DEPARTMENT OF ENERGY
Environmental Management Los Alamos Field Office (EM-LA)
Los Alamos, New Mexico 87544

EMLA-2022-BF096-02-001

May 27, 2022

Mr. Rick Shean
Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313

Subject: Submittal of the Periodic Monitoring Report for 2021 Vapor-Sampling Activities at Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54

Dear Mr. Shean:

Enclosed please find two hard copies with electronic files of the "Periodic Monitoring Report for 2021 Vapor-Sampling Activities at Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54." This periodic monitoring report summarizes vapor-monitoring activities conducted for calendar year 2021 at Material Disposal Area (MDA) L, Solid Waste Management Unit 54-006, in Technical Area 54, at Los Alamos National Laboratory. Two sampling rounds were conducted, one in April and May of 2021, and the second in February 2022. The second calendar year 2021 sampling event was delayed because of contracting issues.

The report is being submitted to fulfill fiscal year 2022 Milestone 19 in Appendix B of the 2016 Compliance Order on Consent. The monitoring was conducted per the recommendations included in the "Interim Measures Final Report for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54." The objectives of the current vapor monitoring at MDA L are to monitor for potential plume rebound following an interim measure conducted in 2015 and to monitor for potential new releases.

If you have any questions, please contact David Diehl at (505) 551-2496 (david.diehl@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,

ARTURO DURAN
Digitally signed by ARTURO DURAN
Date: 2022.05.23 14:42:16 -06'00'

Arturo Q. Duran
Compliance and Permitting Manager
U.S. Department of Energy
Environmental Management
Los Alamos Field Office

Enclosure(s):

1. Two hard copies with electronic files – Periodic Monitoring Report for 2021 Vapor-Sampling Activities at Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54 (EM2022-0265)

cc (letter with hard-copy enclosure[s]):
Cheryl Rodriguez, EM-LA

cc (letter with CD/DVD enclosure[s]):
Laurie King, EPA Region 6, Dallas, TX
Raymond Martinez, San Ildefonso Pueblo, NM
Dino Chavarria, Santa Clara Pueblo, NM
Steve Yanicak, NMED-DOE-OB
Chris Catechis, NMED-RPD
emla.docs@em.doe.gov
n3brecords@em-la.doe.gov
Public Reading Room (EPRR)
PRS website

cc (letter emailed without enclosure[s]):
Jennifer Payne, LANL
Stephen Hoffman, NA-LA
William Alexander, N3B
Emily Day, N3B
David Diehl, N3B
Michael Erickson, N3B
John Hopkins, N3B
Kim Lebak, N3B
Joseph Legare, N3B
Dana Lindsay, N3B
Pamela Maestas, N3B
Christian Maupin, N3B
Joseph Murdock, N3B
Troy Thomson, N3B
M. Lee Bishop, EM-LA
John Evans, EM-LA
Michael Mikolanis, EM-LA
David Nickless, EM-LA

May 2022
EM2022-0265

Periodic Monitoring Report for 2021 Vapor-Sampling Activities at Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54

EM2022-0265

Periodic Monitoring Report for 2021 Vapor-Sampling Activities at Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54

May 2022

Responsible program director:

Michael O. Erickson	[signature]	Program Director	RCRA Remediation Program	5/18/2022
Printed Name	Signature	Title	Organization	Date

Responsible N3B representative:

Troy Thomson	[signature]	Program Manager	N3B Environmental Remediation Program	5/18/2022
Printed Name	Signature	Title	Organization	Date

Responsible DOE EM-LA representative:

Arturo Q. Duran	ARTURO DURAN Digitally signed by ARTURO DURAN Date: 2022.05.26 11:01:14 -06'00'	Compliance and Permitting Manager	Office of Quality and Regulatory Compliance	
Printed Name	Signature	Title	Organization	Date

EXECUTIVE SUMMARY

This periodic monitoring report (PMR) summarizes vapor-monitoring activities conducted for calendar year 2021 at Material Disposal Area (MDA) L, Solid Waste Management Unit 54-006, in Technical Area 54, at Los Alamos National Laboratory. Submittal of this PMR fulfills the New Mexico Environment Department requirement in Appendix B, Milestones and Targets, of the Compliance Order on Consent, Milestone 19, that this PMR be submitted by May 30, 2022. The monitoring was conducted per recommendations included in the 2018 “Interim Measures Final Report for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54.” The objectives of the vapor monitoring at MDA L are to monitor for potential plume rebound following an interim measure (IM) conducted in 2015 and to monitor for potential new releases.

Vapor monitoring for calendar year 2021 consisted of two sampling rounds. The first round was performed in April and May 2021 and involved collecting 167 vapor samples from 167 sample ports within 28 boreholes (sentry and peripheral). The second calendar year 2021 sampling event was delayed until February 2022 because of contracting issues. The second round involved collecting 36 samples from 36 sample ports within the 7 sentry boreholes. Vapor samples were then submitted for laboratory analysis of volatile organic compounds (VOCs) and tritium. Analytical methods and data review procedures are discussed in Appendix C.

Validated analytical results demonstrated the presence of 35 VOCs in the first sampling round and 26 VOCs in the second sampling round. The sampling confirmed the 2 VOC source areas. The VOC screening evaluation identified 14 VOCs in the first round and 13 VOCs in the second round that exceeded Tier I screening levels (SLs), which are based on groundwater SLs (a total of 14 different VOCs exceeded Tier I SLs between the 2 rounds).

The May 2021 data show 1,4 dioxane concentrations greater than Tier I SLs in the two deepest sample ports in the basalt in borehole 54-24399. The measured values are greater than the method detection limit; however, they are much less than the analytical laboratory’s report detection limit (i.e., quantitation limit). May 2021 data from the seven other ports in the basalt in boreholes 54-01015 and 54-01016 show no 1,4-dioxane detections. Data from the second round of sampling for 2021 (February 2022) show no 1,4-dioxane in borehole 54-24399. This compound should be watched carefully to see if detections continue to occur, and a focused validation of the raw data will be performed to determine if the measured detections are valid.

VOC measurements over the last 17 yr show predominantly decreasing contaminant concentrations in sample ports of sentry boreholes and peripheral boreholes. These drops in concentration are primarily the result of the soil-vapor extraction operations during the 2015 interim measure, during which time more than 1000 lb of VOCs were removed from the mesa. Concentrations in source areas that had recently increased because of apparent rebounding from possible leakage decreased in 2021.

A preliminary screening of VOC concentrations versus vapor intrusion screening levels (VISLs), conducted for both sampling rounds, shows that VISLs were exceeded in some of the shallowest sampling ports near buildings.

CONTENTS

Figures

Tables

Appendixes

Plates

1.0 INTRODUCTION

This periodic monitoring report (PMR) presents the results of vapor-monitoring activities conducted for calendar year 2021 at Material Disposal Area (MDA) L, Solid Waste Management Unit (SWMU) 54-006, in Technical Area 54, at Los Alamos National Laboratory (LANL or the Laboratory). Submittal of this PMR fulfills the requirement in Appendix B, Milestones and Targets, of the 2016 Compliance Order on Consent (Consent Order) Milestone 19, that this PMR be submitted by May 30, 2022. The monitoring was conducted per the recommendations included in the "Interim Measures Final Report for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54" (N3B 2018, 700039).

The objectives of the current vapor monitoring at MDA L are to (1) monitor for potential plume rebound following an interim measure (IM) conducted in 2015, (2) monitor for potential new releases, (3) determine when and if to restart the soil-vapor extraction (SVE) IM system, and (4) provide early warning of possible impacts to the regional groundwater.

This report discusses the results obtained during the two vapor-monitoring rounds; however, for comparison, vapor monitoring data from previous monitoring activities from 2014 to present at MDA L are included in the data evaluation section of this report. Vapor-monitoring activities included collecting vapor samples from vapor-monitoring boreholes. All pore-gas samples from both sampling rounds were submitted for off-site analysis of volatile organic compounds (VOCs) and tritium.

No regulatory criteria exist for vapor-phase contaminants; therefore, this report presents results of a screening evaluation of the pore-gas VOC data. The maximum concentrations of VOCs in pore gas are used in a Henry's law calculation to determine the VOC concentration for the hypothetical case of the VOC pore gas being in contact with groundwater.

Section IX of the Consent Order describes the role of data screening in the corrective action process. Screening values are used to identify the *potential* for unacceptable risk resulting from the presence of contaminants in groundwater. Screening levels (SLs) for evaluating pore-gas monitoring data for potential impacts to groundwater are based on New Mexico Water Quality Control Commission (NMWQCC) groundwater standards, U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCLs), New Mexico Environment Department (NMED) SLs for tap water, and EPA regional SLs for tap water.

VOC pore-gas concentrations are also compared with NMED vapor intrusion screening levels (VISLs) to ensure worker protection if the VOCs in pore gas were to migrate above ground surface (NMED 2021, 701849).

Tritium samples were collected in both sampling rounds. Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to NMED in accordance with U.S. Department of Energy (DOE) policy.

This introductory section of the report includes a description of the site location. Section 2 describes the scope of the vapor-monitoring activities, and section 3 addresses regulatory criteria. Section 4 presents field-screening results, and section 5 presents analytical data results. Section 6 summarizes the information presented in this report, and section 7 includes references and map data sources.

The appendices include acronyms, a metric conversion table, and definitions of data qualifiers (Appendix A); field methods (Appendix B); analytical program descriptions and summaries of data quality

(Appendix C); a VOC plume trend analysis (Appendix D); and analytical suites and results and analytical reports (Appendix E on CD included with this document).

1.1 Background

MDA L, also known as SWMU 54-006, is located in the east-central portion of the Laboratory on Mesita del Buey (Figure 1.1-1), within a 2.5-acre fenced area known as Area L. MDA L operated from the early 1960s to 1986 as the designated disposal area for nonradiological liquid chemical wastes, which consisted of containerized and uncontainerized liquid wastes; bulk quantities of treated aqueous waste; batch-treated salt solutions and electroplating waste, including precipitated heavy metals; and small-batch quantities of treated lithium hydride. Waste was disposed of in 1 pit, 3 impoundments, and 34 shafts (Figure 1.1-2). Two additional shafts (shafts 36 and 37) were used for storage of solid mixed waste.

Disposal shafts 1 through 34 were dry-drilled directly into the Tshirege Member of the Bandelier Tuff. The shafts range from 3 to 8 ft in diameter and from 15 to 65 ft in depth. The 34 disposal shafts were used to dispose of containerized and uncontainerized liquid chemical wastes and precipitated solids from the treatment of aqueous waste. Before 1982, containerized liquids were disposed of without the addition of absorbents. Small containers were typically dropped into a shaft. Larger drums were lowered by crane and arranged in layers of 1 drum in a 3- or 4-ft-diameter shaft, 4 to 5 drums in a 6-ft-diameter shaft, or 6 drums in an 8-ft-diameter shaft. The space around the drums was filled with crushed tuff, and a 6-in. layer of crushed tuff was placed between each layer of drums. Uncontainerized liquid wastes were also disposed of in the shafts. Between 1982 and 1985, only containerized wastes (including organic and inorganic liquids, precipitated heavy metals, and stabilized heavy metals) were disposed of in the shafts. These shafts are the primary source for the subsurface VOC vapor plume beneath MDA L (LANL 2011, 205756).

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 1.1-3 shows the pore-gas monitoring boreholes at MDA L. Concentrations in the subsurface VOC plume are generally highest within 150 ft below ground surface (bgs) and decrease significantly with depth to the top of the Cerros del Rio basalts. Concentrations are highest within and below the two source regions, corresponding to the east and west shaft clusters shown in Figure 1.1-2. The west shaft cluster includes shafts 29–34 while the east shaft cluster comprises shafts 1–28.

The hydrogeologic framework for the contaminated subsurface at MDA L is based on years of data collection, including results from a 2006 pilot SVE test at the site (LANL 2006, 094152) and the 2015 SVE IM (N3B 2018, 700039). The current IM uses the same two wells used during the 2006 pilot test: SVE-East and SVE-West (Figure 1.1-3). After disposal activities at the site ended, most of the site's surface was covered with asphalt and/or chemical waste storage structures. The site is currently used for Resource Conservation and Recovery Act–permitted chemical waste storage and treatment and for mixed waste storage.

2.0 SCOPE OF ACTIVITIES

Recommendations in the "Interim Measures Final Report for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54" (N3B 2018, 700039) include the following, which are the basis for vapor-sampling activities at MDA L:

1. Conduct semiannual monitoring of sentry boreholes located in the source region to allow early detection of potential container failure. Boreholes 54-24240 and 54-27641 on the western side of

MDA L are sentry boreholes. On the eastern side of MDA L, boreholes 54-24238, 54-24241, and 54-27642 and open borehole 54-24399 are sentry boreholes. Peripheral borehole 54-02089 was added to the sentry borehole sampling network in 2020 because of an increase in concentrations over the last several sampling events.

2. Monitor peripheral boreholes once every 2 yr for evidence of plume expansion.
3. Conduct semiannual monitoring of deep borehole 54-24399 as a sentry borehole to further characterize long-term trends of VOC concentrations in the basalt and to provide data needed to support the corrective measures evaluation process (e.g., updating the conceptual model for transport and developing cleanup goals).
4. Activate the eastern SVE unit if (1) total VOC concentrations in any ports in the eastern sentry boreholes increase to more than 2000 ppmv and (2) there are 2 yr of sustained concentrations of total VOCs greater than 2000 ppmv for ports to depths of 100 ft. Once this trend is observed for the 2-yr period, the eastern SVE system should be activated.
5. Activate the western SVE unit if (1) total VOC concentrations in any ports in the western sentry boreholes increase to more than 2000 ppmv and (2) there are 2 yr of sustained concentrations of total VOCs greater than 2000 ppmv for ports to depths of 100 ft. Once this trend is observed for the 2-yr period, the western SVE system should be activated.

The following pore-gas monitoring activities were conducted at MDA L for calendar year 2021.The first round of sampling occurred in early 2021. Because of contract delays, the second round of 2021 sampling occurred in February 2022. Two additional rounds of sampling are planned for calendar year 2022, which will return the monitoring program to the prescribed schedule. Tables 2.0-1 and 2.0-2 list the vapor-monitoring locations, port depths, and corresponding sampling intervals. (For details of sampling protocols, see “Sampling Subsurface Vapor,” N3B-SOP-ER-2008.)

- Before sampling, boreholes were field-screened using the portable gas detectors to measure concentrations of carbon dioxide (CO_2), oxygen (O_2), and total VOCs. In the first sampling round, a total of 167 ports in 28 vapor-monitoring boreholes (Figure 1.1-3) were field-screened and in the second sampling round, a total of 36 ports in the 7 vapor-monitoring sentry boreholes were field-screened.
- In the first sampling round, a total of 201 pore-gas samples (167 regular samples, 19 field duplicate samples, and 15 field blank samples) were collected for VOC analysis and a total of 202 pore-gas samples (167 regular samples, 17 field duplicate samples, and 18 field blank samples) were collected for tritium analysis from 7 sentry and 21 peripheral boreholes (Figure 1.1-3).
- In the second sampling round, a total of 44 pore-gas samples (36 regular samples, 4 field duplicate samples, and 4 field blank samples) were collected for VOC analysis and a total of 44 pore-gas samples (36 regular samples,4 field duplicate samples, and 4 field blank samples) were collected for tritium analysis from 7 sentry boreholes (Figure 1.1-3).
- After collection, samples were submitted to the Newport News Nuclear BWXT-Los Alamos, LLC (N3B) Sample Management Office for shipment to analytical laboratories per N3B-SOP-SDM-1102, “Sample Receiving and Shipping by the N3B Sample Management Office.” Vapor samples were submitted to off-site analytical laboratories in SUMMA canisters for VOC analysis using EPA Method TO-15 and in silica-gel columns for tritium analysis using EPA Method 906.
- All analytical data were subjected to data validation reviews in accordance with N3B guidance and procedures. Field duplicate samples were collected at a minimum frequency of 1 for every

10 samples. The data validation process for reviews of MDA L pore-gas data is presented in Appendix C.

Waste generated from sampling activities was handled in accordance with the waste characterization strategy form for MDA L developed in accordance with N3B-AP-TRU-2150, “Waste Characterization Strategy Form.”

Further discussion of the field methods used for pore-gas field screening and sample collection is presented in Appendix B. Field chain-of-custody forms and sample collection logs are provided in Appendix E (on CD included with this document).

The pore-gas field-screening results are discussed in section 4, and the pore-gas analytical results are discussed in section 5. Any deviations from the table of monitoring wells submitted to NMED in the recommendations section of the “Interim Measures Final Report for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54” (N3B 2018, 700039) are discussed in the following section.

2.1 Deviations

In the first sampling round in 2021, samples for tritium analysis from 6 ports listed in Table 2.0-1 did not collect at least 5 g of moisture (Table 2.1-1). Also during the first sampling round in the spring of 2021, VOC field blank samples were not collected at 2 locations because of a sampling field crew error (Table 2.1-1). This should not impact data quality because the measured values were reasonable relative to past data and the collection frequency (1 blank per 11 samples) was only slightly less than the target (1 blank per 10 samples). In the second sampling round, samples for tritium analysis from 16 ports listed in Table 2.0-1 did not collect at least 5 g of moisture (Table 2.1-2).

3.0 REGULATORY CRITERIA

VOCs present in wastes disposed of at MDA L may vaporize and be released into subsurface media (e.g., soil, tuff, fractured rock). These vapor-phase contaminants may potentially be transported through the subsurface to the water table. Once in contact with the water table, vapor-phase VOCs might dissolve into the water. Thus, vapor-phase contaminants are a potential source of groundwater contamination. For MDA L, monitoring of subsurface vapors is being performed to evaluate the potential for groundwater contamination or, if necessary, to evaluate the need for corrective actions to prevent possible groundwater contamination.

Under the Consent Order, results of environmental investigations and monitoring are compared with SLs, which are media-specific contaminant concentrations that indicate the potential for unacceptable risk. The Consent Order specifies that SLs for soil and groundwater developed by NMED be used to evaluate soil and groundwater contamination. NMED has developed VISLs for evaluating the potential for vapor intrusion into buildings and subsequent exposure through inhalation; however, NMED’s VISLs do not address potential migration of vapors to groundwater. Because the Consent Order does not identify SLs for subsurface vapor as a potential groundwater contamination source, N3B developed Tier I SLs to evaluate monitoring results.

The Tier I approach evaluates whether pore gas containing a VOC at the concentration detected in the vapor sample could contaminate groundwater above the groundwater SL. The approach assumes pore gas containing VOCs at the concentrations detected in the pore-gas sample is in hypothetical contact with the water table in sufficient quantity to dissolve into groundwater in accordance with Henry’s law. If Tier I

SLs are not exceeded, VOCs cannot contaminate groundwater above cleanup levels even if the vapor plume comes into direct contact with groundwater, and no further screening is necessary.

3.1 Tier I Soil-Vapor Screening

The Tier I screening analysis evaluates the potential for contamination of groundwater by VOCs in pore gas. The analysis calculates the pore-gas concentration that would be in equilibrium with a groundwater concentration equal to the groundwater SL. The equilibrium between pore-gas and groundwater SLs is described by Henry's law partitioning. If the maximum pore-gas concentration is less than the pore-gas SL, then no potential exists for exceedances of groundwater cleanup levels.

Because there are no SLs for soil vapor that address the potential for groundwater contamination, the screening evaluation is based on Section IX of the Consent Order, which describes the role of data screening in the corrective action process, and the Henry's law constant that describes the equilibrium between vapor and water concentrations. As described in Section IX.C of the Consent Order, SLs are contaminant concentrations that indicate the potential for unacceptable risk, and the presence of contaminants at concentrations greater than SLs does not necessarily indicate that cleanup is required but does indicate the need for additional risk evaluation to determine the potential need for cleanup. The source of Henry's law constants is the NMED "Risk Assessment Guidance for Site Investigations and Remediation Volume 1, Soil Screening Guidance for Human Health Risk Assessments," (NMED 2021, 701849) or the EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables). The following dimensionless form of Henry's law constant is used:

$$H' = \frac{C_{air}}{C_{water}}$$ **Equation 3.1-1**

where, *H'* = the dimensionless Henry's law constant,

C_{water} = the volumetric concentration of the contaminant in water, and

C_{air} = the volumetric concentration of the contaminant in air (or pore gas).

If the air concentration is equal to the pore-gas SL and the water concentration is equal to the groundwater SL, Equation 3.1-1 can be used to calculate the Tier I pore-gas SL as follows:

$$SL_{pgI} = H' \times SL_{gw} \times 1000$$ **Equation 3.1-2**

where, SL_{pgI} = the Tier I pore gas SL (µg/m^3),

SL_{gw} = the groundwater SL (µg/L), and

1000 = a conversion factor (to convert L to m^3).

The Tier I methodology conservatively assumes that groundwater is in equilibrium with the maximum detected concentration of a VOC in pore gas. This assumption would be true only if the maximum pore-gas concentration was immediately above the water table. At MDA L, the samples with maximum VOC concentrations are hundreds of feet above the water table, and VOC concentrations decrease with depth below the maximum concentrations because of diffusion (see cross-sections in Appendix D). The Tier I methodology also assumes that the equilibrium groundwater concentration is representative of the aquifer. This equilibrium exists only at the air-water interface, and water concentrations in the aquifer away from the interface decrease because of mixing with clean water. Therefore, assuming equilibrium conditions conservatively overestimates the concentration in groundwater.

Identification of groundwater SLs is consistent with the process in Section XXVI.D of the Consent Order for evaluating groundwater monitoring data. For each individual VOC, the lower concentration of the NMWQCC groundwater standard or EPA MCL is used as the groundwater SL. If an NMWQCC groundwater standard or an MCL has not been established for a specific substance for which toxicological information is published, the NMED SL for tap water is used as the groundwater SL. NMED tap water SLs are established for either a cancer- or noncancerous-risk type; for the cancer-risk type, SLs are based on a 10^{-5} excess cancer risk specified by the Consent Order. This report was prepared using the 2021 "NMED Risk Assessment Guidance for Site Investigations and Remediation Volume 1, Soil Screening Guidance for Human Health Risk Assessments" (NMED 2021, 701849). If an NMED tap water SL has not been established for a specific substance for which toxicological information is published, the EPA regional SL for tap water (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) is used. EPA tap water SLs are also established for either a cancer- or noncancerous-risk type. The EPA tap water SLs, based on a 10^{-6} excess cancer risk, are multiplied by 10 to convert them to 10^{-5} risk for equivalence with NMED SLs.

Table 3.1-1 presents Tier I pore gas SLs calculated using Equation 3.1-2. Table 3.1-2 presents the results of the Tier I screening for the first round of 2021 soil-vapor data. Table 3.1-3 presents the results of the Tier I screening for the second round of 2021 soil-vapor data. For the first round of sampling, 14 VOCs were identified that exceeded the Tier I SL. For the second round of sampling, 13 VOCs were identified that exceeded the Tier I SL. Between the two sampling rounds, a total of 14 VOCs exceeded the Tier I SL (isopropanol exceeded the Tier I SL in the first round but not in the second round). An analysis of the MDA L data is presented in section 5.0 and Appendix D.

3.2 Vapor Intrusion Screening Levels for Potential Human Exposure

NMED has developed VISLs for chemicals determined to be sufficiently volatile and toxic that are most commonly associated with environmental releases within the state (NMED 2021, 701849).

NMED guidance on evaluating a vapor intrusion pathway does not specify a sample depth that needs to be evaluated against the VISLs. The guidance does specify that evaluation is required if a pathway for exposure is complete or potentially complete; for example, detected VOC concentrations near buildings with occupants. Therefore, the concentrations of VOC contaminants in pore-gas samples located closest to buildings with occupants are the relevant locations for comparison with the VISLs for soil-gas (µg/m^3). The focus should be on VOC contaminants in the first 30 ft of subsurface based on the potential movement of the VOC vapor contaminants through the subsurface and into the building. The shallower VOC contamination has the higher potential to volatilize into the building, where human exposure can take place.

The four boreholes and sampling ports shown in Table 3.2-1 were chosen to screen VISLs. The shallowest depth was chosen from each of the boreholes, and their locations relevant to structures are shown in Figure 1.1-3. Based on the analytical results presented in section 5, VISLs were exceeded in some of the shallowest sampling ports.

4.0 FIELD-SCREENING RESULTS

Before each sampling event, field screening was performed in each borehole at the targeted sampling interval to ensure CO_2, and O_2 levels at each sampling port had stabilized at values representative of subsurface pore-gas conditions. Subsurface vapor monitoring was conducted at the locations and depths described in section 2.0 and shown in Table 2.0-1. Before sampling, each interval was purged in accordance with N3B-SOP-ER-2008, "Sampling Subsurface Vapor," to ensure pore gas was being collected. The pore gas from each port was field-screened using portable gas detectors. During the first round of sampling, a MultiRae Multi-Gas Detector equipped with a 10.6-electronvolt photoionization detector (PID) and O_2 sensor was used to screen for VOCs and O_2 and a ToxiRAE Pro CO_2 sensor was used to screen for CO_2. During the second round of sampling, a RKI Eagle 2 gas detector was used to screen for O_2 and CO_2 and a MultiRae Multi-Gas Detector with a 10.6-electronvolt PID was used to screen for VOCs. Each interval was purged until these readings stabilized. The stabilized CO_2, O_2, and total VOC concentrations from the 2021 monitoring rounds performed at each sampling location are shown in Appendix B.

5.0 ANALYTICAL DATA RESULTS

This section presents a summary of VOC and tritium pore-gas data for 2021 and an evaluation of the pore-gas VOC data.

All analytical data were subject to validation reviews in accordance with N3B guidance and procedures. Appendix C presents a description of these data validation reviews for 2021 MDA L pore-gas data. All validated analytical results from 2021 pore-gas sampling are presented in Appendix E (on CD included with this document).

MDA L pore-gas data are also available at the Intellus New Mexico website (http://www.intellusnm.com/).

5.1 VOC Pore-Gas Results

Subsurface vapor samples were collected at MDA L from sentry and peripheral boreholes in the first sampling round (April–May 2021) and from sentry boreholes in the second sampling round (February 2022). VOC samples were collected in SUMMA canisters and submitted for laboratory analysis according to EPA Method TO-15. Tritium samples were collected in silica gel cartridges and submitted for laboratory analysis according to EPA Method 906.0.

VOC analytical data from the first round of 2021 sampling are presented in Table 5.1-1 and Plate 1 and from the second round are presented in Table 5.1-2 and Plate 2. Tritium analytical data from the first round of 2021 sampling are presented in Table 5.1-3 and from the second round are presented in Table 5.1-4. The N3B data management program used to review the data is presented in Appendix C. Analytical data and reports for 2021 are included in Appendix E (on CD included with this document).

Analytical results demonstrated that during the first sampling round, 35 different VOCs were detected at least once in vapor samples collected from MDA L. During the second sampling round, 26 different VOCs were detected at least once. Trichloroethane[1,1,1-] (TCA[1,1,1-]) was detected in all 167 samples analyzed in the first round and 34 of the 36 samples analyzed in the second round. TCA[1,1,1-] was the VOC detected at the highest concentration for both rounds. TCA[1,1,1-] was detected at a concentration of 1,300,000 $\mu g/m^3$ in borehole 54-02089 at 86 ft bgs during the first round and 1,200,000 $\mu g/m^3$ in the same screen in the second round. Other VOCs detected frequently during the first round of sampling were trichloroethene (TCE) and tetrachloroethene (PCE), (each detected in 166 of 167 samples); 1,1-dichloroethene (DCE) (detected in 165 of 167 samples); 1,1,2-trichloro-1,2,2-trifluoroethane (Freon-113) (detected in 164 of 167 samples); and 1,1-dichloroethane (1,1-DCA) (detected in 159 of 167 samples). Other VOCs detected frequently during the second round of sampling were chloroform, dichlorodifluoromethane, and DCE (each detected in 35 of 36 samples); Freon-113 and trichlorofluoromethane (Freon-11) (each detected in 34 of 36 samples); and 1,1-DCA (detected in 33 of 36 samples).

In the first round of sampling, tritium was detected in 43 of 167 samples with activities ranging from 224 pCi/g at 60 ft in borehole 54-02022 to 31,562 pCi/L at 125 ft in borehole 54-24243. In the second round, tritium was detected in 19 of the 36 samples analyzed at activities ranging from 796 pCi/L at 113 ft in borehole 54-24241 to 120,001 pCi/L at 44 ft in borehole 54-24238.

5.2 Evaluation of VOC Pore-Gas Data as Related to Hypothetical Groundwater Contamination

5.2.1 Potential for Groundwater Contamination

The VOC results from the 2021 monitoring rounds were screened in a Tier I analysis to evaluate whether the concentrations would be a potential source of contamination if the pore gas were in contact with groundwater (Section 3.1). If the maximum concentration of a particular VOC in pore gas is less than the appropriate pore-gas SL, then no potential exists for exceedances of groundwater cleanup levels (see section 3.1).

Equation 3.1-2 was used to calculate pore-gas SLs for VOCs detected in pore-gas samples at MDA L during the two sampling rounds. As shown in Table 3.1-1, there were 32 VOCs detected for which there are MCLs, NMWQCC standards, or NMED or EPA regional tap water SLs.

Tables 5.1-1 and 5.1-2 show the 14 VOCs that exceeded Tier I groundwater screening levels. These VOCs are benzene; carbon tetrachloride; chloroform; 1,1-DCA; 1,2-DCA; 1,1-DCE; 1,2-DCP; 1,4-dioxane; isopropanol/2-propanol; methylene chloride; PCE; 1,1,1-TCA; 1,1,2-TCA; and TCE. Because some concentrations exceeded screening levels, further screening was performed using the concentrations from the deepest pore-gas sample (i.e., the sample collected closest to the regional aquifer). The deepest sample was collected from borehole location 54-24399 at a depth of 587 ft, and this sample had 1 VOC detected above Tier I pore-gas SLs.

Dioxane[1,4-] was detected at a concentration of 28 $\mu g/m^3$, which is approximately 31 times greater than the Tier I pore-gas SL (0.9 $\mu g/m^3$), in the sample collected during the first round of monitoring. Dioxane[1,4-] was not detected in the deepest sample collected from borehole location 54-24399 during the second round of sampling. Dioxane[1,4-] is not routinely detected in the deepest sample collected from borehole 54-24399 and has been detected in only two of the seven samples collected since the permanent packer was installed in this borehole in August 2017.

In the 2021 sampling, measured concentrations of all compounds in the basalt are all less than Tier I SLs with three exceptions. First, a single port in borehole 54-01016 measured TCE at 1.7 times the Tier I SL. This port is at a slant depth of 481 ft and the port above this at a slant depth of 390 ft has a TCE concentration 0.2 times the Tier I SL. Second, the data from May 2021 show 1,4 dioxane concentrations greater than Tier I SLs in the two deepest sample ports in the basalt in borehole 54-24399. The measured values are greater than the method detection limit; however, they are much less than the analytical laboratory's report detection limit (i.e., quantitation limit). May 2021 data from the seven other ports in the basalt in boreholes 54-01015 and 54-01016 show no 1,4 dioxane detections. Data from the second round of sampling for 2021 (February 2022) show no detections of 1,4--dioxane in borehole 54-24399. This compound should be watched carefully to see if detections continue to occur, and a focused validation of the raw data will be performed to determine if the measured detections are valid.

5.2.2 VOC Concentration Trends in Subsurface Vapor Over Time

The objective of monitoring peripheral boreholes is to evaluate concentration trends of VOCs in subsurface vapor at MDA L over time and spatially from known VOC source areas to evaluate if the plume is spreading horizontally and/or vertically.

The following concentration trends over time are discussed in detail in Appendix D.

The boreholes on the east side of the site are used to sample the VOC plume within the Bandelier Tuff, with depths to 338 ft bgs. Data from boreholes 54-02089 (Appendix D, Figures D-4.1-1 [TCE] and D-5.0-1 [total VOCs]) and 54-24238 (Appendix D, Figures D-4.1-2 [TCE], D-4.1-3 [methylene chloride], and D-5.0-2 [total VOCs]) both show strong evidence of possible increased leakage from subsurface sources, starting during the period of the 2015 IM SVE operation and continuing until the present, with a peak in February 2019. The remaining eastside sentry boreholes, 54-24241 (Appendix D, Figure D-4.1-4) and 54-27642 (Appendix D, Figure D-4.1-5), both show TCE concentrations rebounding toward levels seen in September 2014, although many ports remain significantly less than pre-SVE concentrations.

Data from the westside sentry boreholes (54-24240 and 54-27641) are shown in Appendix D, Figures D-4.2-1 and D-4.2-2. Borehole 54-24240 shows the strongest rebound at 28 ft bgs (Appendix D, Figure D-4.2-1) and attains total VOC concentrations slightly greater than pre-SVE values. Borehole 54-27641 shows limited rebound with a maximum rebound at 32 ft bgs in February 2019 (Appendix D, Figure D-4.2-2).

Concentrations of total VOCs near the base of the Otowi member of the Bandelier tuff (just above the basalt) on the west side of MDA L in borehole 54-27641 show little change from 2014 through 2021. Concentrations near the base of the Otowi on the east side of MDA L in borehole 27642 appear to be decreasing from January 2020 through February 2022.

Data from 2021 show the SVE IM has led to overall reductions in concentration in the plume persisting more than 6 yr (Figure D-3.0-1). Maximum TCE concentrations between the two source areas are lower and have not rebounded to the red (100 times Tier I) levels seen in 2014. The 100 times Tier I red regions have also been reduced vertically as shown on the A-A′ vertical cross-sections. The lateral extent of the plume edge shows some reductions as well, as seen in the top, map view panels of Figure D-3.0-1. In these map view panels, the width of the plume along the B-B′ and C-C′ lines is reduced, with concentrations at the edge of the plume lower in 2021 than they were in 2014. The same lateral reduction in plume extent can be seen in the lower vertical panels, where drops in concentration from 2014 to 2021 are apparent in borehole 54-02026 on the A-A′ cross-section, in borehole 54-02031 in the B-B′ cross-section, and in borehole 54-02023 on the left side of the C-C′ cross-section. Thus, the IM objective of reducing the plume concentration and extent has been met.

5.2.3 Evaluation of VOC Pore-Gas Data for Human Health Using Vapor Intrusion Screening Levels

Concentration of VOCs in the shallowest borehole port depth located closest to buildings with occupants are the relevant locations to be compared with the VISLs for soil-gas (μg/m^3). NMED lists VISLs for both industrial soil-gas (μg/m^3) and residential soil-gas (μg/m^3). Because MDA L is an industrial site, the comparison of VOC concentrations with VISLs was based on industrial soil-gas.

It is reasonable to work with a conceptual model that focuses on volatiles in about the first 30 ft of subsurface based on the potential movement of the VOC gases through the subsurface and into the building. The shallower contamination has the higher potential to migrate into the building, which poses a risk of human exposure.

The majority of MDA L is covered by asphalt, which tends to block upwardly migrating VOCs. However, the trailers at MDA L are not on asphalt; thus the asphalt could focus upward VOC migration toward the trailers. There are no monitoring boreholes near the trailers shown in Figure 1.1-3 (trailers 54-0037,

-0051, -0060, -0083, and -0084 are located east of the lower portion of the Mesita del Buey Rd. label on the figure).

As discussed in section 3.2, the data from the shallowest sampling ports in four boreholes located near structures were compared with VISLs for exceedances. VOCs in the borehole ports nearest to the trailers exceeded VISLs as shown in Tables 5.1-1 and 5.1-2. All four boreholes were sampled during the first round of monitoring and two of the boreholes were sampled during the second round. For the first round of monitoring, seven VOCs (carbon tetrachloride; chloroform; 1,1-DCA; 1,2-DCA; 1,2-DCP; PCE; and TCE) were detected above VISLs. Carbon tetrachloride and 1,2,-DCP were detected above VISLs at three of four boreholes, and the other VOCs were detected in all four boreholes. For the second round of monitoring, eight VOCs (carbon tetrachloride; chloroform; 1,1-DCA; 1,2-DCA; 1,2-DCP; PCE; 1,1,2-TCA; and TCE) were detected above VISLs. DCP[1,2-] and 1,1,2-TCA were each detected above VISLs at one of the two boreholes sampled and the other VOCs were detected in both boreholes.

These tables serve as a preliminary screening tool to evaluate on-site worker safety. The data will be shared with N3B Environment, Safety and Health and if interior sampling is determined to be warranted, a sampling plan will be developed and implemented.

5.2.4 Need to Restart Soil-Vapor Extraction System

Monitoring sentry boreholes allows early detection of potential waste container failure in the disposal shafts and provides data for the decision to restart either or both of the SVE systems. Recommendations included in the “Interim Measures Final Report for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54” (N3B 2018, 700039) are to activate the eastern and/or western SVE unit if total VOC concentrations in any ports in the eastern and or western sentry boreholes rise above 2000 ppmv, and stay consistently above 2000 ppmv with each consecutive measurement for ports to depths of 100 ft, for a period of 2 yr. Once this trend is observed, the eastern/western SVE system should be activated. As part of ongoing discussions with NMED, a new metric for initiating the SVE system is being developed that will include Tier I SLs in addition to the 2000 ppmv metric.

Tables 5.2-1 and 5.2-2 show VOC concentrations by analyte and total VOCs in ppmv. The highest total VOC concentration in the first sampling round was 463 ppmv in borehole 54-24238 at 64 ft. The highest total VOC concentration in the second sampling round was 438 ppmv in borehole 54-02089 at 46 ft. While the data demonstrate there is not a need to restart the SVE system now, semiannual pore gas monitoring of sentry boreholes will continue and total VOC concentrations will continue to be evaluated.

6.0 SUMMARY

The purpose of monitoring VOCs in pore gas at MDA L is to identify changes in the configuration of the VOC plumes, monitor changes in contaminant concentration distribution, and identify gaps in VOC data for future modeling or trend analyses.

The results from the two 2021 sampling rounds are summarized below.

- VOC concentrations at MDA L are consistent with a diffusive plume as described by Stauffer et al. (2005, 090537). The diffusive plume has been significantly modified by the 2015 SVE IM (N3B 2018, 700039; Behar et al. 2019, 700854). The SVE IM removed 1000 lb of VOCs. The graphs in Appendix D show concentrations dropping from the 2014 pre-SVE levels in nearly all ports. VOC concentrations are highest from ground surface to approximately 60 ft bgs, within the depth of the VOC disposal shafts.

- VOC concentrations decrease with depth from the base of the disposal units (60 ft bgs) to borehole total depth, with the exception of borehole 54-27642 (e.g., Figure D-4.1-5 in Appendix D).
- VOC concentrations in the source areas are rebounding, implying continued leakage from subsurface containers (e.g., Figure D-5.0-2 in Appendix D). The source areas are the disposal shafts shown in Figure 1.1-2.
- VOC concentrations at two wells on the east side of MDA L show strong evidence of possible increased leakage from subsurface sources, starting during the period of SVE operation and continuing until 2019. Data from the second round for one of these wells suggest that the increased leakage has not continued and concentrations are dropping back toward pre-SVE levels. This trend suggests that a logical action level would be to turn on SVE systems only in the face of a sustained leak with concentrations of more than 2000 ppmv for two or more sampling rounds, perhaps with an increasing trend for a full year.
- VOC concentrations measured deep below the central portion of each source area in the Cerros del Rio basalt are less than Tier I SL concentrations derived from groundwater cleanup standards with three exceptions. Dioxane[1,4-] was detected above the Tier I SL in two ports in borehole 54-24399 in May 2021 but not in February 2022. A single value of TCE at 1.7 times the Tier I SL was detected in borehole 54-01016 in May 2021 at a slant depth of 481 ft.
- Continued observation of data from the basalt (two ports in borehole 54-24399 and seven ports in boreholes 54-01015 and 54-01016) are confirming expectations that values in the deep basalt are stabilizing after installation of the permanent packer in August 2017. Stabilization of VOC measurements in the deep basalt is allowing more confidence in determinations of the MDA L VOC plume impact on the quality of regional groundwater. Some variation in basalt concentration values is expected as barometric pumping pushes and pulls mass through fractures.

Discussions with NMED in January 2020 resulted in the decision to delay the replacement of borehole 54-24399 for the following reason. Observing the deep boreholes will reveal if the concentrations are now reaching an equilibrium no longer impacted by deep breathing in borehole 54-24399. If/when concentrations in borehole 54-24399 stabilize, N3B will re-evaluate the original request to replace that borehole. Included in this plan is continued comparison of VOC concentrations in boreholes 54-01015 and 54-01016 to ensure that subsurface VOC values at all available monitoring points in the basalt are (1) consistent with the conceptual model (i.e., not changing rapidly or erratically) and (2) less than levels of concern for impacting groundwater. If either of these conditions begin to deviate from current conditions, N3B and NMED should meet again to discuss the adequacy of the current basalt monitoring locations for ensuring groundwater safety (Stauffer et al. 2019, 700871).

7.0 REFERENCES AND MAP DATA SOURCES

7.1 References

The following reference list includes documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID.ERIDs were assigned by Los Alamos National Laboratory's (the Laboratory's) Associate Directorate for Environmental Management (IDs through 599999); ESHIDs were assigned by the Laboratory's Associate Directorate for Environment, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by N3B (IDs 700000 and above).

Behar, H.R., E.E. Snyder, S. Marczak, L.J. Salazar, B. Rappe, G.F. Fordham, S.P. Chu, D.M. Strobridge, K.H. Birdsell, T.A. Miller, K.C. Rich, and P.H. Stauffer, February 2019. "An Investigation of Plume Response to Soil Vapor Extraction and Hypothetical Drum Failure," *Vadose Zone Journal,* Vol. 18, No. 1. (Behar et al. 2019, 700854)

LANL (Los Alamos National Laboratory), November 2006. "Summary Report: 2006 In Situ Soil Vapor Extraction Pilot Study at Material Disposal Area L, Technical Area 54, Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-06-7900, Los Alamos, New Mexico. (LANL 2006, 094152)

LANL (Los Alamos National Laboratory), September 2011. "Corrective Measures Evaluation Report for Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54, Revision 2," Los Alamos National Laboratory document LA-UR-11-4798, Los Alamos, New Mexico. (LANL 2011, 205756)

N3B (Newport News Nuclear BWXT-Los Alamos, LLC), August 2018. "Interim Measures Final Report for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54," Newport News Nuclear BWXT-Los Alamos, LLC, document EM2018-0008, Los Alamos, New Mexico. (N3B 2018, 700039)

NMED (New Mexico Environment Department), November 2021. "Risk Assessment Guidance for Site Investigations and Remediation, Volume 1, Soil Screening Guidance for Human Health Risk Assessments," November 2021, Hazardous Waste Bureau and Ground Water Quality Bureau, Santa Fe, New Mexico. (NMED 2021, 701849)

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., T. Rahn, J.P. Ortiz, L.J. Salazar, H. Boukhalfa, H.R. Behar, and E.E. Snyder, March 2, 2019. "Evidence for High Rates of Gas Transport in the Deep Subsurface," *Geophysical Research Letters,* Vol. 46, No. 7. (Stauffer et al. 2019, 700871)

7.2 Map Data Sources

Map data sources used in original figures created for this report are described below and identified by legend title.

Legend Item	Data Source
Disposal pit/ impoundment	Waste Storage Features; LANL, Environment and Remediation Support Services Division, GIS/Geotechnical Services Group, EP2007-0032; 1:2,500 Scale Data; 13 April 2007.
Disposal shaft	Waste Storage Features; LANL, Environment and Remediation Support Services Division, GIS/Geotechnical Services Group, EP2007-0032; 1:2,500 Scale Data; 13 April 2007.
Elevation contour	Hypsography, 10, 20, & 100 Foot Contour Intervals; LANL, ENV Environmental Remediation and Surveillance Program; 1991.
Fence	Security and Industrial Fences and Gates; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 10 September 2007.
LANL boundary	LANL Areas Used and Occupied; LANL, Site Planning & Project Initiation Group, Infrastructure Planning Division; 19 September 2008.
Material disposal area	Materials Disposal Areas; LANL, ENV Environmental Remediation and Surveillance Program; ER2004-0221; 1:2,500 Scale Data; 23 April 2004.
Paved road	Los Alamos National Laboratory, FWO Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.
Structure	Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.
TA boundary	As published; Triad SDE Spatial Geodatabase: GISPUBPRD1\PUB.Boundaries\PUB.Tecareas; February 2020.
Major Road	As published; Q:\16-Projects\16-0033\project_data.gdb\line\major_road; February 2020.
Unpaved road	Dirt Road Arcs; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 10 September 2007.
Drainage	As published; Q:\16-Projects\16-0033\project_data.gdb\line\drainage_features; February 2020.
Vapor monitoring well	Point Feature Locations of the Environmental Restoration Project Database; LANL, Environment and Remediation Support Services Division, EP2007-0754; 30 November 2007.

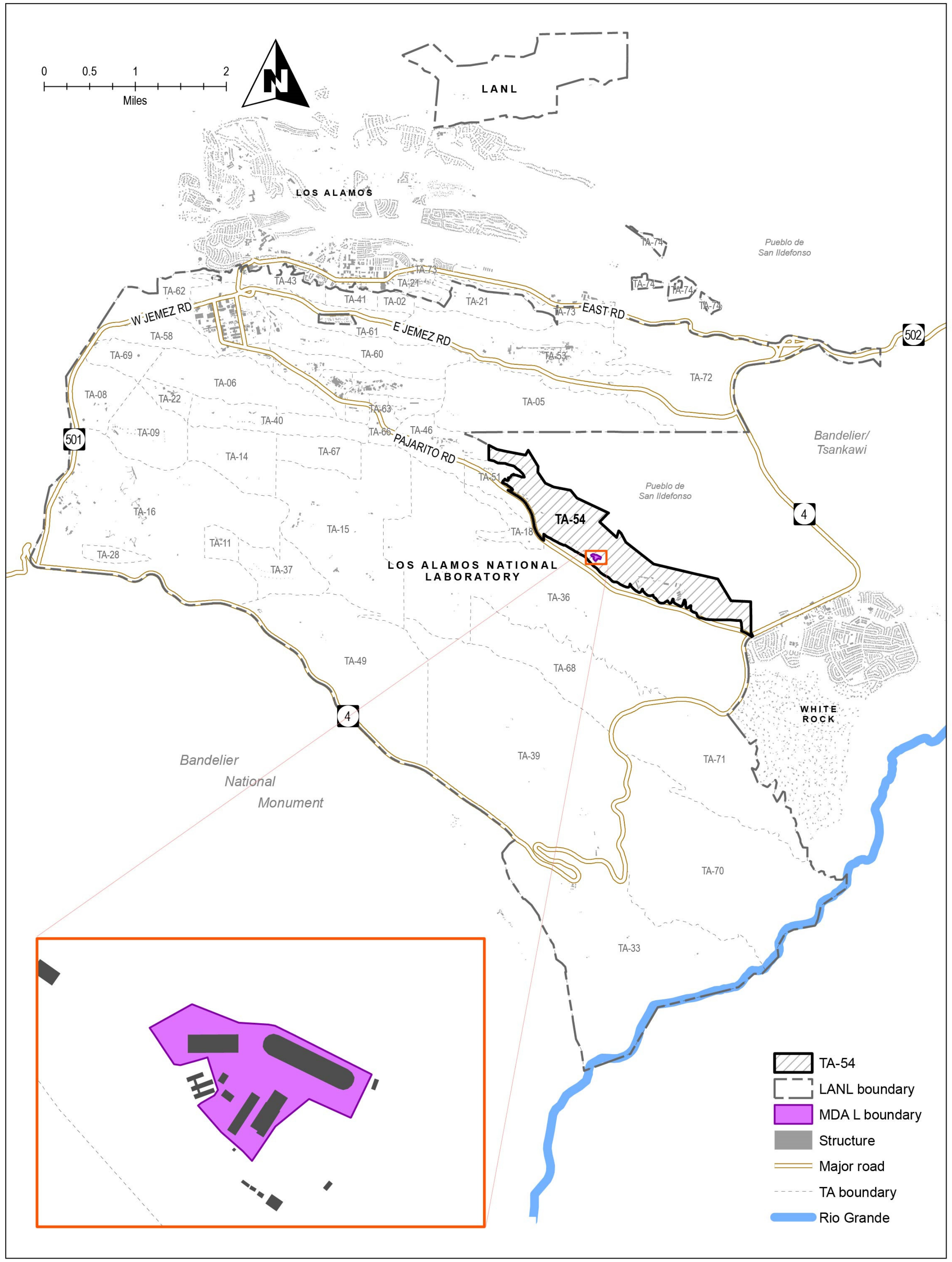

Figure 1.1-1 Location of MDA L with respect to Laboratory technical areas

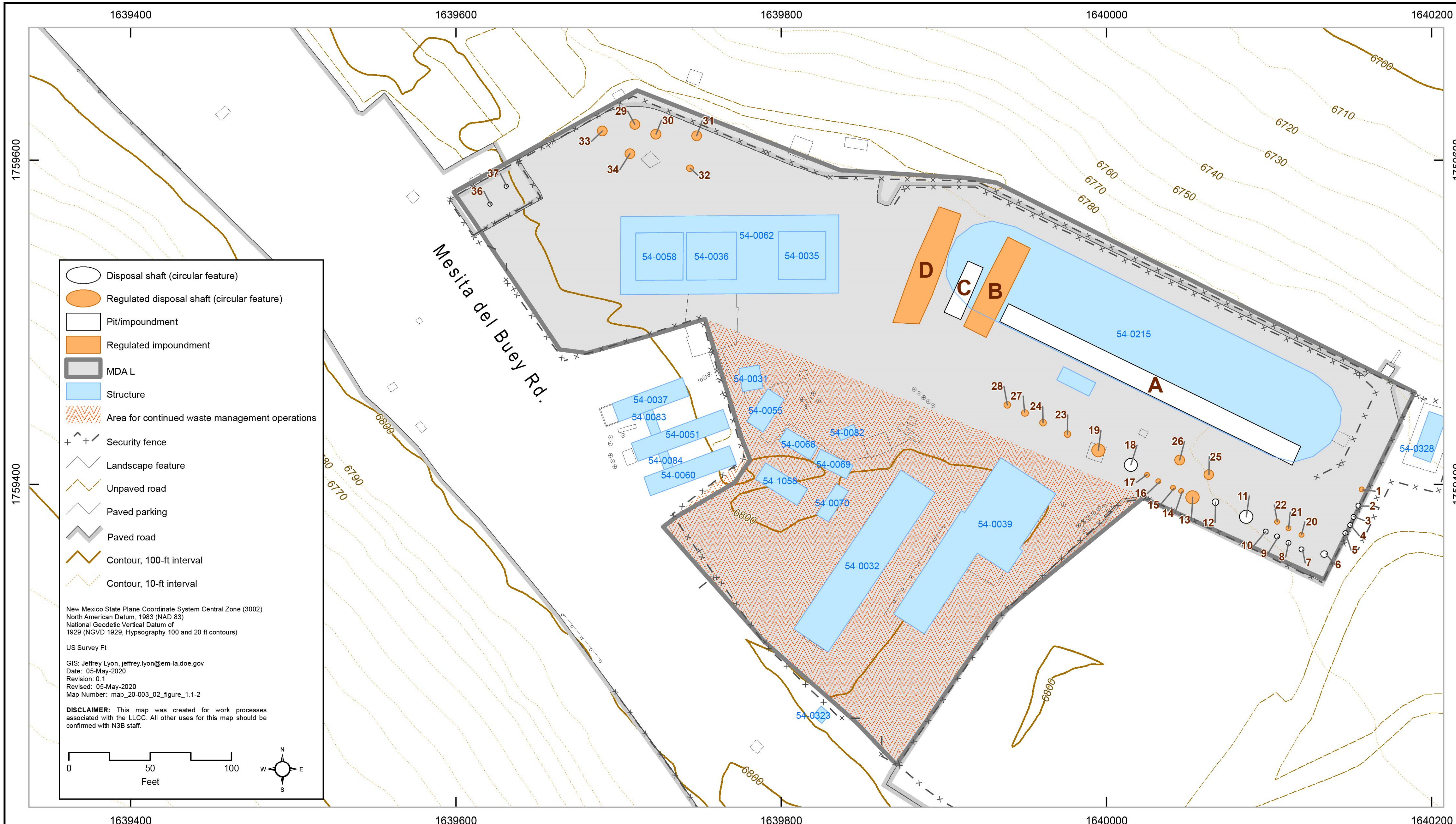

Figure 1.1-2 Inactive subsurface disposal units and existing surface structures at MDA L

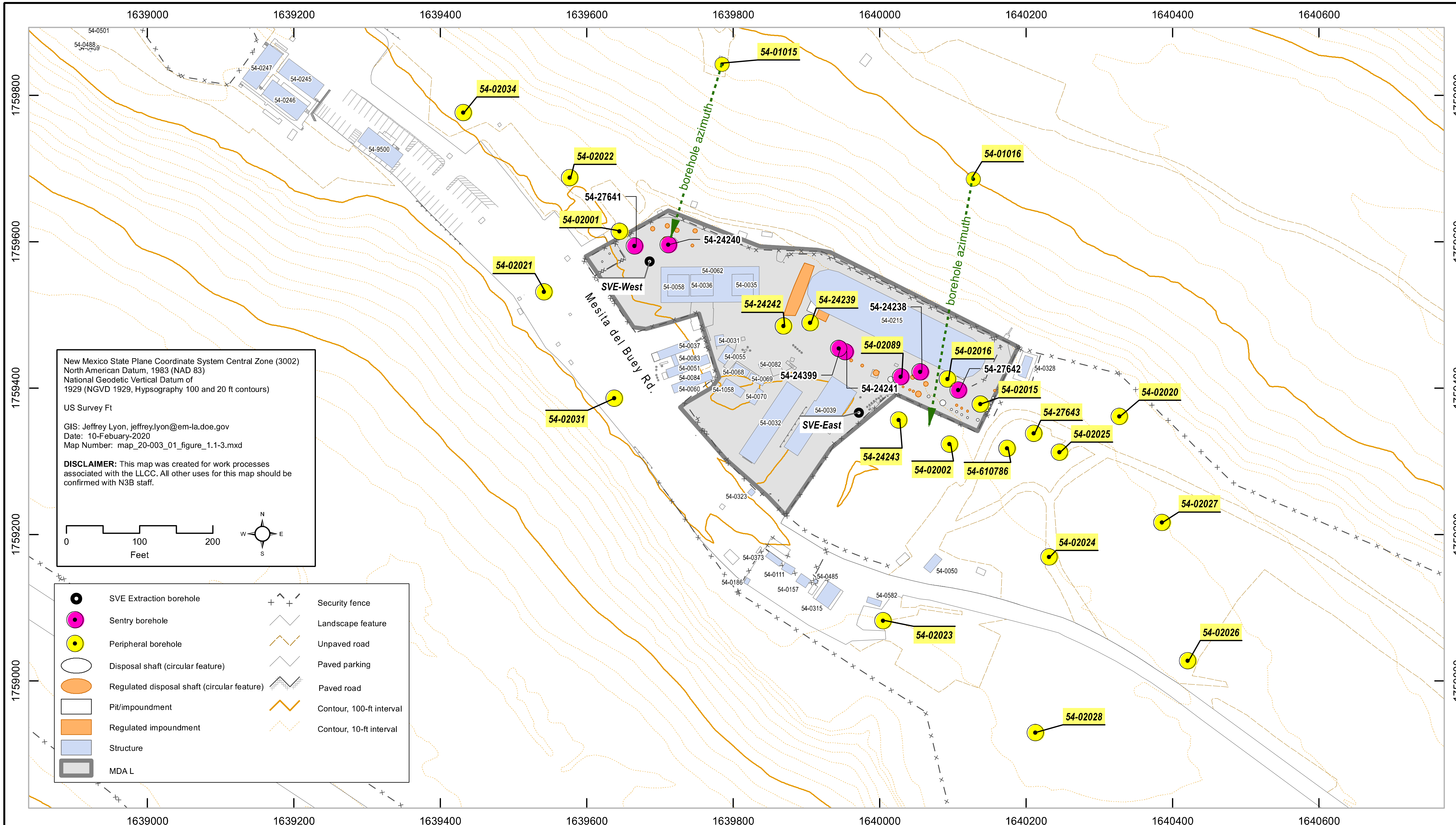

Figure 1.1-3 Location of MDA L pore-gas monitoring boreholes

Table 2.0-1
First Round 2021 MDA L
Subsurface Vapor-Monitoring Locations—Peripheral and Sentry Boreholes

Borehole	Screening Conducted	Sampling Port Depth (vertical depth in ft)
54-01015	Yes	45,187, 350, 385, 435, 485, 525
54-01016	Yes	188, 318, 390, 481, 533, 601
54-02001	Yes	20, 40, 60, 80, 100, 120, 140, 160,180, 200
54-02002	Yes	40, 60, 120, 180, 200
54-02016	Yes	31
54-02020	Yes	20, 40, 60, 80, 95, 120, 140, 160, 180, 200
54-02021	Yes	20, 140, 160, 180, 198
54-02022	Yes	40, 60, 120, 180, 200
54-02023	Yes	20, 40, 60, 80, 100, 159, 200
54-02024	Yes	20, 40, 60, 80, 100, 140, 160, 180, 200
54-02025	Yes	20, 60, 100, 160, 190
54-02026	Yes	20, 60, 100, 160, 200, 215
54-02027	Yes	20, 60, 100, 160, 200, 220, 250
54-02028	Yes	20, 60, 100, 160, 200, 220, 250
54-02031	Yes	20, 60, 100, 160, 200, 220, 260
54-02034	Yes	20, 60, 100, 160, 200, 220, 260, 300
54-02089	Yes	13, 31, 46, 86
54-24238	Yes	44, 64, 84
54-24239	Yes	25, 50, 75, 99.5
54-24240	Yes	28, 53, 78, 103, 128, 153
54-24241	Yes	73, 93, 113, 133, 153, 173, 193
54-24242	Yes	25, 50, 75, 100, 110.5
54-24243	Yes	25, 50, 75, 100, 125
54-24399*	Yes	566.3, 587.3
54-27641	Yes	32, 82, 115, 182, 232, 271, 332.5
54-27642	Yes	30, 75, 116, 175, 235, 275, 338
54-27643	Yes	30, 74, 117, 167, 235, 275, 354
54-610786	Yes	25, 50, 75, 100, 118.5

* Open borehole.

Table 2.0-2
Second Round 2021 MDA L
Subsurface Vapor-Monitoring Locations—Sentry Boreholes

Borehole	Screening Conducted	Sampling Port Depth (vertical depth in ft)
54-02089	Yes	13, 31, 46, 86
54-24238	Yes	44, 64, 84
54-24240	Yes	28, 53, 78, 103, 128, 153
54-24241	Yes	73, 93, 113, 133, 153, 173, 193
54-24399*	Yes	566.7, 587.8
54-27641	Yes	32, 82, 115, 182, 232, 271, 332.5
54-27642	Yes	30, 75, 116, 175, 235, 275, 338

* Open borehole.

Table 2.1-1
First Round 2021 Sampling Requirements Deviations

Borehole	Port	Deviation	Cause
54-01015	525 ft	The sample for tritium analysis that did collect at least 5 grams of moisture.	Pore-gas moisture content was too low to collect 5 grams moisture within a reasonable time period.
54-01016	481 ft		
54-02001	140 ft		
54-02002	180 ft		
54-02020	120 ft		
54-02027	160 ft		
n/a*	n/a	A total of 17 VOC field blanks were planned for collection, however only 15 VOC field blanks were collected for analysis.	Sampling field crew error.

* n/a = Not applicable.

Table 2.1-2
Second Round 2021 Sampling Requirements Deviations

Borehole	Port	Deviation	Cause
54-02089	13	The sample for tritium analysis that did collect at least 5 grams of moisture.	Pore-gas moisture content was too low to collect 5 grams moisture within a reasonable time period.
	31		
54-24238	44		
	64		
	84		
54-24240	53 (FD*)		
	78		
	103		
	153		
54-24241	73 (FD)		
	93		
	133		
54-27641	32		
	82		
	115		
	182		
	232		
	332.5		

* FD = Field duplicate sample.

Table 3.1-1
MDA L Tier I Pore-Gas Screening Levels

VOC	Henry's Law Constant[a] (dimensionless)	Groundwater SL (µg/L)	Source of Groundwater SL	Tier I Pore-Gas SLs (µg/m³)
Acetone	0.00144	14,100	NMED Tap Water[b]	20,300
Benzene	0.228	5	NM GW[c]	1140
Carbon disulfide	0.59	810	NMED Tap Water	478,000
Carbon tetrachloride	1.13	5	NM GW	5650
Chlorobenzene	0.128	100	EPA MCL[d]	12,800
Chloroform	0.15	80	EPA MCL	12,000
Cyclohexane	6.1	13,000	EPA Tap Water[e]	79,300,000
Dichlorodifluoromethane	14.1	197	NMED Tap Water	2,780,000
Dichloroethane[1,1-] (1,1-DCA)	0.23	25	NM GW	5750
Dichloroethane[1,2-] ()1,2-DCA)	0.0484	5	NM GW	242
Dichloroethene[1,1-] (1,1-DCE)	1.07	7	NM GW	7490
Dichloroethene[cis-1,2-]	0.167	70	NM GW	11,700
Dichloroethene[trans-1,2-]	0.383	100	NM GW	38,300
Dichloropropane[1,2-] (1,2-DCP)	0.116	5	NM GW	580
Dioxane[1,4-]	0.000197	4.59	NMED Tap Water	0.9
Ethanol	na[f]	na	na	na
Ethylbenzene	0.323	700	NM GW	226,000
Ethyltoluene[4-]	na	na	na	na
Heptane[n-]	82	6	EPA Tap Water	492,000
Hexane	73.8	319	NMED Tap Water	23,500,000
Isooctane	na	na	na	na
Isopropanol (propanol[2-])	0.000331	410	EPA Tap Water	136
Methylene chloride	0.133	5	NM GW	665
Tetrachloroethene (PCE)	0.726	5	NM GW	3630
Tetrahydrofuran	0.00288	3400	EPA Tap Water	9790
Toluene	0.272	1000	NM GW	272,000
Trichloro-1,2,2-trifluoroethane[1,1,2-] (Freon-113)	21.6	55,000	NMED Tap Water	1,190,000,000
Trichloroethane[1,1,1-]	0.705	200	NM GW	141,000
Trichloroethane[1,1,2-]	0.0338	5	NM GW	169
Trichloroethene (TCE)	0.404	5	NM GW	2020
Trichlorofluoromethane (Freon-11)	3.98	1140	NMED Tap Water	4,540,000
Trimethylbenzene[1,2,4-]	0.252	56	EPA Tap Water	14,000
Vinyl chloride	1.14	2	NM GW	2280

Table 3.1-1 (continued)

VOC	Henry's Law Constant[a] (dimensionless)	Groundwater SL (µg/L)	Source of Groundwater SL	Tier I Pore-Gas SLs (µg/m³)
Xylene[1,2-]	0.212	193	NM Tap Water	40,900
Xylene[1,3-]+xylene[1,4-][g]	0.212	193	NM Tap Water	40,900

Notes: Tier I screening concentration is the calculated concentration in pore gas exceeding groundwater standard derived from Equation 3.1-2.

[a] The source of Henry's law constants is the NMED "NMED Risk Assessment Guidance for Site Investigations and Remediation Volume 1, Soil Screening Guidance for Human Health Risk Assessments" (NMED 2021, 701849) or the EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables).

[b] NMED 2021, 701849.

[c] 20.6.2.3103 New Mexico Administrative Code.

[d] 40 Code of Federal Regulations 141 Subpart G.

[e] https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.

[f] na = Not available.

[g] SL for xylene [1,3-]+xylene[1,4-] is for xylene mixture.

Table 3.1-2
Tier I Screening of VOCs Detected in Pore Gas during First 2021 Sampling Round at MDA L

VOCs	Maximum Pore-Gas Concentration (µg/m³)	Tier I Pore-Gas SL (µg/m³)	Tier I Potential for Groundwater Impact[a]
Acetone	90 (J)	20,300	No
Benzene	1800	1140	Yes
Carbon disulfide	140 (J)	478,000	No
Carbon tetrachloride	7500	5650	Yes
Chlorobenzene	640	12,800	No
Chloroform	36,000	12,000	Yes
Cyclohexane	22,000	79,300,000	No
Dichlorodifluoromethane	3800	2,780,000	No
Dichloroethane[1,1-] (1,1-DCA)	49,000	5750	Yes
Dichloroethane[1,2-] (1,2-DCA)	93,000	242	Yes
Dichloroethene[1,1-] (1,1-DCE)	33,000	7490	Yes
Dichloroethene[cis-1,2-]	26 (J)	11,700	No
Dichloroethene[trans-1,2-]	110 (J)	38,300	No
Dichloropropane[1,2-] (1,2-DCP)	300,000	580	Yes
Dioxane[1,4-]	4700	0.9	Yes
Ethanol	230 (J)	na[b]	na
Ethylbenzene	150 (J)	226,000	No
Ethyltoluene[4-]	12 (J)	na	na

Table 3.1-2 (continued)

VOCs	Maximum Pore-Gas Concentration (µg/m³)	Tier I Pore-Gas SL (µg/m³)	Tier I Potential for Groundwater Impact[a]
Heptane[n-]	53 (J)	492,000	No
Hexane	310 (J)	23,500,000	No
Isooctane	140 (J)	na	na
Isopropanol (propanol[2-])	200 (J)	136	Yes
Methylene chloride	29,000	665	Yes
Tetrachloroethene (PCE)	280,000	3630	Yes
Tetrahydrofuran	8300	9790	No
Toluene	2900	272,000	No
Trichloro-1,2,2-trifluoroethane[1,1,2-] (Freon-113)	500,000	1,190,000,000	No
Trichloroethane[1,1,1-] (1,1,1-TCA)	1,300,000	141,000	Yes
Trichloroethane[1,1,2-] (1,1,2-TCA)	6500	169	Yes
Trichloroethene (TCE)	640,000	2020	Yes
Trichlorofluoromethane (Freon-11)	25,000	4,540,000	No
Trimethylbenzene[1,2,4-]	37 (J)	14,000	No
Vinyl chloride	110 (J)	2280	No
Xylene[1,2-]	560	40,900	No
Xylene[1,3-]+xylene[1,4-]	400	40,900	No

Notes: Tier I screening level is the calculated concentration in pore gas exceeding groundwater standard derived from Equation 3.1-2. Shaded cells indicate VOCs that did not pass the Tier I screen.

[a] If concentration of a VOC measured in a pore-gas sample is less than the pore-gas SL, the concentration of the VOC in soil vapor will not exceed the groundwater SL, even if the VOC plume is in direct contact with groundwater.

[b] na = Not available.

Table 3.1-3
Tier I Screening of VOCs Detected in Pore Gas during Second 2021 Sampling Round at MDA L

VOCs	Maximum Pore-Gas Concentration (µg/m³)	Tier I Pore-Gas SL (µg/m³)	Tier I Potential for Groundwater Impact[a]
Acetone	2600	20,300	No
Benzene	1400	1140	Yes
Carbon tetrachloride	6900 (J)	5650	Yes
Chlorobenzene	430	12,800	No
Chloroform	33,000 (J+)	12,000	Yes
Cyclohexane	5800	79,300,000	No
Dichlorodifluoromethane	3700	2,780,000	No
Dichloroethane[1,1-]	49,000	5750	Yes
Dichloroethane[1,2-]	89,000	242	Yes
Dichloroethene[1,1-]	44,000	7490	Yes

Table 3.1-3 (continued)

VOCs	Maximum Pore-Gas Concentration (µg/m³)	Tier I Pore-Gas SL (µg/m³)	Tier I Potential for Groundwater Impact[a]
Dichloropropane[1,2-] (1,2-DCP)	250,000	580	Yes
Dioxane[1,4-]	1400 (J+)	0.9	Yes
Hexane	400	23,500,000	No
Isooctane	37 (J)	na[b]	na
Isopropanol (propanol[2-])	120 (J)	136	No
Methylene chloride	27,000	665	Yes
Tetrachloroethene (PCE)	62,000 (J+)	3630	Yes
Tetrahydrofuran	600	9790	No
Toluene	2600 (J+)	272,000	No
Trichloro-1,2,2-trifluoroethane[1,1,2-] (Freon-113)	500,000	1,190,000,000	No
Trichloroethane[1,1,1-] (1,1,1-TCA)	1,200,000	141,000	Yes
Trichloroethane[1,1,2-] (1,1,2-TCA)	6500	169	Yes
Trichloroethene (TCE)	500,000 (J+)	2020	Yes
Trichlorofluoromethane (Freon-11)	60,000	4,540,000	No
Vinyl chloride	200 (J)	2280	No
Xylene[1,2-]	270(J)	40,900	No

Notes: Tier I screening level is the calculated concentration in pore gas exceeding groundwater standard derived from Equation 3.1-2. Shaded cells indicate VOCs that did not pass the Tier I screen.

[a] If concentration of a VOC measured in a pore-gas sample is less than the pore-gas SL, the concentration of the VOC in soil vapor will not exceed the groundwater SL, even if the VOC plume is in direct contact with groundwater.

[b] na = Not available.

Table 3.2-1
Boreholes and Sampling Ports used to Evaluate Vapor Intrusion Screening Levels

Borehole	Shallowest Port Depth (ft)	Description
54-24239	25	Located between shafts and southwest corner of building 54-215
54-24243	25	Located east of building 54-39 and SVE-East
54-27641	32	Located on west side of MDA L adjacent to SVE-West and near entrance to transportable office building
54-27642	30	Located between shafts and southeast corner of building 54-215

Table 5.1-1
First Round 2021 VOC Pore-Gas Detected Results at MDA L (in µg/m^3)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
Groundwater Tier I SL[a]			**20,300**	**1140**	**478,000**	**5650**	**12,800**	**12,000**	**79,300,000**	**2,780,000**	**5750**	**242**	**7490**	**11,700**	**38,300**	**580**
Industrial VISL[b]			**5,080,000**	**588**	**115,000**	**765**	**8190**	**199**	**na[c]**	**16,400**	**2870**	**176**	**32,800**	**na**	**6550**	**459**
MD54-21-220067	54-01015 P45	45–45	—[d]	—	—	—	—	—	—	—	14 (J)	—	91 (J)	—	—	—
MD54-21-220069	54-01015 P187	187–187	—	—	—	—	—	—	—	—	—	—	55 (J)	—	—	—
MD54-21-220071	54-01015 P350	350–350	—	—	—	—	—	—	—	—	—	—	22 (J)	—	—	—
MD54-21-220073	54-01015 P385	385–385	21 (J)	—	—	—	—	—	—	—	—	—	48 (J)	—	—	—
MD54-21-220075	54-01015 P435	435–435	—	—	—	—	—	—	—	—	25 (J)	—	80 (J)	—	—	—
MD54-21-220077	54-01015 P485	485–485	19 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
MD54-21-220079	54-01015 P525	525–525	—	—	—	18 (J)	—	—	23 (J+)	54	34 (J)	—	630 (J)	—	—	—
MD54-21-220081	54-01016 P188	188–188	19 (J)	450	—	750	26 (J)	2300	1300 (J+)	470	970	100	17,000 (J)	—	17 (J)	690
MD54-21-220083	54-01016 P318	318–318	—	89	—	230	—	200	170 (J+)	100	110	23 (J)	4800 (J)	—	—	33 (J)
MD54-21-220085	54-01016 P390	390–390	—	5.1 (J)	—	—	—	13 (J)	—	—	—	14 (J)	25 (J)	—	—	23 (J)
MD54-21-220087	54-01016 P481	481–481	38 (J)	77	—	33 (J)	13 (J)	200	45 (J+)	—	53	140	320 (J)	—	—	330
MD54-21-220089	54-01016 P533	533–533	—	35 (J)	—	—	—	50 (J)	—	—	14 (J)	61	83 (J)	—	—	120
MD54-21-220613	54-01016 P601	601–601	33 (J)	70	14 (J)	13 (J)	6.4 (J)	110	—	—	36 (J)	150	150	—	—	290
MD54-21-223691	54-02001 P20	20–20	—	—	—	750	—	2200	3300	150 (J)	13,000	1400	4000	—	—	—
MD54-21-223692	54-02001 P40	40–40	—	51 (J)	—	350	24 (J)	1400	2100	340	6100	3000	6300	—	—	360
MD54-21-223693	54-02001 P60	60–60	—	—	—	—	11 (J)	130	—	—	180	250	13 (J)	—	—	20 (J)
MD54-21-223694	54-02001 P80	80–80	—	190	—	1100	340	4200	7900	590	10,000	9700	5500	—	—	510
MD54-21-223695	54-02001 P100	100–100	—	—	—	470	45 (J)	2200	2400	120 (J)	10,000	1500	2400	—	—	170 (J)
MD54-21-223696	54-02001 P120	120–120	—	110 (J)	—	300	83 (J)	2600	3800	540	5700	11,000	10,000	—	—	740
MD54-21-223697	54-02001 P140	140–140	—	—	—	400	—	1200	1900	79 (J)	7700	800	950	—	—	60 (J)
MD54-21-223698	54-02001 P160	160–160	—	86 (J)	—	690	170 (J)	2300	4100	300	7300	4400	2500	—	—	220
MD54-21-223699	54-02001 P180	180–180	—	—	75 (J)	600	36 (J)	2300	3000	150 (J)	11000	1600	1900	—	—	100 (J)
MD54-21-223700	54-02001 P200	200–200	—	—	—	470	—	1400	2100	120 (J)	7300	800	1000	—	—	—
MD54-21-223711	54-02002 P40	40–40	26 (J)	260 (J)	—	530 (J)	170 (J)	4700 (J)	—	430 (J)	1700 (J)	3300 (J)	5500 (J)	—	15 (J)	8300 (J)
MD54-21-223712	54-02002 P60	60–60	—	89 (J)	—	2100 (J)	33 (J)	18,000 (J)	—	1000 (J)	5700 (J)	6500 (J)	13,000 (J)	—	—	29,000 (J)
MD54-21-223713	54-02002 P120	120–120	21 (J)	150 (J)	29 (J)	420 (J)	120 (J)	4000 (J)	—	330 (J)	1300 (J)	3000 (J)	3400 (J)	—	—	6900 (J)
MD54-21-223714	54-02002 P180	180–180	—	670 (J)	—	2000 (J)	510 (J)	18,000 (J)	—	1000 (J)	6100 (J)	14,000 (J)	15,000 (J)	—	—	32,000 (J)
MD54-21-223715	54-02002 P200	200–200	—	1200	—	1700	460	13,000	3000 (J)	1100	4400	6900	20,000	—	34 (J)	15,000
MD54-21-223716	54-02016 P31	31–31	—	—	—	2100	—	11,000	—	1100	8500	6100	11,000	—	67 (J)	16,000

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
Groundwater Tier I SL[a]			**20,300**	**1140**	**478,000**	**5650**	**12,800**	**12,000**	**79,300,000**	**2,780,000**	**5750**	**242**	**7490**	**11,700**	**38,300**	**580**
Industrial VISL[b]			**5,080,000**	**588**	**115,000**	**765**	**8190**	**199**	**na[c]**	**16,400**	**2870**	**176**	**32,800**	**na**	**6550**	**459**
MD54-21-220091	54-02020 P20	20–20	—	14 (J)	—	180	6.4 (J)	1600	—	94	490	350	1500	—	—	2900
MD54-21-220093	54-02020 P40	40–40	—	54	—	270	25 (J)	2500	—	140	730	770	2500	—	—	5000
MD54-21-220095	54-02020 P60	60–60	—	86	—	300	39 (J)	2700	—	160	800	930	2800	—	—	5100
MD54-21-220097	54-02020 P80	80–80	—	140	17 (J)	360	55	3500	—	210	1100	1300	4000	—	—	6000
MD54-21-220099	54-02020 P95	95–95	—	150	—	350	60	3000	—	210	1100	1300	4000	—	—	6000
MD54-21-220101	54-02020 P120	120–120	—	210	—	430	83	4200	—	200	1300	1500	5900	—	15 (J)	6500
MD54-21-220103	54-02020 P140	140–140	31 (J)	300	—	490	90	4500	—	290	1300	1500	7500	—	14 (J)	6000
MD54-21-220105	54-02020 P160	160–160	—	270	—	430	83	3600	—	230	1000	1100	6300	—	9.9 (J)	4000
MD54-21-220107	54-02020 P180	180–180	—	420	—	600	120	5400	—	370	1500	1400	11,000	—	19 (J)	5500
MD54-21-220109	54-02020 P200	200–200	—	600	—	750	110	5400	1400	410	1500	1100	12,000	—	15 (J)	4300
MD54-21-220111	54-02021 P20	20–20	—	—	—	23 (J)	—	93	—	64	320	130	750	—	—	40 (J)
MD54-21-220113	54-02021 P140	140–140	—	30 (J)	—	140	10 (J)	500	—	260	1800	2500	4400	—	—	310
MD54-21-220115	54-02021 P160	160–160	—	5.7 (J)	—	16 (J)	—	83	—	42 (J)	300	440	590	—	—	55
MD54-21-220117	54-02021 P180	180–180	—	38	—	150	12 (J)	540	—	310	1900	2000	5200	—	—	320
MD54-21-220119	54-02021 P198	198–198	—	45	—	200	10 (J)	540	—	340	2100	1700	6300	—	—	300
MD54-21-223717	54-02022 P40	40–40	—	—	—	—	—	22 (J)	45 (J+)	—	77	65	75	—	—	—
MD54-21-223718	54-02022 P60	60–60	—	11 (J)	—	88	11 (J)	880	1800 (J+)	240	2900	3700	3800	—	—	360
MD54-21-223720	54-02022 P120	120–120	—	45	—	51 (J)	30 (J)	1100	2200 (J+)	390	4000	6900	6300	—	—	600
MD54-21-223723	54-02022 P180	180–180	—	60	—	200	20 (J)	1000	2000 (J+)	590	3900	3500	10,000	—	—	500
MD54-21-223724	54-02022 P200	200–200	—	67	—	300	12 (J)	930	2500 (J+)	690	3900	2200	14,000	—	—	380
MD54-21-220121	54-02023 P20	20–20	—	13 (J)	—	18 (J)	—	270	—	36 (J)	93	53	480	—	—	200
MD54-21-220123	54-02023 P40	40–40	—	10 (J)	—	43 (J)	—	590	—	79	200	40 (J)	1100	—	—	330
MD54-21-220125	54-02023 P60	60–60	—	13 (J)	—	14 (J)	—	78	—	—	27 (J)	11 (J)	220	—	—	43 (J)
MD54-21-220127	54-02023 P80	80–80	—	19 (J)	—	37 (J)	—	450	—	54 (J)	170	53	910	—	—	290
MD54-21-220129	54-02023 P100	100–100	90 (J)	38	—	82	6 (J)	830	—	94	310	100	1700	—	—	510
MD54-21-220131	54-02023 P159	159–159	—	38	—	82	—	500	—	59	170	44 (J)	1300	—	—	210
MD54-21-220133	54-02023 P200	200–200	—	—	—	—	—	28 (J)	—	—	—	—	55	—	—	—
MD54-21-223725	54-02024 P20	20–20	—	—	—	100	—	730	220	69	200	53	990	—	—	740
MD54-21-223726	54-02024 P40	40–40	—	7 (J)	—	130	5.5 (J)	1000	300	94	310	97	1400	—	—	1100
MD54-21-223727	54-02024 P60	60–60	20 (J)	22 (J)	18 (J)	180	11 (J)	1400	380	140	400	140	1900	—	—	1000

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
Groundwater Tier I SL[a]			**20,300**	**1140**	**478,000**	**5650**	**12,800**	**12,000**	**79,300,000**	**2,780,000**	**5750**	**242**	**7490**	**11,700**	**38,300**	**580**
Industrial VISL[b]			**5,080,000**	**588**	**115,000**	**765**	**8190**	**199**	**na[c]**	**16,400**	**2870**	**176**	**32,800**	**na**	**6550**	**459**
MD54-21-223728	54-02024 P80	80–80	—	54	—	210	21 (J)	1700	520	170	530	250	2500	—	—	1800
MD54-21-223729	54-02024 P100	100–100	—	67	—	240	23 (J)	1800	550	190	570	290	2800	—	—	1700
MD54-21-223730	54-02024 P140	140–140	—	140	—	320	40 (J)	2300	700	210	730	390	4400	—	—	1800
MD54-21-223731	54-02024 P160	160–160	—	200	—	400	51	2700	830	260	800	570	5500	17 (J)	—	1900
MD54-21-223732	54-02024 P180	180–180	—	220	—	400	44 (J)	2600	760	200	770	570	5500	—	—	1700
MD54-21-223733	54-02024 P200	200–200	—	190	—	300	37 (J)	2000	520	200	570	380	4400	—	—	1100
MD54-21-223740	54-02025 P20	20–20	—	6.4 (J)	—	620	6.4 (J)	4000	—	180	970	610	2300	—	12 (J)	6900
MD54-21-223741	54-02025 P60	60–60	—	—	—	—	—	38 (J)	—	—	—	—	—	—	—	90
MD54-21-223742	54-02025 P100	100–100	—	250	—	820	170	5900	—	380	1800	2800	5500	—	—	11,000
MD54-21-223743	54-02025 P160	160–160	—	600	—	1100	250	8800	—	540	2700	3900	12,000	—	18 (J)	12,000
MD54-21-223744	54-02025 P190	190–190	—	610	—	1100	230	8800	—	540	2800	3400	16,000	—	31 (J)	9000
MD54-21-220135	54-02026 P20	20–20	—	42	—	13 (J)	—	100	—	—	25 (J)	32 (J)	180	—	—	83
MD54-21-220137	54-02026 P60	60–60	—	12 (J)	—	31 (J)	—	170	—	32 (J)	40 (J)	—	400	—	—	60 (J)
MD54-21-220139	54-02026 P100	100–100	—	12 (J)	—	43 (J)	—	220	70	43 (J)	53	—	590	—	—	69
MD54-21-220141	54-02026 P160	160–160	—	11 (J)	—	57 (J)	—	260	79	54 (J)	61	—	800	—	—	60 (J)
MD54-21-220143	54-02026 P200	200–200	—	11 (J)	—	94	—	410	130	100	97	18 (J)	1300	—	—	79
MD54-21-220145	54-02026 P215	215–215	—	19 (J)	—	110	—	400	120	110	93	17 (J)	1500	—	—	65
MD54-21-220147	54-02027 P20	20–20	18 (J)	—	—	28 (J)	—	430	110	37 (J)	110	9.7 (J)	550	—	—	340
MD54-21-220149	54-02027 P60	60–60	—	22 (J)	—	75	5.1 (J)	1100	300	94	300	89	2000	—	—	1000
MD54-21-220151	54-02027 P100	100–100	—	60	—	140	20 (J)	1600	450	130	400	140	2500	—	—	1300
MD54-21-220153	54-02027 P160	160–160	—	200	—	280	32 (J)	2300	620	220	570	270	4400	—	—	1300
MD54-21-220155	54-02027 P200	200–200	—	200	—	350	27 (J)	2000	580	200	490	180	5200	—	—	830
MD54-21-220157	54-02027 P220	220–220	—	190	—	280	17 (J)	1600	450	230	380	110	4800	—	—	510
MD54-21-220159	54-02027 P250	250–250	—	180	—	350	14 (J)	1000	410	230	330	44 (J)	5500	—	—	340
MD54-21-220161	54-02028 P20	20–20	—	—	—	—	—	—	—	—	—	—	22 (J)	—	—	—
MD54-21-220163	54-02028 P60	60–60	—	—	—	17 (J)	—	160	52	29 (J)	40 (J)	—	360	—	—	51 (J)
MD54-21-220165	54-02028 P100	100–100	—	—	—	40 (J)	—	220	76	38 (J)	65	—	590	—	—	74
MD54-21-220167	54-02028 P160	160–160	—	—	—	88	—	420	130	89	110	20 (J)	1200	—	—	83
MD54-21-220169	54-02028 P200	200–200	—	—	—	94	—	390	140	110	110	15 (J)	1400	—	—	60
MD54-21-220171	54-02028 P220	220–220	—	—	—	100	—	410	150	120	110	11 (J)	1700	—	—	60

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
Groundwater Tier I SL[a]			**20,300**	**1140**	**478,000**	**5650**	**12,800**	**12,000**	**79,300,000**	**2,780,000**	**5750**	**242**	**7490**	**11,700**	**38,300**	**580**
Industrial VISL[b]			**5,080,000**	**588**	**115,000**	**765**	**8190**	**199**	**na[c]**	**16,400**	**2870**	**176**	**32,800**	**na**	**6550**	**459**
MD54-21-220173	54-02028 P250	250–250	—	—	—	30 (J)	—	93	—	35 (J)	27 (J)	—	480	—	—	—
MD54-21-220175	54-02031 P20	20–20	—	8.6 (J)	—	27 (J)	—	180	—	49 (J)	210	97	670	—	—	69
MD54-21-220177	54-02031 P60	60–60	18 (J)	9.6 (J)	—	69	6 (J)	430	—	110	570	570	1700	—	—	170
MD54-21-220179	54-02031 P100	100–100	—	22 (J)	—	100	—	480	—	160	730	690	2000	—	—	210
MD54-21-220181	54-02031 P160	160–160	18 (J)	38	—	160	—	480	—	200	800	490	3400	—	—	170
MD54-21-220183	54-02031 P200	200–200	—	67	—	300	9.7 (J)	880	—	380	1500	650	7100	—	9.1 (J)	240
MD54-21-220185	54-02031 P220	220–220	31 (J)	67	—	330	9.2 (J)	880	—	410	1400	530	7500	—	—	200
MD54-21-220187	54-02031 P260	260–260	—	73	—	350	6.9 (J)	830	—	420	1400	400	8000	—	—	210
MD54-21-220189	54-02034 P20	20–20	—	—	—	—	—	88	—	38 (J)	150	11 (J)	390	—	—	—
MD54-21-220191	54-02034 P60	60–60	—	—	—	—	—	110	—	59	330	160	800	—	—	46 (J)
MD54-21-220193	54-02034 P100	100–100	—	—	—	13 (J)	—	140	—	100	570	280	1500	—	—	69
MD54-21-220195	54-02034 P160	160–160	—	11 (J)	—	35 (J)	—	120	—	180	610	140	2500	—	—	39 (J)
MD54-21-220197	54-02034 P200	200–200	—	9.3 (J)	—	54 (J)	—	100	—	240	570	40 (J)	3500	—	—	18 (J)
MD54-21-220199	54-02034 P220	220–220	—	—	—	28 (J)	—	42 (J)	—	110	210	13 (J)	1500	—	—	—
MD54-21-220201	54-02034 P260	260–260	—	—	—	25 (J)	—	20 (J)	—	110	77	—	1300	—	—	—
MD54-21-220203	54-02034 P300	300–300	—	—	—	—	—	—	—	64	17 (J)	—	520	—	—	—
MD54-21-220205	54-02089 P13	13–13	—	31 (J)	—	880	—	6300	6500	690	17,000	3200	5200	—	—	36,000
MD54-21-220207	54-02089 P31	31–31	—	73 (J)	—	1300	—	6800	7900	1100	20,000	6900	11,000	—	—	60,000
MD54-21-220209	54-02089 P46	46–46	—	420 (J)	—	3000	200 (J)	19,000	21,000	3100	49,000	22,000	19,000	—	—	220,000
MD54-21-220211	54-02089 P86	86–86	—	700 (J)	—	3000 (J)	—	24,000	22,000	2900	40,000	30,000	25,000	—	—	240,000
MD54-21-220213	54-24238 P44	44–44	—	770 (J)	—	3000 (J)	—	30,000	20,000	3700	32,000	93,000	29,000	—	—	240,000
MD54-21-220215	54-24238 P64	64–64	—	990 (J)	—	2700 (J)	—	27,000	21,000	3800	36,000	85,000	26,000	—	—	300,000
MD54-21-220217	54-24238 P84	84–84	—	230 (J)	—	1500 (J)	—	10,000	12,000	2000	25,000	38,000	14,000	—	—	140,000
MD54-21-223752	54-24239 P25	25–25	—	35 (J)	—	340	—	**4100**	—	360	**3500**	**3500**	5200	—	48 (J)	**3000**
MD54-21-223753	54-24239 P50	50–50	66 (J)	45 (J)	—	520	—	5900	—	590	4900	6100	9100	—	63 (J)	5100
MD54-21-223754	54-24239 P75	75–75	66 (J)	9.3 (J)	—	—	—	24 (J)	—	—	17 (J)	36 (J)	28 (J)	—	—	29 (J)
MD54-21-223755	54-24239 P99.5	99.5–99.5	50 (J)	110	53 (J)	530	—	7300	—	690	6100	7700	11,000	—	83 (J)	5500
MD54-21-220219	54-24240 P28	28–28	—	67 (J)	—	7500	90 (J)	15,000	12,000	1100	27,000	6500	9900	—	110 (J)	500
MD54-21-220221	54-24240 P53	53–53	—	260 (J)	—	7500	550	29,000	14,000	1900	28,000	30,000	9100	—	87 (J)	650
MD54-21-220223	54-24240 P78	78–78	—	83	—	210	29 (J)	2000	890	100	1500	2100	710	—	—	88

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
Groundwater Tier I SL[a]			**20,300**	**1140**	**478,000**	**5650**	**12,800**	**12,000**	**79,300,000**	**2,780,000**	**5750**	**242**	**7490**	**11,700**	**38,300**	**580**
Industrial VISL[b]			**5,080,000**	**588**	**115,000**	**765**	**8190**	**199**	**na[c]**	**16,400**	**2870**	**176**	**32,800**	**na**	**6550**	**459**
MD54-21-220225	54-24240 P103	103–103	—	160	—	340	55	4300	2700	360	4000	4900	4400	15 (J)	—	440
MD54-21-220227	54-24240 P128	128–128	—	240	—	600	90 (J)	5900	5200	890	8000	8000	15,000	—	—	1200
MD54-21-220229	54-24240 P153	153–153	28 (J)	57 (J)	—	120 (J)	22 (J)	1000 (J)	930 (J)	170 (J)	1500 (J)	970 (J)	3200 (J)	—	—	220 (J)
MD54-21-220231	54-24241 P73	73–73	—	—	—	1600	41 (J)	10000	5800	740	8900	25,000	7500	—	110 (J)	15,000
MD54-21-220233	54-24241 P93	93–93	—	100 (J)	—	690	31 (J)	6300	3200	540	5300	18,000	5900	—	59 (J)	11,000
MD54-21-220235	54-24241 P113	113–113	—	130 (J)	—	580	28 (J)	6800	2700	640	5300	14,000	8000	—	55 (J)	11,000
MD54-21-220237	54-24241 P133	133–133	—	110	—	350	17 (J)	3500	1200	370	2500	2300	7100	—	37 (J)	4300
MD54-21-220239	54-24241 P153	153–153	—	200	—	450	24 (J)	3800	1400	420	2600	3100	8700	—	35 (J)	4300
MD54-21-220241	54-24241 P173	173–173	—	300	—	690	50 (J)	5900	2100	590	3800	4900	14,000	—	55 (J)	6500
MD54-21-220243	54-24241 P193	193–193	—	350	—	1100	36 (J)	8800	3400	890	5700	6500	23,000	—	80 (J)	9000
MD54-21-223756	54-24242 P25	25–25	—	20 (J)	—	200	—	2000	—	190	1700	1500	2500	—	24 (J)	2000
MD54-21-223757	54-24242 P50	50–50	—	230	—	590	200	9300	—	740	00	11,000	12,000	—	95	8300
MD54-21-223758	54-24242 P75	75–75	—	120 (J)	—	480	120 (J)	6300	—	540	4400	7700	8000	—	63 (J)	6000
MD54-21-223759	54-24242 P100	100–100	—	77 (J)	—	400	36 (J)	4500	—	410	3700	4400	5500	—	44 (J)	4000
MD54-21-223760	54-24242 P110.5	110.5–110.5	—	260	—	500	150	9300	—	790	6500	10,000	13,000	—	99 (J)	7900
MD54-21-223761	54-24243 P25	25–25	—	61 (J)	—	**1000**	—	**8800**	4800 (J)	690	**8900**	**1900**	8300	—	63 (J)	**20,000**
MD54-21-223762	54-24243 P50	50–50	—	190 (J)	—	1500	—	16,000	8300 (J)	1200	13,000	6100	10,000	—	—	44,000
MD54-21-223763	54-24243 P75	75–75	—	300 (J)	—	1700	—	19,000	10,000 (J)	1700	14,000	15,000	20,000	—	—	55,000
MD54-21-223764	54-24243 P100	100–100	—	380 (J)	—	1800	—	19,000	9300 (J)	1800	12,000	21,000	21,000	—	—	51,000
MD54-21-223765	54-24243 P125	125–125	—	420	—	1700	55 (J)	18,000	7900 (J)	2000	9700	15000	21,000	—	—	43,000
MD54-21-220245	54-24399 P566.7	567–567	—	—	—	—	—	30 (J)	—	—	34 (J)	44 (J)	95	—	—	29 (J)
MD54-21-220247	54-24399 P587.8	588–588	—	—	—	—	—	46 (J)	22 (J)	21 (J)	53	73	140	—	—	40 (J)
MD54-21-220249	54-27641 P32	32–32	—	—	—	**2000**	90 (J)	**5900**	8300	590	**25,000**	**7300**	5500	—	—	310 (J)
MD54-21-220251	54-27641 P82	82–82	—	240	—	750	290	4500	6200	590	9300	10,000	5200	—	—	550
MD54-21-220253	54-27641 P115	115–115	—	200	—	430	160	4100	5200	590	7700	11,000	7500	26 (J)	19 (J)	740
MD54-21-220255	54-27641 P182	182–182	—	180	—	550	55 (J)	2900	4500	940	7300	11,000	19,000	—	—	1100
MD54-21-220257	54-27641 P232	232–232	—	130	—	690	42 (J)	2200	4100	940	7300	4000	20,000	—	—	550
MD54-21-220259	54-27641 P271	271–271	—	77	—	500	12 (J)	1000	2300	790	3300	650	18,000	—	—	160
MD54-21-220261	54-27641 P332.5	332.5–332.5	—	21 (J)	—	200	8.7 (J)	220	550	380	610	250	5900	—	—	—
MD54-21-220263	54-27642 P30	30–30	—	—	—	**6000**	—	**33,000**	—	1400	**9300**	**8900**	11,000	—	—	**44,000**

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
Groundwater Tier I SL[a]			**20,300**	**1140**	**478,000**	**5650**	**12,800**	**12,000**	**79,300,000**	**2,780,000**	**5750**	**242**	**7490**	**11,700**	**38,300**	**580**
Industrial VISL[b]			**5,080,000**	**588**	**115,000**	**765**	**8190**	**199**	**na[c]**	**16,400**	**2870**	**176**	**32,800**	**na**	**6550**	**459**
MD54-21-220265	54-27642 P75	75–75	—	100 (J)	—	3300	—	36,000	—	2400	13,000	19,000	26,000	—	—	90,000
MD54-21-220267	54-27642 P116	116–116	—	—	—	3000	—	20,000	—	1200	6900	12,000	10,000	—	—	36,000
MD54-21-220269	54-27642 P175	175–175	—	1800	—	2200	640	20,000	—	1400	8900	14,000	33,000	—	71 (J)	43,000
MD54-21-220271	54-27642 P235	235–235	—	1500	—	2600	270 (J)	19,000	—	1300	7300	9700	31,000	—	71 (J)	34,000
MD54-21-220273	54-27642 P275	275–275	—	190 (J)	—	3000	—	31,000	—	2000	13,000	2200	29,000	—	—	88,000
MD54-21-220275	54-27642 P338	338–338	—	260	—	1900 (J)	64 (J)	17,000 (J)	—	1200 (J)	6100 (J)	13,000 (J)	15,000 (J)	—	—	42,000 (J)
MD54-21-223766	54-27643 P30	30–30	—	20 (J)	—	1400	17 (J)	7800	1600 (J+)	360	1700	2500	3300	—	—	16,000
MD54-21-223767	54-27643 P74	74–74	—	250	140 (J)	1600	300	10,000	2200 (J+)	590	2500	5300	5900	—	—	21,000
MD54-21-223768	54-27643 P117	117–117	—	450	40 (J)	1300	350	10,000	2400 (J+)	540	3000	5700	8700	—	—	19,000
MD54-21-223769	54-27643 P167	167–167	—	830	—	1300	330	10,000	2700 (J+)	640	3000	5700	17,000	—	—	15,000
MD54-21-223770	54-27643 P235	235–235	—	890	—	940	150	6800	1700 (J+)	470	2100	2100	17,000	—	29 (J)	5500
MD54-21-223771	54-27643 P275	275–275	—	800	—	1000	90	5400	1400 (J+)	480	1600	730	18,000	—	23 (J)	3200
MD54-21-223772	54-27643 P354	354–354	31 (J)	480	—	750	18 (J)	1800	620 (J+)	410	530	77	15,000	—	13 (J)	370
MD54-21-223775	54-610786 P25	25–25	—	29 (J)	—	1400	78 (J)	9300	2000 (J)	360	2300	2600	3300	—	22 (J)	17,000
MD54-21-223776	54-610786 P50	50–50	—	130	60 (J)	1600	290	10,000	2100 (J)	540	2400	4000	4400	—	—	20,000
MD54-21-223777	54-610786 P75	75–75	—	260	130 (J)	1600	500	11,000	2400 (J)	590	2700	6100	6300	—	—	22,000
MD54-21-223778	54-610786 P100	100–100	—	300	81 (J)	1300	500	10,000	2300 (J)	640	2800	6100	6700	—	—	19,000
MD54-21-223779	54-610786 P118.5	118.5–118.5	—	510	—	1400	550	11,000	3000 (J)	690	3000	7300	9100	—	—	21,000

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
Groundwater Tier I SL[a]			**0.9**	**na**	**226,000**	**na**	**na**	**23,500,000**	**na**	**136**	**665**	**3630**	**9790**	**272,000**	**1,190,000,000**	**141,000**
Industrial VISL[b]			**na**	**na**	**1840**	**na**	**na**	**115,000**	**na**	**na**	**98,300**	**6550**	**na**	**819,000**	**4,920,000**	**819,000**
MD54-21-220067	54-01015 P45	45–45	—	—	—	—	—	—	—	—	—	110 (J)	—	—	150 (J)	300 (J)
MD54-21-220069	54-01015 P187	187–187	—	—	—	—	—	—	—	—	—	95 (J)	—	—	69 (J)	150 (J)
MD54-21-220071	54-01015 P350	350–350	—	—	—	—	—	—	—	—	—	75 (J)	—	—	—	87 (J)
MD54-21-220073	54-01015 P385	385–385	—	—	—	—	—	—	—	—	—	75 (J)	—	—	64 (J)	150 (J)
MD54-21-220075	54-01015 P435	435–435	—	—	—	—	—	—	—	—	—	81 (J)	—	—	55 (J)	650 (J)
MD54-21-220077	54-01015 P485	485–485	—	—	—	—	—	—	—	—	—	22 (J)	—	—	—	21 (J)
MD54-21-220079	54-01015 P525	525–525	—	—	—	—	—	—	—	—	31 (J)	220 (J)	—	—	570 (J)	870 (J)
MD54-21-220081	54-01016 P188	188–188	—	—	7.4 (J)	—	—	53	12 (J)	—	3400	11,000 (J)	—	250	25,000 (J)	71,000 (J)
MD54-21-220083	54-01016 P318	318–318	—	—	—	—	—	—	—	—	300	1000 (J)	—	9.4 (J)	4900 (J)	7100 (J)
MD54-21-220085	54-01016 P390	390–390	—	—	—	—	—	—	—	—	—	100 (J)	—	—	61 (J)	130 (J)
MD54-21-220087	54-01016 P481	481–481	—	—	—	—	—	—	—	—	110 (J)	810 (J)	28 (J)	7.9 (J)	1100 (J)	2000 (J)
MD54-21-220089	54-01016 P533	533–533	—	—	—	—	—	—	—	—	38 (J)	380 (J)	—	—	250 (J)	500 (J)
MD54-21-220613	54-01016 P601	601–601	—	62 (J)	—	—	—	—	—	—	66 (J)	580	22 (J)	6 (J)	470	1200
MD54-21-223691	54-02001 P20	20–20	—	—	—	—	—	—	—	—	—	6400	—	—	15,000	170,000
MD54-21-223692	54-02001 P40	40–40	—	—	—	—	—	—	—	64 (J)	1000	7500	—	—	9200	100,000
MD54-21-223693	54-02001 P60	60–60	—	—	—	—	—	—	—	—	—	1800	—	—	—	1400
MD54-21-223694	54-02001 P80	80–80	170 (J)	—	—	—	—	—	—	—	560 (J)	21,000	—	—	29,000	240,000
MD54-21-223695	54-02001 P100	100–100	—	—	—	—	—	—	—	—	—	7500	—	—	9200	130,000
MD54-21-223696	54-02001 P120	120–120	—	—	—	—	—	—	—	—	940	10,000	53 (J)	—	16,000	140,000
MD54-21-223697	54-02001 P140	140–140	—	160 (J)	—	—	—	—	—	—	—	3500	—	—	8000	93,000
MD54-21-223698	54-02001 P160	160–160	—	—	—	—	—	—	—	—	220 (J)	11,000	—	—	20,000	140,000
MD54-21-223699	54-02001 P180	180–180	—	—	—	—	—	—	—	—	—	7500	—	—	13,000	160,000
MD54-21-223700	54-02001 P200	200–200	—	—	—	—	—	—	—	—	—	4500	—	—	9200	100,000
MD54-21-223711	54-02002 P40	40–40	—	150 (J)	52	—	—	—	—	—	5200 (J)	4900 (J)	210 (J)	230 (J)	35,000 (J)	71,000 (J)
MD54-21-223712	54-02002 P60	60–60	—	—	—	—	—	—	—	—	180 (J)	19,000 (J)	—	—	180,000 (J)	260,000 (J)
MD54-21-223713	54-02002 P120	120–120	—	—	28 (J)	—	—	—	—	17 (J)	2800 (J)	4000 (J)	1000 (J)	41 (J)	30000 (J)	60000 (J)
MD54-21-223714	54-02002 P180	180–180	—	—	150 (J)	—	—	—	—	—	10,000 (J)	18,000 (J)	3000 (J)	170 (J)	140000 (J)	300,000 (J)

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
Groundwater Tier I SL[a]			**0.9**	**na**	**226,000**	**na**	**na**	**23,500,000**	**na**	**136**	**665**	**3630**	**9790**	**272,000**	**1,190,000,000**	**141,000**
Industrial VISL[b]			**na**	**na**	**1840**	**na**	**na**	**115,000**	**na**	**na**	**98,300**	**6550**	**na**	**819,000**	**4,920,000**	**819,000**
MD54-21-223715	54-02002 P200	200–200	—	—	38 (J)	—	53 (J)	280	140 (J)	—	26,000	12,000	—	1200	80,000	190,000
MD54-21-223716	54-02016 P31	31–31	—	—	—	—	—	—	—	—	—	16,000	—	—	220,000	400,000
MD54-21-220091	54-02020 P20	20–20	—	—	—	—	—	—	—	—	—	1900 (J+)	—	—	9200	23,000
MD54-21-220093	54-02020 P40	40–40	—	—	—	—	—	—	—	—	97 (J)	3100 (J+)	—	—	15,000	37,000
MD54-21-220095	54-02020 P60	60–60	—	—	—	—	—	—	—	—	230	3300 (J+)	—	—	16,000	40,000
MD54-21-220097	54-02020 P80	80–80	—	—	—	—	—	—	—	—	490	4000 (J+)	32	9.4 (J)	21,000	52,000
MD54-21-220099	54-02020 P95	95–95	—	—	9.1 (J)	—	—	—	—	—	700	4000 (J+)	22 (J)	9 (J)	21,000	53,000
MD54-21-220101	54-02020 P120	120–120	—	—	13 (J)	—	—	—	—	—	1400	4700 (J+)	—	12 (J)	26,000	65,000
MD54-21-220103	54-02020 P140	140–140	—	—	32 (J)	—	—	—	14 (J)	21 (J)	3100	5000 (J+)	—	290	29,000	71,000
MD54-21-220105	54-02020 P160	160–160	—	—	22 (J)	—	—	—	—	—	3000	3900	—	270	24,000	50,000
MD54-21-220107	54-02020 P180	180–180	—	—	35 (J)	—	—	—	26 (J)	—	4900	5600	—	340	36,000	82,000
MD54-21-220109	54-02020 P200	200–200	—	—	32 (J)	—	—	—	31 (J)	—	8000	5800 (J)	—	980	39,000	82,000
MD54-21-220111	54-02021 P20	20–20	—	—	—	—	—	—	—	—	—	880	—	—	1400	9800
MD54-21-220113	54-02021 P140	140–140	—	—	—	—	—	—	—	—	620	4100	—	12 (J)	5200	50,000
MD54-21-220115	54-02021 P160	160–160	—	—	—	—	—	—	—	—	—	750	—	—	1000	8200
MD54-21-220117	54-02021 P180	180–180	—	—	—	—	—	—	—	—	870	4500	—	13 (J)	5500	50,000
MD54-21-220119	54-02021 P198	198–198	—	—	—	—	—	—	—	—	1500	4700	—	27 (J)	5700	60,000
MD54-21-223717	54-02022 P40	40–40	—	—	—	—	—	—	—	—	—	150	—	—	180	1900
MD54-21-223718	54-02022 P60	60–60	—	—	—	—	—	—	7 (J)	—	52 (J)	5500	—	—	7000	76,000
MD54-21-223720	54-02022 P120	120–120	—	—	—	—	—	—	—	—	340	7500	—	26 (J)	7400	100,000
MD54-21-223723	54-02022 P180	180–180	—	—	—	—	—	—	22 (J)	—	2800	7500	—	40 (J)	6600	120,000
MD54-21-223724	54-02022 P200	200–200	—	—	—	—	—	—	13 (J)	—	3200	7500	—	11 (J)	7000	130,000
MD54-21-220121	54-02023 P20	20–20	—	—	—	—	—	—	—	—	—	390	—	—	2100	4900
MD54-21-220123	54-02023 P40	40–40	—	—	—	—	—	—	—	—	—	660	—	—	4400	10,000
MD54-21-220125	54-02023 P60	60–60	—	—	—	—	—	—	—	—	—	120	—	—	700	1400
MD54-21-220127	54-02023 P80	80–80	—	—	—	—	—	—	—	—	42 (J)	500	—	—	3500	8200
MD54-21-220129	54-02023 P100	100–100	—	—	—	—	—	—	—	—	110 (J)	880	—	19 (J)	6400	15,000
MD54-21-220131	54-02023 P159	159–159	—	—	—	—	—	—	—	—	73 (J)	550	—	7.9 (J)	4300	9300
MD54-21-220133	54-02023 P200	200–200	—	—	—	—	—	—	—	—	—	27 (J)	—	—	200	400
MD54-21-223725	54-02024 P20	20–20	—	—	—	—	—	—	—	—	—	950	—	—	4800	12,000

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
Groundwater Tier I SL[a]			**0.9**	**na**	**226,000**	**na**	**na**	**23,500,000**	**na**	**136**	**665**	**3630**	**9790**	**272,000**	**1,190,000,000**	**141,000**
Industrial VISL[b]			**na**	**na**	**1840**	**na**	**na**	**115,000**	**na**	**na**	**98,300**	**6550**	**na**	**819,000**	**4,920,000**	**819,000**
MD54-21-223726	54-02024 P40	40–40	—	—	—	—	—	—	—	—	—	1000	—	—	6600	20,000
MD54-21-223727	54-02024 P60	60–60	—	—	—	—	—	—	—	—	26 (J)	1500	—	—	8400	20,000
MD54-21-223728	54-02024 P80	80–80	—	—	—	—	—	—	—	—	130 (J)	1800	—	—	11,000	28,000
MD54-21-223729	54-02024 P100	100–100	—	—	—	—	—	—	—	—	220	1800	—	—	12,000	31,000
MD54-21-223730	54-02024 P140	140–140	—	—	—	—	—	—	—	—	940	2000	—	—	20,000	39,000
MD54-21-223731	54-02024 P160	160–160	—	—	—	—	—	—	—	—	1800	2400	—	—	18,000	45,000
MD54-21-223732	54-02024 P180	180–180	—	—	—	—	—	—	—	—	2000	2200	—	—	16,000	40,000
MD54-21-223733	54-02024 P200	200–200	—	—	8.2 (J)	—	—	—	—	—	1900	1600	—	—	12,000	29,000
MD54-21-223740	54-02025 P20	20–20	—	—	—	—	—	—	—	—	—	4900	—	—	22,000	49,000
MD54-21-223741	54-02025 P60	60–60	—	—	—	—	—	—	—	—	—	88	—	—	100	320
MD54-21-223742	54-02025 P100	100–100	—	—	—	—	—	—	—	54 (J)	830	6700	110	—	32,000	82,000
MD54-21-223743	54-02025 P160	160–160	—	—	32 (J)	—	—	27 (J)	—	—	7300	8100	—	560	47,000	130,000
MD54-21-223744	54-02025 P190	190–190	—	—	17 (J)	—	—	—	—	—	9400	7500	—	35 (J)	48,000	130,000
MD54-21-220135	54-02026 P20	20–20	—	45 (J)	—	—	—	—	—	20 (J)	—	310 (J)	—	—	840	1700
MD54-21-220137	54-02026 P60	60–60	—	—	—	—	—	—	—	—	—	220 (J)	—	—	1600	3100
MD54-21-220139	54-02026 P100	100–100	—	—	—	—	—	—	—	—	—	300 (J)	—	—	2500	4300
MD54-21-220141	54-02026 P160	160–160	—	—	—	—	—	—	—	—	90 (J)	330 (J)	—	—	3000	4700
MD54-21-220143	54-02026 P200	200–200	—	—	—	—	—	—	—	—	190	500 (J)	—	—	4800	7100
MD54-21-220145	54-02026 P215	215–215	—	—	—	—	—	—	—	—	200	520 (J)	—	—	5100	7100
MD54-21-220147	54-02027 P20	20–20	—	—	—	—	—	—	—	—	—	480 (J)	—	—	2500	6500
MD54-21-220149	54-02027 P60	60–60	—	—	—	—	—	—	—	—	62 (J)	1200 (J)	—	—	8000	18,000
MD54-21-220151	54-02027 P100	100–100	—	—	—	—	—	—	—	—	160 (J)	1600 (J)	—	7.2 (J)	11,000	25,000
MD54-21-220153	54-02027 P160	160–160	—	—	9.1 (J)	—	—	—	—	—	1600	2300 (J)	—	140	17,000	35,000
MD54-21-220155	54-02027 P200	200–200	—	—	9.5 (J)	—	—	—	—	—	1800	2200 (J)	—	300	18,000	32,000
MD54-21-220157	54-02027 P220	220–220	—	—	8.7 (J)	—	—	—	—	—	1000	1800 (J)	—	240	20,000	25,000
MD54-21-220159	54-02027 P250	250–250	—	—	—	—	—	—	—	—	800	1700 (J)	—	72	16,000	23,000
MD54-21-220161	54-02028 P20	20–20	—	—	—	—	—	—	—	—	—	—	—	—	73 (J)	50 (J)
MD54-21-220163	54-02028 P60	60–60	—	—	—	—	—	—	—	—	—	150	—	—	1200	2900
MD54-21-220165	54-02028 P100	100–100	—	—	—	—	—	—	—	—	49 (J)	210	—	—	2100	4500
MD54-21-220167	54-02028 P160	160–160	—	—	—	—	—	—	—	—	220	360	—	—	3900	7600

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
Groundwater Tier I SL[a]			**0.9**	**na**	**226,000**	**na**	**na**	**23,500,000**	**na**	**136**	**665**	**3630**	**9790**	**272,000**	**1,190,000,000**	**141,000**
Industrial VISL[b]			**na**	**na**	**1840**	**na**	**na**	**115,000**	**na**	**na**	**98,300**	**6550**	**na**	**819,000**	**4,920,000**	**819,000**
MD54-21-220169	54-02028 P200	200–200	—	—	—	—	—	—	—	—	260	380	—	—	4200	7600
MD54-21-220171	54-02028 P220	220–220	—	—	—	—	—	—	—	—	300	400	—	—	4700	8200
MD54-21-220173	54-02028 P250	250–250	—	—	—	—	—	—	—	—	—	95	—	—	1300	2000
MD54-21-220175	54-02031 P20	20–20	—	—	—	—	—	—	—	—	—	950	—	—	1200	6000
MD54-21-220177	54-02031 P60	60–60	—	—	—	—	—	—	—	—	—	2100	—	—	2900	15,000
MD54-21-220179	54-02031 P100	100–100	—	45 (J)	—	—	—	—	—	—	160	2400	—	—	4000	21,000
MD54-21-220181	54-02031 P160	160–160	—	40 (J)	—	—	—	—	—	—	420	3200	—	17 (J)	5000	28,000
MD54-21-220183	54-02031 P200	200–200	—	51 (J)	—	—	—	—	—	—	970	6000	—	40 (J)	11,000	53,000
MD54-21-220185	54-02031 P220	220–220	—	49 (J)	—	—	—	25 (J)	—	39 (J)	900	5800	—	45	11,000	52,000
MD54-21-220187	54-02031 P260	260–260	—	—	—	—	—	27 (J)	—	—	940	5700	—	40 (J)	12,000	53,000
MD54-21-220189	54-02034 P20	20–20	—	—	—	—	—	—	—	—	—	450	—	—	350	7100
MD54-21-220191	54-02034 P60	60–60	—	—	—	—	—	—	—	—	—	700	—	—	570	13,000
MD54-21-220193	54-02034 P100	100–100	—	—	—	—	—	—	—	—	38 (J)	1100	—	—	920	20,000
MD54-21-220195	54-02034 P160	160–160	—	—	—	—	—	—	—	—	140 (J)	1100	—	—	1200	25,000
MD54-21-220197	54-02034 P200	200–200	—	—	—	—	—	—	—	—	170	1100	—	—	1700	27,000
MD54-21-220199	54-02034 P220	220–220	—	—	—	—	—	—	—	22 (J)	56 (J)	480	—	—	740	10,000
MD54-21-220201	54-02034 P260	260–260	—	—	—	—	—	—	—	—	—	200	—	—	540	5000
MD54-21-220203	54-02034 P300	300–300	—	—	—	—	—	—	—	—	—	70 (J)	—	—	320	1200
MD54-21-220205	54-02089 P13	13–13	—	—	—	—	—	—	—	—	—	22,000	—	—	80,000	400,000
MD54-21-220207	54-02089 P31	31–31	—	—	—	—	—	—	—	—	—	16,000	—	—	120,000	460,000
MD54-21-220209	54-02089 P46	46–46	—	—	—	—	—	310 (J)	—	—	—	38,000	—	—	310,000	1,100,000
MD54-21-220211	54-02089 P86	86–86	—	—	—	—	—	—	—	—	—	52,000	—	—	340,000	1,300,000
MD54-21-220213	54-24238 P44	44–44	—	—	—	—	—	—	—	—	2300 (J)	53,000	—	—	440,000	1,100,000
MD54-21-220215	54-24238 P64	64–64	—	—	—	—	—	—	—	—	9700	48,000	—	—	500,000	1,100,000
MD54-21-220217	54-24238 P84	84–84	—	—	—	—	—	—	—	—	—	30,000	—	—	270,000	650,000
MD54-21-223752	54-24239 P25	25–25	—	—	—	—	—	—	—	—	—	**160,000**	—	—	18,000	82,000
MD54-21-223753	54-24239 P50	50–50	—	—	—	—	—	—	—	—	—	220,000	—	—	27,000	120,000
MD54-21-223754	54-24239 P75	75–75	—	—	—	12 (J)	—	—	—	—	—	1700	—	30 (J)	80 (J)	350
MD54-21-223755	54-24239 P99.5	99.5–99.5	—	—	—	—	—	—	—	—	—	220,000	—	—	30,000	130,000
MD54-21-220219	54-24240 P28	28–28	—	—	—	—	—	—	—	—	—	36,000	—	—	80,000	600,000

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
Groundwater Tier I SL[a]			**0.9**	**na**	**226,000**	**na**	**na**	**23,500,000**	**na**	**136**	**665**	**3630**	**9790**	**272,000**	**1,190,000,000**	**141,000**
Industrial VISL[b]			**na**	**na**	**1840**	**na**	**na**	**115,000**	**na**	**na**	**98,300**	**6550**	**na**	**819,000**	**4,920,000**	**819,000**
MD54-21-220221	54-24240 P53	53–53	500 (J)	—	—	—	—	—	84 (J)	—	—	40,000	—	—	110,000	500,000
MD54-21-220223	54-24240 P78	78–78	70 (J)	—	—	—	—	—	—	—	—	4500	41	—	7400	30,000
MD54-21-220225	54-24240 P103	103–103	100 (J)	—	—	—	—	25 (J)	27 (J)	—	—	10,000	20 (J)	9 (J)	17,000	93,000
MD54-21-220227	54-24240 P128	128–128	—	—	—	—	—	—	50 (J)	—	—	30,000	60 (J)	29 (J)	29,000	200,000
MD54-21-220229	54-24240 P153	153–153	—	—	—	—	—	—	—	—	—	7000 (J)	—	—	5100 (J)	40,000 (J)
MD54-21-220231	54-24241 P73	73–73	1200	—	—	—	—	—	—	—	—	70,000	—	—	63,000	260,000
MD54-21-220233	54-24241 P93	93–93	4700	—	—	—	—	—	—	130 (J)	—	47,000	—	—	43,000	150,000
MD54-21-220235	54-24241 P113	113–113	1300	—	—	—	—	—	—	200 (J)	—	46,000	—	—	44,000	140,000
MD54-21-220237	54-24241 P133	133–133	300	—	—	—	—	—	—	—	—	26,000	—	6 (J)	22,000	65,000
MD54-21-220239	54-24241 P153	153–153	430	—	—	—	—	—	—	—	200	28,000	—	64	25,000	76,000
MD54-21-220241	54-24241 P173	173–173	190 (J)	—	14 (J)	—	—	18 (J)	—	—	830	40,000	—	200	37,000	110,000
MD54-21-220243	54-24241 P193	193–193	940	—	—	—	—	—	—	—	310	62,000	—	72 (J)	55,000	170,000
MD54-21-223756	54-24242 P25	25–25	—	—	—	—	—	—	—	—	—	210,000	—	—	9200	45,000
MD54-21-223757	54-24242 P50	50–50	580	—	—	—	—	—	—	—	830	280,000	110	24 (J)	39,000	160,000
MD54-21-223758	54-24242 P75	75–75	130 (J)	—	—	—	—	—	—	—	450 (J)	280,000	—	—	28,000	110,000
MD54-21-223759	54-24242 P100	100–100	94 (J)	—	—	—	—	—	—	—	110 (J)	280,000	—	—	21,000	93,000
MD54-21-223760	54-24242 P110.5	110.5–110.5	830	—	—	—	—	—	—	—	560	240,000	—	14 (J)	37,000	150,000
MD54-21-223761	54-24243 P25	25–25	—	—	—	—	—	92 (J)	65 (J)	—	—	**12,000**	—	90 (J)	110,000	280,000
MD54-21-223762	54-24243 P50	50–50	—	—	—	—	—	—	—	—	—	16,000	—	94 (J)	200,000	480,000
MD54-21-223763	54-24243 P75	75–75	—	—	—	—	—	99 (J)	—	—	—	18,000	—	120 (J)	240,000	500,000
MD54-21-223764	54-24243 P100	100–100	—	—	—	—	—	92 (J)	—	—	420 (J)	20,000	—	100 (J)	200,000	530,000
MD54-21-223765	54-24243 P125	125–125	—	—	—	—	—	—	—	—	—	19,000	—	94 (J)	180,000	440,000
MD54-21-220245	54-24399 P566.7	567–567	34 (J)	—	—	—	—	—	—	—	31 (J)	370	—	12 (J)	200	650
MD54-21-220247	54-24399 P587.8	588–588	28 (J)	—	—	—	—	—	—	—	30 (J)	640	—	40 (J)	350	1000
MD54-21-220249	54-27641 P32	32–32	—	—	—	—	—	—	—	—	—	**21,000**	—	53 (J)	37,000	360,000
MD54-21-220251	54-27641 P82	82–82	290 (J)	—	—	—	—	140 (J)	—	—	380 (J)	20,000	110 (J)	90 (J)	28,000	180,000
MD54-21-220253	54-27641 P115	115–115	—	—	—	—	—	49 (J)	26 (J)	—	220 (J)	20,000	32 (J)	23 (J)	25,000	200,000
MD54-21-220255	54-27641 P182	182–182	—	—	—	—	—	20 (J)	41 (J)	—	4200	23,000	—	80 (J)	21,000	200,000
MD54-21-220257	54-27641 P232	232–232	—	—	—	—	—	27 (J)	36 (J)	—	3800	18,000	—	87	19,000	190,000
MD54-21-220259	54-27641 P271	271–271	—	—	—	—	—	20 (J)	20 (J)	—	2200	10,000	—	60 (J)	14,000	100,000

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
Groundwater Tier I SL[a]			**0.9**	**na**	**226,000**	**na**	**na**	**23,500,000**	**na**	**136**	**665**	**3630**	**9790**	**272,000**	**1,190,000,000**	**141,000**
Industrial VISL[b]			**na**	**na**	**1840**	**na**	**na**	**115,000**	**na**	**na**	**98,300**	**6550**	**na**	**819,000**	**4,920,000**	**819,000**
MD54-21-220261	54-27641 P332.5	332.5–332.5	—	—	10 (J)	—	—	13 (J)	12 (J)	—	230	2100	—	13 (J)	5800	20,000
MD54-21-220263	54-27642 P30	30–30	—	—	—	—	—	—	—	—	—	**29,000**	—	—	410,000	400,000
MD54-21-220265	54-27642 P75	75–75	—	—	—	—	—	—	—	—	—	35,000	—	—	280,000	460,000
MD54-21-220267	54-27642 P116	116–116	—	—	—	—	—	—	—	—	—	23,000	—	—	240,000	320,000
MD54-21-220269	54-27642 P175	175–175	—	230 (J)	100 (J)	—	—	300	100 (J)	—	29,000	28,000	—	2900	140,000	290,000
MD54-21-220271	54-27642 P235	235–235	—	—	61 (J)	—	—	210 (J)	75 (J)	—	23,000	25,000	—	2000	160,000	290,000
MD54-21-220273	54-27642 P275	275–275	—	—	—	—	—	—	—	—	—	35,000	—	—	210,000	380,000
MD54-21-220275	54-27642 P338	338–338	—	—	—	—	—	—	—	—	1000 (J)	19,000 (J)	—	—	150,000 (J)	250,000 (J)
MD54-21-223766	54-27643 P30	30–30	—	—	—	—	—	—	—	—	—	10,000	—	—	42000	82,000
MD54-21-223767	54-27643 P74	74–74	—	—	—	—	—	—	—	—	490 (J)	12,000	3500	72 (J)	52,000	110,000
MD54-21-223768	54-27643 P117	117–117	—	—	36 (J)	—	—	22 (J)	—	—	1600	10,000	1300	98 (J)	51,000	130,000
MD54-21-223769	54-27643 P167	167–167	—	—	52 (J)	—	—	56 (J)	—	—	8300	9500	—	830	54,000	150,000
MD54-21-223770	54-27643 P235	235–235	—	—	22 (J)	—	—	39 (J)	39 (J)	—	15,000	5700	—	530	35,000	93,000
MD54-21-223771	54-27643 P275	275–275	—	—	10 (J)	—	—	39	35 (J)	—	9400	5000	80	21 (J)	34,000	76,000
MD54-21-223772	54-27643 P354	354–354	—	—	—	—	—	24 (J)	23 (J)	—	3400	2600	—	40	21,000	29,000
MD54-21-223775	54-610786 P25	25–25	—	—	—	—	—	—	—	—	—	10,000 (J)	—	—	70,000	100,000
MD54-21-223776	54-610786 P50	50–50	—	—	—	—	—	—	—	—	220 (J)	15,000	—	49 (J)	59,000	100,000
MD54-21-223777	54-610786 P75	75–75	—	—	65 (J)	—	—	49 (J)	—	—	1200	16,000	4700	180	60,000	130,000
MD54-21-223778	54-610786 P100	100–100	—	100 (J)	100 (J)	—	—	46 (J)	40 (J)	—	2200	12,000	8300	200	55,000	120,000
MD54-21-223779	54-610786 P118.5	118.5–118.5	—	—	78 (J)	—	—	49 (J)	—	—	3800	13,000	5300	170 (J)	62,000	140,000

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Groundwater Tier I SL[a]			**169**	**2020**	**4,540,000**	**14,000**	**2280**	**40,900**	**40,900**
Industrial VISL[b]			**32.8**	**328**	**115,000**	**na**	**1040**	**16,400**	**16,400**
MD54-21-220067	54-01015 P45	45–45	—	210 (J)	22 (J)	—	—	—	—
MD54-21-220069	54-01015 P187	187–187	—	210 (J)	12 (J)	—	—	—	—
MD54-21-220071	54-01015 P350	350–350	—	210 (J)	—	—	—	—	—
MD54-21-220073	54-01015 P385	385–385	—	150 (J)	14 (J)	—	—	—	—
MD54-21-220075	54-01015 P435	435–435	—	360 (J)	11 (J)	—	—	—	—
MD54-21-220077	54-01015 P485	485–485	—	52 (J)	—	—	—	—	—
MD54-21-220079	54-01015 P525	525–525	—	860 (J)	100 (J)	—	—	—	—
MD54-21-220081	54-01016 P188	188–188	—	47,000 (J)	2900 (J)	—	—	—	—
MD54-21-220083	54-01016 P318	318–318	—	7500 (J)	670 (J)	—	—	—	—
MD54-21-220085	54-01016 P390	390–390	—	410 (J)	—	—	—	—	—
MD54-21-220087	54-01016 P481	481–481	—	3400 (J)	79 (J)	—	—	—	—
MD54-21-220089	54-01016 P533	533–533	—	1300 (J)	15 (J)	—	—	—	—
MD54-21-220613	54-01016 P601	601–601	—	2000	30 (J)	—	64	—	—
MD54-21-223691	54-02001 P20	20–20	—	350,000	670	—	89 (J)	—	—
MD54-21-223692	54-02001 P40	40–40	—	120,000	790	—	—	—	—
MD54-21-223693	54-02001 P60	60–60	—	20,000	—	—	—	—	—
MD54-21-223694	54-02001 P80	80–80	—	320,000	1600	—	—	—	—
MD54-21-223695	54-02001 P100	100–100	—	300,000	420	—	—	—	—
MD54-21-223696	54-02001 P120	120–120	—	100,000	1000	—	56 (J)	—	—
MD54-21-223697	54-02001 P140	140–140	—	190,000	380	—	—	—	—
MD54-21-223698	54-02001 P160	160–160	—	190,000	900	—	—	—	—
MD54-21-223699	54-02001 P180	180–180	—	310,000	620	—	—	—	—
MD54-21-223700	54-02001 P200	200–200	—	200,000	400	—	—	—	—
MD54-21-223711	54-02002 P40	40–40	—	30,000 (J)	1300 (J)	—	—	180 (J)	11 (J)
MD54-21-223712	54-02002 P60	60–60	—	120,000 (J)	3600 (J)	—	69 (J)	—	—
MD54-21-223713	54-02002 P120	120–120	—	25,000 (J)	900 (J)	—	—	78 (J)	—
MD54-21-223714	54-02002 P180	180–180	—	120,000 (J)	4200 (J)	—	—	380 (J)	—
MD54-21-223715	54-02002 P200	200–200	—	97,000	5600	37 (J)	—	560	400
MD54-21-223716	54-02016 P31	31–31	—	150,000	10,000	—	—	—	—
MD54-21-220091	54-02020 P20	20–20	—	9700	600	—	—	—	—
MD54-21-220093	54-02020 P40	40–40	—	15,000	840	—	—	—	—

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Groundwater Tier I SL[a]			**169**	**2020**	**4,540,000**	**14,000**	**2280**	**40,900**	**40,900**
Industrial VISL[b]			**32.8**	**328**	**115,000**	**na**	**1040**	**16,400**	**16,400**
MD54-21-220095	54-02020 P60	60–60	—	17,000	1000	—	—	6.9 (J)	—
MD54-21-220097	54-02020 P80	80–80	—	22,000	1300	—	—	28 (J)	—
MD54-21-220099	54-02020 P95	95–95	—	23,000	1400	—	—	40 (J)	—
MD54-21-220101	54-02020 P120	120–120	—	28,000	1900	—	—	56	—
MD54-21-220103	54-02020 P140	140–140	—	31,000	2300	—	—	100	—
MD54-21-220105	54-02020 P160	160–160	—	26,000	1900	—	—	95	—
MD54-21-220107	54-02020 P180	180–180	—	39,000	3100	—	—	82	—
MD54-21-220109	54-02020 P200	200–200	—	41,000 (J)	3500	—	—	130	9.5 (J)
MD54-21-220111	54-02021 P20	20–20	—	5900	100	—	—	—	—
MD54-21-220113	54-02021 P140	140–140	—	20,000	510	—	—	—	—
MD54-21-220115	54-02021 P160	160–160	—	4500	79	—	—	—	—
MD54-21-220117	54-02021 P180	180–180	—	24,000	600	—	—	—	—
MD54-21-220119	54-02021 P198	198–198	—	30,000	670	—	—	—	—
MD54-21-223717	54-02022 P40	40–40	—	1800	13 (J)	—	—	—	—
MD54-21-223718	54-02022 P60	60–60	—	59,000	440	—	—	—	—
MD54-21-223720	54-02022 P120	120–120	—	46,000	670	—	—	—	—
MD54-21-223723	54-02022 P180	180–180	—	46,000	1100	—	—	—	—
MD54-21-223724	54-02022 P200	200–200	—	49,000	1200	—	—	—	—
MD54-21-220121	54-02023 P20	20–20	—	2400	180	—	—	—	—
MD54-21-220123	54-02023 P40	40–40	—	4700	370	—	—	—	—
MD54-21-220125	54-02023 P60	60–60	—	910	67	—	—	—	—
MD54-21-220127	54-02023 P80	80–80	—	4100	310	—	—	—	—
MD54-21-220129	54-02023 P100	100–100	—	7500	600	—	—	—	—
MD54-21-220131	54-02023 P159	159–159	—	5100	420	—	—	—	—
MD54-21-220133	54-02023 P200	200–200	—	240	22 (J)	—	—	—	—
MD54-21-223725	54-02024 P20	20–20	—	5200	360	—	—	—	—
MD54-21-223726	54-02024 P40	40–40	—	7000	500	—	—	—	—
MD54-21-223727	54-02024 P60	60–60	—	9100	670	—	—	—	—
MD54-21-223728	54-02024 P80	80–80	—	12,000	900	—	—	—	—
MD54-21-223729	54-02024 P100	100–100	—	12,000	1000	—	—	—	—
MD54-21-223730	54-02024 P140	140–140	—	17,000	1500	—	—	—	—
MD54-21-223731	54-02024 P160	160–160	—	20,000	1800	—	—	8.7 (J)	—
MD54-21-223732	54-02024 P180	180–180	—	19,000	1800	—	—	14 (J)	—

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Groundwater Tier I SL[a]			**169**	**2020**	**4,540,000**	**14,000**	**2280**	**40,900**	**40,900**
Industrial VISL[b]			**32.8**	**328**	**115,000**	**na**	**1040**	**16,400**	**16,400**
MD54-21-223733	54-02024 P200	200–200	—	15,000	1400	—	—	12 (J)	—
MD54-21-223740	54-02025 P20	20–20	—	20,000	840	—	—	—	—
MD54-21-223741	54-02025 P60	60–60	—	230	—	—	—	—	—
MD54-21-223742	54-02025 P100	100–100	—	35,000	1900	—	—	95 (J)	—
MD54-21-223743	54-02025 P160	160–160	—	50,000	3600	—	—	300	—
MD54-21-223744	54-02025 P190	190–190	—	59,000	4400	—	—	130	—
MD54-21-220135	54-02026 P20	20–20	—	1000 (J)	84	—	—	—	—
MD54-21-220137	54-02026 P60	60–60	—	1300 (J)	170	—	—	—	—
MD54-21-220139	54-02026 P100	100–100	—	1800 (J)	260	—	—	—	—
MD54-21-220141	54-02026 P160	160–160	—	2400 (J)	330	—	—	—	—
MD54-21-220143	54-02026 P200	200–200	—	3700 (J)	520	—	—	—	—
MD54-21-220145	54-02026 P215	215–215	—	3700 (J)	550	—	—	—	—
MD54-21-220147	54-02027 P20	20–20	—	2700 (J)	200	—	—	—	—
MD54-21-220149	54-02027 P60	60–60	—	7500 (J)	620	—	—	—	—
MD54-21-220151	54-02027 P100	100–100	—	10,000 (J)	950	—	—	—	—
MD54-21-220153	54-02027 P160	160–160	—	17,000 (J)	1600	—	—	18 (J)	—
MD54-21-220155	54-02027 P200	200–200	—	16,000 (J)	2000	—	—	14 (J)	—
MD54-21-220157	54-02027 P220	220–220	—	13,000 (J)	1600	—	—	9.1 (J)	—
MD54-21-220159	54-02027 P250	250–250	—	12,000 (J)	2000	—	—	—	—
MD54-21-220161	54-02028 P20	20–20	—	—	29 (J)	—	—	—	—
MD54-21-220163	54-02028 P60	60–60	—	1200	160	—	—	—	—
MD54-21-220165	54-02028 P100	100–100	—	1900	250	—	—	—	—
MD54-21-220167	54-02028 P160	160–160	—	3700	520	—	—	—	—
MD54-21-220169	54-02028 P200	200–200	—	4000	600	—	—	—	—
MD54-21-220171	54-02028 P220	220–220	—	4000	670	—	—	—	—
MD54-21-220173	54-02028 P250	250–250	—	1000	190	—	—	—	—
MD54-21-220175	54-02031 P20	20–20	—	3100	120	—	—	—	—
MD54-21-220177	54-02031 P60	60–60	—	7500	270	—	—	—	—
MD54-21-220179	54-02031 P100	100–100	—	9700	360	—	—	—	—
MD54-21-220181	54-02031 P160	160–160	—	13,000	520	—	—	—	—
MD54-21-220183	54-02031 P200	200–200	—	26,000	1100	—	—	—	—
MD54-21-220185	54-02031 P220	220–220	—	25,000	1000	—	—	—	—
MD54-21-220187	54-02031 P260	260–260	—	26,000	1200	—	—	—	—

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Groundwater Tier I SL[a]			**169**	**2020**	**4,540,000**	**14,000**	**2280**	**40,900**	**40,900**
Industrial VISL[b]			**32.8**	**328**	**115,000**	**na**	**1040**	**16,400**	**16,400**
MD54-21-220189	54-02034 P20	20–20	—	2300	53 (J)	—	—	—	—
MD54-21-220191	54-02034 P60	60–60	—	4100	95	—	—	—	—
MD54-21-220193	54-02034 P100	100–100	—	6400	150	—	—	—	—
MD54-21-220195	54-02034 P160	160–160	—	8100	260	—	—	—	—
MD54-21-220197	54-02034 P200	200–200	—	8600	350	—	—	—	—
MD54-21-220199	54-02034 P220	220–220	—	3500	200	—	—	—	—
MD54-21-220201	54-02034 P260	260–260	—	2000	140	—	—	—	—
MD54-21-220203	54-02034 P300	300–300	—	490	100	—	—	—	—
MD54-21-220205	54-02089 P13	13–13	980	370,000	20,000	—	—	—	—
MD54-21-220207	54-02089 P31	31–31	2300	210,000	17,000	—	—	—	—
MD54-21-220209	54-02089 P46	46–46	6500	400,000	25,000	—	—	—	—
MD54-21-220211	54-02089 P86	86–86	4400	410,000	20,000	—	—	—	—
MD54-21-220213	54-24238 P44	44–44	4500	340,000	13,000	—	—	—	—
MD54-21-220215	54-24238 P64	64–64	5200	350,000	16,000	—	—	—	—
MD54-21-220217	54-24238 P84	84–84	4600	220,000	20,000	—	—	—	—
MD54-21-223752	54-24239 P25	25–25	—	**50,000**	1200	—	—	—	—
MD54-21-223753	54-24239 P50	50–50	—	81,000	1800	—	—	—	—
MD54-21-223754	54-24239 P75	75–75	—	500	—	12 (J)	—	15 (J)	27 (J)
MD54-21-223755	54-24239 P99.5	99.5–99.5	—	86,000	2000	—	—	—	—
MD54-21-220219	54-24240 P28	28–28	—	590,000	16,000	—	110 (J)	—	—
MD54-21-220221	54-24240 P53	53–53	—	640,000	10,000	—	—	—	—
MD54-21-220223	54-24240 P78	78–78	—	41,000	270	—	—	—	—
MD54-21-220225	54-24240 P103	103–103	—	86,000	730	—	—	—	—
MD54-21-220227	54-24240 P128	128–128	—	120,000	2000	—	—	—	—
MD54-21-220229	54-24240 P153	153–153	—	28,000 (J)	400 (J)	—	—	—	—
MD54-21-220231	54-24241 P73	73–73	—	120,000	3500	—	—	—	—
MD54-21-220233	54-24241 P93	93–93	—	75,000	2000	—	—	—	—
MD54-21-220235	54-24241 P113	113–113	—	75,000	2000	—	—	—	—
MD54-21-220237	54-24241 P133	133–133	—	42,000	1300	—	—	—	—
MD54-21-220239	54-24241 P153	153–153	—	47,000	1600	—	—	—	—
MD54-21-220241	54-24241 P173	173–173	—	75,000	2500	—	—	—	—
MD54-21-220243	54-24241 P193	193–193	—	110,000	3800	—	—	—	—
MD54-21-223756	54-24242 P25	25–25	—	37,000	670	—	—	—	—

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Groundwater Tier I SL[a]			**169**	**2020**	**4,540,000**	**14,000**	**2280**	**40,900**	**40,900**
Industrial VISL[b]			**32.8**	**328**	**115,000**	**na**	**1040**	**16,400**	**16,400**
MD54-21-223757	54-24242 P50	50–50	—	100,000	2500	—	—	—	—
MD54-21-223758	54-24242 P75	75–75	—	75,000	1900	—	—	—	—
MD54-21-223759	54-24242 P100	100–100	—	64,000	1400	—	—	—	—
MD54-21-223760	54-24242 P110.5	110.5–110.5	—	97,000	2300	—	—	22 (J)	—
MD54-21-223761	54-24243 P25	25–25	—	**130,000**	5000	—	—	—	61 (J)
MD54-21-223762	54-24243 P50	50–50	760	190,000	6700	—	—	—	—
MD54-21-223763	54-24243 P75	75–75	760	190,000	7300	—	—	—	—
MD54-21-223764	54-24243 P100	100–100	650 (J)	180,000	6700	—	—	—	—
MD54-21-223765	54-24243 P125	125–125	—	160,000 (J)	6000	—	—	—	—
MD54-21-220245	54-24399 P566.7	567–567	—	590	28 (J)	—	—	—	—
MD54-21-220247	54-24399 P587.8	588–588	—	1000	38 (J)	—	—	—	11 (J)
MD54-21-220249	54-27641 P32	32–32	—	**500,000**	2500	—	—	—	—
MD54-21-220251	54-27641 P82	82–82	—	220,000	1200	—	—	—	90 (J)
MD54-21-220253	54-27641 P115	115–115	—	150,000	1000	—	—	—	—
MD54-21-220255	54-27641 P182	182–182	—	91,000	2100	—	—	—	—
MD54-21-220257	54-27641 P232	232–232	—	110,000	2100	—	—	—	—
MD54-21-220259	54-27641 P271	271–271	—	53,000	1800	—	—	—	—
MD54-21-220261	54-27641 P332.5	332.5–332.5	—	14,000	840	—	—	—	—
MD54-21-220263	54-27642 P30	30–30	—	**200,000**	5300	—	—	—	—
MD54-21-220265	54-27642 P75	75–75	—	220,000	6200	—	—	—	—
MD54-21-220267	54-27642 P116	116–116	—	150,000	4200	—	—	—	—
MD54-21-220269	54-27642 P175	175–175	—	180,000	6700	—	—	520	140 (J)
MD54-21-220271	54-27642 P235	235–235	—	200,000	6700	—	—	220 (J)	—
MD54-21-220273	54-27642 P275	275–275	—	220,000	6200	—	—	—	—
MD54-21-220275	54-27642 P338	338–338	—	100,000 (J)	3100 (J)	—	—	—	—
MD54-21-223766	54-27643 P30	30–30	370	37,000	1200	—	—	—	—
MD54-21-223767	54-27643 P74	74–74	500	50,000	2000	—	—	100 (J)	—
MD54-21-223768	54-27643 P117	117–117	460	50,000	2700	—	—	250	—
MD54-21-223769	54-27643 P167	167–167	—	64,000	4200	—	—	340	—
MD54-21-223770	54-27643 P235	235–235	46 (J)	51,000	3700	—	—	100	—
MD54-21-223771	54-27643 P275	275–275	—	45,000	4000	—	20 (J)	34 (J)	—
MD54-21-223772	54-27643 P354	354–354	—	26,000	2900	—	—	5.6 (J)	—

Table 5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Groundwater Tier I SL[a]			**169**	**2020**	**4,540,000**	**14,000**	**2280**	**40,900**	**40,900**
Industrial VISL[b]			**32.8**	**328**	**115,000**	**na**	**1040**	**16,400**	**16,400**
MD54-21-223775	54-610786 P25	25–25	400	52,000	1400	—	—	—	—
MD54-21-223776	54-610786 P50	50–50	520	50,000	1600	—	—	—	—
MD54-21-223777	54-610786 P75	75–75	—	50,000	1900	—	—	260	—
MD54-21-223778	54-610786 P100	100–100	500	53,000	2100	—	—	310	—
MD54-21-223779	54-610786 P118.5	118.5–118.5	540	64,000	3000	—	—	320	—

Notes: Results are in µg/m^3. Data qualifiers are defined in Appendix A. Shading denotes concentrations greater than Tier I SLs. Bolding denotes exceedance of VISLs in shallowest sampling ports in boreholes closest to occupied buildings.

[a] Tier I SLs are based on NMED 2021, 701849.

[b] VISLs from NMED (2021, 701849).

[c] na = Not available.

[d] — = Not detected.

Table 5.1-2
Second Round 2021 VOC Pore-Gas Detected Results at MDA L (in µg/m³)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloropropane[1,2-]	Dioxane[1,4-]	Hexane
Groundwater Tier I SL[a]			**20,300**	**1140**	**5650**	**12,800**	**12,000**	**79,300,000**	**2,780,000**	**5750**	**242**	**7490**	**580**	**0.9**	**23,500,000**
Industrial VISL[b]			**5,080,000**	**588**	**765**	**8190**	**199**	**na[c]**	**16,400**	**2870**	**176**	**32,800**	**459**	**na**	**115,000**
MD54-22-242224	54-02089 P13	13–13	—[d]	110 (J)	1400	—	9300	1200	1100	22,000	3800	16,000	55,000	—	—
MD54-22-242225	54-02089 P31	31–31	—	120 (J)	2300	—	13,000	1800	2000	32,000	11,000	17,000	100,000	—	—
MD54-22-242226	54-02089 P46	46–46	—	540 (J)	3300	—	21,000	5800	3300	49,000	21,000	23,000	250,000	—	—
MD54-22-242227	54-02089 P86	86–86	—	730 (J)	3000	—	25,000	4100	3000	44,000	27,000	29,000	200,000	—	—
MD54-22-239860	54-24238 P44	44–44	—	480 (J)	2300	—	22,000	4800	3100	32,000	49,000	23,000	220,000	—	390 (J)
MD54-22-239862	54-24238 P64	64–64	—	700 (J)	2200 (J)	—	22,000	3300	2900	25,000	57,000	22,000	200,000	—	—
MD54-22-239864	54-24238 P84	84–84	—	770 (J)	2800	—	31,000	3800	3700	32,000	89,000	44,000	220,000	—	—
MD54-22-239872	54-24240 P28	28–28	1300 (J)	—	—	—	13,000 (J+)	—	1000	40,000 (J+)	—	26,000 (J+)	—	—	—
MD54-22-239874	54-24240 P53	53–53	2600	150 (J)	6900 (J)	270 (J)	18,000 (J)	3200 (J)	1200	22,000 (J)	20,000 (J)	17,000 (J+)	510 (J)	—	—
MD54-22-239876	54-24240 P78	78–78	1900	540	—	100 (J)	15,000 (J+)	4100	890	13,000 (J+)	13,000 (J+)	13,000 (J+)	690	610 (J)	56 (J)
MD54-22-239866	54-24240 P103	103–103	900	380	—	120 (J)	10,000 (J+)	2900	940	9300 (J+)	8500 (J+)	17,000 (J+)	970	260 (J)	60 (J)
MD54-22-239868	54-24240 P128	128–128	360	230	—	69 (J)	5000 (J+)	1600	890	—	5300 (J+)	19,000 (J+)	1100	—	—
MD54-22-239870	54-24240 P153	153–153	380	200	—	55 (J)	4500 (J+)	1500	1000	6900 (J+)	2700 (J+)	19,000 (J+)	900	—	—
MD54-22-239888	54-24241 P73	73–73	—	240 (J+)	1600 (J+)	—	11,000 (J)	1900 (J)	410 (J+)	9700 (J)	24,000 (J)	13,000 (J+)	16,000 (J)	1300 (J+)	—
MD54-22-239890	54-24241 P93	93–93	—	—	—	—	—	—	—	—	—	—	—	—	—
MD54-22-239878	54-24241 P113	113–113	—	240 (J+)	1000 (J+)	—	7800 (J+)	830	790 (J+)	5700 (J+)	13,000 (J+)	15,000 (J+)	12,000 (J+)	1400 (J+)	—
MD54-22-239880	54-24241 P133	133–133	—	240 (J+)	820 (J+)	—	6300 (J+)	700	500 (J+)	4000 (J+)	—	17,000 (J+)	7400 (J+)	—	—
MD54-22-239882	54-24241 P153	153–153	—	320 (J+)	880 (J+)	—	6300 (J+)	650	890 (J+)	4400 (J+)	—	20,000 (J+)	6900 (J+)	470 (J+)	—
MD54-22-239884	54-24241 P173	173–173	—	450 (J+)	1100 (J+)	—	7300 (J+)	790	790 (J+)	5300 (J+)	—	20,000 (J+)	8300 (J+)	650 (J+)	—
MD54-22-239886	54-24241 P193	193–193	—	170 (J+)	750 (J+)	—	5400 (J+)	—	740 (J+)	3500 (J+)	—	17,000 (J+)	5100 (J+)	700 (J+)	—
MD54-22-239892	54-24399 P566.7	566.7–566.7	—	6.4 (J)	—	—	18 (J)	—	17 (J)	40 (J)	26 (J)	180	—	—	—
MD54-22-239894	54-24399 P587.8	587.8–587.8	—	—	—	—	22 (J)	—	23 (J)	36 (J)	39 (J)	150	—	—	—
MD54-22-239904	54-27641 P32	32–32	—	—	**2100**	—	**6800 (J+)**	3300 (J+)	480	**35,000 (J+)**	**8000 (J+)**	11,000 (J+)	340 (J)	—	—
MD54-22-239908	54-27641 P82	82–82	550	270	1100	250	5900 (J+)	4800 (J+)	690	13,000 (J+)	12,000 (J+)	10,000 (J+)	600	400 (J)	160
MD54-22-239896	54-27641 P115	115–115	380	180	520	130 (J)	4100 (J+)	3000 (J+)	640	7300 (J+)	11,000 (J+)	10,000 (J+)	740	—	56 (J)
MD54-22-239898	54-27641 P182	182–182	180 (J)	130	400	45 (J)	2300 (J+)	1100 (J+)	890	6100 (J+)	8000 (J+)	20,000 (J+)	830	—	—
MD54-22-239900	54-27641 P232	232–232	200	150	690	30 (J)	2000 (J+)	1200 (J+)	1100	8500 (J+)	4000 (J+)	27,000	600	—	40 (J)
MD54-22-239902	54-27641 P271	271–271	—	86	520	—	1100 (J+)	720 (J+)	790	4000 (J+)	650 (J+)	22,000	160	—	24 (J)
MD54-22-239906	54-27641 P332.5	332.5–332.5	—	23 (J)	230	—	250 (J+)	280 (J+)	390	—	250 (J+)	8700	21 (J)	—	19 (J)

Table 5.1-2 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloropropane[1,2-]	Dioxane[1,4-]	Hexane
Groundwater Tier I SL[a]			**20,300**	**1140**	**5650**	**12,800**	**12,000**	**79,300,000**	**2,780,000**	**5750**	**242**	**7490**	**580**	**0.9**	**23,500,000**
Industrial VISL[b]			**5,080,000**	**588**	**765**	**8190**	**199**	**na[c]**	**16,400**	**2870**	**176**	**32,800**	**459**	**na**	**115,000**
MD54-22-239918	54-27642 P30	30–30	—	—	**5600**	—	**30,000 (J+)**	790	1300	**8900 (J+)**	**6100 (J+)**	14,000 (J+)	**36,000 (J+)**	—	—
MD54-22-239922	54-27642 P75	75–75	—	140 (J)	3300	—	33,000 (J+)	1300	2200	13,000 (J+)	17,000 (J+)	29,000 (J+)	79,000 (J+)	—	—
MD54-22-239910	54-27642 P116	116–116	—	—	1300	—	10,000 (J+)	300	590	3800 (J+)	3800 (J+)	6700 (J+)	14,000 (J+)	—	—
MD54-22-239912	54-27642 P175	175–175	—	1400	1900	430	18,000 (J+)	1000	1100	6900 (J+)	10,000 (J+)	33,000 (J+)	33,000 (J+)	—	300
MD54-22-239914	54-27642 P235	235–235	—	1400	2300	290 (J)	15,000 (J+)	860	1200	6100 (J+)	6900 (J+)	36,000	19,000 (J+)	—	400
MD54-22-239916	54-27642 P275	275–275	—	300 (J)	2700	—	31,000 (J+)	1400	2000	10,000 (J+)	—	38,000 (J+)	74,000 (J+)	—	350 (J)
MD54-22-239920	54-27642 P338	338–338	—	420	1100	110 (J)	10,000 (J+)	550	640	3900 (J+)	6500 (J+)	20,000 (J+)	22,000 (J+)	—	—

Table 5.1-2 (continued)

Sample ID	Location ID	Depth (ft)	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Vinyl Chloride	Xylene[1,2-]
Groundwater Tier I SL[a]			**na**	**136**	**665**	**3630**	**9790**	**272,000**	**1,190,000,000**	**141,000**	**169**	**2020**	**4,540,000**	**2280**	**40,900**
Industrial VISL[b]			**na**	**na**	**98,300**	**6550**	**na**	**819,000**	**4,920,000**	**819,000**	**32.8**	**328**	**115,000**	**1040**	**16,400**
MD54-22-242224	54-02089 P13	13–13	—	—	—	30,000	—	—	170,000	510,000	1800	330,000	60,000	—	—
MD54-22-242225	54-02089 P31	31–31	—	—	—	29,000	—	—	200,000	650,000	4000	350,000	36,000	—	—
MD54-22-242226	54-02089 P46	46–46	—	—	—	42,000	—	—	400,000	1,100,000	6500	440,000	28,000	—	—
MD54-22-242227	54-02089 P86	86–86	—	—	—	49,000	—	—	400,000	1,200,000	4500	390,000	18,000	—	—
MD54-22-239860	54-24238 P44	44–44	—	—	—	39,000	—	—	440,000	870,000	6000	310,000	24,000	—	—
MD54-22-239862	54-24238 P64	64–64	—	—	4900 (J)	30,000	—	—	390,000	760,000	4000	250,000	11,000	—	—
MD54-22-239864	54-24238 P84	84–84	—	—	2300 (J)	50,000	—	—	500,000	1,000,000	3900	330,000	14,000	—	—
MD54-22-239866	54-24240 P103	103–103	—	—	—	33,000 (J+)	—	24 (J)	43,000 (J+)	210,000 (J+)	71 (J)	180,000 (J+)	1700 (J+)	97	—
MD54-22-239868	54-24240 P128	128–128	—	—	—	31,000 (J+)	60 (J)	24 (J)	20,000 (J+)	180,000 (J+)	50 (J)	—	1800 (J+)	59 (J)	—
MD54-22-239870	54-24240 P153	153–153	—	—	—	30,000 (J+)	—	18 (J)	24,000 (J+)	190,000 (J+)	—	—	1900 (J+)	—	—
MD54-22-239872	54-24240 P28	28–28	—	—	—	—	—	—	—	870,000 (J+)	—	—	—	—	—
MD54-22-239874	54-24240 P53	53–53	—	—	—	—	—	—	67,000 (J+)	—	—	—	3000 (J)	200 (J)	—
MD54-22-239876	54-24240 P78	78–78	—	110 (J)	—	30,000 (J+)	250	—	63,000 (J+)	280,000 (J+)	65 (J)	250,000 (J+)	2000 (J+)	92 (J)	—

Table 5.1-2 (continued)

Sample ID	Location ID	Depth (ft)	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Vinyl Chloride	Xylene[1,2-]
Groundwater Tier I SL[a]			**na**	**136**	**665**	**3630**	**9790**	**272,000**	**1,190,000,000**	**141,000**	**169**	**2020**	**4,540,000**	**2280**	**40,900**
Industrial VISL[b]			**na**	**na**	**98,300**	**6550**	**na**	**819,000**	**4,920,000**	**819,000**	**32.8**	**328**	**115,000**	**1040**	**16,400**
MD54-22-239888	54-24241 P73	73–73	—	—	—	—	—	—	71,000 (J+)	300,000 (J+)	—	130,000 (J+)	4100 (J+)	—	—
MD54-22-239890	54-24241 P93	93–93	—	—	—	—	—	2600 (J+)	—	—	—	—	—	—	—
MD54-22-239878	54-24241 P113	113–113	—	—	—	62,000 (J+)	—	—	54,000 (J+)	200,000 (J+)	—	86,000 (J+)	3300 (J+)	—	—
MD54-22-239880	54-24241 P133	133–133	—	—	—	—	—	—	43,000 (J+)	120,000 (J+)	—	75,000 (J+)	2900 (J+)	—	—
MD54-22-239882	54-24241 P153	153–153	—	—	760 (J)	—	—	170 (J+)	50,000 (J+)	130,000 (J+)	—	75,000 (J+)	2900 (J+)	—	—
MD54-22-239884	54-24241 P173	173–173	—	—	1200 (J)	—	—	300 (J+)	50,000 (J+)	150,000 (J+)	—	97,000 (J+)	3400 (J+)	—	—
MD54-22-239886	54-24241 P193	193–193	—	—	300 (J)	—	—	—	41,000 (J+)	100,000 (J+)	—	70,000 (J+)	2600 (J+)	—	—
MD54-22-239892	54-24399 P566.7	566.7–566.7	—	—	42 (J)	200	—	53	280	400	—	280	34 (J)	—	—
MD54-22-239894	54-24399 P587.8	587.8–587.8	—	—	52 (J)	180	—	53	250	390	—	280	40 (J)	—	—
MD54-22-239904	54-27641 P32	32–32	—	—	—	**22,000 (J+)**	—	—	48,000 (J+)	520,000 (J+)	—	**500,000 (J+)**	1900	140 (J)	—
MD54-22-239908	54-27641 P82	82–82	—	120 (J)	450 (J)	25,000 (J+)	170	25 (J)	31,000 (J+)	240,000 (J+)	—	230,000 (J+)	1400	54 (J)	—
MD54-22-239896	54-27641 P115	115–115	—	—	250 (J)	18,000 (J+)	—	17 (J)	22,000 (J+)	160,000 (J+)	—	130,000 (J+)	1200	—	—
MD54-22-239898	54-27641 P182	182–182	—	—	3800	18,000 (J+)	—	56 (J)	19,000 (J+)	160,000 (J+)	—	75,000 (J+)	1700	—	—
MD54-22-239900	54-27641 P232	232–232	37 (J)	—	4200	20,000 (J+)	—	87	24,000 (J+)	200,000 (J+)	—	120,000 (J+)	2600	—	—
MD54-22-239902	54-27641 P271	271–271	32 (J)	—	2300	12,000 (J+)	—	80	14,000 (J+)	110,000 (J+)	—	50,000 (J+)	1900	—	—
MD54-22-239906	54-27641 P332.5	332.5–332.5	—	—	320	2400 (J+)	—	15 (J)	7400 (J+)	23,000 (J+)	—	15,000 (J+)	900	—	—
MD54-22-239918	54-27642 P30	30–30	—	—	—	**26,000 (J+)**	—	—	430,000 (J+)	340,000 (J+)	**240 (J)**	**170,000 (J+)**	4200	—	—
MD54-22-239922	54-27642 P75	75–75	—	—	—	33,000 (J+)	—	—	260,000 (J+)	480,000 (J+)	1000	190,000 (J+)	6000	—	—
MD54-22-239910	54-27642 P116	116–116	—	—	—	11,000 (J+)	—	—	120,000 (J+)	170,000 (J+)	130 (J)	70,000 (J+)	2000	—	—
MD54-22-239912	54-27642 P175	175–175	—	—	20,000	20,000 (J+)	—	1700	110,000 (J+)	250,000 (J+)	350 (J)	130,000 (J+)	5300	—	100 (J)
MD54-22-239914	54-27642 P235	235–235	—	—	27,000	18,000 (J+)	—	1200	120,000 (J+)	230,000 (J+)	210 (J)	120,000 (J+)	6700	—	270 (J)
MD54-22-239916	54-27642 P275	275–275	—	—	—	33,000 (J+)	—	—	180,000 (J+)	390,000 (J+)	1100	190,000 (J+)	6700	—	—
MD54-22-239920	54-27642 P338	338–338	—	—	5600	12,000 (J+)	600	120 (J)	70,000 (J+)	140,000 (J+)	310	70,000 (J+)	3000	—	52 (J)

Notes: Results are in μg/m^3. Data qualifiers are defined in Appendix A. Shading denotes concentrations greater than Tier 1 SLs. Bolding denotes exceedance of VISLs in shallowest sampling ports in boreholes closest to occupied buildings

[a] Tier I SLs are based on NMED 2021, 701849.

[b] VISLs from NMED (2021, 701849).

[c] na = Not available.

[d] — = Not detected.

.

Table 5.1-3
Detected Tritium Results in Pore-Gas Samples at
MDA L Vapor-Monitoring Wells, First Sampling Round

Field Sample ID	Location ID	Depth (ft bgs)	Analytical Result (pCi/L)
MD54-21-223551	54-02001 P80	80–80	1224
MD54-21-223559	54-02002 P60	60–60	650
MD54-21-223560	54-02002 P120	120–120	256
MD54-21-223561	54-02002 P180	180–180	287
MD54-21-223562	54-02002 P200	200–200	279
MD54-21-223565	54-02022 P60	60–60	224
MD54-21-223571	54-02022 P200	200–200	288
MD54-21-220128	54-02023 P100	100–100	1158 (J)
MD54-21-223572	54-02024 P20	20–20	241
MD54-21-223576	54-02024 P100	100–100	306
MD54-21-223581	54-02025 P20	20–20	331
MD54-21-223583	54-02025 P100	100–100	534
MD54-21-220170	54-02028 P220	220–220	228
MD54-21-220206	54-02089 P31	31–31	374
MD54-21-220208	54-02089 P46	46–46	1789
MD54-21-220210	54-02089 P86	86–86	2182
MD54-21-220212	54-24238 P44	44–44	579
MD54-21-220214	54-24238 P64	64–64	827
MD54-21-220216	54-24238 P84	84–84	379
MD54-21-223588	54-24239 P75	75–75	3408
MD54-21-220224	54-24240 P103	103–103	360
MD54-21-220230	54-24241 P73	73–73	298
MD54-21-220232	54-24241 P93	93–93	1538
MD54-21-220234	54-24241 P113	113–113	291
MD54-21-223591	54-24242 P50	50–50	227
MD54-21-223594	54-24242 P110.5	110.5–110.5	259
MD54-21-223595	54-24243 P25	25–25	8700
MD54-21-223596	54-24243 P50	50–50	1614
MD54-21-223597	54-24243 P75	75–75	12554
MD54-21-223598	54-24243 P100	100–100	16162
MD54-21-223599	54-24243 P125	125–125	31562
MD54-21-220262	54-27642 P30	30–30	311
MD54-21-220266	54-27642 P116	116–116	343
MD54-21-220268	54-27642 P175	175–175	466
MD54-21-220270	54-27642 P235	235–235	318
MD54-21-220272	54-27642 P275	275–275	5512

Table 5.1-3 (continued)

Field Sample ID	Location ID	Depth (ft bgs)	Analytical Result (pCi/L)
MD54-21-220274	54-27642 P338	338–338	499
MD54-21-223601	54-27643 P74	74–74	1445
MD54-21-223602	54-27643 P117	117–117	238
MD54-21-223607	54-610786 P25	25–25	589
MD54-21-223608	54-610786 P50	50–50	463
MD54-21-223610	54-610786 P100	100–100	714
MD54-21-223611	54-610786 P118.5	118.5–118.5	241

Table 5.1-4
Detected Tritium Results in Pore-Gas Samples at
MDA L Vapor-Monitoring Wells, Second Sampling Round

Field Sample ID	Location ID	Depth (ft bgs)	Analytical Result (pCi/L)
MD54-22-242228	54-02089 P13	13–13	2822
MD54-22-242229	54-02089 P31	31–31	4029
MD54-22-242230	54-02089 P46	46–46	3811
MD54-22-242231	54-02089 P86	86–86	8268
MD54-22-239861	54-24238 P44	44–44	12001
MD54-22-239863	54-24238 P64	64–64	2651
MD54-22-239865	54-24238 P84	84–84	2879
MD54-22-239873	54-24240 P28	28–28	2415
MD54-22-239875	54-24240 P53	53–53	3783 (J)
MD54-22-239879	54-24241 P113	113–113	797
MD54-22-239889	54-24241 P73	73–73	1741 (J)
MD54-22-239891	54-24241 P93	93–93	2591
MD54-22-239905	54-27641 P32	32–32	1855
MD54-22-239913	54-27642 P175	175–175	822
MD54-22-239915	54-27642 P235	235–235	854
MD54-22-239917	54-27642 P275	275–275	989
MD54-22-239919	54-27642 P30	30–30	1944
MD54-22-239921	54-27642 P338	338–338	2241
MD54-22-239923	54-27642 P75	75–75	4728

Table 5.2-1
First Round 2021 VOC Pore-Gas Detected Results at MDA L (in ppmv)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
MD54-21-220067	54-01015 P45	45–45	—*	—	—	—	—	—	—	—	0.0035 (J)	—	0.023 (J)	—	—	—
MD54-21-220069	54-01015 P187	187–187	—	—	—	—	—	—	—	—	—	—	0.014 (J)	—	—	—
MD54-21-220071	54-01015 P350	350–350	—	—	—	—	—	—	—	—	—	—	0.0056 (J)	—	—	—
MD54-21-220073	54-01015 P385	385–385	0.0089 (J)	—	—	—	—	—	—	—	—	—	0.012 (J)	—	—	—
MD54-21-220075	54-01015 P435	435–435	—	—	—	—	—	—	—	—	0.0063 (J)	—	0.02 (J)	—	—	—
MD54-21-220077	54-01015 P485	485–485	0.0081 (J)	—	—	—	—	—	—	—	—	—	0.011	—	—	—
MD54-21-220079	54-01015 P525	525–525	—	—	—	0.0028 (J)	—	—	0.0067 (J+)	0.011	0.0083 (J)	—	0.16 (J)	—	—	—
MD54-21-220081	54-01016 P188	188–188	0.0081 (J)	0.14	—	0.12	0.0056 (J)	0.48	0.39 (J+)	0.095	0.24	0.025	4.2 (J)	—	0.0044 (J)	0.15
MD54-21-220083	54-01016 P318	318–318	—	0.028	—	0.036	—	0.041	0.048 (J+)	0.03	0.026	0.0057 (J)	1.2 (J)	—	—	0.0071 (J)
MD54-21-220085	54-01016 P390	390–390	—	0.0016 (J)	—	—	—	0.0027 (J)	—	—	—	0.0035 (J)	0.0064 (J)	—	—	0.0049 (J)
MD54-21-220087	54-01016 P481	481–481	0.016 (J)	0.024	—	0.0053 (J)	0.0029 (J)	0.04	0.013 (J+)	—	0.013	0.034	0.081 (J)	—	—	0.072
MD54-21-220089	54-01016 P533	533–533	—	0.011 (J)	—	—	—	0.01 (J)	—	—	0.0034 (J)	0.015	0.021 (J)	—	—	0.027
MD54-21-220613	54-01016 P601	601–601	0.014 (J)	0.022	0.0046 (J)	0.002 (J)	0.0014 (J)	0.022	—	—	0.0088 (J)	0.038	0.038	—	—	0.062
MD54-21-223691	54-02001 P20	20–20	—	—	—	0.12	—	0.45	0.97	0.031 (J)	3.3	0.35	0.9	—	—	—
MD54-21-223692	54-02001 P40	40–40	—	0.016 (J)	—	0.056	0.0053 (J)	0.29	0.62	0.068	1.5	0.74	1.6	—	—	0.077
MD54-21-223693	54-02001 P60	60–60	—	—	—	—	0.0023 (J)	0.026	—	—	0.045	0.062	0.0034 (J)	—	—	0.0044 (J)
MD54-21-223694	54-02001 P80	80–80	—	0.059	—	0.17	0.074	0.87	2.3	0.12	3	2.4	1.4	—	—	0.11
MD54-21-223695	54-02001 P100	100–100	—	—	—	0.074	0.0097 (J)	0.45	0.69	0.024 (J)	2.5	0.38	0.61	—	—	0.037 (J)
MD54-21-223696	54-02001 P120	120–120	—	0.036 (J)	—	0.047	0.018 (J)	0.53	1.1	0.11	1.4	2.8	2.6	—	—	0.16
MD54-21-223697	54-02001 P140	140–140	—	—	—	0.064	—	0.24	0.55	0.016 (J)	1.9	0.2	0.24	—	—	0.013 (J)
MD54-21-223698	54-02001 P160	160–160	—	0.027 (J)	—	0.11	0.038 (J)	0.47	1.2	0.061	1.8	1.1	0.63	—	—	0.048
MD54-21-223699	54-02001 P180	180–180	—	—	0.024 (J)	0.1	0.0079 (J)	0.47	0.88	0.031 (J)	2.8	0.39	0.49	—	—	0.03 (J)
MD54-21-223700	54-02001 P200	200–200	—	—	—	0.074	—	0.28	0.61	0.025 (J)	1.8	0.2	0.3	—	—	—
MD54-21-223711	54-02002 P40	40–40	0.011 (J)	0.083 (J)	—	0.085 (J)	0.036 (J)	0.96 (J)	0.011	0.086 (J)	0.41 (J)	0.82 (J)	1.4 (J)	—	0.0037 (J)	1.8 (J)
MD54-21-223712	54-02002 P60	60–60	—	0.028 (J)	—	0.34 (J)	0.0071 (J)	3.7 (J)	0.054	0.21 (J)	1.4 (J)	1.6 (J)	3.4 (J)	—	—	6.2 (J)
MD54-21-223713	54-02002 P120	120–120	0.009 (J)	0.047 (J)	0.0092 (J)	0.067 (J)	0.025 (J)	0.8 (J)	0.01	0.066 (J)	0.31 (J)	0.74 (J)	0.85 (J)	—	—	1.5 (J)
MD54-21-223714	54-02002 P180	180–180	—	0.21 (J)	—	0.32 (J)	0.11 (J)	3.7 (J)	0.075	0.3 (J)	1.5 (J)	3.5 (J)	3.8 (J)	—	—	6.9 (J)
MD54-21-223715	54-02002 P200	200–200	—	0.39	—	0.27	0.099	2.6	1 (J)	0.22	1.1	1.7	6	—	0.0086 (J)	3.3
MD54-21-223716	54-02016 P31	31–31	—	—	—	0.34	—	2.3	—	0.22	2.1	1.5	2.9	—	0.017 (J)	3.4
MD54-21-220091	54-02020 P20	20–20	—	0.0043 (J)	—	0.028	0.0014 (J)	0.32	—	0.019	0.12	0.086	0.39	—	—	0.62
MD54-21-220093	54-02020 P40	40–40	—	0.017	—	0.043	0.0054 (J)	0.51	—	0.029	0.18	0.19	0.63	—	—	1

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
MD54-21-220095	54-02020 P60	60–60	—	0.027	—	0.047	0.0084 (J)	0.56	—	0.032	0.2	0.23	0.71	—	—	1.1
MD54-21-220097	54-02020 P80	80–80	—	0.044	0.0054 (J)	0.057	0.012	0.71	—	0.042	0.26	0.31	1	—	—	1.3
MD54-21-220099	54-02020 P95	95–95	—	0.048	—	0.056	0.013	0.7	—	0.042	0.26	0.32	1	—	—	1.3
MD54-21-220101	54-02020 P120	120–120	—	0.066	—	0.068	0.018	0.86	—	0.05	0.31	0.38	1.5	—	0.0039 (J)	1.4
MD54-21-220103	54-02020 P140	140–140	0.013 (J)	0.093	—	0.078	0.02	0.92	—	0.059	0.33	0.37	1.9	—	0.0036 (J)	1.3
MD54-21-220105	54-02020 P160	160–160	—	0.086	—	0.068	0.018	0.74	—	0.046	0.25	0.28	1.6	—	0.0025 (J)	0.9
MD54-21-220107	54-02020 P180	180–180	—	0.13	—	0.1	0.026	1.1	—	0.074	0.37	0.34	2.7	—	0.0048 (J)	1.2
MD54-21-220109	54-02020 P200	200–200	—	0.2	—	0.12	0.024	1.1	0.42	0.083	0.36	0.28	3.1	—	0.0037 (J)	0.94
MD54-21-220111	54-02021 P20	20–20	—	—	—	0.0036 (J)	—	0.019	—	0.013	0.079	0.033	0.19	—	—	0.0087 (J)
MD54-21-220113	54-02021 P140	140–140	—	0.01 (J)	—	0.023	0.0022 (J)	0.1	—	0.052	0.44	0.63	1.1	—	—	0.067
MD54-21-220115	54-02021 P160	160–160	—	0.0018 (J)	—	0.0026 (J)	—	0.017	—	0.0085 (J)	0.075	0.11	0.15	—	—	0.012
MD54-21-220117	54-02021 P180	180–180	—	0.012	—	0.024	0.0025 (J)	0.11	—	0.062	0.48	0.6	1.3	—	—	0.069
MD54-21-220119	54-02021 P198	198–198	—	0.014	—	0.032	0.0022 (J)	0.11	—	0.068	0.51	0.42	1.6	—	—	0.06
MD54-21-223717	54-02022 P40	40–40	—	—	—	—	—	0.0046 (J)	0.013 (J+)	—	0.019	0.016	0.019	—	—	—
MD54-21-223718	54-02022 P60	60–60	—	0.0036 (J)	—	0.014	0.0023 (J)	0.18	0.52 (J+)	0.049	0.71	0.92	0.96	—	—	0.077
MD54-21-223720	54-02022 P120	120–120	—	0.014	—	0.0081 (J)	0.0066 (J)	0.22	0.65 (J+)	0.079	0.9	1.7	1.6	—	—	0.13
MD54-21-223723	54-02022 P180	180–180	—	0.02	—	0.03	0.0043 (J)	0.2	0.7 (J+)	0.12	0.96	0.87	3	—	—	0.1
MD54-21-223724	54-02022 P200	200–200	—	0.021	—	0.04	0.0027 (J)	0.19	0.74 (J+)	0.14	0.97	0.54	3.6	—	—	0.082
MD54-21-220121	54-02023 P20	20–20	—	0.0042 (J)	—	0.0028 (J)	—	0.056	—	0.0073 (J)	0.023	0.013	0.12	—	—	0.04
MD54-21-220123	54-02023 P40	40–40	—	0.0032 (J)	—	0.0068 (J)	—	0.12	—	0.016	0.049	0.0099 (J)	0.28	—	—	0.071
MD54-21-220125	54-02023 P60	60–60	—	0.0041 (J)	—	0.0022 (J)	—	0.016	—	—	0.0067 (J)	0.0028 (J)	0.056	—	—	0.0093 (J)
MD54-21-220127	54-02023 P80	80–80	—	0.0061 (J)	—	0.0059 (J)	—	0.093	—	0.011 (J)	0.043	0.013	0.23	—	—	0.063
MD54-21-220129	54-02023 P100	100–100	0.038 (J)	0.012	—	0.013	0.0013 (J)	0.17	—	0.019	0.077	0.025	0.44	—	—	0.11
MD54-21-220131	54-02023 P159	159–159	—	0.012	—	0.013	—	0.1	—	0.012	0.043	0.011 (J)	0.33	—	—	0.045
MD54-21-220133	54-02023 P200	200–200	—	—	—	—	—	0.0058 (J)	—	—	—	—	0.014	—	—	—
MD54-21-223725	54-02024 P20	20–20	—	—	—	0.016	—	0.15	0.064	0.014	0.06	0.013	0.25	—	—	0.16
MD54-21-223726	54-02024 P40	40–40	—	0.0022 (J)	—	0.021	0.0012 (J)	0.21	0.086	0.019	0.076	0.024	0.36	—	—	0.23
MD54-21-223727	54-02024 P60	60–60	0.0083 (J)	0.007 (J)	0.0058 (J)	0.028	0.0024 (J)	0.28	0.11	0.028	0.1	0.034	0.47	—	—	0.3
MD54-21-223728	54-02024 P80	80–80	—	0.017	—	0.034	0.0046 (J)	0.35	0.15	0.034	0.13	0.062	0.64	—	—	0.38
MD54-21-223729	54-02024 P100	100–100	—	0.021	—	0.038	0.0049 (J)	0.37	0.16	0.038	0.14	0.071	0.71	—	—	0.36
MD54-21-223730	54-02024 P140	140–140	—	0.043	—	0.051	0.0087 (J)	0.47	0.2	0.043	0.18	0.096	1.1	—	—	0.38
MD54-21-223731	54-02024 P160	160–160	—	0.064	—	0.063	0.011	0.56	0.24	0.052	0.2	0.14	1.4	0.0042 (J)	—	0.42
MD54-21-223732	54-02024 P180	180–180	—	0.068	—	0.06	0.0096 (J)	0.54	0.22	0.05	0.19	0.14	1.4	—	—	0.36

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
MD54-21-223733	54-02024 P200	200–200	—	0.058	—	0.047	0.0081 (J)	0.4	0.15	0.041	0.14	0.095	1.1	—	—	0.23
MD54-21-223740	54-02025 P20	20–20	—	0.002 (J)	—	0.099	0.0014 (J)	0.82	—	0.036	0.24	0.15	0.58	—	0.003 (J)	1.5
MD54-21-223741	54-02025 P60	60–60	—	—	—	—	—	0.0078 (J)	—	—	—	—	—	—	—	0.02
MD54-21-223742	54-02025 P100	100–100	—	0.079	—	0.13	0.037	1.2	—	0.077	0.44	0.69	1.4	—	—	2.3
MD54-21-223743	54-02025 P160	160–160	—	0.2	—	0.18	0.054	1.8	—	0.11	0.66	0.96	3.1	—	0.0046 (J)	2.6
MD54-21-223744	54-02025 P190	190–190	—	0.19	—	0.18	0.049	1.8	—	0.11	0.68	0.84	4.1	—	0.0078 (J)	2
MD54-21-220135	54-02026 P20	20–20	—	0.013	—	0.0021 (J)	—	0.02	—	—	0.0062 (J)	0.0079 (J)	0.046	—	—	0.018
MD54-21-220137	54-02026 P60	60–60	—	0.0037 (J)	—	0.005 (J)	—	0.035	—	0.0064 (J)	0.01 (J)	—	0.1	—	—	0.013 (J)
MD54-21-220139	54-02026 P100	100–100	—	0.0039 (J)	—	0.0068 (J)	—	0.046	0.02	0.0086 (J)	0.013	—	0.15	—	—	0.015
MD54-21-220141	54-02026 P160	160–160	—	0.0036 (J)	—	0.0091 (J)	—	0.053	0.023	0.011 (J)	0.015	—	0.2	—	—	0.013 (J)
MD54-21-220143	54-02026 P200	200–200	—	0.0034 (J)	—	0.015	—	0.085	0.037	0.02	0.024	0.0045 (J)	0.34	—	—	0.017
MD54-21-220145	54-02026 P215	215–215	—	0.0059 (J)	—	0.018	—	0.081	0.036	0.022	0.023	0.0041 (J)	0.38	—	—	0.014
MD54-21-220147	54-02027 P20	20–20	0.0077 (J)	—	—	0.0045 (J)	—	0.089	0.033	0.0074 (J)	0.028	0.0024 (J)	0.14	—	—	0.073
MD54-21-220149	54-02027 P60	60–60	—	0.0069 (J)	—	0.012	0.0011 (J)	0.23	0.088	0.019	0.074	0.022	0.4	—	—	0.22
MD54-21-220151	54-02027 P100	100–100	—	0.02	—	0.022	0.0043 (J)	0.32	0.13	0.027	0.1	0.035	0.64	—	—	0.28
MD54-21-220153	54-02027 P160	160–160	—	0.064	—	0.045	0.0069 (J)	0.47	0.18	0.044	0.14	0.067	1.1	—	—	0.28
MD54-21-220155	54-02027 P200	200–200	—	0.07	—	0.055	0.0059 (J)	0.42	0.17	0.05	0.12	0.044	1.3	—	—	0.18
MD54-21-220157	54-02027 P220	220–220	—	0.059	—	0.045	0.0036 (J)	0.32	0.13	0.047	0.095	0.026	1.2	—	—	0.11
MD54-21-220159	54-02027 P250	250–250	—	0.056	—	0.056	0.003 (J)	0.3	0.12	0.047	0.082	0.011 (J)	1.4	—	—	0.073
MD54-21-220161	54-02028 P20	20–20	—	—	—	—	—	—	—	—	—	—	0.0056 (J)	—	—	—
MD54-21-220163	54-02028 P60	60–60	—	—	—	0.0027 (J)	—	0.032	0.015	0.0058 (J)	0.0098 (J)	—	0.092	—	—	0.011 (J)
MD54-21-220165	54-02028 P100	100–100	—	—	—	0.0063 (J)	—	0.046	0.022	0.0077 (J)	0.016	—	0.15	—	—	0.016
MD54-21-220167	54-02028 P160	160–160	—	—	—	0.014	—	0.086	0.039	0.018	0.026	0.005 (J)	0.31	—	—	0.018
MD54-21-220169	54-02028 P200	200–200	—	—	—	0.015	—	0.079	0.041	0.022	0.027	0.0037 (J)	0.36	—	—	0.013
MD54-21-220171	54-02028 P220	220–220	—	—	—	0.016	—	0.083	0.043	0.024	0.026	0.0027 (J)	0.42	—	—	0.013
MD54-21-220173	54-02028 P250	250–250	—	—	—	0.0047 (J)	—	0.019	—	0.007 (J)	0.0066 (J)	—	0.12	—	—	—
MD54-21-220175	54-02031 P20	20–20	—	0.0027 (J)	—	0.0043 (J)	—	0.037	—	0.0099 (J)	0.052	0.024	0.17	—	—	0.015
MD54-21-220177	54-02031 P60	60–60	0.0075 (J)	0.003 (J)	—	0.011	0.0013 (J)	0.089	—	0.023	0.14	0.14	0.44	—	—	0.037
MD54-21-220179	54-02031 P100	100–100	—	0.0068 (J)	—	0.016	—	0.099	—	0.032	0.18	0.17	0.6	—	—	0.045
MD54-21-220181	54-02031 P160	160–160	0.0075 (J)	0.012	—	0.026	—	0.099	—	0.04	0.2	0.12	0.87	—	—	0.036
MD54-21-220183	54-02031 P200	200–200	—	0.021	—	0.05	0.0021 (J)	0.18	—	0.076	0.37	0.16	1.8	—	0.0023 (J)	0.052
MD54-21-220185	54-02031 P220	220–220	0.013 (J)	0.021	—	0.053	0.002 (J)	0.18	—	0.082	0.35	0.13	1.9	—	—	0.043
MD54-21-220187	54-02031 P260	260–260	—	0.023	—	0.056	0.0015 (J)	0.17	—	0.085	0.35	0.1	2	—	—	0.045

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
MD54-21-220189	54-02034 P20	20–20	—	—	—	—	—	0.018	—	0.0076 (J)	0.038	0.0026 (J)	0.099	—	—	—
MD54-21-220191	54-02034 P60	60–60	—	—	—	—	—	0.023	—	0.012	0.082	0.039	0.2	—	—	0.0099 (J)
MD54-21-220193	54-02034 P100	100–100	—	—	—	0.002 (J)	—	0.029	—	0.021	0.14	0.069	0.37	—	—	0.015
MD54-21-220195	54-02034 P160	160–160	—	0.0034 (J)	—	0.0055 (J)	—	0.025	—	0.037	0.15	0.034	0.64	—	—	0.0084 (J)
MD54-21-220197	54-02034 P200	200–200	—	0.0029 (J)	—	0.0086 (J)	—	0.021	—	0.049	0.14	0.01 (J)	0.89	—	—	0.0039 (J)
MD54-21-220199	54-02034 P220	220–220	—	—	—	0.0044 (J)	—	0.0086 (J)	—	0.023	0.051	0.0033 (J)	0.39	—	—	—
MD54-21-220201	54-02034 P260	260–260	—	—	—	0.004 (J)	—	0.004 (J)	—	0.023	0.019	—	0.32	—	—	—
MD54-21-220203	54-02034 P300	300–300	—	—	—	—	—	—	—	0.013	0.0043 (J)	—	0.13	—	—	—
MD54-21-220205	54-02089 P13	13–13	—	0.0096 (J)	—	0.14	—	1.3	1.9	0.14	4.1	0.79	1.3	—	—	7.7
MD54-21-220207	54-02089 P31	31–31	—	0.023 (J)	—	0.21	—	1.4	2.3	0.22	5	1.7	2.9	—	—	13
MD54-21-220209	54-02089 P46	46–46	—	0.13 (J)	—	0.48	0.044 (J)	3.8	6.2	0.62	12	5.4	4.9	—	—	48
MD54-21-220211	54-02089 P86	86–86	—	0.22 (J)	—	0.4 (J)	—	4.9	6.4	0.59	9.8	8	6.4	—	—	52
MD54-21-220213	54-24238 P44	44–44	—	0.24 (J)	—	0.48 (J)	—	6	5.8	0.74	7.8	23	7.4	—	—	51
MD54-21-220215	54-24238 P64	64–64	—	0.31 (J)	—	0.43 (J)	—	5.5	6.1	0.77	8.8	21	6.6	—	—	65
MD54-21-220217	54-24238 P84	84–84	—	0.072 (J)	—	0.24 (J)	—	3	3.6	0.41	6.2	9.4	3.5	—	—	31
MD54-21-223752	54-24239 P25	25–25	—	0.011 (J)	—	0.054	—	0.83	—	0.073	0.86	0.87	1.3	—	0.012 (J)	0.7
MD54-21-223753	54-24239 P50	50–50	0.028 (J)	0.014 (J)	—	0.083	—	1.2	—	0.12	1.2	1.5	2.3	—	0.016 (J)	1.1
MD54-21-223754	54-24239 P75	75–75	0.028 (J)	0.0029 (J)	—	—	—	0.005 (J)	—	—	0.0043 (J)	0.009 (J)	0.007 (J)	—	—	0.0063 (J)
MD54-21-223755	54-24239 P99.5	99.5–99.5	0.021 (J)	0.033	0.017 (J)	0.085	—	1.5	—	0.14	1.5	1.9	2.9	—	0.021 (J)	1.2
MD54-21-220219	54-24240 P28	28–28	—	0.021 (J)	—	1.2	0.02 (J)	3.1	3.5	0.22	6.6	1.6	2.5	—	0.028 (J)	0.1
MD54-21-220221	54-24240 P53	53–53	—	0.082 (J)	—	1.2	0.12	5.9	4.2	0.38	6.8	7.4	2.3	—	0.022 (J)	0.14
MD54-21-220223	54-24240 P78	78–78	—	0.026	—	0.034	0.0062 (J)	0.42	0.26	0.02	0.37	0.52	0.18	—	—	0.019
MD54-21-220225	54-24240 P103	103–103	—	0.051	—	0.054	0.012	0.89	0.78	0.072	1	1.2	1.1	0.0038 (J)	—	0.096
MD54-21-220227	54-24240 P128	128–128	—	0.074	—	0.096	0.02 (J)	1.2	1.5	0.18	2	2	3.9	—	—	0.26
MD54-21-220229	54-24240 P153	153–153	0.012 (J)	0.018 (J)	—	0.019 (J)	0.0048 (J)	0.2 (J)	0.27 (J)	0.035 (J)	0.37 (J)	0.24 (J)	0.81 (J)	—	—	0.047 (J)
MD54-21-220231	54-24241 P73	73–73	—	—	—	0.25	0.0089 (J)	2.1	1.7	0.15	2.2	6.2	1.9	—	0.028 (J)	3.3
MD54-21-220233	54-24241 P93	93–93	—	0.032 (J)	—	0.11	0.0068 (J)	1.3	0.92	0.11	1.3	4.4	1.5	—	0.015 (J)	2.3
MD54-21-220235	54-24241 P113	113–113	—	0.041 (J)	—	0.092	0.006 (J)	1.4	0.78	0.13	1.3	3.5	2	—	0.014 (J)	2.4
MD54-21-220237	54-24241 P133	133–133	—	0.036	—	0.055	0.0036 (J)	0.71	0.36	0.074	0.62	0.57	1.8	—	0.0093 (J)	0.94
MD54-21-220239	54-24241 P153	153–153	—	0.05	—	0.072	0.0053 (J)	0.78	0.42	0.084	0.64	0.77	2.2	—	0.0089 (J)	0.93
MD54-21-220241	54-24241 P173	173–173	—	0.093	—	0.11	0.01 (J)	1.2	0.62	0.12	0.95	1.2	3.5	—	0.014 (J)	1.4
MD54-21-220243	54-24241 P193	193–193	—	0.11	—	0.18	0.0079 (J)	1.8	0.99	0.18	1.4	1.6	5.8	—	0.02 (J)	2
MD54-21-223756	54-24242 P25	25–25	—	0.0062 (J)	—	0.03	—	0.42	—	0.039	0.42	0.36	0.62	—	0.006 (J)	0.4

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
MD54-21-223757	54-24242 P50	50–50	—	0.071	—	0.094	0.04	1.9	—	0.15	1.7	2.8	3.1	—	0.024	1.8
MD54-21-223758	54-24242 P75	75–75	—	0.039 (J)	—	0.076	0.025 (J)	1.3	—	0.11	1.1	1.9	2	—	0.016 (J)	1.3
MD54-21-223759	54-24242 P100	100–100	—	0.024 (J)	—	0.064	0.0079 (J)	0.93	—	0.082	0.92	1.1	1.4	—	0.011 (J)	0.9
MD54-21-223760	54-24242 P110.5	110.5–110.5	—	0.082	—	0.079	0.033	1.9	—	0.16	1.6	2.5	3.2	—	0.025 (J)	1.7
MD54-21-223761	54-24243 P25	25–25	—	0.019 (J)	—	0.16	—	1.8	1.4 (J)	0.14	2.2	0.47	2.1	—	0.016 (J)	5
MD54-21-223762	54-24243 P50	50–50	—	0.058 (J)	—	0.24	—	3.2	2.4 (J)	0.25	3.2	1.5	3	—	—	9.6
MD54-21-223763	54-24243 P75	75–75	—	0.094 (J)	—	0.27	—	3.9	3 (J)	0.35	3.4	3.6	5.1	—	—	12
MD54-21-223764	54-24243 P100	100–100	—	0.12 (J)	—	0.29	—	3.8	2.7 (J)	0.37	2.9	5.3	5.2	—	—	11
MD54-21-223765	54-24243 P125	125–125	—	0.13	—	0.27	0.012 (J)	3.6	2.3 (J)	0.4	2.4	3.6	5.2	—	—	9.4
MD54-21-220245	54-24399 P566.7	567–567	—	—	—	—	—	0.0061 (J)	—	—	0.0083 (J)	0.011 (J)	0.024	—	—	0.0062 (J)
MD54-21-220247	54-24399 P587.8	588–588	—	—	—	—	—	0.0095 (J)	0.0063 (J)	0.0042 (J)	0.013	0.018	0.036	—	—	0.0086 (J)
MD54-21-220249	54-27641 P32	32–32	—	—	—	0.32	0.02 (J)	1.2	2.4	0.12	6.1	1.8	1.4	—	—	0.068 (J)
MD54-21-220251	54-27641 P82	82–82	—	0.076	—	0.12	0.063	0.93	1.8	0.12	2.3	2.5	1.3	—	—	0.12
MD54-21-220253	54-27641 P115	115–115	—	0.064	—	0.068	0.034	0.84	1.5	0.12	1.9	2.8	1.9	0.0065 (J)	0.0047 (J)	0.16
MD54-21-220255	54-27641 P182	182–182	—	0.056	—	0.087	0.012 (J)	0.59	1.3	0.19	1.8	2.7	4.8	—	—	0.23
MD54-21-220257	54-27641 P232	232–232	—	0.042	—	0.11	0.0091 (J)	0.45	1.2	0.19	1.8	0.9	5	—	—	0.12
MD54-21-220259	54-27641 P271	271–271	—	0.024	—	0.08	0.0027 (J)	0.2	0.66	0.16	0.81	0.16	4.6	—	—	0.034
MD54-21-220261	54-27641 P332.5	332.5–332.5	—	0.0067 (J)	—	0.032	0.0019 (J)	0.045	0.16	0.076	0.15	0.063	1.5	—	—	—
MD54-21-220263	54-27642 P30	30–30	—	—	—	0.9	—	6.7	—	0.29	2.3	2.2	2.9	—	—	9.6
MD54-21-220265	54-27642 P75	75–75	—	0.04 (J)	—	0.53	—	7.3	—	0.49	3.3	4.6	6.6	—	—	20
MD54-21-220267	54-27642 P116	116–116	—	—	—	0.47	—	4.2	—	0.24	1.7	2.9	2.6	—	—	7.8
MD54-21-220269	54-27642 P175	175–175	—	0.57	—	0.35	0.14	4.2	—	0.28	2.2	3.5	8.3	—	0.018 (J)	9.4
MD54-21-220271	54-27642 P235	235–235	—	0.46	—	0.41	0.059 (J)	3.9	—	0.27	1.8	2.4	7.7	—	0.018 (J)	7.4
MD54-21-220273	54-27642 P275	275–275	—	0.059 (J)	—	0.47	—	6.4	—	0.41	3.1	0.55	7.2	—	—	19
MD54-21-220275	54-27642 P338	338–338	—	0.082	—	0.31 (J)	0.014 (J)	3.4 (J)	—	0.24 (J)	1.5 (J)	3.3 (J)	3.7 (J)	—	—	9.1 (J)
MD54-21-223766	54-27643 P30	30–30	—	0.0063 (J)	—	0.23	0.0038 (J)	1.6	0.47 (J+)	0.073	0.42	0.62	0.83	—	—	3.4
MD54-21-223767	54-27643 P74	74–74	—	0.079	0.044 (J)	0.25	0.065	2.1	0.64 (J+)	0.12	0.61	1.3	1.5	—	—	4.5
MD54-21-223768	54-27643 P117	117–117	—	0.14	0.013 (J)	0.21	0.075	2	0.69 (J+)	0.11	0.7	1.4	2.2	—	—	4.2
MD54-21-223769	54-27643 P167	167–167	—	0.26	—	0.21	0.072	2.1	0.78 (J+)	0.13	0.8	1.4	4.3	—	—	3.2
MD54-21-223770	54-27643 P235	235–235	—	0.28	—	0.15	0.032	1.4	0.49 (J+)	0.096	0.51	0.51	4.2	—	0.0074 (J)	1.2
MD54-21-223771	54-27643 P275	275–275	—	0.25	—	0.16	0.02	1.1	0.41 (J+)	0.098	0.39	0.18	4.5	—	0.0058 (J)	0.69
MD54-21-223772	54-27643 P354	354–354	0.013 (J)	0.15	—	0.12	0.004 (J)	0.36	0.18 (J+)	0.083	0.13	0.019	3.7	—	0.0033 (J)	0.081
MD54-21-223775	54-610786 P25	25–25	—	0.0092 (J)	—	0.23	0.017 (J)	1.9	0.57 (J)	0.072	0.56	0.64	0.83	—	0.0055 (J)	3.6

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]
MD54-21-223776	54-610786 P50	50–50	—	0.041	0.02 (J)	0.25	0.062	2.1	0.62 (J)	0.11	0.59	1	1.1	—	—	4.3
MD54-21-223777	54-610786 P75	75–75	—	0.082	0.042 (J)	0.26	0.1	2.3	0.71 (J)	0.12	0.66	1.5	1.6	—	—	4.7
MD54-21-223778	54-610786 P100	100–100	—	0.1	0.026 (J)	0.21	0.1	2.1	0.67 (J)	0.13	0.69	1.5	1.7	—	—	4.1
MD54-21-223779	54-610786 P118.5	118.5–118.5	—	0.16	—	0.23	0.12	2.3	0.8 (J)	0.14	0.8	1.8	2.3	—	—	4.6

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
MD54-21-220067	54-01015 P45	45–45	—	—	—	—	—	—	—	—	—	0.016 (J)	—	—	0.019 (J)	0.05 (J)
MD54-21-220069	54-01015 P187	187–187	—	—	—	—	—	—	—	—	—	0.014 (J)	—	—	0.009 (J)	0.028 (J)
MD54-21-220071	54-01015 P350	350–350	—	—	—	—	—	—	—	—	—	0.011 (J)	—	—	0.012	0.016 (J)
MD54-21-220073	54-01015 P385	385–385	—	—	—	—	—	—	—	—	—	0.011 (J)	—	—	0.0084 (J)	0.028 (J)
MD54-21-220075	54-01015 P435	435–435	—	—	—	—	—	—	—	—	—	0.012 (J)	—	—	0.0072 (J)	0.12 (J)
MD54-21-220077	54-01015 P485	485–485	—	—	—	—	—	—	—	—	—	0.0033 (J)	—	—	0.011	0.0038 (J)
MD54-21-220079	54-01015 P525	525–525	—	—	—	—	—	—	—	—	0.009 (J)	0.033 (J)	—	—	0.074 (J)	0.16 (J)
MD54-21-220081	54-01016 P188	188–188	—	—	0.0017 (J)	—	—	0.015	0.0025 (J)	—	0.97	1.6 (J)	—	0.066	3.3 (J)	13 (J)
MD54-21-220083	54-01016 P318	318–318	—	—	—	—	—	—	—	—	0.1	0.15 (J)	—	0.0025 (J)	0.64 (J)	1.3 (J)
MD54-21-220085	54-01016 P390	390–390	—	—	—	—	—	—	—	—	—	0.02 (J)	—	—	0.0079 (J)	0.024 (J)
MD54-21-220087	54-01016 P481	481–481	—	—	—	—	—	—	—	—	0.033 (J)	0.12 (J)	0.0096 (J)	0.0021 (J)	0.14 (J)	0.4 (J)
MD54-21-220089	54-01016 P533	533–533	—	—	—	—	—	—	—	—	0.011 (J)	0.056 (J)	—	—	0.033 (J)	0.1 (J)
MD54-21-220613	54-01016 P601	601–601	—	0.033 (J)	—	—	—	—	—	—	0.019 (J)	0.086	0.0075 (J)	0.0016 (J)	0.062	0.22
MD54-21-223691	54-02001 P20	20–20	—	—	—	—	—	—	—	—	—	0.95	—	—	1.9	31
MD54-21-223692	54-02001 P40	40–40	—	—	—	—	—	—	—	0.026 (J)	0.29	1.1	—	—	1.2	20
MD54-21-223693	54-02001 P60	60–60	—	—	—	—	—	—	—	—	—	0.26	—	—	—	0.25
MD54-21-223694	54-02001 P80	80–80	0.046 (J)	—	—	—	—	—	—	—	0.16 (J)	3.1	—	—	3.8	44

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
MD54-21-223695	54-02001 P100	100–100	—	—	—	—	—	—	—	—	—	1.1	—	—	1.2	23
MD54-21-223696	54-02001 P120	120–120	—	—	—	—	—	—	—	—	0.27	2	0.018 (J)	—	2.1	25
MD54-21-223697	54-02001 P140	140–140	—	0.087 (J)	—	—	—	—	—	—	—	0.52	—	—	1	17
MD54-21-223698	54-02001 P160	160–160	—	—	—	—	—	—	—	—	0.064 (J)	1.6	—	—	2	25
MD54-21-223699	54-02001 P180	180–180	—	—	—	—	—	—	—	—	—	1.1	—	—	1.7	29
MD54-21-223700	54-02001 P200	200–200	—	—	—	—	—	—	—	—	—	0.67	—	—	1.2	20
MD54-21-223711	54-02002 P40	40–40	—	0.082 (J)	0.012	—	—	—	—	—	1.5 (J)	0.72 (J)	0.071 (J)	0.061 (J)	4.6 (J)	13 (J)
MD54-21-223712	54-02002 P60	60–60	—	—	—	—	—	—	—	—	0.052 (J)	2.8 (J)	0.054	0.054	24 (J)	48 (J)
MD54-21-223713	54-02002 P120	120–120	—	—	0.0064 (J)	—	—	—	—	0.0068 (J)	0.82 (J)	0.59 (J)	0.35 (J)	0.011 (J)	3.9 (J)	11 (J)
MD54-21-223714	54-02002 P180	180–180	—	—	0.034 (J)	—	—	—	—	—	4 (J)	2.7 (J)	1 (J)	0.044 (J)	18 (J)	50 (J)
MD54-21-223715	54-02002 P200	200–200	—	—	0.0087 (J)	—	0.013 (J)	0.079	0.031 (J)	—	7.4	1.8	—	0.33	10	35
MD54-21-223716	54-02016 P31	31–31	—	—	—	—	—	—	—	—	—	2.3	—	—	29	73
MD54-21-220091	54-02020 P20	20–20	—	—	—	—	—	—	—	—	—	0.28 (J+)	—	—	1.2	4.3
MD54-21-220093	54-02020 P40	40–40	—	—	—	—	—	—	—	—	0.028 (J)	0.45 (J+)	—	—	1.9	6.7
MD54-21-220095	54-02020 P60	60–60	—	—	—	—	—	—	—	—	0.066	0.48 (J+)	—	—	2.1	7.4
MD54-21-220097	54-02020 P80	80–80	—	—	—	—	—	—	—	—	0.14	0.6 (J+)	0.011	0.0025 (J)	2.8	9.6
MD54-21-220099	54-02020 P95	95–95	—	—	0.0021 (J)	—	—	—	—	—	0.2	0.59 (J+)	0.0073 (J)	0.0024 (J)	2.8	9.8
MD54-21-220101	54-02020 P120	120–120	—	—	0.003 (J)	—	—	—	—	—	0.39	0.69 (J+)	—	0.0033 (J)	3.4	12
MD54-21-220103	54-02020 P140	140–140	—	—	0.0073 (J)	—	—	—	0.0029 (J)	0.0085 (J)	0.88	0.7 (J+)	—	0.076	3.8	13
MD54-21-220105	54-02020 P160	160–160	—	—	0.005 (J)	—	—	—	—	—	0.9	0.57	—	0.072	3.1	10
MD54-21-220107	54-02020 P180	180–180	—	—	0.008 (J)	—	—	—	0.0056 (J)	—	1.4	0.83	—	0.089	4.7	15
MD54-21-220109	54-02020 P200	200–200	—	—	0.0073 (J)	—	—	—	0.0066 (J)	—	2.3	0.85 (J)	—	0.26	5.1	15
MD54-21-220111	54-02021 P20	20–20	—	—	—	—	—	—	—	—	—	0.13	—	—	0.18	1.8
MD54-21-220113	54-02021 P140	140–140	—	—	—	—	—	—	—	—	0.18	0.61	—	0.0031 (J)	0.68	9.2
MD54-21-220115	54-02021 P160	160–160	—	—	—	—	—	—	—	—	—	0.11	—	—	0.13	1.5
MD54-21-220117	54-02021 P180	180–180	—	—	—	—	—	—	—	—	0.25	0.67	—	0.0035 (J)	0.72	10
MD54-21-220119	54-02021 P198	198–198	—	—	—	—	—	—	—	—	0.42	0.69	—	0.0072 (J)	0.75	11
MD54-21-223717	54-02022 P40	40–40	—	—	—	—	—	—	—	—	—	0.022	—	—	0.024	0.34
MD54-21-223718	54-02022 P60	60–60	—	—	—	—	—	—	0.0015 (J)	—	0.015 (J)	0.81	—	—	0.9	14
MD54-21-223720	54-02022 P120	120–120	—	—	—	—	—	—	—	—	0.098	1.1	—	0.0068 (J)	0.97	19
MD54-21-223723	54-02022 P180	180–180	—	—	—	—	—	—	0.0048 (J)	—	0.82	1.1	—	0.01 (J)	0.86	22
MD54-21-223724	54-02022 P200	200–200	—	—	—	—	—	—	0.0027 (J)	—	0.91	1.1	—	0.0028 (J)	0.91	23

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
MD54-21-220121	54-02023 P20	20–20	—	—	—	—	—	—	—	—	—	0.057	—	—	0.28	0.89
MD54-21-220123	54-02023 P40	40–40	—	—	—	—	—	—	—	—	—	0.097	—	—	0.58	1.9
MD54-21-220125	54-02023 P60	60–60	—	—	—	—	—	—	—	—	—	0.018	—	—	0.091	0.26
MD54-21-220127	54-02023 P80	80–80	—	—	—	—	—	—	—	—	0.012 (J)	0.074	—	—	0.46	1.5
MD54-21-220129	54-02023 P100	100–100	—	—	—	—	—	—	—	—	0.033 (J)	0.13	—	0.0051 (J)	0.84	2.7
MD54-21-220131	54-02023 P159	159–159	—	—	—	—	—	—	—	—	0.021 (J)	0.081	—	0.0021 (J)	0.56	1.7
MD54-21-220133	54-02023 P200	200–200	—	—	—	—	—	—	—	—	—	0.004 (J)	—	—	0.026	0.074
MD54-21-223725	54-02024 P20	20–20	—	—	—	—	—	—	—	—	—	0.14	—	—	0.63	2.2
MD54-21-223726	54-02024 P40	40–40	—	—	—	—	—	—	—	—	—	0.2	—	—	0.86	3
MD54-21-223727	54-02024 P60	60–60	—	—	—	—	—	—	—	—	0.0076 (J)	0.22	—	—	1.1	4
MD54-21-223728	54-02024 P80	80–80	—	—	—	—	—	—	—	—	0.038 (J)	0.27	—	—	1.4	5.1
MD54-21-223729	54-02024 P100	100–100	—	—	—	—	—	—	—	—	0.062	0.27	—	—	1.6	5.6
MD54-21-223730	54-02024 P140	140–140	—	—	—	—	—	—	—	—	0.27	0.3	—	—	2	7.1
MD54-21-223731	54-02024 P160	160–160	—	—	—	—	—	—	—	—	0.51	0.36	—	—	2.3	8.2
MD54-21-223732	54-02024 P180	180–180	—	—	—	—	—	—	—	—	0.6	0.33	—	—	2.1	7.4
MD54-21-223733	54-02024 P200	200–200	—	—	0.0019 (J)	—	—	—	—	—	0.56	0.24	—	—	1.6	5.4
MD54-21-223740	54-02025 P20	20–20	—	—	—	—	—	—	—	—	—	0.73	—	—	2.9	8.9
MD54-21-223741	54-02025 P60	60–60	—	—	—	—	—	—	—	—	—	0.013	—	—	0.013	0.058
MD54-21-223742	54-02025 P100	100–100	—	—	—	—	—	—	—	0.022 (J)	0.24	0.99	0.037	—	4.2	15
MD54-21-223743	54-02025 P160	160–160	—	—	0.0074 (J)	—	—	0.0077 (J)	—	—	2.1	1.2	—	0.15	6.2	24
MD54-21-223744	54-02025 P190	190–190	—	—	0.004 (J)	—	—	—	—	—	2.7	1.1	—	0.0094 (J)	6.3	24
MD54-21-220135	54-02026 P20	20–20	—	0.024 (J)	—	—	—	—	—	0.0083 (J)	—	0.045 (J)	—	—	0.11	0.31
MD54-21-220137	54-02026 P60	60–60	—	—	—	—	—	—	—	—	—	0.032 (J)	—	—	0.21	0.57
MD54-21-220139	54-02026 P100	100–100	—	—	—	—	—	—	—	—	—	0.04 (J)	—	—	0.32	0.78
MD54-21-220141	54-02026 P160	160–160	—	—	—	—	—	—	—	—	0.026 (J)	0.048 (J)	—	—	0.39	0.86
MD54-21-220143	54-02026 P200	200–200	—	—	—	—	—	—	—	—	0.054	0.074 (J)	—	—	0.63	1.3
MD54-21-220145	54-02026 P215	215–215	—	—	—	—	—	—	—	—	0.059	0.076 (J)	—	—	0.67	1.3
MD54-21-220147	54-02027 P20	20–20	—	—	—	—	—	—	—	—	—	0.071 (J)	—	—	0.33	1.2
MD54-21-220149	54-02027 P60	60–60	—	—	—	—	—	—	—	—	0.018 (J)	0.18 (J)	—	—	1	3.3
MD54-21-220151	54-02027 P100	100–100	—	—	—	—	—	—	—	—	0.045 (J)	0.24 (J)	—	0.0019 (J)	1.4	4.6
MD54-21-220153	54-02027 P160	160–160	—	—	0.0021 (J)	—	—	—	—	—	0.45	0.34 (J)	—	0.036	2.2	6.5
MD54-21-220155	54-02027 P200	200–200	—	—	0.0022 (J)	—	—	—	—	—	0.51	0.33 (J)	—	0.07	2.3	5.8

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
MD54-21-220157	54-02027 P220	220–220	—	—	0.002 (J)	—	—	—	—	—	0.4	0.26 (J)	—	0.065	2	4.5
MD54-21-220159	54-02027 P250	250–250	—	—	—	—	—	—	—	—	0.23	0.25 (J)	—	0.019	2.1	4.2
MD54-21-220161	54-02028 P20	20–20	—	—	—	—	—	—	—	—	—	—	—	—	0.0095 (J)	0.0091 (J)
MD54-21-220163	54-02028 P60	60–60	—	—	—	—	—	—	—	—	—	0.022	—	—	0.16	0.54
MD54-21-220165	54-02028 P100	100–100	—	—	—	—	—	—	—	—	0.014 (J)	0.031	—	—	0.27	0.82
MD54-21-220167	54-02028 P160	160–160	—	—	—	—	—	—	—	—	0.063	0.053	—	—	0.51	1.4
MD54-21-220169	54-02028 P200	200–200	—	—	—	—	—	—	—	—	0.076	0.056	—	—	0.55	1.4
MD54-21-220171	54-02028 P220	220–220	—	—	—	—	—	—	—	—	0.08	0.06	—	—	0.62	1.5
MD54-21-220173	54-02028 P250	250–250	—	—	—	—	—	—	—	—	—	0.014	—	—	0.17	0.36
MD54-21-220175	54-02031 P20	20–20	—	—	—	—	—	—	—	—	—	0.14	—	—	0.16	1.1
MD54-21-220177	54-02031 P60	60–60	—	—	—	—	—	—	—	—	—	0.31	—	—	0.38	2.7
MD54-21-220179	54-02031 P100	100–100	—	0.024 (J)	—	—	—	—	—	—	0.046	0.36	—	—	0.52	3.8
MD54-21-220181	54-02031 P160	160–160	—	0.02 (J)	—	—	—	—	—	—	0.12	0.47	—	0.0044 (J)	0.7	5.1
MD54-21-220183	54-02031 P200	200–200	—	0.027 (J)	—	—	—	—	—	—	0.28	0.88	—	0.01 (J)	1.4	9.8
MD54-21-220185	54-02031 P220	220–220	—	0.026 (J)	—	—	—	0.0072 (J)	—	0.016 (J)	0.26	0.85	—	0.012	1.4	9.6
MD54-21-220187	54-02031 P260	260–260	—	—	—	—	—	0.0078 (J)	—	—	0.27	0.84	—	0.01 (J)	1.6	9.7
MD54-21-220189	54-02034 P20	20–20	—	—	—	—	—	—	—	—	—	0.066	—	—	0.046	1.3
MD54-21-220191	54-02034 P60	60–60	—	—	—	—	—	—	—	—	—	0.1	—	—	0.074	2.3
MD54-21-220193	54-02034 P100	100–100	—	—	—	—	—	—	—	—	0.011 (J)	0.16	—	—	0.12	3.6
MD54-21-220195	54-02034 P160	160–160	—	—	—	—	—	—	—	—	0.039 (J)	0.16	—	—	0.16	4.6
MD54-21-220197	54-02034 P200	200–200	—	—	—	—	—	—	—	—	0.048	0.16	—	—	0.22	4.9
MD54-21-220199	54-02034 P220	220–220	—	—	—	—	—	—	—	0.0091 (J)	0.016 (J)	0.071	—	—	0.097	2
MD54-21-220201	54-02034 P260	260–260	—	—	—	—	—	—	—	—	—	0.029	—	—	0.071	0.91
MD54-21-220203	54-02034 P300	300–300	—	—	—	—	—	—	—	—	—	0.01 (J)	—	—	0.042	0.22
MD54-21-220205	54-02089 P13	13–13	—	—	—	—	—	—	—	—	—	3.3	—	—	10	73
MD54-21-220207	54-02089 P31	31–31	—	—	—	—	—	—	—	—	—	2.4	—	—	16	85
MD54-21-220209	54-02089 P46	46–46	—	—	—	—	—	0.088 (J)	—	—	—	5.6	—	—	41	210
MD54-21-220211	54-02089 P86	86–86	—	—	—	—	—	—	—	—	—	7.6	—	—	45	230
MD54-21-220213	54-24238 P44	44–44	—	—	—	—	—	—	—	—	0.65 (J)	7.8	—	—	58	210
MD54-21-220215	54-24238 P64	64–64	—	—	—	—	—	—	—	—	2.8	7.1	—	—	60	210
MD54-21-220217	54-24238 P84	84–84	—	—	—	—	—	—	—	—	—	4	—	—	35	120
MD54-21-223752	54-24239 P25	25–25	—	—	—	—	—	—	—	—	—	24	—	—	2.4	15

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
MD54-21-223753	54-24239 P50	50–50	—	—	—	—	—	—	—	—	—	33	—	—	3.5	22
MD54-21-223754	54-24239 P75	75–75	—	—	—	0.0024 (J)	—	—	—	—	—	0.25	—	0.0079 (J)	0.01 (J)	0.064
MD54-21-223755	54-24239 P99.5	99.5–99.5	—	—	—	—	—	—	—	—	—	32	—	—	3.9	24
MD54-21-220219	54-24240 P28	28–28	—	—	—	—	—	—	—	—	—	5.3	—	—	10	110
MD54-21-220221	54-24240 P53	53–53	0.14 (J)	—	—	—	—	—	0.018 (J)	—	—	5.9	—	—	14	100
MD54-21-220223	54-24240 P78	78–78	0.02 (J)	—	—	—	—	—	—	—	—	0.67	0.014	—	0.96	5.5
MD54-21-220225	54-24240 P103	103–103	0.028 (J)	—	—	—	—	0.0072 (J)	0.0057 (J)	—	—	2	0.0068 (J)	0.0024 (J)	2.2	17
MD54-21-220227	54-24240 P128	128–128	—	—	—	—	—	—	0.01 (J)	—	—	4.4	0.02 (J)	0.0078 (J)	3.8	37
MD54-21-220229	54-24240 P153	153–153	—	—	—	—	—	—	—	—	—	1 (J)	—	—	0.67 (J)	7 (J)
MD54-21-220231	54-24241 P73	73–73	0.32	—	—	—	—	—	—	—	—	10	—	—	8.2	47
MD54-21-220233	54-24241 P93	93–93	1.3	—	—	—	—	—	—	0.054 (J)	—	6.9	—	—	5.6	28
MD54-21-220235	54-24241 P113	113–113	0.37	—	—	—	—	—	—	0.082 (J)	—	6.8	—	—	5.7	25
MD54-21-220237	54-24241 P133	133–133	0.082	—	—	—	—	—	—	—	—	3.8	—	0.0016 (J)	2.9	12
MD54-21-220239	54-24241 P153	153–153	0.12	—	—	—	—	—	—	—	0.07	4.2	—	0.017	3.2	14
MD54-21-220241	54-24241 P173	173–173	0.054 (J)	—	0.0032 (J)	—	—	0.005 (J)	—	—	0.24	6	—	0.054	4.8	21
MD54-21-220243	54-24241 P193	193–193	0.26	—	—	—	—	—	—	—	0.088	9.2	—	0.019 (J)	7.2	32
MD54-21-223756	54-24242 P25	25–25	—	—	—	—	—	—	—	—	—	31	—	—	1.2	8.2
MD54-21-223757	54-24242 P50	50–50	0.16	—	—	—	—	—	—	—	0.24	42	0.039	0.0064 (J)	5.1	29
MD54-21-223758	54-24242 P75	75–75	0.036 (J)	—	—	—	—	—	—	—	0.13 (J)	41	—	—	3.7	21
MD54-21-223759	54-24242 P100	100–100	0.026 (J)	—	—	—	—	—	—	—	0.032 (J)	42	—	—	2.8	17
MD54-21-223760	54-24242 P110.5	110.5–110.5	0.23	—	—	—	—	—	—	—	0.16	35	—	0.0038 (J)	4.8	28
MD54-21-223761	54-24243 P25	25–25	—	—	—	—	—	0.026 (J)	0.014 (J)	—	—	1.8	—	0.024 (J)	15	52
MD54-21-223762	54-24243 P50	50–50	—	—	—	—	—	—	—	—	—	2.3	—	0.025 (J)	30	88
MD54-21-223763	54-24243 P75	75–75	—	—	—	—	—	0.028 (J)	—	—	—	2.7	—	0.033 (J)	31	100
MD54-21-223764	54-24243 P100	100–100	—	—	—	—	—	0.026 (J)	—	—	0.12 (J)	2.9	—	0.027 (J)	26	97
MD54-21-223765	54-24243 P125	125–125	—	—	—	—	—	—	—	—	—	2.8	—	0.025 (J)	23	81
MD54-21-220245	54-24399 P566.7	567–567	0.0095 (J)	—	—	—	—	—	—	—	0.0089 (J)	0.055	—	0.0032 (J)	0.03	0.12
MD54-21-220247	54-24399 P587.8	588–588	0.0078 (J)	—	—	—	—	—	—	—	0.01 (J)	0.094	—	0.01 (J)	0.046	0.19
MD54-21-220249	54-27641 P32	32–32	—	—	—	—	—	—	—	—	—	3.1	—	0.014 (J)	4.8	66
MD54-21-220251	54-27641 P82	82–82	0.081 (J)	—	—	—	—	0.041 (J)	—	—	0.11 (J)	3	0.037 (J)	0.024 (J)	3.7	33
MD54-21-220253	54-27641 P115	115–115	—	—	—	—	—	0.014 (J)	0.0055 (J)	—	0.062 (J)	2.9	0.011 (J)	0.0062 (J)	3.2	30
MD54-21-220255	54-27641 P182	182–182	—	—	—	—	—	0.0057 (J)	0.0087 (J)	—	1.2	3.4	—	0.02 (J)	2.7	37

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Dioxane[1,4-]	Ethanol	Ethylbenzene	Ethyltoluene[4-]	Heptane[n-]	Hexane	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]
MD54-21-220257	54-27641 P232	232–232	—	—	—	—	—	0.0078 (J)	0.0078 (J)	—	1.1	2.7	—	0.023	2.5	35
MD54-21-220259	54-27641 P271	271–271	—	—	—	—	—	0.0058 (J)	0.0043 (J)	—	0.62	1.5	—	0.016 (J)	1.8	19
MD54-21-220261	54-27641 P332.5	332.5–332.5	—	—	0.0023 (J)	—	—	0.0038 (J)	0.0026 (J)	—	0.067	0.31	—	0.0035 (J)	0.76	3.7
MD54-21-220263	54-27642 P30	30–30	—	—	—	—	—	—	—	—	—	4.3	—	—	53	74
MD54-21-220265	54-27642 P75	75–75	—	—	—	—	—	—	—	—	—	5.2	—	—	36	84
MD54-21-220267	54-27642 P116	116–116	—	—	—	—	—	—	—	—	—	3.4	—	—	31	58
MD54-21-220269	54-27642 P175	175–175	—	0.12 (J)	0.024 (J)	—	—	0.08	0.022 (J)	—	8.3	4.1	—	0.76	18	54
MD54-21-220271	54-27642 P235	235–235	—	—	0.014 (J)	—	—	0.061 (J)	0.016 (J)	—	6.5	3.7	—	0.4	21	54
MD54-21-220273	54-27642 P275	275–275	—	—	—	—	—	—	—	—	—	5.2	—	—	27	69
MD54-21-220275	54-27642 P338	338–338	—	—	—	—	—	—	—	—	0.3 (J)	2.8 (J)	—	—	19 (J)	45 (J)
MD54-21-223766	54-27643 P30	30–30	—	—	—	—	—	—	—	—	—	1.5	—	—	5.5	15
MD54-21-223767	54-27643 P74	74–74	—	—	—	—	—	—	—	—	0.14 (J)	1.8	1.2	0.019 (J)	6.8	21
MD54-21-223768	54-27643 P117	117–117	—	—	0.0082 (J)	—	—	0.0062 (J)	—	—	0.46	1.5	0.44	0.026 (J)	6.6	24
MD54-21-223769	54-27643 P167	167–167	—	—	0.012 (J)	—	—	0.016 (J)	—	—	2.4	1.4	—	0.22	7.1	27
MD54-21-223770	54-27643 P235	235–235	—	—	0.005 (J)	—	—	0.011 (J)	0.0083 (J)	—	4.4	0.84	—	0.14	4.6	17
MD54-21-223771	54-27643 P275	275–275	—	—	0.0023 (J)	—	—	0.011	0.0074 (J)	—	2.7	0.74	0.027	0.0056 (J)	4.5	14
MD54-21-223772	54-27643 P354	354–354	—	—	—	—	—	0.0068 (J)	0.005 (J)	—	0.97	0.39	—	0.01	2.7	5.4
MD54-21-223775	54-610786 P25	25–25	—	—	—	—	—	—	—	—	—	2 (J)	—	—	9.1	19
MD54-21-223776	54-610786 P50	50–50	—	—	—	—	—	—	—	—	0.064 (J)	2.2	—	0.013 (J)	7.7	20
MD54-21-223777	54-610786 P75	75–75	—	—	0.015 (J)	—	—	0.014 (J)	—	—	0.35	2.3	1.6	0.048	8	23
MD54-21-223778	54-610786 P100	100–100	—	0.07 (J)	0.024 (J)	—	—	0.013 (J)	0.0085 (J)	—	0.63	1.8	2.8	0.05	7.2	22
MD54-21-223779	54-610786 P118.5	118.5–118.5	—	—	0.018 (J)	—	—	0.014 (J)	—	—	1.1	1.9	1.8	0.046 (J)	8.1	26

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]	Total VOCs
MD54-21-220067	54-01015 P45	45–45	—	0.039 (J)	0.004 (J)	—	—	—	—	0.15
MD54-21-220069	54-01015 P187	187–187	—	0.039 (J)	0.0021 (J)	—	—	—	—	0.11
MD54-21-220071	54-01015 P350	350–350	—	0.039 (J)	0.012	—	—	—	—	0.096
MD54-21-220073	54-01015 P385	385–385	—	0.027 (J)	0.0025 (J)	—	—	—	—	0.098
MD54-21-220075	54-01015 P435	435–435	—	0.067 (J)	0.002 (J)	—	—	—	—	0.23
MD54-21-220077	54-01015 P485	485–485	—	0.0097 (J)	0.011	—	—	—	—	0.058
MD54-21-220079	54-01015 P525	525–525	—	0.16 (J)	0.02 (J)	—	—	—	—	0.64
MD54-21-220081	54-01016 P188	188–188	—	8.8 (J)	0.51 (J)	—	—	—	—	34
MD54-21-220083	54-01016 P318	318–318	—	1.4 (J)	0.12 (J)	—	—	—	—	5.1
MD54-21-220085	54-01016 P390	390–390	—	0.077 (J)	0.011	—	—	—	—	0.16
MD54-21-220087	54-01016 P481	481–481	—	0.64 (J)	0.014 (J)	—	—	—	—	1.7
MD54-21-220089	54-01016 P533	533–533	—	0.25 (J)	0.0027 (J)	—	—	—	—	0.54
MD54-21-220613	54-01016 P601	601–601	—	0.37	0.0053 (J)	—	0.025	—	—	1.0
MD54-21-223691	54-02001 P20	20–20	—	65	0.12	—	0.035 (J)	—	—	105
MD54-21-223692	54-02001 P40	40–40	—	23	0.14	—	—	—	—	51
MD54-21-223693	54-02001 P60	60–60	—	4	—	—	—	—	—	4.7
MD54-21-223694	54-02001 P80	80–80	—	59	0.29	—	—	—	—	121
MD54-21-223695	54-02001 P100	100–100	—	50	0.074	—	—	—	—	80
MD54-21-223696	54-02001 P120	120–120	—	20	0.18	—	0.022 (J)	—	—	58
MD54-21-223697	54-02001 P140	140–140	—	36	0.067	—	—	—	—	58
MD54-21-223698	54-02001 P160	160–160	—	36	0.16	—	—	—	—	70
MD54-21-223699	54-02001 P180	180–180	—	57	0.11	—	—	—	—	94
MD54-21-223700	54-02001 P200	200–200	—	38	0.072	—	—	—	—	63
MD54-21-223711	54-02002 P40	40–40	—	6 (J)	0.24 (J)	—	—	0.041 (J)	0.0026 (J)	32
MD54-21-223712	54-02002 P60	60–60	—	23 (J)	0.64 (J)	—	0.027 (J)	0.054	—	116
MD54-21-223713	54-02002 P120	120–120	—	4.7 (J)	0.16 (J)	—	—	0.018 (J)	—	26
MD54-21-223714	54-02002 P180	180–180	—	22 (J)	0.75 (J)	—	—	0.088 (J)	—	119
MD54-21-223715	54-02002 P200	200–200	—	18	0.99	0.0076 (J)	—	0.13	0.1	91
MD54-21-223716	54-02016 P31	31–31	—	28	2	—	—	—	—	147
MD54-21-220091	54-02020 P20	20–20	—	1.8	0.1	—	—	—	—	9.3
MD54-21-220093	54-02020 P40	40–40	—	2.8	0.15	—	—	—	—	15
MD54-21-220095	54-02020 P60	60–60	—	3.2	0.18	—	—	0.0016 (J)	—	16
MD54-21-220097	54-02020 P80	80–80	—	4.1	0.24	—	—	0.0064 (J)	—	21

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]	Total VOCs
MD54-21-220099	54-02020 P95	95–95	—	4.2	0.25	—	—	0.01 (J)	—	22
MD54-21-220101	54-02020 P120	120–120	—	5.2	0.34	—	—	0.013	—	27
MD54-21-220103	54-02020 P140	140–140	—	5.7	0.41	—	—	0.023	—	30
MD54-21-220105	54-02020 P160	160–160	—	4.8	0.34	—	—	0.022	—	24
MD54-21-220107	54-02020 P180	180–180	—	7.2	0.55	—	—	0.019	—	36
MD54-21-220109	54-02020 P200	200–200	—	7.7 (J)	0.63	—	—	0.029	0.0022 (J)	39
MD54-21-220111	54-02021 P20	20–20	—	1.1	0.02	—	—	—	—	3.6
MD54-21-220113	54-02021 P140	140–140	—	4	0.091	—	—	—	—	17
MD54-21-220115	54-02021 P160	160–160	—	0.83	0.014	—	—	—	—	3.0
MD54-21-220117	54-02021 P180	180–180	—	4.4	0.1	—	—	—	—	19
MD54-21-220119	54-02021 P198	198–198	—	5	0.12	—	—	—	—	21
MD54-21-223717	54-02022 P40	40–40	—	0.34	0.0024 (J)	—	—	—	—	0.80
MD54-21-223718	54-02022 P60	60–60	—	11	0.078	—	—	—	—	30
MD54-21-223720	54-02022 P120	120–120	—	8.6	0.12	—	—	—	—	35
MD54-21-223723	54-02022 P180	180–180	—	8.5	0.19	—	—	—	—	39
MD54-21-223724	54-02022 P200	200–200	—	9.1	0.21	—	—	—	—	42
MD54-21-220121	54-02023 P20	20–20	—	0.44	0.032	—	—	—	—	2.0
MD54-21-220123	54-02023 P40	40–40	—	0.87	0.066	—	—	—	—	4.1
MD54-21-220125	54-02023 P60	60–60	—	0.17	0.012	—	—	—	—	0.65
MD54-21-220127	54-02023 P80	80–80	—	0.76	0.055	—	—	—	—	3.3
MD54-21-220129	54-02023 P100	100–100	—	1.4	0.1	—	—	—	—	6.1
MD54-21-220131	54-02023 P159	159–159	—	0.95	0.074	—	—	—	—	4.0
MD54-21-220133	54-02023 P200	200–200	—	0.045	0.0039 (J)	—	—	—	—	0.17
MD54-21-223725	54-02024 P20	20–20	—	0.97	0.065	—	—	—	—	4.7
MD54-21-223726	54-02024 P40	40–40	—	1.3	0.089	—	—	—	—	6.5
MD54-21-223727	54-02024 P60	60–60	—	1.7	0.12	—	—	—	—	8.5
MD54-21-223728	54-02024 P80	80–80	—	2.2	0.16	—	—	—	—	11
MD54-21-223729	54-02024 P100	100–100	—	2.3	0.18	—	—	—	—	12
MD54-21-223730	54-02024 P140	140–140	—	3.1	0.26	—	—	—	—	16
MD54-21-223731	54-02024 P160	160–160	—	3.8	0.32	—	—	0.002 (J)	—	19
MD54-21-223732	54-02024 P180	180–180	—	3.6	0.32	—	—	0.0032 (J)	—	17
MD54-21-223733	54-02024 P200	200–200	—	2.8	0.25	—	—	0.0028 (J)	—	13
MD54-21-223740	54-02025 P20	20–20	—	3.8	0.15	—	—	—	—	20
MD54-21-223741	54-02025 P60	60–60	—	0.042	—	—	—	—	—	0.15
MD54-21-223742	54-02025 P100	100–100	—	6.5	0.34	—	—	0.022 (J)	—	34

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]	Total VOCs
MD54-21-223743	54-02025 P160	160–160	—	10	0.65	—	—	0.07	—	54
MD54-21-223744	54-02025 P190	190–190	—	11	0.79	—	—	0.031	—	56
MD54-21-220135	54-02026 P20	20–20	—	0.2 (J)	0.015	—	—	—	—	0.83
MD54-21-220137	54-02026 P60	60–60	—	0.24 (J)	0.031	—	—	—	—	1.3
MD54-21-220139	54-02026 P100	100–100	—	0.34 (J)	0.046	—	—	—	—	1.8
MD54-21-220141	54-02026 P160	160–160	—	0.44 (J)	0.058	—	—	—	—	2.1
MD54-21-220143	54-02026 P200	200–200	—	0.68 (J)	0.092	—	—	—	—	3.4
MD54-21-220145	54-02026 P215	215–215	—	0.69 (J)	0.098	—	—	—	—	3.5
MD54-21-220147	54-02027 P20	20–20	—	0.51 (J)	0.04	—	—	—	—	2.5
MD54-21-220149	54-02027 P60	60–60	—	1.4 (J)	0.11	—	—	—	—	7.1
MD54-21-220151	54-02027 P100	100–100	—	1.9 (J)	0.17	—	—	—	—	9.9
MD54-21-220153	54-02027 P160	160–160	—	3.1 (J)	0.29	—	—	0.0041 (J)	—	15
MD54-21-220155	54-02027 P200	200–200	—	2.9 (J)	0.3	—	—	0.0033 (J)	—	15
MD54-21-220157	54-02027 P220	220–220	—	2.4 (J)	0.28	—	—	0.0021 (J)	—	12
MD54-21-220159	54-02027 P250	250–250	—	2.3 (J)	0.3	—	—	—	—	12
MD54-21-220161	54-02028 P20	20–20	—	—	0.0052 (J)	—	—	—	—	0.029
MD54-21-220163	54-02028 P60	60–60	—	0.23	0.028	—	—	—	—	1.1
MD54-21-220165	54-02028 P100	100–100	—	0.36	0.045	—	—	—	—	1.8
MD54-21-220167	54-02028 P160	160–160	—	0.68	0.092	—	—	—	—	3.3
MD54-21-220169	54-02028 P200	200–200	—	0.7	0.1	—	—	—	—	3.4
MD54-21-220171	54-02028 P220	220–220	—	0.75	0.12	—	—	—	—	3.8
MD54-21-220173	54-02028 P250	250–250	—	0.2	0.033	—	—	—	—	0.93
MD54-21-220175	54-02031 P20	20–20	—	0.57	0.021	—	—	—	—	2.3
MD54-21-220177	54-02031 P60	60–60	—	1.4	0.048	—	—	—	—	5.7
MD54-21-220179	54-02031 P100	100–100	—	1.8	0.065	—	—	—	—	7.8
MD54-21-220181	54-02031 P160	160–160	—	2.4	0.092	—	—	—	—	10
MD54-21-220183	54-02031 P200	200–200	—	4.8	0.19	—	—	—	—	20
MD54-21-220185	54-02031 P220	220–220	—	4.7	0.2	—	—	—	—	20
MD54-21-220187	54-02031 P260	260–260	—	4.8	0.22	—	—	—	—	20
MD54-21-220189	54-02034 P20	20–20	—	0.43	0.0094 (J)	—	—	—	—	2.0
MD54-21-220191	54-02034 P60	60–60	—	0.77	0.017	—	—	—	—	3.6
MD54-21-220193	54-02034 P100	100–100	—	1.2	0.026	—	—	—	—	5.8
MD54-21-220195	54-02034 P160	160–160	—	1.5	0.046	—	—	—	—	7.4
MD54-21-220197	54-02034 P200	200–200	—	1.6	0.062	—	—	—	—	8.1
MD54-21-220199	54-02034 P220	220–220	—	0.66	0.03	—	—	—	—	3.4

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]	Total VOCs
MD54-21-220201	54-02034 P260	260–260	—	0.3	0.025	—	—	—	—	1.7
MD54-21-220203	54-02034 P300	300–300	—	0.091	0.018	—	—	—	—	0.53
MD54-21-220205	54-02089 P13	13–13	0.18	69	4	—	—	—	—	177
MD54-21-220207	54-02089 P31	31–31	0.42	39	3.1	—	—	—	—	173
MD54-21-220209	54-02089 P46	46–46	1.2	74	4.4	—	—	—	—	418
MD54-21-220211	54-02089 P86	86–86	0.81	77	3	—	—	—	—	452
MD54-21-220213	54-24238 P44	44–44	0.82	64	2.4	—	—	—	—	446
MD54-21-220215	54-24238 P64	64–64	0.95	65	2.9	—	—	—	—	463
MD54-21-220217	54-24238 P84	84–84	0.85	41	3	—	—	—	—	261
MD54-21-223752	54-24239 P25	25–25	—	10	0.21	—	—	—	—	56
MD54-21-223753	54-24239 P50	50–50	—	15	0.32	—	—	—	—	81
MD54-21-223754	54-24239 P75	75–75	—	0.1	—	0.0025 (J)	—	0.0035 (J)	0.0062 (J)	0.51
MD54-21-223755	54-24239 P99.5	99.5–99.5	—	16	0.35	—	—	—	—	86
MD54-21-220219	54-24240 P28	28–28	—	110	2.8	—	0.042 (J)	—	—	257
MD54-21-220221	54-24240 P53	53–53	—	120	2	—	—	—	—	271
MD54-21-220223	54-24240 P78	78–78	—	7.6	0.048	—	—	—	—	17
MD54-21-220225	54-24240 P103	103–103	—	16	0.13	—	—	—	—	43
MD54-21-220227	54-24240 P128	128–128	—	23	0.36	—	—	—	—	80
MD54-21-220229	54-24240 P153	153–153	—	5.2 (J)	0.07 (J)	—	—	—	—	16
MD54-21-220231	54-24241 P73	73–73	—	22	0.63	—	—	—	—	106
MD54-21-220233	54-24241 P93	93–93	—	14	0.4	—	—	—	—	68
MD54-21-220235	54-24241 P113	113–113	—	14	0.4	—	—	—	—	64
MD54-21-220237	54-24241 P133	133–133	—	7.8	0.24	—	—	—	—	32
MD54-21-220239	54-24241 P153	153–153	—	8.8	0.29	—	—	—	—	37
MD54-21-220241	54-24241 P173	173–173	—	14	0.44	—	—	—	—	56
MD54-21-220243	54-24241 P193	193–193	—	21	0.68	—	—	—	—	85
MD54-21-223756	54-24242 P25	25–25	—	6.8	0.12	—	—	—	—	50
MD54-21-223757	54-24242 P50	50–50	—	19	0.44	—	—	—	—	108
MD54-21-223758	54-24242 P75	75–75	—	14	0.33	—	—	—	—	88
MD54-21-223759	54-24242 P100	100–100	—	12	0.25	—	—	—	—	80
MD54-21-223760	54-24242 P110.5	110.5–110.5	—	18	0.41	—	—	0.005 (J)	—	98
MD54-21-223761	54-24243 P25	25–25	—	25	0.9	—	—	—	0.014 (J)	108
MD54-21-223762	54-24243 P50	50–50	0.14	36	1.2	—	—	—	—	181
MD54-21-223763	54-24243 P75	75–75	0.14	36	1.3	—	—	—	—	203
MD54-21-223764	54-24243 P100	100–100	0.12 (J)	33	1.2	—	—	—	—	192

Table 5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Vinyl Chloride	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]	Total VOCs
MD54-21-223765	54-24243 P125	125–125	—	29 (J)	1	—	—	—	—	164
MD54-21-220245	54-24399 P566.7	567–567	—	0.11	0.005 (J)	—	—	—	—	0.40
MD54-21-220247	54-24399 P587.8	588–588	—	0.19	0.0068 (J)	—	—	—	0.0026 (J)	0.65
MD54-21-220249	54-27641 P32	32–32	—	100	0.44	—	—	—	—	188
MD54-21-220251	54-27641 P82	82–82	—	41	0.21	—	—	—	0.02 (J)	91
MD54-21-220253	54-27641 P115	115–115	—	28	0.2	—	—	—	—	74
MD54-21-220255	54-27641 P182	182–182	—	17	0.37	—	—	—	—	73
MD54-21-220257	54-27641 P232	232–232	—	21	0.38	—	—	—	—	73
MD54-21-220259	54-27641 P271	271–271	—	9.8	0.32	—	—	—	—	40
MD54-21-220261	54-27641 P332.5	332.5–332.5	—	2.6	0.15	—	—	—	—	9.6
MD54-21-220263	54-27642 P30	30–30	—	38	0.95	—	—	—	—	195
MD54-21-220265	54-27642 P75	75–75	—	41	1.1	—	—	—	—	210
MD54-21-220267	54-27642 P116	116–116	—	27	0.74	—	—	—	—	140
MD54-21-220269	54-27642 P175	175–175	—	33	1.2	—	—	0.12	0.032 (J)	149
MD54-21-220271	54-27642 P235	235–235	—	30	1.2	—	—	0.051 (J)	—	141
MD54-21-220273	54-27642 P275	275–275	—	41	1.1	—	—	—	—	180
MD54-21-220275	54-27642 P338	338–338	—	20 (J)	0.55 (J)	—	—	—	—	109
MD54-21-223766	54-27643 P30	30–30	0.067	6.9	0.22	—	—	—	—	37
MD54-21-223767	54-27643 P74	74–74	0.09	9.4	0.36	—	—	0.03 (J)	—	52
MD54-21-223768	54-27643 P117	117–117	0.085	10	0.48	—	—	0.058	—	55
MD54-21-223769	54-27643 P167	167–167	—	12	0.74	—	—	0.079	—	64
MD54-21-223770	54-27643 P235	235–235	0.0084 (J)	9.5	0.66	—	—	0.023	—	46
MD54-21-223771	54-27643 P275	275–275	—	8.3	0.7	—	0.0078 (J)	0.0078 (J)	—	39
MD54-21-223772	54-27643 P354	354–354	—	4.8	0.51	—	—	0.0013 (J)	—	20
MD54-21-223775	54-610786 P25	25–25	0.08	9.6	0.25	—	—	—	—	48
MD54-21-223776	54-610786 P50	50–50	0.096	9.4	0.29	—	—	—	—	50
MD54-21-223777	54-610786 P75	75–75	—	10	0.34	—	—	0.059	—	58
MD54-21-223778	54-610786 P100	100–100	0.092	9.8	0.37	—	—	0.072	—	56
MD54-21-223779	54-610786 P118.5	118.5–118.5	0.099	12	0.5	—	—	0.074	—	65

Notes: Results are in ppmv. Data qualifiers are defined in Appendix A.

* — = Not detected.

Table 5.2-2
Second Round 2021 VOC Pore-Gas Detected Results at MDA L (in ppmv)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloropropane[1,2-]	Dioxane[1,4-]	Hexane
54-02089 P13	MD54-22-242224	13–13	—*	0.034 (J)	0.22	—	1.9	0.35	0.23	5.5	0.94	4.1	12	—	—
54-02089 P31	MD54-22-242225	31–31	—	0.038 (J)	0.36	—	2.6	0.51	0.41	7.8	2.6	4.4	22	—	—
54-02089 P46	MD54-22-242226	46–46	—	0.17 (J)	0.52	—	4.3	1.7	0.67	12	5.1	5.7	54	—	—
54-02089 P86	MD54-22-242227	86–86	—	0.23 (J)	0.48	—	5.2	1.2	0.7	11	6.7	7.4	50	—	—
54-24238 P44	MD54-22-239860	44–44	—	0.15 (J)	0.36	—	4.6	1.4	0.62	7.9	12	5.8	47	—	0.11 (J)
54-24238 P64	MD54-22-239862	64–64	—	0.22 (J)	0.35 (J)	—	4.6	0.97	0.58	6.1	14	5.6	44	—	—
54-24238 P84	MD54-22-239864	84–84	—	0.24 (J)	0.44	—	6.3	1.1	0.74	7.8	22	11	48	—	—
54-24240 P28	MD54-22-239872	28–28	0.53 (J)	—	—	—	2.6 (J+)	—	0.2	9 (J+)	—	6.6 (J+)	—	—	—
54-24240 P53	MD54-22-239874	53–53	1.1	0.048 (J)	1.1 (J)	0.058 (J)	3.6 (J)	0.93 (J)	0.24	5.5 (J)	4 (J)	4.2 (J+)	0.11 (J)	—	—
54-24240 P78	MD54-22-239876	78–78	0.82	0.17	—	0.03 (J)	3.1 (J+)	1.2	0.18	3.3 (J+)	3.1 (J+)	3.3 (J+)	0.15	0.17 (J)	0.016 (J)
54-24240 P103	MD54-22-239866	103–103	0.4	0.12	—	0.026 (J)	2 (J+)	0.84	0.19	2.3 (J+)	2.1 (J+)	4.3 (J+)	0.21	0.071 (J)	0.017 (J)
54-24240 P128	MD54-22-239868	128–128	0.15	0.071	—	0.015 (J)	1 (J+)	0.47	0.18	—	1.3 (J+)	4.8 (J+)	0.24	—	—
54-24240 P153	MD54-22-239870	153–153	0.16	0.064	—	0.012 (J)	0.92 (J+)	0.44	0.2	1.7 (J+)	0.67 (J+)	4.7 (J+)	0.2	—	—
54-24241 P73	MD54-22-239888	73–73	—	0.074 (J+)	0.25 (J+)	—	2.2 (J)	0.54 (J)	0.083 (J+)	2.4 (J)	5.9 (J)	3.3 (J+)	3.4 (J)	0.37 (J+)	—
54-24241 P93	MD54-22-239890	93–93	—	—	—	—	—	—	—	—	—	—	—	—	—
54-24241 P113	MD54-22-239878	113–113	—	0.074 (J+)	0.16 (J+)	—	1.6 (J+)	0.24	0.16 (J+)	1.4 (J+)	3.1 (J+)	3.7 (J+)	2.6 (J+)	0.38 (J+)	—
54-24241 P133	MD54-22-239880	133–133	—	0.075 (J+)	0.13 (J+)	—	1.3 (J+)	0.2	0.1 (J+)	1 (J+)	—	4.4 (J+)	1.6 (J+)	—	—
54-24241 P153	MD54-22-239882	153–153	—	0.099 (J+)	0.14 (J+)	—	1.3 (J+)	0.19	0.18 (J+)	1.1 (J+)	—	5 (J+)	1.5 (J+)	0.13 (J+)	—
54-24241 P173	MD54-22-239884	173–173	—	0.14 (J+)	0.17 (J+)	—	1.5 (J+)	0.23	0.16 (J+)	1.3 (J+)	—	6 (J+)	1.8 (J+)	0.18 (J+)	—
54-24241 P193	MD54-22-239886	193–193	—	0.052 (J+)	0.12 (J+)	—	1.1 (J+)	—	0.15 (J+)	0.87 (J+)	—	4.4 (J+)	1.1 (J+)	0.2 (J+)	—
54-24399 P566.7	MD54-22-239892	566.7–566.7	—	0.002 (J)	—	—	0.0037 (J)	—	0.0034 (J)	0.01 (J)	0.0064 (J)	0.045	—	—	—
54-24399 P587.8	MD54-22-239894	587.8–587.8	—	—	—	—	0.0046 (J)	—	0.0046 (J)	0.0088 (J)	0.0097 (J)	0.039	—	—	—
54-27641 P32	MD54-22-239904	32–32	—	—	0.34	—	1.4 (J+)	0.95 (J+)	0.097	8.7 (J+)	2 (J+)	2.7 (J+)	0.074 (J)	—	—
54-27641 P82	MD54-22-239908	82–82	0.23	0.085	0.18	0.054	1.2 (J+)	1.4 (J+)	0.14	3.2 (J+)	2.9 (J+)	3 (J+)	0.13	0.11 (J)	0.045
54-27641 P115	MD54-22-239896	115–115	0.16	0.056	0.082	0.028 (J)	0.85 (J+)	0.88 (J+)	0.13	1.8 (J+)	2.7 (J+)	2.6 (J+)	0.16	—	0.016 (J)
54-27641 P182	MD54-22-239898	182–182	0.075 (J)	0.041	0.064	0.0097 (J)	0.48 (J+)	0.32 (J+)	0.18	1.5 (J+)	2 (J+)	5 (J+)	0.18	—	—
54-27641 P232	MD54-22-239900	232–232	0.084	0.047	0.11	0.0065 (J)	0.5 (J+)	0.36 (J+)	0.23	2.1 (J+)	0.99 (J+)	6.9	0.13	—	0.01 (J)
54-27641 P271	MD54-22-239902	271–271	—	0.027	0.082	—	0.23 (J+)	0.21 (J+)	0.16	0.9 (J+)	0.16 (J+)	5.6	0.034	—	0.0067 (J)
54-27641 P332.5	MD54-22-239906	332.5–332.5	—	0.0072 (J)	0.036	—	0.052 (J+)	0.082 (J+)	0.079	—	0.062 (J+)	2.2	0.0046 (J)	—	0.0053 (J)
54-27642 P30	MD54-22-239918	30–30	—	—	0.89	—	7 (J+)	0.23	0.26	2.2 (J+)	1.5 (J+)	3.6 (J+)	7.7 (J+)	—	—
54-27642 P75	MD54-22-239922	75–75	—	0.045 (J)	0.53	—	6.8 (J+)	0.37	0.45	3.1 (J+)	4.3 (J+)	7.2 (J+)	17 (J+)	—	—

Table 5.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Acetone	Benzene	Carbon Tetrachloride	Chlorobenzene	Chloroform	Cyclohexane	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloropropane[1,2-]	Dioxane[1,4-]	Hexane
54-27642 P116	MD54-22-239910	116–116	—	—	0.21	—	2.1 (J+)	0.1	0.12	0.93 (J+)	0.94 (J+)	1.7 (J+)	3.1 (J+)	—	—
54-27642 P175	MD54-22-239912	175–175	—	0.45	0.31	0.094	3.6 (J+)	0.29	0.23	1.7 (J+)	3 (J+)	8.4 (J+)	7.1 (J+)	—	0.09
54-27642 P235	MD54-22-239914	235–235	—	0.45	0.36	0.064 (J)	3.1 (J+)	0.25	0.25	1.5 (J+)	1.7 (J+)	9.2	4.1 (J+)	—	0.1
54-27642 P275	MD54-22-239916	275–275	—	0.08 (J)	0.43	—	6.3 (J+)	0.41	0.41	3 (J+)	—	9.7 (J+)	16 (J+)	—	0.098 (J)
54-27642 P338	MD54-22-239920	338–338	—	0.13	0.17	0.024 (J)	2.1 (J+)	0.16	0.13	0.96 (J+)	1.6 (J+)	4 (J+)	4.8 (J+)	—	—

Table 5.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Vinyl Chloride	Xylene[1,2-]	Total VOCs
54-02089 P13	MD54-22-242224	13–13	—	—	—	4	—	—	22	93	0.33	62	10	—	—	217
54-02089 P31	MD54-22-242225	31–31	—	—	—	4.3	—	—	30	120	0.7	66	6.5	—	—	268
54-02089 P46	MD54-22-242226	46–46	—	—	—	6.2	—	—	50	210	1.2	82	4.9	—	—	438
54-02089 P86	MD54-22-242227	86–86	—	—	—	7.3	—	—	50	220	0.82	72	3.2	—	—	436
54-24238 P44	MD54-22-239860	44–44	—	—	—	5.8	—	—	57	160	1.1	58	4.2	—	—	366
54-24238 P64	MD54-22-239862	64–64	—	—	1.4 (J)	5	—	—	51	140	0.74	46	1.9	—	—	322
54-24238 P84	MD54-22-239864	84–84	—	—	0.66 (J)	7.4	—	—	65	190	0.71	62	2.5	—	—	426
54-24240 P28	MD54-22-239872	28–28	—	—	—	—	—	—	—	160 (J+)	—	—	—	—	—	179
54-24240 P53	MD54-22-239874	53–53	—	—	—	—	—	—	8.8 (J+)	—	—	—	0.53 (J)	0.077 (J)	—	30.3
54-24240 P78	MD54-22-239876	78–78	—	0.044 (J)	—	4.4 (J+)	0.085	—	8.2 (J+)	52 (J+)	0.012 (J)	47 (J+)	0.36 (J+)	0.036 (J)	—	128
54-24240 P103	MD54-22-239866	103–103	—	—	—	4.8 (J+)	—	0.0063 (J)	5.6 (J+)	38 (J+)	0.013 (J)	33 (J+)	0.31 (J+)	0.038	—	94.3
54-24240 P128	MD54-22-239868	128–128	—	—	—	4.5 (J+)	0.02 (J)	0.0063 (J)	3 (J+)	33 (J+)	0.0091 (J)	—	0.32 (J+)	0.023 (J)	—	49.1
54-24240 P153	MD54-22-239870	153–153	—	—	—	4.4 (J+)	—	0.0048 (J)	3.1 (J+)	34 (J+)	—	—	0.33 (J+)	—	—	50.9
54-24241 P73	MD54-22-239888	73–73	—	—	—	—	—	—	9.3 (J+)	50 (J+)	—	24 (J+)	0.73 (J+)	—	—	103
54-24241 P93	MD54-22-239890	93–93	—	—	—	—	—	0.68 (J+)	—	—	—	—	—	—	—	0.680
54-24241 P113	MD54-22-239878	113–113	—	—	—	9.1 (J+)	—	—	7.1 (J+)	30 (J+)	—	16 (J+)	0.58 (J+)	—	—	76.2

Table 5.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Isooctane	Isopropanol/propanol[2-]	Methylene Chloride	Tetrachloroethene	Tetrahydrofuran	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethane[1,1,1-]	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Vinyl Chloride	Xylene[1,2-]	Total VOCs
54-24241 P133	MD54-22-239880	133–133	—	—	—	—	—	—	5.6 (J+)	22 (J+)	—	14 (J+)	0.52 (J+)	—	—	50.9
54-24241 P153	MD54-22-239882	153–153	—	—	0.22 (J)	—	—	0.044 (J+)	6 (J+)	23 (J+)	—	14 (J+)	0.52 (J+)	—	—	53.4
54-24241 P173	MD54-22-239884	173–173	—	—	0.34 (J)	—	—	0.07 (J+)	7 (J+)	28 (J+)	—	18 (J+)	0.61 (J+)	—	—	65.5
54-24241 P193	MD54-22-239886	193–193	—	—	0.1 (J)	—	—	—	5.3 (J+)	20 (J+)	—	13 (J+)	0.47 (J+)	—	—	46.9
54-24399 P566.7	MD54-22-239892	566.7–566.7	—	—	0.012 (J)	0.029	—	0.014	0.036	0.074	—	0.052	0.0061 (J)	—	—	0.294
54-24399 P587.8	MD54-22-239894	587.8–587.8	—	—	0.015 (J)	0.027	—	0.014	0.032	0.071	—	0.053	0.0071 (J)	—	—	0.286
54-27641 P32	MD54-22-239904	32–32	—	—	—	3.3 (J+)	—	—	6.3 (J+)	95 (J+)	—	94 (J+)	0.34	0.056 (J)	—	215
54-27641 P82	MD54-22-239908	82–82	—	0.048 (J)	0.13 (J)	3.7 (J+)	0.059	0.0067 (J)	4.1 (J+)	44 (J+)	—	42 (J+)	0.25	0.021 (J)	—	107
54-27641 P115	MD54-22-239896	115–115	—	—	0.072 (J)	2.7 (J+)	—	0.0046 (J)	2.9 (J+)	29 (J+)	—	24 (J+)	0.22	—	—	68.4
54-27641 P182	MD54-22-239898	182–182	—	—	1.1	2.7 (J+)	—	0.015 (J)	2.5 (J+)	29 (J+)	—	14 (J+)	0.31	—	—	59.5
54-27641 P232	MD54-22-239900	232–232	0.0079 (J)	—	1.2	3 (J+)	—	0.023	3.1 (J+)	40 (J+)	—	22 (J+)	0.46	—	—	81.3
54-27641 P271	MD54-22-239902	271–271	0.0068 (J)	—	0.67	1.7 (J+)	—	0.02	1.8 (J+)	21 (J+)	—	10 (J+)	0.33	—	—	42.9
54-27641 P332.5	MD54-22-239906	332.5–332.5	—	—	0.093	0.35 (J+)	—	0.004 (J)	0.96 (J+)	4.2 (J+)	—	2.7 (J+)	0.16	—	—	11.0
54-27642 P30	MD54-22-239918	30–30	—	—	—	3.9 (J+)	—	—	56 (J+)	62 (J+)	0.044 (J)	32 (J+)	0.75	—	—	178
54-27642 P75	MD54-22-239922	75–75	—	—	—	4.8 (J+)	—	—	34 (J+)	88 (J+)	0.2	36 (J+)	1	—	—	204
54-27642 P116	MD54-22-239910	116–116	—	—	—	1.6 (J+)	—	—	16 (J+)	31 (J+)	0.023 (J)	13 (J+)	0.36	—	—	71.2
54-27642 P175	MD54-22-239912	175–175	—	—	7	3 (J+)	—	0.46	15 (J+)	46 (J+)	0.065 (J)	24 (J+)	0.95	—	0.03 (J)	122
54-27642 P235	MD54-22-239914	235–235	—	—	7.8	2.6 (J+)	—	0.31	16 (J+)	42 (J+)	0.038 (J)	22 (J+)	1.2	—	0.063 (J)	113
54-27642 P275	MD54-22-239916	275–275	—	—	—	4.9 (J+)	—	—	24 (J+)	71 (J+)	0.21	35 (J+)	1.2	—	—	173
54-27642 P338	MD54-22-239920	338–338	—	—	1.6	1.8 (J+)	0.2	0.033 (J)	9.2 (J+)	26 (J+)	0.057	13 (J+)	0.5	—	0.012 (J)	66.5

* — = Not detected.

Appendix A

Acronyms and Abbreviations, Metric Conversion Table, and Data Qualifier Definitions

A-1.0 ACRONYMS AND ABBREVIATIONS

ADR	automated data review
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylene
COC	chain of custody
Consent Order	2016 Compliance Order on Consent
DCA	dichloroethane
DCE	dichloroethene
DCP	dichloropropane
DOE	Department of Energy (U.S.)
DQO	data quality objective
EDD	electronic data deliverable
EIM	Environmental Information Management (database)
EPA	Environmental Protection Agency (U.S.)
FB	field blank
FD	field duplicate
FY	fiscal year
IM	interim measure
LANL	Los Alamos National Laboratory
MCL	maximum contaminant level
MDA	material disposal area
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NMED	New Mexico Environment Department
NM GW	NMWQCC groundwater standard
NMWQCC	New Mexico Water Quality Control Commission
NS	not sampled
PCE	tetrachloroethene
PETN	pentaerythritol tetranitrate

PID	photoionization detector
PMR	periodic monitoring report
QA	quality assurance
QC	quality control
SCL	sample collection log
SL	screening level
SMO	Sample Management Office
SOP	standard operating procedure
SQL	Structured Query Language
SVE	soil-vapor extraction
SWMU	solid waste management unit
TCA	trichloroethane
TCE	trichloroethene
VISL	vapor intrusion screening level
VOC	volatile organic compound

A-2.0 METRIC CONVERSION TABLE

Multiply SI (Metric) Unit	by	To Obtain U.S. Customary Unit
kilometers (km)	0.622	miles (mi)
kilometers (km)	3281	feet (ft)
meters (m)	3.281	feet (ft)
meters (m)	39.37	inches (in.)
centimeters (cm)	0.03281	feet (ft)
centimeters (cm)	0.394	inches (in.)
millimeters (mm)	0.0394	inches (in.)
micrometers or microns (µm)	0.0000394	inches (in.)
square kilometers (km^2)	0.3861	square miles (mi^2)
hectares (ha)	2.5	acres
square meters (m^2)	10.764	square feet (ft^2)
cubic meters (m^3)	35.31	cubic feet (ft^3)
kilograms (kg)	2.2046	pounds (lb)
grams (g)	0.0353	ounces (oz)
grams per cubic centimeter (g/cm^3)	62.422	pounds per cubic foot (lb/ft^3)

Multiply SI (Metric) Unit	by	To Obtain U.S. Customary Unit
milligrams per kilogram (mg/kg)	1	parts per million (ppm)
micrograms per gram (μg/g)	1	parts per million (ppm)
liters (L)	0.26	gallons (gal.)
milligrams per liter (mg/L)	1	parts per million (ppm)
degrees Celsius (°C)	9/5 + 32	degrees Fahrenheit (°F)

A-3.0 DATA QUALIFIER DEFINITIONS

Data Qualifier	Definition
U	The analyte was analyzed for but not detected.
J	The analyte was positively identified, and the associated numerical value is estimated to be more uncertain than would normally be expected for that analysis.
J+	The analyte was positively identified, and the result is likely to be biased high.
J-	The analyte was positively identified, and the result is likely to be biased low.
UJ	The analyte was not positively identified in the sample, and the associated value is an estimate of the sample-specific detection or quantitation limit.
R	The data are rejected as a result of major problems with quality assurance/quality control (QA/QC) parameters.

Appendix B

Field Methods

B-1.0 INTRODUCTION

This appendix summarizes field methods used during calendar year 2021 sampling activities at Material Disposal Area (MDA) L Solid Waste Management Unit 50-006, in Technical Area 54 at Los Alamos National Laboratory (LANL or the Laboratory). All activities were conducted in accordance with the applicable standard operating procedures (SOPs), quality procedures, and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) implementation and procedural requirements. Table B-1.0-1 summarizes the field methods used, Table B-1.0-2 lists the applicable procedures, and Table B-1.0-3 presents the field-screening data.

B-2.0 FIELD METHODS

All work was conducted according to site-specific health and safety documents and an integrated work document. Field activities conducted according to SOPs are discussed below.

B-2.1 Volatile Organic Compound Pore-Gas Sample Collection

Samples were collected following purging of the sample port and stabilization of field parameters. Monitored field parameters include static pressure of port, purge flow rate, carbon dioxide (CO_2), oxygen (O_2), and volatile organic compounds (VOCs). Each port was purged for a minimum of 10 min, after which O_2, CO_2, and VOCs were monitored to ensure levels were stable before sample collection. A minimum sample purge flow rate of 0.3 slpm is required for collection.

Ports with purge flow rates of less than 0.3 slpm were considered plugged and not sampled. Portable gas detectors were used to screen for O_2, CO_2, and VOCs. Once stabilization occurred, the sample was collected in a SUMMA canister. Field crews noted the pressure measurements of the SUMMA canister before and after the sample was taken and noted all field parameters. Field duplicates were collected immediately following the original sample. Field blanks were collected using ultrapure nitrogen gas (99.9%). Information was recorded on appropriate sample collection logs (SCLs). Field chain-of-custody (COC) forms and SCLs are provided in Appendix E (on CD included with this document).

All VOC samples were collected in accordance with the current version of N3B-SOP-ER-2008, "Sampling Subsurface Vapor."

All samples were submitted to the N3B Sample Management Office (SMO) for processing and transport to off-site contract analytical laboratories.

B-2.2 Volatile Organic Compound Pore-Gas Field Screening

All VOC samples were field-screened in accordance with the current version of N3B-SOP-ER-2008, "Sampling Subsurface Vapor." All field-screening results were recorded on the appropriate SCLs in the field logbook and/or in tables and are provided in Appendix E (on CD included with this document) and summarized in Table B-1.0-3.

Before each sampling event, each sampling port was purged of stagnant air and then monitored until CO_2 and O_2 levels stabilized at values representative of subsurface pore-gas conditions. The total VOC concentration in ppmv was also estimated using a volatile gas monitor with photoionization detector (PID). During the first round of sampling, a MultiRae Multi-Gas Detector equipped with a 10.6-electronvolt PID and O_2 sensor was used to screen for VOCs and O_2 and a ToxiRAE Pro CO_2 sensor was used to screen for CO_2. During the second round of sampling, a RKI Eagle 2 gas detector was used to screen for O_2 and CO_2 and a MultiRae Multi-Gas Detector with a 10.6-electronvolt PID was used to screen for VOCs. Each rented instrument was shipped factory-calibrated to the sampling subcontractor, and the calibration was checked daily.

Drawing sufficient air from the sampling interval through the line ensured that the vapor-sample tubing was purged of stagnant air. To ensure that the sample collected was representative of the subsurface air at depth, every sampling activity included a purge cycle.

The CO_2, O_2, and VOC screening results are presented in Table B.1-0.3. During the 2021 sampling events, field-screening readings were consistent with the 2020 readings.

B-2.3 Tritium Pore-Gas Sample Collection

All tritium samples were collected in accordance with the current version of N3B-SOP-ER-2008. Silica gel was the medium used to collect moisture from pore-gas samples. To collect water vapor intended for tritium analysis from pore gas, a pore-gas sample was pulled through a canister of silica gel (silica-gel column), and the sample information was recorded on the appropriate SCL (included in Appendix E [on CD included with this document]). The moisture was analyzed for tritium by means of liquid scintillation counting. Silica-gel column field duplicate samples were also collected at a frequency greater than or equal to 10% per sampling event in accordance with the current version of N3B- SOP-SDM-1100, “Sample Containers, Preservation, and Field Quality Control.”

Silica gel was prepared for sampling by drying at a temperature greater than 100°C. Drying removes moisture from the silica gel but does not remove bound water, as demonstrated when the bound water percentage in each batch of silica gel is measured. Before sample collection, the amount of silica gel used in each sample was weighed (typically about 135 g). The sample canister with silica gel was also weighed before sampling. N3B-SOP-ER-2008 requires that at least 5 g of moisture be collected. After sampling, the sample canister with silica gel was weighed again to verify that 5 g of water vapor had been collected.

The sample (canister plus silica gel) was shipped to the analytical laboratory where it was weighed again. The silica gel was emptied into a distillation apparatus and heated to 110°C, driving moisture off the silica gel. This moisture was collected and analyzed for tritium by liquid scintillation. The analytical laboratory also weighed the empty canister and calculated the percent moisture of the sample as the amount of moisture collected divided by the calculated weight of the wet silica gel. The value of the tritium activity and the calculated percent moisture were reported to N3B in the analytical data package and the electronic data deliverable.

Table B-1.0-1
Summary of Field Methods

Method	Summary
General Instructions for Field Investigations	General instructions for field investigations (e.g., prework briefings, plan-of-the-day meetings, tailgate meetings) provide an overview of instructions regarding activities performed before, during, and after field investigations. Field investigations are assumed to involve standard sampling equipment, personal protective equipment, waste management, and site-control equipment/materials; and general fieldwork guidance covers premobilization activities, mobilization to the site, documentation and sample collection activities, sample media evaluation, surveillance, and completion of lessons learned.
Sample Containers and Preservation	Specific requirements/processes for sample containers, preservation techniques, and holding times are based on U.S. Environmental Protection Agency guidance for environmental sampling, preservation, and quality assurance. Specific requirements were met for each sample and were printed in the SCLs provided by N3B's SMO (size and type of container, preservatives, etc.).
Handling, Packaging, and Transporting Field Samples	Field team members sealed and labeled samples before packing to ensure sample and transport containers were free of external contamination. All environmental samples were collected, preserved, packaged, and transported to the SMO under COC (N3B- SOP-SDM-1102 R1, "Sample Receiving and Shipping by the N3B Sample Management Office"). The SMO arranged for shipping of the samples to analytical laboratories. Any levels of radioactivity (i.e., action-level or limited-quantity ranges) were documented in SCLs submitted to the SMO.
Sample Control and Field Documentation	The collection, screening, and transport of samples were documented in standard forms generated by the SMO. These forms include SCLs, COC forms, sample container labels, and custody seals. Collection logs were completed at the time of sample collection and were signed by the sampler and a reviewer who verified the logs for completeness and accuracy. Corresponding labels were initialed and applied to each sample container, and custody seals were placed around container lids or openings. COC forms were completed and signed to verify that the samples were not left unattended.
Field Quality Control Samples	Field quality control samples were collected as follows: Field duplicates were collected at a frequency of 10% and at the same time as a regular sample and submitted for the same analyses. Field blanks required for all field events that include collecting samples for VOC analyses were collected. Field blanks were kept with the other sample containers during the sampling process and were submitted for laboratory analyses.
Sampling Subsurface Vapor	Vapor sampling was performed at 28 monitoring wells in accordance with the current version of N3B-SOP-ER-2008, and samples were analyzed for VOCs and tritium. This SOP describes the process of sampling subsurface air from vapor ports in monitoring wells and boreholes. The procedure covers presampling activities, sampling to detect and quantify gaseous organic concentration in air, SUMMA sampling (a passive collection and containment system of laboratory-quality air samples), adsorbent column sampling, sampling through the packer system (a sampling system that uses inflatable bladders to seal off a desired interval in an open borehole or at the end of a drill casing to obtain a sample from a discrete section), and post-sampling activities.

Table B-1.0-2
List of Procedures Used for MDA L Pore-Gas Monitoring Activities

Document Number	N3B Procedure Title
N3B-AP-ER-1002	Environmental Remediation (ER) Field Work Requirements
N3B-SOP-SDM-1100	Sample Containers, Preservation, and Field Quality Control
N3B-SOP-SDM-1101	Sample Control and Field Documentation
N3B-SOP-ER-2002	Field Decontamination of Equipment
N3B-SOP-ER-2008	Sampling Subsurface Vapor
N3B-P101-6	Personal Protective Equipment
N3B-AP-SDM-1200	Requesting and Managing Data Sets
N3B-POL-QAT-0019	Notification, Investigation and Learning from Events
N3B-AP-SDM-1103	Preparation and Storage of Final Records Packages for Analytic Data
N3B-SOP-SDM-1102	Sample Receiving and Shipping by the N3B Sample Management Office
N3B-AP-ER-1001	Environmental Remediation Project Preparedness Review
N3B-AP-TRU-2150	Waste Characterization Strategy Form

Table B-1.0-3
Field-Screening Results

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-01015	45	CO_2 (ppmv)	500	NS[b]
		O_2 (%)	20.9	NS
		VOC (ppmv)	0	NS
	187	CO_2 (ppmv)	300	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.1	NS
	350	CO_2 (ppmv)	1500	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.3	NS
	385	CO_2 (ppmv)	600	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.1	NS
	435	CO_2 (ppmv)	600	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.1	NS
	485	CO_2 (ppmv)	300	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.1	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-01015 (cont'd)	525	CO_2 (ppmv)	500	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.1	NS
54-01016	188	CO_2 (ppmv)	4500	NS
		O_2 (%)	20.6	NS
		VOC (ppmv)	12	NS
	318	CO_2 (ppmv)	1800	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2	NS
	390	CO_2 (ppmv)	200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0	NS
	481	CO_2 (ppmv)	200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0	NS
	533	CO_2 (ppmv)	200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0	NS
	601	CO_2 (ppmv)	800	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0	NS
54-02001	20	CO_2 (ppmv)	7400	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	165.5	NS
	40	CO_2 (ppmv)	7100	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	80.3	NS
	60	CO_2 (ppmv)	1200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	5.6	NS
	80	CO_2 (ppmv)	9500	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	132.8	NS
	100	CO_2 (ppmv)	6900	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	97	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-02001 (cont'd)	120	CO_2 (ppmv)	8000	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	57.5	NS
	140	CO_2 (ppmv)	9500	NS
		O_2 (%)	20.4	NS
		VOC (ppmv)	245.9	NS
	160	CO_2 (ppmv)	500	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	4.1	NS
	180	CO_2 (ppmv)	7200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	115.7	NS
	200	CO_2 (ppmv)	4700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	82.4	NS
54-02002	40	CO_2 (ppmv)	5300	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	12	NS
	60	CO_2 (ppmv)	15,200	NS
		O_2 (%)	20.0	NS
		VOC (ppmv)	2.2	NS
	120	CO_2 (ppmv)	4800	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	11	NS
	180	CO_2 (ppmv)	13,000	NS
		O_2 (%)	19.9	NS
		VOC (ppmv)	44	NS
	200	CO_2 (ppmv)	8300	NS
		O_2 (%)	20.3	NS
		VOC (ppmv)	37	NS
54-02016	31	CO_2 (ppmv)	25,000	NS
		O_2 (%)	20.4	NS
		VOC (ppmv)	67.9	NS
54-02020	20	CO_2 (ppmv)	4000	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	1.6	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-02020 (cont'd)	40	CO_2 (ppmv)	4800	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2.9	NS
	60	CO_2 (ppmv)	5300	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	4	NS
	80	CO_2 (ppmv)	5500	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	4.6	NS
	95	CO_2 (ppmv)	5700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	6.4	NS
	120	CO_2 (ppmv)	5900	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	7.7	NS
	140	CO_2 (ppmv)	5700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	8.7	NS
	160	CO_2 (ppmv)	1600	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2.4	NS
	180	CO_2 (ppmv)	5200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	9.4	NS
	200	CO_2 (ppmv)	5200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	8.7	NS
54-02021	20	CO_2 (ppmv)	6200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.4	NS
	140	CO_2 (ppmv)	6400	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	4.5	NS
	160	CO_2 (ppmv)	2600	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.9	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-02021 (cont'd)	180	CO_2 (ppmv)	6000	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	3.6	NS
	198	CO_2 (ppmv)	4800	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	4	NS
54-02022	40	CO_2 (ppmv)	10,200	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	16.9	NS
	60	CO_2 (ppmv)	9200	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	17.3	NS
	120	CO_2 (ppmv)	8400	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	16.3	NS
	180	CO_2 (ppmv)	6800	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	19.1	NS
	200	CO_2 (ppmv)	6700	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	19	NS
54-02023	20	CO_2 (ppmv)	7700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.4	NS
	40	CO_2 (ppmv)	10,900	NS
		O_2 (%)	20.3	NS
		VOC (ppmv)	0	NS
	60	CO_2 (ppmv)	600	NS
		O_2 (%)	21.3	NS
		VOC (ppmv)	0.2	NS
	80	CO_2 (ppmv)	9800	NS
		O_2 (%)	21.1	NS
		VOC (ppmv)	1.3	NS
	100	CO_2 (ppmv)	5600	NS
		O_2 (%)	20.6	NS
		VOC (ppmv)	1	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-02023 (cont'd)	159	CO_2 (ppmv)	6800	NS
		O_2 (%)	21.1	NS
		VOC (ppmv)	3.2	NS
	200	CO_2 (ppmv)	5800	NS
		O_2 (%)	21.2	NS
		VOC (ppmv)	4.2	NS
54-02024	20	CO_2 (ppmv)	5300	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.7	NS
	40	CO_2 (ppmv)	5700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	1.2	NS
	60	CO_2 (ppmv)	5800	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	1.6	NS
	80	CO_2 (ppmv)	6700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2.3	NS
	100	CO_2 (ppmv)	6000	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2.8	NS
	140	CO_2 (ppmv)	6200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	4.1	NS
	160	CO_2 (ppmv)	6000	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	5.1	NS
	180	CO_2 (ppmv)	5200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	4.8	NS
	200	CO_2 (ppmv)	3600	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	3.9	NS
54-02025	20	CO_2 (ppmv)	4700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	5.3	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-02025 (cont'd)	60	CO_2 (ppmv)	500	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0.1	NS
	100	CO_2 (ppmv)	6600	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	14.7	NS
	160	CO_2 (ppmv)	5900	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	21	NS
	190	CO_2 (ppmv)	5500	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	23.5	NS
54-02026	20	CO_2 (ppmv)	5200	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	0	NS
	60	CO_2 (ppmv)	8100	NS
		O_2 (%)	20.4	NS
		VOC (ppmv)	0	NS
	100	CO_2 (ppmv)	5200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0	NS
	160	CO_2 (ppmv)	6600	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	0	NS
	200	CO_2 (ppmv)	5700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	1	NS
	215	CO_2 (ppmv)	5000	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	0	NS
54-02027	20	CO_2 (ppmv)	4700	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	1.6	NS
	60	CO_2 (ppmv)	5600	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	2.4	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-02027 (cont'd)	100	CO_2 (ppmv)	6100	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2.4	NS
	160	CO_2 (ppmv)	5500	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	4.3	NS
	200	CO_2 (ppmv)	4700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	4.2	NS
	220	CO_2 (ppmv)	3800	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	3.5	NS
	250	CO_2 (ppmv)	2700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2.4	NS
54-02028	20	CO_2 (ppmv)	2900	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2	NS
	60	CO_2 (ppmv)	3800	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2	NS
	100	CO_2 (ppmv)	4100	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	3	NS
	160	CO_2 (ppmv)	3100	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	4	NS
	200	CO_2 (ppmv)	1900	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2	NS
	220	CO_2 (ppmv)	1200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2	NS
	250	CO_2 (ppmv)	1900	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	3	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-02031	20	CO_2 (ppmv)	9400	NS
		O_2 (%)	20.1	NS
		VOC (ppmv)	0	NS
	60	CO_2 (ppmv)	8600	NS
		O_2 (%)	20.2	NS
		VOC (ppmv)	1	NS
	100	CO_2 (ppmv)	5600	NS
		O_2 (%)	20.4	NS
		VOC (ppmv)	1	NS
	160	CO_2 (ppmv)	3400	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2	NS
	200	CO_2 (ppmv)	3900	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	2	NS
	220	CO_2 (ppmv)	5200	NS
		O_2 (%)	20.4	NS
		VOC (ppmv)	3	NS
	260	CO_2 (ppmv)	5000	NS
		O_2 (%)	20.4	NS
		VOC (ppmv)	3	NS
54-02034	20	CO_2 (ppmv)	1200	NS
		O_2 (%)	18.8	NS
		VOC (ppmv)	0.8	NS
	60	CO_2 (ppmv)	9800	NS
		O_2 (%)	18.8	NS
		VOC (ppmv)	1.1	NS
	100	CO_2 (ppmv)	9700	NS
		O_2 (%)	18.7	NS
		VOC (ppmv)	1.7	NS
	160	CO_2 (ppmv)	6600	NS
		O_2 (%)	18.7	NS
		VOC (ppmv)	2.1	NS
	200	CO_2 (ppmv)	6200	NS
		O_2 (%)	18.6	NS
		VOC (ppmv)	2.4	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-02034 (cont'd)	220	CO_2 (ppmv)	3100	NS
		O_2 (%)	18.6	NS
		VOC (ppmv)	1.3	NS
	260	CO_2 (ppmv)	2400	NS
		O_2 (%)	18.6	NS
		VOC (ppmv)	0.5	NS
	300	CO_2 (ppmv)	2100	NS
		O_2 (%)	18.5	NS
		VOC (ppmv)	0.6	NS
54-02089	13	CO_2 (ppmv)	26,300	10,000
		O_2 (%)	14.6	16.5
		VOC (ppmv)	1.5	163.3
	31	CO_2 (ppmv)	22,000	25,000
		O_2 (%)	15.0	15.1
		VOC (ppmv)	96.1	221.2
	46	CO_2 (ppmv)	39,900	24,000
		O_2 (%)	10.7	16.0
		VOC (ppmv)	193	239.3
	86	CO_2 (ppmv)	34,900	19,000
		O_2 (%)	11.3	16.0
		VOC (ppmv)	164.4	192.9
54-24238	44	CO_2 (ppmv)	31,300	22,000
		O_2 (%)	12.5	16.0
		VOC (ppmv)	154.2	165.9
	64	CO_2 (ppmv)	34,900	14,000
		O_2 (%)	11.5	17.7
		VOC (ppmv)	171.7	104.0
	84	CO_2 (ppmv)	26,100	17,000
		O_2 (%)	13.4	17.1
		VOC (ppmv)	107.7	173.2
54-24239	25	CO_2 (ppmv)	10,300	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	999	NS
	50	CO_2 (ppmv)	10,700	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	999	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-24239 (cont'd)	75	CO_2 (ppmv)	10,900	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	999	NS
	99.5	CO_2 (ppmv)	10,500	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	288	NS
54-24240	28	CO_2 (ppmv)	15,500	10,000
		O_2 (%)	20.9	19.6
		VOC (ppmv)	48.2	242.1
	53	CO_2 (ppmv)	15,200	10,000
		O_2 (%)	20.9	19.4
		VOC (ppmv)	317.5	242.9
	78	CO_2 (ppmv)	1900	8000
		O_2 (%)	20.9	20.0
		VOC (ppmv)	17.9	139.0
	103	CO_2 (ppmv)	9300	6000
		O_2 (%)	20.9	20.5
		VOC (ppmv)	29.2	85.3
	128	CO_2 (ppmv)	8100	5000
		O_2 (%)	20.9	20.7
		VOC (ppmv)	26.2	58.7
	153	CO_2 (ppmv)	5300	6000
		O_2 (%)	20.9	20.9
		VOC (ppmv)	41.2	57.5
54-24241	73	CO_2 (ppmv)	14,100	11,000
		O_2 (%)	20.0	18.7
		VOC (ppmv)	84.3	112.1
	93	CO_2 (ppmv)	9100	10,000
		O_2 (%)	20.4	19.1
		VOC (ppmv)	56.6	100.4
	113	CO_2 (ppmv)	8600	7000
		O_2 (%)	20.4	20.2
		VOC (ppmv)	50	64.2
	133	CO_2 (ppmv)	3000	4000
		O_2 (%)	20.9	20.9
		VOC (ppmv)	30.4	55.9

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-24241 (cont'd)	153	CO_2 (ppmv)	3400	4000
		O_2 (%)	20.9	20.9
		VOC (ppmv)	26.3	60.1
	173	CO_2 (ppmv)	5300	5000
		O_2 (%)	20.9	20.7
		VOC (ppmv)	40	72.9
	193	CO_2 (ppmv)	8000	6000
		O_2 (%)	20.5	20.3
		VOC (ppmv)	65.8	66.2
54-24242	25	CO_2 (ppmv)	7900	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	83.3	NS
	50	CO_2 (ppmv)	10,300	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	119.9	NS
	75	CO_2 (ppmv)	1200	NS
		O_2 (%)	20.0	NS
		VOC (ppmv)	120.5	NS
	100	CO_2 (ppmv)	10,300	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	129.9	NS
	110.5	CO_2 (ppmv)	11,500	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	133.5	NS
54-24243	25	CO_2 (ppmv)	15,300	NS
		O_2 (%)	20.1	NS
		VOC (ppmv)	61.5	NS
	50	CO_2 (ppmv)	20,100	NS
		O_2 (%)	19.6	NS
		VOC (ppmv)	92.8	NS
	75	CO_2 (ppmv)	20,300	NS
		O_2 (%)	19.6	NS
		VOC (ppmv)	97.8	NS
	100	CO_2 (ppmv)	17,900	NS
		O_2 (%)	19.8	NS
		VOC (ppmv)	91.8	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-24243 (cont'd)	125	CO_2 (ppmv)	16,500	NS
		O_2 (%)	19.9	NS
		VOC (ppmv)	84.5	NS
54-24399	566.3	CO_2 (ppmv)	800	0
		O_2 (%)	20.9	10.4
		VOC (ppmv)	2.5	20.9
	587.3	CO_2 (ppmv)	1400	0
		O_2 (%)	20.9	6.8
		VOC (ppmv)	2	20.9
54-27641	32	CO_2 (ppmv)	10,800	9000
		O_2 (%)	20.6	20.7
		VOC (ppmv)	200.6	207.7
	82	CO_2 (ppmv)	9600	7000
		O_2 (%)	20.5	20.9
		VOC (ppmv)	99.2	95.5
	115	CO_2 (ppmv)	7100	7000
		O_2 (%)	20.9	20.9
		VOC (ppmv)	58.6	63.0
	182	CO_2 (ppmv)	7000	6000
		O_2 (%)	20.9	20.9
		VOC (ppmv)	43.4	39.9
	232	CO_2 (ppmv)	6600	6000
		O_2 (%)	20.9	20.9
		VOC (ppmv)	51.9	36.4
	271	CO_2 (ppmv)	5400	5000
		O_2 (%)	20.9	20.9
		VOC (ppmv)	26.7	20.2
	332.5	CO_2 (ppmv)	3200	3000
		O_2 (%)	20.9	20.9
		VOC (ppmv)	5.2	6.5
54-27642	30	CO_2 (ppmv)	23,200	14,000
		O_2 (%)	19	18.3
		VOC (ppmv)	66.6	100.3
	75	CO_2 (ppmv)	18,500	12,000
		O_2 (%)	19.3	18.5
		VOC (ppmv)	96.1	121.8

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-27642	116	CO_2 (ppmv)	20,500	10,000
		O_2 (%)	17.9	18.0
		VOC (ppmv)	71	56.2
	175	CO_2 (ppmv)	10,000	7000
		O_2 (%)	20.1	19.6
		VOC (ppmv)	87.8	100.1
	235	CO_2 (ppmv)	11,000	6000
		O_2 (%)	20.0	19.7
		VOC (ppmv)	79.3	75.9
	275	CO_2 (ppmv)	13,400	9000
		O_2 (%)	19.8	19.3
		VOC (ppmv)	94.6	114.8
	338	CO_2 (ppmv)	13,600	4000
		O_2 (%)	20.0	20.7
		VOC (ppmv)	57.4	35.7
54-27643	30	CO_2 (ppmv)	6800	NS
		O_2 (%)	19.9	NS
		VOC (ppmv)	243	NS
	74	CO_2 (ppmv)	7200	NS
		O_2 (%)	19.8	NS
		VOC (ppmv)	433	NS
	117	CO_2 (ppmv)	8200	NS
		O_2 (%)	19.7	NS
		VOC (ppmv)	834	NS
	167	CO_2 (ppmv)	6500	NS
		O_2 (%)	19.9	NS
		VOC (ppmv)	999	NS
	235	CO_2 (ppmv)	5000	NS
		O_2 (%)	20.1	NS
		VOC (ppmv)	796	NS
	275	CO_2 (ppmv)	4500	NS
		O_2 (%)	20.1	NS
		VOC (ppmv)	636	NS
	354	CO_2 (ppmv)	200	NS
		O_2 (%)	20.9	NS
		VOC (ppmv)	0	NS

Table B-1.0-3 (continued)

Borehole ID	Sampling Port Depth (ft bgs[a])	Analyte	Result First Round 2021	Result Second Round 2021
54-610786	25	CO_2 (ppmv)	6500	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	9.8	NS
	50	CO_2 (ppmv)	8600	NS
		O_2 (%)	20.5	NS
		VOC (ppmv)	30.3	NS
	75	CO_2 (ppmv)	8700	NS
		O_2 (%)	20.4	NS
		VOC (ppmv)	32	NS
	100	CO_2 (ppmv)	8400	NS
		O_2 (%)	20.3	NS
		VOC (ppmv)	32.9	NS
	118.5	CO_2 (ppmv)	8200	NS
		O_2 (%)	20.3	NS
		VOC (ppmv)	36.7	NS

[a] bgs = Below ground surface.

[b] NS = Not sampled.

Appendix C

Analytical Program

C-1.0 INTRODUCTION

This appendix discusses analytical methods and data-quality review for samples collected during vapor-sampling activities at Material Disposal Area (MDA) L, Solid Waste Management Unit (SWMU) 54-006, at Technical Area 54 at Los Alamos National Laboratory (LANL or the Laboratory).

Newport News Nuclear BWXT-Los Alamos, LLC (N3B) uses the Environmental Information Management (EIM) database for data management. This is a cloud-based data management platform used for managing sampling events, tracking the packaging and transportation of samples, and storing the resultant data. In addition to N3B, Triad National Security, LLC (Triad) and the U.S. Department of Energy (DOE) Oversight Bureau of the New Mexico Environment Department (NMED) share EIM for all LANL environmental analytical data. EIM interfaces with Intellus New Mexico (Intellus), a fully searchable database available to the public through the Intellus website (http://www.intellusnm.com).

The system, written and maintained by Locus Technologies, consists of a cloud-based Structured Query Language (SQL) server database platform coupled with a web-based user interface. It is a comprehensive sample and data management application, designed to manage the process from sample planning through data review and reporting. It includes modules for sample planning, sample tracking, manual and electronic field data upload, electronic data deliverables (EDDs) upload, Automated Data Review (ADR) routines, notification emails, and reporting tools.

The analytical data are submitted in EDDs by the analytical laboratory and are uploaded to the N3B EIM database. The received data are then independently validated through the N3B data validation process, per the data quality objectives (DQOs) described in section C-2.1, to qualify the data. The laboratory also submits PDFs that detail the entire analytical process for each sample analysis.

The entire data validation process includes a description of the reasons for any failure to meet method, procedural, or contractual requirements and an evaluation of the impact of such failure on the associated data or data set.

C-2.0 ANALYTICAL DATA

Data evaluated in this report come from the analysis of vapor samples collected during semiannual vapor-sampling activities at MDA L. All investigation samples were submitted to and analyzed by approved off-site analytical laboratories. These data are determined to be of sufficient quality for decision-making purposes and have been reviewed and revalidated to current quality assurance/quality control (QA/QC) standards as described in section C-2.1.

In the first 2021 sampling round, a total of 201 samples (167 regular samples, 15 field blanks [FBs], and 19 field duplicates [FDs]) were collected and analyzed for volatile organic compounds (VOCs). Also in the first sampling round, a total of 202 samples (167 regular samples, 18 FBs, and 17 FDs) were collected and analyzed for tritium. In the second 2021 sampling round, a total of 44 samples (36 regular samples, 4 FBs, and 4 FDs) were collected and analyzed for VOCs. Also in the second sampling round, a total of 44 samples (36 regular samples, 4 FBs, and 4 FDs) were collected and analyzed for tritium. The analytical methods are listed in Table C-2.0-1.

These samples were planned using the EIM Sample Request module, and sample collection logs (SCLs) were created and printed to serve as chain of custody (COC) documents and analytical request forms.

Sampling events included collection of FB and FD field QA/QC samples. Detection of analytes in FBs may indicate contamination resulting from sample collection, transportation, or the analytical laboratory processes. Differences in analytical results between an FD and its regular sample may indicate samples were not uniform or that significant variation in analysis occurred between the two samples.

The FBs are SUMMA canisters filled with pure nitrogen (99.9%) subjected to the same conditions as regular samples. FBs are collected at a minimum frequency of 10% of all VOC samples and 10% of all tritium samples collected during the monitoring event. FBs are collected from locations where the regular samples are collected.

FDs are collected at a rate of 10% of all VOC samples and 10% of all tritium samples collected during the monitoring event. FDs are split samples collected from locations where the regular samples are collected.

Following sample collection, sampling personnel deliver the samples and the SCLs to sample management personnel at the N3B Sample Management Office (SMO). An analytical COC is then created, which includes the field sample identification number, the date and time of field sample collection, the analytical parameters group code(s), and the number of bottles for each analytical parameter group. The N3B SMO then ships the samples to the appropriate laboratory for analysis.

In addition to analyzing the field samples and field QA/QC samples, laboratories also employ laboratory batch QA/QC samples. These include matrix spikes, duplicates, method blanks, and laboratory control samples that are prepared and analyzed by the laboratories to monitor their analytical process quality. The laboratory QA/QC process is defined in the appropriate analytical method (Table C-2.0-1) and the external analytical laboratory statement of work.

Tables within the main text of this MDA L vapor-sampling periodic monitoring report summarize the analytical results from all samples collected at MDA L for calendar year 2021. All VOC and tritium analytical results are provided in Appendix E (on CD included with this document). Analytical chemical and radiological data presented in this report can also be found in the public Intellus database at http://www.intellusnm.com.

C-2.1 Data Validation Definitions and Procedures

Analytical results meet the N3B minimum DQOs as outlined in N3B-PLN-SDM-1000: "Sample and Data Management Plan." N3B-PLN-SDM-1000 sets the validation frequency criteria at 100% Level 1 examination and Level 2 verification of data and at 10% minimum Level 3 validation of data. A Level 1 examination assesses the completeness of the data as delivered from the analytical laboratory, identifies any reporting errors, and checks the usability of the data based on the analytical laboratory's evaluation of the data. A Level 2 verification evaluates the data to determine the extent to which the laboratory met the analytical method and the contract-specific quality control and reporting requirements. A Level 3 validation includes Level 1 and 2 criteria and determines the effect of potential anomalies encountered during analysis and possible effects on data quality and usability. A Level 3 validation is performed manually with method-specific data validation procedures. Laboratory analytical data are validated by N3B personnel as outlined in N3B-PLN-SDM-1000; N3B-AP-SDM-3000: "General Guidelines for Data Validation"; N3B-AP-SDM-3014: "Examination and Verification of Analytical Laboratory Data"; and additional method-specific analytical data validation procedures.

All associated validation procedures have been developed, where applicable, from the U.S. Environmental Protection Agency (EPA) QA/G-8 "Guidance on Environmental Data Verification and Data Validation," the U.S. Department of Defense/DOE "Consolidated Quality Systems Manual for Environmental Laboratories," the EPA "National Functional Guidelines for Data Validation," and the

American National Standards Institute/American Nuclear Society 41.5: "Verification and Validation of Radiological Data."

N3B data validation is performed externally from the analytical laboratory and end users of the data. Data validation provides a level of assurance of the data quality based on this technical evaluation of the data quality.

Validation qualifiers and reason codes applied during this process are also reviewed and approved by an N3B chemist to assess data usability and quality. The EIM data are then made available to the public in the Intellus New Mexico database (https://intellusnm.com/).

Validated data are qualified as accepted or rejected. Data accepted per the validation criteria have one of the following qualifiers: not detected (U), estimated but not detected (UJ), estimated (J), or detected without data qualification (NQ). Accepted data can then be used as needed, assuming that no problems occurred during the sampling events. Data that are qualified as rejected (R) per the validation criteria are unusable. In addition, the analytical results can also be further labeled with data validation reason codes that explain the reason for the qualification. (See Appendix A of this report, which includes data qualifier definitions.)

The analytical data, laboratory report, and data validation reports are provided in Appendix E (on CD included with this report). In addition to the laboratory analytical data, SCLs and COC forms are also provided in Appendix E.

Table C-2.0-1
Volatile Organic Compound and
Radionuclide Analytical Methods for Samples Collected at SWMU 54-006

Analytical Method	Analytical Description	Analytical Suite
VOCs		
EPA Air Method Toxic Organics (TO15)	Determination of VOCs in air collected in specially prepared canisters and analyzed by gas chromatography/mass spectrometry	VOCs
Radionuclides		
EPA 906.0	Tritium in water (liquid scintillation)	Tritium

Appendix D

Volatile Organic Compound Plume Trend Analysis

D-1.0 INTRODUCTION

This appendix summarizes data from the Material Disposal Area (MDA) L volatile organic compound (VOC) plume at Technical Area 54, Los Alamos National Laboratory (LANL) (Figure D-1.0-1). The data were collected as part of an ongoing soil-vapor extraction (SVE) interim measure (IM) (N3B 2018, 700039) and represent a first phase, pilot-project-scale demonstration of the ability of SVE to effectively remove plume mass and reduce the likelihood of VOCs impacting groundwater beneath MDA L (Behar et al. 2019, 700854).

Boreholes reported in this document include a set of sentry wells in the source region of the plume designed to provide an early warning of leakage from buried drums of VOCs. Table D-1.0-1 lists the sentry wells that are discussed. These sentry wells have been modified slightly from those presented in the 2018 IM report and now include borehole 54-02089. The original 6 sentry wells were chosen as the likeliest to detect any new leakage from the subsurface VOC waste drums. Although previously not called out as a sentry well (N3B 2018, 700039), borehole 54-24399 was included in semiannual monitoring beginning in 2020 to better characterize the lower reaches of the VOC plume and is now designated as a sentry well. In the first sampling round of fiscal year (FY) 2021, data were collected from 28 boreholes, including the 7 sentry wells. In the second sampling round of FY 2021, data were collected from only the 7 sentry wells.

Section D-2 gives an overview of the plume through discussion of a series of 13 plume images. These 13 figures show map-view and vertical cross-sections of 13 compounds that exceeded Tier I screening levels (SLs) at more than one location.

Section D-3 compares the maximum concentrations of the currently measured plume (maximum value at any port from the two FY 2021 sampling rounds) with the pre-SVE 2014 baseline plume concentrations.

Section D-4 discusses data from selected boreholes in the east source area; the west source area; the deep borehole 54-24399, completed in the Cerros del Rio basalt; and finally, boreholes in the periphery of the plume, including data from borehole 54-24399 to 568 ft below ground surface (bgs). Data from these boreholes are shown as X-Y plots with concentration versus depth and include data from previous sampling rounds. In many cases, 2014 data from before the SVE IM are used to show the impact of SVE and subsequent rebound of the plume. However, some boreholes have more limited historic data, and plots for these boreholes show as much data as are available. The figures discussed in this section are limited to selected boreholes and selected compounds exceeding Tier I SLs.

Section D-5 discusses total VOC concentrations in boreholes where total VOC concentrations are approaching SVE reactivation trigger values. Current recommendations from the IM final report (N3B 2018, 700039) call for an analysis of restarting the SVE pumping units if total VOC concentrations at any port rise to more than 2000 parts (of total VOCs) ppmv, the trigger value. The units of ppmv were chosen for the following reasons: (1) these units are directly scalable to the units of measurement reported by the analytical laboratory (ppbv) and (2) ppmv units remove the molecular weight of each compound and normalize to mole fraction of the sum of different compounds. As part of ongoing discussions with the New Mexico Environment Department (NMED), a new metric for initiating the SVE system is being developed that will include a Tier II SL exceedance metric in addition to the 2000-ppmv metric.

Attachment D-1 (on CD included with this document) presents 171 figures (including figures for isopropanol, which exceeded the Tier I SL in the first round but not in the second round) representing all boreholes in which any of 14 compounds exceeded Tier I SLs. The Tier I SL value is shown as a vertical red line on all of these X-Y plots.

D-2.0 PLUME OVERVIEW

This section presents an overview of the VOC plume through discussion of a series of 13 plume images (Figures D-2.0-1 through D-2.0-13). The VOC plume is composed of many different VOCs. These 13 figures show map-view and vertical cross-sections of 13 compounds that exceeded Tier I SLs at more than one location in FY 2021. The 28 boreholes sampled in the first round of FY 2021 were used as the basis of the contour plots for both sample rounds. The compounds are presented in the following order, based on Tier I exceedance levels. First, the 8 compounds that represent the bulk of the plume by mass and/or area of Tier I impact are presented: trichlorethene (TCE); 1,2-dichloroethane (1,2-DCA); 1,2-dichloropropane (1,2-DCP); methylene chloride; tetrachloroethene (PCE); 1,1,1-trichloroethane (1,1,1-TCA); 1,1-dichloroethene (1,1-DCE); and 1,4-dioxane. After this, the remaining 5 compounds with lower mass and less consistent Tier I impacts are presented in alphabetical order: benzene; carbon tetrachloride; chloroform; 1,1-dichloroethane (1,1-DCA); and 1,1,2-trichloroethane (1,1,2-TCA). Isopropanol, detected only in the first round slightly above the Tier I SL in only one port, is suspected of being a contaminant from the analytical laboratory and is not included in the Appendix D plume images. However, figures for isopropanol are presented in Attachment D-1 (on CD included with this document).

D-2.1 Eight Primary Compounds of Concern at MDA L

The eight primary compounds of concern were chosen using a two-tiered screening process developed in consultation with NMED in 2010/2011 and are reported in Appendix B of the MDA L corrective measures evaluation report (LANL 2011, 205756). The results of the screening process identified eight VOCs of potential concern. These eight VOCs are TCE; 1,2-DCA; 1,2-DCP; methylene chloride; PCE; 1,1,1-TCA; 1,1-DCE; and 1,4-dioxane (LANL 2010, 109955).

Figure D-2.0-1 shows the TCE plume at MDA L in map and cross-section views. Maximum concentrations of TCE are found in both the east and west source areas. The TCE plume spreads laterally beyond the MDA L fenceline at concentrations greater than 100 times the Tier I SL. At depth, the eastern source plume maintains concentrations 100 times the Tier I SL to the 275-ft port in borehole 54-27642. Beneath the west source region, the 100 times Tier 1 SL contour reaches midway from the surface to the basalt. Note that concentrations at all ports measured in the basalt (54-01015, 54-01016, 54-24399) are, with a single exception at 481 ft slant depth in borehole 54-02016, less than 1 time the Tier I SL. Low concentrations in the basalt are likely due to the atmospheric connection and high estimated diffusivity within this massive fracture unit that outcrops in White Rock canyon (Stauffer et al. 2019, 700871). Concentration contours showing values higher than the Tier I SL in the basalt are artifacts of the contouring algorithm filling space between measured points. Data from the 2 sampling rounds are quite similar with no significant differences. TCE is found in 26 of the 28 wells sampled at values above the Tier I SL, with no detections above the Tier I SL seen in the deep vertical basalt well 54-24399.

Figure D-2.0-2 shows the 1,2-DCA plume with characteristics similar to those seen in the TCE data. The extent of the 25× contour in map view is reduced, and concentrations at depth are not as pronounced. Concentrations in the port in 54-27642 at nearly 350 ft have decreased from greater than 100 times the Tier I SL to approximately 50 times the Tier I SL. Concentrations in the basalt are below the Tier I SL for all samples. Data from the 2 sampling rounds are quite similar with no significant differences. DCA[1,2-] is found in 22 of the 28 wells sampled at values above the Tier I SL.

Figure D-2.0-3 shows the 1,2-DCP plume, which exhibits behavior comparable with that of 1,2-DCA on the east side of the site. However, 1,2-DCP has a much smaller impact on the west side of the site (cross-section B-B′). Concentrations in the basalt are below the Tier I SL for all samples. Data from the 2 sampling rounds also show no significant differences. DCP[1,2-] is found in 20 of the 28 wells sampled at values above the Tier I SL.

Figure D-2.0-4 shows the methylene chloride plume. Again, concentrations on the east side are higher and reach greater depth, with no measured values in the basalt above the Tier I SL. Data from the 2 sampling rounds are comparable with no significant differences. Methylene chloride is found in 17 of the 28 wells sampled at values greater than the Tier I SL.

Figure D-2.0-5 shows the PCE plume, which varies significantly from the previously described plumes in that there seems to be a source of PCE near the middle of MDA L, not associated with either the east or west shaft cluster. PCE in this region was reduced during SVE in 2015 but has since rebounded. The vertical extent of the PCE plume is also reduced compared with the TCE plume, with the concentration 25 times the Tier I SL extending only to the top of the Qbt 1g unit. Concentrations in the basalt are less than the Tier I SL for all samples. Data from the 2 sampling rounds are comparable with no significant differences. PCE is found in 20 of the 28 wells sampled at values greater than the Tier I SL.

Figure D-2.0-6 shows the 1,1,1-TCA plume. This compound has the highest mass of any compound in the plume; however, because of a high Tier I value of 141,000 $\mu g/m^3$, the impact of 1,1,1-TCA is less than that of many of the previous 6 compounds. The plume is again stronger on the east side of MDA L, with concentrations 10 times the Tier I SL confined to a small area in the Qbt 1v-u unit. Concentrations in the basalt are less than the Tier I SL for all samples. Data from the 2 sampling rounds are comparable with no significant differences. TCA[1,1,1-] is found in 19 of the 28 wells sampled at values greater than the Tier I SL.

Figure D-2.0-7 shows the 1,1-DCE plume. Data from the 2021 sampling show that concentrations have decreased since 2020 with no concentrations of this compound more than 5 times the Tier I SL. Concentrations in the basalt are less than the Tier I SL for all samples. Data from the 2 sampling rounds are similar with no significant differences. DCE[1,1-) is found in 19 of the 28 wells sampled at values greater than the Tier I SL.

Figure D-2.0-8 shows the 1,4-dioxane plume data. Concentrations of this compound exceeded the Tier I SL in only six wells and thus have a scattered appearance. Although not widely detected, this compound has the highest Tier I SL exceedance, more than 16,000 times, because of a low 0.9-$\mu g/m^3$ Tier I SL and as a result is included in the compounds of concern. The May 2021 data show 1,4-dioxane concentrations greater than Tier I SLs in the two deepest sample ports in the basalt in borehole 54-24399. The measured values are greater than the method detection limit; however, they are much less than the analytical laboratory's report detection limit.

May 2021 data from the seven other ports in the basalt in boreholes 54-01015 and 54-01016 show no 1,4-dioxane detections. Data from the second round of sampling for 2021 (February 2022) show no detections of 1,4-dioxane in borehole 54-24399. This compound should be watched carefully to see if detections continue to occur, and a focused validation of the raw data will be performed to determine if the measured detections are valid. The vertical axis on Figure D-2.0-8 does not extend far enough to show the deep sample from borehole 54-24399. Data from the two sampling rounds are similar with no significant differences in the Bandelier Tuff.

D-2.2 Five Minor Compounds at MDA L

This section presents data for the remaining five compounds that are minor contributors to the MDA L plume. These compounds exist at greatly reduced concentrations and multiples of the Tier I screening.

Figure D-2.0-9 shows the benzene plume at MDA L. Maximum concentrations are less than 2 times the Tier I SL. Concentrations in the basalt are below the Tier I SL for all samples. Data from the 2 sampling rounds are quite similar with no significant differences. Benzene is found in only 2 of the 28 wells sampled at values above the Tier I SL, all on the east side of MDA L.

Figure D-2.0-10 shows the carbon tetrachloride plume. Carbon tetrachloride was detected slightly above the Tier I SL in one well on the east side of MDA L and one well on the west side of MDA L. Concentrations in the basalt are less than the Tier I SL for all samples. Data from the two sampling rounds are similar with no significant differences.

Figure D-2.0-11 shows the chloroform plume, with sources on both the east and west sides of MDA L. The plume reaches a maximum of a little more than 2 times the Tier I SL in the Qbt 1v-u unit and in 1 sample in the Cerro Toledo interval. Concentrations in the basalt are less than the Tier I SL for all samples. Data from the 2 sampling rounds are similar with no significant differences. Chloroform is found in 6 of the 28 wells sampled at values greater than the Tier I SL.

Figure D-2.0-12 shows the 1,1-DCA plume. Data from 2021 sampling show concentrations of this compound slightly less than 10 times the Tier I SL in a limited region on the east side of MDA L and concentrations slightly less than 5 times the Tier I SL in a very limited region on the west side of MDA L, primarily in the Qbt 1v-u unit. Concentrations in the basalt are less than the Tier I SL for all samples. Data from the 2 sampling rounds are comparable with no significant differences. DCA[1,1-] is found in 12 of the 28 wells sampled at values greater than the Tier I SL.

Figure D-2.0-13 shows the 1,1,2-TCA plume. Here the east and west source regions are distinct, with no detections above the Tier I SL on the west side of MDA L, and concentrations less than 50 times the Tier I SL limited in depth to the Qbt 1v-u unit. Concentrations in the basalt are less than the Tier I SL for all samples. Data from the 2 sampling rounds are comparable with no significant differences. TCA[1,1,2-] is found in 6 of the 28 wells sampled at values greater than the Tier I SL.

D-3.0 TCE PLUME COMPARISON, 2014 VERSUS 2021

Figure D-3.0-1 shows a comparison of the maximum 2021 MDA L TCE data and interpolated plume with the FY 2014 Quarter 4 pre-SVE baseline. Data from 2021 show the SVE IM has led to overall reductions in concentration in the plume persisting more than 6 yr (Figure D-3.0-1). The SVE has clearly had a long-term impact on reducing the peak concentrations of TCE in the central portions of the plume on both the east and west sides of MDA L. Pre-SVE contours of 100 times the Tier I SL have been reduced in many places to less than 50 times the Tier I SL, and the depth of the 100 times Tier I contour has been reduced from nearly 300 ft bgs in 2014 to approximately 60 ft bgs in 2021. The lateral extent of the overall plume has changed only slightly, although the lateral extent of the 100 times Tier I SL contours have reduced significantly.

Maximum TCE concentrations between the two source areas are lower and have not rebounded to the red (100 times Tier I) levels seen in 2014. The 100 times Tier I red regions have also been reduced vertically as shown on the A-A′ vertical cross-sections. The lateral extent of the plume edge shows some reductions as well, as seen in the top, map-view panels of Figure D-3.0-1. In these map-view panels, the width of the plume along the B-B′ and C-C′ lines is reduced, with concentrations at the edge of the plume lower in 2021 than they were in 2014. The same lateral reduction in plume extent can be seen in the lower vertical panels, where drops in concentration from 2014 to 2021 are apparent in borehole 54-02026 on the A-A′ cross-section, in borehole 54-02031 in the B-B′ cross-section, and in borehole 54-02023 on the left side of the C-C′ cross-section.

D-4.0 CONCENTRATION VERSUS DEPTH AND TIME FOR SELECTED BOREHOLES

Because many of the primary compounds of concern follow similar patterns, this section presents concentration versus depth and time for only selected compounds. The eastside sentry wells are discussed first (D-4.1), followed by the westside sentry wells (D-4.2). Data from the center of MDA L, where PCE concentrations are high, are discussed in section D-4.3. Section D-4.4 presents data from the deepest borehole completed in the Cerros del Rio basalt, and section D-4.5 addresses the behavior of wells located on the periphery of the plume. Beyond the figures presented in this section, Attachment D-1 (on CD included with this document) presents 171 figures representing all boreholes with Tier I SL exceedances for any of the 14 compounds exceeding Tier I SLs. The Tier I SL value is shown as a vertical red line on all of these X-Y plots.

D-4.1 Eastside Sentry Borehole Data

The sentry boreholes on the east side of the site sample the VOC plume within the Bandelier Tuff, with depths to 338 ft bgs. TCE data from boreholes 54-02089 (Figure D-4.1-1) and 54-24238 (Figure D-4.1-2) both previously showed strong evidence of possible increased leakage from subsurface sources, starting during the period of SVE operation and continuing until the present, with the highest measured concentrations in many ports for borehole 54-02089 seen in the 2021 data (farthest right rust-colored circles on Figure D-4.1-1). Borehole 54-24238 has values at or above pre-SVE concentrations at most ports (Figure D-4.1-2, gold circles and leftmost rust-colored circles).

Increased leakage is relative to pre-SVE leakage from subsurface sources of VOCs that were supporting plume concentrations seen in September 2014. DCP[1,2-]; PCE; and chloroform also showed evidence of leakage by concentration increases above pre-SVE values in both 54-02089 and 54-24238, although concentrations were generally decreasing in 2021 (figures in Attachment D-1 [on CD included with this document]).

Methylene chloride in borehole 54-24238 also showed large increases from pre-SVE values, rising to over 1,000,000 μg/m^3 in August 2016 before dropping back to values near pre-SVE conditions in the latest sampling rounds (Figure D-4.1-3). Similar behavior is seen for 1,2-DCA in both 54-02089 and 54-24238 (figures in Attachment D-1 [on CD in included with this document]).

The remaining eastside sentry boreholes, 54-24241 (Figure D-4.1-4) and 54-27642 (Figure D-4.1-5), both show TCE concentrations above 200 ft depth rebounding approximately halfway towards levels seen in September 2014, although many ports remain well below pre-SVE concentrations. In borehole 54-24241 TCE at all depths to nearly 200 ft appears to be increasing to values seen pre-SVE.

Concentrations of TCE near the base of the Otowi Member of the Bandelier Tuff (just above the basalt) on the east side show noticeable decreases from 2014 through 2021. In borehole 54-27642, the two most recent rounds show the lowest concentrations of TCE at 330 ft depth since the start of SVE in 2015, suggesting long-term impacts of SVE. At 330 ft in borehole 54-27642, 2021 data are the lowest two points since the start of SVE in 2015 for many compounds including TCE; 1,2-DCA; 1,2-DCP; 1,1-DCE; and 1,1,1-TCA.

Other compounds in the eastside sentry wells follow similar patterns, which can be seen in the figures of Attachment D-1 (on CD included with this document).

D-4.2 Westside Sentry Borehole Data

TCE data from the westside sentry boreholes (54-24240 and 54-27641) are shown in Figures D-4.2-1 and D-4.2-2. Borehole 54-24240 shows the strongest rebound at 28 ft bgs but remaining at less than pre-SVE values. Borehole 54-27641 shows limited rebound with a maximum rebound at 32 ft bgs in February 2022 nearing the pre-SVE value. Concentrations of total VOCs near the base of the Otowi Member of the Bandelier Tuff (just above the basalt) on the west side of MDA L show little change from 2014 through 2021. Values at the base of the Bandelier Tuff in borehole 54-27641 on the west side are significantly less than those seen on the east side in borehole 54-27642.

D-4.3 Center of MDA L

Two boreholes in the center of MDA L, 54-24239 and 54-24242 (Figures D-4.3-1 and D-4.3-2), show higher concentrations of PCE than surrounding boreholes. Both of these boreholes show rebound to near pre-SVE levels, with 54-24239 showing rebound at all depths while 54-24242 is more limited near the surface. Other compounds in these boreholes generally show rebound but not to pre-SVE levels. One exception is 1,2-DCA, where values at shallow depths in 54-24239 rose higher than pre-SVE values during SVE; however, these values have since dropped below the 2014 pre-SVE values (see figures in Attachment D-1 [on CD included with this document]).

D-4.4 Deep Basalt Sentry Borehole 54-24399 Data

Borehole 54-24399 is completed deep in the Cerros del Rio basalt, with an open interval extending beneath casing that ends at a depth of 566.7 ft bgs (Figure D-4.4-1). The open interval extends from 566.7 to 660 ft bgs; however, attempts to video log deeper sections of the open interval were halted after unstable conditions were encountered. Borehole video logs show alternating consolidated sections and sections containing cavernous voids. Figure D-4.4-1 shows that the shoe and bottom of the casing are completed in consolidated basalt, reducing the likelihood there is a flowing connection on the outside of the casing, a short-circuit connection that has previously been hypothesized.

In August 2017 a packer was permanently installed in the casing just above the open borehole. The packer is designed with two sampling ports, one that collects gas from directly beneath the packer, and another that collects gas from 20 ft below the packer in a section of the basalt that contains cavernous voids. The new permanent packer has several benefits, including (1) a simpler sampling process needing no drill rig, (2) a substantial reduction in borehole breathing because of new construction of the wellhead, and (3) the ability to maintain longer periods of packer inflation to ensure isolation of the deep basalt.

Figures D-4.4-2 through D-4.4-8 plot individual concentrations for seven analytes from borehole 54-24399. Data in these plots are for 1,1,1-TCA; methylene chloride; TCE; 1,1- DCE; PCE; 1,2-DCP; and 1,2-DCA and span April 2005 to February 2022. These plots also contain data from two nearby boreholes (54-01015 and 54-01016 [Figure D-1.0-1]) that have vapor sampling ports completed in the basalt. The nearby borehole data from February 2019 and May 2021 are presented to confirm that concentrations seen in borehole 54-24399 are representative of values throughout the deep basalt. Each figure also shows a vertical black line representing the timing of the installation of the permanent packer and a horizontal line at the Tier I SL for each of the VOCs.

The figures show that concentrations of all compounds of concern measured in the second round are less than Tier 1 SLs except for three cases. First, a single port in borehole 54-01016 measured TCE at 1.7 times the Tier I SL. This port is at a slant depth of 481 ft, and the port above this at a slant depth of 390 ft has a TCE concentration 0.2 times Tier I. Second, the May 2021 data show 1,4-dioxane concentrations above the Tier I SL in the two deepest sample ports in the basalt in borehole 54-24399. The measured values are more than the method detection limit (based on theoretical measurements); however, they are well below the analytical laboratory's report detection limit (based on measurement data from the analytical laboratory). May 2021 data from the seven other ports in the basalt in boreholes 54-01015 and 54-01016 show no 1,4-dioxane detections. Data from the second round of sampling for 2021 (February 2022) show no detections of 1,4-dioxane in borehole 54-24399. Dioxane[1,4-] should be watched carefully to see if detections continue to occur, and a focused validation of the raw data will be performed to determine if the measured detections are valid.

Figure D-4.4-8 also includes the laboratory detection limit for 1,2-DCA (15 ppbv) and shows that recently measured values are close to the laboratory detection limit.

Data from the first sampling round also show concentrations of each of the seven analytes measured in borehole 54-24399 are consistent with measurements in boreholes 54-01015 and 54-01016. Further, the measurements in the two sampling rounds appear to be stabilizing and now represent the true state of VOC concentrations in the deep basalt. Recommendations from these observations are to continue monitoring boreholes 54-24399, 54-01015, and 54-01016 to ensure that long-term data from these boreholes are representative of concentrations in the deep basalt and to provide early warning if higher concentrations from the base of the Bandelier Tuff begin to increase concentrations in the basalt.

Data from the two sampling rounds are comparable and may be indicating that the packer in borehole 54-24399 is finally providing stable deep measurements that are no longer being impacted by deep breathing from the surface to depth in the open borehole casing that occurred from the installation of 54-24399 until placement of the deep packer in August 2017. The deep breathing caused measurable increases in benzene, toluene, ethylbenzene, and xylene (BTEX) compounds relative to other parts of the VOC plume. BTEX compounds are components of exhaust from vehicles, such as from the vehicles that often idled near the top of borehole 54-24399 (N3B 2018, 700039). Concentrations of BTEX compounds in samples from borehole 54-24399 have decreased since installation of the permanent packer.

Propanol[2-] had previously been detected above the Tier I SL in borehole 54-24399. This compound was detected in December 2016 at 19 $\mu g/m^3$ and twice in January 2020 with concentrations of 20 and 340 $\mu g/m^3$. The Tier I SL for 2-propanol is 136 $\mu g/m^3$; thus the 340-$\mu g/m^3$ measurement is 2.5 times the Tier I SL. Propanol[2-] was not detected in samples collected from borehole 54-24399 during the 2021 sampling.

D-4.5 Periphery Borehole Data

This section presents data for a few of the periphery boreholes that show how concentrations at the lateral edge of the plume are evolving. Figure D-4.5-1 shows TCE concentrations through time for borehole 54-02020 on the far east side of MDA L. TCE was rebounding in this borehole and had not recovered to pre-SVE levels seen in September 2014. Concentrations in the 2021 samples are the lowest seen in borehole 54-02020 since the start of the IM SVE in 2015. On the west side, borehole 54-02022 shows significant TCE removal with rebound to less than half the pre-SVE values in many ports (Figure D-4.5-2). TCE in borehole 54-02031, on the southwest side of the site (Figure D-4.5-3), also shows significant reductions in concentration after the SVE, with limited rebound.

D-5.0 TOTAL VOCS APPROACHING SVE TRIGGER

This section presents data for the two ports that have risen the closest to the proposed SVE reactivation trigger of 2000 ppmv. These ports are at depths of 46 ft bgs in borehole 54-02089 and 44 ft bgs in borehole 54-24238. In Figures D-5.0-1 and D-5.0-2, the maximum total VOC trigger of 2000-ppmv total VOC concentration is located at the top of each figure. Each figure represents a single depth and shows the evolution of seven analytes of interest plus an “other” category, such that the height of each bar is the sum of all moles of VOCs, or the total VOCs.

In both cases, total VOC concentration reached nearly 1750 ppmv in February 2019, with the bulk of the mole fraction in each port coming from 1,1,1-TCA. By November 2020 total VOCs at these ports had dropped back significantly, to on the order of 250 ppmv. During the first and second rounds of monitoring in 2021, the concentrations at these ports had increased slightly, ranging from 366 ppm to 446 ppm. These ports should continue to be watched closely moving forward for any new evidence of continued leakage.

D-6.0 REFERENCES AND MAP DATA SOURCES

D-6.1 References

The following reference list includes documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID.ERIDs were assigned by Los Alamos National Laboratory’s (the Laboratory’s) Associate Directorate for Environmental Management (IDs through 599999); ESHIDs were assigned by the Laboratory’s Associate Directorate for Environment, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by N3B (IDs 700000 and above).

Behar, H.R., E.E. Snyder, S. Marczak, L.J. Salazar, B. Rappe, G.F. Fordham, S.P. Chu, D.M. Strobridge, K.H. Birdsell, T.A. Miller, K.C. Rich, and P.H. Stauffer, February 2019. “An Investigation of Plume Response to Soil Vapor Extraction and Hypothetical Drum Failure,” *Vadose Zone Journal,* Vol. 18, No. 1. (Behar et al. 2019, 700854)

LANL (Los Alamos National Laboratory), July 2010. “Periodic Monitoring Report for Vapor-Sampling Activities at Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54, Second Quarter Fiscal Year 2010,” Los Alamos National Laboratory document LA-UR-10-3957, Los Alamos, New Mexico. (LANL 2010, 109955)

LANL (Los Alamos National Laboratory), September 2011. “Corrective Measures Evaluation Report for Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54, Revision 2,” Los Alamos National Laboratory document LA-UR-11-4798, Los Alamos, New Mexico. (LANL 2011, 205756)

N3B (Newport News Nuclear BWXT-Los Alamos, LLC), August 2018. “Interim Measures Final Report for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54,” Newport News Nuclear BWXT-Los Alamos, LLC, document EM2018-0008, Los Alamos, New Mexico. (N3B 2018, 700039)

Stauffer, P.H., T. Rahn, J.P. Ortiz, L.J. Salazar, H. Boukhalfa, H.R. Behar, and E.E. Snyder, March 2, 2019. “Evidence for High Rates of Gas Transport in the Deep Subsurface,” *Geophysical Research Letters,* Vol. 46, No. 7. (Stauffer et al. 2019, 700871)

D-6.2 Map Data Sources

Map data sources used in original figures created for this report are described below and identified by legend title.

Legend Item	Data Source
Disposal pit/ impoundment	Waste Storage Features; LANL, Environment and Remediation Support Services Division, GIS/Geotechnical Services Group, EP2007-0032; 1:2,500 Scale Data; 13 April 2007.
Disposal shaft	Waste Storage Features; LANL, Environment and Remediation Support Services Division, GIS/Geotechnical Services Group, EP2007-0032; 1:2,500 Scale Data; 13 April 2007.
Elevation contour	Hypsography, 10, 20, & 100 Foot Contour Intervals; LANL, ENV Environmental Remediation and Surveillance Program; 1991.
Fence	Security and Industrial Fences and Gates; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 10 September 2007.
LANL boundary	LANL Areas Used and Occupied; LANL, Site Planning & Project Initiation Group, Infrastructure Planning Division; 19 September 2008.
Material disposal area	Materials Disposal Areas; LANL, ENV Environmental Remediation and Surveillance Program; ER2004-0221; 1:2,500 Scale Data; 23 April 2004.
Paved road	Los Alamos National Laboratory, FWO Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.
Structure	Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.
TA boundary	As published; Triad SDE Spatial Geodatabase: GISPUBPRD1\PUB.Boundaries\PUB.Tecareas; February 2020.
Major Road	As published; Q:\16-Projects\16-0033\project_data.gdb\line\major_road; February 2020.
Unpaved road	Dirt Road Arcs; LANL, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 10 September 2007.
Drainage	As published; Q:\16-Projects\16-0033\project_data.gdb\line\drainage_features; February 2020.
Vapor monitoring well	Point Feature Locations of the Environmental Restoration Project Database; LANL, Environment and Remediation Support Services Division, EP2007-0754; 30 November 2007.

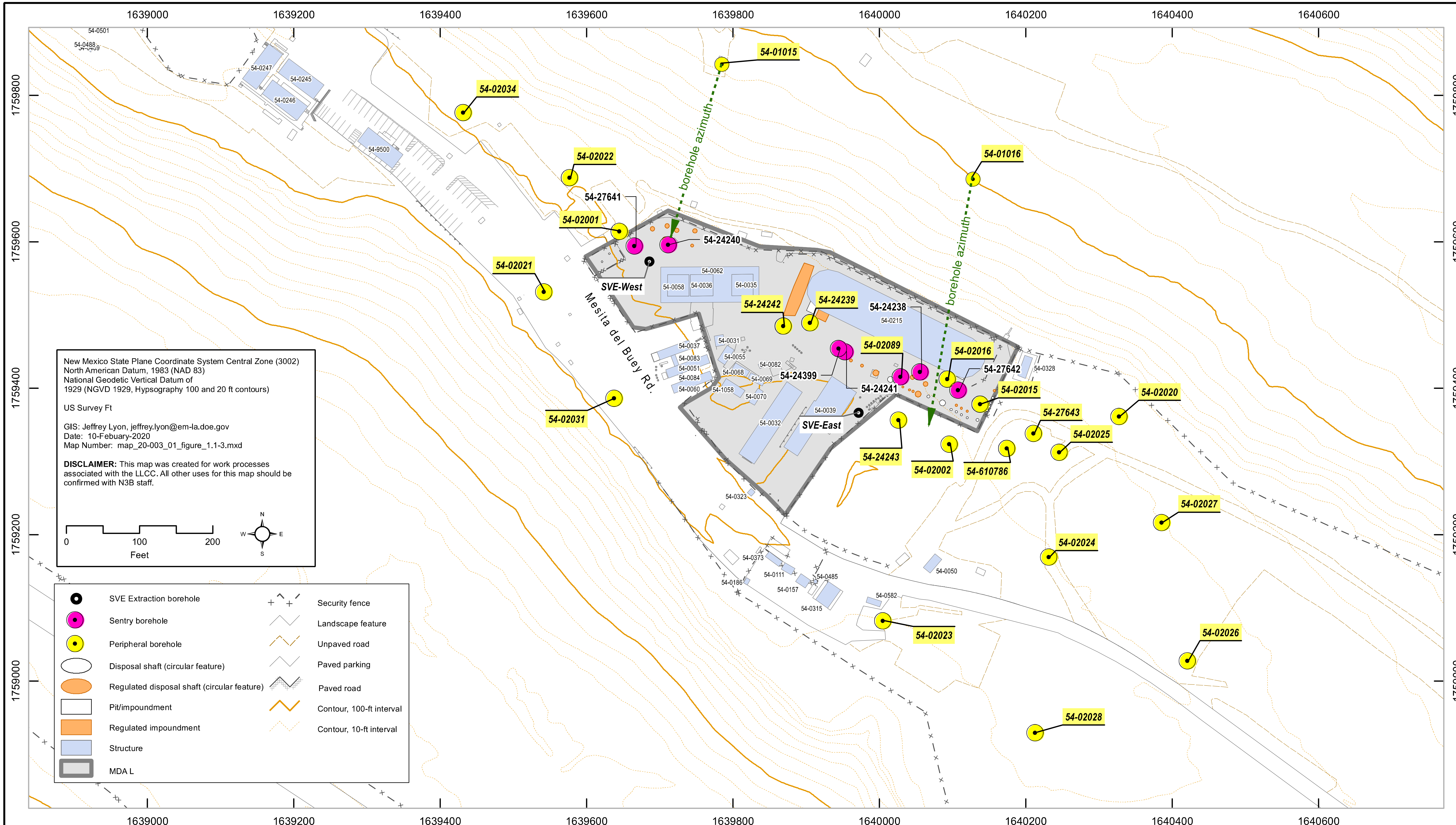

Figure D-1.0-1 MDA L site map showing borehole locations

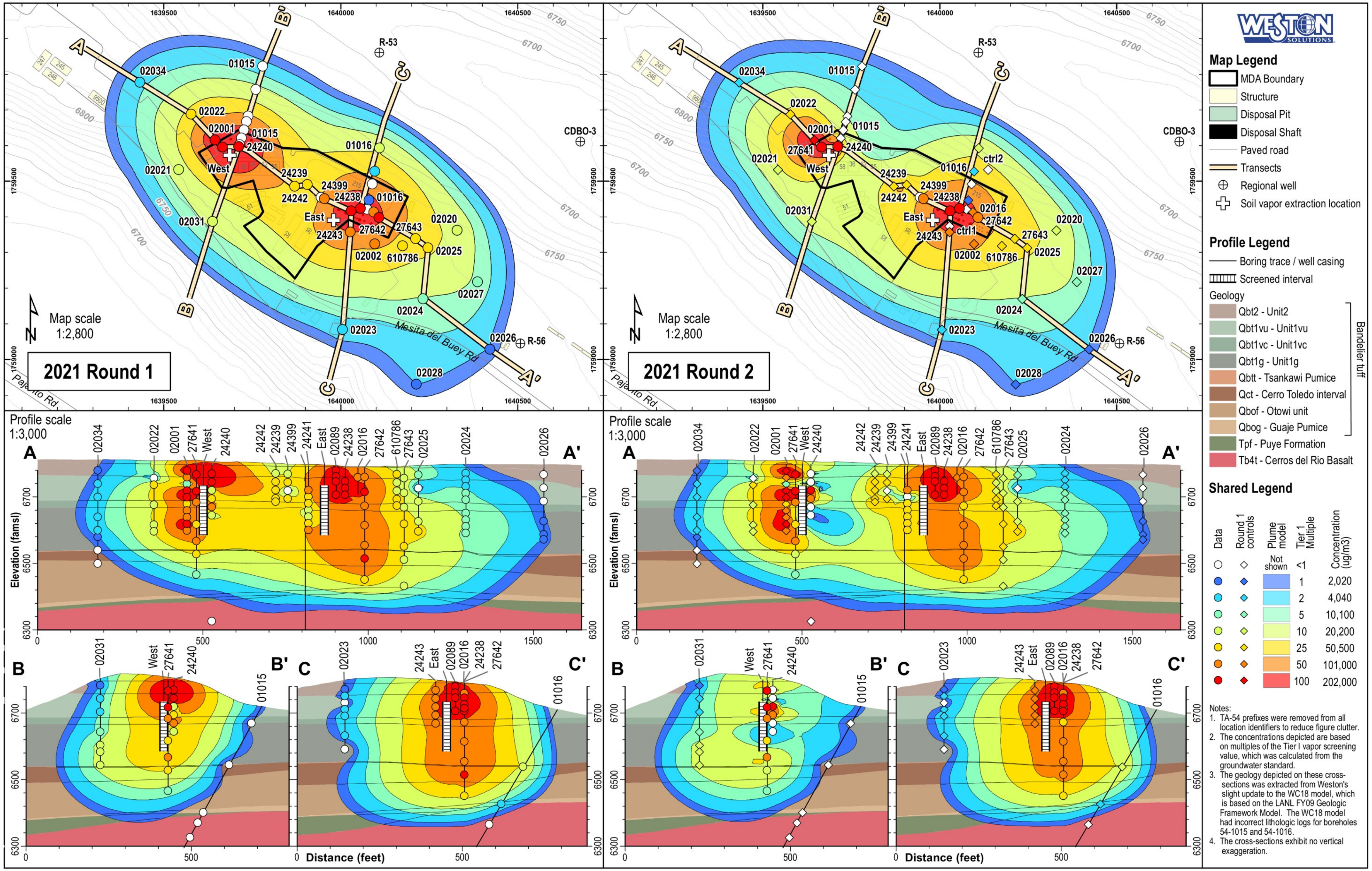

Figure D-2.0-1 Comparison of the 2021 MDA L TCE data and interpolated plumes

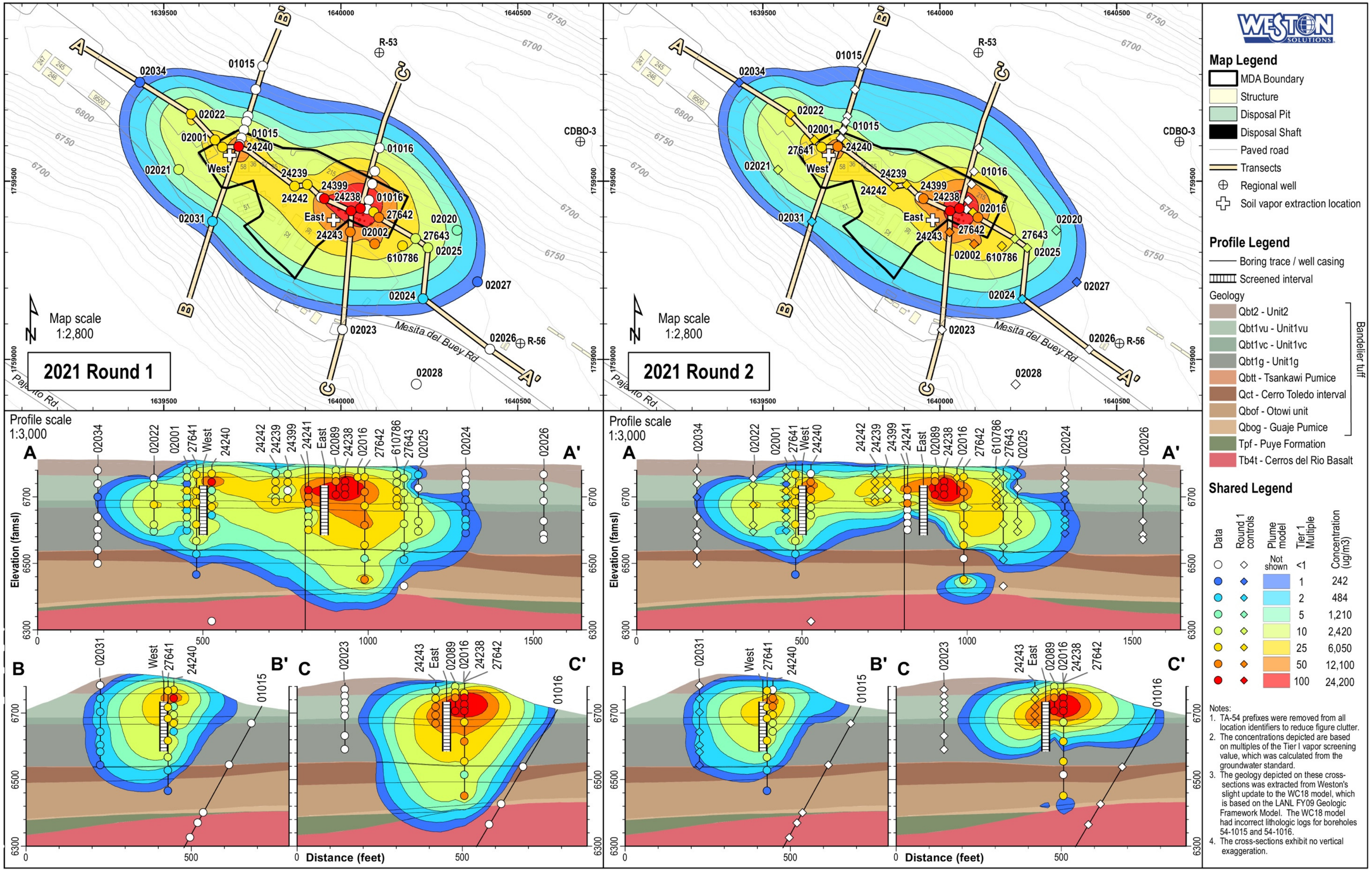

Figure D-2.0-2 Comparison of the 2021 1,2-DCA data and interpolated plumes

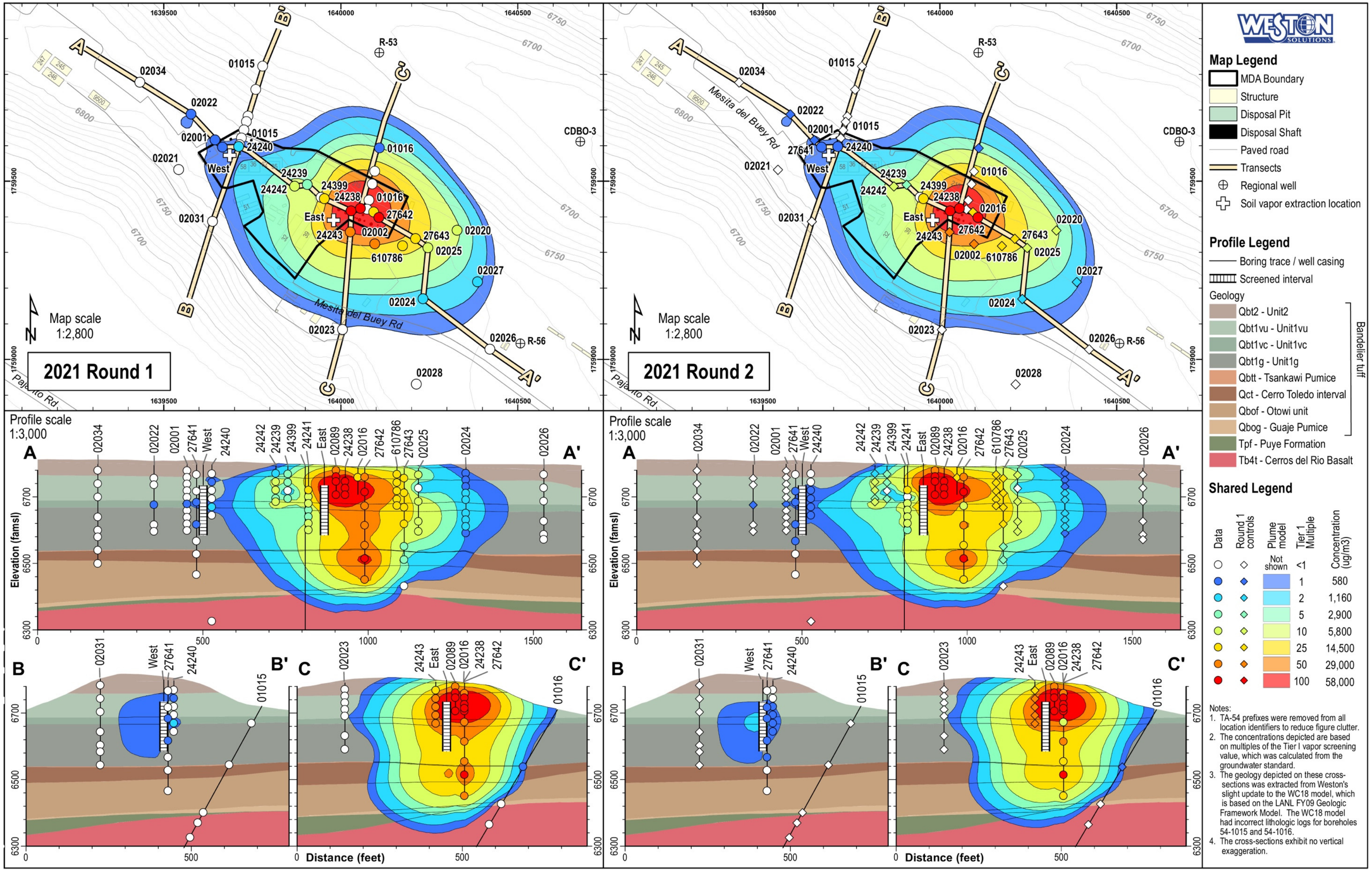

Figure D-2.0-3 Comparison of the 2021 1,2-DCP data and interpolated plumes

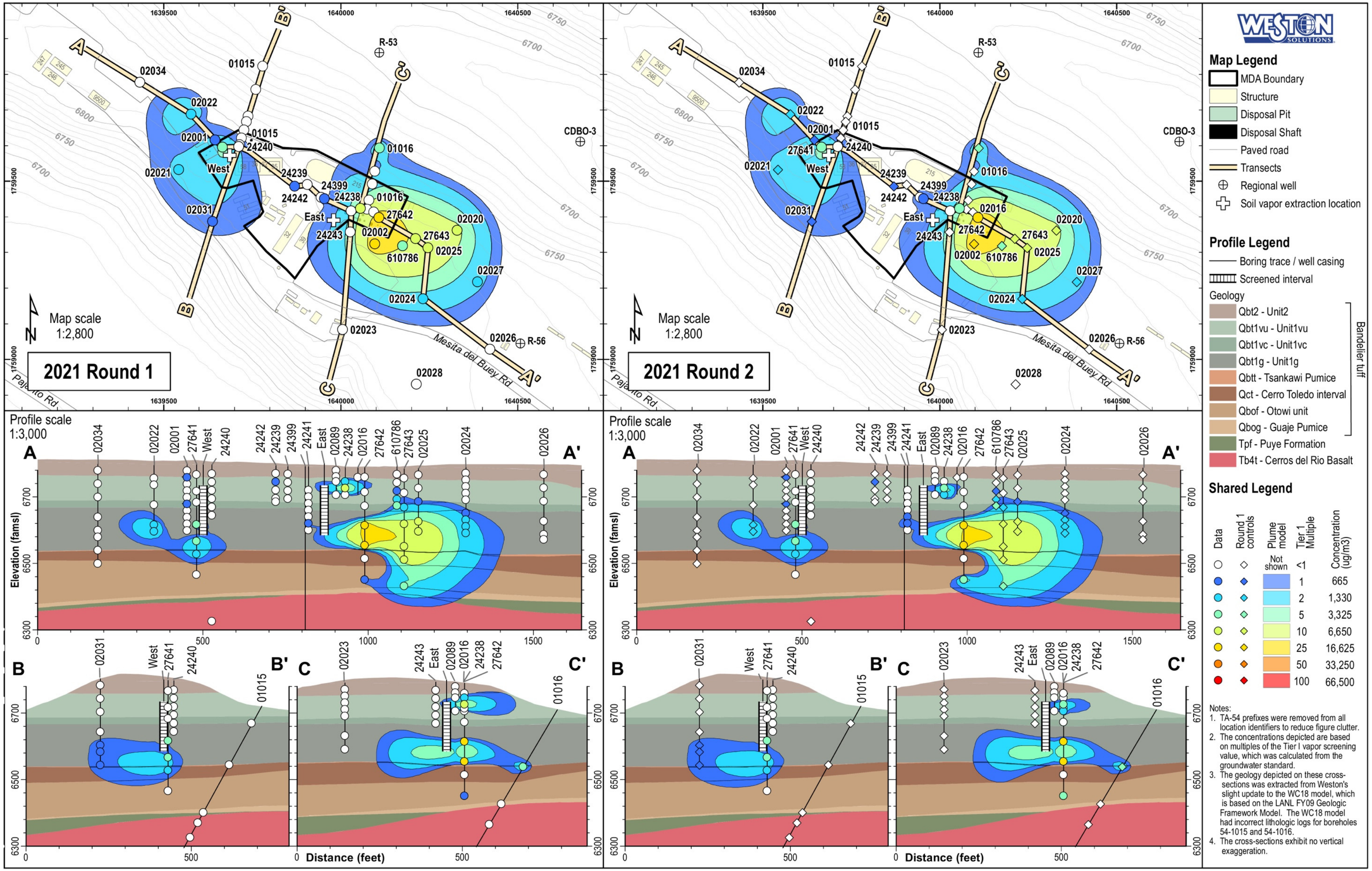

Figure D-2.0-4 Comparison of the 2021 methylene chloride data and interpolated plumes

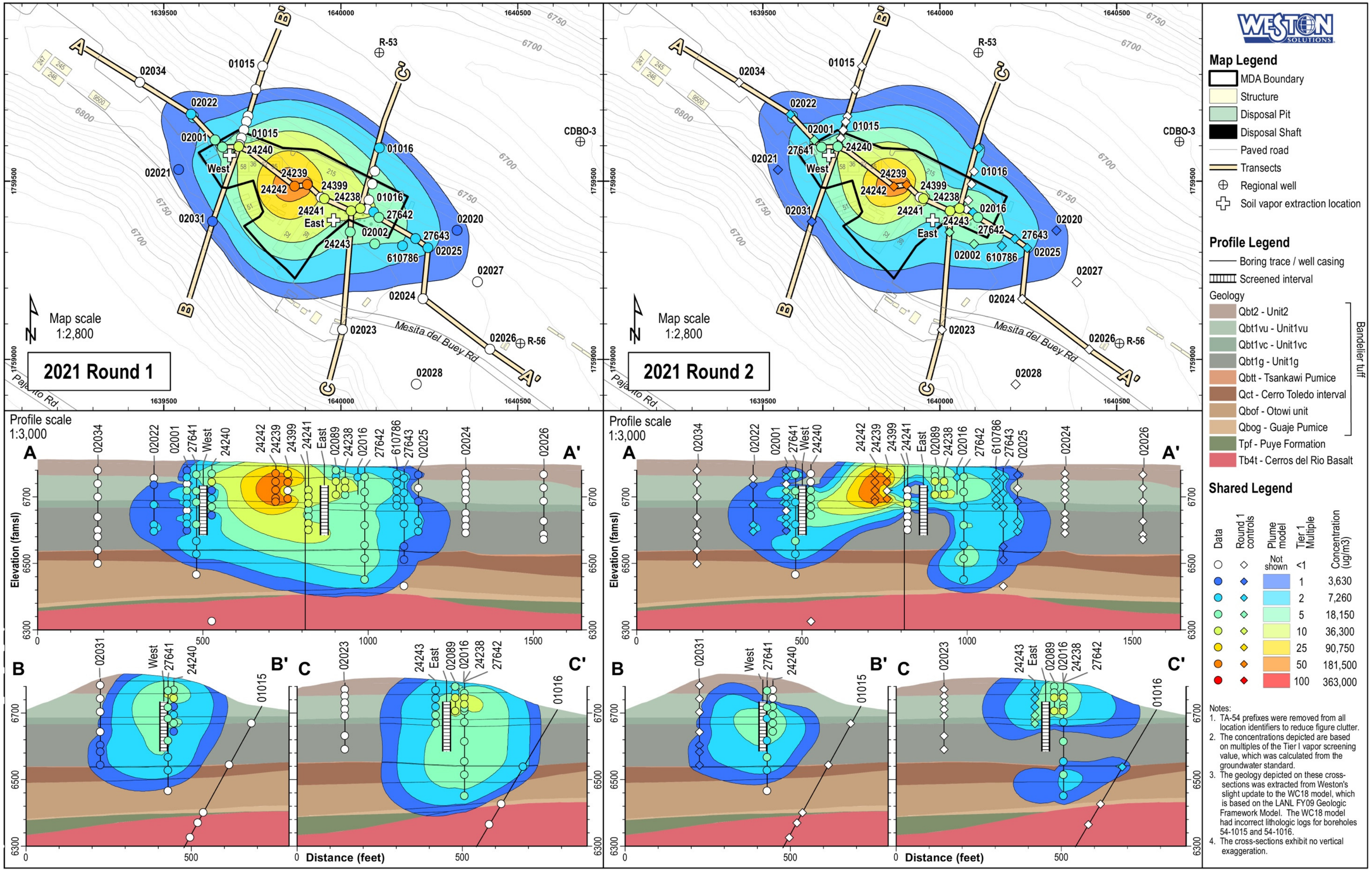

Figure D-2.0-5 Comparison of the 2021 PCE data and interpolated plumes

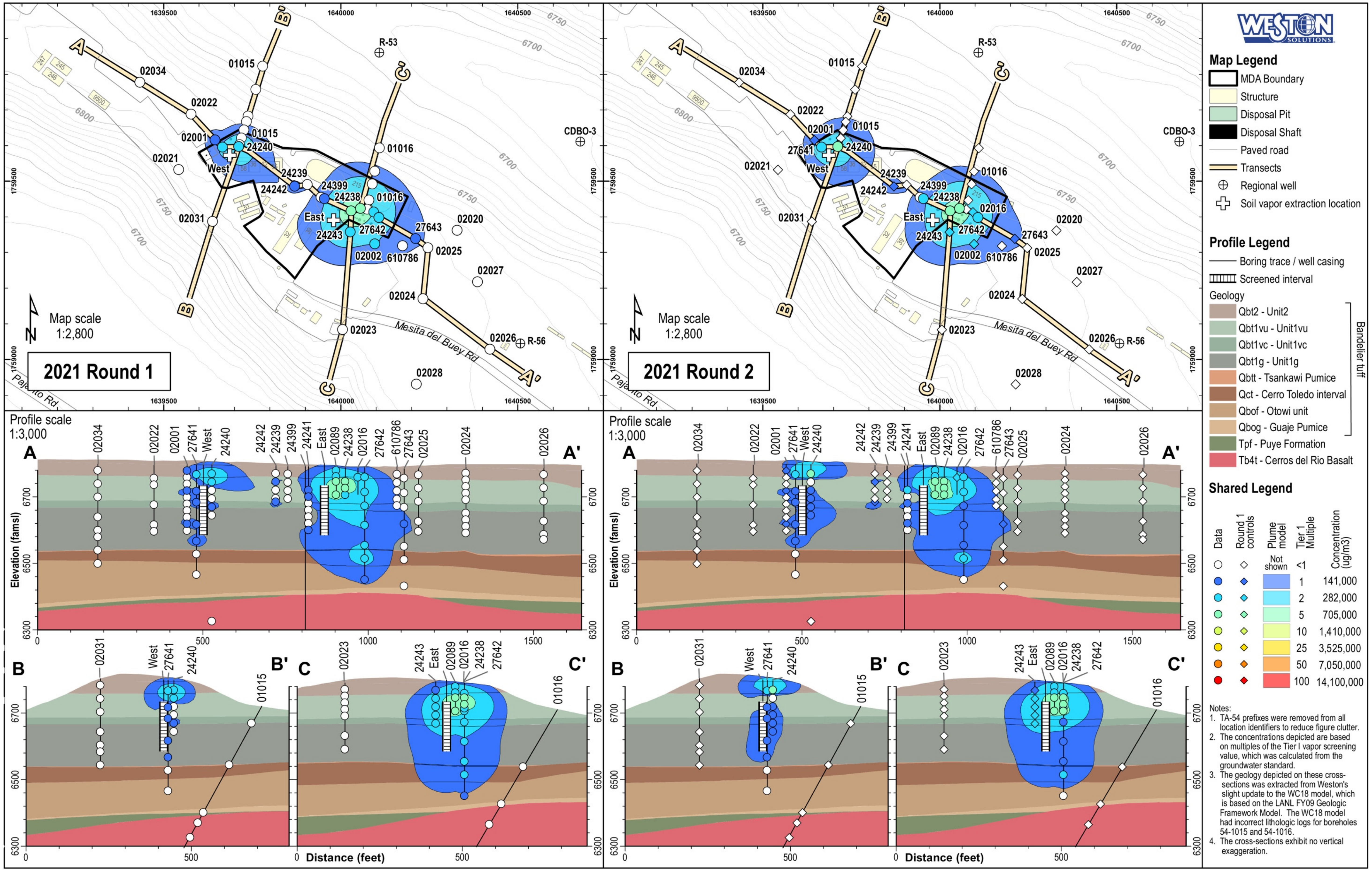

Figure D-2.0-6 Comparison of the 2021 1,1,1-TCA data and interpolated plumes

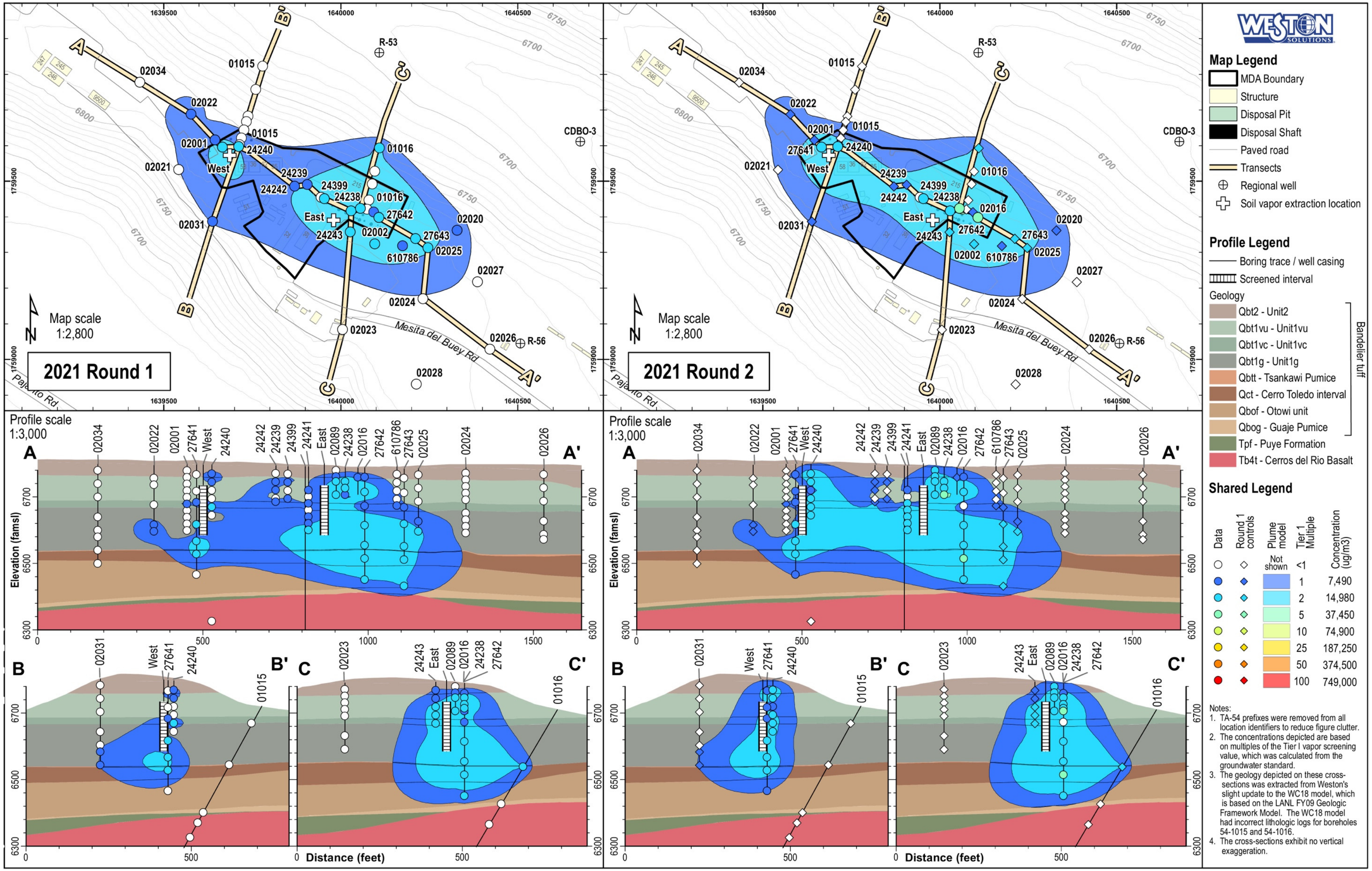

Figure D-2.0-7 Comparison of the 2021 1,1-DCE data and interpolated plumes

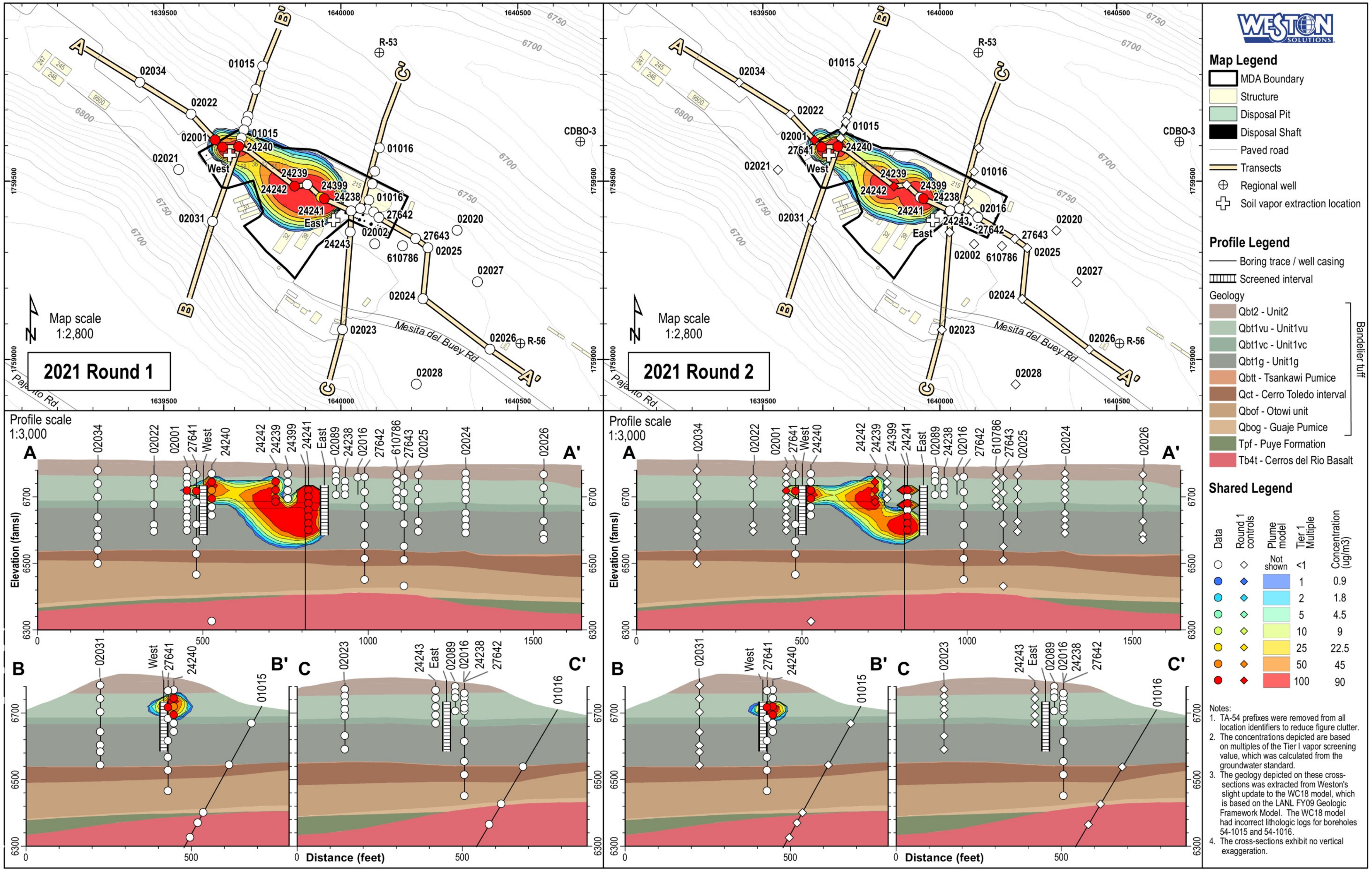

Figure D-2.0-8 Comparison of the 2021 1,4-dioxane data and interpolated plumes

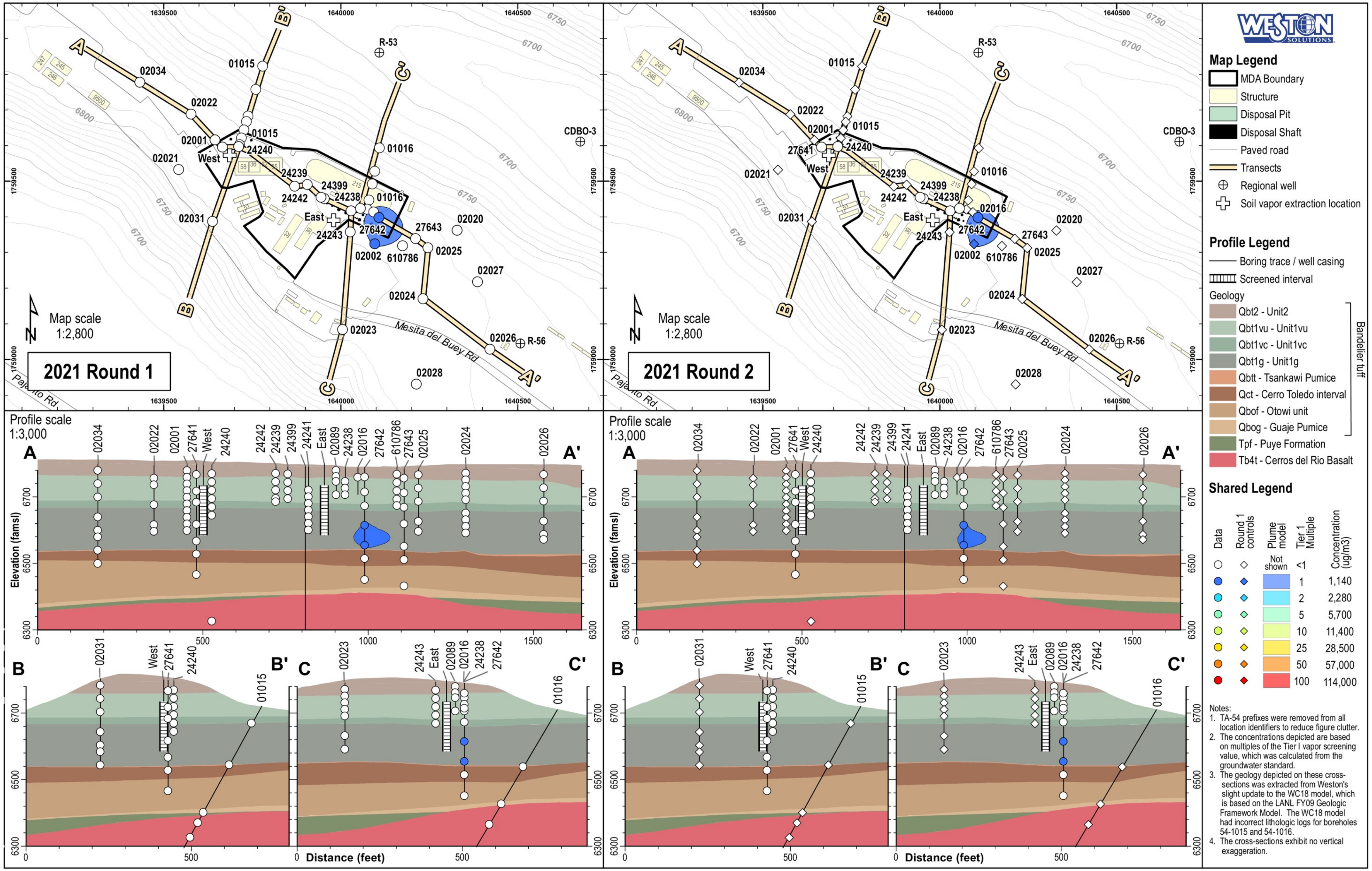

Figure D-2.0-9 Comparison of the 2021 benzene data and interpolated plumes

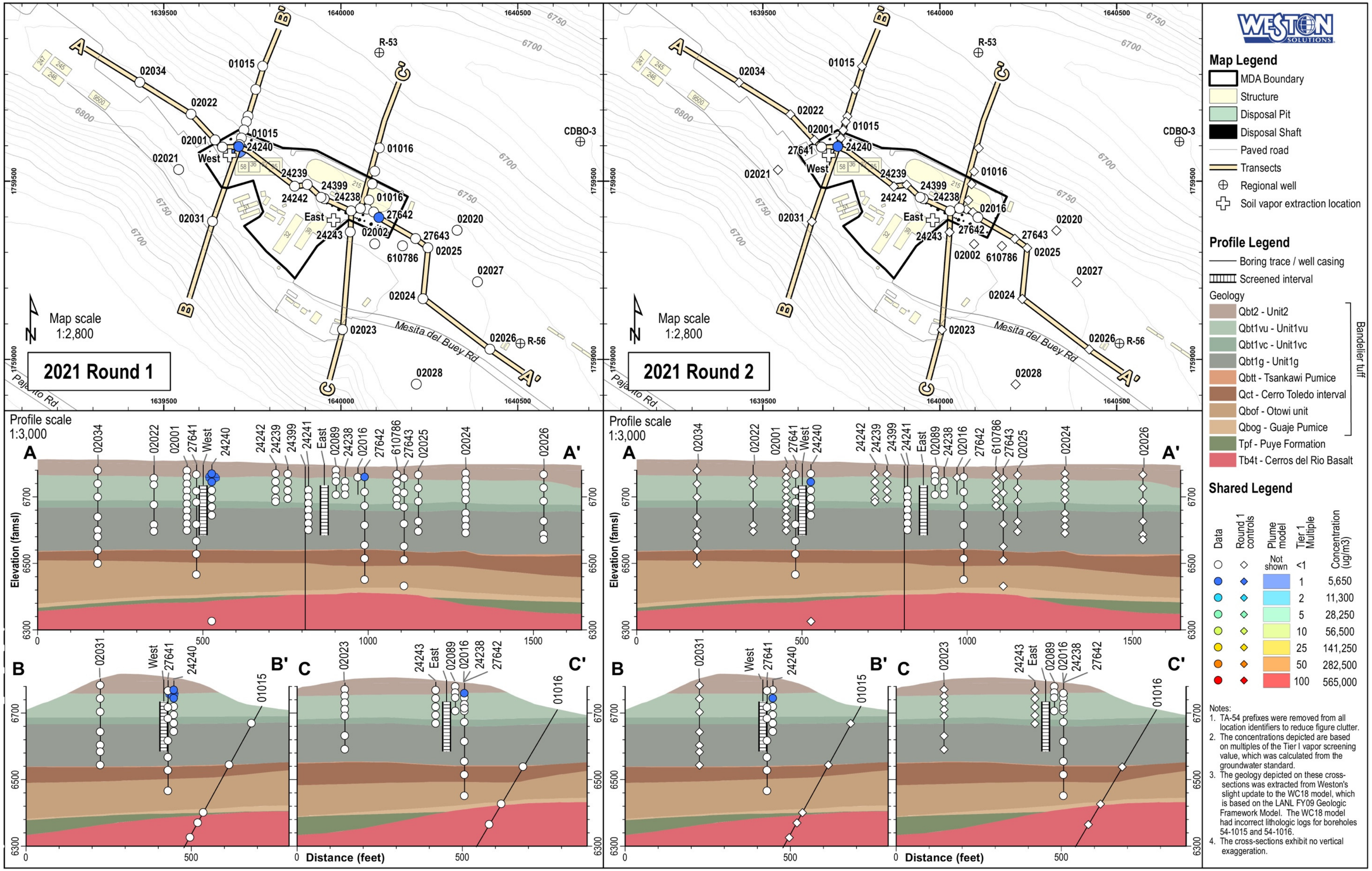

Figure D-2.0-10 Comparison of the 2021 carbon tetrachloride data and interpolated plumes

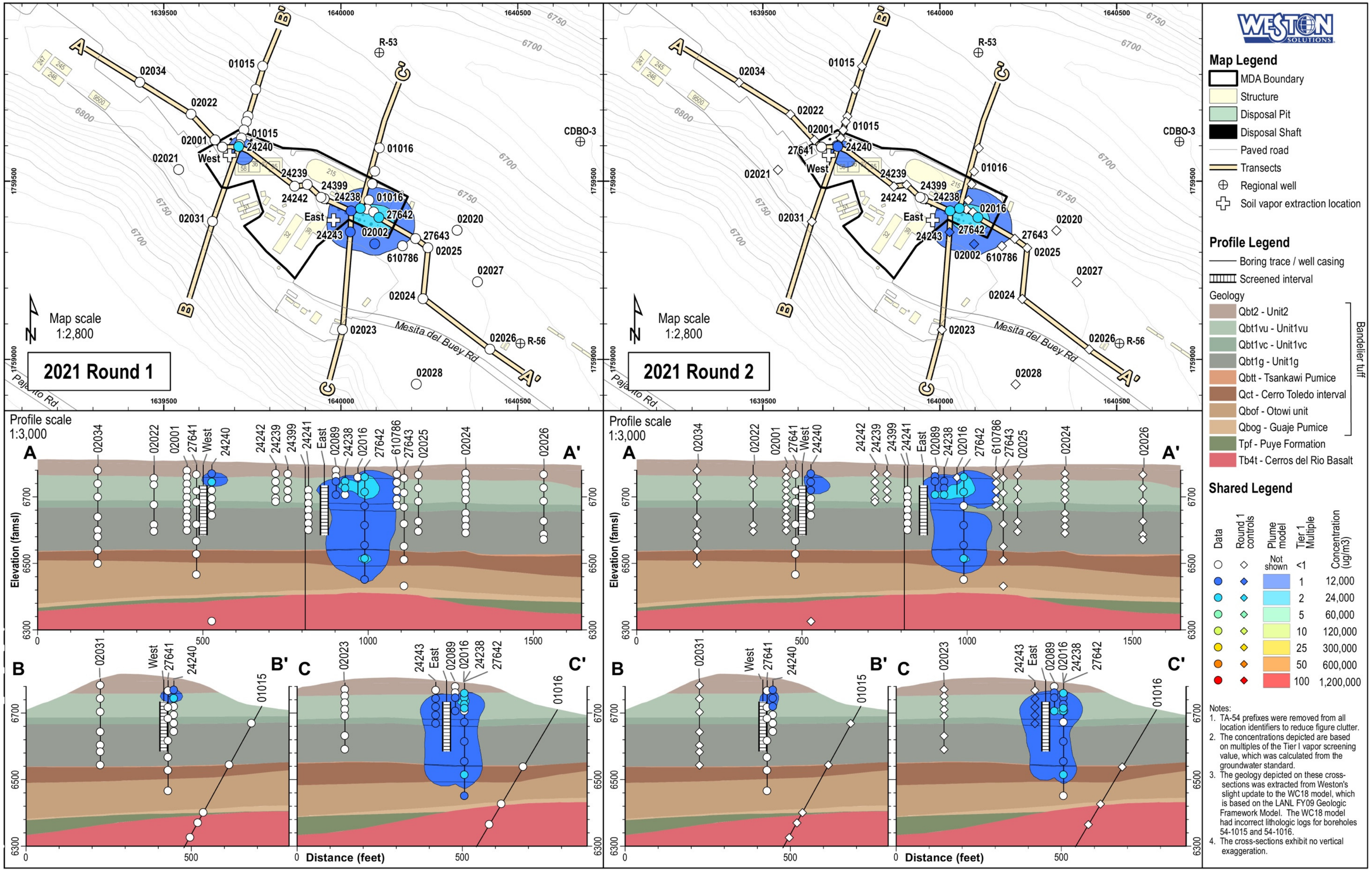

Figure D-2.0-11 Comparison of the 2021 chloroform data and interpolated plumes

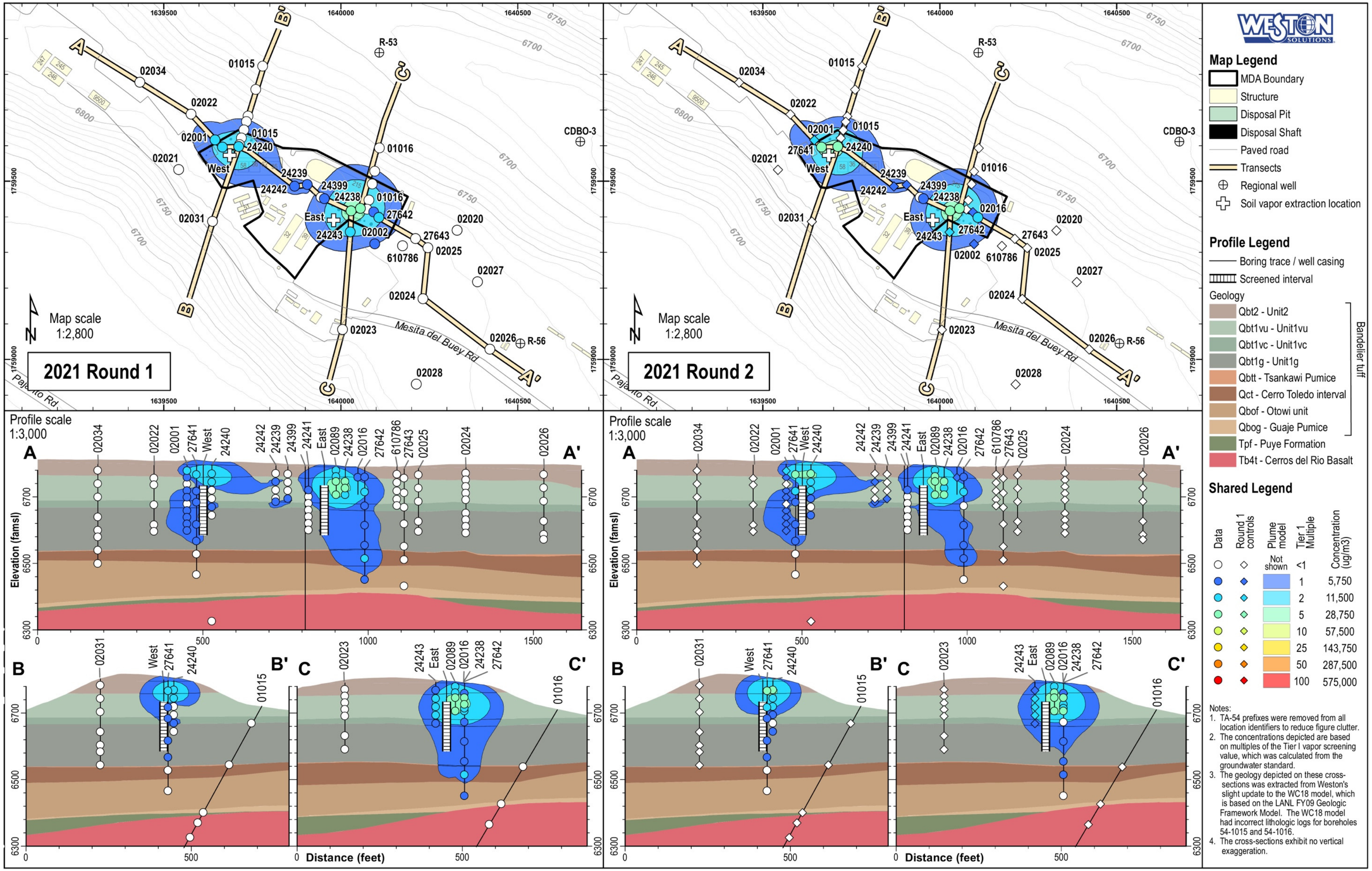

Figure D-2.0-12 Comparison of the 2021 1,1-DCA data and interpolated plumes

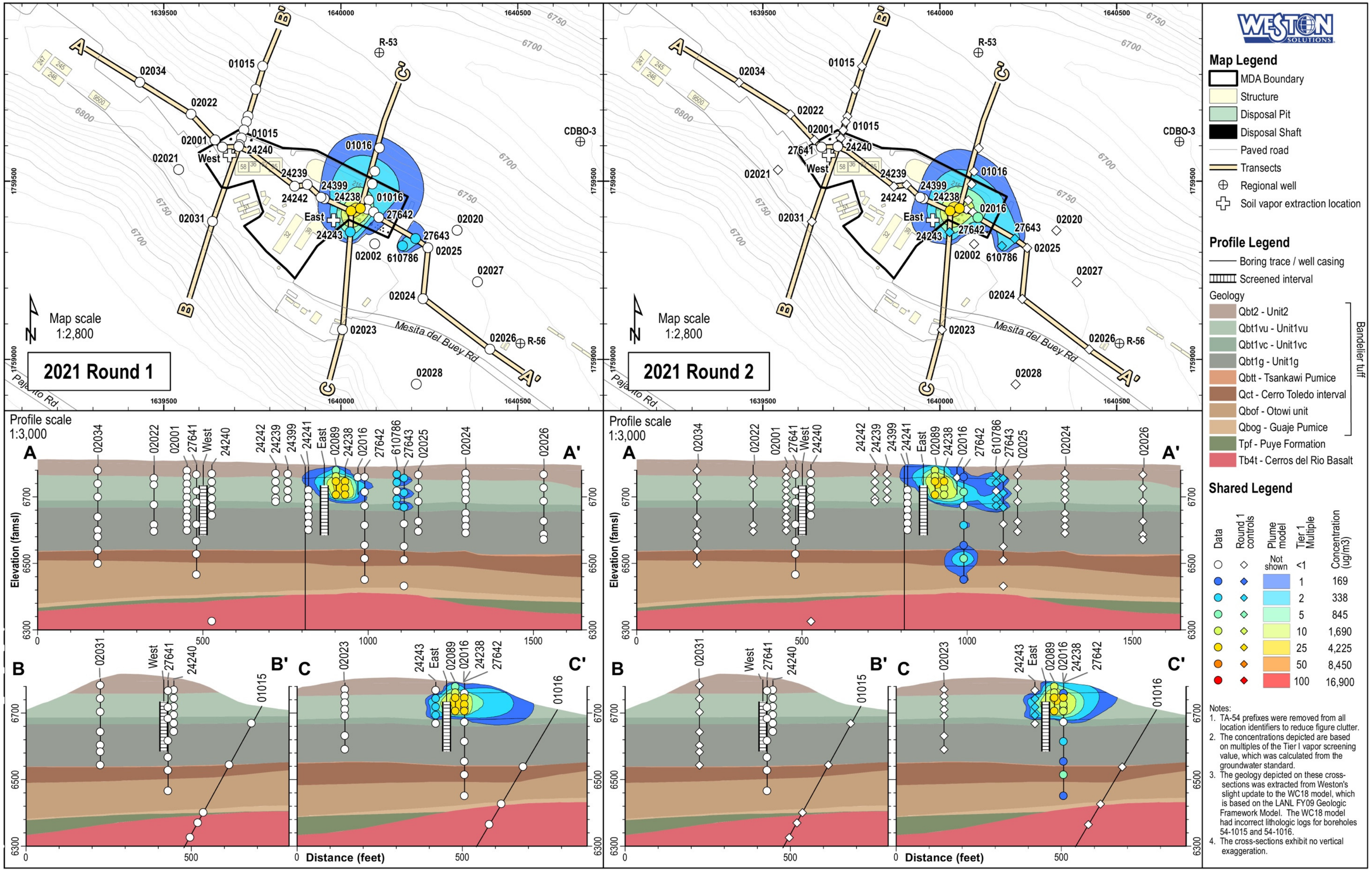

Figure D-2.0-13 Comparison of the 2021 1,1,2-TCA data and interpolated plumes

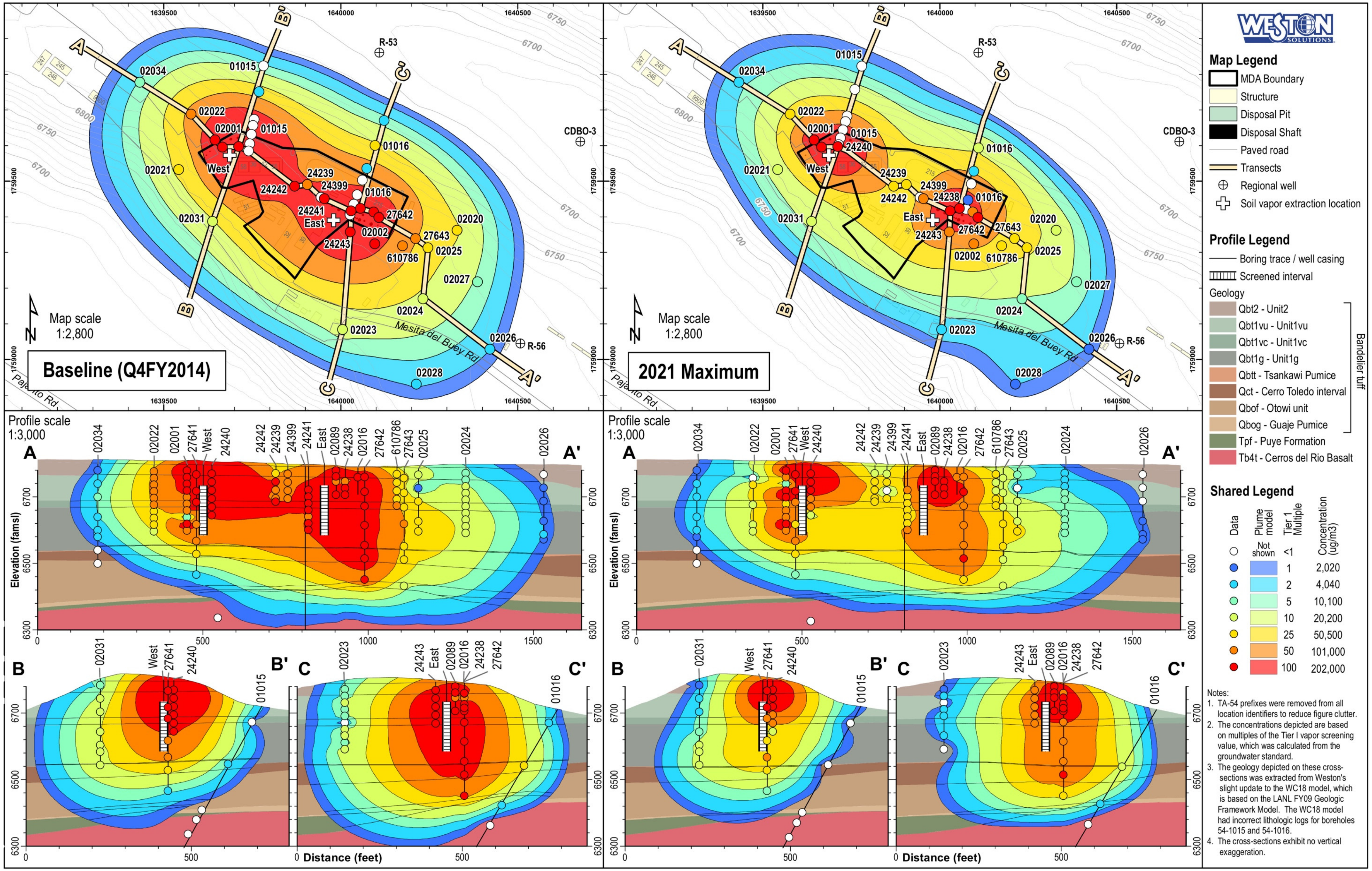

Figure D-3.0-1 Comparison of the maximum 2021 MDA L TCE data and interpolated plume with the FY 2014 Quarter 4 pre-SVE baseline

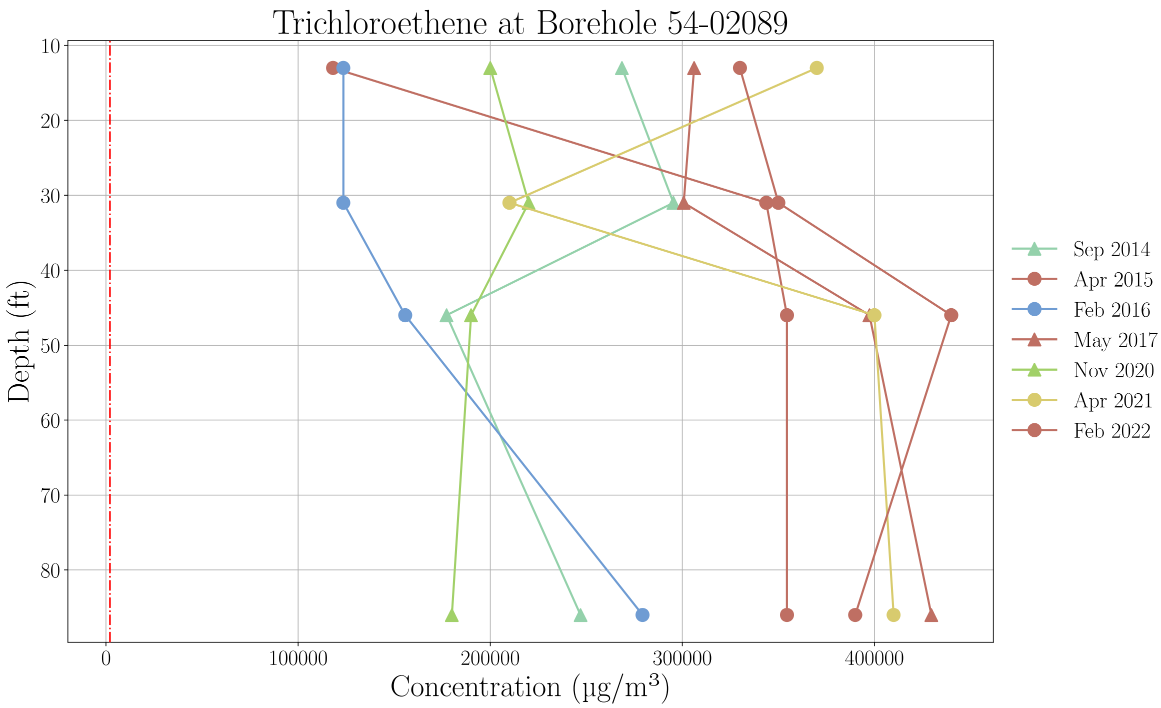

Figure D-4.1-1 TCE data in 54-02089 eastside sentry well

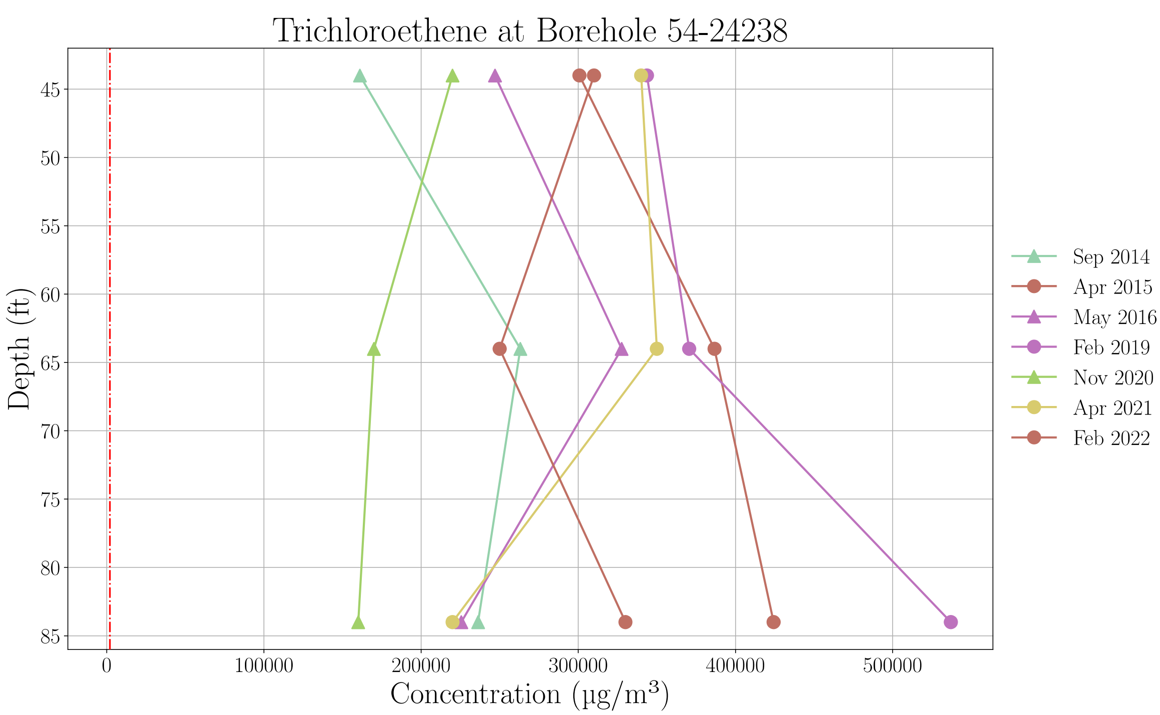

Figure D-4.1-2 TCE in 54-24238 eastside sentry well

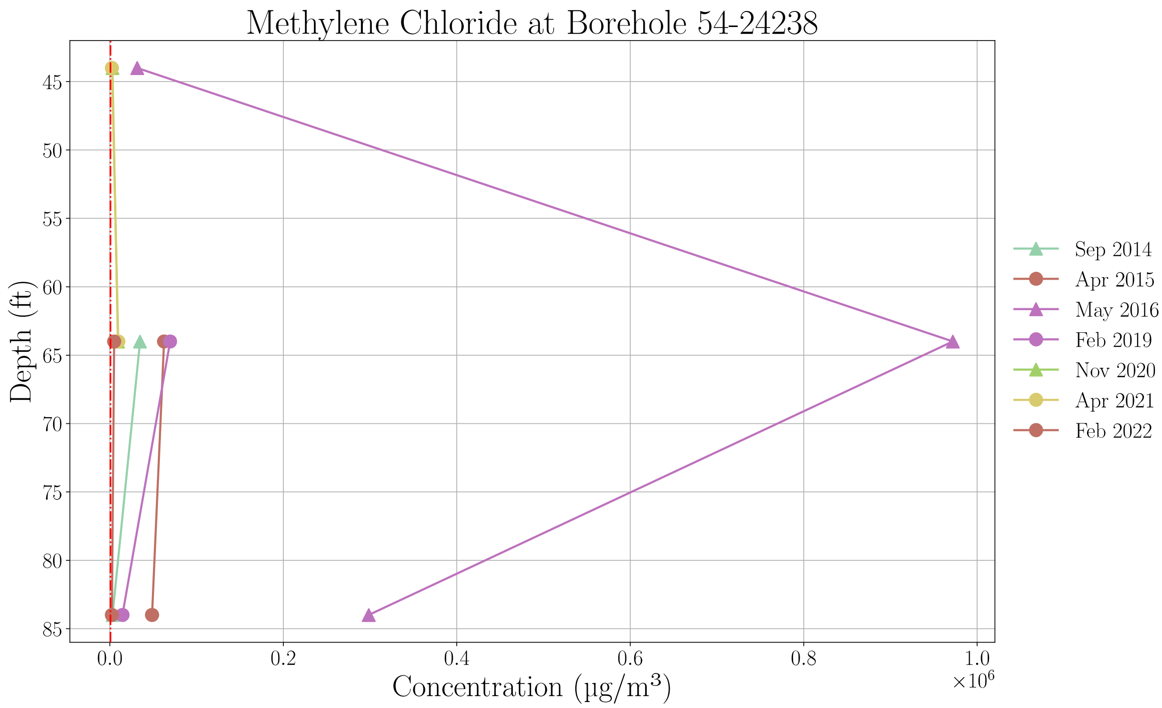

Figure D-4.1-3 Methylene chloride in 54-24238 eastside sentry well

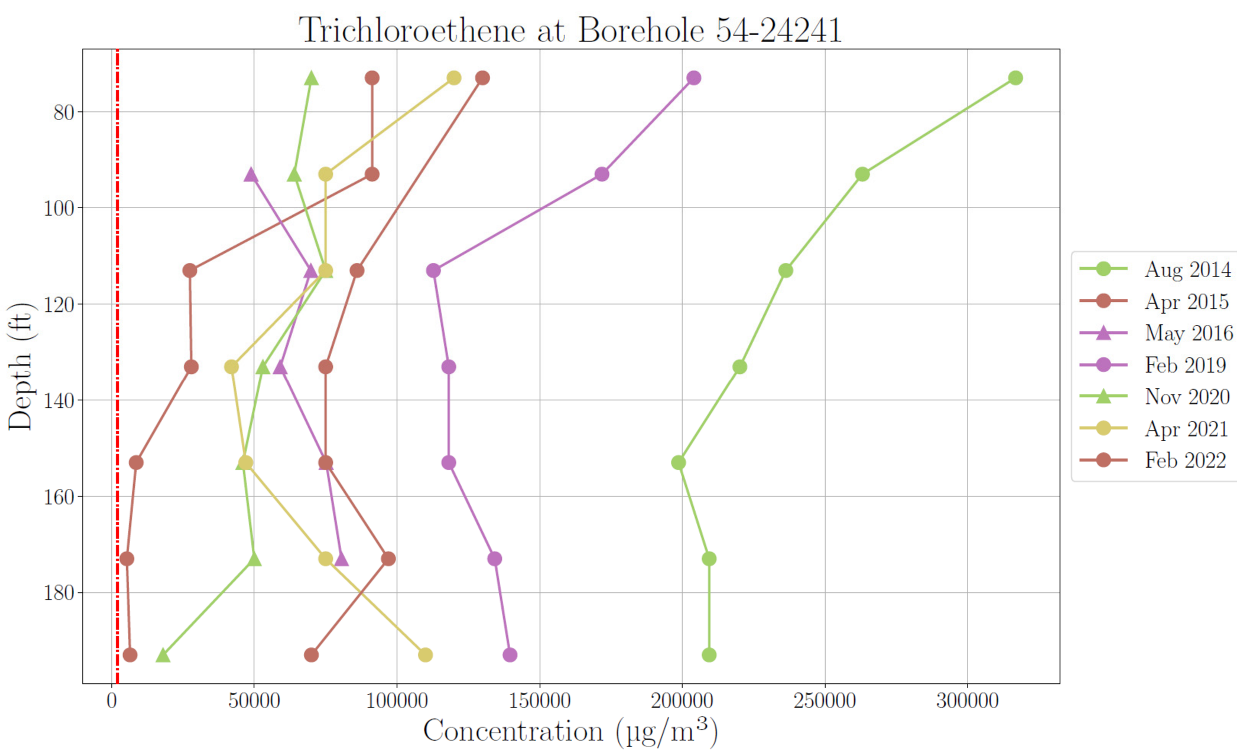

Figure D-4.1-4 TCE in 54-24241 eastside sentry well

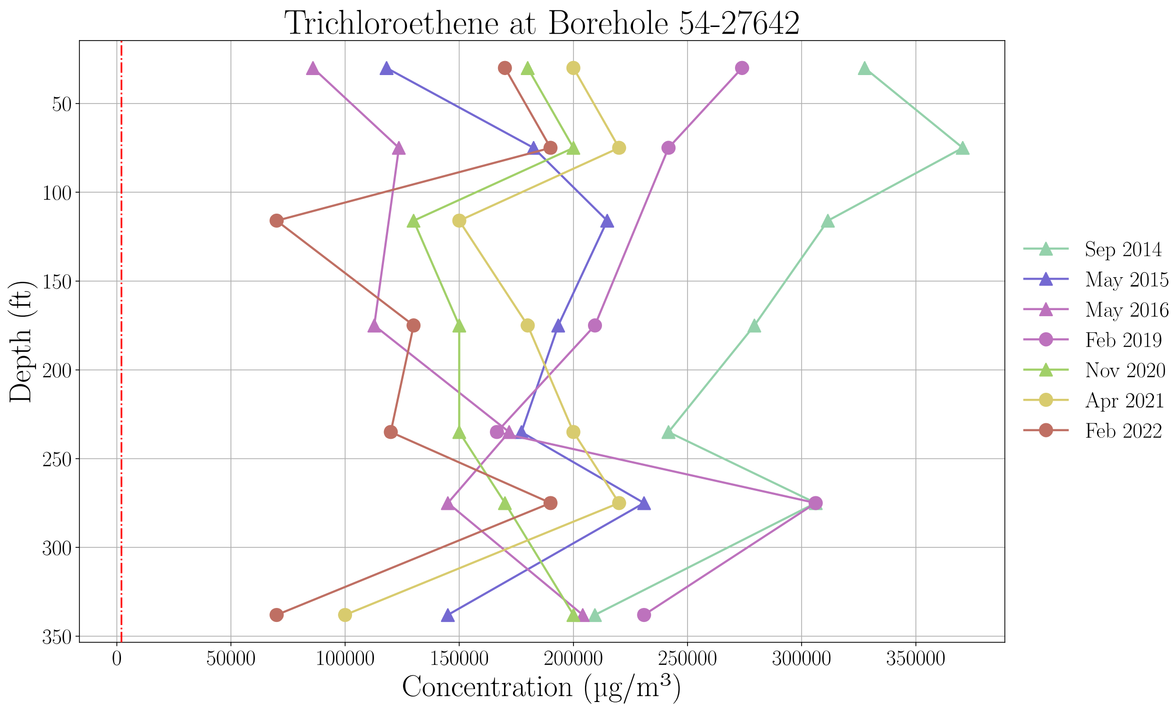

Figure D-4.1-5 TCE in 54-27642 eastside sentry well

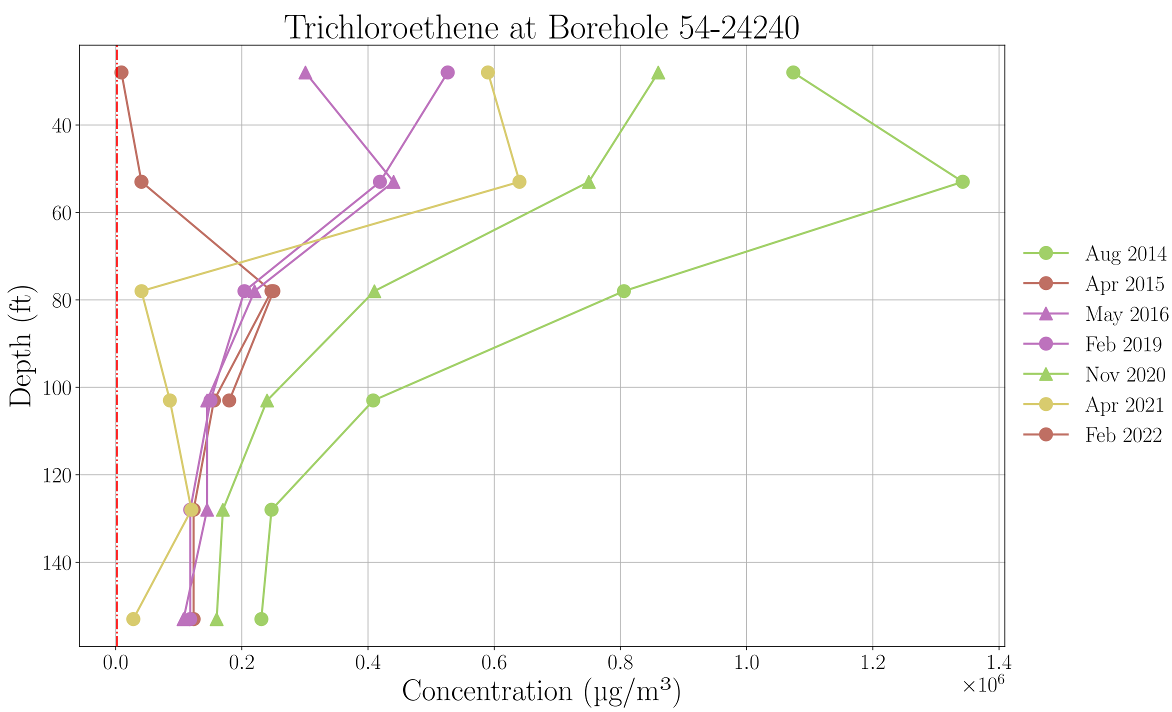

Figure D-4.2-1 TCE in 54-24240 westside sentry well

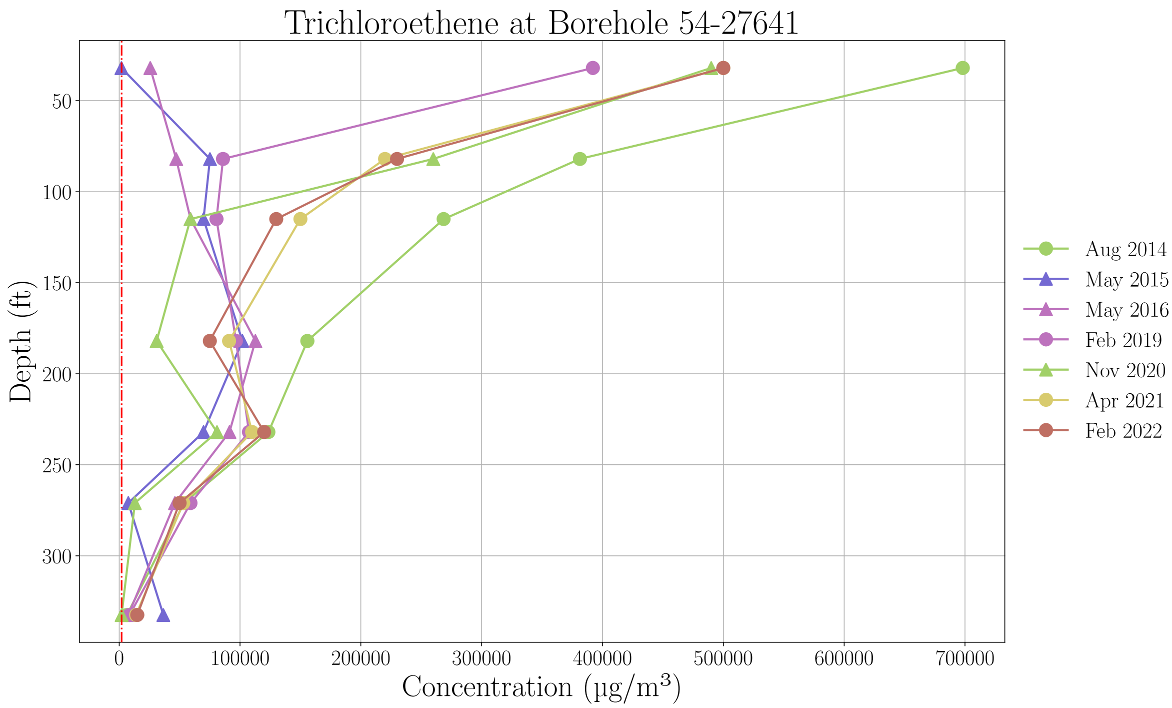

Figure D-4.2-2 TCE in 54-27641 westside sentry well

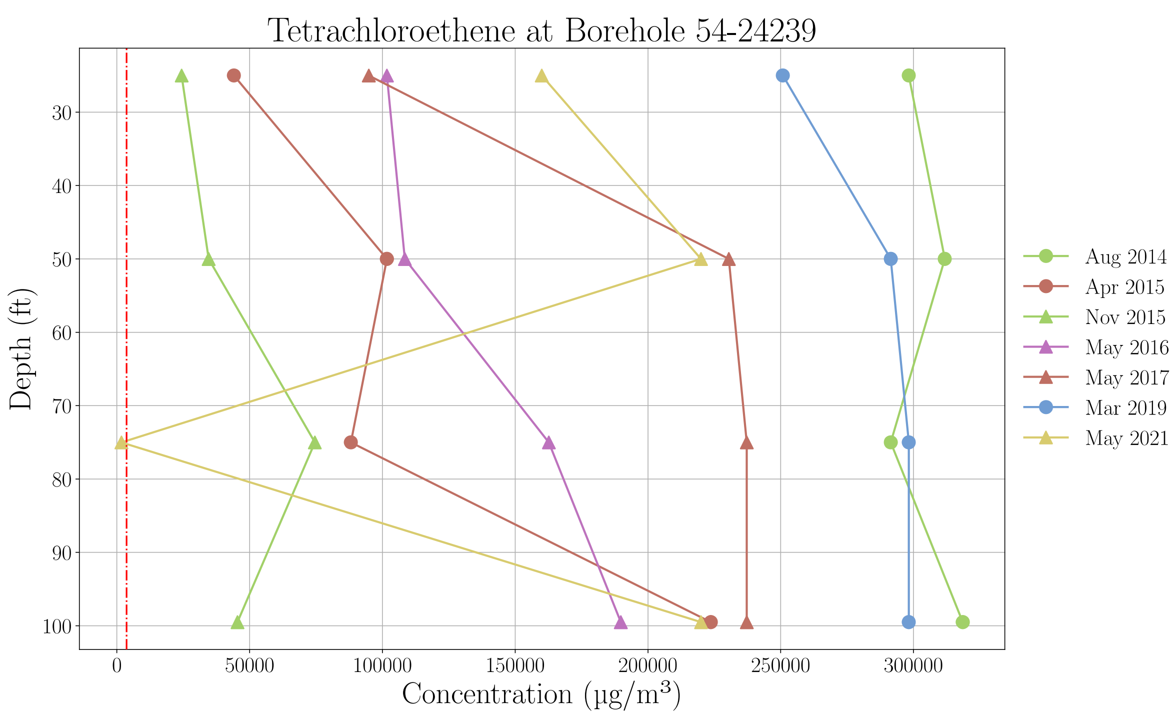

Figure D-4.3-1 PCE in borehole 54-24239

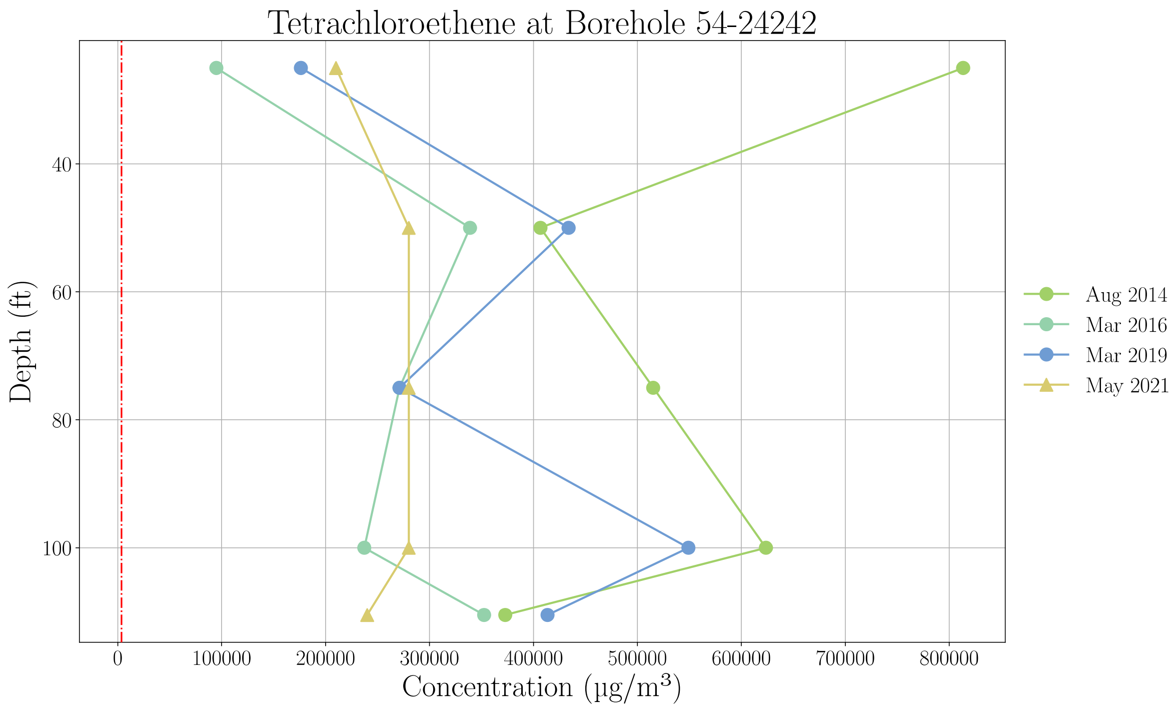

Figure D-4.3-2 PCE in borehole 54-24242

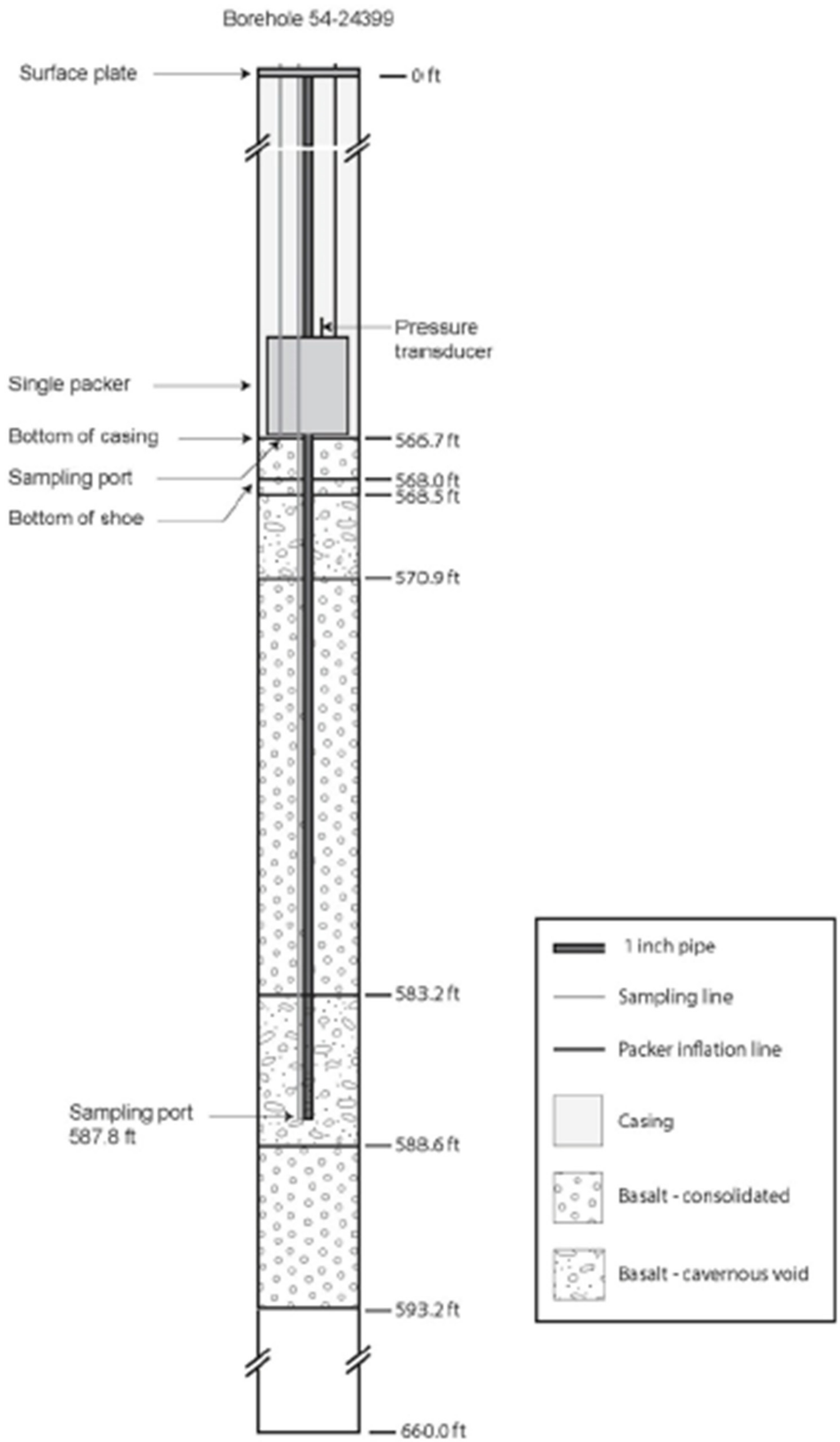

Figure D-4.4-1 Borehole 54-24399 completion schematic

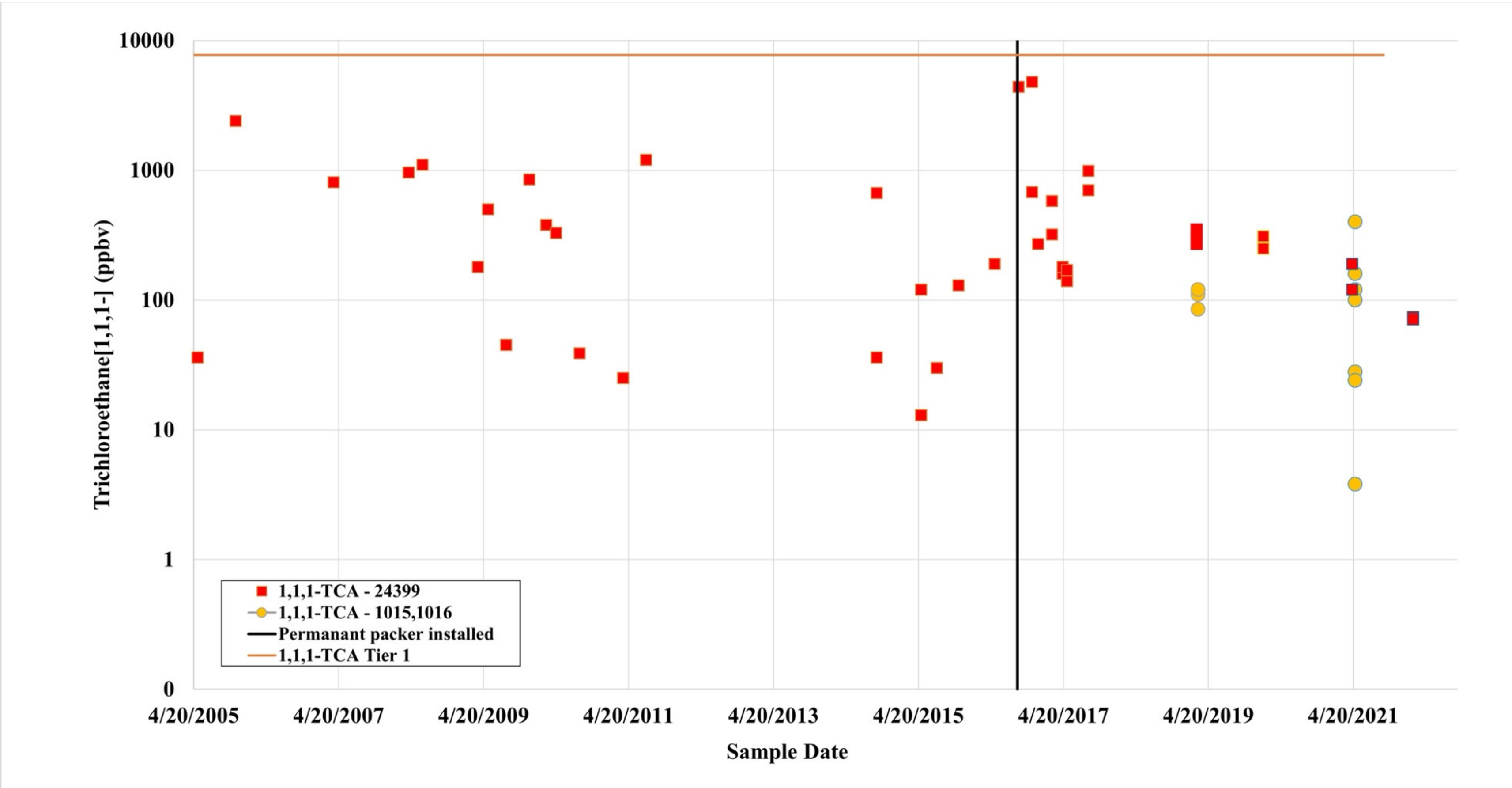

Figure D-4.4-2 TCA[1,1,1-] concentrations in borehole 54-24399

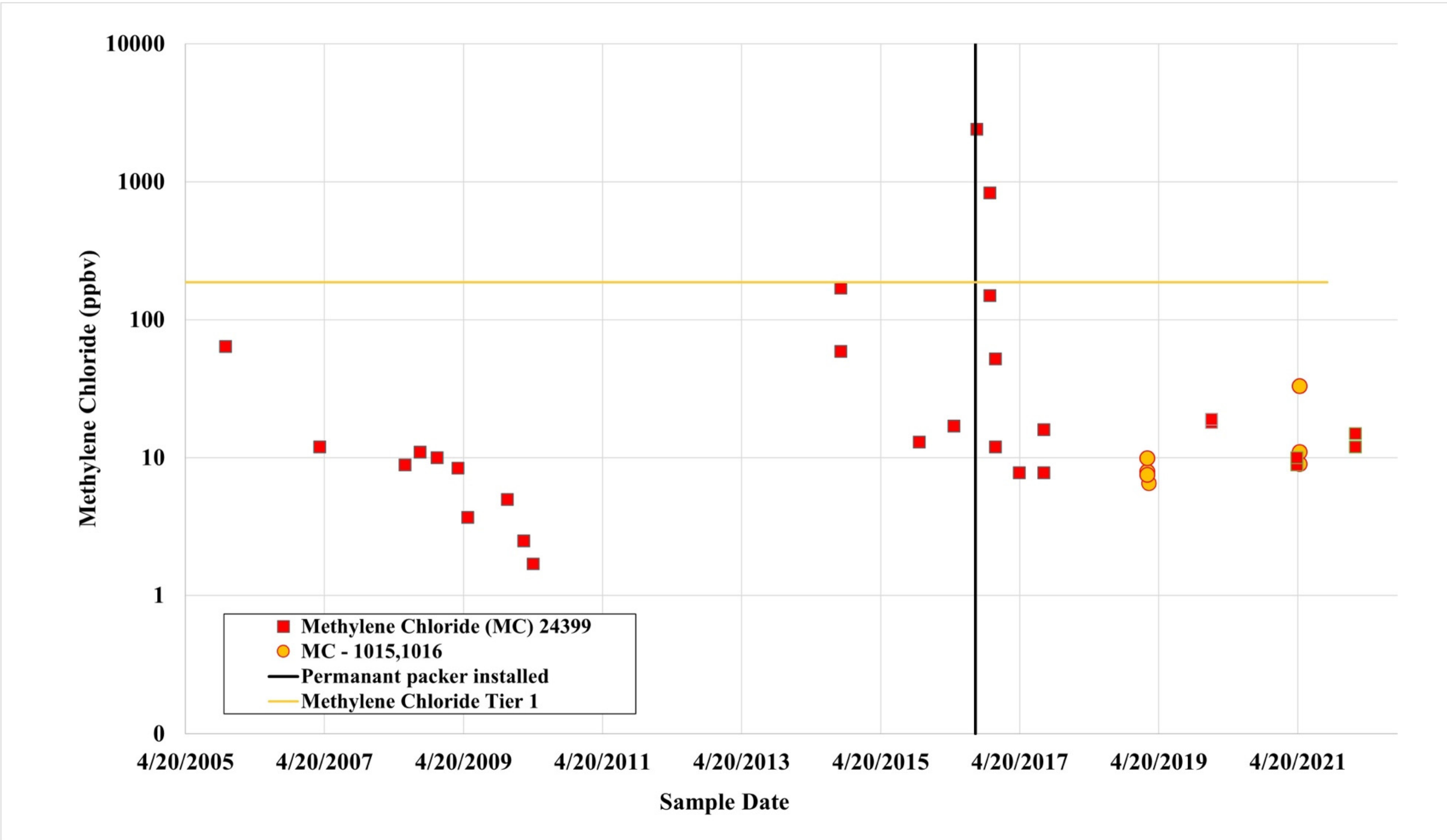

Figure D-4.4-3 Methylene chloride concentrations in borehole 54-24399

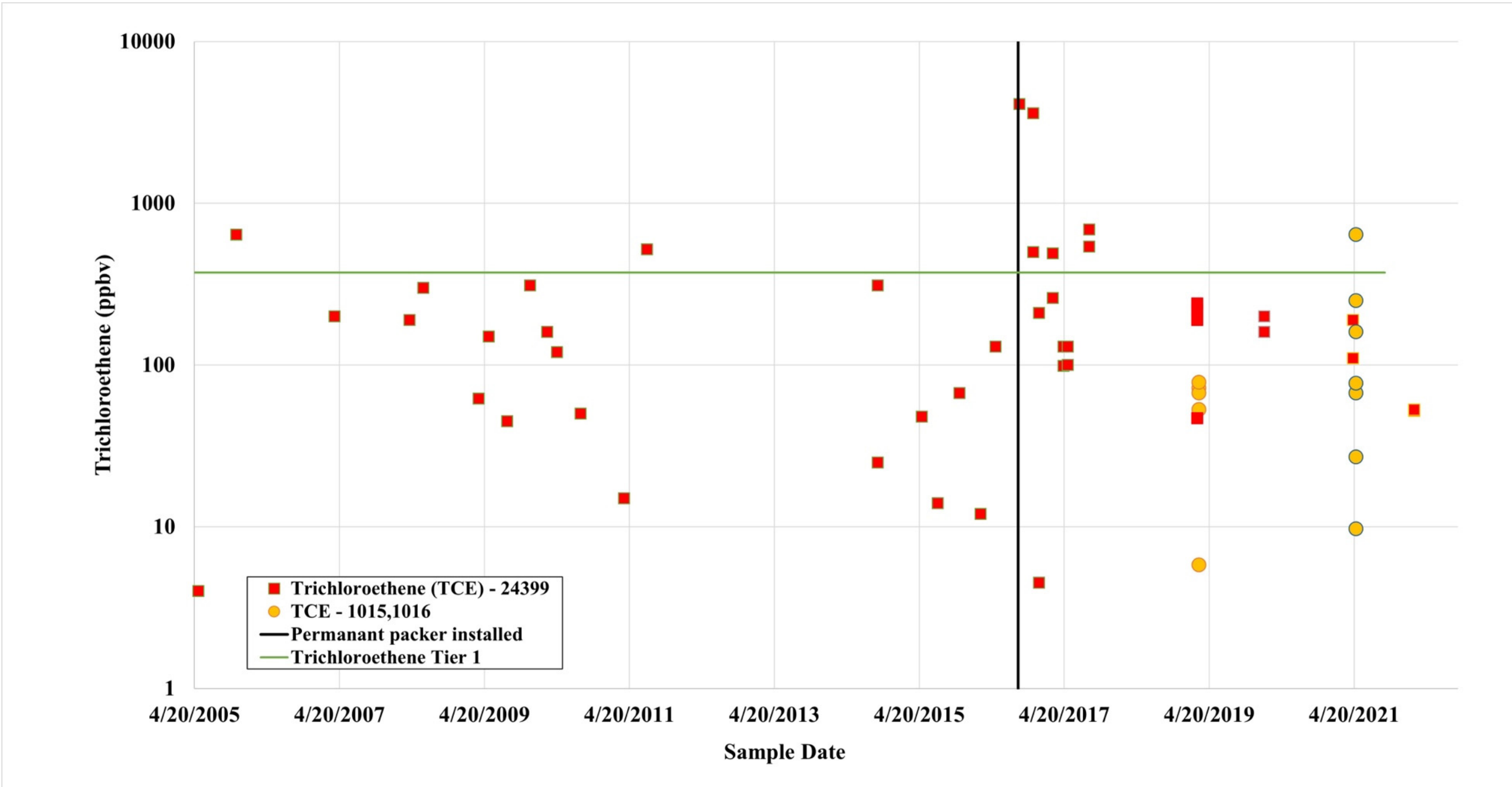

Figure D-4.4-4 TCE concentrations in borehole 54-24399

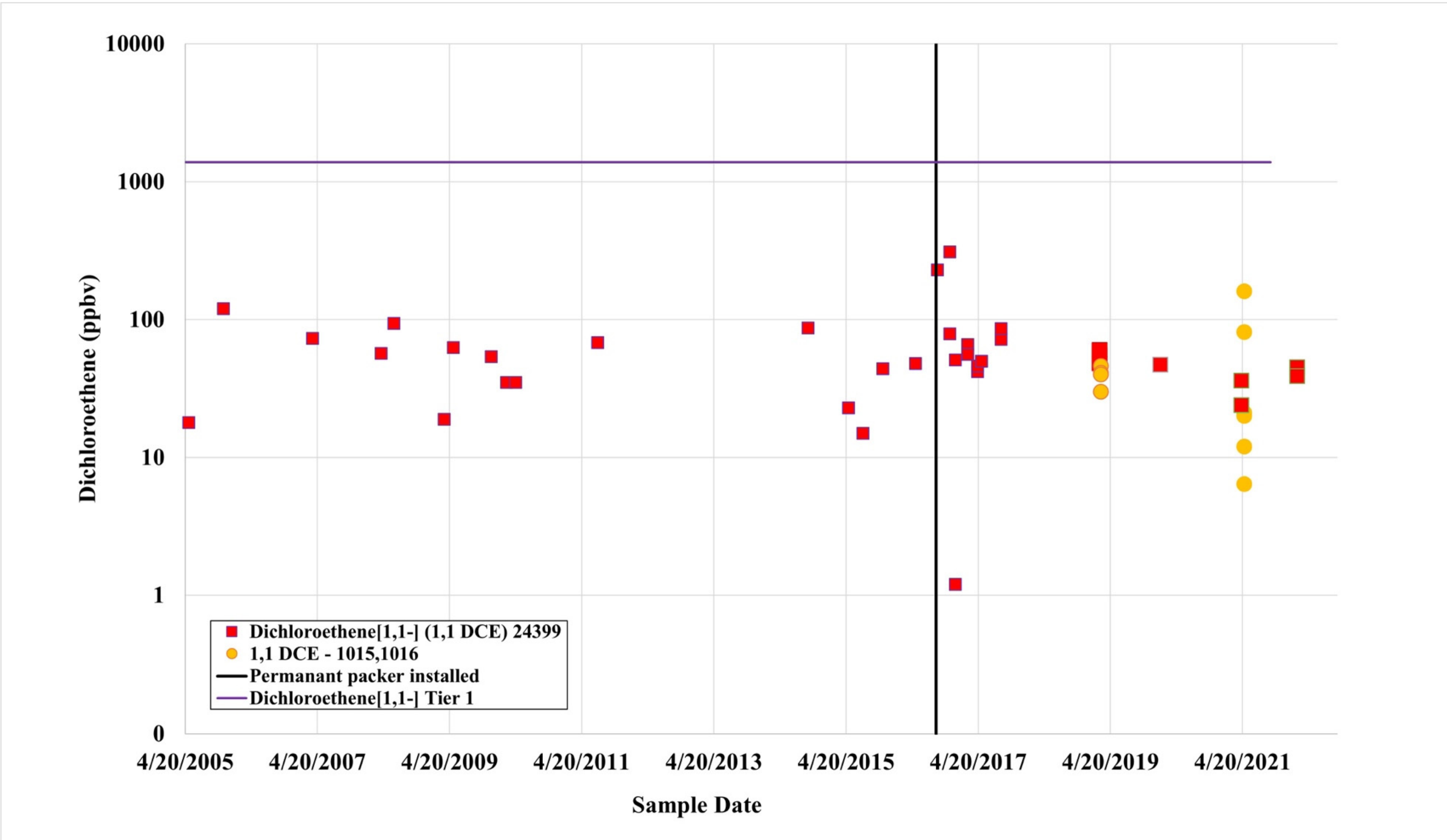

Figure D-4.4-5 DCE[1,1-] concentrations in borehole 54-24399

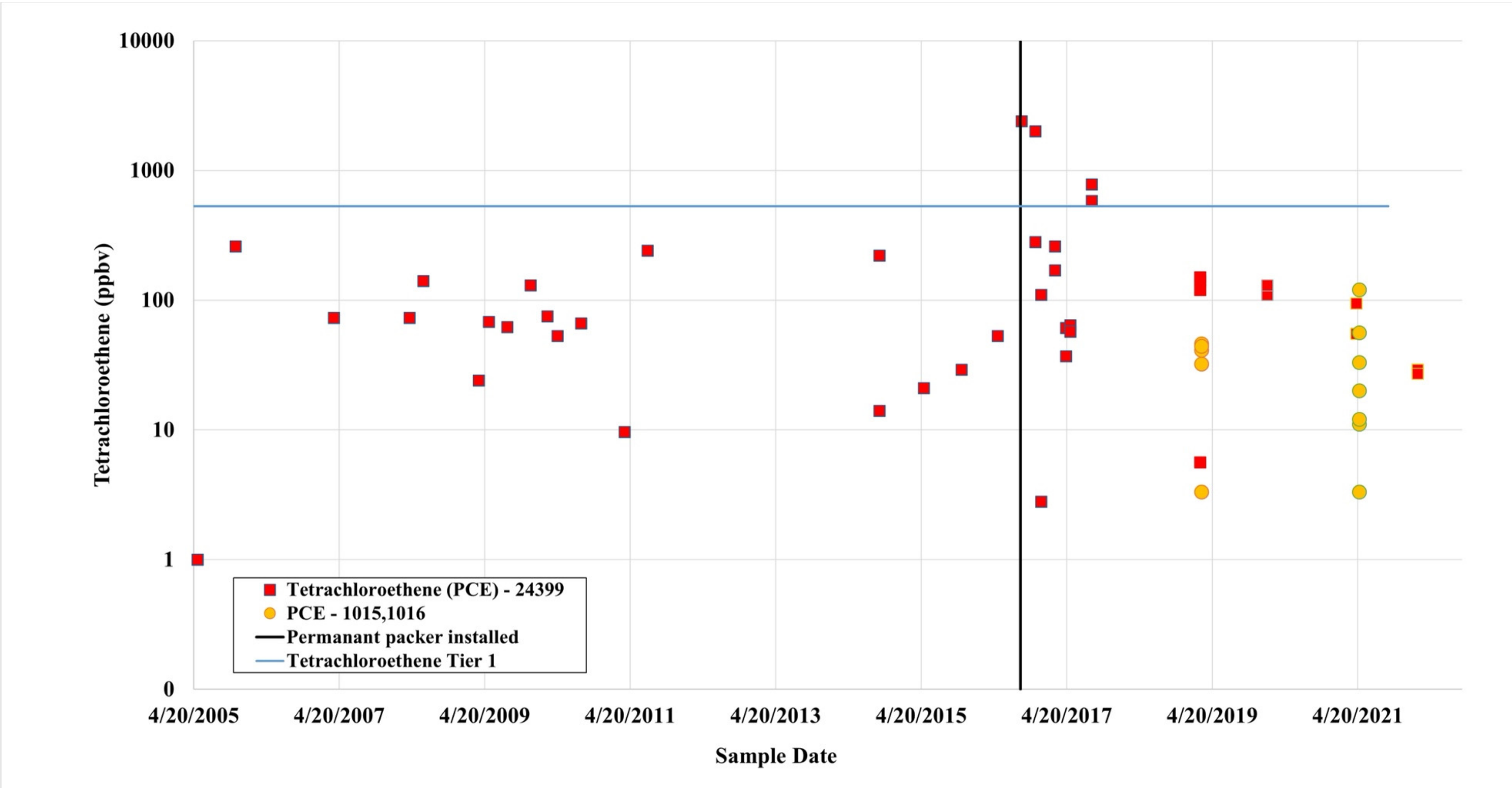

Figure D-4.4-6 PCE concentrations in borehole 54-24399

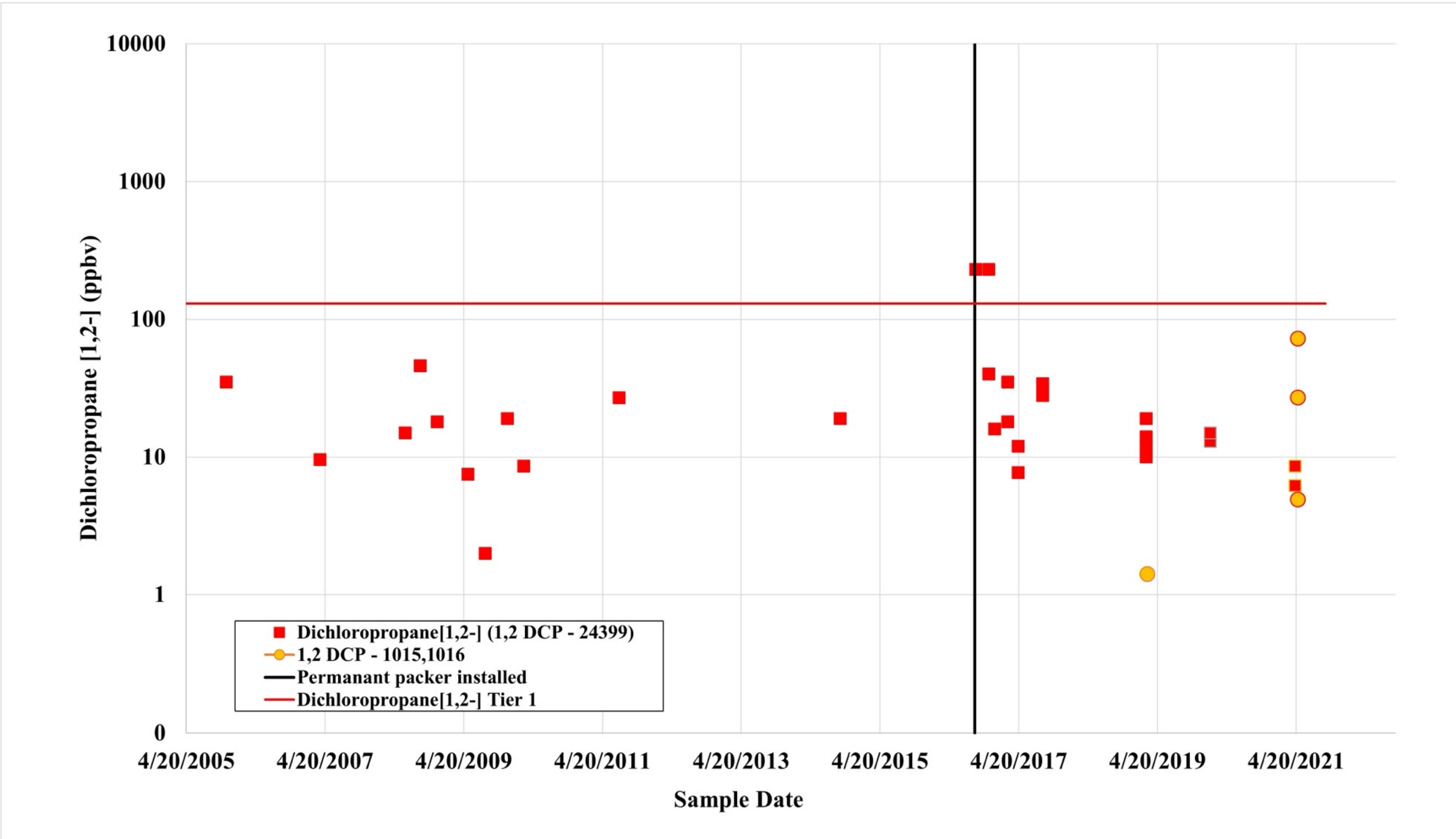

Figure D-4.4-7 DCP[1,2-] concentrations in borehole 54-24399

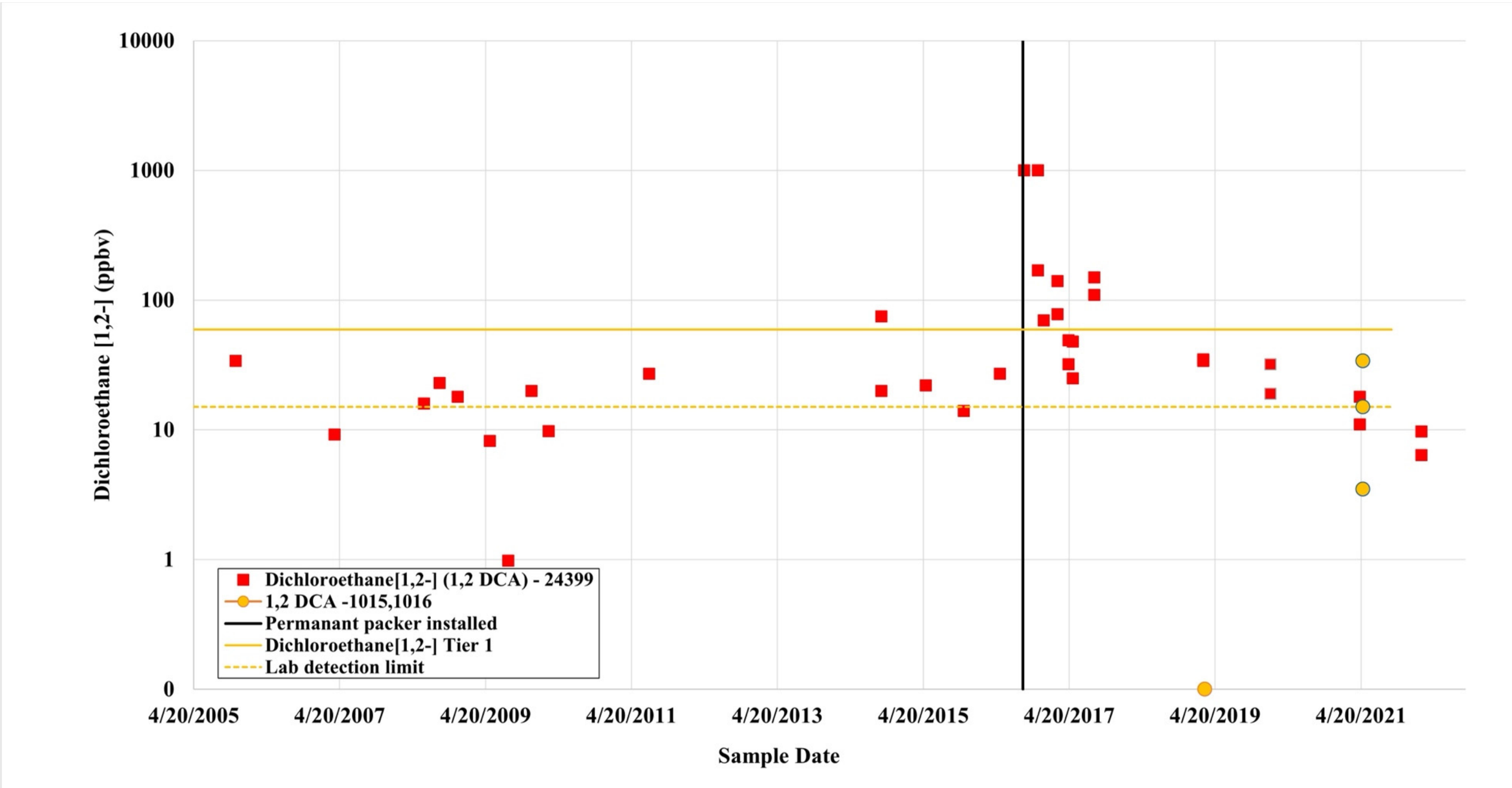

Figure D-4.4-8 DCA[1,2-] concentrations in borehole 54-24399

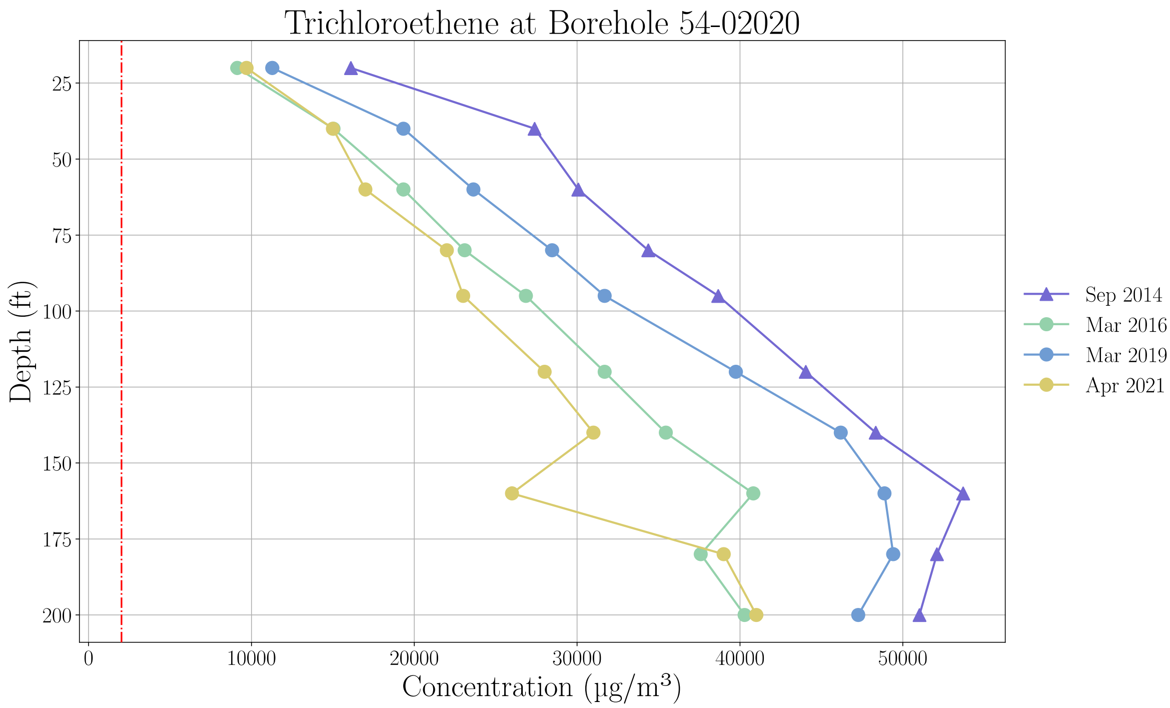

Figure D-4.5-1 TCE concentration in periphery borehole 54-02020 on the east side of MDA L

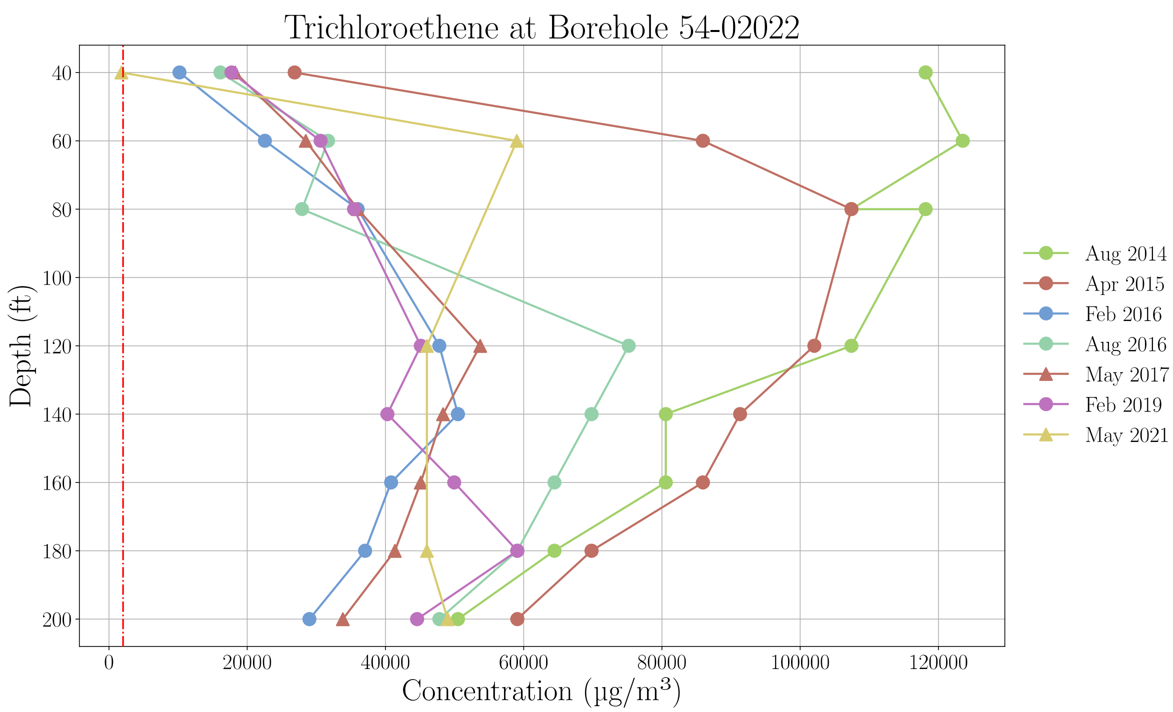

Figure D-4.5-2 TCE concentration in periphery borehole 54-02022 on the west side of MDA L

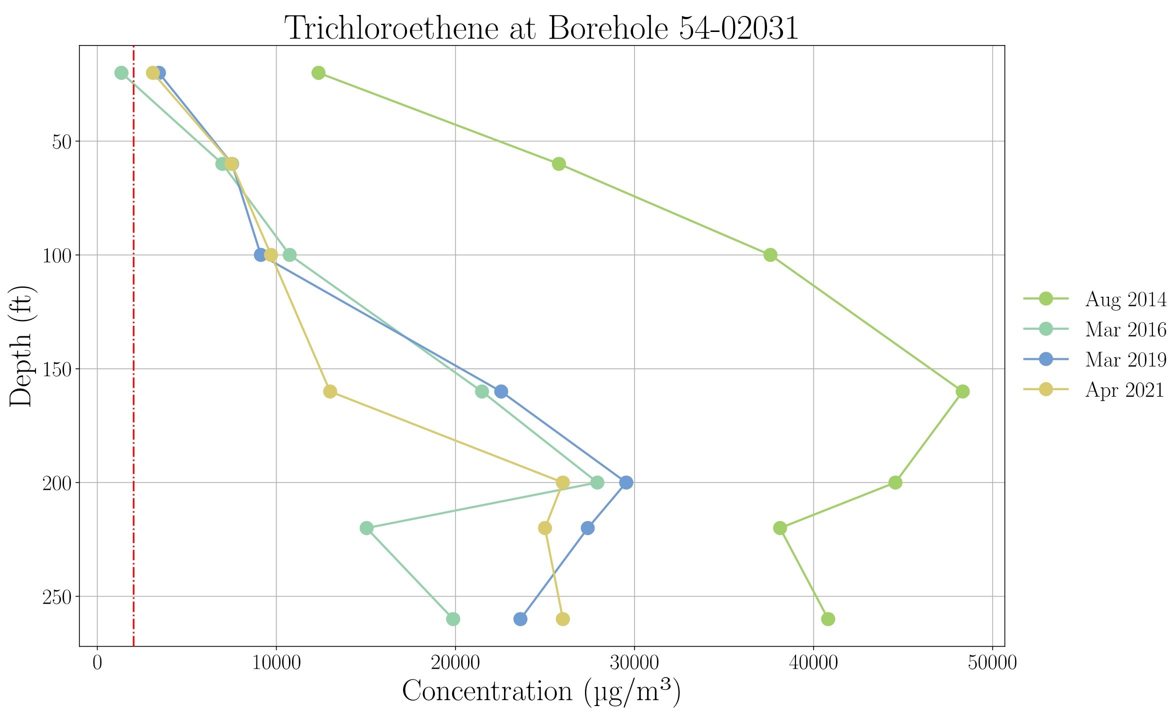

Figure D-4.5-3 TCE concentration in periphery borehole 54-02031 on the southwest side of MDA L

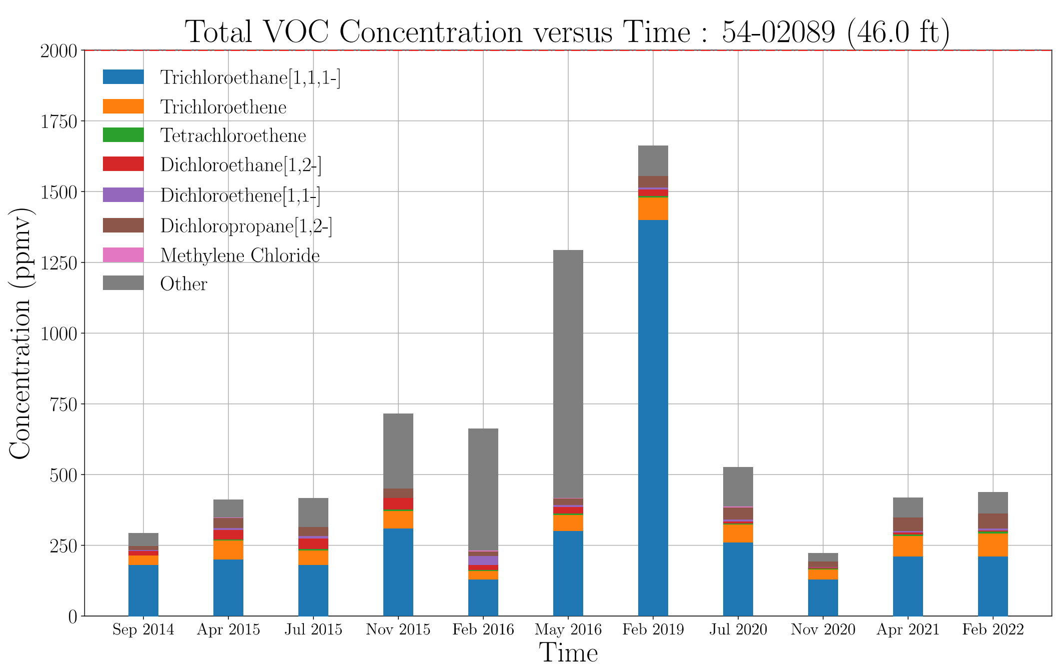

Figure D-5.0-1 Total VOC concentrations in borehole 54-02089 at 46 ft bgs. The proposed SVE trigger value of 2000 ppmv total VOC is at the top of the graph.

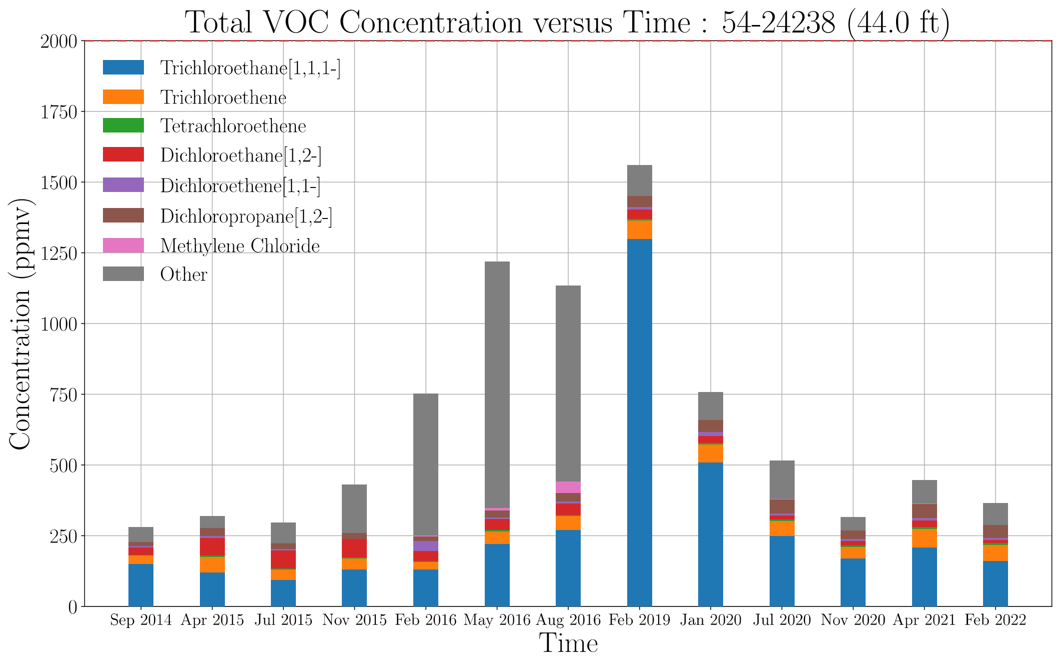

Figure D-5.0-2 Total VOC concentrations in borehole 54-24238 at 43 ft bgs. The proposed SVE trigger value of 2000 ppmv total VOC is at the top of the graph.

Table D-1.0-1
Sentry Boreholes at MDA L

Sentry Borehole	East, West, or Deep	Deepest Port (ft bgs)	Possible Increased Leakage Detected
54-02089	East	86	Yes (all depths)
54-24238	East	84	Yes (all depths)
54-24240	West	153	Yes (28 ft)
54-24241	East	193	No
54-24399	Deep	587.7	No
54-27641	West	332.5	No
54-27642	East	338	Yes (30 ft)

Appendix E

Analytical Suites and Results and Analytical Reports
(on CD included with this document)

E-1.0 INTRODUCTION

This appendix summarizes detected volatile organic compound concentrations and tritium activities for vapor-phase monitoring during the two rounds of calendar year 2021 sampling at Material Disposal Area L.

Data qualifiers used in these tables are defined in Appendix A of this periodic monitoring report.

Notes:

1. The abbreviation ppbv is for parts per billion by volume (i.e., volume of gaseous pollutant per 10^9 volumes of ambient air).
2. The abbreviation µg/m^3 is for micrograms of gaseous pollutant per cubic meter of ambient air.