 ft to 4.0 ft, and 6.0 ft to 7.0 ft below the drainfield. The analytical suites in the investigation work plan have been revised to add isotopic uranium, gamma-emitting radionuclides, strontium-90, and PCBs (20% of samples).

### **2.16 AOC C-14-001 – Former Storage Magazine**

The Cañon de Valle Aggregate Area investigation work plan recommended AOC C-14-001 for no further action because the site had previously been characterized and there was no indication of a release (LANL 2006, 091698). The approval with modifications did not concur with the no further action recommendation because inadequate site characterization data were available (NMED 2007, 095478). Consistent with previous investigations at similar structures, samples will be collected at one location within the footprint of the former structure and at four step-out locations around the footprint. At each location, samples will be collected at depth intervals of 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft bgs and analyzed for TAL metals, cyanide, nitrate, perchlorate, VOCs, SVOCs, explosive compounds, and PCBs (20% of samples).

### **2.17 AOC C-14-002 – Former Control Building**

AOC C-14-002 is a former 14-ft x 8-ft x 8-ft control building (structure 14-3) that was constructed in 1944 and removed in 1952. The Cañon de Valle Aggregate Area investigation work plan recommended AOC C-14-002 for no further action because there was no known use of hazardous materials or known releases at the site (LANL 2006, 091698). The approval with modifications did not concur with the no further action recommendation because no characterization of the site has been performed (NMED 2007, 095478). Due to the nature of potential contamination at this site, the investigation of this site will be delayed until the investigation of the nearby deferred active firing sites. That is, the RFI Work Plan for OU 1085 does not identify any releases from AOC C-14-002 itself, but instead notes the area may have residual contamination because of its location (LANL 1994, 034755, p. 5-3-5). Therefore, the source of potential contamination at this site appears to be the adjacent deferred active firing sites, including SWMUs 14-002(a) and 14-002(b). Contamination at this site will be characterized during the investigation of SWMUs 14-002(a) and 14-002(b) when the firings sites are no longer active.

### **2.18 AOC C-14-003 – Former HE Prep Shop**

The Cañon de Valle Aggregate Area investigation work plan proposed collection of samples at two locations within the footprint of this former structure. This sampling approach has been revised for consistency with previous investigations of similar structures and to better define lateral extent. Samples will be collected at one location within the footprint of the former structure and at four step-out locations

around the footprint. Because the area has since been covered with fill since removal of the structure, samples at each location will be collected at depth intervals of 4.0 ft to 5.0 ft and 7.0 ft to 8.0 ft bgs to ensure they are collected below the fill. All samples will be analyzed for TAL metals, cyanide, nitrate, perchlorate, VOCs, SVOCs, explosive compounds, and PCBs (20% of samples).

#### **2.19 AOC C-14-004 – Former Electronics Shop**

The Cañon de Valle Aggregate Area investigation work plan proposed collection of samples at two locations within the footprint of this former structure. This sampling approach has been revised for consistency with previous investigations of similar structures and to better define lateral extent. Samples will be collected at two locations within the footprint of the former structure and at four step-out locations around the footprint. At each location, samples will be collected at depth intervals of 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft bgs and analyzed for TAL metals, cyanide, nitrate, perchlorate, VOCs, SVOCs, explosive compounds, and PCBs (20% of samples).

#### **2.20 AOC C-14-005 – Former Storage Magazine**

The Cañon de Valle Aggregate Area investigation work plan proposed collection of samples at two locations within the footprint of this former structure. This sampling approach has been revised for consistency with previous investigation of similar structures and to better define lateral extent. Samples will be collected at one location within the footprint of the former structure and at four step-out locations around the footprint. At each location, samples will be collected at depth intervals of 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft bgs and analyzed for TAL metals, cyanide, nitrate, perchlorate, VOCs, SVOCs, explosive compounds, and PCBs (20% of samples).

#### **2.21 AOC C-14-007 – Former Storage Building**

The Cañon de Valle Aggregate Area investigation work plan proposed collection of samples at two locations within the footprint of this former structure. This sampling approach has been revised for consistency with previous investigations of similar structures and to better define lateral extent. Samples will be collected at one location within the footprint of the former structure and at four step-out locations around the footprint. At each location, samples will be collected at depth intervals of 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft bgs and analyzed for TAL metals, cyanide, nitrate, perchlorate, VOCs, SVOCs, explosive compounds, and PCBs (20% of samples).

#### **2.22 AOC C-14-009 – Former Storage Magazine**

The Cañon de Valle Aggregate Area investigation work plan recommended AOC C-14-009 for no further action because the site had previously been characterized and there was no indication of a release (LANL 2006, 091698). The approval with modifications did not concur with the no further action recommendation because the recommendation was made on the basis of screening-level data (NMED 2007, 095478). Consistent with previous investigations at similar structures, samples will be collected at one location within the footprint of the former structure and at four step-out locations around the footprint. At each location, samples will be collected at depth intervals of 0.0 ft to 1.0 ft and 3.0 ft to 4.0 ft bgs and analyzed for TAL metals, cyanide, nitrate, perchlorate, VOCs, SVOCs, explosive compounds, and PCBs (20% of samples).

### **3.0 INVESTIGATION METHODS**

#### **3.1 Geodetic Surveys**

Geodetic surveys will be conducted by a land surveyor in accordance with the latest version of SOP-03.11, Coordinating and Evaluating Geodetic Surveys, to locate historical structures and to document field activities such as sampling and excavation locations. All coordinates will be expressed as State Plane Coordinate System 83, New Mexico Central, U.S. ft coordinates

#### **3.2 Field Screening**

The primary field screening methods to be used on surface and subsurface samples include (1) visual examination, (2) radiological screening, and (3) vapor screening for VOCs using a photoionization detector (PID). Additional screening for release-specific characteristics, such as HE, may be conducted using field analytical methods.

##### **3.2.1 Volatile Organic Compounds**

Screening will be conducted using a PID capable of measuring quantities as low as 1 ppm. Vapor screening of soils, sediments, and subsurface core for VOCs will be conducted using a PID equipped with an 11.7 eV lamp. All samples will be screened for VOCs in headspace gas in accordance with SOP-06.33, Headspace Vapor Screening with a Photo Ionization Detector.

The PID will be calibrated daily to the manufacturer's standard for instrument operation, and the daily calibration results will be documented in the field logbooks. All instrument background checks, background ranges, and calibration procedures will be documented daily in the field logbooks in accordance with SOP-5181, "Notebook Documentation for Waste and Environmental Services Technical Field Activities."

##### **3.2.2 Radioactivity**

Field screening for radioactivity will be conducted for health and safety purposes at all sites. Radiological screening will target gross-alpha, -beta, and -gamma radiation. Field screening for alpha, beta, and gamma radiation will be conducted within 1 in. from the sample material and will be performed using appropriate field instruments. Instruments will be calibrated in accordance with the Laboratory's Health Physics Operations Group procedures. All instrument calibration activities will be documented daily in the field logbooks in accordance with SOP-5181, "Notebook Documentation for Waste and Environmental Services Technical Field Activities."

##### **3.2.4 HE Screening**

HE spot tests will be used as a preliminary screening tool for samples. For samples that test positive in the HE spot test, the Strategic Diagnostics, Inc., EnSYS soil test kit will be used to field screen quantitatively for RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine) and TNT (2,4,6-trinitrotoluene). All assays will be conducted following the manufacturer's instructions, including equipment calibration, equipment use, sample dilution, and reagent storage. An elevated immunoassay result is defined as two times the estimated quantitation limit (Approximately 2 ppm). Immunoassay field-screening results will be recorded on the logs.

### **3.3 Quality Assurance/Quality Control Samples**

Field duplicates will be collected at a rate of 10 percent. Equipment blanks (field rinsates) from all sampling apparatus will be collected at a frequency of 10 percent. Trip blanks will be collected at a frequency of one per day or one per twenty samples collected for VOC analysis, whichever is more frequent.

### **3.4 Health and Safety**

The field investigations described in this investigation work plan will comply with all applicable requirements pertaining to worker health and safety. An integrated work document and a site-specific health and safety plan will be in place before fieldwork is performed.

### **3.5 Borehole Abandonment**

Hand auger holes will be backfilled with cuttings from the same location. All boreholes will be abandoned by filling the borehole with a bentonite/concrete mixture in accordance with SOP-5034, "Monitoring Well and RFI Borehole Abandonment".

### **3.6 Equipment Decontamination**

Equipment for sampling will be decontaminated before and after sampling activities (as well as between hand-augered subsurface samples) to minimize the potential for cross-contamination. Dry decontamination methods are preferred and will be given priority because they do not generate liquid wastes. Residual material adhering to the equipment will be removed using dry decontamination methods, including wire-brushing and scraping, as described in SOP-5061, "Field Decontamination of Equipment." Dry decontamination of sampling equipment may include use of a non-phosphate detergent such as Fantastik on a paper towel, and the equipment is wiped so that no liquid waste is generated.

If dry decontamination methods are not effective, equipment may be decontaminated by steam-cleaning or hot water pressure-washing, as described in SOP-5061. Wet decontamination methods will be conducted on a high-density polyethylene liner on a temporary decontamination pad. Cleaning solutions and wash water will be collected and contained for proper disposal. Decontamination solutions will be sampled and analyzed to determine the final disposition of the wastewater and the effectiveness of the decontamination procedures.

### **3.7 Investigation-Derived Waste (IDW)**

IDW generated during field-investigation activities may include, but is not limited to, drill cuttings; contaminated soil; excavated debris; contaminated personal protective equipment (PPE), sampling supplies, and plastic; fluids from the decontamination of PPE and sampling equipment; and all other waste that has potentially come into contact with contaminants.

All IDW generated during field-investigation activities will be managed in accordance with applicable SOPs that incorporate the requirements of all applicable EPA and NMED regulations, DOE orders, and Laboratory implementation requirements.

## **4.0 REFERENCES**

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