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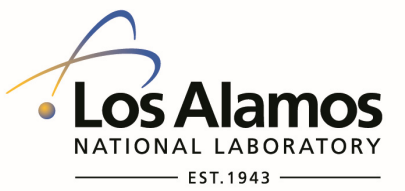
Interim Measures Work Plan for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54, Revision 1



Prepared by the Environmental Programs Directorate

EP2014-0419

Interim Measures Work Plan for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54, Revision 1

September 2014

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1.0 INTRODUCTION

This interim measures work plan (IMWP) recommends activities to address a volatile organic compound (VOC) vapor plume present in the unsaturated zone (vadose zone) beneath Material Disposal Area (MDA) L (Figure 1.0-1), Technical Area 54 (TA-54), Los Alamos National Laboratory (LANL or the Laboratory). The Laboratory proposes to conduct interim measures in accordance with Section VII.B.1 of the March 1, 2005, Compliance Order on Consent (the Consent Order). The IMWP is being prepared to initiate a soil-vapor extraction (SVE) interim measure of the VOC vapor plume. Remediation of the vapor plume by SVE is recommended as part of the final remedy in the "Corrective Measures Evaluation Report for Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54, Revision 2" (the CME report) to meet a remedial action objective (RAO) of preventing groundwater from being impacted above a regulatory standard by the transport of VOCs to groundwater through soil vapor (LANL 2011, 205756). The depth to regional groundwater beneath MDA L is on the order of 285 m (935 ft), whereas the vapor plume is predominantly within the Bandelier Tuff in the upper 90 m (300 ft) of the surface. The tuff units beneath the surface at MDA L are underlain by a thick (nearly 150 m [500 ft]) sequence of Cerros del Rio basalts. There is uncertainty regarding the long-term transport of vapors downward through the basalt toward the water table. Therefore, it is desirable to contain the plume above the basalt. The SVE interim measure is proposed as a proactive step to remove VOC mass, to decrease maximum VOC concentrations within the plume, to reduce the current extent of the vapor plume so it remains well contained within the upper tuff units, and to gather design information for a potential final SVE remedy.

Remediation techniques for VOC vapor plumes in deep vadose zones differ substantially from techniques used to remediate plumes in saturated zones (i.e., aquifers). One of the primary remediation techniques currently used on vadose-zone vapor plumes is SVE. SVE is appealing because of the relatively low costs associated with installation and operation, the effectiveness of remediation, and the widespread use at contaminated sites. This technique uses an applied vacuum to draw soil vapors (also called pore gas) toward an extraction hole. In a contaminated area, the extracted soil vapors will contain some fraction of VOC in addition to air, water vapor, and CO_2. As VOC vapors are removed from the subsurface, any dissolved, adsorbed, or liquid-phase VOC will tend to move into the vapor phase, thus reducing the total subsurface VOC mass (Hoeg et al. 2004, 255583).

2.0 BACKGROUND

Investigations related to the VOC plume at MDA L are summarized in the CME report (LANL 2011, 205756) and reports referenced therein. Soil-vapor monitoring boreholes located within and around MDA L have been used to characterize the nature and extent of the subsurface vapor plume at the site since 1986. Figure 1.0-1 shows the vapor-monitoring boreholes at MDA L. Table 2.0-1 provides a list of all the vapor-sampling ports (188 ports in 28 monitoring wells) available for VOC monitoring at MDA L. Analytical results of past vapor sampling are reported in quarterly periodic monitoring reports for vapor sampling activities at MDA L (e.g., LANL 2011, 208822). During the most recent sampling event, 29 organic compounds were detected within the vapor plume at MDA L (LANL 2011, 208822). The primary constituents found in the VOC vapor plume are the organic solvents 1,1,1-trichloroethane (TCA) and trichloroethene (TCE). Figure 2.0-1 shows the distribution of TCA based on sampling data from 2009 and 2010. The figure illustrates that the highest concentrations are located within the upper Bandelier Tuff units and concentrations decrease with depth.

The investigations conducted at MDA L have determined that the continued source of the subsurface VOC plume is centered on the two disposal shaft fields located on the east and west sides of MDA L (Figures 1.0-1 and 2.0-1). The disposal shafts date from 1975 to 1985 and were used to dispose of the

Laboratory's nonradioactive liquid waste. Slow leaks of VOC vapors from drums of waste in the two shaft fields have been proposed as the source of the vapor plume over the last 30-plus yr (Stauffer et al. 2005, 090537). The CME report used a screening approach, called Tier II screening, to identify the VOCs present at high enough concentrations within the vapor plume to potentially impact groundwater above a regulatory standard if they migrated to groundwater (LANL 2011, 205756). That analysis found that vapor concentrations for TCA; TCE; tetrachloroethene; methylene chloride; 1,2-dichloropropane; 1,1-dichloroethene; 1,2-dichloroethane; and 1,4-dioxane are present within the tuff units at concentrations that exceed their Tier II screening levels (LANL 2011, 205756) (Table 2.0-2).

The Laboratory performed a pilot test of SVE at MDA L in 2006. The results and analysis from this test are reported in several sources (Stauffer et al. 2007, 097871; LANL 2011, 205756; Stauffer et al. 2011, 255584). Two SVE boreholes were installed at MDA L: one near the west shaft field and one near the east shaft field (Figure 1.0-1). The pilot test showed that SVE was effective in removing VOC mass from the vapor plume with a radius of influence (ROI) of between 100 ft and 150 ft. During the 24.8 d of operation at the SVE-West test, more than 225 kg (500 lb) of VOCs was extracted from the subsurface. Figure 2.0-2 shows the TCA concentrations extracted from the western borehole during the test. The total mass removed from both boreholes during the nearly 47 d of total SVE operation in 2006 amounted to approximately 360 kg (800 lb). This mass removal is significant given that a 2010 estimate of the total VOC plume mass (not including the amount still in waste drums) is on the order of 1370 kg (3015 lb). Following the pilot test, vapor-monitoring data through 2010 were analyzed and presented in the CME report (LANL 2011, 205756). Analysis of the data indicated the 2006 pilot test had long-term impacts on soil-vapor concentrations. Concentrations of 1,2-dichloroethane; 1,2-dichloropropane; methylene chloride; TCA; and TCE all decreased in response to the SVE test, and at most locations, the decrease was still observed in 2010. The successful pilot test factored into the recommendation for an SVE remedy in the CME report (LANL 2011, 205756).

3.0 OBJECTIVES AND APPROACH

3.1 Objectives

3.1.1 VOC Mass Removal and Plume Reduction

The activities proposed under this IMWP focus on removing mass from the VOC vapor plume beneath MDA L to protect groundwater before final remedies are implemented at the site. VOC mass removal is a proactive step that will reduce both vapor concentrations and the extent of the subsurface vapor plume. Because there is uncertainty related to plume migration in the deep basalt toward the regional aquifer, SVE is recommended during this interim measure as a method for containing the vapor plume within the Bandelier Tuff. Analysis by Stauffer et al. (2011, 255548) and predictions presented in the MDA L CME (LANL 2011, 205756) both indicate that if SVE is performed, it will significantly reduce VOC concentrations and plume size. For example, simulations presented in the CME (LANL 2011, 205756), indicate that if SVE had been performed over a 3-yr period, from 2011 to 2013 in the analysis (Figure 3.1-1), both vapor-phase VOC concentrations and plume size would be significantly reduced over the next 10 to 300 yr. Much of this benefit is from the extraction of higher-concentration regions of the plume resulting from historical releases. With these concentrations remediated, concentrations are not likely to rebound to previous high values. In addition, actively extracting VOC vapors at a greater rate than they are generated will lower peak concentrations. With maximum concentrations lower in the source regions, vapor transport will reverse direction, and VOCs will diffuse from deeper in the plume back toward the surface. This reversal of the diffusion gradient would limit deeper migration into the underlying basalt and potentially toward groundwater. Implementing this interim measure before final remedy selection should increase the overall effectiveness of a final remedy.

In summary, to make progress on the RAO defined in the CME report (LANL 2011, 205756) of preventing groundwater from being impacted above a regulatory standard by the transport of VOCs to groundwater through soil vapor, the SVE interim measure has the following objectives for subsurface mass removal and plume reduction:

- Remove VOC mass from the subsurface
- Reduce maximum VOC concentrations
- Contain the vapor plume within the Bandelier Tuff units

3.1.2 SVE Design Information

Data collected on mass removal rates and concentration rebound during the interim measure will provide critical testing and feasibility information for design and operation of a longer-term SVE remedy. The short duration of the SVE pilot test in 2006 provided very useful data for illustrating the viability of SVE and for helping define the SVE remedy presented in the CME report. However, longer-term operation of SVE during an interim measure at MDA L will provide additional data to refine final design and operating conditions. Performance information will provide data on

- Mass removal rates for total VOCs and for those VOCs that exceed Tier II screening limits,
- Plume rebound to indicate VOC release rates from the east and west shaft fields,
- Feasibility of decreasing concentrations to below Tier II screening limits, and
- Extraction well ROI during longer-term pumping.

These data will support design decisions for

- Proposing the number, placement, and screened intervals of extraction wells;
- Recommending operating conditions for the SVE unit, such as, optimal extraction rates, extraction/rebound periods; and
- Defining appropriate cleanup standards.

3.2 Approach

The approach for the SVE interim measure at MDA L is described below. The first section describes the plan to generate a pre-SVE baseline data set of VOC soil-vapor concentrations. Next, the SVE equipment is described, followed by the extraction plan, which uses the two existing extraction boreholes employed during the 2006 pilot test. The plan is flexible and will be updated as data related to system performance are collected. The fourth section describes sampling that will be undertaken concurrently with SVE extraction to estimate mass removal and provide feedback on plume contraction through time. Finally, a baseline monitoring data set will be collected at the end of 1 yr of SVE operation to allow for a decision point to determine whether to continue the interim measure, and, if so, to define operating conditions for the next year.

3.2.1 VOC Baseline Sampling

Quarterly vapor monitoring at MDA L was suspended in fiscal year (FY) 2012 by agreement with NMED because the available data were deemed sufficient to support the remedy selection process (LANL 2011, 207416; NMED 2011, 207576). However, to assess the impact of the proposed interim measure on the VOC vapor plume at MDA L, monitoring is proposed to provide a present-day, three-dimensional (3-D)

description of the plume against which the SVE results can be compared. This IMWP proposes baseline sampling from all the vapor-sampling ports (188 ports in 28 monitoring wells) available for VOC monitoring at MDA L (Table 2.0-1). Sampling will be performed in accordance with the current version of Standard Operating Procedure (SOP) 5074, Sampling Subsurface Vapor. Per the SOP, the static pressure of the formation at each sampling interval will be documented. Vapor samples will be collected in SUMMA canisters and sent off-site for analysis using U.S. Environmental Protection Agency (EPA) Method TO-15. Based on previous sampling, it is known that some vapor sampling ports have clogged over time. If clogging of a given port is indicated during sampling, SUMMA canisters will not be collected at such ports, as directed by the SOP.

3.2.2 SVE System

The SVE system that will be employed during the interim measure at MDA L has a main blower unit rated to 129 standard cubic feet per minute (scfm) at vacuum equal to 42.5 kPa (120 in. of water), a knock-out trap for liquid, various in-line flow and pressure measurement instruments, and an off-gas stack to the atmosphere. This type of system was used previously for a SVE test performed at MDA G in 2010 (LANL 2010, 109657). The SVE system consists of an 11-ft-long × 3-ft-wide skid-mounted Model 4L SVE SCFM Blower Package system provided by Catalytic Combustion Corp. of Bloomer, WI. The system uses a positive-displacement blower driven by a 10-horsepower electric motor. Currently, the Laboratory owns one of these units but may purchase a second identical unit so SVE can be run at both extraction boreholes independently, and transfer of the units between extraction wells will not be required.

3.2.3 SVE Plan

For the MDA L interim measure, the SVE unit(s) will initially be run continuously for 6 mo. The system may be operated at a lower extraction rate than its maximum of 129 scfm. Monitoring data will be used to generate concentration versus time plots (similar to Figure 2.0-2) and estimates of VOC mass removal with time. After 6 mo, these data will be used to determine whether SVE should be cycled off for a period to allow for plume rebound. Cycling of SVE units can be done to increase extraction efficiency, save energy, and extend equipment life. However, cycling can be labor intensive, and the SVE unit(s) may also be operated continuously, depending on the observed results. The Laboratory plans to run the interim measure for an initial 1-yr extraction period, evaluate the data, and make a decision about continuing the interim measure. A decision to continue the interim measure will be based on multiple metrics, including extraction efficiency, plume evolution, and available budget. If SVE is continued, a similar decision strategy will be revisited annually until a final remedy is implemented.

3.2.4 Sampling Plan during SVE

During operation of the SVE systems, the Laboratory will monitor the extraction gas and the vapor concentrations at ports near the two extraction wells.

- *Extraction gas monitoring*: Analytical samples will be collected for operational monitoring of vapor concentrations in extraction gas (i.e., using SUMMA canisters and TO-15 analysis). The SUMMA canister sampling frequency will start with multiple (a minimum of 4) daily samples at startup, decrease to daily after 2 d, and decrease further to weekly after concentrations appear to stabilize, probably about 3 wk after extraction starts. Extracted vapor concentrations will be used to calculate total VOC mass removal as a function of time and to guide decisions regarding the length of time to run the SVE units before the plume is allowed to rebound.
- *Plume monitoring*: Sampling ports within the 150-ft ROIs (Figure 1.0-1) of the two extraction wells will be monitored quarterly during the first year of the interim measure. SUMMA canister samples will be collected at all sampling ports located within approximately the two ROIs (Table 3.2-1).

This sampling regime includes 43 ports in 5 boreholes near the SVE-West extraction well and 44 ports in 9 boreholes near the SVE-East extraction well. If one of the extraction wells is not used during a given quarter, the ports within that wells ROI will not be sampled. Per SOP 5074, the static pressure of the formation at each sampling interval will be documented, and no samples will be collected at ports that are clogged. These data will be used to help guide decision points concerning SVE rates, SVE cycling, and extension of the interim measure beyond 1 yr.

3.2.5 One-Year Baseline Sampling

At the end of 1 yr of SVE operation, the Laboratory will again monitor the full set of vapor-sampling ports (188 ports in 28 monitoring wells) by collecting samples in SUMMA canisters and analyzing them using EPA Method TO-15. Per SOP 5074, the static pressure of the formation at each sampling interval will be documented, and no samples will be collected at ports that are clogged. The results of data analysis will determine the overall impact of SVE on the nature and extent of the vapor plume. The results, along with the extraction data and quarterly subsurface vapor monitoring, will be used to make a decision regarding continued SVE operation.

3.2.6 Reporting

The Laboratory proposes submitting two progress reports to the New Mexico Environment Department (NMED) based on the first year of operation of SVE at MDA L:

- Baseline monitoring data along with monitoring data and mass removal information collected during the first 6 mo of SVE operation will be analyzed and an informal progress report will be written and submitted to NMED approximately 8 mo after SVE begins.
- Baseline monitoring data along with monitoring data and mass removal information collected during the first year of SVE operation will be analyzed. A report documenting the first year of operation with recommendations regarding future SVE operation and monitoring at the site will be submitted to NMED 16 mo after SVE begins.

3.2.7 Air Permit

The Laboratory submitted to NMED's Air Quality Bureau a request to review and approve a No Permit Required (NPR) determination for the interim measure (LANL 2014, 256576). The Laboratory evaluated in a conservative manner the maximum air emissions that could be emitted from the SVE operation and determined an air-quality construction or New Source Review permit is not required under 20.2.72 New Mexico Administrative Code, Construction Permits. NMED agreed that an NPR determination is appropriate for the proposed SVE operation at the site (NMED 2014, 260193). Therefore, vapors extracted during SVE will be released to the atmosphere. The Laboratory's request and NMED's approval are included in Appendix A of this work plan.

4.0 SCHEDULE

The proposed interim measure is a proactive, voluntary action by the Laboratory. The Laboratory is currently purchasing equipment and reinstating its vapor monitoring subcontracts to start the proposed work. The first step is to collect the baseline monitoring data described in section 3.2. Monitoring will be performed during August 2014. The SVE system will be installed and tested during September 2014. Full operations at one or both of the extraction wells is expected to begin in October 2014, after which samples will be collected quarterly following the date when SVE operations began.

5.0 REFERENCES

The following list includes all documents cited in this plan. Parenthetical information following each reference provides the author(s), publication date, and ER ID. This information is also included in text citations. ER IDs are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

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Stauffer, P., K. Birdsell, and W. Rice, March 7–11, 2011. "3-D Model Validation in Support of Site Closure, Material Disposal Area L, Los Alamos, NM," Paper 11545, Waste Management 2011 Conference, March 7–11, 2011, Phoenix, AZ. (Stauffer et al. 2011, 255584)

Stauffer, P.H., K.H. Birdsell, M.S. Witkowski, and J.K. Hopkins, 2005. "Vadose Zone Transport of 1,1,1-Trichloroethane: Conceptual Model Validation through Numerical Simulation," *Vadose Zone Journal,* Vol. 4, pp. 760–773. (Stauffer et al. 2005, 090537)

Stauffer, P.H., J.K. Hopkins, T. Anderson, and J. Vrugt, July 11, 2007. "Soil Vapor Extraction Pilot Test at Technical Area 54, Material Disposal Area L: Numerical Modeling in Support of Decision Analysis," Los Alamos National Laboratory document LA-UR-07-4890, Los Alamos, New Mexico. (Stauffer et al. 2007, 097871)

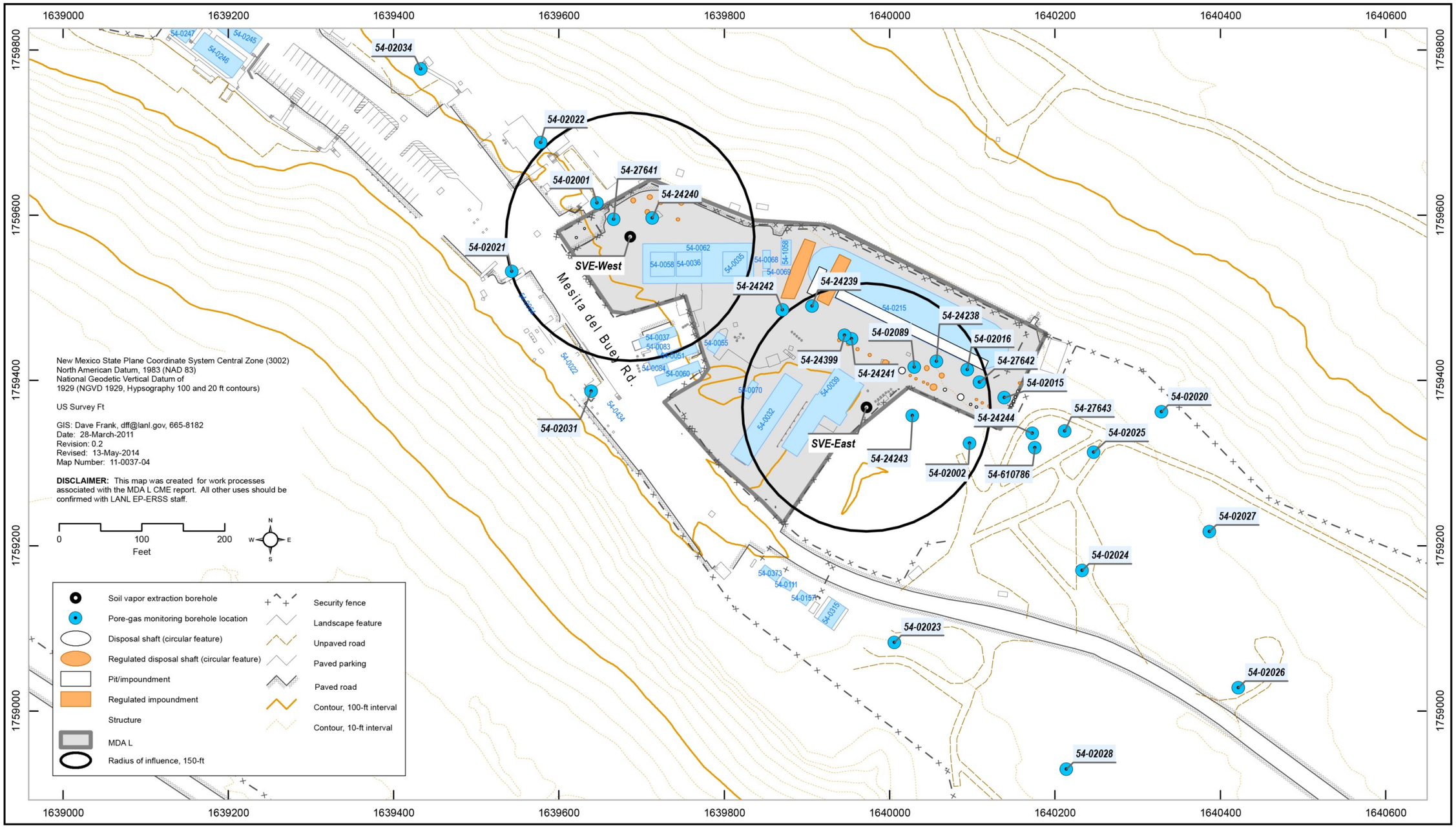
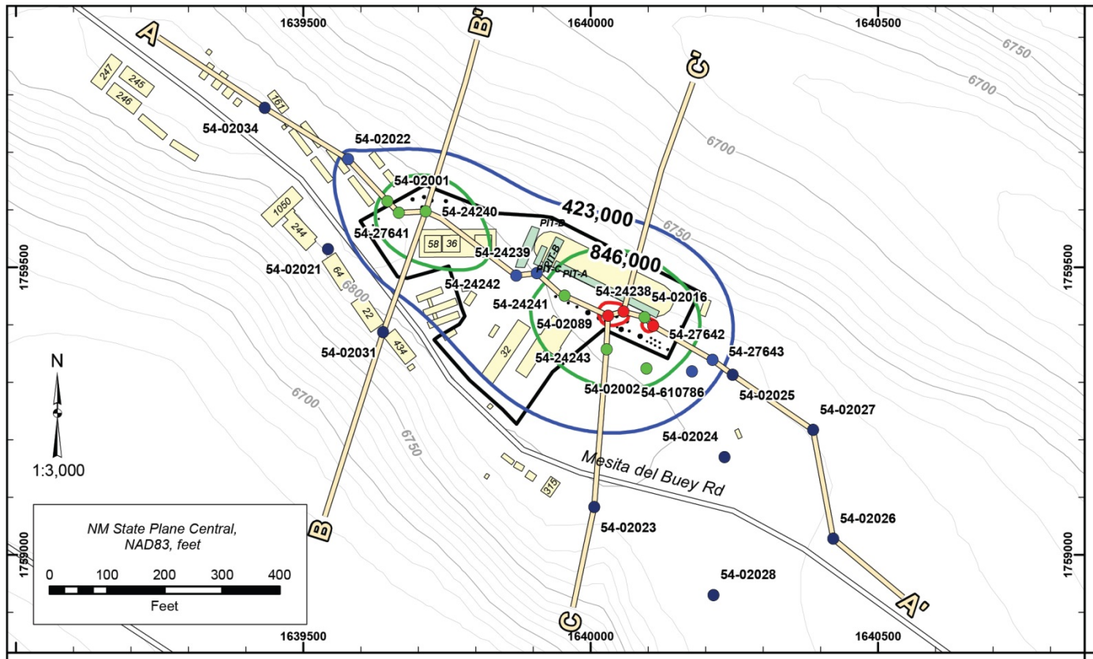
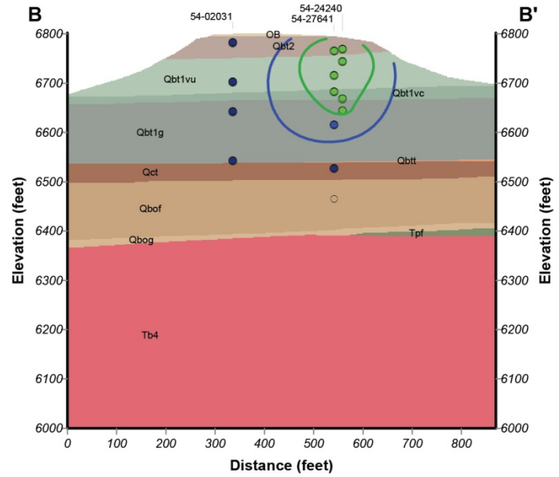
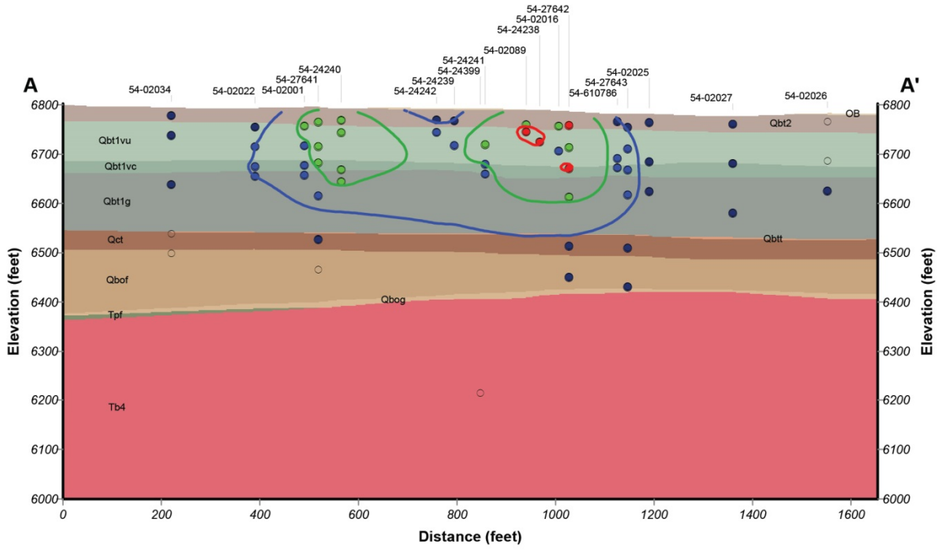
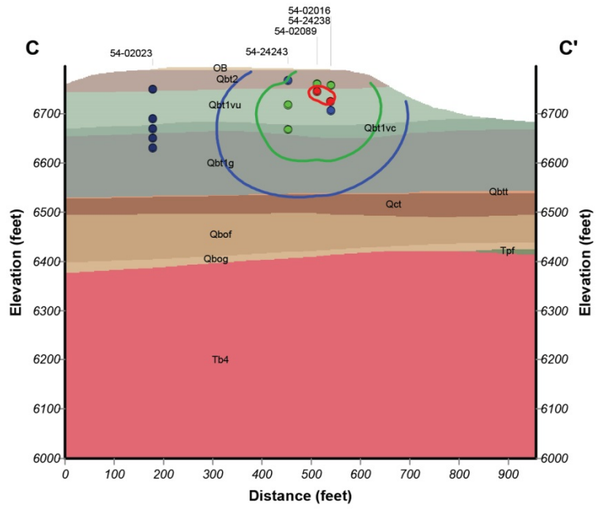


Figure 1.0-1 Map view of MDA L with disposal units, surface structures, vapor-monitoring boreholes, SVE boreholes, and 150-ft ROI of extraction wells









Legend

- MDA Boundary
- Structure
- Disposal Pit
- Disposal Shaft
- Roads
- Topography (CI=10-ft)
- Transects

Maximum Detection in Borehole
ug/m3 (screening value multiple)

- < 423,000 (10x)
- 423,000 (10x) - 846,000 (20x)
- 846,000 (20x)1 - 2,115,000 (50x)
- > 2,115,000 (50x)

Modeled Plume Contour
ug/m3 (screening value multiple)

- 423,000 (10x)
- 846,000 (20x)
- 2,115,000 (50x)

Geologic Unit

- OB - Fill, Soil
- Qbt3 - Bandelier tuff - Unit3
- Qbt2 - Bandelier tuff - Unit2
- Qbt1vu - Bandelier tuff - Unit1vu
- Qbt1vc - Bandelier tuff - Unit1vc
- Qbt1g - Bandelier tuff - Unit1g
- Qbtt - Tsankawi Pumice
- Qct - Cerro Toledo interval
- Qbof - Bandelier Tuff - Otowi unit
- Qbog - Bandelier tuff - Guaje Pumice
- Tpf - Puye Formation
- Tb4 - Cerros del Rio Basalt

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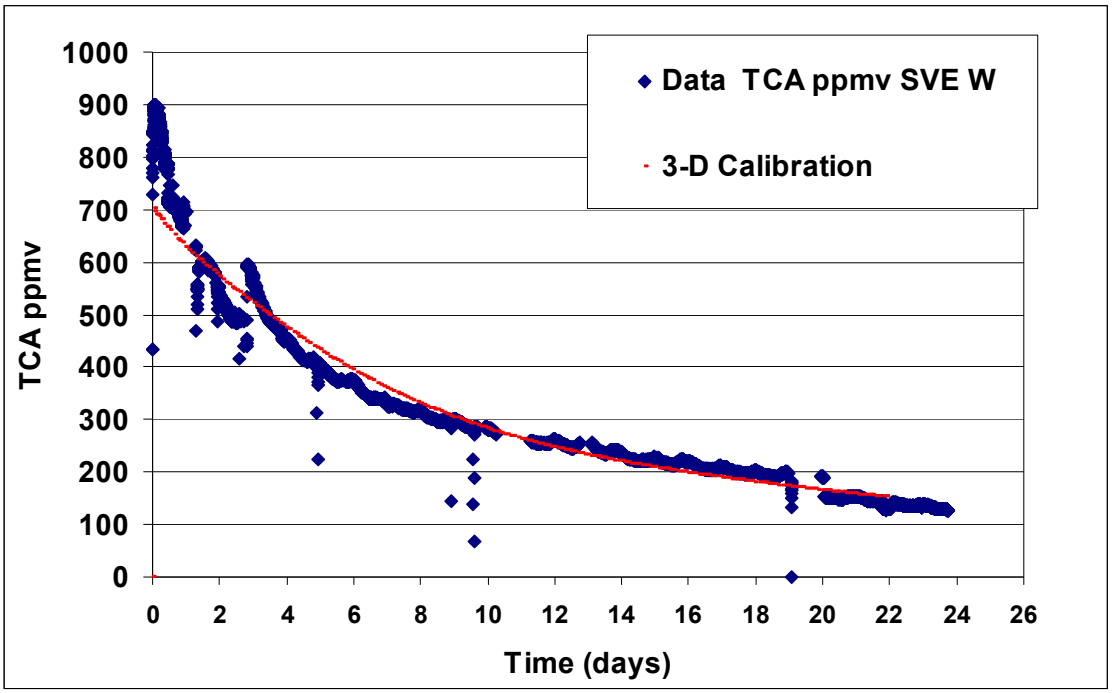
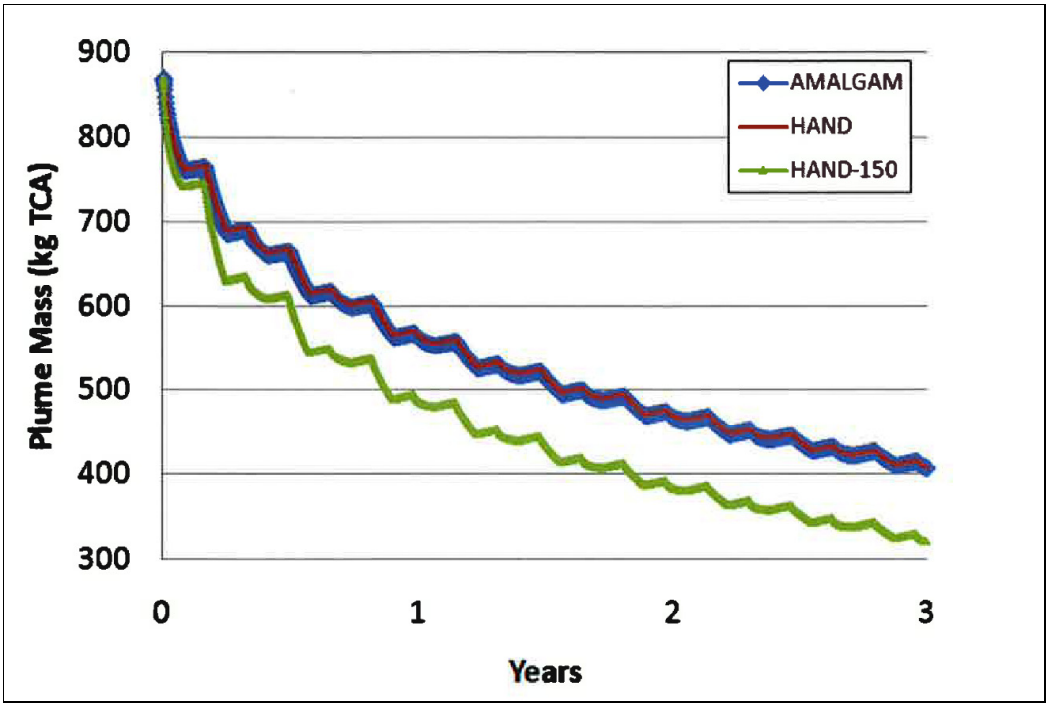
Note: TCA is the dominant component of the plume at greater than 60% by mass.

Figure 2.0-1 Subsurface distribution of 1,1,1-TCA vapors at MDA L based on the average of four quarters of monitoring (third quarter FY2009 to second quarter FY2010)



Notes: The red line is the match using a calibrated 3-D model of the site. The calibrated 3-D model is used to make predictions about the plume's evolution.

Figure 2.0-2 Mass removal during the 2006 pilot test from SVE-West at MDA L



Notes: The rate of air flow for the red and blue curves is 85 scfm, while for the green curve the system is pumping 150 scfm. SVE is active for 30 d on SVE-West, followed by a 30-d rebound period, then 30 d of SVE on SVE-East, followed by another 30-d rebound period. This cycle of 30 d × 4 d is repeated for the 3 yr of the prediction.

Figure 3.1-1 Predicted mass removal for a 3-yr SVE system as described in the MDA L CME report

Table 2.0-1
Subsurface Vapor-Monitoring Locations, Port Depths, and Corresponding Sampling Intervals Proposed for Use during Baseline and Annual Monitoring for MDA L SVE Interim Measure

Vapor-Monitoring Well ID	VOC and Tritium Sampling Port-Depth Intervals (ft bgs)
54-01015[a]	37.6 (36–46), 165.4 (182–192), 308.3 (340–352), 333.3 (375–385), 377.7 (425–435), 426.5 (480–490), 462.1 (520–530)
54-01016[a]	30.8 (30–40), 162.2 (178–190), 274.7 (318–324), 336.3 (386–396), 414.3 (473–483), 459.5 (530–540), 517.6 (592–602)
54-02001	20 (17.5–22.5), 40 (37.5–42.5), 60 (57.5–62.5), 80 (77.5–82.5), 100 (97.5–102.5), 120 (117.5–122.5), 140 (137.5–142.5), 160 (157.5–162.5), 180 (177.5–182.5), 200 (197.5–202.5)
54-02002	20 (17.5–22.5), 40 (37.5–42.5), 60 (57.5–62.5), 80 (77.5–82.5), 100 (97.5–102.5), 120 (117.5–122.5), 140 (137.5–142.5), 157 (154.5–159.5), 180 (177.5–182.5), 200 (197.5–202.5)
54-02016	18 (15.5–20.5), 31 (28.5–33.5), 82 (79.5–84.5)
54-02020	20 (10–30), 40 (30–50), 60 (50–70), 80 (70–90), 95 (90–110), 120 (110–130), 140 (130–150), 160 (150–170), 180 (170–190), 200 (190–210)
54-02021	20 (10–30), 40 (30–50), 60 (50–70), 80 (70–90), 100 (90–110), 120 (110–130), 140 (130–150), 160 (150–170), 180 (170–190), 198 (190–210)
54-02022	20 (17.5–22.5), 40 (37.5–42.5), 60 (57.5–62.5), 80 (77.5–82.5), 100 (97.5–102.5), 120 (117.5–122.5), 140 (137.5–142.5), 160 (157.5–162.5), 180 (177.5–182.5), 200 (197.5–202.5)
54-02023	20 (10–30), 40 (30–50), 60 (50–70), 80 (70–90), 100 (90–110), 120 (110–130), 140 (130–149), 159 (149–169), 180 (170–190), 200 (190–210)
54-02024	20 (10–30), 40 (30–50), 60 (50–70), 80 (70–90), 100 (90–110), 120 (110–130), 140 (130–150), 160 (150–170), 180 (170–190), 200 (190–210)
54-02025	20 (20), 60 (60), 100 (100), 160 (160), 190 (190)
54-02026	20 (20), 60 (60), 100 (100), 160 (160), 200 (200), 215 (215)
54-02027	20 (20), 60 (60), 100 (100), 160 (160), 200 (200), 220 (220), 250 (250)
54-02028	20 (20), 60 (60), 100 (100), 160 (160), 200 (200), 220 (220), 250 (250)
54-02031	20 (20), 60 (60), 100 (100), 160 (160), 200 (200), 220 (220), 260 (260)
54-02034	20 (20), 60 (60),100 (100), 160 (160), 200 (200), 220 (220), 260 (260), 300 (300)
54-02089	13 (13), 31 (31), 46 (46), 86 (86)
54-24238	44 (43–45), 64 (63–65), 84 (83–85)
54-24239	25 (24–26), 50 (49–51), 75 (74–76), 99.5 (98.5–100.5)
54-24240	28 (27–29), 53 (52–54), 78 (77–79), 103 (102–104), 128 (127–129), 153 (152–154)
54-24241	73 (71–74), 93 (92–94), 113 (112–114), 133 (132–134), 153 (152–154), 173 (172–174), 193 (192–194)
54-24242	25 (24–26), 50 (49–51), 75 (74–76), 100 (99–101), 110.5 (109.5–111.5)

Table 2.0-1 (continued)

Vapor-Monitoring Well ID	VOC and Tritium Sampling Port-Depth Interval (ft bgs)
54-24243	25 (24–26), 50 (49–51), 75 (74–76), 100 (99–101), 125 (124–126)
54-24399[b]	568–569 with dual packer and 568–680 with single packer[c]
54-27641	32 (29.5–34.5), 82 (79.5–84.5), 115 (112.5–117.5), 182 (179.5–184.5), 232 (229.5–234.5), 271 (268.5–273.5), 332.5 (330–335)
54-27642	30 (27.5–32.5), 75 (71.5–76.5), 116 (114.5–119.5), 175 (172.5–177.5), 235 (232.5–237.5), 275 (272.5–277.5), 338 (335.5–340.5)
54-27643	30 (27.5–32.5), 74 (71.5–76.5), 117 (114.5–119.5), 167 (164.5–169.5), 235 (232.5–237.5), 275 (272.5–277.5), 354 (351.5–356.5)
54-610786	25 (22.5-27.5), 50 (47.5-52.5), 75 (72.5-77.5), 100 (97.5-102.5), 118.5 (116-121)

[a] Vapor-monitoring well is angled. Port depth is depth below ground surface. Port-depth interval is length along borehole.

[b] Open borehole below 568 ft below ground surface.

[c] If dual packer cannot be installed to isolate the 568–569-ft interval, the Laboratory will document the change as a deviation in the progress report.

Table 2.0-2
Tier I and Tier II Screening of VOCs Detected during Second Quarter FY2010 in Pore Gas at MDA L

VOCs	Maximum Pore-Gas Concentration (µg/m^3)	Calculated Concentrations in Pore Gas Corresponding to Groundwater Standard (µg/m^3)	Tier I SV (unitless)	Tier I Potential for Groundwater Impact[a]	Tier II Potential for Groundwater Impact
Acetone	260	35,200	0.0074	No	No
Benzene	4400	1140	3.9	Yes	No
Carbon Tetrachloride	19,000	5500	3.5	Yes	No
Chlorobenzene	1700	13,000	0.13	No	No
Chloroform	71,000	15,000	4.7	Yes	No
Cyclohexane	19,000	79,300,000	0.00024	No	No
Dichlorodifluoromethane	21,000	5,460,000	0.0038	No	No
Dichloroethane[1,1-]	94,000	5750	16	Yes	No
Dichloroethane[1,2-]	740,000	240	3100	Yes	Yes
Dichloroethene[1,1-]	130,000	5500	24	Yes	Yes
Dichloroethene[trans-1,2-]	1300	38,000	0.034	No	No
Dichloropropane[1,2-]	400,000	600	670	Yes	Yes
Dioxane[1,4-]	4300	12.2	350	Yes	Yes[b]
Ethanol	6300	na[c]	na	No	No
Hexane	3400	65,120,000	0.000052	No	No
Methylene Chloride	130,000	650	200	Yes	Yes
Tetrachloroethene	370,000	3600	100	Yes	Yes
Tetrahydrofuran	73,000	na	na	No	No
Toluene	17,000	204,000	0.083	No	No
Trichloro-1,2,2-trifluoroethane[1,1,2-]	2,200,000	1,298,000,000	0.0017	No	No
Trichloroethane[1,1,1-]	3,900,000	42,300	92	Yes	Yes
Trichloroethane[1,1,2-]	1000	170	5.9	Yes	No
Trichloroethene	1,200,000	2000	600	Yes	Yes
Trichlorofluoromethane	41,000	5,200,000	0.0079	No	No
Xylene[1,2-]	3200	255,600	0.013	No	No
Xylene[1,3-]+Xylene[1,4-]	2100	2,700,000	0.00078	No	No

Notes: Tier I and Tier II screening results can be found in the MDA L CME report (LANL 2011, 205756). Shading denotes that analyte exceeds Tier I or Tier II screening levels (SLs).

[a] If the Tier I screening value (SV) is less than 1, the concentration of the VOC in pore gas does not have the potential to exceed the groundwater SL.

[b] Results from pore-water migration.

[c] na = Not available.

Table 3.2-1
Subsurface Vapor-Monitoring Locations,
Port Depths, and Corresponding Sampling Intervals within 150-ft ROIs
of the Two Extraction Wells Proposed for Use during Quarterly Monitoring

Vapor-Monitoring Well ID	VOC and Tritium Sampling Port-Depth Intervals (ft bgs)
54-02001	20 (17.5–22.5), 40 (37.5–42.5), 60 (57.5–62.5), 80 (77.5–82.5), 100 (97.5–102.5), 120 (117.5–122.5), 140 (137.5–142.5), 160 (157.5–162.5), 180 (177.5–182.5), 200 (197.5–202.5)
54-02002	20 (17.5–22.5), 40 (37.5–42.5), 60 (57.5–62.5), 80 (77.5–82.5), 100 (97.5–102.5), 120 (117.5–122.5), 140 (137.5–142.5), 157 (154.5–159.5), 180 (177.5–182.5), 200 (197.5–202.5)
54-02016	18 (15.5–20.5), 31 (28.5–33.5), 82 (79.5–84.5)
54-02021	20 (10–30), 40 (30–50), 60 (50–70), 80 (70–90), 100 (90–110), 120 (110–130), 140 (130–150), 160 (150–170), 180 (170–190), 198 (190–210)
54-02022	20 (17.5–22.5), 40 (37.5–42.5), 60 (57.5–62.5), 80 (77.5–82.5), 100 (97.5–102.5), 120 (117.5–122.5), 140 (137.5–142.5), 160 (157.5–162.5), 180 (177.5–182.5), 200 (197.5–202.5)
54-02089	13 (13), 31 (31), 46 (46), 86 (86)
54-24238	44 (43–45), 64 (63–65), 84 (83–85)
54-24239	25 (24–26), 50 (49–51), 75 (74–76), 99.5 (98.5–100.5)
54-24240	28 (27–29), 53 (52–54), 78 (77–79), 103 (102–104), 128 (127–129), 153 (152–154)
54-24241	73 (71–74), 93 (92–94), 113 (112–114), 133 (132–134), 153 (152–154), 173 (172–174), 193 (192–194)
54-24243	25 (24–26), 50 (49–51), 75 (74–76), 100 (99–101), 125 (124–126)
54-24399[b]	568–608 with single packer
54-27641	32 (29.5–34.5), 82 (79.5–84.5), 115 (112.5–117.5), 182 (179.5–184.5), 232 (229.5–234.5), 271 (268.5–273.5), 332.5 (330–335)
54-27642	30 (27.5–32.5), 75 (71.5–76.5), 116 (114.5–119.5), 175 (172.5–177.5), 235 (232.5–237.5), 275 (272.5–277.5), 338 (335.5–340.5)

[a] Vapor-monitoring well is angled. Port depth is depth below ground surface. Port-depth interval is length along borehole.

[b] Open borehole below 568 ft bgs.

Appendix A

Documentation of No Permit Required Determination

Los Alamos
NATIONAL LABORATORY
EST 1943

Environmental Protection Division
Environmental Compliance Programs (ENV-CP)
PO Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

Date: APR 3 0 2014
Symbol: ENV-DO-14-0098
LAUR: 14-22478

Mr. Ted Schooley
Permit Program Manager
New Mexico Environment Department
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816

Dear Mr. Schooley:

Subject: No Permit Required Determination – TA 54 MDA L Soil Vapor Extraction

Los Alamos National Laboratory (LANL) is requesting review and approval of this No Permit Required (NPR) determination. LANL intends to install and operate two (2) soil vapor extraction systems to remediate hydrocarbon vapors in soil surrounding a legacy waste disposal site. This site is located within Technical Area (TA) 54 and is designated Material Disposal Area (MDA) L. We have evaluated in a conservative manner maximum air emissions which could be emitted from this operation, and determined an air quality construction or New Source Review (NSR) permit is not required under 20.2.72 NMAC – Construction Permits. This letter summarizes our determination. All required permit application forms for an NPR request are included in the attached enclosure.

LANL used MDA L from the early 1960s until 1985 as the designated disposal area for non-radiological, containerized and uncontainerized liquid chemical wastes, including chlorinated solvents. All of the former disposal units are covered by asphalt and/or chemical waste storage structures. Subsurface vapor phase hydrocarbons were detected during the mid-1980s, and the existence of a hydrocarbon vapor plume was verified during the RCRA Phase I characterization of MDA L. Ongoing monitoring of the hydrocarbon plume is done by soil pore-gas sampling and has been conducted for many years. Concentrations of most hydrocarbons within the pore gas are less than 1 ppmv but several exceed 1,000 ppmv near the intended extraction wells.

A soil vapor extraction (SVE) system has been selected as a RCRA interim measure for in situ remediation of the volatile contaminants in the vadose zone (unsaturated) soils. This is intended to assure the contaminant plume will not increase size. SVE is a proven technology for the physical treatment of soil contaminants. The technology uses vacuum blowers and extraction wells to induce gas flow through the subsurface to collection and potential treatment aboveground before being exhausted to the air. This technology can be implemented with minimum site disturbance and standard off-the-shelf equipment

aboveground. Two extraction wells will be utilized to collect and contain organic soil vapors. The wells are designated MDA L SVE East and MDA L SVE West.

Maximum air emissions have been estimated for full operation of the two SVE units on an annual continuous basis. Emissions have been estimated using contaminant soil pore-gas measurements from the most recent year with full sampling. In reality, soil pore-gas concentrations used in emission estimates are over-estimates since pore-gas will be diluted due to air mixing by the extraction system prior to being exhausted to the outside air. It is also anticipated pore-gas contaminant concentrations will become lower during operation of the SVE process from those present today.

The organic vapors emitted have been characterized as volatile organic compounds (VOC) and/or hazardous air pollutants (HAP). These are the only pollutants emitted. The SVE system has no fuel burning equipment associated with it. All emission estimates provided assume there is no control of emissions prior to discharge.

Table 1 below provides a summary of maximum emission estimates. HAP emission estimates are higher than VOCs because several chlorinated contaminants are HAPs, but have negligible photochemical reactivity (are not contributors to ground-level ozone formation) and are excluded from the U.S. EPA definition of volatile organic compounds.

Table 1
Maximum Emission Rates TA-54 MDA L SVE

SVE Unit	VOC (pounds per hour)	VOC (tons per year)	HAP (tons per year)
SVE – East	1.39	1.43	3.78
SVE - West	1.39	1.13	2.70
Total	2.79	2.57	6.48

20.2.72 NMAC does not require a permit for a VOC-only source such as this. HAP emissions also do not require a permit under 20.2.72 NMAC. The exception would be if HAP emissions for this operation exceeded 25 tons per year, the major source threshold for HAP sources, which is not the case here. Emissions of individual toxic air pollutants (TAPs) are all well below permit threshold levels in 20.2.72 NMAC. There are no New Source Performance Standards (NSPS) or National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories which would apply to this operation.

In addition to the maximum emission rates shown in Table 1, a second estimate of annual emissions was made. A three-dimensional multiphase numerical model of a volatile organic compound (VOC) vapor plume in the subsurface at LANL was developed using a site-scale numerical model. The site-scale numerical model evolved over many years (1999–2006) and has been used to evaluate the nature and extent of the subsurface contaminant 1,1,1-trichloroethane (TCA) associated with waste disposal. This model was refined to include a 2006 soil-vapor extraction (SVE) pilot test and calibrated permeabilities for the site were developed to match flow-rate versus pressure drop and concentrations in the exhaust gas. A blind validation simulation that begins with the pre-SVE test in 2006 and predicts present day (2010) plume concentrations yields a data/model correlation coefficient (r^2) for over 150 data model pairs that is

greater than 90% in the year 2010. The ability of the model to align with data after four years that include two active SVE demonstration tests provides confidence that the model captures the dominant physical transport processes at this site, and can thus be used with confidence to explore future scenarios of site behavior. For the air quality estimate of VOC removal, the model was run from 2010 to 2014 assuming both SVE boreholes are pumped at maximum capacity for 1 year. Given that TCA is typically close to 70% of the total plume mass, a conservative estimate of expected effluent from the SVE units for the year is on the order of 1 ton.

It should be noted that NMED approved an NPR determination for a similar SVE unit which LANL proposed for use in MDA L. That leased unit was used in a pilot study and is no longer on site. The approved NPR was designated 2195-L and was issued on January 6, 2005. In that request, LANL estimated maximum VOC emissions for one SVE unit to be 1.7 tons per year. HAP emissions were estimated to be 5.1 tons per year.

Please contact Bill Blankenship at (505) 665-0823 of the Environmental Compliance Programs (ENV-CP) if you have questions. Thank you for consideration of this request.

Sincerely,

A R Grieggs

Anthony R. Grieggs
Group Leader
Environmental Compliance Programs (ENV-CP)
Los Alamos National Security, LLC

ARG:BB/lm

Enclosure: Permit Application Forms

Cy: Hai Shen, NA-LA (E-File)
Carl A. Beard, PADOPS, (E-File to aosburn@lanl.gov)
Michael T. Brandt, ADESH, (E-File)
Alison M. Dorries, ENV-DO, (E-File)
Stephani F. Swickley, CAP, (E-File)
Phillip H. Stauffer, EES-16, (E-File)
Kay H. Birdsell, EES-16, (E-File)
Steven L. Story, ENV-CP, (E-File)
Bill Blankenship, ENV-CP, (E-File)
Margie B. Stockton, ENV-CP, (E-File)
lasomailbox@nnsa.doe.gov, (E-File)
locatesteam@lanl.gov, (E-File)
env-correspondence@lanl.gov, (E-File)

ENCLOSURE 1

Permit Application Forms

ENV-DO-14-0098

LAUR-14-22478

Date: APR 3 0 2014

√Mail Application To:		For Department use only:
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.nmenv.state.nm.us/aqb		AIRS No.:

Universal Air Quality Permit Application

Use this application for NOI, NSR, or Title V sources.

Use this application for: the initial application, modifications, technical revisions, and renewals. For technical revisions, complete Sections, 1-A, 1-B, 2-E, 3, 9 and any other sections that are relevant to the requested action; coordination with the Air Quality Bureau permit staff prior to submittal is encouraged to clarify submittal requirements and to determine if more or less than these sections of the application are needed. Use this application for streamline permits as well. For NOI applications, submit the entire UA1, UA2, and UA3 applications on a single CD (no copies are needed). For NOIs, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required.

This application is being submitted as (check all that apply): √ Request for a No Permit Required Determination (no fee)
☐ **Updating** an application currently under NMED review. Include this page and all pages that are being updated (no fee required).
Construction Status: √ Not Constructed ☐ Existing Permitted (or NOI) Facility ☐ Existing Non-permitted (or NOI) Facility
Minor Source: ☐ a NOI 20.2.73 NMAC ☐ 20.2.72 NMAC application/revision ☐ 20.2.72.300 NMAC Streamline application
Title V Source: ☐ Title V (new) ☐ Title V renewal ☐ TV minor mod. ☐ TV significant mod. TV Acid Rain: ☐ New ☐ Renewal
PSD Major Source: ☐ PSD major source (new) ☐ minor modification to a PSD source ☐ a PSD major modification

Acknowledgements: √ I acknowledge that a pre-application meeting is available to me upon request √ NPR (no fee)
☐ $500 NSR Permit Filing Fee enclosed OR ☐ The full permit fee associated with 10 fee points (required w/ streamline applications).
☐ Check No.: in the amount of (Fee not required for Title V) ☐ This facility meets the applicable requirements to register as a Small Business and a check for 50% of the normal fee is enclosed (only applicable **provided** that NMED has a Small Business Certification Form from your company on file found at: http://www.nmenv.state.nm.us/aqb/permit/app_form.html).

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.XX.XXX.X.X NMAC** (i.e. an example of an application for a new minor source would be 20.2.72.200.A NMAC, one example of a low level cite for a Technical Revision could be: 20.2.72.219.B.1.b NMAC, or a Title V acid rain cite would be: 20.2.70.200.C NMAC)

Synthetic Minor Source Information: A source is synthetic minor if its uncontrolled emissions are above major source applicability thresholds, but the facility is minor because it has federally enforceable requirements (federal requirements or permit conditions) that limit controlled emissions below major source thresholds. Facilities can be synthetic minor for either Title V (20.2.70 NMAC) or PSD (20.2.74 NMAC) or both. The Department tracks synthetic minor sources that are within 20% of either TV or PSD major source thresholds, referring to these as Synthetic Minor 80 Sources (abbreviated SM80). Please check all that apply:
Prior to this permitting action this source is a ☐ TV major source, ☐ a TV synthetic minor source, ☐ a TV SM80 source.
Prior to this permitting action this source is a ☐ PSD major source, √ a PSD synthetic minor source, ☐ a PSD SM80 source.
This permitting action results in a ☐ TV synthetic minor source and/or ☐ PSD synthetic minor source.

Section 1 – Facility Information

Section 1-A: Company Information

		AI # (if known): **35-028-0001**	Updating Permit/NOI #: **N/A**
1	Facility Name: **Los Alamos National Laboratory**	Plant primary SIC Code (4 digits): **8733**	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): **The Laboratory is bounded by the towns of Los Alamos and White Rock, NM**		
2	Plant Operator Company Name: **Los Alamos National Security**	Phone/Fax: **(505) 665-8855/(505) 665-8858**	
a	Plant Operator Address: **P.O. Box 1663, MS J978, Los Alamos, NM 87545**		
b	Plant Operator's New Mexico Corporate ID or Tax ID: **03059304002**		
3	Plant Owner(s) name(s): **DOE, National Nuclear Security Administration**	Phone/Fax: **(505) 667-6691**	

a	Plant Owner(s) Mailing Address(s): **3747 West Jemez Road, Los Alamos, NM 87544**	
4	Bill To (Company): **N/A**	Phone/Fax: **N/A**
a	Mailing Address: **N/A**	E-mail: **N/A**
5	√ Preparer: **Bill Blankenship** □ Consultant:	Phone/Fax: **(505) 665-0823/(505) 665-8858**
a	Mailing Address: **P.O. Box 1663, MS J978, Los Alamos, NM 87545**	E-mail: **bblankenship@lanl.gov**
6	Plant Operator Contact: **Tony Grieggs**	Phone/Fax: **(505) 665-0451**
a	Address: **P.O. Box 1663, MS K490, Los Alamos, NM 87545**	E-mail: **grieggst@lanl.gov**
7	Air Permit Contact: **Tony Grieggs**	Title: **Group Leader, ENV-CP**
a	E-mail: **grieggst@lanl.gov**	Phone/Fax: **(505) 665-0451**
b	Mailing Address: **P.O. Box 1663, MS K490, Los Alamos, NM 87545**	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? √Yes □ No	1.b If yes to question 1.a, is it currently operating in New Mexico? √ Yes □ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? □ Yes √ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? √ Yes □ No
3	Is the facility currently shut down? □ Yes √ No	If yes, give month and year of shut down (MM/YY):
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? √Yes □ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? √ Yes □No □N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? √ Yes □ No	If yes, the permit No. is: **P-100-R1-M3**
7	Has this facility been issued a No Permit Required (NPR)? √Yes □ No	If yes, the NPR No. is: **2195A,2195Q,2195S,2195U**
8	Has this facility been issued a Notice of Intent (NOI)? □ Yes √ No	If yes, the NOI No. is:
9	Does this facility have a construction permit (20.2.72 NMAC)? √ Yes □ No	If yes, the permit No. is: **632,634,1081,2195,2195B,2195F,2195H,2195L,2195N,2195P**
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? √ Yes □ No	If yes, the register No. is: **GCP-3-2195G**

Section 1-C: Facility Input Capacity & Production Rate - Soil Vapor Extraction Units

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly:	Daily:	Annually:
b	Proposed	Hourly: **15,480 scf**[1]	Daily: **371,520 scf**[1]	Annually: **1.36 x 10^8 scf**[1]
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly:	Daily:	Annually:
b	Proposed	Hourly: **15,480 scf**[1]	Daily: **371,520 scf**[1]	Annually: **1.36 x 10^8 scf**[1]

[1]Values are based on maximum capacity of soil vapor extraction system to extract 129 scfm of soil pore-gas for treatment from each of 2 units 24 hour/day, 365 days per year.

Section 1-D: Facility Location Information – Soil Vapor Extraction Units

1	Section: **36**	Range: **6E**	Township: **19N**	County: **Los Alamos**	Elevation (ft): **6690**
2	UTM Zone: □ 12 or √ 13			Datum: □ NAD 27 √ NAD 83 □ WGS 84	
a	UTM E (in meters, to nearest 10 meters): **386940**			UTM N (in meters, to nearest 10 meters): **3966490**	
b	**AND** Latitude (deg., min., sec.): **35 50 10**			Longitude (deg., min., sec.): **106 15 7**	
3	Name and zip code of nearest New Mexico town: **White Rock, NM**				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): **Turn west at intersection of State Road 4 and Pajarito Road. Proceed 3 miles to Mesita del Buey Road. Note Pajarito Road is not open to the public.**				
5	The facility is **1.9** (distance) miles **west** (direction) of **White Rock, NM** (nearest town).				
6	Status of land at facility (check one): □ Private □ Indian/Pueblo □ Federal BLM □ Federal Forest Service √ Other **Federal Department of Energy**				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: **Los Alamos County, Sandoval County, Santa Fe County, Rio Arriba County, City of Espanola, San Ildefonso Pueblo, Santa Clara Pueblo, Jemez Pueblo, Pojoaque Pueblo, Cochiti Pueblo**				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.nmenv.state.nm.us/aqb/modeling/class1areas.html)? √ Yes □ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: **6.3 km from Bandelier Wilderness Area**				
9	Name nearest Class I area: **Bandelier Wilderness Area (the wilderness portion of Bandelier National Monument)**				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): **6.3 km**				
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: **N/A**				
12	Method(s) used to delineate the Restricted Area: **N/A** "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? □ Yes √ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? √ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?				

Section 1-E: Proposed Operating Schedule - Soil Vapor Extraction Units

1	Facility **maximum** operating ($\frac{\text{hours}}{\text{day}}$): **24**	($\frac{\text{days}}{\text{week}}$): **7**	($\frac{\text{weeks}}{\text{year}}$): **52**	($\frac{\text{hours}}{\text{year}}$): **8760**		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start:	□AM □PM	End:	□AM □PM		
3	Month and year of anticipated start of construction: **September 2014**					
4	Month and year of anticipated construction completion: **September 2014**					
5	Month and year of anticipated startup of new or modified facility: **September 2014**					
6	Will this facility operate at this site for more than one year? √ Yes □ No					

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.nmenv.state.nm.us/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.nmenv.state.nm.us/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No. Serial No.	Max Capacity Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
TA-54-SVE-East	Soil Vapor Extraction	Catalytic Combustion Corporation	4L 0408-B10945	129 SCFM	N/A - Minor VOC only source N/A	2010 Sep-14	Existing (unchanged) ☐ To be Removed √ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
TA-54-SVE-West	Soil Vapor Extraction	Catalytic Combustion Corporation	4L TBD	129 SCFM	N/A - Minor VOC only source N/A	TBD TBD	Existing (unchanged) ☐ To be Removed √ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/A reported, unless specifically requested.
[2] Specify date(s) required to determine regulatory applicability.

Table 2-D: Maximum Emissions (under normal operating conditions)

☐ **This Table was intentionally left blank because it would be identical to Table 2-E.**

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-1. Unit & stack numbering must be consistent throughout the application package. For each unit with flashing, list tank-flashing emissions estimates as a separate line item (20.2.70.300.D.5 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.B.6, & 20.2.74.301 NMAC). Fill all cells in this tablewith the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed with a minimum of two significant figures[1]. If there are any significant figures to the left of a decimal point, there shall be no more than one significant figure to the right of the decimal point.

Unit No.	NOx		CO		VOC		SOx		TSP[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TA-54-SVE-East	-	-	-	-	1.39	1.43	-	-	-	-	-	-	-	-	-	-	-	-
TA-54-SVE-West	-	-	-	-	1.39	1.13	-	-	-	-	-	-	-	-	-	-	-	-
Totals					2.79	2.57												

[1] **Significant Figures Examples:** One significant figure – 0.03, 3, 0.3. Two significant figures – 0.34, 34, 3400, 3.4

[2] **Condensables:** Include condensable particulate matter emissions in particulate matter calculations.

Hourly Emission Estimates TA-54 MDA L Soil Vapor Extraction

Input Parameters

Maximum capacity SVE	129 scfm	Each SVE unit	
Conversion factors			
1 pound	453.6 g		
1 cubic foot	0.02832 cu meter		

Maximum Emissions, lb/hr

CAS #	Analyte	Maximum Pore-Gas Conc. ($\mu g/m^3$)	Maximum Pore-Gas Conc. ($grams/m^3$)	Maximum Pore-Gas Conc (lb/ft^3)	SVE East (lb/hr)	SVE West (lb/hr)	Total for 2 Systems (lbs/hr)	HAP	TAP	VOC
71-43-2	Benzene	3300	3.30E-03	2.06E-07	1.59E-03	1.59E-03	0.003	x		x
71-36-3	Butanol[1-]	1,700	1.70E-03	1.06E-07	8.22E-04	8.22E-04	0.002		x	x
56-23-5	Carbon Tetrachloride	13,000	1.30E-02	8.12E-07	6.28E-03	6.28E-03	0.013	x		x
108-90-7	Chlorobenzene	1,400	1.40E-03	8.74E-08	6.77E-04	6.77E-04	0.001	x		x
67-63-3	Chloroform	120,000	1.20E-01	7.49E-06	5.80E-02	5.80E-02	0.116	x		x
110-82-7	Cyclohexane	39,000	3.90E-02	2.43E-06	1.88E-02	1.88E-02	0.038		x	x
75-34-3	Dichloroethane[1,1-]	71,000	7.10E-02	4.43E-06	3.43E-02	3.43E-02	0.069	x		x
107-06-2	Dichloroethane[1,2-]	600,000	6.00E-01	3.75E-05	2.90E-01	2.90E-01	0.580	x		x
75-35-4	Dichloroethene[1,1-]	69,000	6.90E-02	4.31E-06	3.33E-02	3.33E-02	0.067	x		x
156-60-5	Dichloroethene[trans-1,2-]	1,800	1.80E-03	1.12E-07	8.70E-04	8.70E-04	0.002		x	x
78-87-5	Dichloropropane[1,2-]	280,000	2.80E-01	1.75E-05	1.35E-01	1.35E-01	0.271	x		x
123-91-1	Dioxane[1,4-]	11000	1.10E-02	6.87E-07	5.32E-03	5.32E-03	0.011	x		x
64-17-5	Ethanol	8,300	8.30E-03	5.18E-07	4.01E-03	4.01E-03	0.008			x
100-41-4	Ethylbenzene	5,000	5.00E-03	3.12E-07	2.42E-03	2.42E-03	0.005	x		x
622-96-8	Ethyltoluene(4-)	13,000	1.30E-02	8.12E-07	6.28E-03	6.28E-03	0.013			x
110-54-3	Hexane	9700	9.70E-03	6.06E-07	4.69E-03	4.69E-03	0.009	x		x
1634-04-4	Methyl tert-Butyl Ether	1,000	1.00E-03	6.24E-08	4.83E-04	4.83E-04	0.001	x		x
75-09-2	Methylene chloride	150,000	1.50E-01	9.37E-06	7.25E-02	7.25E-02	0.145	x		
142-82-5	n-Heptane	4,300	4.30E-03	2.68E-07	2.08E-03	2.08E-03	0.004			x
115-07-1	Propylene	74	7.40E-05	4.62E-09	3.58E-05	3.58E-05	0.000			x
12-71-84	Tetrachloroethene	760,000	7.60E-01	4.74E-05	3.67E-01	3.67E-01	0.735	x		
109-99-9	Tetrahydrofuran	44,000	4.40E-02	2.75E-06	2.13E-02	2.13E-02	0.043			x
108-88-3	Toluene	17,000	1.70E-02	1.06E-06	8.22E-03	8.22E-03	0.016	x		x
71-55-6	Trichloroethane[1,1,1-]	2,800,000	2.80E+00	1.75E-04	1.35E+00	1.35E+00	2.706	x		
79-005	Trichloroethane[1,1,2-]	2,100	2.10E-03	1.31E-07	1.01E-03	1.01E-03	0.002	x		x
79-01-6	Trichloroethene	1,500,000	1.50E+00	9.37E-05	7.25E-01	7.25E-01	1.450	x		x
95-63-6	Trimethylbenzene[1,2,4-]	16,000	1.60E-02	9.99E-07	7.73E-03	7.73E-03	0.015		x	x
108-67-8	Trimethylbenzene[1,3,5-]	5,300	5.30E-03	3.31E-07	2.56E-03	2.56E-03	0.005		x	x
75-01-4	Vinyl Chloride	800	8.00E-04	4.99E-08	3.87E-04	3.87E-04	0.001	x		x
95-47-6	Xylene[1,2-]	11,000	1.10E-02	6.87E-07	5.32E-03	5.32E-03	0.011	x		x
108-38-3 106-42-3	Xylene[1,3-]+xylene[1,4-]	33,000	3.30E-02	2.06E-06	1.59E-02	1.59E-02	0.032	x		x
			Total HAPs + VOCs		**3.19**	**3.19**	**6.37**			
			Total VOCs only		**1.39**	**1.39**	**2.79**			
			Total HAPs only		**3.12**	**3.12**	**6.24**			

Notes

1 The maximum pore-gas concentration used is the highest value measured from any sample.
2 Pore-gas samples used are from vapor-monitoring boreholes closest to the two extraction wells for SVE use.
3 Data from the last full year of sampling (2011) is used. Vapor plume is at near steady-state conditions and sample data is representative of 2014 conditions.
4 Estimated emissions are conservative over-estimates. Pore-gas concentrations will lower during remediation. Pore-gas is mixed with air during the extraction process and concentrations in exhaust are lower than represented here.
5 All TAP lb/hr estimates are below permit threshold values in 20.2.72 NMAC.

Annual Emission Estimates TA-54 MDA L Soil Vapor Extraction

Input Data

Maximum capacity SVE unit	129	scfm	
Conversion factors			
	1 pound	453.6	g
	1 cubic foot	0.02832	cu meter

Maximum Emissions, tpy, MDA L SVE West

CAS #	Analyte	Average Pore-Gas Conc. ($\mu g/m^3$)	Average Pore-Gas Conc. (grams/m^3)	Average Pore-Gas Conc (lb/ft^3)	(lb/hr)	(ton/yr)	HAP	VOC
71-43-2	Benzene	727	7.27E-04	4.54E-08	3.51E-04	0.002	x	x
56-23-5	Carbon Tetrachloride	1,734	1.73E-03	1.08E-07	8.38E-04	0.004	x	x
108-90-7	Chlorobenzene	1,105	1.11E-03	6.90E-08	5.34E-04	0.002	x	x
67-63-3	Chloroform	6,820	6.82E-03	4.26E-07	3.30E-03	0.014	x	x
110-82-7	Cyclohexane	12,465	1.25E-02	7.78E-07	6.02E-03	0.026		x
75-34-3	Dichloroethane[1,1-]	19,603	1.96E-02	1.22E-06	9.47E-03	0.041	x	x
107-06-2	Dichloroethane[1,2-]	107,167	1.07E-01	6.69E-06	5.18E-02	0.227	x	x
75-35-4	Dichloroethene[1,1-]	12,525	1.25E-02	7.82E-07	6.05E-03	0.027	x	x
78-87-5	Dichloropropane[1,2-]	1,971	1.97E-03	1.23E-07	9.52E-04	0.004	x	x
123-91-1	Dioxane[1,4-]	ND	ND	ND	ND	ND	x	x
100-41-4	Ethylbenzene	ND	ND	ND	ND	ND	x	x
110-54-3	Hexane	1125	1.13E-03	7.02E-08	5.44E-04	0.002	x	x
1634-04-4	Methyl tert-Butyl Ether	ND	ND	ND	ND	ND	x	x
75-09-2	Methylene chloride	6,571	6.57E-03	4.10E-07	3.18E-03	0.014	x	
12-71-84	Tetrachloroethene	84,165	8.42E-02	5.25E-06	4.07E-02	0.178	x	
109-99-9	Tetrahydrofuran	610	6.10E-04	3.81E-08	2.95E-04	0.001		x
108-88-3	Toluene	ND	ND	ND	ND	ND	x	x
71-55-6	Trichloroethane[1,1,1-]	661,984	6.62E-01	4.13E-05	3.20E-01	1.401	x	
79-005	Trichloroethane[1,1,2-]	1,900	1.90E-03	1.19E-07	9.18E-04	0.004	x	x
79-01-6	Trichloroethene	368,082	3.68E-01	2.30E-05	1.78E-01	0.779	x	x
75-01-4	Vinyl Chloride	ND	ND	ND	ND	ND	x	x
95-47-6	Xylene[1,2-]	ND	ND	ND	ND	ND	x	x
108-38-3 106-42-3	Xylene[1,3-]+xylene[1,4-]	ND	ND	ND	ND	ND	x	x
				Total HAPs + VOCs		**2.73**		
				Total VOCs only		**1.13**		
				Total HAPs only		**2.70**		

Maximum Emissions, tpy, MDA L SVE East

CAS #	Analyte	Average Pore-Gas Conc. ($\mu g/m^3$)	Average Pore-Gas Conc. (grams/m^3)	Average Pore-Gas Conc (lb/ft^3)	(lb/hr)	(ton/yr)	HAP	VOC
71-43-2	Benzene	1301	1.30E-03	8.12E-08	6.29E-04	0.003	x	x
56-23-5	Carbon Tetrachloride	4,714	4.71E-03	2.94E-07	2.28E-03	0.010	x	x
108-90-7	Chlorobenzene	1,233	1.23E-03	7.70E-08	5.96E-04	0.003	x	x
67-63-3	Chloroform	32,256	3.23E-02	2.01E-06	1.56E-02	0.068	x	x
110-82-7	Cyclohexane	29,500	2.95E-02	1.84E-06	1.43E-02	0.062		x
75-34-3	Dichloroethane[1,1-]	25,155	2.52E-02	1.57E-06	1.22E-02	0.053	x	x
107-06-2	Dichloroethane[1,2-]	81,297	8.13E-02	5.08E-06	3.93E-02	0.172	x	x
75-35-4	Dichloroethene[1,1-]	36,595	3.66E-02	2.28E-06	1.77E-02	0.077	x	x
156-60-5	Dichloroethene[trans-1,2-]	1,033	1.03E-03	6.45E-08	4.99E-04	0.002		x
78-87-5	Dichloropropane[1,2-]	94,987	9.50E-02	5.93E-06	4.59E-02	0.201	x	x
123-91-1	Dioxane[1,4-]	7225	7.23E-03	4.51E-07	3.49E-03	0.015	x	x
64-17-5	Ethanol	1000	1.00E-03	6.24E-08	4.83E-04	0.002		x
100-41-4	Ethylbenzene	1,100	1.10E-03	6.87E-08	5.32E-04	0.002	x	x
622-96-8	Ethyltoluene(4-)	6,700	6.70E-03	4.18E-07	3.24E-03	0.014		x
110-54-3	Hexane	1,387	1.39E-03	8.66E-08	6.70E-04	0.003	x	x
1634-04-4	Methyl tert-Butyl Ether	840	8.40E-04	5.24E-08	4.06E-04	0.002	x	x
75-09-2	Methylene chloride	35,974	3.60E-02	2.25E-06	1.74E-02	0.076	x	
12-71-84	Tetrachloroethene	52,877	5.29E-02	3.30E-06	2.56E-02	0.112	x	
109-99-9	Tetrahydrofuran	10,879	1.09E-02	6.79E-07	5.26E-03	0.023		x
108-88-3	Toluene	2,214	2.21E-03	1.38E-07	1.07E-03	0.005	x	x
71-55-6	Trichloroethane[1,1,1-]	1,081,458	1.08E+00	6.75E-05	5.23E-01	2.289	x	
79-005	Trichloroethane[1,1,2-]	1,500	1.50E-03	9.37E-08	7.25E-04	0.003	x	x
79-01-6	Trichloroethene	318,060	3.18E-01	1.99E-05	1.54E-01	0.673	x	x
95-63-6	Trimethylbenzene[1,2,4-]	10,000	1.00E-02	6.24E-07	4.83E-03	0.021		x
108-67-8	Trimethylbenzene[1,3,5-]	2,800	2.80E-03	1.75E-07	1.35E-03	0.006		x
75-01-4	Vinyl Chloride	ND	ND	ND	ND	ND	x	x
95-47-6	Xylene[1,2-]	1,940	1.94E-03	1.21E-07	9.37E-04	0.004	x	x
108-38-3 106-42-3	Xylene[1,3-]+xylene[1,4-]	2,754	2.75E-03	1.72E-07	1.33E-03	0.006	x	x
				Total HAPs + VOCs		**3.91**		
				Total VOCs only		**1.43**		
				Total HAPs only		**3.78**		

Maximum Emissions, tpy, MDA L SVE East and SVE West Totals

	Totals (tpy)
HAPs + VOCs	6.64
VOCs only	2.57
HAPS only	6.48

Notes

1 The annual average pore-gas concentration is used to estimate annual emissions.
2 Pore-gas samples used are from vapor-monitoring boreholes closest to each extraction well for SVE use.
3 Data from the last full year of sampling (2011) is used. Vapor plume is at near steady-state conditions and sample data is representative of 2014 conditions.
4 Estimated emissions are conservative over-estimates. Pore-gas concentrations will lower during remediation. Pore-gas is mixed with air during the extraction process and concentrations in exhaust are lower than represented here.
5 All TAP lb/hr estimates are below permit threshold values in 20.2.72 NMAC.

Section 3

Application Summary

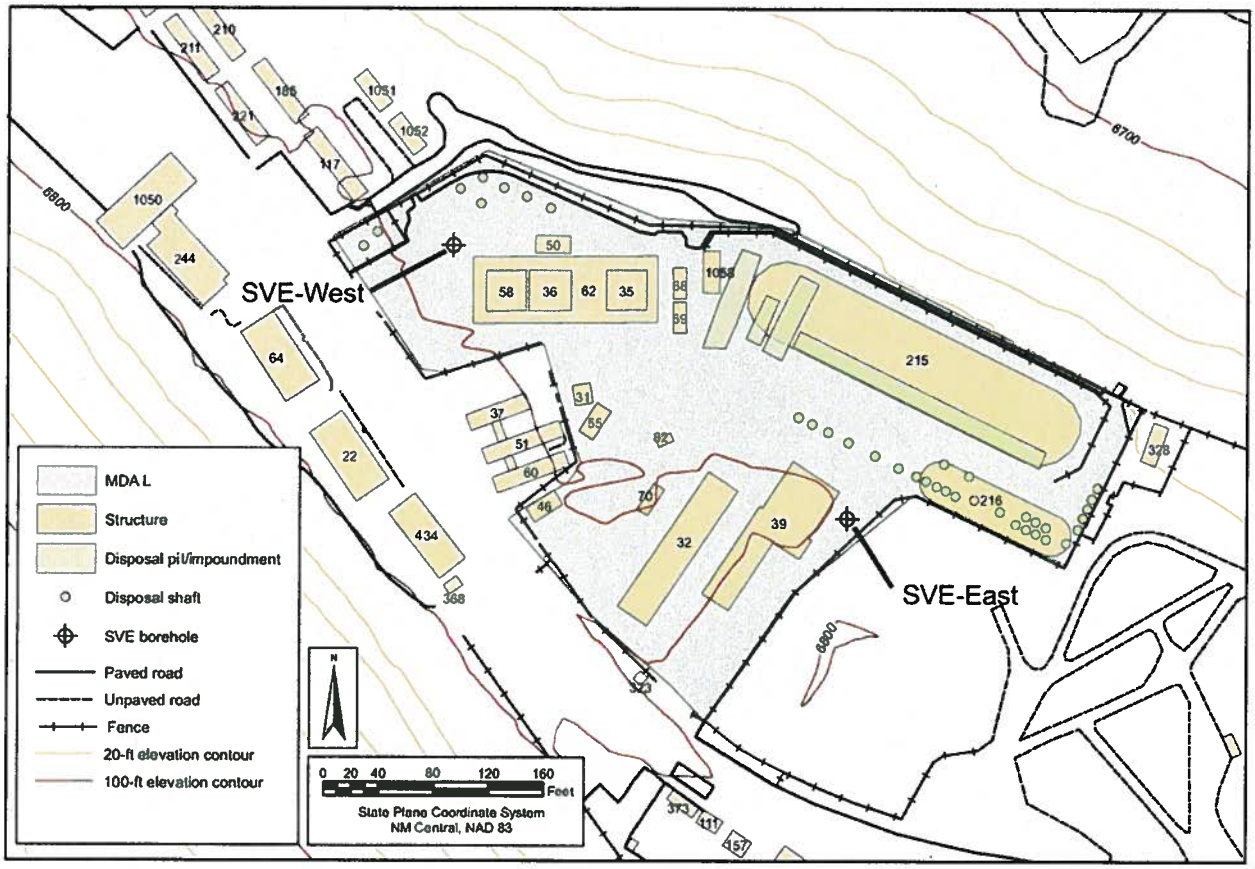
The **Application Summary** shall include a brief description of the facility and its process, the type of permit application, the applicable regulation (i.e. 20.2.72.200.A.X, or 20.2.73 NMAC) under which the application is being submitted, and any air quality permit numbers associated with this site. If this facility is to be collocated with another facility, provide details of the other facility including permit number(s). In case of a revision or modification to a facility, provide the lowest level regulatory citation (i.e. 20.2.72.219.B.1.d NMAC) under which the revision or modification is being requested. Also describe the proposed changes from the original permit, how the proposed modification will effect the facility's operations and emissions, de-bottlenecking impacts, and changes to the facility's major/minor status (both PSD & Title V).

Routine or predictable emissions during Startup, Shutdown, and Maintenance (SSM): Provide an overview of how SSM emissions are accounted for in this application. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.nmenv.state.nm.us/aqb/permit/app_form.html) for more detailed instructions on SSM emissions.

LANL used Material Disposal Area (MDA) L from the early 1960s until 1985 as the designated disposal area for non-radiological, containerized and uncontainerized liquid chemical wastes, including chlorinated solvents. Located at Technical Area (TA) 54, MDA L consists of an elongated pit, three impoundments and 34 shafts. Area L is the asphalted area atop MDA L and is currently used for RCRA-permitted chemical waste storage and treatment, and for mixed waste storage under interim status authority. All of the former disposal units are covered by asphalt and/or chemical waste storage structures. Subsurface vapor phase hydrocarbons were detected during the mid-1980s, and the existence of a hydrocarbon vapor plume was verified during the RCRA Phase I characterization of MDA L. Ongoing monitoring of the hydrocarbon plume is done by soil pore-gas sampling and has been conducted for many years. Concentrations of most hydrocarbons within the pore gas are less than 1 ppmv but several exceed 1,000 ppmv near the intended source areas.

A soil vapor extraction (SVE) system has been selected as a RCRA interim measure for in situ remediation of the volatile contaminants in the vadose zone (unsaturated) soils. This is intended to assure the contaminant plume will not increase size. SVE is a proven technology for the physical treatment of soil contaminants. The technology uses vacuum blowers and extraction wells to induce gas flow through the subsurface to collection and potential treatment aboveground before being exhausted to the air. This technology can be implemented with minimum site disturbance and standard off-the-shelf equipment aboveground.

Two extraction wells will be utilized to collect and contain organic soil vapors. The wells are designated MDA L SVE East and MDA L SVE West. A plot plan is attached. LANL intends to install two identical SVE systems with one at each well. The systems are manufactured by the Catalytic Combustion Corporation and are designated Model 4L. A diagram of the system is attached. For air permit purposes, the maximum capacity of the exhaust fan is used in conjunction with soil pore-gas measurement to estimate maximum emissions. As shown on the diagram, the fan capacity is rated at 129 scfm.



SVE locations within TA-54 MDA L

CATALYTIC COMBUSTION

CATALYTIC COMBUSTION CORPORATION
OWNER'S MANUAL

Model 4L SVE with Heat Exchanger

Customer
Catalytic Combustion Corporation
Rental #131

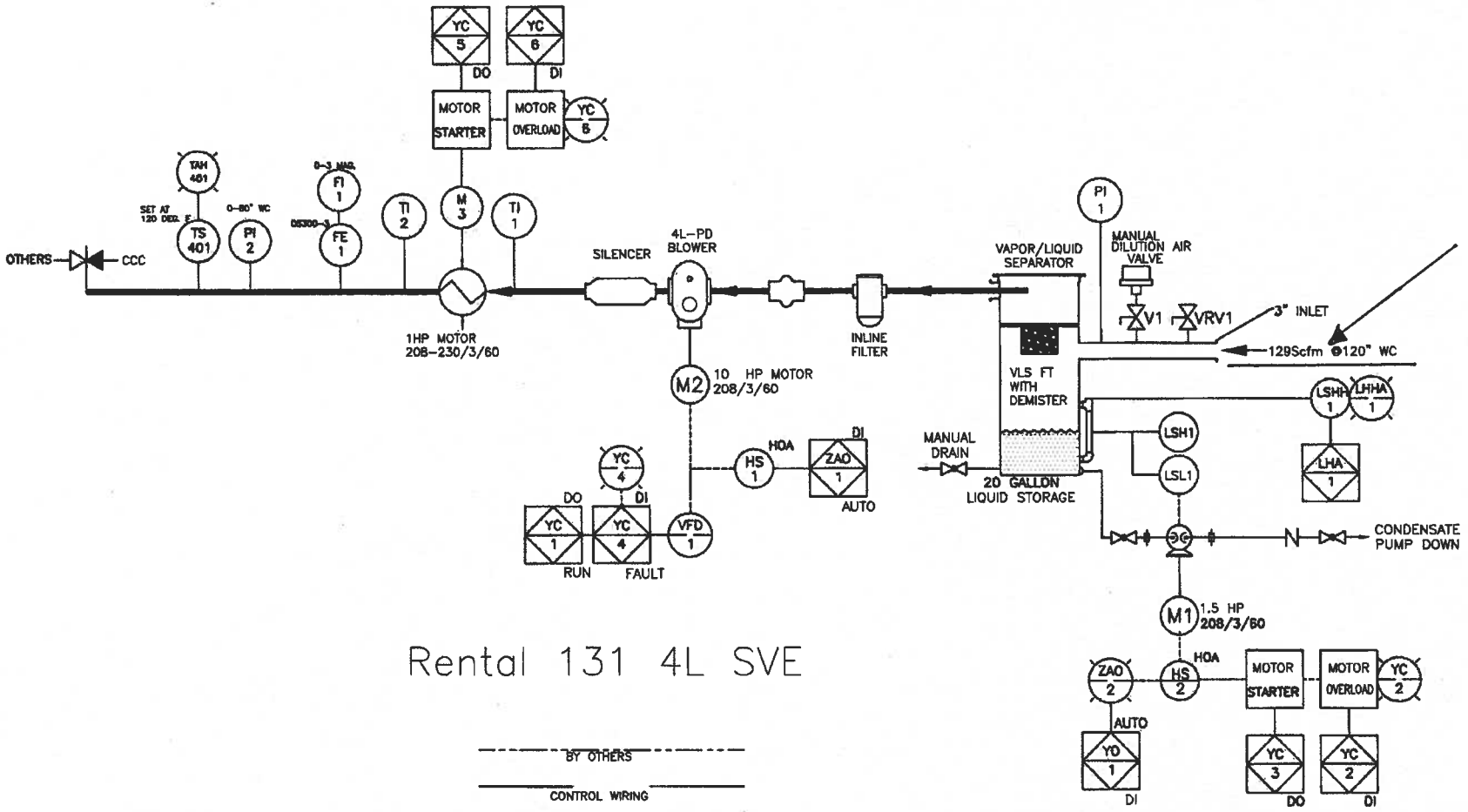
CCC Project No. **WO12460**

READ THIS MANUAL
for important safety, installation, operation
and maintenance instructions.
Keep this manual with the unit
at all times.

Issued: May, 2010

Catalytic Combustion Corporation
709 21st Avenue
Bloomer, WI 54724

Phone: (715) 568-2882
Fax: (715) 568-2884



Rental 131 4L SVE

BY OTHERS

CONTROL WIRING

REV	DESCRIPTION	DATE	BY
A	ADDES HEAT EXCHANGER & TS401	4/29/10	DDH
B	CHANGED INLET VACUUM AND FLOW	5/4/10	DDH

DRAWING STATUS	DATE	BY
PRELIMINARY		
FOR APPROVAL		
APPROVED FOR FAB		
AS BUILT		
AS FIELD MODIFIED		

MAT'L: SEE BOM

WEIGHT: N/A

TOLERANCES: .X = 0.06, .XX = 0.03, .XXX = 0.015, ∠ = 0.5°

THIRD ANGLE PROJECTION

INCH [mm]

DO NOT SCALE THIS DRAWING

CATALYTIC COMBUSTION

Catalytic Combustion Corporation
709 - 21st Avenue
Bloomer, WI 54724

Telephone: 715-568-2882
Fax: 715-568-2884

www.catalyticcombustion.com

DATE: 4/29/10

SCALE: NTS

DRAWN BY: DDH

CHECKED BY: CB

CUSTOMER: CATALYTIC COMBUSTION CORPORATION RENTAL 131

TITLE: 4L SVE PACKAGE W/ HX PROCESS & INSTRUMENTATION DIAGRAM

PROJECT/PRODUCT	DRAWING	REV	SIZE
WO12460	500	B	B

Los Alamos
NATIONAL LABORATORY
EST 1943

COPY

Environmental Protection Division
Environmental Compliance Programs (ENV-CP)
PO Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

Date: APR 3 0 2014
Symbol: ENV-DO-14-0098
LAUR: 14-22478

Mr. Ted Schooley
Permit Program Manager
New Mexico Environment Department
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816

Dear Mr. Schooley:

Subject: No Permit Required Determination – TA 54 MDA L Soil Vapor Extraction

Los Alamos National Laboratory (LANL) is requesting review and approval of this No Permit Required (NPR) determination. LANL intends to install and operate two (2) soil vapor extraction systems to remediate hydrocarbon vapors in soil surrounding a legacy waste disposal site. This site is located within Technical Area (TA) 54 and is designated Material Disposal Area (MDA) L. We have evaluated in a conservative manner maximum air emissions which could be emitted from this operation, and determined an air quality construction or New Source Review (NSR) permit is not required under 20.2.72 NMAC – Construction Permits. This letter summarizes our determination. All required permit application forms for an NPR request are included in the attached enclosure.

LANL used MDA L from the early 1960s until 1985 as the designated disposal area for non-radiological, containerized and uncontainerized liquid chemical wastes, including chlorinated solvents. All of the former disposal units are covered by asphalt and/or chemical waste storage structures. Subsurface vapor phase hydrocarbons were detected during the mid-1980s, and the existence of a hydrocarbon vapor plume was verified during the RCRA Phase I characterization of MDA L. Ongoing monitoring of the hydrocarbon plume is done by soil pore-gas sampling and has been conducted for many years. Concentrations of most hydrocarbons within the pore gas are less than 1 ppmv but several exceed 1,000 ppmv near the intended extraction wells.

A soil vapor extraction (SVE) system has been selected as a RCRA interim measure for in situ remediation of the volatile contaminants in the vadose zone (unsaturated) soils. This is intended to assure the contaminant plume will not increase size. SVE is a proven technology for the physical treatment of soil contaminants. The technology uses vacuum blowers and extraction wells to induce gas flow through the subsurface to collection and potential treatment aboveground before being exhausted to the air. This technology can be implemented with minimum site disturbance and standard off-the-shelf equipment

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez Suite 1
Santa Fe, NM 87505-1816
Phone (505) 476-4300
Fax (505) 476-4375
www.nmenv.state.nm.us

SUSANA MARTINEZ
GOVERNOR

JOHN A. SANCHEZ
LIEUTENANT GOVERNOR

RYAN FLYNN
CABINET SECRETARY

BUTCH TONGATE
DEPUTY SECRETARY

May 29, 2014

Anthony R. Grieggs
Group Leader
ENV-CP
Los Alamos National Security, LLC
U.S. Department of Energy National
Nuclear Security Administration
PO Box 1663, K490
Los Alamos, NM 87545

Air Quality No Permit Required (NPR)
No. 2195L-R1
Facility type, Federal Agency
IDEA ID No. 856 - PRN20140002
Los Alamos National Laboratory
AIRS No. 350280001

Dear Mr. Grieggs:

This letter acknowledges the receipt of your request for a permit applicability determination dated April 30, 2014 to construct and operate the Soil Vapor Extraction system at TA 54 Material Disposal Area L at the Los Alamos National Laboratory near Los Alamos, New Mexico. This Soil Vapor Extraction system is located in Township 19N, Range 06E, Section 36, approximately 1.9 miles west of White Rock, New Mexico in Los Alamos County. The request was received by the Department on May 1, 2014.

A review has been completed and the information provided is sufficient to complete an evaluation of your No Permit Required request. The results demonstrate that the emissions solely from the two soil vapor extraction units (TA-54-SVE, East and West) are too low to trigger 20.2.72 NMAC - Construction Permits or 2.73 - Notice of Intent and Emissions Inventory Requirements. This determination is based on the assumption that the soil vapor extraction system is a stand-alone emissions source for New Source Review (NSR) permitting and is not part of another source with an existing NSR permit. Therefore this notice of No Permit Required authorizes you to operate the Soil Vapor Extraction system as stated in the application.

Given, that emissions from the entire Los Alamos National Laboratory facility are regulated under one operating permit P100R1M1, any emissions from the soil vapor extraction system shall be considered when verifying compliance with the facility-wide emissions caps listed in that permit.

U.S. Department of Energy National Nuclear Security Administration
Los Alamos National Laboratory, NPR No. 2195L-R1
May 29, 2014

The soil vapor extraction system may be subject to other state and federal regulations. It is the responsibility of the owner and/or operator of the facility to determine applicability and to comply with all existing, revised, and new applicable regulations.

Please be advised that this No Permit Required determination was based upon the application submitted and these sources, when constructed, will be subject to inspection.

If you have any questions, please do not hesitate to contact me in Santa Fe at 505-476-4366

Sincerely,

Daren K. Zigich
Major Source Unit
Air Quality Bureau