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RFI Report for Potential Release Sites

73-001(a, b, c, d)
73-004(d)

(Airport Landfill Areas)

Volume 1 of 3

Environmental Restoration Project
A Department of Energy Environmental Cleanup Program

Los Alamos
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EXECUTIVE SUMMARY

This report presents results of a series of Resource Conservation and Recovery Act (RCRA) facility investigations (RFIs) at Technical Area 73 (TA-73), in areas historically used as the Los Alamos municipal landfill. The Los Alamos airport and the associated potential release sites (PRSs) discussed in this report lie on top of East Mesa, north of State Highway 502, at an elevation of approximately 7,100 ft. The environmental setting of the airport area does not include any wetlands, seeps, or perennial streams. The municipal landfill areas were located within TA-73 primarily because it was a secure and convenient location with easy access, it was in close proximity to the Los Alamos townsite, and it had capacity and room for expansion. TA-73 has functioned continuously as an airport since the original Los Alamos municipal landfill was established, and will continue as such in the foreseeable future. None of the PRSs discussed in this report are a result of airport-related activities.

The two municipal landfill areas located at TA-73 comprise the following PRSs:

- 73-001(d), debris disposal area;
- 73-001(a), main landfill;
- 73-001(c), bunker debris pits;
- 73-001(b), waste oil pit; and
- 73-004(d), septic system.

This report summarizes the results of a variety of investigations conducted over several years and produces an exhaustive data set from which clear conclusions can be drawn. These investigations focus on what was described in the original 1992 Operable Unit 1071 work plan as "a former municipal landfill." These investigations were designed to characterize the landfill adequately to determine an appropriate plan for corrective action. The data collected from these PRSs were compared with data collected from over 60 municipal, nonhazardous landfills in California. These comparisons indicated that the nature and level of contaminants detected in soil gas and pore water at the airport landfill were present at levels consistent with those found at other municipal landfills. Section 2.3.4.3, Data Review, and Section 2.3.5.1, Nature and Extent of Contamination, focus on this comparison. Specifically, composition of soil gas and organic and inorganic constituents present in porewater were compared to three separate municipal landfill data sets and were directly comparable in terms of the suite of chemicals present and their concentrations. Therefore, although this site is not regulated under the same state and federal regulations that cover municipal landfills, the final remedy for this site should be consistent with those regulations. Further, the PRSs discussed in this report are closely associated with each other in both character and operational history and should be addressed as a single unit when evaluating remedial alternatives.

The investigations presented in this report, which are based on an Environmental Protection Agency (EPA)-approved work plan, provide an extensive survey of potential contaminants in surface and subsurface soils, shallow and deep soil gas, pore water, and specific visible debris remnants. The nature of the buried refuse was also investigated, but the primary goal of the RFI was to bind and understand the landfill as a unit in preparation for an *in situ* corrective action.

Under current conditions, landfill gas—primarily methane and carbon dioxide associated with the decomposing refuse—is present in the subsurface. Temporal variation in the nature of landfill gas constituents and spatial concentration trends are documented by the existing analytical data. Measurements of the soil water potentials confirm relatively wet, but unsaturated, conditions within the refuse and within the tuff immediately surrounding the refuse. These wet zones within the refuse contribute to the generation of landfill gas. Samples collected from the tuff bordering the landfill indicate increasingly dry conditions, demonstrating a decreasing trend in the potential for migration. A reduction in available moisture, from implementing surface water run-on controls, will further reduce the potential for contaminant migration.

The human health risk caused by soil gas and surficial contamination was evaluated for a variety of potential exposure scenarios. Conservative assumptions for exposure point concentrations, chemical toxicity, and degree of exposure were developed and used for these assessments. For exposure scenarios consistent with current and proposed future land use (no residences on the airport property), the risk to human health is within the acceptable range as set forth by the EPA. For a hypothetical exposure scenario (residential use), the current condition of the landfill could present a risk outside the acceptable range. However, the planned use for this site remains as an airport with significant access restrictions to the landfill areas. Additional airport landfill stormwater controls (currently underway) will also serve to reduce the potential for human health impacts and will be consistent with projected land use for this property.

There may be a potential for ecological risk associated with the former municipal landfill PRSs through surficial contamination and subsurface soil gases. However, because of the intense human intervention/management inherent to an airport facility, exposure to sensitive species and/or habitats should be minimal. The potential for exposure will be further reduced once the surface water controls are completed, surficial debris is removed, and a landfill closure plan is developed and implemented.

The investigations conducted on this site and presented in this RFI report provide a sufficient basis to support an *in-situ* remedial strategy. In addition, the data collected can be used to develop long-term monitoring and maintenance requirements that will ensure that human health and the environment are adequately protected. The final remedy for this municipal landfill is proposed to be consistent with state and federal regulations set forth for other municipal landfill closures. Further, the PRSs discussed in this report are closely associated in terms of both character and operational history and should remain linked and addressed as a single unit when evaluating remedial alternatives. A final corrective action plan and site engineering designs will be developed in a manner that is consistent with the New Mexico Environment Department Solid Waste Bureau guidelines for municipal landfills and with EPA guidance presented in "Presumptive Remedy for CERCLA Municipal Landfill Sites." The plan will include provisions for data collection where needed to address data gaps and will address the construction of the final cover and other debris lining the south side of Pueblo Canyon and the eastern end of the landfill. This report does not propose the specifics necessary to properly initiate a municipal landfill closure under the New Mexico Solid Waste Bureau regulations, but rather, indicates that such a remedial strategy is appropriate. The specific engineering, modeling, and monitoring needs required for final remedy will be developed and implemented as a part of the final remedial strategy plan for this set of PRSs.

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Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the Department of Energy (DOE) and managed by the University of California. The Laboratory is located in north-central New Mexico, approximately 60 miles northeast of Albuquerque and 20 miles northwest of Santa Fe. The Laboratory site covers 43 square miles of the Pajarito Plateau, which consists of a series of fingerlike mesas separated by deep canyons containing ephemeral and intermittent streams that run from west to east. Mesa tops range in elevation from approximately 6200 ft to 7800 ft. The eastern portion of the plateau stands 300 to 900 ft above the Rio Grande.

The Laboratory's Environmental Restoration (ER) Project is involved in a national effort by the DOE to clean up facilities that were formerly involved in weapons production. The goal of the ER Project is to ensure that DOE's past operations do not threaten human or environmental health and safety in and around Los Alamos County, New Mexico. To achieve that goal, the ER Project is currently investigating sites potentially contaminated by past Laboratory operations.

The sites under investigation are either solid waste management units (SWMUs) or areas of concern (AOCs). In the LANL ER Project, SWMUs and AOCs are collectively referred to as potential release sites (PRSs).

This report presents the results of a series of field activities in support of a RCRA facility investigation (RFI) at two municipal landfill areas in Technical Area 73 (TA-73). The locations of LANL and TA-73, as well as the PRSs discussed in this report, are shown in Figures 1.0-1, 1.0-2, and 1.0-3. (PRS 73-002 is listed on Figure 1.0-3 but was not a part of this investigation.) The landfills were located within TA-73 primarily because it was a secure and convenient location with easy access, in close proximity to the town of Los Alamos, with plenty of capacity and room for expansion. The general area that includes the municipal landfills at TA-73 has functioned continuously as an airport since the main landfill was established. None of the PRSs discussed in this report are a result of airport-related activities.

The two municipal landfill areas located at TA-73 comprise of the following PRSs:

- 73-001(d), debris disposal area;
- 73-001(a), main landfill;
- 73-001(c), bunker debris pits;
- 73-001(b), waste oil pit; and
- 73-004(d), septic system.

Section 2.2 of this report includes the site description and operational history for each PRS. Section 2.3 presents an in-depth discussion of the investigatory activities including a data review, and a discussion of nature and extent and environmental fate. Section 2.4 includes human health and ecological screening assessments, and a human health risk assessment. Surface water and ground water issues are also discussed. Conclusions and Recommendations are presented in Section 2.5.

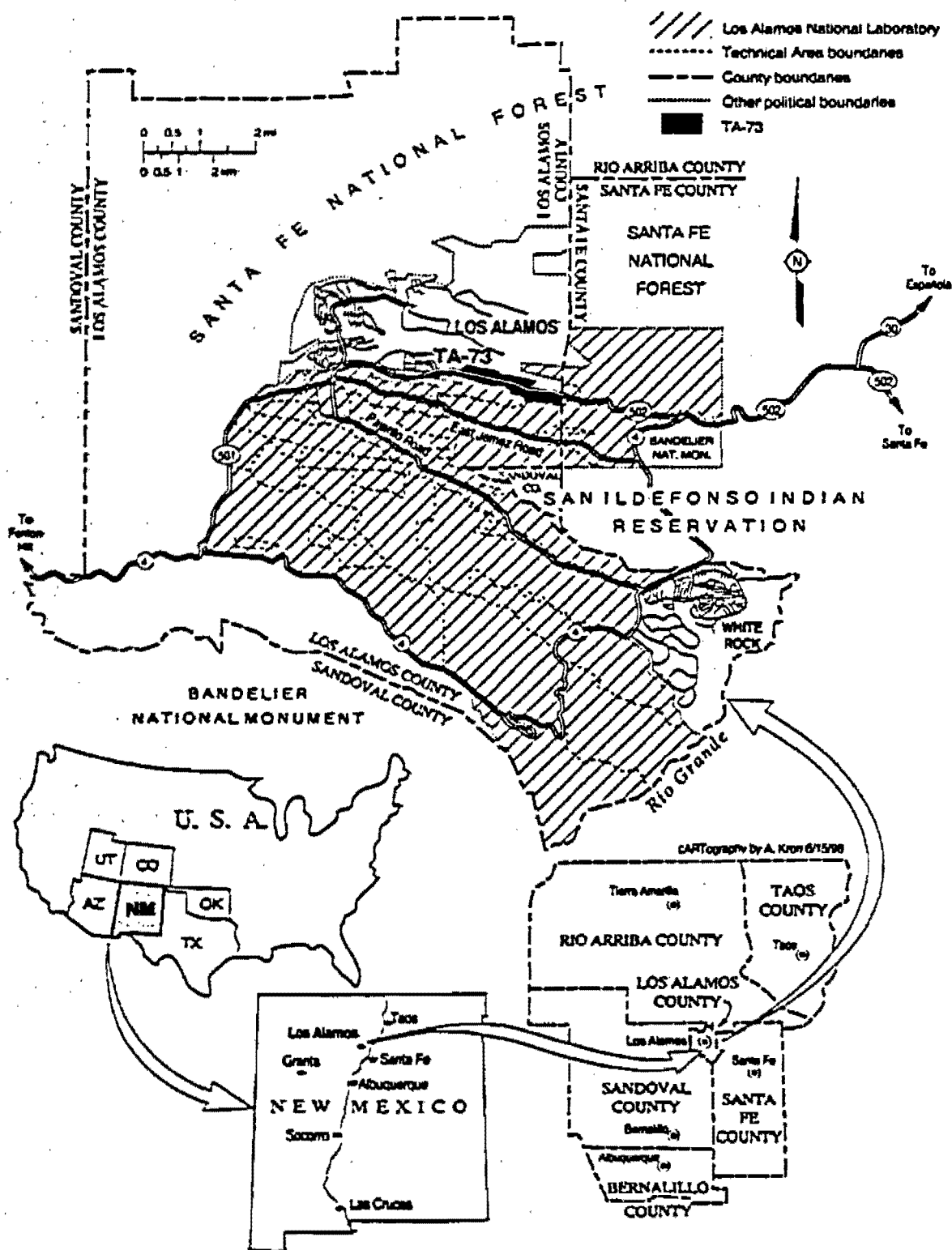


Figure 1.0-1. Location of TA-73 within Los Alamos National Laboratory, Los Alamos County, New Mexico

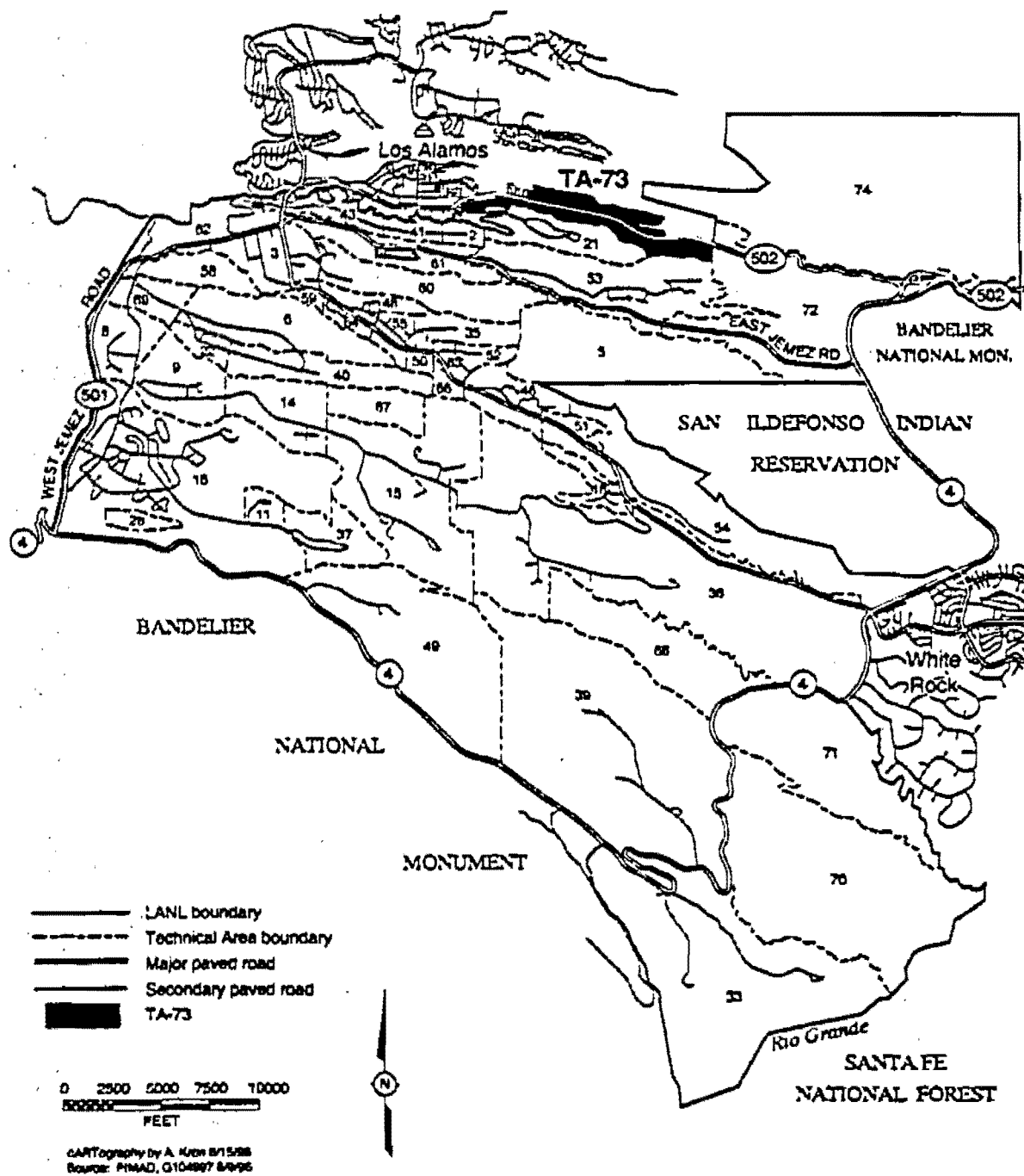


Figure 1.0-2. Location of TA-73 with respect to Laboratory TAs and surrounding landholdings

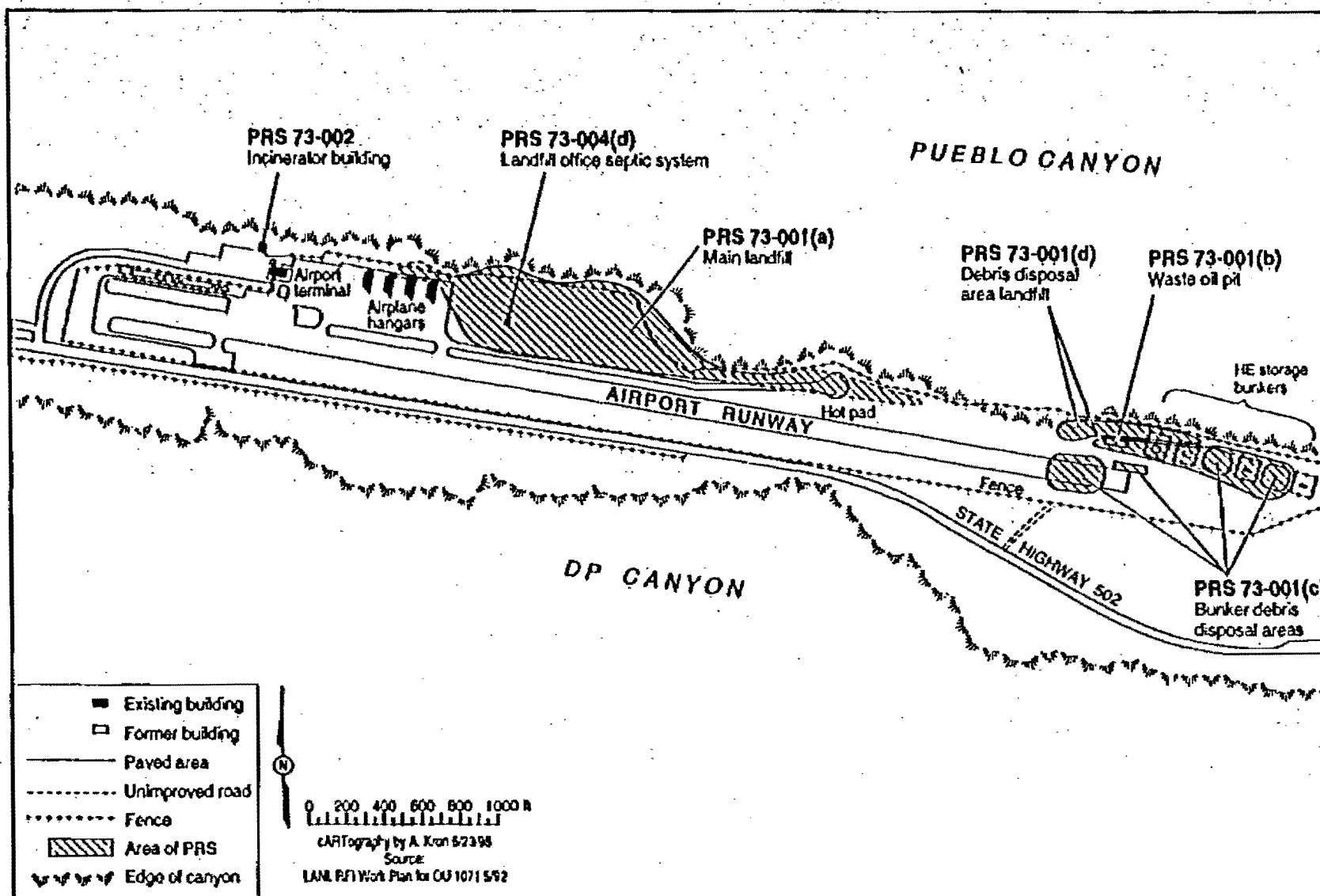


Figure 1.0-3. Locations of PRSs 73-001(a), 73-001(b), 73-001(c), 73-001(d), and 73-004(d); 73-002 is also shown

For assessment and reporting purposes, these five PRSs have been grouped together and essentially treated as a single PRS. Figure 1.0-3 shows the PRS 73-004(d) septic tank to lie within the PRS 73-001(a) boundary. The actual site of the septic tank is in an area where geophysical results indicate a landfill waste thickness of approximately 20 ft. However, it is very probable that the tank was incorporated into the landfill and no longer exists. Additionally, the approved RFI Work Plan for operable unit (OU) 1071 states that PRS 73-004(d) will be investigated as part of PRS 73-001(a), reinforcing the contention that 73-004(d) should never have been designated as a separate PRS. Therefore, PRS 73-004(d) was recommended for no further action (NFA) in the NFA Report for Potential Release Sites at TA-0 and TA-73 (LANL 1997, 59367). This recommendation was consistent with NFA Criterion 1, where a site is located within and therefore, will be investigated as part of another PRS. Figure 1.0-3 also shows PRS 73-001(b) and portions of PRS 73-001(c) to lie within the PRS 73-001(d) boundary. There is drilling, trenching, and geophysical evidence to support the assertion that the waste oil pit and the two bunker debris pits east northeast of the runway were destroyed by trench excavation for PRS 73-001(d). Any contamination within these PRSs is now just one component of the contamination within the debris disposal area. PRS 73-001(b) was also recommended for NFA in the NFA Report for Potential Release Sites at TA-0 and TA-73 (LANL 1997, 59367). This recommendation was also consistent with NFA Criterion 1. To date, LANL has not received any comments from the Administrative Authority on this report, nor has Administrative Authority concurrence been received. Until such concurrence is received, LANL will continue to address these PRSs as unique but within the larger PRS context. They will again be recommended for NFA when sites 73-001(a and d) are proposed, if not approved, before completion of the landfill closure. As a result of combining PRSs, only the two municipal landfill sites remain (PRSs 73-001[a] and 73-001[d]). These PRSs are essentially identical in nature, and any conclusions and recommendations for one are expected to be generally applicable to the other.

Future plans for this general area continue to designate it for use as an airport and related activities. Over the years, other activities have also been conducted in this area. In 1947, four bunkers, used for storing high explosives (HE), were constructed along the canyon rim, east northeast of the end of the runway. In 1974, the bunkers were demolished and some of the concrete rubble may have been placed in two pits (PRS 73-001(c)) adjacent to the bunker sites and now part of PRS 73-001(d). Also associated with this area was a hot-mix asphalt batch plant operated from about the mid-1940s until 1954 (LANL 1990, 07514). The asphalt plant was located east of the terminal building along the canyon rim, in an area that was subsequently assimilated into the main landfill. Therefore, this area was addressed as part of PRS 73-001(a). For detailed operational history information, refer to Section 2.2.2 and Appendix B-1.0.

Since the initiation of RFI activities, there has been no administrative activity relating specifically to the airport landfill sites. Before initiating field work, approval of the RFI Work Plan for OU 1071 was obtained from the Environmental Protection Agency (EPA), as documented in Appendix G-1.0.

The Los Alamos airport lies on top of East Mesa, north of State Highway 502 at an elevation of approximately 7100 ft, and is bordered on the north by Pueblo Canyon. The environmental setting of the airport area includes no wetlands, seeps, or perennial streams. The ephemeral stream in Pueblo Canyon flows only in the spring as snow is melting and during extended, moderate to heavy rainfall events. The closest

spring to the area is DP Spring, located in DP Canyon approximately 1400 ft southeast of the east end of the runway. The only threatened and endangered species known or expected to occur in this area are the peregrine falcon and the Mexican spotted owl.

The appendixes to this report include the following contents:

- A list of acronyms and a glossary is found in Appendix A.
- Current and anticipated future land use of TA-73 is discussed in Appendix B-1.0. Appendixes B-2.0 through B-6.0 include a detailed discussion of the climate, geology, hydrology, ecological resources, and cultural resources for this area.
- Appendix C includes the complete quality assurance/quality control (QA/QC) results for this report.
- Appendix D provides an abridged version of the data for the investigation. A complete data set will be provided to the Administrative Authority in electronic format.
- Appendix E provides statistical calculations.
- Human health risk and ecological screening assessments were conducted for this report. Appendix F provides those calculations.
- Appendix G-1.0 summarizes the administrative history of the PRSs at TA-73. Appendix G-2.0 contains documents referenced in this RFI report that are specific to this report, if any. Other references will be included in the appropriate reference set (reference set for OU 1071) of the LANL ER Project Reference Library.

21 Summary

Section 2.3.4.2 provides a description of activities conducted during the RFI. This section is divided into 13 subheadings to more effectively discuss the tasks that have been conducted over the past four years. Before initiating sampling activities, several nonsampling tasks were completed. These included a site survey, surface radiological survey, geophysical survey, geomorphologic mapping, and infrared photography survey. Sampling activities included the completion of soil gas surveys, surface soil and channel sediment sampling, perimeter drilling and sampling, flux chamber testing, cone penetrometer testing, interior drilling and sampling, and geodetic surveying to document all sampling locations.

The nonsampling activities, including searching archival docs and interviewing former site personnel, were successful in gathering historical information regarding the landfill operation. The nonsampling activities also determined that the surface of the site posed no radiological health and safety concerns. The approximate boundaries of the landfill areas were revised, site drainage patterns were determined, and the lack of seeps and springs on the adjacent canyon wall was established.

RFI Report for Airport Landfill

As discussed in Section 2.3.5.1, the majority of inorganic COPCs were detected in the Bandelier Tuff (Qbt). Few inorganic COPCs were detected in deeper Bandelier Tuff units (Qbt2 and Qbt1V). Therefore, it appears that the vertical extent of inorganic contamination in tuff is mostly defined. In addition, most of the inorganic COPCs were identified by a relatively small number of samples that exceeded the baseline value. This is consistent with either limited extent of releases or natural variation in trace mineral chemistry. Also, the nature and extent of inorganic is comparable to other municipal landfills, which is pointed out in Section 2.3.5.1.

Porewater samples were collected from two interior wells and four perimeter wells for inorganic analysis. Several elements, including calcium, magnesium, iron, and manganese, were detected and provide an indication of the nature of pore water chemistry in the area. Although the installation of suction lysimeters is the best technology available for evaluating subsurface water under unsaturated conditions, there are inherent logistical difficulties and natural variations in the subsurface that prevent obtaining sufficient pore water at all depths beneath the landfill.

As discussed in Section 2.3.5.1, of 28 organic chemicals detected in subsurface soil and tuff samples, only eight were detected in more than one sample. Thus, the infrequent detection of organic chemicals, including twenty organic chemicals detected once, suggests limited extent of organic contamination. PCBs, pesticide, polyaromatic hydrocarbons (PAHs), and other SVOCs were more commonly seen in biased landfill surface or drainage channel samples locations (e.g., a paraffin-like material on the landfill surface).

As expected based on simple chemical partitioning models (e.g., Henry's Law), the VOC/COPC list shows good correspondence between the soil gas, subsurface soil, and pore water samples. Few VOCs were detected in the surface soil and sediment samples which is typical for volatile chemicals in surficial materials. In soil gas, the VOC concentrations demonstrate a positive correlation between the presence of methane and chlorinated VOCs. The highest methane and VOC concentrations generally occur at the shallowest soil gas sampling ports, and decrease by orders of magnitude with depth. The suite of VOCs detected at the landfill correlates well with VOCs detected in other municipal solid waste landfills. This will be discussed in depth in Section 2.3.5.1. It is estimated that the soil gas plume may extend to depths of at least 200 ft in places; however, this depth is still at least 1,200 ft above the regional water table.

Stormwater run-on controls, currently under construction, are expected to greatly reduce or eliminate any further vertical migration and to significantly reduce the formation of methane and other landfill gases. To the east, north, and west, the extent of fixed gases and VOCs appears to be defined by the perimeter monitor wells. The southern extent of the soil gas plume is assumed to extend not much further than the south side of the runway.

The extent of VOCs in pore water is poorly defined based on the pore water samples themselves, primarily because of insufficient data resulting from the difficulty in obtaining water samples from unsaturated soils. However, VOC concentrations are clearly highest within and immediately below the refuse. To approximate the distribution of VOCs in pore water, the VOC concentrations in soil gas and pore water were compared to predicted concentrations based on Henry's Law. It appears that the pore water and soil gas are in approximate equilibrium with respect to the distribution of VOCs, and VOCs in pore water can be expected in all locations within the refuse where both moisture and the landfill gas plume are present.

As discussed in Section 2.3.5.1, the detection of radionuclides in surface soil and sediment appears

Section 2.5 presents the conclusions and recommendations for the PRS aggregate and the rationale behind them. The primary conclusion is that contaminant levels present in the various landfill media are

consistent with other municipal landfills and that the final remedy for the landfill aggregate should be consistent with state and federal regulations set forth for closure of other municipal waste landfills. It is recommended that because the aggregated PRSs are shown to be closely associated in terms of both character and operational history, that they remain aggregated when evaluating remedial alternatives. It is also concluded that both the carcinogenic and noncarcinogenic human health risk posed by this landfill are acceptable for current and proposed future use as an airport. It is further recommended that planned best management practices (BMPs) to minimize future infiltration of water into the landfill areas be constructed and instituted. Other planned site restoration activities will likely mitigate any ecological risk posed by surface contamination or debris associated with the landfill.

2.2.1 Site Description

Initially, the main landfill [PRS 73-001 (a)] consisted of a natural, hanging valley into which municipal waste was disposed. As more capacity was required, trenches were excavated into the tuff. Historical (1946) aerial photographs (Photographs 2.2.1-1 and 2.2.1-2) show two large trenches on the north side of the runway, which suggest that trenches were excavated for disposal of wastes; however, the exact nature and purpose of these trenches has never been determined. In 1946 it was not common practice to line trenches at disposal areas. Per the RFI work plan for OU1071 (Figures 5-77, 5-78), the west and south sides of the main landfill approximately coincided with the edges of the asphalt tiedown area and the asphalt taxiway to the hot pad, respectively (LANL 1992, 07667). The north side extended approximately to the chain link security fence along the north side of the airport. To the east, the main landfill extended to the end of the hanging valley and pinched out to the east of the hot pad. Figure 2.2.1-1 illustrates the PRS and associated structures and features as shown in the work plan's Figure 5-78. Figure 2.2.1-2 illustrates the PRS and associated features as revised using information generated during completion of the RFI activities, primarily the site, geophysical, and shallow soil gas surveys. The most obvious differences are the elimination of the narrow projection to the west, north of the airplane hangers, and the long narrow projection to the east along the taxiway to the hot pad and pinching out to the east of the hot pad. In addition, based on a re-examination of available aerial photographs, the former asphalt batch plant and the two trenches noted on a 1946 aerial photograph have been relocated.

Per the work plan, the debris disposal area (PRS 73-001[d]) consisted of two pits excavated to a depth of 60 ft (Burgess 1990, 00633). The exact location of the pits was unknown but was thought to have been north of the end of the runway as illustrated in the work plan, Figure 5-77 (Figure 2.2.1-3). Based on new information from the RFI, the debris disposal area landfill consisted of 2, roughly parallel, unlined trenches (Photo 2.2.1-3, 2.2.1-4). The maximum documented depth of these trenches is approximately 35 ft. To the west, the trenches extend to within approximately 150 ft of the wind sock. To the east the trenches extend approximately 800 ft beyond the end of the runway. The north and south boundaries extend to within approximately 50 ft of the security fence and the asphalt runway. The PRS and associated structures and features, as revised using the RFI information, are illustrated in Figure 2.2.1-4.

The main landfill, as illustrated in Figure 2.2.1-2, covers a surface area of approximately 12 acres. The debris disposal area landfill, as illustrated in Figure 2.2.1-4, covers a surface area of approximately 5 acres. Neither of these surface area dimensions includes drainage channels and other portions of the north-facing slope of Pueblo Canyon that are known to contain debris from landfill activities. Using approximate depths obtained from geophysical survey and drilling activities, the main and debris disposal area landfill volumes are estimated to be 489 500 and 126 000 cubic yards, respectively.

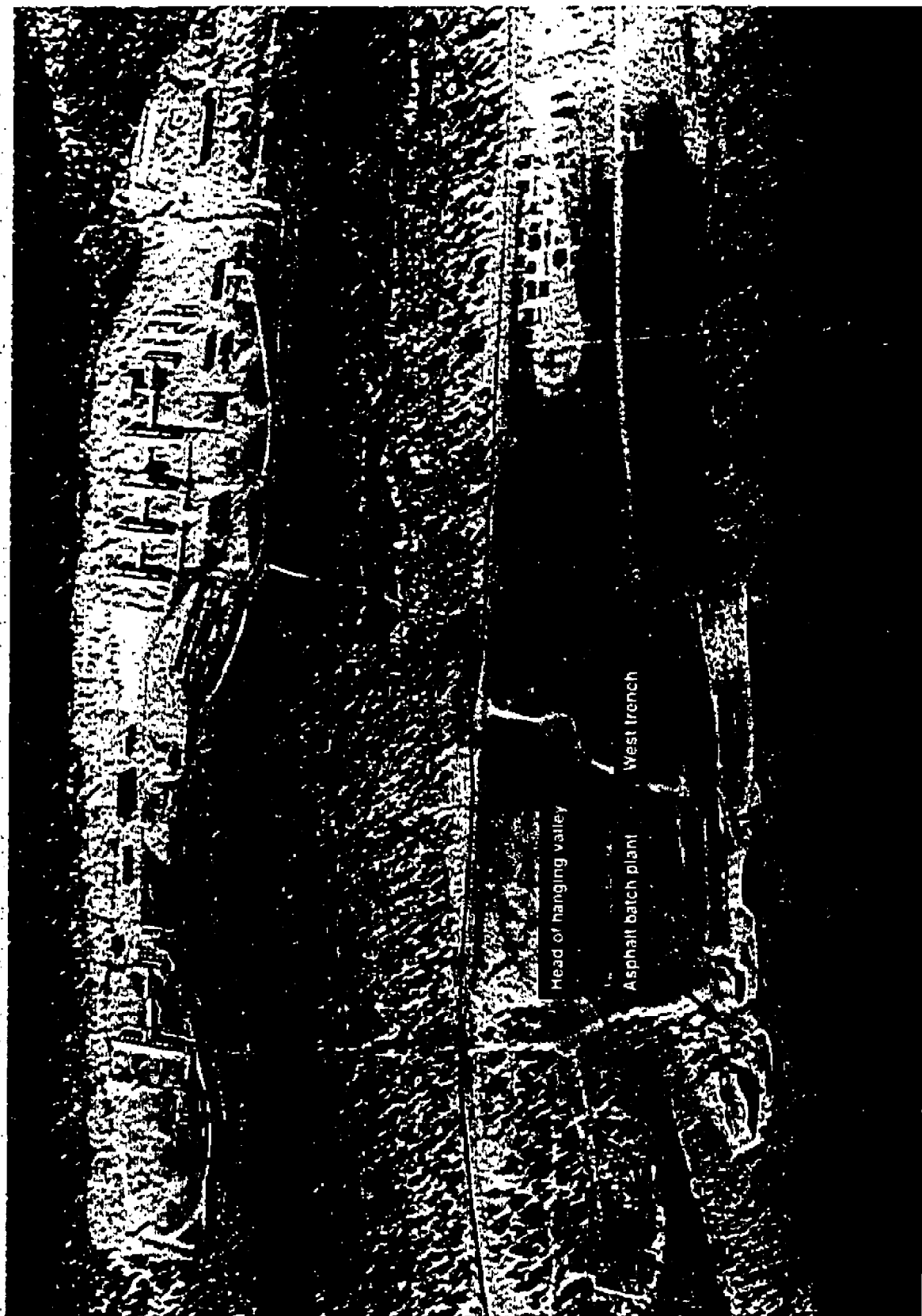


Photo 2.2.1-1, West trench and head of hanging valley (1946)

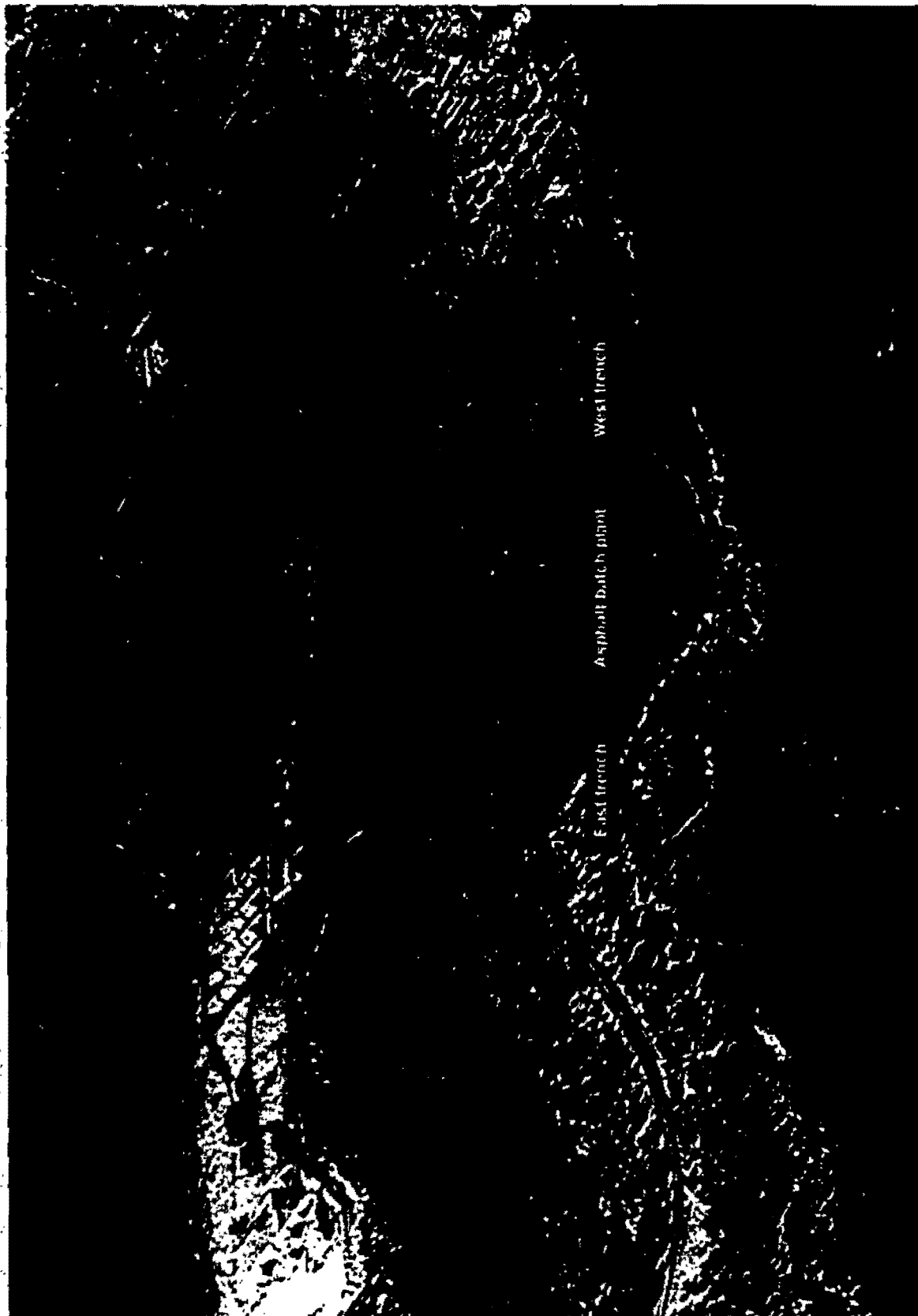


Photo 2.2.1-2. West and east trenches and hanging valley (1946)

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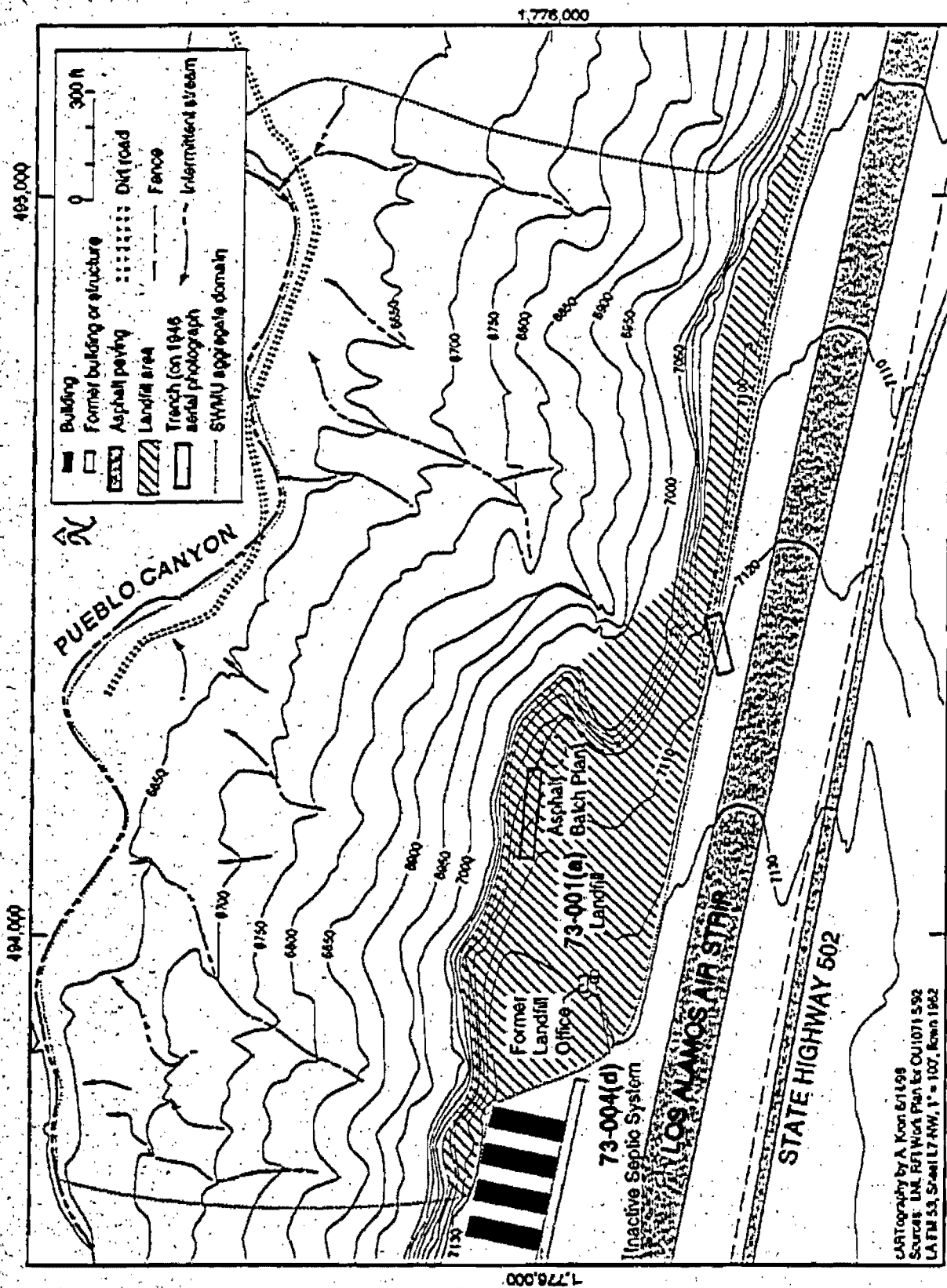


Figure 2.2.1-1. PRS 73-001(a), as illustrated in RFI Work Plan, as Figure 5-78

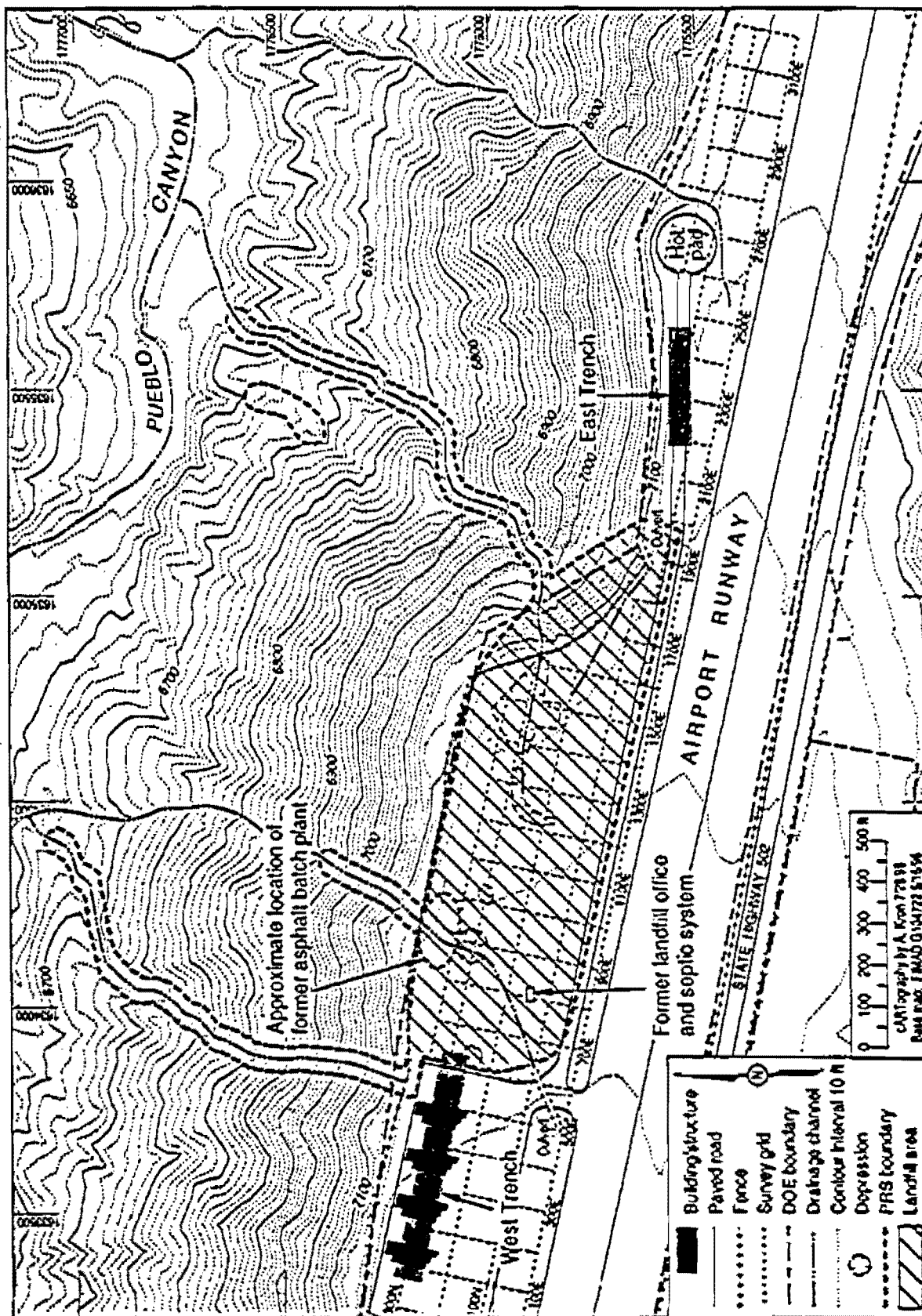


Figure 2.2.1-2. PRS 73-001(a) as revised using RFI information

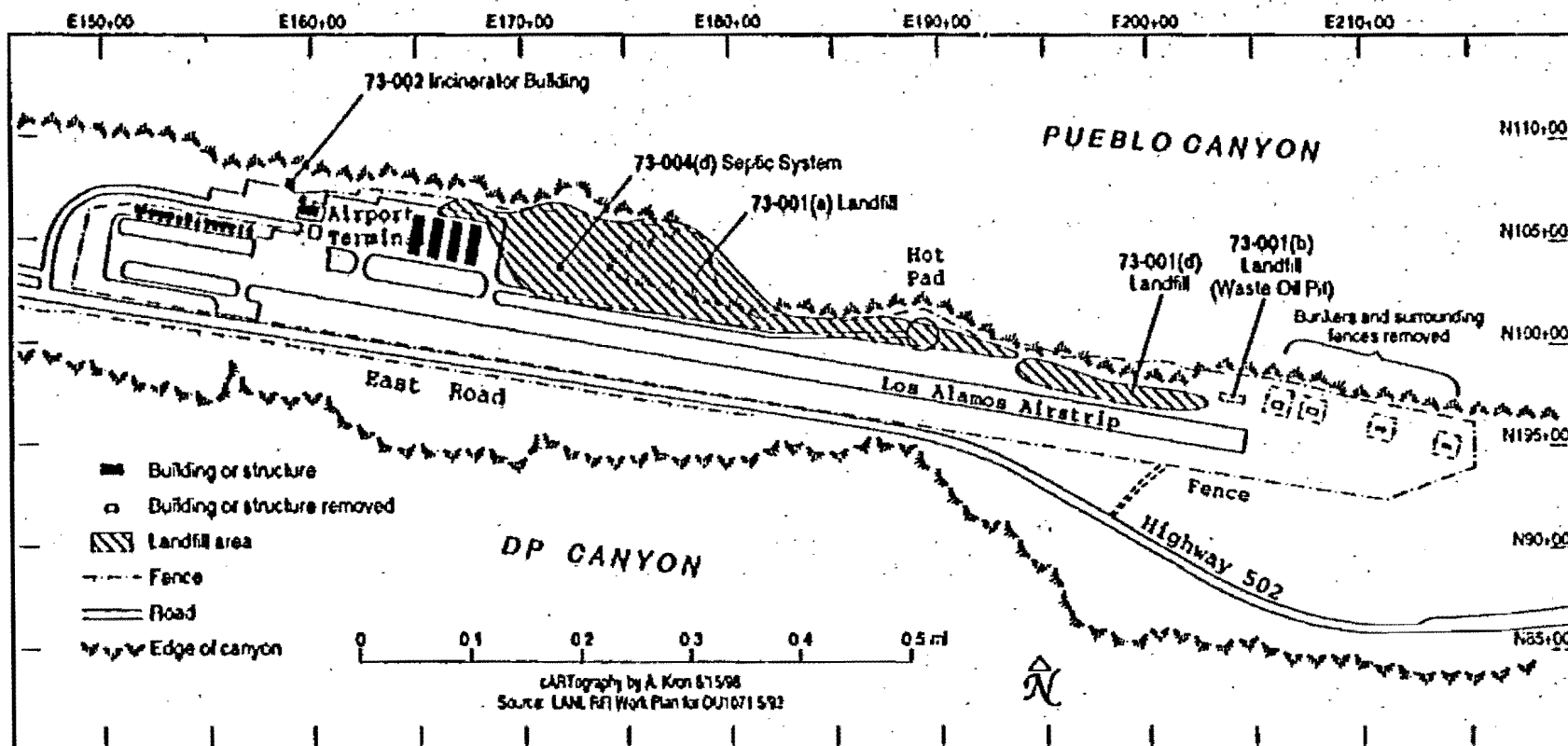


Figure 2.2.1-3. PRSs 73-001(a) and 73-001(d) as illustrated in RFI work plan as Figure 5-77

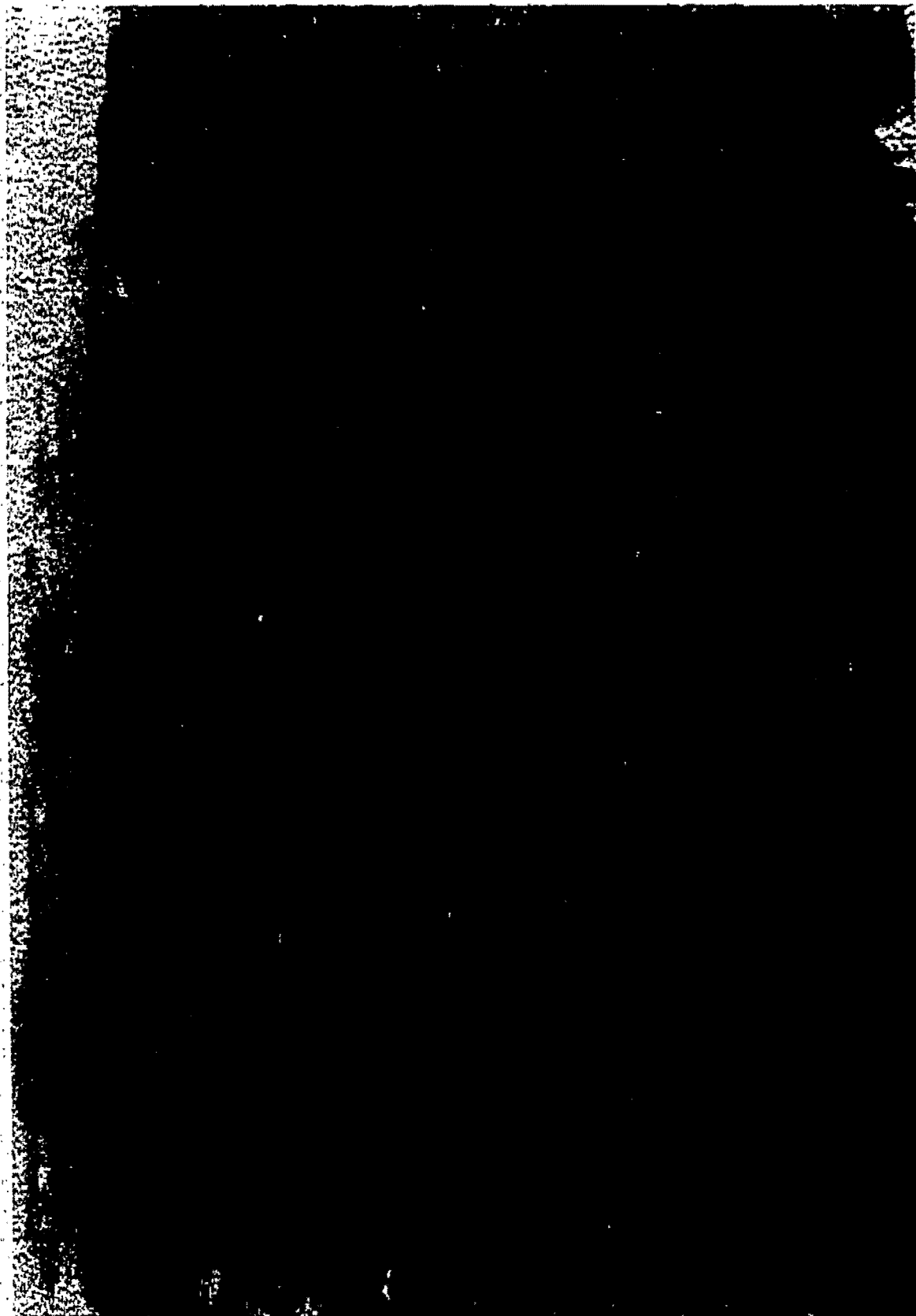


Photo 2.2, 1-3. Debris disposal area trenches (1985)

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Photo 2.2.1-4. Debris disposal area trenches (1985)

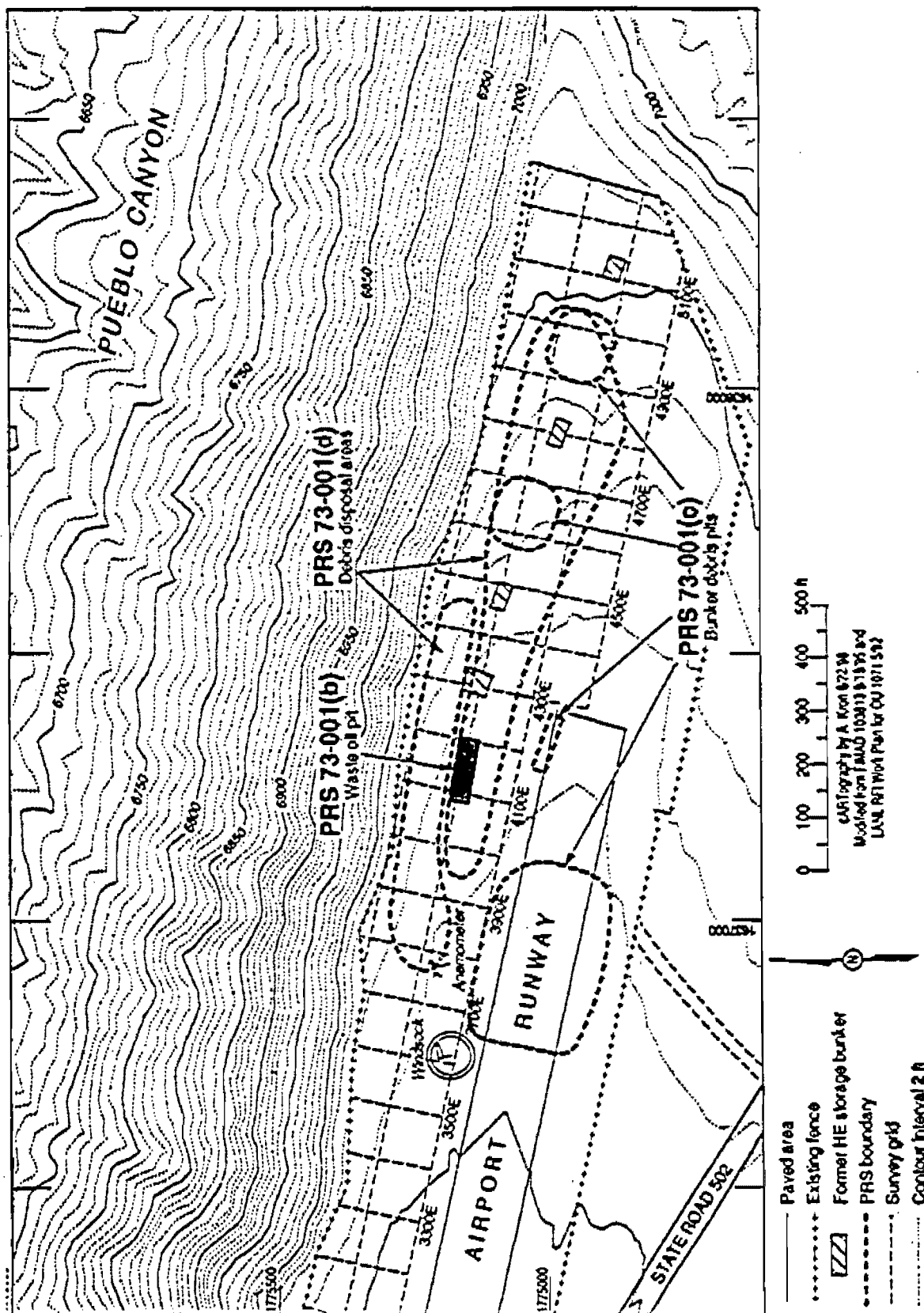


Figure 2.2.1-4. PRS 73-001(d) as revised using RFI information

No documented historical releases are known to have occurred outside either landfill boundary. Tires, car bodies, concrete chunks, and other miscellaneous debris are relatively common in some drainage channels and other areas along the south slope of Pueblo Canyon adjacent to the landfill areas. At the end of the hanging valley, debris extends beyond the security fence and is weathering out of a 30–40° slope.

Several other airport PRSs are part of PRS Group 73-2. Only two of these have the potential to affect recommendations for the landfill PRSs: (1) PRS 73-001(c) (bunker debris pits), is discussed in Section 1.0; (2) PRS 73-002, consisted of an incinerator and an incinerator ash disposal area located approximately 0.2 mi west of the western end of the main landfill (Figure 1.0-3). The incinerator functioned for a short period (1947–1948), primarily to burn classified documents and municipal trash. Because of short operating duration, distance from the landfill, and dispersion of incinerator stack gases that would have taken place, it is unlikely that these stack emissions significantly affected the landfill area. If so, it would now be impossible to separate potential effects of the incinerator emissions from emissions created by burning trash at the landfill for a period of over 20 years.

The areas encompassing PRSs 73-001(a) and 73-001(d) are currently part of the airport, but are not being used for any specific purposes. Future land use projections say that these areas will continue to be included as part of the airport (i.e., an industrial use). The current airport operations manager has indicated that there is a desire to use part of the area above the main landfill, once properly remediated, for an aircraft tiedown area, assuming there are no restrictions on this type of activity.

Both landfills are located entirely on the mesa top, adjacent to the north edge. Soils in the vicinity of the landfill are composed predominantly of reworked soil and fill material. Construction of the taxiway, hangar, and tiedown area, and operation and capping of the landfills necessitated a great deal of earth-moving activity and trucking in a considerable amount of fill. These activities have left little, if any, of the original soil profile. In general, the existing surficial soils are thin and sandy with a relatively low clay content. With depth, and in relatively undisturbed areas, more well-developed soils are occasionally encountered with relatively high percentages of reddish clay. Such soils are usually enriched with many naturally occurring trace metals. In boreholes outside the landfill perimeter, the depth to tuff is 4–7.5 ft. For a detailed discussion of the general site geology and soils, refer to Appendix B.

Vegetation in the form of grasses and forbs covers approximately 85–90% of the relatively level mesa-top area. The adjacent south slope of Pueblo Canyon is vegetated predominantly with grasses, forbs, scrub oak, and Ponderosa pine. The east end of the trash-filled hanging valley is sloped at approximately 30–40° with a sparse vegetation cover on the order of 25–30%; therefore, a considerable amount of erosion was taking place on the slope. To prevent continued erosion, a shallow run-off diversion ditch was constructed in October 1979 along the east end of the landfill.

The surface of the main landfill area contains several depressions created by differential compaction of the underlying waste. A portion of the sheet flow run-on from the south side of the landfill and the precipitation falling on the surface of the landfill is temporarily ponded in some of these depressions. The ponded water dries up through evaporation and infiltration. The infiltrated water undergoes multiple fates—from evapotranspiration to retention within the unsaturated landfill waste to potential downward percolation. The potential for interflow in the soil or tuff is interpreted to be negligible because little or no water was encountered in perimeter boreholes and no seeps were identified along the south slope of Pueblo Canyon.

Precipitation and run-on that does not pond in the depressions continues to flow off-site to the north and east. The run-off diversion ditch that was constructed along the east end of the landfill to prevent erosion,

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directs flow to a culvert that discharges near the edge of the mesa, beyond the buried trash. A drainage ditch across the west end of the landfill was designed to direct run-on from a large area of the airport to the edge of the mesa. Discharge from these ditches, with other runoff, drains directly north to the ephemeral stream at the base of Pueblo Canyon via drainage channels that arise at or near the edge of the mesa (Figure 2.2.1-2).

Some of the drainage channels receiving runoff from the landfill contain debris derived from landfill operations, primarily in the form of tires, scrap metal, and asphalt or concrete debris. The largest quantity of debris appears to be at the east end of the landfill in the channel originating below the hanging valley.

The surface of the debris disposal area is relatively flat, with no major run-on or runoff features and little evidence of differential compaction or erosion. Runoff from this area drains directly north to the ephemeral stream at the base of Pueblo Canyon via drainage channels that arise at or near the edge of the mesa (Figure 2.2.1-4).

The preliminary conceptual model for contaminant release and transport identified 5 primary and secondary release mechanisms including water entrainment, mass movement, leaching/dispersion, volatilization, and air entrainment. Data generated during the RFI allowed refinement of the preliminary conceptual model (Section 2.3.5). There appear to be no major gaps in the conceptual understanding of the PRS and the potential contaminant migration pathways.

Climatic information, and information regarding cultural and biological resources that may be present at the site, are discussed in Appendices B-2.0, B-5.0, and B-6.0, respectively. As a general statement, there appear to be no climatic factors that dominate or control contaminant distribution at the site. No known cultural resources are impacted by the site. The only known biological resources (threatened and endangered species) that may be present in the site's vicinity are the peregrine falcon and the Mexican spotted owl.

2.2.2 Operational History

In 1943, the DOE began operating a burning area/landfill (PRS 73-001[a]) located north of the airport runway (Photo 2.2.2-1). Garbage was collected twice a week from the Laboratory and townsite and burned on the edge of the hanging valley located next to the airport runway (Miller 1963, 00684). This intentional burning ceased in 1965, when the county assumed operation of the landfill (Miller and Shaykin 1966, 36692). Heavy equipment was used to push the burned residues and ash into whichever landfill disposal area was being used at the time. Flammable materials were reportedly disposed in a special designated area separate from the burning area. However, the location of this flammable materials disposal area is undocumented; conclusive evidence to support its existence could not be found. Also, animal carcasses from an unspecified source were reportedly disposed of in the landfill (Miller 1963, 00684).

The draft Comprehensive Environmental Assessment and Response Program (CEARP) report (DOE 1987, 52951.61) refers to a paragraph in a Laboratory document that mentions "a yet to be identified radioactive disposal area in the vicinity of the airport that was active in 1943-1944." There was some speculation that 1 of 2 trenches north of the runway, believed to be visible on a 1946 aerial photograph, may have been this disposal area. However, this could not be verified, and the existence of the disposal area has never been confirmed.

[The following anecdotal accounts of nonroutine disposal were also found; however, none of these accounts could be conclusively corroborated or verified by the data. They are presented here for completeness only.]

Two separate incidents involving accidental disposal of radioactive materials in 1953 were reported. On April 3, 1953, approximately 125 lbs of uranium-238 in the form of scrap and oxide were taken from the dock of the TU

Building at the library. The individual who reported the material missing thought it had been taken to the city landfill. Through extensive monitoring and recovery efforts (including dump workers manually sifting through hot ash), approximately 25 lbs of the material were retrieved; however, the remaining 100 lbs could not be located. Approximately three truckloads of soil were placed over the area from which the material was recovered, and monitoring continued on a weekly basis for the next several weeks (Blackwell 1953, 00616). No significant counts were measured in urine samples collected from 23 men who worked at the landfill.

Also in 1953, a 20-lb block of depleted uranium (uranium-238), which was apparently being used as a doorstop, was reported missing by an employee in the Sigma Building. A janitor had placed the doorstop in a dumpster, which was subsequently emptied at the city landfill. Although attempts were made to find and recover the uranium, recovery efforts were hampered by continuous burning activities and the depth of the ashes in which searchers had to wade. Although a few lbs of uranium were recovered during this effort, the block of uranium may remain in the landfill (Buckland 1978, 00631).

A 1959 memo noted that an explosion could occur at the landfill as a result of disposing trash from Kappa Site (DOE 1987, 52951.61). Kappa Site was an explosives firing site, located within the current boundaries of TA-36, where hazardous materials, explosive materials (such as HE), uranium, lead, zinc, barium, and beryllium were historically used. These materials may have been disposed in the landfill. However, no records could be found to indicate any such occurrence.

Normal and accepted operation of the landfill encouraged disposal of municipal waste only. The documented incidents discussed above all represent potential releases only to the landfill interior. There were no documented releases outside the boundaries of the landfill. However, the practice of burning waste, the lack of run-on and run-off controls, and the unlined nature of the landfill trenches all provided opportunities for potential releases.

The landfill office septic system (PRS 73-004[d]) was combined with PRS 73-001(a) for the purposes of this report. The septic tank served the airport landfill office, which was located east of the airport terminal building. It appears from available drawings and information that the septic system was used between 1960 and 1973. The septic system is believed to have been used for sanitary wastes only, and no evidence was uncovered to indicate that it contained any hazardous materials. Based on the known boundaries, the septic system is completely surrounded by the landfill area.

Los Alamos County assumed operations of the landfill in 1965 (Miller and Shaykin 1966, 36692). The county continued to operate it until June 30, 1973 (Drennon 1991, 00650). In 1984-1986, the western portion of the landfill was excavated and moved to the debris disposal pit [73-001(d)] to allow the construction of the existing hangars and tie-down area.

The debris disposal area landfill [PRS 73-001(d)] was used from 1984 to 1986 to bury debris excavated from the western portion of the 73-001(a) landfill (LANL 1990, 07514). This material was excavated and replaced with clean fill to prepare the western portion of the landfill for the construction of airplane hangars and tie-down areas. Since the wastes placed in the debris disposal area landfill came from 73-001(a), it is assumed that they may have contained the same materials known to have been disposed at that PRS. In 1986, the debris disposal area landfill was covered with soil and hydroseeded (LANL 1990, 07514). There is no indication that there were releases from this area during its short period of operation.

The waste oil pit (PRS 73-001[b]) and the bunker debris pits (PRS 73-001[c]) are combined with PRS 73-001(d) for purposes of this report. The waste oil pit was approximately 100 by 25 ft with an unknown depth (Francis 1991,



Photo 2.2.2-1, Burning trash in main landfill (1963)

00642; Limbaugh 1963, 00678), and was located north of the end of the runway (Photo 2.2.2-2). The waste oil pit's period of operation is estimated to have been 1947-1974 (Black & Veatch 1947, 00614). Used oils from the motor pool, craft shops, and vehicle shop are known to have been disposed at this PRS (Miller 1962, 00683; Francis 1997, 00642). No releases were reported during its operation. The Zia Company reportedly closed the waste oil pit by filling it with clean sand to solidify its contents (LANL 1990, 07514). By viewing aerial photographs and examining RFI data, it can be shown that the closed waste oil pit was incorporated into 73-001(d) when the disposal trenches were excavated.

PRS-73-001(c) contained debris from the demolition of 4 HE storage bunkers that were constructed of concrete in 1947, along the north canyon rim east of the runway (The Zia Company 1974, 00725) (Photo 2.2.2-2). The Zia Company acquired 3 of the bunkers in June 1948 (Larson 1973, 00662). The protective force of the Laboratory's security branch continued to use the other bunker between 1948 and 1964. In July 1964, the protective force permanently vacated the bunker and turned control of the structure over to The Zia Company (O'Connor 1964, 00695; Nettrott 1964, 00693). By July 1973, the company no longer needed the bunkers and listed them as excess facilities (Larson 1973, 00662). Following contamination surveys in September and October 1973 by Lab groups H-1, H-5, and H-8 (Montoya 1973, 00687), all 4 bunkers were demolished in 1974. Concrete rubble from the bunkers may have been placed in 2 large pits adjacent to the bunker sites, in a small trench at the northeast corner of the runway, and beneath the 1974 runway extension. Existing lighting arrestor poles and some fencing were removed or relocated at that time. Steel doors, vent pipes, and other salvageable items were sent to the Zia salvage yard (The Zia Company 1974, 05-0180). There were no known releases resulting from operating the storage bunkers. As with the waste oil pit, it can be shown that the 2 supposed disposal pits adjacent to the bunker sites were physically incorporated into 73-001(d) when the disposal trenches were excavated.

Access to PRSs 73-001(a) and 73-001(d) has been for many years, and still is, controlled by a perimeter fence around the entire airport. Access to the tarmac is limited to private airplane owners, operators, and passengers, and others with legitimate reasons to be there. No commercial flights are scheduled at this time; however, most pertinent Federal Aviation Administration (FAA) security protocols are followed. In return for night-time and weekend security, a Los Alamos police officer is provided with a residence near the airport entrance. A pending transfer of TA-73 to Los Alamos county ownership is expected to continue this level of access control and may, in fact, enhance site control as the county seeks to expand airport opportunities.

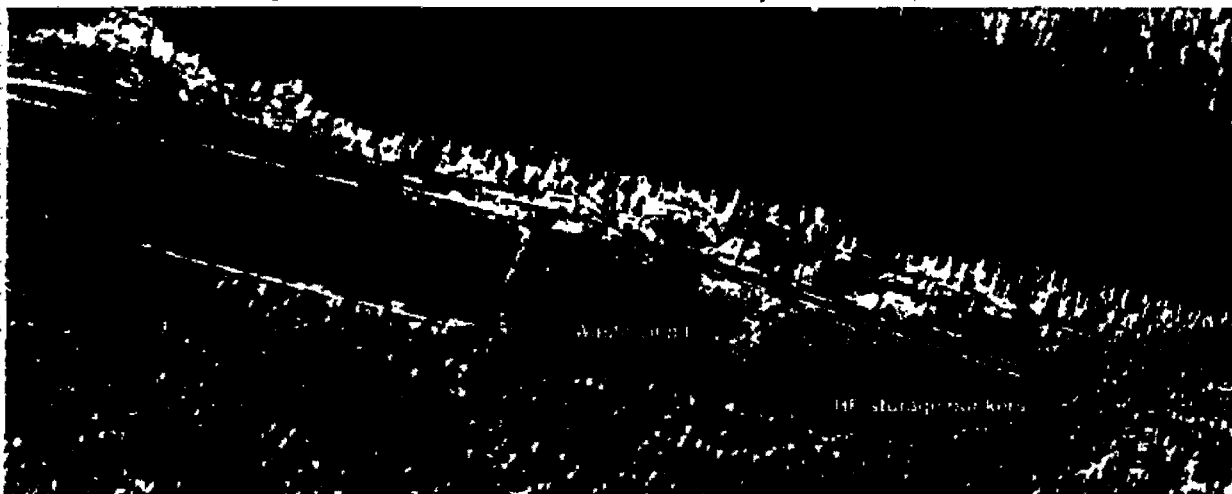


Photo 2.2.2-2. Waste oil pit and HE storage bunkers (1958). Note: Current runway ends 600 ft east of runway end shown here

2.3 Investigative Activities

2.3.1 Summary

Section 2.3 describes the investigative activities for the Los Alamos airport landfill (PRSs 73-001[a], 73-001[b], 73-001[c], 73-001[d], and 73-004[d]), including previous investigations (Section 2.3.2), the preliminary conceptual model that guided the RFI field work (Section 2.3.3), and the RFI field activities (Section 2.3.4.2). A review of the RFI data is also presented (Section 2.3.4.3) followed by a description of how the conceptual model was revised based on information gained during the RFI (Section 2.3.5).

2.3.2 Previous Investigations

No previous investigations were conducted at PRSs 73-001(a) or 73-001(d). Of the associated PRSs, only the HE storage bunkers (PRS 73-001(c)) were investigated before their demolition. Contamination surveys were conducted in September 1973 and October 1973 by Laboratory groups H-1, H-5, and H-8. Group H-1 demonstrated all four structures to be free of radioactive contamination (Buckland 1973, 00630). Group H-5 determined that there was no significant chemical or toxic contamination in any of the structures, but found two cases labeled "High Explosive" in one of the bunkers at PRS 73-001(c) (Mitchell 1973, 00686; Montoya 1973, 00687). These were removed before demolition.

2.3.3 Preliminary Conceptual Model

Figure 2.3.3-1 presents the preliminary conceptual model for potential contaminant releases from the airport landfills and subsequent exposure by potential receptors. In this figure, "off-site residents" refers to residents located in the vicinity of the airport (likely closest downwind receptors to the west and to the north across Pueblo Canyon), "site visitors" refers to passengers at the airport and people who hike along the slopes of Pueblo Canyon adjacent to the airport, and "on-site workers" refers to employees at the airport facilities. Terrestrial animals in the vicinity of the airport, primarily on the adjacent north facing slope of Pueblo Canyon, may also be impacted by potential contaminant releases.

The preliminary conceptual model was based solely on the site setting and history as detailed in Sections 2.2.1 and 2.2.2. There were no previous investigations upon which to base assumptions regarding the expected nature and extent of contamination or the environmental fate of contaminants. Operational histories of the landfill PRSs provided no documentation of releases beyond the landfill boundaries. Based on the conceptual model, potential contaminants may have been released to the environment via mass movement, leaching/dispersion, volatilization, and entrainment by air and water. Migration pathways were expected to be soil and tuff within the vadose zone, surface water runoff, and the atmosphere. The

most likely contact mediums would then be soil or tuff, channel sediments, vegetation, or air. Because of the considerable depth to the top of the regional aquifer, and since there are no active water supply wells within the vicinity of the landfill, ground water was not considered to be a potential migration pathway or contact medium. This assumption will be reconsidered following review of the RFI data.

Based on the preliminary site conceptual model, the data quality objectives (DQO) process identified several data needs. The first of these needs was to determine as accurately as possible the locations, boundaries, and geometries of the units to be investigated. Following definition of the approximate landfill boundaries, the objectives were to determine the nature, concentrations, and lateral and vertical extent of any contaminants present in potential release areas and site media, including contaminants in surface material and exposed refuse at the landfill, vadose zone gases at the landfill, leachate in subsurface materials beneath and/or surrounding the landfill, subsurface material beneath the waste oil pit and the debris disposal areas, and channel sediments in surface drainages originating at or transecting the landfill.

2.3.4 Field Investigation and Data Evaluation

2.3.4.1 Summary

Section 2.3.4 describes the field investigation and data evaluation for the Los Alamos Airport landfill PRS aggregate. The field investigation is discussed in Section 2.3.4.2, and the data review is included in Section 2.3.4.3. Table 2.3.4.1-1 provides an overview of field investigations.

2.3.4.2 Field Investigations

Phase I RFI activities at the airport landfill PRSs were carried out over a period of several years starting in April 1994 and continuing on and off through September 1997. The investigation was conducted in several phases that included three primary tasks: Task 1, Field Surveys; Task 2, Surface Sampling; and Task 3, Subsurface Sampling. As part of these tasks, several activities were completed including geodetic surveying, radiological surveying, geophysical surveying, soil-gas sampling, surface soil and sediment sampling, borehole drilling, subsurface soil and tuff sampling, monitoring well installation, leachate sampling, and related activities. In addition, a Phase I RFI was completed at PRS 73-001(c) as discussed in the RFI work plan for PRS Group 73-2 (OU 1071 Work Plan; LANL 1992, 07667). Since part of this PRS is associated with the debris disposal area, the decision was made to discuss these data in this report with SWMU Group 73-1. All applicable LANL ER SOPs were followed during completion of the field work. Applicable SOPs are identified in each of the following task summaries, as are deviations from the

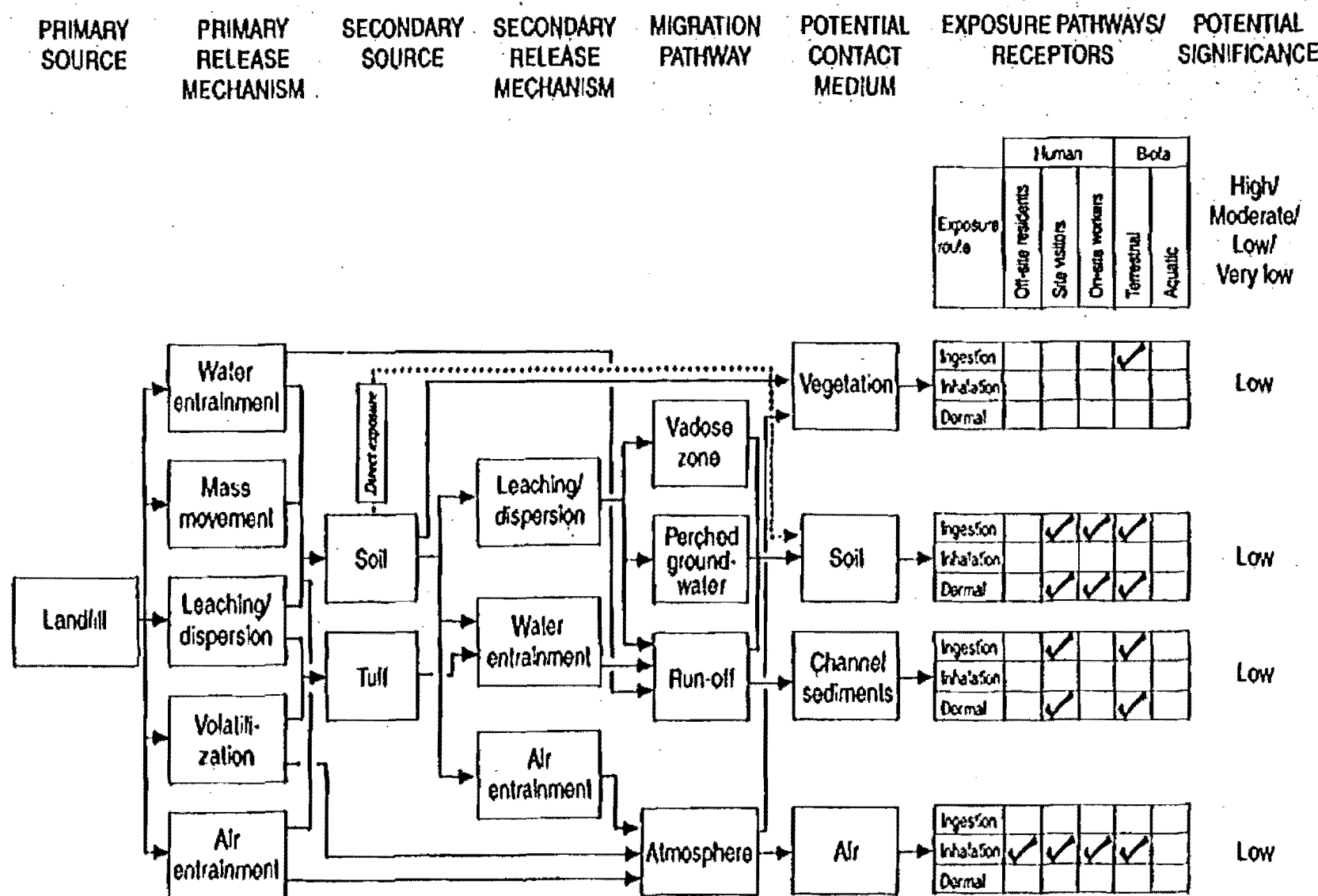


Figure 2.3.3-1. Preliminary conceptual model of PRSs 73-001(a) and 73-001(d) as illustrated in RFI work plan, Figures 5-79 and 5-80

2.3.4.2 (a) Field Surveys

The following field surveys were included in the Phase I scope of activities as presented in the work plan: (1) site survey, (2) geophysical surveys, (3) geomorphologic mapping, (4) soil-gas surveys, and (5) a surface radiological survey. Two additional surveys, not specifically discussed in the work plan, were completed: (1) infrared photography survey and (2) geodetic survey. These activities are described below.

Site Survey

A site survey was conducted primarily in April and May 1994, but was essentially an ongoing activity throughout the life of the project. As new information became available, it was reviewed to determine its impact on both completed and planned activities. No relevant ER Project SOP exists for this type of activity.

The initial fieldwork was preceded by a site survey that comprised a review of historic aerial photographs and records, including maps and engineering plans. Site walkthroughs were conducted to physically associate available information with existing site conditions. Approximate boundaries of the landfill and the associated PRSs were determined, even though there was little or no physical evidence at the time, with which to verify the accuracy of the boundary locations. Former employees of the airport and landfill were interviewed to determine their recollection of PRS and associated structure locations. Results of these interviews are referenced where applicable.

The site survey was conducted per the RFI work plan with no deviations.

Geophysical Surveys

The geophysical surveys were conducted to more precisely locate the boundaries of the trenches and landfill areas (PRSs 73-001[a] and 73-001[d]); to determine the depth and thickness of the landfill material and to identify anomalies in the subsurface to be avoided during drilling. The climatic conditions that prevailed during completion of the geophysical surveys were not documented. The LANL ER Project SOPs used are as follows:

- | | |
|------------------|---|
| LANL-ER-SOP-3.01 | Land Surveying Procedures |
| LANL-ER-SOP-3.02 | General Surface Geophysics |
| LANL-ER-SOP-3.12 | Field and Laboratory Notebook Documentation for Environmental Restoration Earth Science Studies |

TABLE 2.3.4.1-1
FIELD INVESTIGATIONS CONDUCTED AT THE TA-73 LANDFILL

RFI Field Activities	Start Date	Finish Date	Location ¹	Nonsampling Activities	Sampling Activities
<i>1994 Field Activities</i>					
Site Survey	4/94	5/94	73-001(a,b,d)	yes	no
Surface Radiological Survey	5/94	5/94	73-001(a)	yes	no
Geodetic Survey	5/94	11/94	—	yes	no
Geophysical Survey	6/94	9/94	73-001(a)	yes	no
Shallow Soil Gas Survey	7/94	8/94	73-001(a)	no	yes
HSA Perimeter Soil Borings	10/94	11/94	73-001(a)	yes	yes
Perim. VZ Well Installations	10/94	11/94	73-001(a)	yes	no
<i>1995 Field Activities</i>					
Infrared Photo Survey	6/95	6/95	73-001(a)	yes	no
Geophysical Surveys	8/95	9/95	73-001(b,d)	yes	no
Geomorphic Mapping	7/95	7/95	73-001(a,d)	yes	no
Monitor Well Sampling	2/95	10/95	73-001(a,d)	yes	yes
Cone Penetrometer Testing	10/95	10/95	73-001(a,b,d)	yes	yes
CPT VZ Well Installations	10/95	10/95	73-001(a,d)	yes	no
Shallow Soil Gas Survey	5/95	5/95	73-001(a,b,d)	no	yes
Surface Soil Sampling	—	—	73-001(a)	no	yes
Soil Gas Flux Study	—	—	73-001(a,b,d)	no	yes
<i>1996 Field Activities</i>					
Monitor Well Sampling	3/96	12/96	73-001(a,d)	yes	yes
Channel Sediment Sampling	3/96	3/96	73-001(a)	no	yes
Surface Soil Sampling	4/96	4/96	73-001(a)	no	yes
Geodetic Surveying	3/96	4/96	73-001(a)	yes	no
<i>1997 Field Activities</i>					
HSA Interior Soil Borings	6/97	7/97	73-001(a,c,d)	yes	yes
HSA Interior VZ Well Installations	6/97	7/97	73-001(a,d)	yes	no
Monitor Well Sampling	3/97	10/97	73-001(a,d)	yes	yes
Geodetic Surveying	6/97	7/97	73-001(a, c, d)	yes	no

¹ The Airport Landfill consists of SWMU Group 73-1 as identified in the RFI work plan for OU 1071 (LANL 1992, 56101). This group consists of the following SWMUs: 73-001a (main landfill), 73-001b (waste oil pit), 73-001c (airport bunkers), and 73-001(d) (debris disposal area).

The initial geophysical surveys were conducted in the main landfill area (PRS 73-001[a]) between June 22 and August 25, 1994. The survey methods used involved several basic principles including wave propagation at different wavelengths (seismic refraction and ground penetrating radar [GPR], potential fields (magnetic total field and gravity field profiling and mapping), and Schlumberger vertical electric sounding (VES) resistivity measurement. The surveys were based on a measured grid and performed using conventional methods. The surveys were successful in providing data on landfill thicknesses and depths to the native tuff, and on the location of landfill boundaries and buried objects. These data were used in developing the final design and placement of the perimeter boreholes. The results of the different surveys were combined to produce a consistent, integrated interpretation of all available data. Data from the geophysical surveys were integrated with historical records and geological information to produce an isopach map of landfill thickness (Figure 2.3.4.2-1). Four cross sectional profiles are included to illustrate the structure of the landfill (Figure 2.3.4.2-2). The survey found that the landfill extended 1100 ft east from the hanger to the mesa edge, 400 feet north from the hot pad taxiway to the mesa edge. The two trenches noted on a 1946 aerial photograph could not be located with any of the survey data. The southern boundary of the landfill was clearly defined by a linear anomaly that parallels the hot pad taxiway, as illustrated on the magnetometer survey data plot (Figure 2.3.4.2-3). This anomaly represents an abundance of ferrous metallic debris which was highly visible to the magnetic survey. South of this linear anomaly, the magnetic data showed no metallic materials present, which suggests that the southern landfill boundary coincides with this concentration of metallic debris. It is possible that metal may have been concentrated by the practice of burning debris along this edge of the landfill. Combustible materials were reduced to ashes leaving behind a concentration of metal materials. Other high amplitude anomalies within the landfill are interpreted to be concentrations of buried ferrous materials. The depth/thickness of the landfill was determined primarily with seismic, GPR, and VES resistivity methods. Microgravity profiling did not provide significant information on the landfill thickness because of the lack of density contrast between the Bandelier Tuff and fill material. Seismic refraction provided landfill thickness determinations up to 25 feet. In the thicker portions of the landfill, absorption of energy by the fill material and the low contrast in seismic velocity between the fill material and Bandelier Tuff made seismic wave propagation difficult with the available energy source. VES resistivity was the only method capable of providing depth information in the deeper portions of the landfill. The maximum thickness of the fill was found to be approximately 70 feet at the east end of the hanging valley that had been infilled with trash. The survey results were reported by Geophex (Geophex 1995, 59982).

On August 24-25, 1994, the Naval Research Laboratory, in conjunction with Sandia National Laboratory, conducted a technological demonstration of a towed magnetometer array survey apparatus. The entire landfill area (approximately 21 acres) was surveyed between the north side of the airport runway and the edge of Pueblo Canyon. The survey was conducted using the Multi-Sensor Towed Array Detection System (MTADS), which consists of a trailer-mounted rack of seven total field magnetometers towed by an all-terrain buggy and tracked by a complex global positioning system (GPS). The magnetic anomaly signatures and patterns identified by the MTADS survey were not consistent with an organized landfill

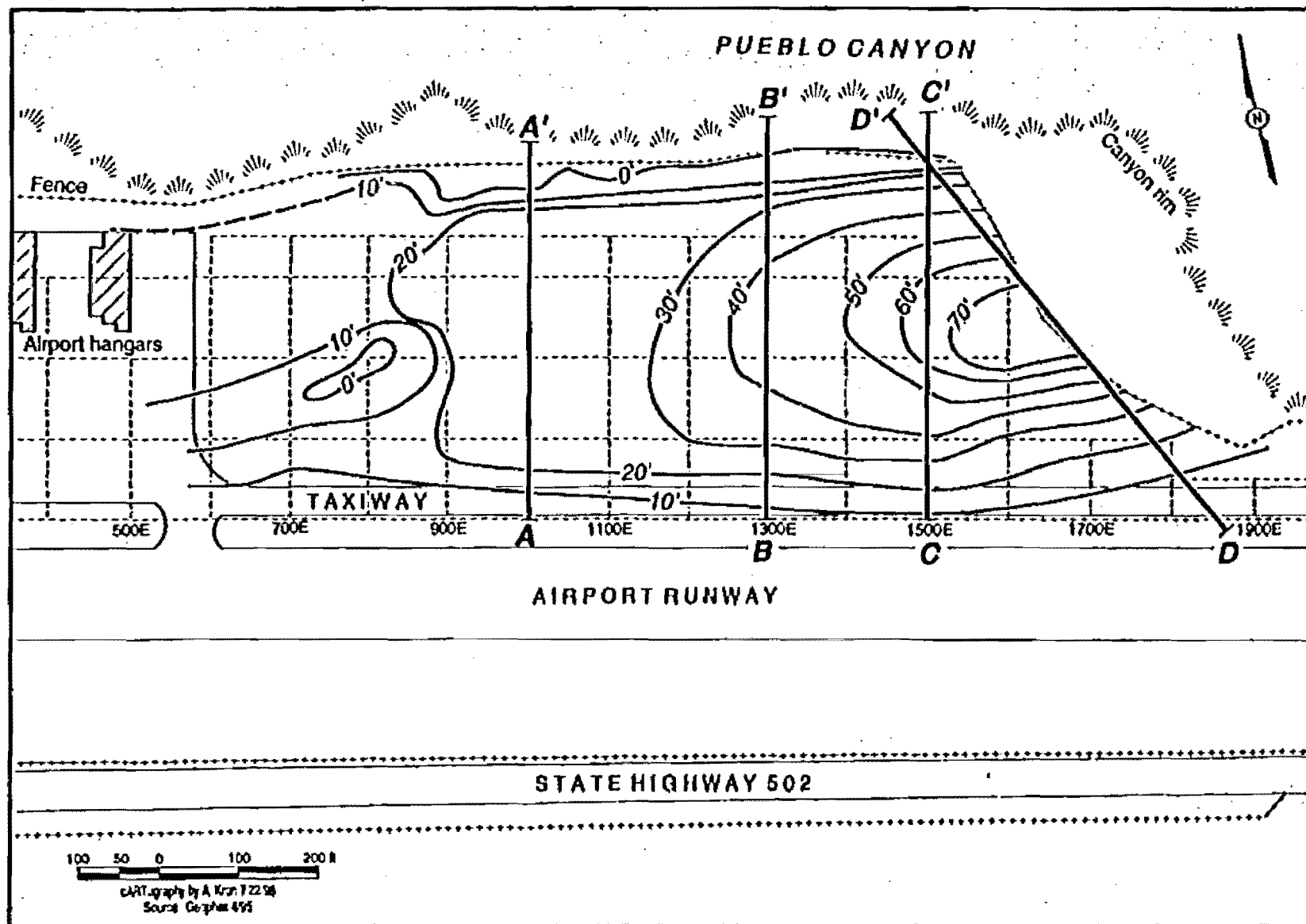


Figure 2.3.4.2-1, Isopachmap of landfill thickness and locations of cross-sections A-A', B-B', C-C', D-D'.

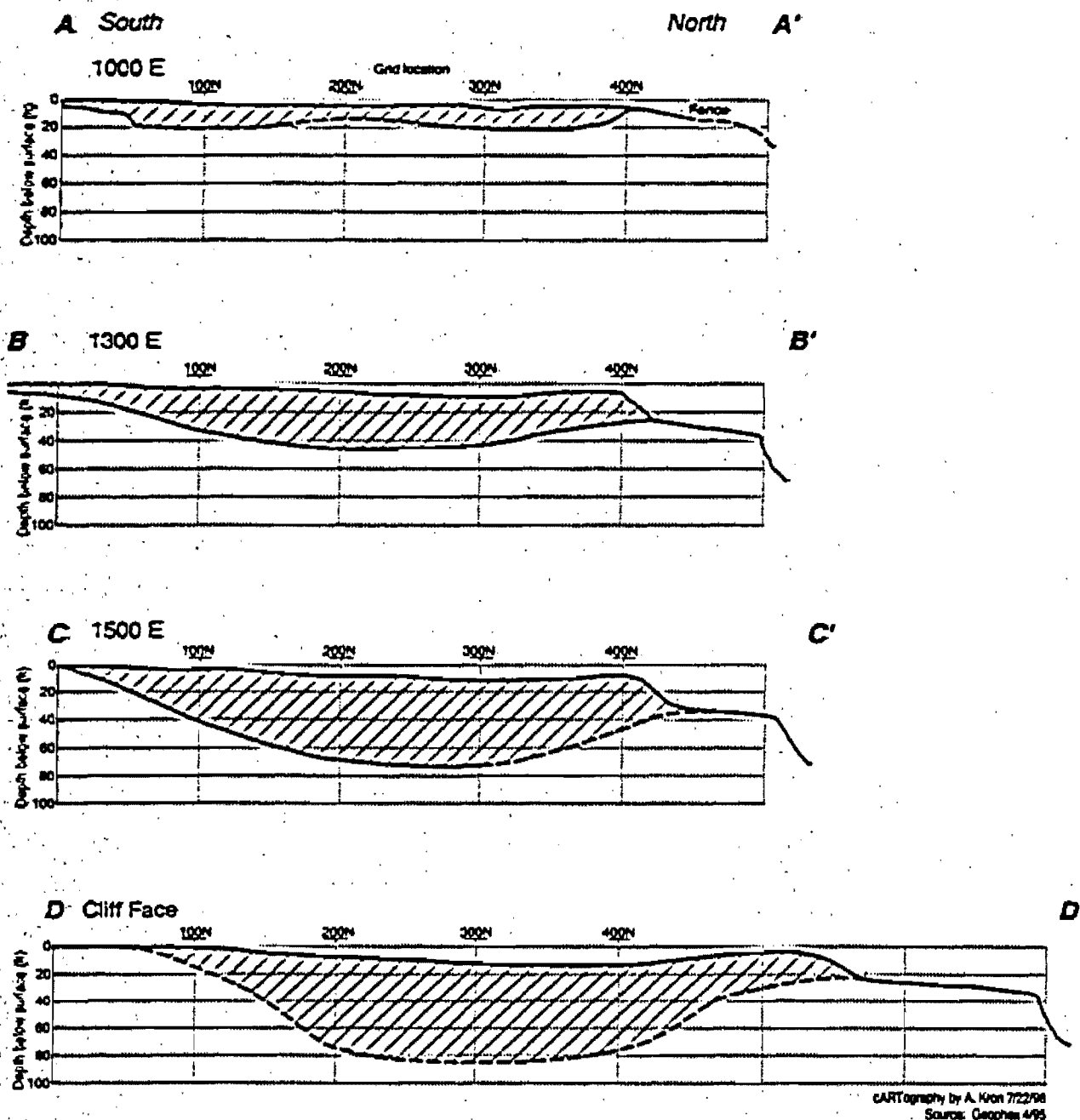


Figure 2.3.4.2-2. Four cross-sections of the landfill structure

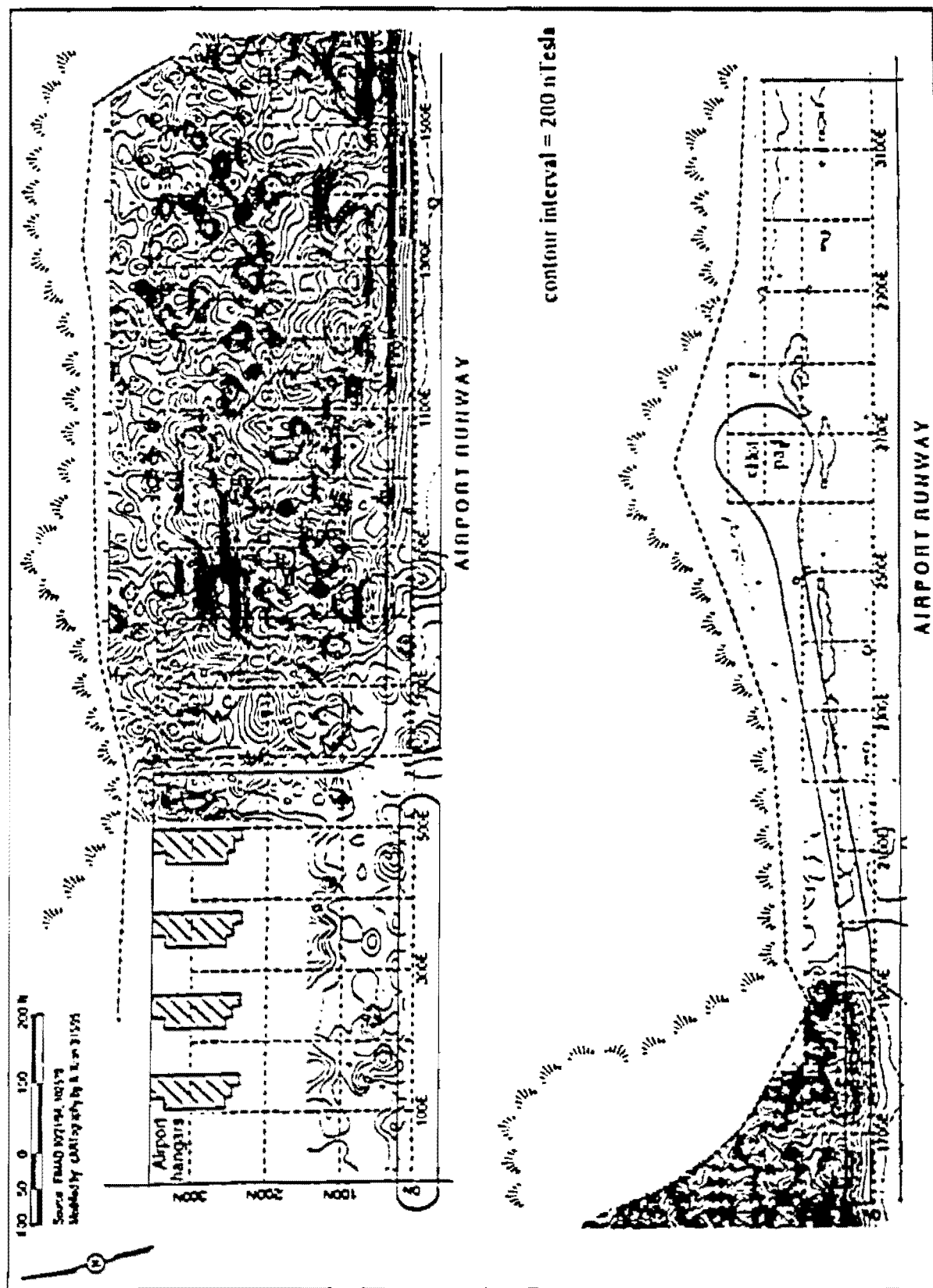


Figure 2.3.4.2-3. Residual magnetic total field data plot from 73-001(a) survey

plan. There were no images typical of pit, trench, or shaft burials. Rather, the observations were consistent with a landfill operation using random dumping and grading, which creates large sweeping areas of very high magnetic signature typical of many layers of ferrous and magnetic debris (Figure 2.3.4.2-4). The intense magnetic signals from the primary landfill abruptly ended near the point at which the edge of the mesa comes to within less than 100 ft of the edge of the taxiway to the hot pad. The magnetic anomalies from this point to near the windsock were relatively small and isolated. This appears to indicate that this area contains little ferrous material. These results were corroborated by the magnetic total field data collected by Geophex (Figure 2.3.4.2-3). The results of the MTADS survey were reported by the Naval Research Laboratory (Naval Research Laboratory 1994, 53011).

Additional geophysical surveys were conducted by Geophex Ltd., during August and September 1995. These surveys focused on the debris disposal area landfill (PRS 73-001(d)). Magnetic total field, electro-magnetic (EM), and Schlumberger VES resistivity geophysical surveys were employed for the purpose of locating and mapping the lateral extent of this landfill. Data from the geophysical surveys were integrated with historical records and geological observations to produce a map of suspected trenching locations (Figure 2.3.4.2-5). Magnetic total field data are presented for comparison purposes (Figure 2.3.4.2-6). Based on the survey data, the landfill consists of two separate areas. The first area, thought to correlate most closely to the original described location of 73-001(d), is north of the runway and extends from approximately 200 ft east of the windsock to approximately 200 ft past the end of the runway. The landfill's orientation is parallel to the runway, but the individual trench geometries are obscured by a 20-ft thick cover of debris and backfill material. The orientation of the anomaly is similar to the configuration shown in the RFI work plan but lies several hundred feet further to the east. This area includes the location of the waste oil pit [73-001(b)], which appears to have been assimilated by the later trenching activity. The second area starts approximately 300 ft northeast of the end of the runway and extends for an additional 400 ft to the east. This anomaly appears to consist of two equal-length, parallel trenches. This second area encompasses the two bunker debris pits east northeast of the end of the runway [73-001(c)]; however, there is no geophysical evidence to support the configuration of the bunker debris pits as shown in the RFI work plan. The survey results were reported by Geophex (Geophex 1995, 59983).

The geophysical surveys activity, as presented in the work plan, was general in nature, reflecting the uncertainty regarding the necessity and scope of geophysical studies. The ultimate scope of this activity was to have been determined following completion of the site survey. The only guidelines were that, if needed, magnetic and EM surveys would be conducted at an appropriate spacing to ensure full resolution of large metallic objects. These surveys were to be supplemented by a GPR survey if more precise information was needed.

As completed, the geophysical surveys activity represents an expansion of the original scope presented in the work plan. The seismic refraction, gravity field profiling, Schlumberger VES resistivity, and MTADS surveys were added in an effort to enhance the precision of the results. The EM method was used only in the vicinity of the east end of the runway as part of the 1995 survey. The EM method was intended to provide information on landfill boundaries by detecting metallic objects within 10 to 20 ft of the ground surface; however, the same type of information was adequately provided by the magnetic total field method and a complete EM survey was not required.

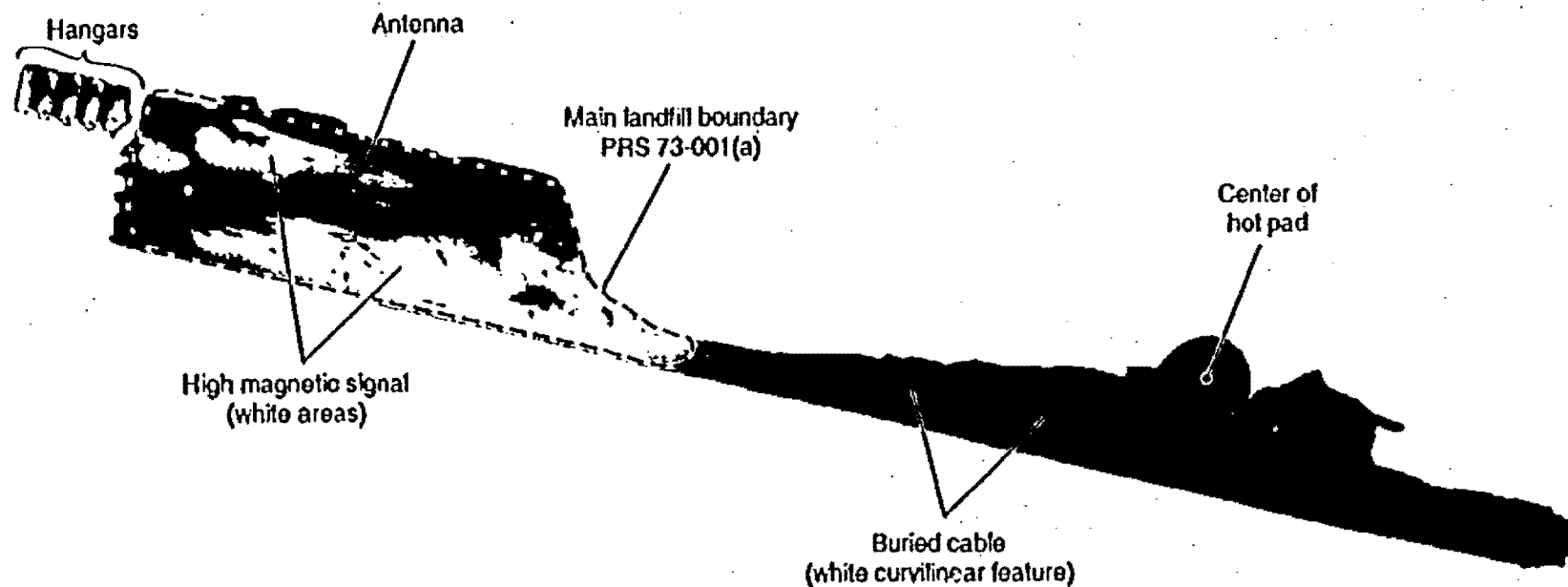


Figure 2.3.4.2-4, MTADS survey results in grayscale, settings: 500 to 1000 gammas

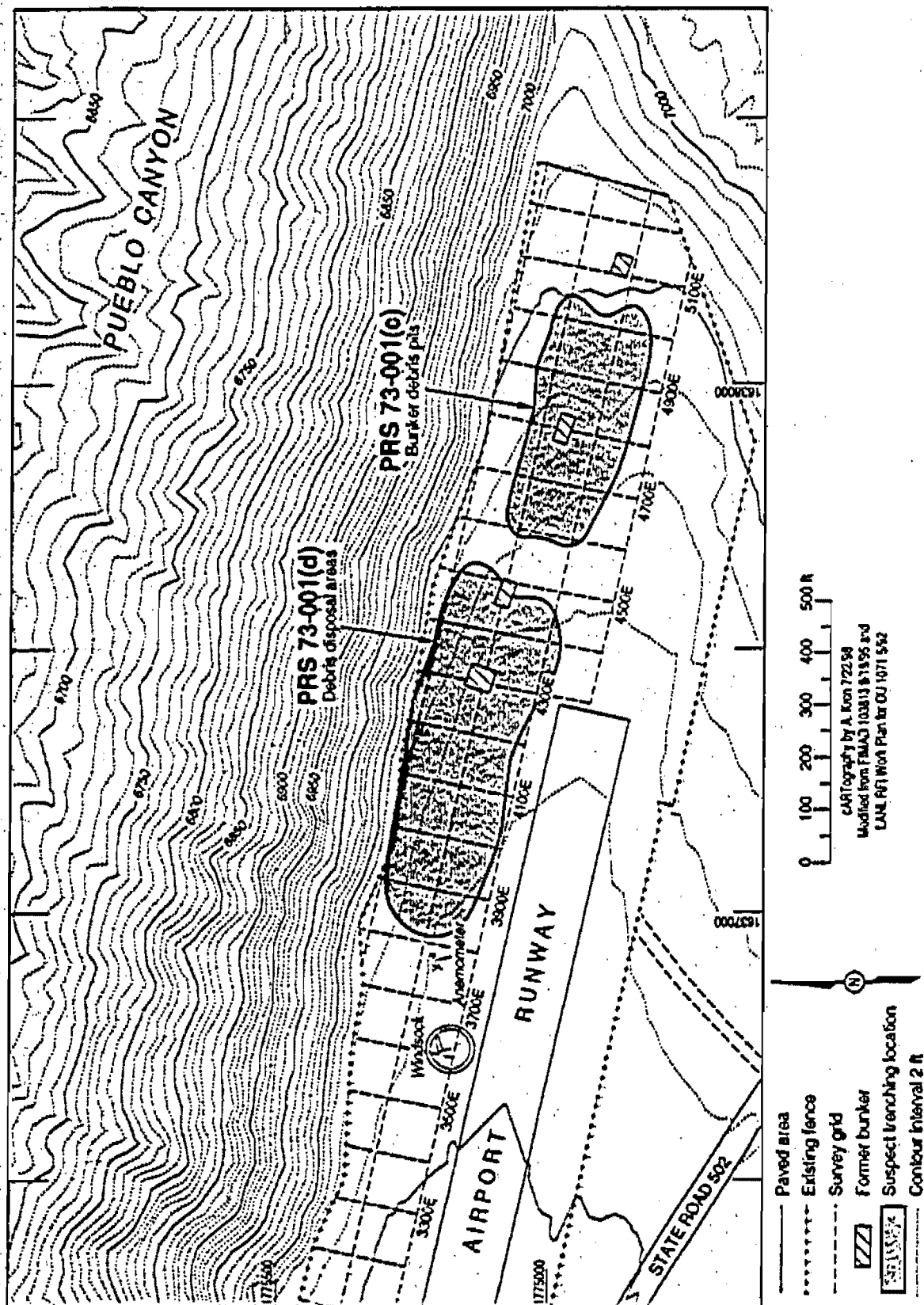


Figure 2.3.4.2-5. Suspected trenching locations at 73-001(d) and 73-001(c)

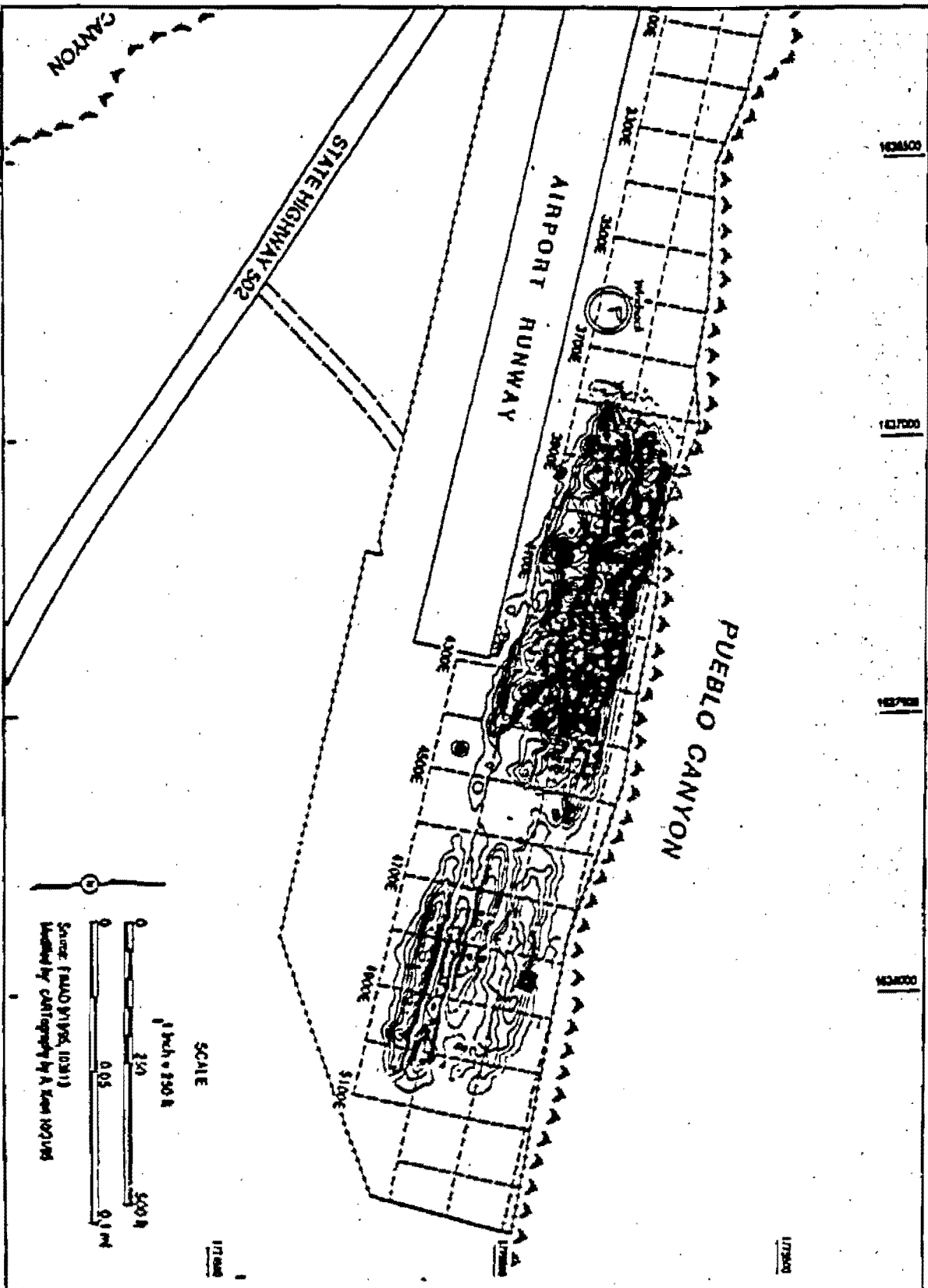


Figure 2.3.4.2-6. Residual magnetic field data plot from 73-001(d) survey.

Geomorphologic Mapping

The geomorphology of the north-facing slope of Pueblo Canyon that lies adjacent to the airport landfill was examined by ERM/Golder personnel in July 1995. The specific climatic conditions that existed during the mapping were not documented. The LANL ER Project SOPs utilized are as follows:

LANL-ER-SOP-1.01 General Instructions for Field Investigations

LANL-ER-SOP-3.08 Geomorphic Characterization

The goals of this investigation were to map the primary drainages that originate on or transect the landfill surface, identify sediment traps from which sediment samples could be collected within these drainages, identify any springs or sites for leachate discharge, and evaluate the slope stability. The objectives of the slope stability mapping were to identify areas in which mass wasting or landsliding has occurred in the recent past or in which there is high potential that such events may occur in the future. Figure 2.3.4.2-7 illustrates the site drainage as defined by this task. Four primary drainages were identified. No springs, seeps, or leachate discharge sites were observed. Other than evidence of historical soil erosion along the eastern edge of the landfill cap, slope stability appears good. The south slope of Pueblo Canyon, adjacent to the landfill, is highly vegetated and is not as steep as the north slope.

The geomorphologic mapping task was completed per the RFI work plan.

Soil Gas Surveys

Shallow soil gas surveys were conducted in July and August 1994, and May 1995. The specific climatic conditions that existed during the surveys were not documented. The LANL ER Project SOPs used during the completion of this task are as follows:

LANL-ER-SOP-1.01 General Instructions for Field Investigations

LANL-ER-SOP-1.04 Sample Control and Field Documentation

LANL-ER-SOP-1.05 Field Quality Control Samples

LANL-ER-SOP-1.08 Field Decontamination of Drilling and Sampling Equipment

LANL-ER-SOP-3.12 Field and Laboratory Notebook Documentation for Environmental Restoration Earth Science Studies

The 1994 survey was conducted to further (1) define landfill boundaries, (2) determine if elevated concentrations of organic vapors and/or methane are present within the shallow subsurface gasses, (3) help define areas in which volatile fluids may be accumulating, (4) provide analytical data to guide the selection of borehole locations, and (5) assist in defining the lateral extent of contaminant migration. A total of

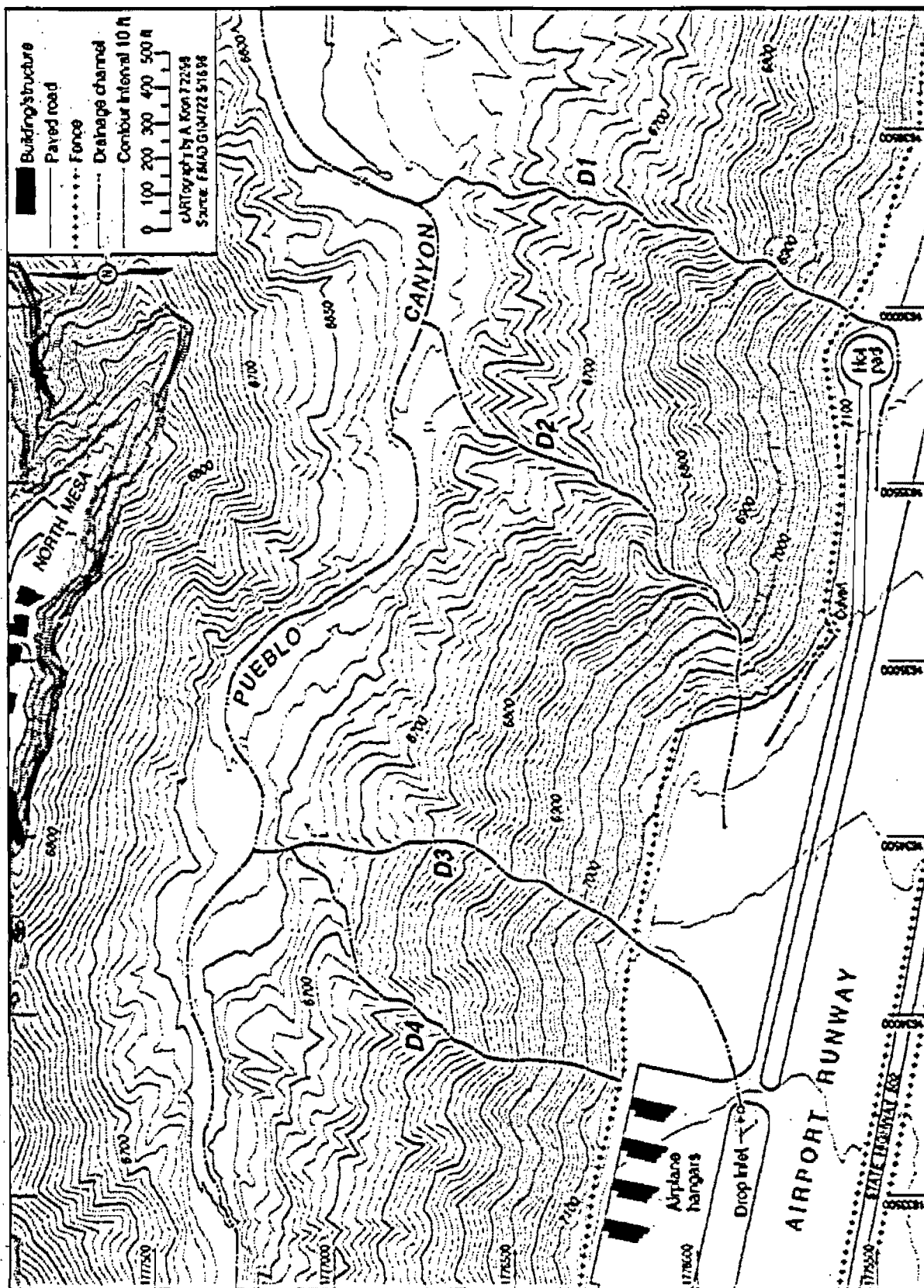


Figure 2.3.4.2-7. Primary drainage channels that originate on or transect the landfill surface

174 soil gas samples were collected at points within and around the main landfill and hot pad areas (Figure 2.3.4.2-8). Samples were collected on a 100-foot grid spacing. Additional samples were collected on a 50-foot spacing in areas with elevated organic vapors and methane to assess lateral extent. Additional samples were also collected as quality control (QC) duplicates (1 per 20 sample locations). Ambient air/equipment blank samples were collected at a frequency of 1 per day. Instrument blanks and lab replicates were also analyzed at a rate of 1 per 20 samples.

Soil gas samples were collected at a depth of 6 ft using a 1-in. diameter, stainless-steel probe that was driven into the ground. The sample collection tubing was then inserted into the probe and purged of ambient air. Samples were extracted from the tubing with a syringe and injected through a septa into the sample bulb. The samples were analyzed on site in a mobile laboratory. Methane analysis was performed with a SRI model 8610 gas chromatograph with thermal conductivity detection applying ASTM method D1945 5.05. VOC analysis was accomplished with a Hewlett Packard model 5890 series II gas chromatograph with PID and ECD detection in parallel applying EPA method 8021 (8010/8020), modified for soil vapor analysis. Analyses were conducted for methane, benzene, toluene, xylenes, trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), vinyl chloride, tetrachloroethene (PCE), 1,1,1-trichloroethane, freon-113, and dichlorobenzene. The highest concentrations were in the central portion of the main landfill. Methane was the most widespread. The primary compounds detected in the soil gas samples included methane at levels up to 87 percent by volume, TCE at levels up to 430 parts per billion by volume (ppbv), PCE at levels up to 2400 ppbv, and vinyl chloride at levels up to 510 ppbv. In addition, xylenes (total) at levels up to 258 ug/L and 1,4-dichlorobenzene at levels up to 120 ppbv were also present, but in more limited areas. Other volatile organics were also detected, but at significantly lower concentrations and in very limited areas.

A 1995 survey was conducted in the debris disposal/waste oil pit areas (survey lines 3700E - 4400E) and the heart of the main landfill (survey lines 900E - 1600E). The general purpose of this survey was to further characterize soil gas constituents and determine the lateral extent of soil gas contamination from the associated PRSs. A total of 91 samples including QC duplicates were collected at depths of 12 feet or less, from 69 locations (Figure 2.3.4.2-9). Ambient air and equipment blank samples (one each per day) were also collected. Instrument blanks and lab replicates were analyzed at a rate of one per twenty samples.

Soil gas samples were collected and analyzed using the same procedures described for the 1994 sampling event. All samples were analyzed on site for chlorodifluoromethane (freon-22), chloromethane, vinyl chloride, 1,1-DCE, methylene chloride, trans-1,2-dichloroethene (trans-1,2-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), benzene, TCE, PCE, 1,4-dichlorobenzene (1,4-DCB), and methane.

Chlorodifluoromethane (freon-22) was the most widespread constituent detected, followed closely by methane. The primary compounds detected in the soil gas samples included freon-22 at levels up to 130,000 ppbv, chloromethane at levels up to 2,000 ppbv, and methane at levels up to 28 percent by volume. Other volatile organics were also detected, but at significantly lower concentrations and in very limited areas.

The work plan stated that at perimeter sampling locations with positive detection of VOCs or methane,



additional samples were to be collected at successive 20-ft intervals from the landfill perimeter until clean samples were obtained. Both the 1994 and 1995 surveys detected target analytes in some areas up to the edges of the landfills, but successive samples could not be collected beyond the landfill perimeters because the sampling tubes could not penetrate the shallow bedrock present outside of the landfill excavations. This deviation did not adversely impact the success of the surveys. In most cases, a decreasing trend toward the perimeters of the landfills could be established. In addition, the lateral extent of soil gas beyond the landfill perimeters was also investigated as part of other tasks; i.e., soil gas field screening survey, soil gas flux chamber testing, and soil gas sampling in the perimeter boreholes.

Two other deviations represented additions to the original scope of work. One involved decreasing the sample spacing within the landfill area to a 50 x 50 foot grid in areas where significant soil gas concentrations were found. This deviation allowed a more precise definition of the lateral distribution of soil gases within the landfill area. The second deviation involved conducting analyses for additional constituents beyond the list of nine analytes specified in the work plan. This deviation allowed a more complete definition of the nature of the soil gas contamination in the landfill area.

Surface Radiological Survey

In May 1994, a pre-investigation, direct risk radiological survey was conducted by LANL Environment, Safety, and Health (ESH)-1 radiological control technicians (RCTs) for health and safety purposes. The survey was conducted using the following direct-reading instruments for beta and gamma radiation: ESP-1, micro-R meter, Ludlum model 2, ESP-1/HP210 AL, and ESP-1/HP260. The survey was carried out over the surface of the main landfill at a grid spacing of approximately 10 to 15 feet, resulting in 523 survey locations (Figure 2.3.4.2-10). The results of the survey indicated that no significantly elevated levels of beta or gamma activity were present on the surface of the landfill area (Poirer 1995, 59984). The results of this survey allowed the landfill surface to be treated as a noncontrolled area during the subsequent site operations.

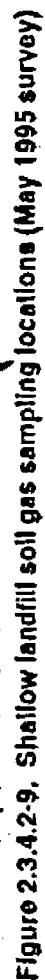
In addition to the surface radiological survey, excavated material and samples were screened by the radiological screening personnel (RSP), using hand-held meters, to detect gross radiological contamination for the purposes of identifying potential health risks and selecting samples to be submitted for laboratory analysis.

The radiological survey was conducted per the RFI work plan with no deviations.

Infrared Photography Survey

Infrared (IR) photographs were taken of the main landfill and associated slope on June 6-7, 1995. The survey was conducted by ERM/Golder using a high-resolution radiometric thermal imaging camera (FLIR System Prism SP) manufactured by FLIR Systems, Portland, Oregon, with a Sony recorder (Williams 1995, 59981). The purpose of the survey was to identify thermal anomalies which might have indicated locations of potential moisture seepage/leachate discharge from the landfill. The photoimagery was supplemented with a detailed visual assessment of the north and east slopes associated with the landfill.

The climatic conditions that prevailed during the IR photo and visual surveys were not documented. No anomalous imagery were detected that may have indicated moisture seepage from the landfill. Also, no



visual signs of seeps or areas of distressed vegetation were observed on the slope of Pueblo Canyon. A relevant ER Project SOP does not exist for this type of procedure; however, the camera was operated in accordance with the manufacturer's operating instructions.

The IR photography survey was conducted as an expansion to the original scope of Task 1, Activity 1 Site Survey, as described in the RFI work plan. Ultimately, results of the survey contributed to the success of the field activities in that it provided independent evidence for the lack of leachate migration from the landfill, supporting the findings of the subsurface sampling investigation.

Geodetic Surveys

The geodetic surveys were conducted as needed. Approximate locations were initially determined for certain site features by examining historic aerial photographs, reviewing maps and engineering plans, and through visually inspecting the site. Geodetic surveying was then used to accurately locate site features such as landfill boundaries, surface features, and buried trenches. Surveying was also conducted to establish sampling grids, and precisely locate drilling and sampling locations. All locations were recorded in New Mexico state plane coordinates and location identification numbers were assigned for entry into the Facility for Information Management and Display (FIMAD). The LANL ER Project SOP used during the completion of this task is as follows:

LANL-ER-SOP-3.01 Land Surveying Procedures

Geodetic surveying was not specifically discussed in any of the RFI work plan task activities. Therefore, no deviations occurred.

2.3.4.2 (b) Surface Sampling

Two surface sampling activities were included in the Phase I scope of activities as presented in the RFI work plan: (1) surface sampling at the main landfill and (2) channel sediment sampling. These activities are described below.

Surface Sampling at the Main Landfill

Surface soil sampling was conducted as described in the RFI work plan. The specific climatic conditions that existed during the sampling activities were not documented. The LANL ER Project SOPs used during completion of this task are as follows:

- LANL-ER-SOP-1.01 General Instructions for Field Investigations**
- LANL-ER-SOP-1.02 Sample Containers and Preservation**
- LANL-ER-SOP-1.03 Handling, Packaging, and Shipping of Samples**
- LANL-ER-SOP-1.04 Sample Control and Field Documentation**

LANL-ER-SOP-1.05	Field Quality Control Samples
LANL-ER-SOP-1.06	Management of Environmental Restoration Project Wastes
LANL-ER-SOP-1.08	Field Decontamination of Drilling and Sampling Equipment
LANL-ER-SOP-3.01	Land Surveying Procedures
LANL-ER-SOP-3.12	Field and Laboratory Notebook Documentation for Environmental Restoration Earth Science Studies
LANL-ER-SOP-6.09	Spade and Scoop Method for Collection of Soil Samples

A total of seven surface soil samples, including one field duplicate, were collected in April 1996 from six biased locations within the main landfill area (Figure 2.3.4.2-11). These locations were selected based on a visual survey during which the main landfill area was walked in pre-established traverses and searched for stained soils, abnormal bare spots or vegetation patterns, or other evidence of local contamination. Two sampling locations (73-02173 and 02174) contained exposed refuse and debris. Two other locations, sampled for comparison purposes (73-02175 and 02176), contained no refuse or debris and were fairly well vegetated. Of the remaining two locations, field observations at both locations suggest that the material sampled was parafin.

Sample numbers, requested analytes, and request numbers for the surface soil samples are summarized in Table 2.3.4.2-2. Sample results are presented in Appendix D.

The RFI work plan called for the collection of about 60 samples from the uppermost 6 inches of soil over the main landfill, either on a grid pattern or at random locations to characterize the site. However, recognizing that the corrective measure anticipated for the landfill will, at a minimum, involve on-site stabilization of the wastes, the surface soil sampling activity was modified to emphasize worker safety rather than characterization of the landfill materials. As such, judgmental samples were collected at surface sites that offered visual evidence of contamination that might be potentially hazardous to site workers. Two locations with no visual contamination were sampled to provide contrasting data. This sampling approach is consistent within EPA CERCLA policy for landfills where containment is the presumptive remedy. This policy recommends that emphasis be placed on characterizing migration from the landfill rather than characterizing the landfill materials themselves (EPA 1993, 45358). Even though a remedy had not been recommended for this site, it was assumed, since the beginning of the RFI, that containment would at a minimum be part of whatever remedy was selected.

The RFI work plan specified that all samples with positive field screening results for organic vapors and radioactivity, and 30 percent of the samples with negative screening results, would be analyzed for VOCs, SVOCs, TAL metals, PCBs/pesticides, and radiological constituents. However, since the landfill had been surveyed previously and found to be clear of radioactive contamination under Task 1, Activity 5, Radiological survey, radiological analyses were not conducted on the surface soil samples. In addition, since fewer samples were being collected than envisioned in the work plan, all samples were analyzed for SVOCs, TAL metals, and PCBs/pesticides, regardless of the field screening results.

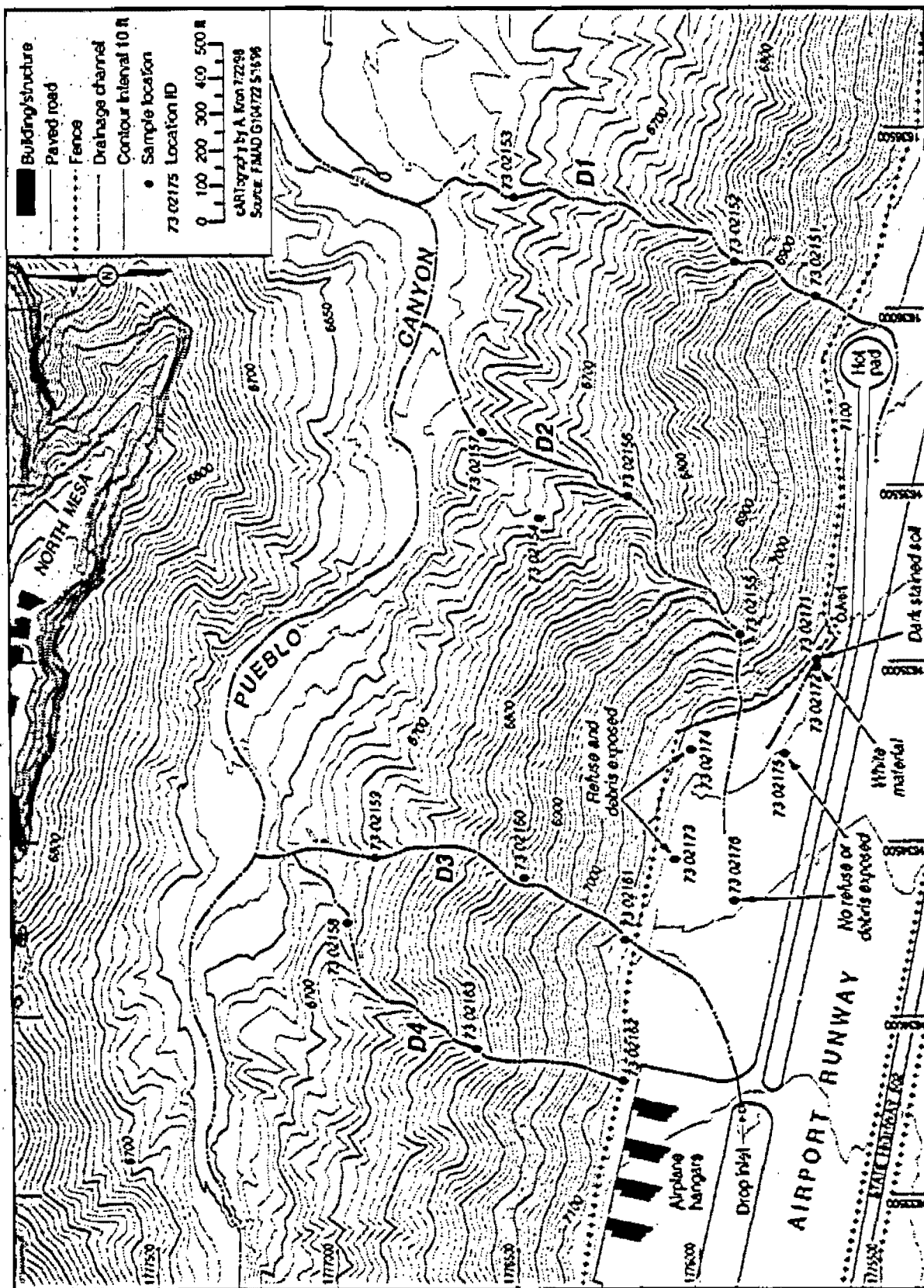


Figure 2.3.4.2-11. Surface soil and channel sediment sampling locations

**TABLE 2.3.4.2-2
SURFACE SOIL SAMPLES SUMMARY**

Location ID	Sample Id	Sample Type	Depth (ft)	Analyses Requested					
				Media	VOCs	SVOCs	PCBs/ Pest.	Inorganic chemicals	Radio- nuclides
73-02151	0173-96-0101	Grab	0-0.67	Channel Sediment	NA	1923	1923	1924	1925
73-02152	0173-96-0102	Grab	0-0.83	Channel Sediment	NA	1923	1923	1924	1925
73-02153	0173-96-0103	Grab	0-0.67	Channel Sediment	NA	1923	1923	1924	1925
73-02154	0173-96-0104	Grab	0-0.83	Channel Sediment	NA	1923	1923	1924	1925
73-02154	0173-96-0105	Grab	0.83-1.67	Channel Sediment	NA	1923	1923	1924	1925
73-02155	0173-96-0106	Grab	0-1.25	Channel Sediment	NA	1923	1923	1924	1925
73-02156	0173-96-0107	Grab	0-0.83	Channel Sediment	NA	1923	1923	1924	1925
73-02157	0173-96-0108	Grab	0.25-0.83	Channel Sediment	NA	1923	1923	1924	1925
73-02158	0173-96-0109	Grab	0-0.83	Channel Sediment	NA	1923	1923	1924	1925
73-02159	0173-96-0110	Grab	0-0.5	Channel Sediment	NA	1923	1923	1924	1925
73-02160	0173-96-0111	Grab	0-0.5	Channel Sediment	NA	1923	1923	1924	1925
73-02161	0173-96-0112	Grab	0-0.5	Channel Sediment	NA	1923	1923	1924	1925
73-02162	0173-96-0113	Grab	0-1.0	Channel Sediment	NA	1923	1923	1924	1925
73-02163	0173-96-0114	Grab	0-1.0	Channel Sediment	NA	1923	1923	1924	1925
73-02163	0173-96-0118	Grab/ duplicate	0-1.0	Channel Sediment	NA	1923	1923	1924	1925
73-02171	0173-96-0130	Grab	0-0.17	Soil	1944	1944	1944	1945	NA
73-02171	0173-96-0131	Grab/ duplicate	0-0.17	Soil	1944	1944	1944	1945	NA
73-02172	0173-96-0129	Grab	0-0.08	Soil	NA	1944	1944	1945	NA
73-02173	0173-96-0121	Grab	0-0.25	Soil	NA	1944	1944	1945	NA
73-02174	0173-96-0122	Grab	0-0.42	Soil	NA	1944	1944	1945	NA
73-02175	0173-96-0123	Grab	0-0.5	Soil	NA	1944	1944	1945	NA
73-02176	0173-96-0128	Grab	0-0.5	Soil	NA	1944	1944	1945	NA
73-02371	0173-97-0042	Grab	0.5-1.5	Soil	3182R	3182R	3182R	3183R	NA
73-02372	0173-97-0044	Grab	2.0-3.0	Soil	3182R	3182R	3182R	3183R	NA
73-02373	0173-97-0046	Grab	1.0-1.5	Soil	3182R	3182R	3182R	3183R	NA

Channel Sediment Sampling

Channel sediment sampling was conducted as described in the RFI work plan. The specific climatic conditions that existed during the sampling activities were not documented. The LANL ER Project SOPs used during completion of this task are as follows:

LANL-ER-SOP-1.01	General Instructions for Field Investigations
LANL-ER-SOP-1.02	Sample Containers and Preservation
LANL-ER-SOP-1.03	Handling, Packaging, and Shipping of Samples
LANL-ER-SOP-1.04	Sample Control and Field Documentation
LANL-ER-SOP-1.05	Field Quality Control Samples
LANL-ER-SOP-1.06	Management of Environmental Restoration Project Wastes
LANL-ER-SOP-1.08	Field Decontamination of Drilling and Sampling Equipment
LANL-ER-SOP-3.01	Land Surveying Procedures
LANL-ER-SOP-3.12	Field and Laboratory Notebook Documentation for Environmental Restoration Earth Science Studies
LANL-ER-SOP-6.09	Spade and Scoop Method for Collection of Soil Samples

Fifteen channel sediment samples, including one QA/QC duplicate, were collected in March 1996 from locations within the four primary drainage channels that originate at, or transect the surface of the landfill, and extend to the canyon floor (Figure 2.3.4.2-11). A total of three sediment catchments were sampled in each of the drainages downgradient of the north landfill boundary. In addition, two samples were collected from a large sediment catchment basin at a break in the slope approximately 300 ft from the bottom of Pueblo Canyon and 150 ft west of drainage two (D2).

Sample numbers, requested analytes, and request numbers for the channel sediment samples are also summarized in Table 2.3.4.2-2. Sample results are presented in Appendix D.

The original activity scope called for the sampling of two sediment catchments immediately downchannel of the northern boundary of the landfill, and of a third catchment either near the terminus of the drainage channel or immediately downgradient of the first major confluence, whichever occurs farthest upstream. However, sampling under this activity was modified to collect one sample immediately downchannel from the boundary of the landfill, one sample from the middle to upper third of the slope, and one sample from just upstream of the terminus of the channel in the canyon bottom. This modification expanded the focus of the channel sediment sampling from the near perimeter of the landfill to the entire canyon slope.

As with the surface soil samples, the RFI work plan specified that sediment samples with positive field screening results for organic vapors and radioactivity, and 30 percent of the samples with negative screening results, would be analyzed. The analyte list consisted of SVOCs, TAL metals, PCBs/pesticides, and radiological constituents. However, to verify that none of the samples contained contamination above action levels, all were analyzed for the complete constituent list. This expansion of the activity scope allowed a more complete definition of the nature of any possible contamination in the drainage channels.

A Phase I RFI was conducted at PRS 73-001(c) in May and June 1997. These activities were conducted in accordance with Chapter 5.17, Task 3, Activity 2, Coring at Airport Bunker Debris Pits, as described in the RFI work plan. Although the scope of this investigation was presented in the work plan as part of SWMU Group 73-2, the decision was made to discuss these data in this report with SWMU Group 73-1.

The specific climatic conditions that existed during the investigation were not documented. The LANL ER Project SOPs used during the completion of this task are as follows:

LANL-ER-SOP-1.01	General Instructions for Field Investigations
LANL-ER-SOP-1.02	Sample Containers and Preservation
LANL-ER-SOP-1.03	Handling, Packaging, and Shipping of Samples
LANL-ER-SOP-1.04	Sample Control and Field Documentation
LANL-ER-SOP-1.05	Field Quality Control Samples
LANL-ER-SOP-1.06	Management of Environmental Restoration Project Wastes
LANL-ER-SOP-1.08	Field Decontamination of Drilling and Sampling Equipment
LANL-ER-SOP-3.10	Trenching and Logging
LANL-ER-SOP-3.12	Field and Laboratory Notebook Documentation for Environmental Restoration Earth Science Studies
LANL-ER-SOP-6.09	Spade and Scoop Method for Collection of Soil Samples

The investigation was initiated with a site survey to determine the location of the bunker debris pits. Prior to visiting the site, engineering drawings and historical aerial photographs were examined, but no evidence was noted that clearly defined the location of any debris disposal pits. Several former airport and airport landfill employees were interviewed regarding their recollection of landfill and debris disposal pit locations. None could remember distinct disposal pits of any kind at or near the end of the runway. For safety reasons, this would not have been permitted. However, some did recall that a great deal of fill material was brought in to raise the ground level before the construction of runway and safety area extensions in 1974. This fill material contained abundant construction and demolition debris from a variety of unknown sources. It is possible that the bunker debris was used for this purpose during construction of the 1974 runway extension.

Two site visits were conducted to identify the debris disposal pits. However, the only evidence found was a scattering of debris over a broad area, indicating that construction and demolition type debris had been disposed in the area. This did not provide any evidence of specific disposal pits. For lack of evidence to the contrary, it was determined that samples should be collected in the areas identified in the RFI work plan.

The disposal areas beneath the 1974 runway extension and adjacent to the northeast corner of the runway were investigated first. A backhoe was used to excavate trenches at three locations (Figure 2.3.4.2-12). At locations 73-02371, 73-01372, and 73-02373, tuff was encountered at depths of 3.5, 7.5, and 3.5 feet, respectively. At location 73-02373, a dark red, clay rich soil horizon was encountered at a depth of 1.2-3.5 feet. No construction debris or visual signs of contamination were noted at locations 73-02371 or 73-02373 (beneath the 1974 runway extension). However, numerous small fragments of asphalt and pieces of vitrified clay pipe (VCP) were noted at location 73-02372 (adjacent to the northeast corner of the runway) in the upper 3 to 4 feet. As material was removed from the trench, it was periodically screened for organic vapors and radioactivity. No positive screening results were obtained. Therefore, two samples were collected from each trench, one from the soil/tuff interface and one from an overlying interval deemed appropriate based on the presence of visible debris or a change in soil lithology possibly indicating a zone of chemical deposition. All samples were screened in the field for radioactivity and VOCs to ensure worker health and safety. All samples were also screened at the TA-21 radiological analytical laboratory to meet transportation and analytical laboratory acceptance criteria. The results of screening for radiation indicated no detectable activity and no VOCs were detected. Information about the sample depths, analyses conducted, and request numbers for each sample collected at PRS 73-001(c) is summarized in Table 2.3.4.2-3. Laboratory results are presented in Appendix D. For safety reasons, the trenches were immediately backfilled and compacted per the agreement with the airport manager.

The two bunker debris disposal areas to the east-northeast of the runway, near the north edge of the mesa, were neither located nor sampled. In the process of excavating to sample the furthest east area, municipal landfill type trash (glass, plastic, wood, cloth, and paper) in various forms was encountered at a depth of one foot. Much of this trash had the appearance of being burned. The excavation was terminated at a depth of three feet while still in trash. VOC and radiological screening resulted in no positive detects. Because collecting a soil sample unaffected by the overlying trash would be impossible, it was decided that an alternate sampling trench should be excavated at a location 30 feet to the west. Similar trash was again encountered at a depth of approximately one foot. A third alternate location was selected 30 feet to the north of the original trench and trash was again encountered. In each of the two offsets, trenching was stopped immediately when trash was encountered. The decision was made to continue digging exploration trenches on a roughly 50- to 100-ft grid for the purpose of defining the horizontal extent of the trash. An additional 38 trenches were excavated, 15 of which contained trash in various forms. The area of buried trash thus defined overlays both of the bunker debris disposal areas located to the east-northeast of the runway, and appears to be essentially continuous with the debris disposal area [PRS 73-001(d)] (Figure 2.3.4.2-13). The geophysical survey conducted in the vicinity of the debris disposal area provided similar evidence for the location of buried trash and debris; however, it was assumed at that time that this

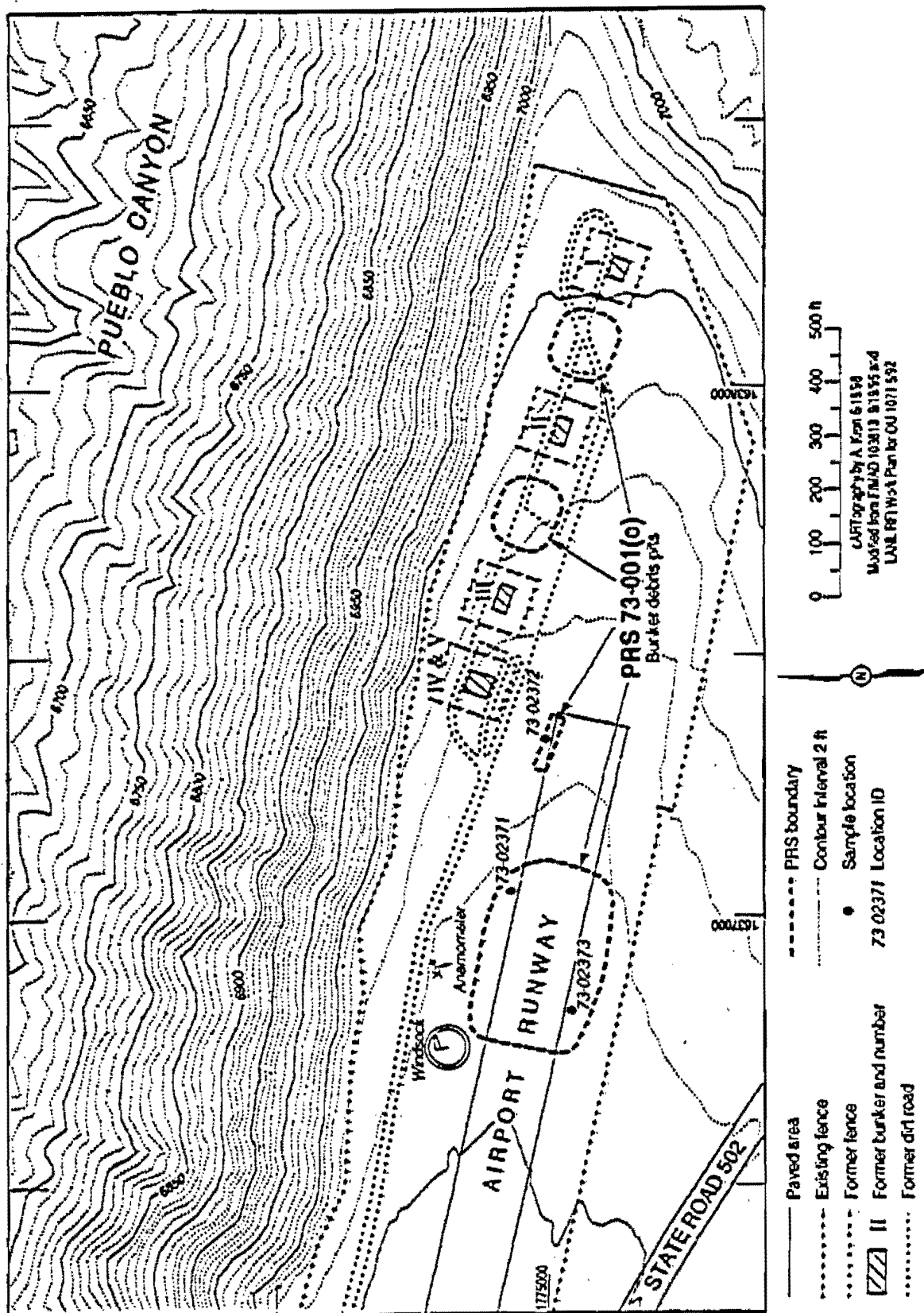


Figure 2.3.4.2-12. Initial backhoe trench and sampling locations at PRS 73-001(c)

TABLE 2.3.4.2-2
PRS 73-001(c) SAMPLE SUMMARY

Sample ID	Location ID	Sample Interval (ft.)	Matrix	Request Number				
				Rad Screening ^a	VOCs	SVOCs	PCBs/ Pest	TAL Metals
0173-97-0042 ^b	73-02371	0.5-1.5	Soil	TA-21	3182R	3182R	3182R	3183R
0173-97-0043 ^b	73-02371	3.0-3.5	Soil	TA-21	3182R	3182R	3182R	3183R
0173-97-0044 ^b	73-02372	2.0-3.0	Soil	TA-21	3182R	3182R	3182R	3183R
0173-97-0045 ^b	73-02372	6.5-7.5	Soil	TA-21	3182R	3182R	3182R	3183R
0173-97-0046 ^b	73-02373	1.0-1.5	Soil	TA-21	3182R	3182R	3182R	3183R
0173-97-0047 ^b	73-02373	3.0-3.5	Soil	TA-21	3182R	3182R	3182R	3183R

^a Radiological screening conducted at the TA-21 Radiological Analytical Laboratory.

^b These samples were grouped with the surface soil samples and are also presented in Table 2.3.4.2-1.

^c These samples were grouped with the subsurface soil and and tuff samples and are also presented in Table 2.3.4.2-1.

area represented the bunker debris pits which is not the case. It is probable that the debris disposal area trenches were excavated through the bunker debris disposal pits, and extend much farther to the east than originally expected based on the available historical information. At the very least, the landfill debris overlays and is intermingled with the bunker debris. Thus, any contamination within the two bunker debris pits east-northeast of the runway is now just one component of the contamination within the debris disposal area, and was characterized as part of the PRS 73-001(d) investigation. Figure 2.2.1-4 represents a revised 73-001(d) boundary based on an integration of photographic evidence, data from the geophysical survey, and information from the backhoe trenching activities.

A geodetic survey was conducted to document the trenching and sampling locations at PRS 73-001(c). All locations were recorded in New Mexico state plane coordinates and location identification numbers were assigned for entry into FIMAD.

The investigation of 73-001(c) involved two minor deviations from the RFI work plan. First, a backhoe was used in place of a drill rig to collect subsurface soil samples within the bunker debris pits. The use of a backhoe was considered to be more expedient and cost-effective since the debris disposal areas were thought to be relatively shallow, up to possibly six ft deep. The use of a backhoe also eliminated the potential problem of encountering blocks of concrete and other debris with the drill rig, thus forcing the rig to relocate and start a new borehole. Ultimately, this deviation saved time and money, without adversely affecting achievement of the investigation objectives.

Second, no samples were collected in the two bunker debris pit areas to the east-northeast of the runway. The presence of buried trash in this entire area, that was unrelated to the bunker debris, prompted the decision to defer characterization of this area to the PRS 73-001(d) investigation. This deviation did not affect achievement of the objectives as the trash pertained to the other bunker debris disposal areas.

2.3.4.2 (c) Subsurface Sampling

The scope of work for Task 3 (Subsurface Sampling), as defined in the RFI work plan, consisted of three activities: (Activity 1) installation of gas monitoring wells at the main landfill, (Activity 2) coring and sam-

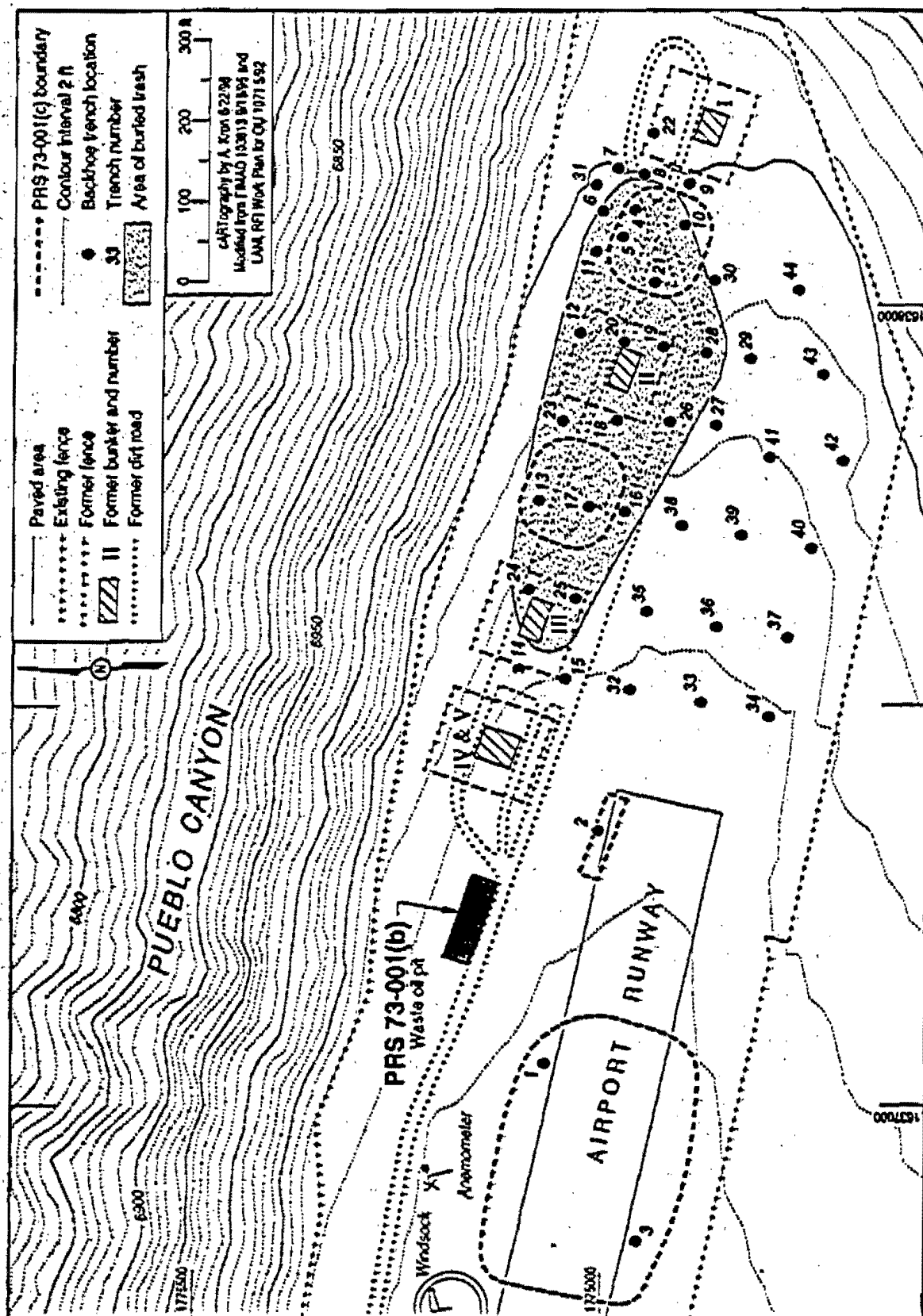


Figure 2.3.4.2-13. Area of buried trash as defined by backhoe trenches

piling subsurface material from beneath the main landfill, and (Activity 3) coring and sampling subsurface material from the waste oil pit and the debris disposal area. The field activities associated with Task 3 are summarized in Table 2.3.4.1-1. This table presents project start and finish dates, investigation locations, and a designation of sampling and nonsampling activities for all field investigations conducted at the TA-73 landfill.

As previously mentioned in Section 2.3.4.1, the subsurface sampling program (Task 3) was completed through three separate field investigations which were conducted at the TA-73 landfill. These field investigations included (1) a drilling program which was conducted around the perimeter of the main landfill (perimeter drilling program) between October and November 1994, (2) a cone penetrometer testing investigation (CPT program) conducted within the interior of the main landfill and debris disposal area in October 1995, and (3) a drilling program conducted within the interior of the main landfill and debris disposal area (interior drilling program) between June and July 1997. A summary of these sample numbers, requested analytes, and request numbers for the subsurface soil and turf samples is found in Table 2.3.4.2-5. In addition, routine sampling of the vadose zone monitoring network was conducted at the TA-73 landfill between November 1994 and December 1997. A summary of the pore-water sample numbers, requested analytes, and request numbers is found in Table 2.3.4.2-6.

The three field investigations conducted in support of the subsurface sampling program do not directly correspond to the three activities described in the RFI work plan. Rather, one or more of the RFI work plan activities may have been addressed by one or more of the field investigations. For clarity, the remainder of this section is organized by field investigation rather than RFI work plan activity. The SOPs followed in each field investigation are identified in the individual sections describing these programs. However, deviations from the RFI work plan cannot be addressed until all of the field investigations are discussed. Therefore, deviations from the RFI work plan are presented at the end of this section.

Perimeter Drilling Program

The perimeter drilling program was conducted as part of Task 3, Subsurface Sampling, Activities 1 and 2, as described in the RFI work plan. This investigation, which included both sampling and nonsampling activities, was carried out as part of the characterization of PRS 73-001(a) (main landfill). The objectives of the work performed under Task 3 at the main landfill, as defined by the RFI work plan, were to (1) determine the nature and extent of releases of hazardous constituents from the landfill, and (2) evaluate the potential for migration of hazardous constituents from the landfill to the accessible environment via the groundwater, atmospheric, or direct surface contact pathways.

The perimeter drilling program was conducted between October 13 and November 20, 1994. General climatic conditions which prevailed during the program consisted of daytime temperatures ranging between 4.6 and 18.6 °C, and nighttime temperatures ranging between -4.5 and 7.2 °C. There were a total of 10 days of measurable precipitation during the field investigation. Daily precipitation during this program ranged from nondetectable levels to a maximum of 1.63 inches on October 14 (TA-53 weather station data).

The scope of the perimeter drilling program included drilling 11 borings along the perimeter of the aban-

TABLE 2.3.4.2-5
SAMPLE SUMMARY TABLE FOR SUBSURFACE SOIL AND TUFF

Location ID	Borehole ID	Sample Id	Sample Type	Depth (ft)	Media	Analyses Requested				
						VOCs	SVOCs	PCBs/ Pest.	Inorganic chemicals	Radio- nuclides
73-01001	LP-1	AAB7473	Grab	2.5-5	Soil	19587	19587	19587	20532	20026
73-01001	LP-1	AAB7474	Grab	12.5-15	Qbt-3	19618	19618	19618	20098	20027
73-01001	LP-1	AAB7475	Grab	22.5-25	Qbt-3	19618	19618	19618	20098	20027
73-01001	LP-1	AAB7476	Grab	32.5-35	Qbt-3	19618	19618	19618	20098	20027
73-01001	LP-1	AAB7477	Grab/ duplicate	32.5-35	Qbt-3	19618	19618	19618	20098	20027
73-01002	LP-2	AAB7484	Grab	2.5-5	Soil	19685	19685	19685	20105	20199
73-01002	LP-2	AAB7485	Grab	12.5-15	Qbt-3	19685	19685	19685	20105	20199
73-01002	LP-2	AAB7486	Grab/ duplicate	12.5-15	Qbt-3	19685	19685	19685	20105	20199
73-01002	LP-2	AAB7487	Grab	22.5-25	Qbt-3	19685	19685	19685	20105	20199
73-01002	LP-2	AAB7573	Grab	32.5-35	Qbt-3	19685	19685	19685	20105	20199
73-01003	LP-3	AAB7478	Grab	57.5-60	Qbt-3	19633	19633	19633	20099	20028
73-01003	LP-3	AAB7479	Grab	67.5-70	Qbt-3	19652	19652	19652	20100	20194
73-01003	LP-3	AAB7480	Grab	77.5-80	Qbt-3	19652	19652	19652	20100	20194
73-01003	LP-3	AAB7481	Grab	87.5-90	Qbt-2	19652	19652	19652	20100	20194
73-01003	LP-3	AAB7482	Grab	97.5-100	Qbt-2	19654	19654	19654	20102	20192
73-01003	LP-3	AAB7483	Grab/ duplicate	97.5-100	Qbt-2	19654	19654	19654	20102	20192
73-01004	LP-4	AAB7582	Grab	17.5-20	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAB7583	Grab	57.5-60	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAB7584	Grab	67.5-70	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAB7585	Grab/ duplicate	67.5-70	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAB7586	Grab	80-82.5	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAB7587	Grab	87.5-90	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAC0944	Grab	97.5-100	Qbt-2	19746	19746	19746	19994	20200
73-01005	LP-5	AAB7574	Grab	12.5-15	Qbt-3	19688	19688	19688	20104	20196
73-01005	LP-5	AAB7575	Grab	22.5-25	Qbt-3	19688	19688	19688	20104	20196
73-01005	LP-5	AAB7576	Grab/ duplicate	22.5-25	Qbt-3	19688	19688	19688	20104	20196
73-01005	LP-5	AAB7577	Grab	32.5-35	Qbt-3	19688	19688	19688	20104	20196
73-01006	LP-6	AAB7578	Grab	12.5-15	Qbt-3	19688	19688	19688	20104	20196
73-01006	LP-6	AAB7579	Grab/ duplicate	12.5-15	Qbt-3	19688	19688	19688	20104	20196
73-01006	LP-6	AAB7580	Grab	22.5-25	Qbt-3	19688	19688	19688	20104	20196
73-01006	LP-6	AAB7581	Grab	32.5-35	Qbt-3	19688	19688	19688	20104	20196
73-01007	LP-7	AAC1604	Grab	10-12.5	Qbt-3	19983	19983	19983	20030	20201
73-01007	LP-7	AAC1605	Grab	15-17.5	Qbt-3	19983	19983	19983	20030	20201
73-01007	LP-7	AAC1606	Grab	22.5-25	Qbt-3	19983	19983	19983	20030	20201
73-01007	LP-7	AAC1607	Grab	27.5-30	Qbt-3	19983	19983	19983	20030	20201
73-01007	LP-7	AAC1608	Grab	47.5-50	Qbt-3	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1609	Grab	55-57.5	Qbt-3	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1610	Grab/ duplicate	55-57.5	Qbt-3	20035	20035	20035	20265	20187

TABLE 2.3.4.2-5 (continued)

Location ID	Borehole ID	Sample ID	Sample Type	Depth (ft)	Media	Analyses Requested				
						VOCs	SVOCs	PCBs/ Pest.	Inorganic chemicals	Radio- nuclides
73-01007	LP-7	AAC1611	Grab	70-72.5	Qbt-3	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1612	Grab	77.5-80	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1613	Grab	87.5-90	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1614	Grab	97.5-100	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1615	Grab	107.5-110	Qbt-2	20035	20035	20035	20265	20187
73-01008	LP-8	AAC0945	Grab	22.5-25	Qbt-3	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0946	Grab	57.5-60	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0947	Grab	65-67.5	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0948	Grab	77.5-80	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0949	Grab	87.5-90	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0950	Grab/ duplicate	87.5-90	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0951	Grab	100-102.5	Qbt-2	19899	19899	19899	19995	20202
73-01009	LP-9	AAC1616	Grab	22.5-25	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1617	Grab	32.5-35	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1618	Grab	42.5-45	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1619	Grab/ duplicate	42.5-45	Qbt-3	20035	20035	20035	20265	20187
73-01010	LPS-1	AAC0952	Grab	5-7.5	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0953	Grab	17.5-20	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0954	Grab	32.5-35	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0955	Grab	60-62.5	Qbt-2	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0956	Grab	87.5-90	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC0957	Grab	107.5-110	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC0958	Grab	115-117.5	Qbt-2	NA	19982	19982	20041	20188
73-01010	LPS-1	AAC1601	Grab	127.5-130	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC1602	Grab	147.5-150	Qbt-2	19983	19983	19983	20030	20201
73-01010	LPS-1	AAC1603	Grab/ duplicate	147.5-150	Qbt-2	19983	19983	19983	20030	20201
73-01011	LPS-2	AAC1620	Grab	47.5-50	Qbt-3	20206	20206	20206	20266	20287
73-01011	LPS-2	AAC1621	Grab	55-57.5	Qbt-3	20206	20206	20206	20266	20287
73-01011	LPS-2	AAC1622	Grab	80-82.5	Qbt-3	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1623	Grab	97.5-100	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1624	Grab	120-122.5	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1625	Grab/ duplicate	120-122.5	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1626	Grab	137.5-140	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1627	Grab	157.5-160	Qbt-2	20237	20237	20237	20270	20289
73-01011	LPS-2	AAC1628	Grab	177.5-180	Qbt-2	20237	20237	20237	20270	20289
73-01011	LPS-2	AAC1629	Grab	197.5-200	Qbt-1v	20237	20237	20237	20270	20289
73-02061	CP-1	0173-95-0179	Grab	95.5-96.5	Qbt-2	1401	NA	NA	1402	NA
73-02062	CP-2A	0173-95-0180	Grab	74-75	Qbt-3	1434	NA	NA	1435	NA
73-02064	CP-5A	0173-95-0183	Grab	27-28	Qbt-3	1439	NA	NA	1440	NA
73-02065	CP-5B	0173-95-0184	Grab	17-18	Qbt-3	1439	NA	NA	1440	NA
73-02066	CP-6	0173-95-0185	Grab	13.5-14.5	Qbt-3	1439	NA	NA	1440	NA
73-02067	CP-7D	0173-95-0186	Grab	25-26	Qbt-3	1484	NA	NA	1487	NA

0173-95-0186-0187-0188-0189-0190-0191-0192-0193-0194-0195-0196-0197-0198-0199-0200-0201-0202-0203-0204-0205-0206-0207-0208-0209-0210-0211-0212-0213-0214-0215-0216-0217-0218-0219-0220-0221-0222-0223-0224-0225-0226-0227-0228-0229-0230-0231-0232-0233-0234-0235-0236-0237-0238-0239-0240-0241-0242-0243-0244-0245-0246-0247-0248-0249-0250-0251-0252-0253-0254-0255-0256-0257-0258-0259-0260-0261-0262-0263-0264-0265-0266-0267-0268-0269-0270-0271-0272-0273-0274-0275-0276-0277-0278-0279-0280-0281-0282-0283-0284-0285-0286-0287-0288-0289-0290-0291-0292-0293-0294-0295-0296-0297-0298-0299-0300-0301-0302-0303-0304-0305-0306-0307-0308-0309-0310-0311-0312-0313-0314-0315-0316-0317-0318-0319-0320-0321-0322-0323-0324-0325-0326-0327-0328-0329-0330-0331-0332-0333-0334-0335-0336-0337-0338-0339-0340-0341-0342-0343-0344-0345-0346-0347-0348-0349-0350-0351-0352-0353-0354-0355-0356-0357-0358-0359-0360-0361-0362-0363-0364-0365-0366-0367-0368-0369-0370-0371-0372-0373-0374-0375-0376-0377-0378-0379-0380-0381-0382-0383-0384-0385-0386-0387-0388-0389-0390-0391-0392-0393-0394-0395-0396-0397-0398-0399-0400-0401-0402-0403-0404-0405-0406-0407-0408-0409-0410-0411-0412-0413-0414-0415-0416-0417-0418-0419-0420-0421-0422-0423-0424-0425-0426-0427-0428-0429-0430-0431-0432-0433-0434-0435-0436-0437-0438-0439-0440-0441-0442-0443-0444-0445-0446-0447-0448-0449-0450-0451-0452-0453-0454-0455-0456-0457-0458-0459-0460-0461-0462-0463-0464-0465-0466-0467-0468-0469-0470-0471-0472-0473-0474-0475-0476-0477-0478-0479-0480-0481-0482-0483-0484-0485-0486-0487-0488-0489-0490-0491-0492-0493-0494-0495-0496-0497-0498-0499-0500-0501-0502-0503-0504-0505-0506-0507-0508-0509-0510-0511-0512-0513-0514-0515-0516-0517-0518-0519-0520-0521-0522-0523-0524-0525-0526-0527-0528-0529-0530-0531-0532-0533-0534-0535-0536-0537-0538-0539-0540-0541-0542-0543-0544-0545-0546-0547-0548-0549-0550-0551-0552-0553-0554-0555-0556-0557-0558-0559-0560-0561-0562-0563-0564-0565-0566-0567-0568-0569-0570-0571-0572-0573-0574-0575-0576-0577-0578-0579-0580-0581-0582-0583-0584-0585-0586-0587-0588-0589-0590-0591-0592-0593-0594-0595-0596-0597-0598-0599-0600-0601-0602-0603-0604-0605-0606-0607-0608-0609-0610-0611-0612-0613-0614-0615-0616-0617-0618-0619-0620-0621-0622-0623-0624-0625-0626-0627-0628-0629-0630-0631-0632-0633-0634-0635-0636-0637-0638-0639-0640-0641-0642-0643-0644-0645-0646-0647-0648-0649-0650-0651-0652-0653-0654-0655-0656-0657-0658-0659-0660-0661-0662-0663-0664-0665-0666-0667-0668-0669-0670-0671-0672-0673-0674-0675-0676-0677-0678-0679-0680-0681-0682-0683-0684-0685-0686-0687-0688-0689-0690-0691-0692-0693-0694-0695-0696-0697-0698-0699-0700-0701-0702-0703-0704-0705-0706-0707-0708-0709-0710-0711-0712-0713-0714-0715-0716-0717-0718-0719-0720-0721-0722-0723-0724-0725-0726-0727-0728-0729-0730-0731-0732-0733-0734-0735-0736-0737-0738-0739-0740-0741-0742-0743-0744-0745-0746-0747-0748-0749-0750-0751-0752-0753-0754-0755-0756-0757-0758-0759-0760-0761-0762-0763-0764-0765-0766-0767-0768-0769-0770-0771-0772-0773-0774-0775-0776-0777-0778-0779-0780-0781-0782-0783-0784-0785-0786-0787-0788-0789-0790-0791-0792-0793-0794-0795-0796-0797-0798-0799-0800-0801-0802-0803-0804-0805-0806-0807-0808-0809-0810-0811-0812-0813-0814-0815-0816-0817-0818-0819-0820-0821-0822-0823-0824-0825-0826-0827-0828-0829-0830-0831-0832-0833-0834-0835-0836-0837-0838-0839-0840-0841-0842-0843-0844-0845-0846-0847-0848-0849-0850-0851-0852-0853-0854-0855-0856-0857-0858-0859-0860-0861-0862-0863-0864-0865-0866-0867-0868-0869-0870-0871-0872-0873-0874-0875-0876-0877-0878-0879-0880-0881-0882-0883-0884-0885-0886-0887-0888-0889-0890-0891-0892-0893-0894-0895-0896-0897-0898-0899-0900-0901-0902-0903-0904-0905-0906-0907-0908-0909-0910-0911-0912-0913-0914-0915-0916-0917-0918-0919-0920-0921-0922-0923-0924-0925-0926-0927-0928-0929-0930-0931-0932-0933-0934-0935-0936-0937-0938-0939-0940-0941-0942-0943-0944-0945-0946-0947-0948-0949-0950-0951-0952-0953-0954-0955-0956-0957-0958-0959-0960-0961-0962-0963-0964-0965-0966-0967-0968-0969-0970-0971-0972-0973-0974-0975-0976-0977-0978-0979-0980-0981-0982-0983-0984-0985-0986-0987-0988-0989-0990-0991-0992-0993-0994-0995-0996-0997-0998-0999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-1218-1219-1220-1221-1222-1223-1224-1225-1226-1227-1228-1229-1230-1231-1232-1233-1234-1235-1236-1237-1238-1239-1240-1241-1242-1243-1244-1245-1246-1247-1248-1249-1250-1251-1252-1253-1254-1255-1256-1257-1258-1259-1260-1261-1262-1263-1264-1265-1266-1267-1268-1269-1270-1271-1272-1273-1274-1275-1276-1277-1278-1279-1280-1281-1282-1283-1284-1285-1286-1287-1288-1289-1290-1291-1292-1293-1294-1295-1296-1297-1298-1299-1300-1301-1302-1303-1304-1305-1306-1307-1308-1309-1310-1311-1312-1313-1314-1315-1316-1317-1318-1319-1320-1321-1322-1323-1324-1325-1326-1327-1328-1329-1330-1331-1332-1333-1334-1335-1336-1337-1338-1339-1340-1341-1342-1343-1344-1345-1346-1347-1348-1349-1350-1351-1352-1353-1354-1355-1356-1357-1358-1359-1360-1361-1362-1363-1364-1365-1366-1367-1368-1369-1370-1371-1372-1373-1374-1375-1376-1377-1378-1379-1380-1381-1382-1383-1384-1385-1386-1387-1388-1389-1390-1391-1392-1393-1394-1395-1396-1397-1398-1399-1400-1401-1402-1403-1404-1405-1406-1407-1408-1409-1410-1411-1412-1413-1414-1415-1416-1417-1418-1419-1420-1421-1422-1423-1424-1425-1426-1427-1428-1429-1430-1431-1432-1433-1434-1435-1436-1437-1438-1439-1440-1441-1442-1443-1444-1445-1446-1447-1448-1449-1450-1451-1452-1453-1454-1455-1456-1457-1458-1459-1460-1461-1462-1463-1464-1465-1466-1467-1468-1469-1470-1471-1472-1473-1474-1475-1476-1477-1478-1479-1480-1481-1482-1483-1484-1485-1486-1487-1488-1489-1490-1491-1492-1493-1494-1495-1496-1497-1498-1499-1500-1501-1502-1503-1504-1505-1506-1507-1508-1509-1510-1511-1512-1513-1514-1515-1516-1517-1518-1519-1520-1521-1522-1523-1524-1525-1526-1527-1528-1529-1530-1531-1532-1533-1534-1535-1536-1537-1538-1539-1540-1541-1542-1543-1544-1545-1546-1547-1548-1549-1550-1551-1552-1553-1554-1555-1556-1557-1558-1559-1560-1561-1562-1563-1564-1565-1566-1567-1568-1569-1570-1571-1572-1573-1574-1575-1576-1577-1578-1579-1580-1581-1582-1583-1584-1585-1586-1587-1588-1589-1590-1591-1592-1593-1594-1595-1596-1597-1598-1599-1600-1601-1602-1603-1604-1605-1606-1607-160

TABLE 2.3.42-5 (continued)

Location ID	Borehole ID	Sample ID	Sample Type	Depth (ft)	Media	Analyses Requested				
						VOCs	SVOCs	PCBs/ Pest.	Inorganic chemicals	Radio- nuclides
73-01007	LP-7	AAC1611	Grab	70-72.5	Qbt-3	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1612	Grab	77.5-80	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1613	Grab	87.5-90	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1614	Grab	97.5-100	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1615	Grab	107.5-110	Qbt-2	20035	20035	20035	20265	20187
73-01008	LP-8	AAC0945	Grab	22.5-25	Qbt-3	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0946	Grab	57.5-60	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0947	Grab	65-67.5	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0948	Grab	77.5-80	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0949	Grab	87.5-90	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0950	Grab/ duplicate	87.5-90	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0951	Grab	100-102.5	Qbt-2	19899	19899	19899	19995	20202
73-01009	LP-9	AAC1616	Grab	22.5-25	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1617	Grab	32.5-35	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1618	Grab	42.5-45	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1619	Grab/ duplicate	42.5-45	Qbt-3	20035	20035	20035	20265	20187
73-01010	LPS-1	AAC0952	Grab	5-7.5	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0953	Grab	17.5-20	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0954	Grab	32.5-35	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0955	Grab	60-62.5	Qbt-2	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0956	Grab	87.5-90	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC0957	Grab	107.5-110	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC0958	Grab	115-117.5	Qbt-2	NA	19982	19982	20041	20188
73-01010	LPS-1	AAC1601	Grab	127.5-130	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC1602	Grab	147.5-150	Qbt-2	19983	19983	19983	20030	20201
73-01010	LPS-1	AAC1603	Grab/ duplicate	147.5-150	Qbt-2	19983	19983	19983	20030	20201
73-01011	LPS-2	AAC1620	Grab	147.5-50	Qbt-3	20206	20206	20206	20266	20287
73-01011	LPS-2	AAC1621	Grab	55-57.5	Qbt-3	20206	20206	20206	20266	20287
73-01011	LPS-2	AAC1622	Grab	80-82.5	Qbt-3	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1623	Grab	97.5-100	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1624	Grab	120-122.5	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1625	Grab/ duplicate	120-122.5	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1626	Grab	137.5-140	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1627	Grab	157.5-160	Qbt-2	20237	20237	20237	20270	20289
73-01011	LPS-2	AAC1628	Grab	177.5-180	Qbt-2	20237	20237	20237	20270	20289
73-01011	LPS-2	AAC1629	Grab	197.5-200	Qbt-1v	20237	20237	20237	20270	20289
73-02061	CP-1	0173-95-0179	Grab	95.5-96.5	Qbt-2	1401	NA	NA	1402	NA
73-02062	CP-2A	0173-95-0180	Grab	74-75	Qbt-3	1434	NA	NA	1435	NA
73-02064	CP-5A	0173-95-0183	Grab	27-28	Qbt-3	1439	NA	NA	1440	NA
73-02065	CP-5B	0173-95-0184	Grab	17-18	Qbt-3	1439	NA	NA	1440	NA
73-02066	CP-6	0173-95-0185	Grab	13.5-14.5	Qbt-3	1439	NA	NA	1440	NA
73-02067	CP-7D	0173-95-0186	Grab	25-26	Qbt-3	1484	NA	NA	1487	NA

NA = Not applicable.

NA = Not analyzed.

TABLE 2.3.4.2-6
SAMPLE SUMMARY TABLE FOR PORE WATER

Location ID	Well ID	Sample ID	Sample Type	Lysimeter Depth (ft)	Media	Analyses Requested*		
						VOCs	Inorganic Chemicals	Uranium
73-01004	LP-4	0173-95-0036	Lysimeter water	34.4	Water	75	NA	NA
73-01005	LP-5	0173-95-0037	Lysimeter water	10.7	Water	75	76	NA
73-01009	LP-9	0173-95-0040	Lysimeter water	26	Water	75	76	NA
73-01005	LP-5	0173-95-0080	Lysimeter water	33.5	Water	313	NA	NA
73-01009	LP-9	0173-95-0083	Lysimeter water	26	Water	313	NA	NA
73-01005	LP-5	0173-95-0102	Lysimeter water	10.7	Water	663	NA	NA
73-01007	LP-7	0173-95-0103	Lysimeter water	55	Water	663	NA	NA
73-01009	LP-9	0173-95-0104	Lysimeter water	26	Water	663	664	NA
73-01009	LP-9	0173-96-0062	Lysimeter water	26	Water	1881	NA	NA
73-01005	LP-5	0173-96-0063	Lysimeter water	10.7	Water	1881	NA	NA
73-01009	LP-9	0173-96-0064	Lysimeter water	26	Water	NA	1913	NA
73-01009	LP-9	0173-96-0196	Lysimeter water	26	Water	2172	2175	NA
73-01007	LP-7	0173-96-0451	Lysimeter water	55	Water	2342	NA	NA
73-01009	LP-9	0173-96-0452	Lysimeter water	26	Water	2342	2343	NA
73-01005	LP-5	0173-96-0453	Lysimeter water	10.7	Water	2342	2343	NA
73-01007	LP-7	0173-96-0521	Lysimeter water	55	Water	2590	NA	NA
73-01009	LP-9	0173-96-0522	Lysimeter water	26	Water	2590	2591	NA
73-01005	LP-5	0173-96-0523	Lysimeter water	10.7	Water	2590	NA	NA
73-01007	LP-7	0173-96-0524	Lysimeter water	55	Water	2649	NA	NA
73-01009	LP-9	0173-96-0525	Lysimeter water	26	Water	2649	2650	NA
73-01005	LP-5	0173-96-0526	Lysimeter water	10.7	Water	2649	2650	NA
73-01004	LP-4	0173-96-0527	Lysimeter water	34.4	Water	2649	NA	NA
73-01007	LP-7	0173-96-0651	Lysimeter water	55	Water	2826	NA	NA
73-01009	LP-9	0173-96-0652	Lysimeter water	26	Water	2826	2825	NA
73-01005	LP-5	0173-96-0653	Lysimeter water	10.7	Water	2826	2825	NA
73-02429	LI-1	0173-97-0081	Lysimeter water	76	Water	3520R	NA	NA
73-02426	LI-3	0173-97-0082	Lysimeter water	23.3	Water	3520R	NA	NA
73-02426	LI-3	0173-97-0083	Lysimeter water	23.3	Water	3611R	NA	NA
73-02428	LI-5	0173-97-0211	Lysimeter water	28.8	Water	3665R	3666R	NA
73-02426	LI-3	0173-97-0212	Lysimeter water	23.3	Water	3665R	3666R	NA
73-02428	LI-5	0173-97-0213	Lysimeter water	28.8	Water	3726R	NA	NA
73-02426	LI-3	0173-97-0214	Lysimeter water	23.3	Water	3726R	NA	NA
73-02426	LI-3	0173-97-0215	Lysimeter water	23.3	Water	NA	3740H	3740R
73-02428	LI-5	0173-97-0361	Lysimeter water	28.8	Water	3834R	3835R	3835R
73-01006	LP-6	AAC3266	Lysimeter water	11	Water	21429	NA	NA
73-01007	LP-7	AAC3267	Lysimeter water	55	Water	NA	21431	NA
73-01009	LP-9	AAC3268	Lysimeter water	26	Water	NA	21431	NA
73-01005	LP-5	AAC3271	Lysimeter water	10.7	Water	NA	21431	NA
73-01005	LP-5	AAC4159	Lysimeter water	10.7	Water	21715	21716	NA
73-01007	LP-7	AAC4161	Lysimeter water	55	Water	21715	NA	NA
73-01009	LP-9	AAC4162	Lysimeter water	26	Water	21715	21716	NA
73-01011	LPS-2	AAC4163	Lysimeter water	20.2	Water	21715	21716	NA

* Request number is given for each analysis.

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doned municipal landfill to depths ranging from 45 to 205 feet. Health and safety concerns and restrictions precluded drilling directly into the landfill refuse; it was necessary to install all borings on the periphery of the abandoned municipal landfill. Nine of the borings were drilled vertically (<10 degree angle from vertical) and were designated LP-1 through LP-9 (landfill perimeter). Two-angle borings (>10 degree angle from vertical) were designated LPS-1 and LPS-2 (landfill perimeter slant). The boring locations are shown in Figure 2.3.4.2-14.

The perimeter soil borings were drilled using a HSA drill rig equipped with 7 7/8-inch outside diameter (O.D.) augers. Core samples were collected at 2 1/2-foot intervals from the ground surface to total depth at each boring using a wireline coring system. Detailed logging of each recovered core sample, including (1) geologic logging, (2) soil/rock sampling for laboratory analyses at discrete intervals, (3) radiation monitoring field screening, (4) photoionization detector (PID) and flame-ionization detector (FID) screening for VOCs on each section of recovered core, and (5) gravimetric moisture content determined at 2 1/2-foot intervals was conducted. Samples were submitted to the TA-21 radiochemical screening lab and screened for gross alpha, beta, and gamma, tritium, and percent moisture (by weight). In addition, samples were also submitted to the sample management office (SMO) for fixed laboratory analyses for VOCs, SVOCs, pesticides/PCBs, and TAL metals. A summary of all samples submitted for fixed laboratory analyses are presented in Table 2.3.4.2-4.

Data obtained from the logging of each recovered core sample were used to determine the depths and locations of vadose zone instruments that were installed. Lithologic logs for each boring are provided in Appendix D-3.1. These logs contain information on the lithology encountered at each location, as well as various observations made during drilling (e.g., presence of staining, contaminant odors, and free water).

The LANL ER Project SOPs used in the perimeter drilling program included the following:

LANL-ER-SOP-1.01	General Instructions for Field Investigations
LANL-ER-SOP-1.02	Sampling Containers and Preservation
LANL-ER-SOP-1.03	Handling, Packaging, and Shipping of Samples
LANL-ER-SOP-1.04	Sample Control and Field Documentation
LANL-ER-SOP-1.05	Field Quality Control Samples
LANL-ER-SOP-1.06	Management of RFI-Generated Waste
LANL-ER-SOP-4.01	Drilling Methods and Drill Site Management
LANL-ER-SOP-4.04	General Borehole Logging
LANL-ER-SOP-6.09	Spade and Scoop Methods for Collection of Soil Samples
LANL-ER-SOP-6.24	Sample Collection from Split-Spoon Samplers and Shelby Tube Samplers



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- LANL-ER-SOP-6.26 Core Barrel Sampling for Subsurface Earth Materials
- LANL-ER-SOP-12.01 Field Logging, Handling, and Documentation of Borehole Materials
- LANL-ER-SOP-12.02 Transportation, Receipt, and Admittance of Borehole Samples for the Sample Management Facility

Quality assurance/quality control procedures were conducted to ensure the integrity and defensibility of data collected during site investigation activities. Field QA/QC sampling included duplicate samples at a frequency of approximately one duplicate per 20 samples for moisture/tritium and radiological screening samples (rad van). Eighteen duplicate moisture/tritium samples were collected per 413 regular moisture/tritium samples. Radiological screening samples included 16 duplicates per 220 regular samples. Duplicate samples for complete laboratory analysis (full analytical suite) were collected at a frequency of one per borehole, resulting in a total of 11 duplicate samples per 96 regular samples. In addition, one equipment rinse blank was collected from the core barrel at each borehole and one field blank was collected during core sampling at each borehole. Laboratory trip blanks, prepared by CST-9, accompanied samples in coolers at all times.

Field documentation was reviewed regularly by the field team leader and field team manager to ensure accuracy and completeness. All field activities were conducted in accordance with applicable plans, procedures, and requirements, with the exception of deviations discussed at the end of this section. A procedure for Level B operations, Project-Specific SOP for Level B Operations at OU 1071, TA-73, was developed (October 1994d). All procedures were reviewed and approved by the appropriate technical representatives within LANL. A summary of all QA/QC samples collected during this program is provided in Table 2.3.4.2-7.

Upon retrieval, the outer surface and contents of the sample barrels were screened by ERM/Golder personnel using hand-held meters to detect chemical and gross radiological contamination. Each 2.5-foot run was screened for alpha activity using a Ludlum Model 2221 alpha tray counter to count swipes from core-barrel surfaces and for beta/gamma activity using a direct-reading Ludlum Model 18 with a Model 44-40 detector. The core was screened for organic vapors, simultaneously, with a Microtip™ PID to monitor for organic vapors and a Foxboro™ FID to monitor for methane. In an effort to consistently obtain the highest core-screening values, the shoe of the core barrel was cracked open slightly to allow insertion of the probes of the PID and FID into the interior of the core to collect readings before significant volatilization could occur. Samples were collected at 2.5-foot intervals for moisture and tritium analysis (rad van) and at 5-foot intervals for gross alpha, beta, gamma, and gamma spectroscopy screening (rad van). All field-screening instruments were calibrated and checked on a daily basis.

Two field instruments, a Landtec GA-90 and a PID, were used to quantify fixed gas and total VOC concentrations, respectively. The GA-90 multi-gas monitor employs an infrared detector to determine the concentrations of methane and carbon dioxide and a polarographic sensor to measure oxygen concentrations. The PID was used to estimate total organic vapor concentrations when measured methane concentrations were below 1 percent by volume. Field experience at various landfills suggests that the PID may be unreliable for determining VOC concentrations in soil gas from landfills, due to the presence of high concentrations of biogenic methane, which may interfere with the PID response. Therefore, whenever the

TABLE 2.3.4.2-7
FIELD QA/QC

Collection Date	Sample ID	Field QC Type	Matrix	Fixed Gases (Method 133)	Volatiles (Method TO14)	Volatiles	Semi-volatiles	PCB/PEST.	Radio-nuclides	Metals
17-Oct-94	AAC1001	Field Reagent Blank	WATER	—	—	19618	19618	19618	20027	20098
17-Oct-94	AAC1002	Equipment Blank	WATER	—	—	19618	19618	19618	20027	20098
20-Oct-94	AAB7571	Field Trip Blank	WATER	—	—	19654	—	—	—	—
20-Oct-94	AAC1003	Field Reagent Blank	WATER	—	—	19685	19685	19685	20199	20105
20-Oct-94	AAC1004	Equipment Blank	WATER	—	—	19685	19685	19685	20199	20105
21-Oct-94	AAC1005	Field Reagent Blank	WATER	—	—	19685	19685	19685	20199	20105
21-Oct-94	AAC1006	Equipment Blank	WATER	—	—	19685	19685	19685	20199	20105
21-Oct-94	AAC1047	Field Trip Blank	WATER	—	—	19685	—	—	—	—
21-Oct-94	AAC1048	Field Trip Blank	WATER	—	—	19685	—	—	—	—
22-Oct-94	AAC1007	Equipment Blank	WATER	—	—	19688	19688	19688	20196	20104
22-Oct-94	AAC1008	Field Reagent Blank	WATER	—	—	19688	19688	19688	20196	20104
23-Oct-94	AAC1009	Field Reagent Blank	WATER	—	—	19688	19688	19688	20196	20104
23-Oct-94	AAC1010	Equipment Blank	WATER	—	—	19688	19688	19688	20196	20104
23-Oct-94	AAC1576	Field Trip Blank	WATER	—	—	19688	—	—	—	—
23-Oct-94	AAC1577	Field Trip Blank	WATER	—	—	19688	—	—	—	—
25-Oct-94	AAC1011	Field Reagent Blank	WATER	—	—	19746	19746	19746	20200	19994
25-Oct-94	AAC1012	Equipment Blank	WATER	—	—	19746	19746	19746	20200	19994
25-Oct-94	AAC1578	Field Trip Blank	WATER	—	—	19746	—	—	—	—
25-Oct-94	AAC1579	Field Trip Blank	WATER	—	—	19746	—	—	—	—
01-Nov-94	AAC1013	Equipment Blank	WATER	—	—	19899	19899	19899	20202	19995
01-Nov-94	AAC1014	Field Reagent Blank	WATER	—	—	19899	19899	19899	20202	19995
01-Nov-94	AAC1580	Field Trip Blank	WATER	—	—	19899	—	—	—	—
01-Nov-94	AAC1581	Field Trip Blank	WATER	—	—	19899	—	—	—	—
04-Nov-94	AAC1583	Field Trip Blank	WATER	—	—	19982	—	—	—	—
05-Nov-94	AAC1015	Field Reagent Blank	WATER	—	—	19983	19983	19983	20201	20030
05-Nov-94	AAC1016	Equipment Blank	WATER	—	—	19983	19983	19983	20201	20030
07-Nov-94	AAC1919	Field Reagent Blank	WATER	—	—	20035	20035	20035	20187	20265
07-Nov-94	AAC1920	Equipment Blank	WATER	—	—	20035	20035	20035	20187	20265

TABLE 2.3.4.2-7 (continued)

Collection Date	Sample ID	Field QC Type	Matrix	Fixed Gases (Method 133)	Volatiles (Method TO14)	Volatiles	Semi-volatiles	PCB/PEST.	Radio-nuclides	Metals
08-Nov-94	AAC1917	Equipment Blank	WATER	—	—	20035	20035	20035	20187	20265
08-Nov-94	AAC1918	Field Reagent Blank	WATER	—	—	20035	20035	20035	20187	20265
15-Nov-94	AAC1582	Field Trip Blank	WATER	—	—	20233	—	—	—	—
16-Nov-94	AAC1584	Field Trip Blank	WATER	—	—	20237	—	—	—	—
16-Nov-94	AAC1915	Equipment Blank	WATER	—	—	20237	20237	20237	20289	20270
16-Nov-94	AAC1916	Field Reagent Blank	WATER	—	—	20237	20237	20237	20289	20270
24-Feb-95	AAA3269	Performance Evaluation	GAS	21416	21416	—	—	—	—	—
24-Feb-95	AAC3270	Performance Evaluation	GAS	21416	21416	—	—	—	—	—
29-Mar-95	AAC4155	Performance Evaluation	GAS	21709	21709	—	—	—	—	—
29-Mar-95	AAC4156	Performance Evaluation	GAS	21709	21709	—	—	—	—	—
25-Apr-95	0173-95-0030	Field Blank	GAS	78	78	—	—	—	—	—
26-Apr-95	0173-95-0033	Performance Evaluation	GAS	93	93	—	—	—	—	—
26-Apr-95	0173-95-0034	Performance Evaluation	GAS	93	93	—	—	—	—	—
26-Apr-95	0173-95-0042	Field Trip Blank	WATER	—	—	75	—	—	—	—
24-May-95	0173-95-0076	Field Blank	GAS	303	303	—	—	—	—	—
24-May-95	0173-95-0076	Performance Evaluation	GAS	305	305	—	—	—	—	—
24-May-95	0173-95-0077	Performance Evaluation	GAS	305	305	—	—	—	—	—
25-May-95	0173-95-0085	Field Trip Blank	WATER	—	—	313	—	—	—	—
11-Jul-95	0173-95-0101	Field Trip Blank	WATER	—	—	663	—	—	—	—
02-Nov-95	0173-95-0232	Performance Evaluation	GAS	1500	1500	—	—	—	—	—
02-Nov-95	0173-95-0233	Performance Evaluation	GAS	1500	1500	—	—	—	—	—
12-Mar-96	0173-96-0059	Field Blank	GAS	—	1865	—	—	—	—	—
13-Mar-96	0173-96-0060	Performance Evaluation	GAS	—	1871	—	—	—	—	—
23-Apr-96	0173-96-0159	Performance Evaluation	GAS	—	2007	—	—	—	—	—
23-Apr-96	0173-96-0160	Field Blank	GAS	—	2007	—	—	—	—	—
29-May-96	0173-96-0185	Performance Evaluation	GAS	—	2174	—	—	—	—	—
29-May-96	0173-96-0186	Field Blank	GAS	—	2174	—	—	—	—	—
25-Jun-96	0173-96-0413	Field Blank	GAS	—	2341	—	—	—	—	—
26-Jun-96	0173-96-0450	Performance Evaluation	GAS	—	2341	—	—	—	—	—

TABLE 2.3.4.2-7 (continued)

Collection Date	Sample ID	Field QC Type	Matrix	Fixed Gases (Method 133)	Volatiles (Method T014)	Volatiles	Semi-volatiles	PCB/PEST.	Radio-nuclides	Metals
24-Sep-96	0173-96-0584	Field Blank	GAS	—	2642	—	—	—	—	—
25-Sep-96	0173-96-0560	Performance Evaluation	GAS	—	2649	—	—	—	—	—
11-Dec-96	0173-96-0649	Performance Evaluation	GAS	—	2824	—	—	—	—	—
11-Dec-96	0173-96-0650	Field Blank	GAS	—	2824	—	—	—	—	—
18-Jun-97	0173-97-0131	Field Trip Blank	WATER	—	—	3248R	—	—	—	—
19-Jun-97	0173-97-0132	Field Trip Blank	WATER	—	—	3251R	—	—	—	—
23-Jun-97	0173-97-0133	Field Trip Blank	WATER	—	—	3260R	—	—	—	—
24-Jun-97	0173-97-0134	Field Trip Blank	WATER	—	—	3263R	—	—	—	—
27-Jun-97	0173-97-0136	Field Trip Blank	WATER	—	—	3282R	—	—	—	—
30-Jun-97	0173-97-0137	Field Trip Blank	WATER	—	—	3288R	—	—	—	—
03-Jul-97	0173-97-0138	Field Trip Blank	WATER	—	—	3302R	—	—	—	—
10-Jul-97	0173-97-0139	Field Trip Blank	WATER	—	—	3347R	—	—	—	—
06-Aug-97	0173-97-0100	Performance Evaluation	GAS	—	3500R	—	—	—	—	—
29-Sep-97	0173-97-0270	Field Blank	GAS	—	3760R	—	—	—	—	—
30-Sep-97	0173-97-0295	Performance Evaluation	GAS	—	3763R	—	—	—	—	—

GA-90 multi-gas meter indicated the presence of methane, the PID readings were viewed with caution, and the boring was purged with nitrogen immediately prior to well installation both to minimize the risk of exposure to hazardous VOCs and eliminate the possibility of explosion or fire.

Field screening during drilling indicated that no significant methane or VOC contaminant concentrations were present in the vicinity of wells LP-1, LP-2, LP-5, LP-8, LP-9, and LPS-1. However, field screening detected VOCs in well LP-6 and high levels of methane in wells LP-3, LP-4, LP-7, and LPS-2. Therefore, in order to reduce the risk of exposure to hazardous VOCs and eliminate the possibility of explosion or fire, these borings were purged with nitrogen immediately before well completion.

Immediately prior to the installation of each well, the open annulus of the boring was monitored at discrete depths for methane, carbon dioxide, oxygen, and total VOC concentrations. If methane or VOCs were detected, the boring was purged with nitrogen before installing the monitor well. This was done to eliminate the possibility that explosive conditions could develop in the borehole during well completion and minimize the risk of exposure to hazardous VOCs.

A vadose-zone monitor well was installed in each of the 11 perimeter borings immediately after removal of the hollow stem augers. The vadose zone monitor wells were completed variously as neutron access tube (NAT), multiport soil gas (MPSG), thermocouple (TC), heat dissipation sensor (HDS), and suction lysimeter (SL) installations to permit collection of pore liquid and soil vapor samples and the measurement of subsurface properties, such as temperature, moisture content, and matric potential. Table 2.3.4.2-8 lists the types, numbers, and depths of instruments used in the 11 perimeter vadose zone monitor well installations. Appendix D-3.1 presents the individual perimeter monitor well completion diagrams.

Each well was completed with 2-in. inside diameter (I.D.) flush-threaded, Schedule 40 PVC pipe (with O-ring joint seals), a threaded end-plug at the bottom, and an expansion cap at the surface. The PVC casing served as a riser pipe to support the various attached monitoring instruments and as an access tube for neutron probe logging to estimate relative changes in soil moisture content. No free water was encountered during the drilling operations; therefore, well screens were not installed in any of the wells. Figure 2.3.4.2-15 presents the locations of all monitor wells located at the TA-73 landfill. The following paragraphs present details on the vadose zone monitoring instruments installed in the perimeter wells. Additional details on the perimeter well constructions can be found in Appendix D-3.1 of this report.

Soil gas sampling ports were installed in each of the borings to allow soil gas samples to be collected from discrete depths within the vadose zone. Each soil gas port consists of an 80-micron high-density polyethylene (HDPE) porous filter attached to an appropriate length of 3-inch O.D., 0.020-inch wall beverage-grade, welded 304 stainless steel tubing. The hydrophobic HDPE filters, which were used to prevent entry of water or sediment into the stainless steel soil gas sampling tubes, were attached to the tubing using stainless steel Swagelok union fittings. The stainless steel tubing is manufactured in 50-foot sections, thus requiring that individual lengths be joined with stainless steel Swagelok union fittings for those installations greater than 50 ft deep. A total of 30 soil gas ports were installed in the 11 perimeter wells to depths ranging from 7 to 160 ft bgs.

TABLE 2.3.4.2-8
TA-73 BOREHOLE AND MONITOR WELL INFORMATION

Borehole Location	FIMADID	Total Depth Drilled	Estimated Depth to Tuff Interface (ft)	Status	Well Instrumentation		
					Gas Ports	Lysimeters	Other
LP-1	73-01001	45.0	3.5	Monitor well	GP-1; 40.2 ft GP-2; 10.2 ft	NA	Neutron Access Tube Heat Dissipation Sensor #1; 34.2 ft
LP-2	73-01002	42.5	7.5	Monitor well	GP-1; 36.0 ft	NA	Neutron Access Tube
LP-3	73-01003	110.0	5.0	Monitor well	GP-1; 99.2 ft GP-2; 91.2 ft GP-3; 39.2 ft GP-4; 9.2 ft	20.2 ft	Neutron Access Tube Heat Dissipation Sensor #1; 20.4 ft
LP-4	73-01004	112.5	7.0	Monitor well	GP-1; 99.4 ft GP-2; 75.4 ft GP-3; 46.4 ft GP-4; 13.4 ft	34.35 ft	Neutron Access Tube Heat Dissipation Sensor #1; 34.55 ft Thermocouple #1; 99.35 ft Thermocouple #2; 75.35 ft Thermocouple #3; 46.35 ft Thermocouple #4; 13.35 ft
LP-5	73-01005	40.0	11.5	Monitor well	GP-1; 33.5 ft	10.7 ft	Neutron Access Tube Heat Dissipation Sensor #1; 23.0 ft Heat Dissipation Sensor #2; 11.0 ft
LP-6	73-01006	40.0	11.5	Monitor well	GP-1; 27.0 ft	11.0 ft	Neutron Access Tube Heat Dissipation Sensor #1; 11.2 ft
LP-7	73-01007	115.0 (113.25 TVD)	10.0	Monitor well (angled)	GP-1; 100.0 ft GP-2; 28.0 ft GP-3; 16.0 ft	55.0 ft	Neutron Access Tube Heat Dissipation Sensor #1; 55.0 ft Thermocouple #1; 100.0 ft Thermocouple #2; 28.0 ft
LP-8	73-01008	102.5	5.0	Monitor well	GP-1; 91.5 ft GP-2; 43.5 ft GP-3; 15.5 ft	NA	Neutron Access Tube Heat Dissipation Sensor #1; 54.5 ft Thermocouple #1; 91.5 ft Thermocouple #2; 43.5 ft Thermocouple #3; 15.5 ft
LP-9	73-01009	45.0	16.0	Monitor well	GP-1; 41.0 ft GP-2; 11.2 ft	26.0 ft	Neutron Access Tube Heat Dissipation Sensor #1; 26.2 ft

TABLE 2.3.4.2-8 (continued)

Borehole Location	FIMADID	Total Depth Drilled	Estimated Depth to Tuff Interface (ft)	Status	Well Instrumentation		
					Gas Ports	Lyalmeters	Other
LPS-1	73-01010	162.5 (163.0 TYD)	0.0	Monitor well (angled)	GP-1; 145.0 ft GP-2; 114.0 ft GP-3; 61.0 ft GP-4; 22.0 ft GP-5; 7.5 ft	NA	Neutron Access Tube Thermocouple #1; 145.0 ft Thermocouple #2; 114.0 ft Thermocouple #3; 51.0 ft Thermocouple #4; 7.5 ft
LPS-2	73-01011	205.0 (186.0 TYD)	10.0	Monitor wells (angled)	GP-1; 178.0 ft GP-2; 125.0 ft GP-3; 87.0 ft GP-4; 29.0 ft	62.0 ft	Neutron Access Tube Heat Dissipation Sensor #1; 160.0 ft Heat Dissipation Sensor #2; 62.0 ft Thermocouple #1; 178.0 ft Thermocouple #2; 125.0 ft Thermocouple #3; 87.0 ft Thermocouple #4; 29.0 ft
LI-1	73-02429	90.0	76.0	Monitor well	NA	76.0 ft 58.0 ft	Neutron Access Tube Heat Dissipation Sensor #1; 75 ft Heat Dissipation Sensor #2; 57 ft Heat Dissipation Sensor #3; 35 ft
LI-2	73-02425	40.0	29.6	Monitor well	NA	32.2 ft	Heat Dissipation Sensor #1; 31.5 ft Thermocouple #1; 15.0 ft
LI-3	73-02426	30.0	18.0	Monitor well	NA	23.3 ft	Heat Dissipation Sensor #1; 22.5 ft Thermocouple #1; 10.0 ft
LI-3A	NA	20.0	18.0	Grouted	NA	NA	NA
LI-3B	NA	25.0	18.0	Grouted	NA	NA	NA
LI-4	73-02427	29.1	19.0	Monitor well	NA	22.3 ft	Heat Dissipation Sensor #1; 21.3 ft Thermocouple #1; 10.0 ft
LI-5	73-02428	29.5	25.0	Monitor well	NA	28.8 ft	Heat Dissipation Sensor #1; 27.8 Thermocouple #1; 12.0 ft
LI-6	73-02430	75.0	66.0	Monitor well	GP-1; 60.0 ft GP-2; 25.0 ft	66.0 ft	Heat Dissipation Sensor #1; 65 ft Heat Dissipation Sensor #2; 19 ft

TABLE 2.3.4.2-8 continued

Borehole Location	FIMADID	Total Depth Drilled	Estimated Depth to Tuff Interface (ft)	Status	Well Instrumentation		
					Gas Ports	Lyseimeters	Other
DDA-1	73-02424	36.0	30.8	Monitor well	GP-1; 24.0 ft	31.3 ft	Neutron Access Tube Heat Dissipation Sensor #1: 29.8 ft Thermocouple #1: 15.0 ft Thermocouple #2: 5.0 ft
DDA-2	73-02423	7.0	*	Grouted	NA	NA	NA
DDA-2A	73-02423	35.0	22.5	Grouted	NA	NA	NA
DDA-3	73-02421	36.6	35.0	Monitor well	GP-1; 28.0 ft	35.5 ft	Neutron Access Tube Heat Dissipation Sensor #1: 34.5 ft Thermocouple #1: 18.0 ft Thermocouple #2: 5.0 ft
DDA-4	73-02422	16.5		Grouted	NA	NA	
DDA-4A	73-02422	30.0	16.0	Grouted	NA	NA	
CP-1	73-02061	85.6*	95.5	Monitor well	GP-1; 75.0 ft GP-2; 27.5 ft GP-3; 2.5 ft	NA	Thermocouple #1: 75.0 ft Thermocouple #2: 27.5 ft Thermocouple #3: 2.5 ft
CP-2	73-02074	73.8	70.5	Grouted	NA	NA	NA
CP-2A	73-02062	75.0	70.6	Grouted	NA	NA	NA
CP-3	73-02075	1.8	*	Grouted	NA	NA	NA
CP-3A	73-02076	2.0	*	Grouted	NA	NA	NA
CP-3B	73-02077	1.0	*	Grouted	NA	NA	NA
CP-3C	73-02078	25.1	*	Grouted	NA	NA	NA
CP-4	73-02079	24.1	*	Grouted	NA	NA	NA
CP-4A	73-02080	26.1	*	Grouted	NA	NA	NA
CP-4B	73-02081	19.0	*	Grouted	NA	NA	NA
CP-4C	73-02069	26.0	*	Monitor well	GP-1; 17.8 ft GP-2; 1.0 ft	NA	Heat Dissipation Sensor #1: 17.8 ft Thermocouple #1: 1.0 ft
CP-5	73-02082	7.9	*	Grouted	NA	NA	NA
CP-5A	73-02064	26.9	17.5	Grouted	NA	NA	NA
CP-5B	73-02065	18.0	17.5	Grouted	NA	NA	NA
CP-6	73-02068	13.5	13.0	Grouted	NA	NA	NA

TABLE 2.3.4.2-8 continued

Borehole Location	FIMADID	Total Depth Drilled	Estimated Depth to Tuff Interface (ft)	Status	Well Instrumentation		
					Gas Ports	Lyseimeters	Other
CP-7	73-02083	21.8	9	Grouted	NA	NA	NA
CP-7A	73-02084	21.2	9	Grouted	NA	NA	NA
CP-7B	73-02085	23.1	9	Grouted	NA	NA	NA
CP-7C	73-02086	18.9	9	Grouted	NA	NA	NA
CP-7D	73-02087	24.8	24.5	Monitor well	GP-1; 23.4 ft GP-2; 2.0 ft	NA	Heat Dissipation Sensor #1; 23.4 ft Thermocouple #1; 2.0 ft
CP-9	73-02071	32.6	31.0	Monitor well	GP-1; 19.0 ft GP-2; 1.0 ft		Heat Dissipation Sensor #1; 19.0 ft Thermocouple #1; 1.0 ft
CP-10	73-02087	27.4	25.0	Grouted	NA	NA	NA
CP-10A	73-02068	28.0	25.0	Monitor Well	GP-1; 25.8 ft GP-2; 1.3 ft	NA	Heat Dissipation Sensor #1; 25.8 ft Thermocouple #1; 1.3 ft
CP-13	73-02088	22.1	21.0	Grouted	NA	NA	NA
CP-13A	73-02057	22.0	21.0	Grouted	NA	NA	NA
CP-13B	73-02063	75.0	75.0	Grouted	NA	NA	NA
CP-13C	73-02089	88.7	87.0	Monitor Well	GP-1; 74.0 ft GP-2; 30.0 ft GP-3; 1.2 ft	NA	Heat Dissipation Sensor #1; 74.0 ft Thermocouple #1; 74.0 ft Thermocouple #2; 30.0 ft Thermocouple #3; 1.2 ft
CP-14	73-02090	10.8	10.5	Grouted	NA	NA	NA
CP-14A	73-02059	10.7	10.5	Grouted	NA	NA	NA
CP-14B	73-02060	3.0	-	Grouted	NA	NA	NA
CP-15	73-02091	10.2	8.5	Grouted	NA	NA	NA
CP-16	73-02092	33.0	31.0	Grouted	NA	NA	NA
CP-16A	73-02070	22.3	21.0	Grouted	NA	NA	NA
CP-18	73-02093	11.3	9	Grouted	NA	NA	NA
CP-18A	73-02094	11.8	10.0	Grouted	NA	NA	NA
CP-19	73-02095	42.2	10.0	Grouted	NA	NA	NA
CP-19A	73-02096	10.7	10.5	Grouted	NA	NA	NA
CP-19B	73-02097	12.1	10.5	Grouted	NA	NA	NA
CP-21	73-02098	13.8	13.5	Grouted	NA	NA	NA

TABLE 2.3.4.2-8 continued

Borehole Location	FIMADID	Total Depth Drilled	Estimated Depth to Tuff Interface (ft)	Status	Well Instrumentation		
					Gas Ports	Lychnometers	Other
CP-21A	73-02099	1.0	*	Grouted	NA	NA	NA
CP-21B	73-02100	5.7	*	Grouted	NA	NA	NA
CP-21C	73-02101	3.6	*	Grouted	NA	NA	NA
CP-21D	73-02051	27.9	26.0	Grouted	NA	NA	NA
CP-22	73-02052	25.9	25.5	Grouted	NA	NA	NA
CP-23	73-02102	7.1	*	Grouted	NA	NA	NA
CP-23A	73-02103	5.3	*	Grouted	NA	NA	NA
CP-23B	73-02053	19.7	19.5	Grouted	NA	NA	NA
CP-24	73-02054	20.5	19.0	Grouted	NA	NA	NA
CP-30	73-02104	7.9	*	Grouted	NA	NA	NA
CP-30A	73-02105	5.9	*	Grouted	NA	NA	NA
CP-30B	73-02055	20.7	19.0	Grouted	NA	NA	NA
CP-300	73-02056	55.5	49.0	Monitor Well	GP-1; 43.1 ft	NA	NA

- a. TVD = True vertical depth
- b. Cone Penetration Tests conducted at CP-1 could only be advanced to 85.5 ft due to the limitation of the length of the CPT cable running downhole. The CPT cone was extracted from the hole and the soil sampler cone was then advanced to a total depth of 95.5 ft, where the soil/tuff interface was encountered.
- c. HAS CPT refusal at this location before the soil/tuff interface was encountered.

Thermocouples were installed in some of the wells, especially those in which high downhole methane and carbon dioxide concentrations indicated that a significant thermal gradient may exist due to exothermic oxidation of biogenic methane. Each thermocouple consists of a pair of 20-gauge wires, one of copper and the other of constantin (type T), which were twisted and soldered together and emplaced adjacent to soil gas ports. The thermocouple wires extend to the surface for connection to a Campbell Scientific 21X Micrologger. A total of 18 thermocouples were installed in five of the perimeter wells to depths ranging from 7.5 to 178 ft bgs.

HDSs, which measure matric potential, were installed to (1) determine whether a particular suction lysimeter should be sampled at a particular time and (2) assess the driving force (gradient) for potential liquid movement in the Bandelier Tuff adjacent to the landfill. Each HDS consists of a thermistor/thermocouple assembly embedded in a porous ceramic tip. Wires extend to the surface for connection to a Campbell Scientific 21X Micrologger. The HDS device operates on the principle that wet soil dissipates heat more rapidly than dry soil. The heat dissipation rate at various matric potentials is measured in the laboratory to develop a calibration curve for each HDS. A total of 12 heat dissipation sensors were installed in nine perimeter wells to depths ranging between 11 and 160 feet bgs. Appendix D-3.3 contains the calibration data for each HDS.

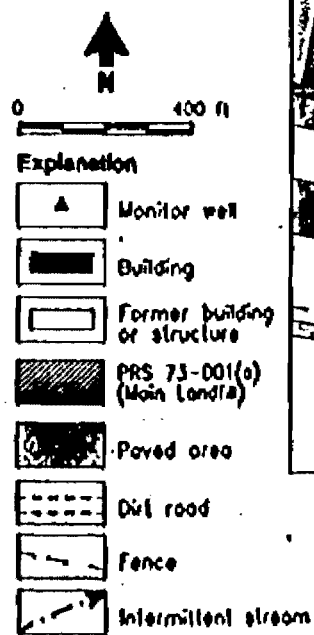
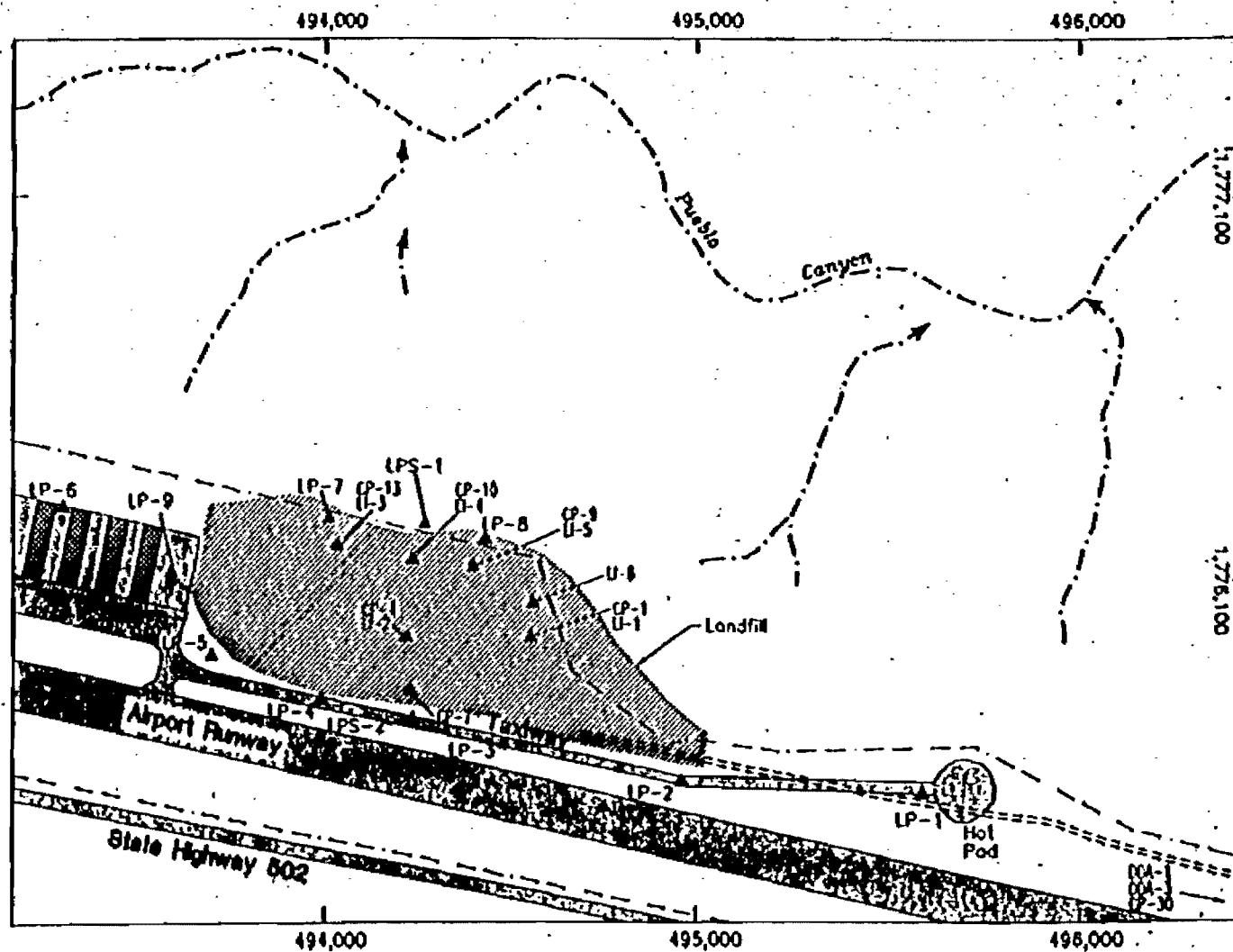
Deep sampling suction lysimeters were installed to allow collection of pore water from the unsaturated volcanic tuff around the landfill. The lysimeters were installed at locations from which core samples exhibited gravimetric moisture contents in excess of 10 percent. The suction lysimeters consist of a porous cup mounted on the bottom of a PVC plastic body tube, with pressure-vacuum and liquid discharge tubes extending to the surface. A heat dissipation sensor, located adjacent to each suction lysimeter, is monitored to ascertain whether the tuff is wet enough to permit pore water samples to be collected from that particular suction lysimeter. In general, lysimeters can only be used to collect pore water samples at matric potentials less (wetter) than 0.8 bar tension. A total of seven suction lysimeters were installed to depths ranging between 10.7 and 62 feet bgs.

Cone Penetrometer Testing (CPT) Program

The CPT program was conducted as part of Task 3, Subsurface Sampling, Activities 1, 2, and 3, as described in the RFI work plan. This investigation included both sampling and nonsampling activities. The work was carried out as part of the characterization of PRSs 73-001(a), 73-001(b), and 73-001(d). The purposes for performing the CPT survey were to (1) investigate potential areas of leachate and/or gas generation in support of risk assessment determination and corrective measure design, (2) determine refuse thickness within the landfill area and related PRSs, (3) obtain information on the strength characteristics and subsidence potential of the landfill refuse in support of corrective measure design, (4) characterize landfill related contaminants present in soil gas within the landfill area and occurring at the soil/tuff interface immediately beneath the landfill, and (5) collect time-series data on soil gas constituents, soil moisture content, and matric potential in the subsurface within the landfill area.

The CPT program was conducted between October 2 and 30, 1995. General climatic conditions which prevailed during the program consisted of daytime temperatures ranging between 10.2 and 24.2 °C, and nighttime temperatures ranging between -4.3 and 9.6 °C. There was no measurable precipitation during

Figure 2.3.4.2-15



Source: LA-FM-53, Sheet L7-NM, 1"=100', Nov 1962

LANL RFI SUPPORT
Monitor Well Location Map
Los Alamos Airport (TA-73)
Los Alamos, New Mexico

this period (TA-53 weather station data).

Forty-eight cone penetrometer tests within the interior of the main landfill and four tests within the debris disposal area were supervised. The individual cone penetrometer test locations are designated with a CP prefix. The penetration depths of the cone penetrometer ranged between 1.0 feet (CP-3B and CP-21A) and 88.7 feet (CP-13C). The CPT locations are shown in Figure 2.3.4.2-16.

Nonsampling activities consisted of recording measurements of tip resistance and sidewall friction during each penetration. These results are presented in Appendix D-3.1. The sampling activities consisted of collecting 34 soil gas samples at various depths from 17 CPT sites and collecting 17 soil core samples from the soil/tuff interface at the base of the landfill by pushing a 1-foot long sampling tube into the bottom of the CPT hole at 17 sites. A total of ten samples of the fill/tuff interface were obtained and submitted for fixed laboratory analyses. Gas samples were analyzed for EPA Method TO-14 VOCs and fixed gases (methane, nitrogen, and oxygen). Soil samples were analyzed for VOCs by EPA method 8240 and selected EPA TAL metals (silver, arsenic, barium, beryllium, cadmium, chromium, mercury, nickel, lead, antimony, and selenium). A listing of all of the collected samples is provided in Table 2.3.4.2-4. In addition, geotechnical information on fill material properties was collected for use in corrective measure design. Six of the holes were subsequently used to install vadose zone monitoring wells and the remaining holes were sealed in accordance with New Mexico state requirements.

The LANL ER Project SOPs used in the CPT program included all of the SOPs followed in the perimeter drilling program with the exception of the following:

LANL-ER-SOP-6.24 Sample Collection from Split-Spoon Samplers and Shelby Tube Samplers

LANL-ER-SOP-6.26 Core Barrel Sampling for Subsurface Earth Materials

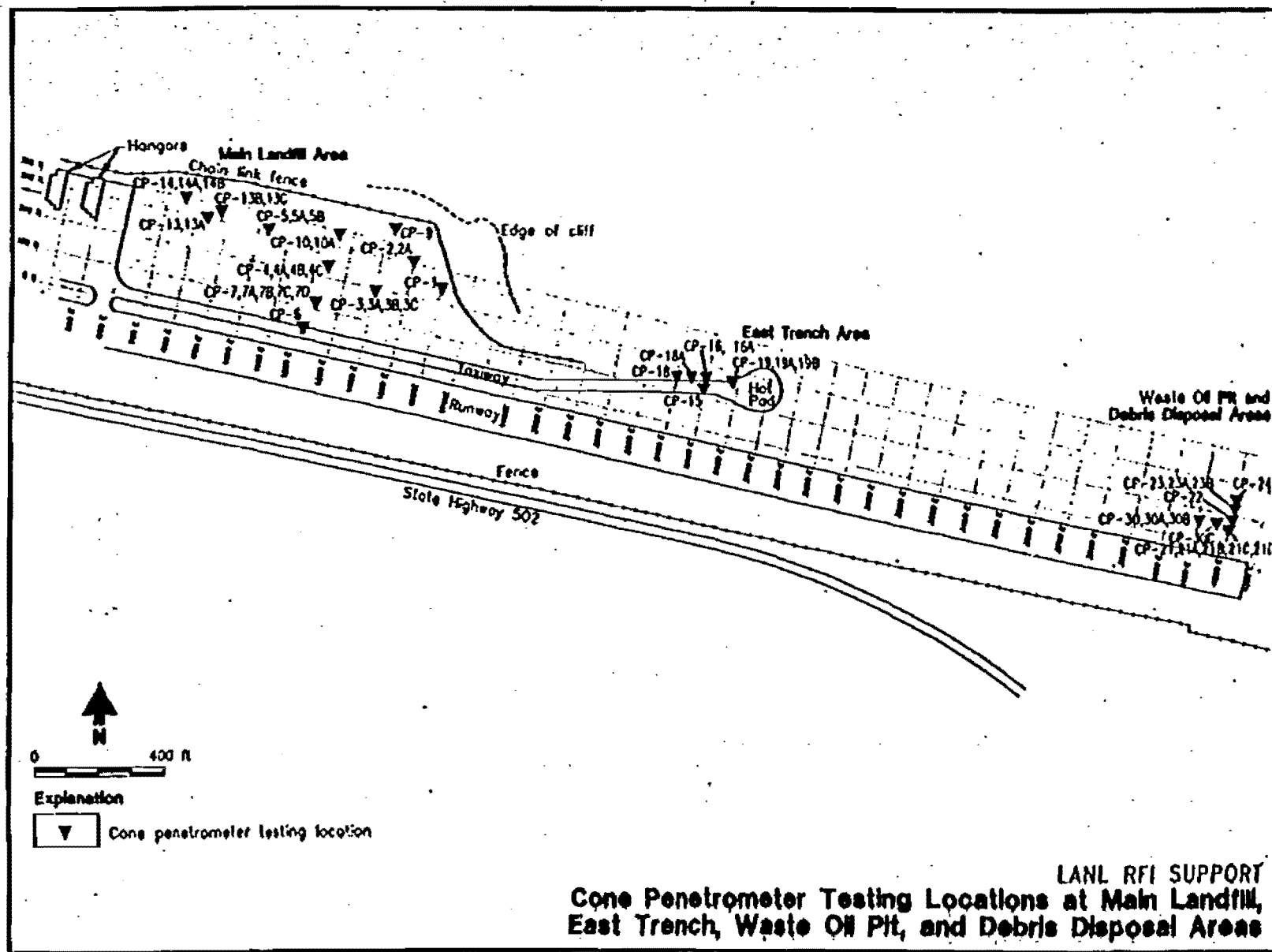
In addition, LANL-ER-SOP-6.22 Canister Sampling for Organics EPA Method TO-14 was used for this program.

Field QA/QC sampling included duplicate samples for moisture/tritium and radiological screening samples (rad van). Due to the limited sample volume associated with the CPT sampling, no duplicate samples were collected for fixed lab analyses. Equipment rinse blanks were collected from the sample rods and field blanks were also collected during core sampling. Laboratory trip blanks, prepared by CST-9, accompanied samples in coolers at all times. In addition, two performance evaluation (PE) soil gas samples from a reference gas with known VOC concentrations were collected. Using hand collection techniques, one background tuff sample was collected from a road cut exposure on the north side of SR-502 and southeast of the eastern end of the airport runway.

Field documentation was reviewed regularly by the field team leader and field team manager to ensure accuracy and completeness. All field activities were conducted in accordance with applicable plans, procedures, and requirements, with the exception of deviations discussed at the end of this section. A summary of all QA/QC samples collected during this program is provided in Table 2.3.4.2-6.

Upon retrieval, the outer surface of the CPT rod and contents of the sample barrels were screened by ERM/Golder personnel using hand-held meters to detect chemical and gross radiological contamination.

Figure 2.3.A.2-16



Each CPT sample rod was screened for alpha activity using a Ludlum Model 2221 alpha tray counter to count swipes from sample rod surfaces and for beta/gamma activity using a direct-reading Ludlum Model 18 with a Model 44-40 detector. The core was screened for organic vapors, simultaneously, with a Microtip™ PID to monitor for organic vapors and a Foxboro™ FID to monitor for methane. Two additional field instruments, a Landtec GA-90 and a PID, were used to continuously quantify fixed gas and total VOC concentrations within the CPT rig, respectively. All field-screening instruments were calibrated and checked on a daily basis.

Well Installations

Vadose zone monitor wells were installed in seven of the 52 CPT locations (six wells within the main landfill and one well within the debris disposal area) immediately after removal of the CPT rod. Each monitor well contains instrumentation to permit collection of soil vapor samples and the measurement of subsurface properties, such as temperature and matric potential. These instruments include soil gas sampling ports, heat dissipation sensors, and thermocouples.

The seven vadose zone monitor wells installed within the main landfill and debris disposal area contain a total of 15 soil gas monitoring ports installed to depths ranging from 1 to 75 feet bgs. In addition, the CP wells are instrumented with a total of 5 heat dissipation sensors installed to depths ranging from 17.6 to 74 feet bgs, and 18 thermocouples installed to depths ranging from 1 to 75 feet bgs. The number and depths of the monitoring devices in each of the seven CP wells are presented in Table 2.3.4.2-7, and shown on the well completion logs in Appendix D-3.1. Additional details on the CP well constructions are also presented in Appendix D-3.1

Interior Drilling Program

The interior drilling program was conducted as part of Task 3, Subsurface Sampling, Activities 1, 2, and 3, as described in the RFI work plan. This investigation, which included both sampling and nonsampling activities, was carried out as part of the characterization of PRSs 73-001 (a) and (d). The purpose of the interior drilling program was to determine the nature of leachate (if present) and evaluate soil gas conditions within and beneath both the landfill and debris disposal area in support of a long-term monitoring program (if necessary) and to determine the feasibility of remedial alternatives.

The interior drilling program was conducted between June 17 and July 9, 1997. General climatic conditions which prevailed during the program consisted of daytime temperatures ranging between 24.5 and 32.9 °C, and nighttime temperatures ranging between 9.4 and 17.5 °C. There were a total of six days of measurable precipitation, with daily precipitation during the field investigation ranging from nondetectable levels to a maximum of 0.11 inches on June 18 (TA-53 weather station data).

Eight borings were drilled within the interior of the main landfill and six borings were drilled within the interior of the debris disposal area to depths ranging from 7 to 82 feet. Each borehole was drilled through the landfill refuse and approximately 10 feet into the tuff beneath the landfill. The eight soil borings drilled within the main landfill area were identified with a LI prefix, while the six borings drilled within the debris

disposal area were designated with a DDA prefix. The individual boring locations are shown in Figure 2.3.4.2-17.

The interior soil borings were drilled using a HSA drill rig equipped with 7 7/8-inch O.D. augers. Core samples were collected through the HSA using a wireline coring system. In general, the HSA drill easily penetrated both the refuse material and volcanic rocks of the Bandelier Tuff without using any drilling fluids, and caving problems were minimal. Exceptions occurred at boring locations DDA-2 and DDA-4, where concrete was encountered at depths of 7 and 16.5 feet, respectively. At each of these locations, the boring locations were relocated a few feet from the original locations and advanced through the refuse material.

Core samples were collected with a 5-foot long by 4-inch O.D. core barrel. Individual core samples were collected at selected 5-foot intervals as presented on the individual LI and DDA boring logs in Appendix D-3.1. Detailed logging of each recovered core sample, including field screening for VOCs and radiological constituents, geologic logging, and refuse/rock sampling for laboratory analyses at discrete intervals was conducted. Samples were retained for submittal to the TA-21 radiochemical screening lab and screened for gross alpha, beta, and gamma, tritium, and percent moisture (by weight). In addition, samples were submitted to the SMO for fixed laboratory analyses for VOCs, SVOCs, pesticides/PCBs, and TAL metals. An additional two core samples were submitted to CST-18 for microbiological analyses in support of a research project being conducted independent from the RFL. A summary of all samples submitted for fixed laboratory analyses are presented in Table 2.3.4.2-4.

Data obtained from the logging of each recovered core sample were used to determine the depths and locations of vadose zone instruments that were installed. Lithologic logs for each boring are provided in Appendix D-3.1. These logs contain information on the lithology encountered at each location, as well as various observations made during drilling (e.g., presence of staining, contaminant odors, and free water).

The LANL ER Project SOPs used in the interior drilling program included all of the SOPs followed in the perimeter drilling program.

Field QA/QC sampling included duplicate samples for moisture/tritium and radiological screening samples (rad van). One duplicate sample for complete laboratory analysis (full analytical suite) was collected. In addition, equipment rinsate blanks were collected from the core barrel at each borehole and one field blank was collected during core sampling at each borehole. Laboratory trip blanks, prepared by CST-9, accompanied samples in coolers at all times.

Field documentation was reviewed regularly by the field team leader and field team manager to ensure accuracy and completeness. All field activities were conducted in accordance with applicable plans, procedures, and requirements, with the exception of deviations discussed at the end of this section. All procedures were reviewed and approved by the appropriate technical representatives within LANL. A summary of all QA/QC samples collected during this program is provided in Table 2.3.4.2-7.

Well Installations

Vadose zone monitor wells were installed in six of the eight borings drilled in the main landfill (LI-1

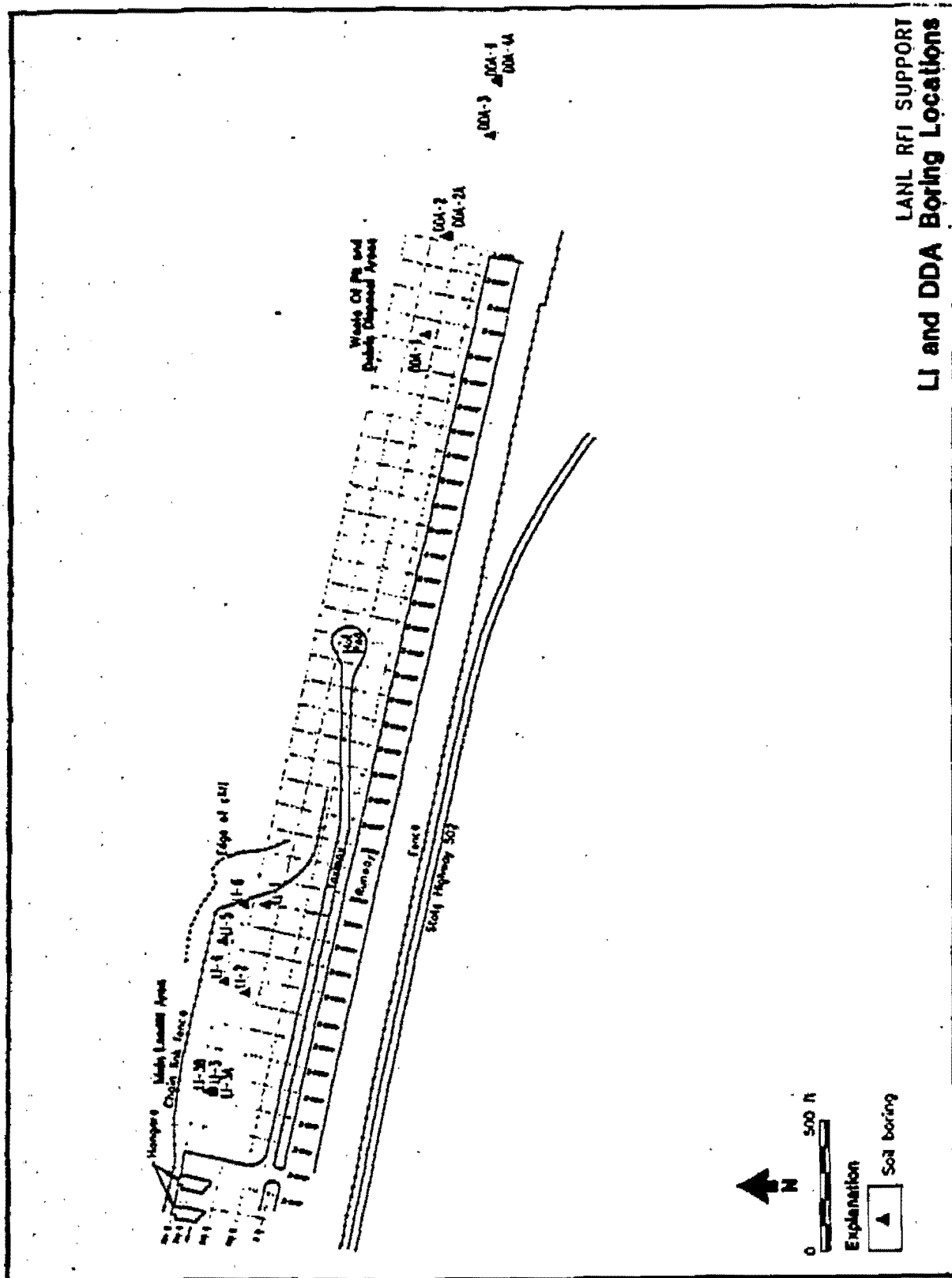


Figure 2.3.42-17

through LI-6), and in two of the six borings drilled in the debris disposal area (DDA-1 and DDA-3). With the exception of vadose zone monitor well LI-6, each of the wells installed within the main landfill was constructed with a screened section within the refuse material. In general, the bottom 5-ft section of screen was constructed with 0.01-in. slot screen, and the remaining screened interval was constructed with 0.125-in. slot screen. The bottom section of screen was designed to collect/recover leachate (if present), and the remaining screened interval was designed for gas recovery within the landfill. Three wells contain soil gas monitoring ports (LI-6, DDA-1, and DDA-3) which are installed to depths ranging between 24 and 60 ft bgs. All eight wells are instrumented with heat dissipation sensors at depths ranging between 19 and 75 feet bgs, and suction lysimeters installed at depths ranging between 22.3 and 75 ft bgs. In addition, six wells are instrumented with thermocouples at depths ranging between 5 and 18 ft bgs. The number and depths of the instruments in each of the six LI wells and two DDA wells are presented in Table 2.3.4.2-8, and shown on the attached well completion logs (Appendix D-3.1). Additional details on the interior well constructions are also presented in Appendix D-3.1

The following discussion presents deviations from the RFI work plan that occurred in the Subsurface Sampling program. The deviations that occurred are presented in terms of the three activities defined in Task 3, Subsurface Sampling of the RFI work plan.

Task 3, Activity 1 Scope: The original scope for Task 3, Activity 1, called for the installation of five gas-monitoring wells at locations uniformly distributed over the interior of the main landfill to detect and monitor vapor phase contaminants. Priority was to be given to locations where the soil gas surveys (Task 1, Activity 4 of the RFI work plan) detected anomalous concentrations of gaseous contaminants. Each well was to penetrate the entire thickness of the landfill debris.

Status: A total of 23 vadose zone monitor wells were installed at the main landfill and three vadose zone monitor wells were installed within the debris disposal area as part of Task 3, Activity 1. The well locations were prioritized as described in the RFI work plan, and are distributed over both the interior and perimeter of the main landfill, and within the interior of the debris disposal area.

Deviations: The RFI work plan requirements for Task 3, Activity 1 were exceeded.

Task 3, Activity 2 Scope: The original scope of Task 3, Activity 2 called for the drilling of coreholes in the interior and around the perimeter of the main landfill to confirm containment of contaminants and/or determine the lateral and vertical extent of contaminant migration. A total of 10 coreholes were to be drilled at uniformly distributed locations throughout the interior of the landfill to the fill/tuff interface. Samples were to be collected at 5-ft intervals and field screened for organic vapors and gross alpha, beta, and gamma radiation. If positive field screening results were obtained, coring and sampling were to continue at 5-ft intervals until field screening indicated no evidence of contamination. All samples that indicated a positive screen response, and 50% of the remaining samples, were to be analyzed for selected radionuclides, VOCs, SVOCs, TAL metals, PCBs, and pesticides as described in the RFI work plan.

In addition, approximately 12 coreholes were to be drilled at intervals of 300 ft around the southern boundary of the landfill or at locations where vapor phase contaminants were identified in the soil gas

surveys. The coreholes were to extend to a depth corresponding to the base of the landfill. The cores were to be continuously screened for organic vapors and gross alpha, beta, and gamma radiation, and coring was to continue in each hole to a point five feet below the last positive field screen response. The samples were to be analyzed in the same manner as the core samples retrieved from the landfill interior.

Status: Eleven coreholes were auger drilled around the perimeter of the landfill in 1994 to depths ranging from approximately 35 ft to over 180 ft. Nine of the holes were vertical, and two were slant drilled under the waste. Tuff samples were taken, screened, and analyzed in accordance with the RFI work plan. Each hole was continued until field screening showed no further evidence of contamination other than methane.

A total of 48 holes were penetrated within the interior of the main landfill by CPT methods in 1995. The sampling activities consisted of collecting 34 soil gas samples at various depths from 17 CPT sites and collecting 17 soil core samples from the soil/tuff interface at the base of the landfill at 17 sites. Ten samples of the fill/tuff interface were obtained and submitted for gross alpha, beta, and gamma radiation, TAL metals, and VOCs. Samples of landfill soil gas were taken at most test locations. In addition, geotechnical information on fill material properties was collected for use in corrective measure design. Six of the holes were subsequently used to install gas monitoring wells and the remaining holes were sealed in accordance with New Mexico state requirements.

A total of eight borings were drilled within the interior of the main landfill to depths ranging from 20 to 82 feet in 1997. Each borehole was drilled through the landfill refuse and approximately 10 feet into the tuff beneath the landfill. Core samples were collected at selected 5-foot intervals and field screened for VOCs, and gross alpha, beta, and gamma radiation. Samples were retained for submittal to the TA-21 radiochemical screening lab and screened for gross alpha, beta, and gamma, tritium, and percent moisture (by weight). In addition, samples were submitted to the SMO for fixed laboratory analyses. Vadose zone monitor wells were installed in six of the eight borings drilled in the main landfill.

Deviations: Eleven coreholes were found to be sufficient for sampling the perimeter of the main landfill instead of the "approximately 12" that were anticipated in the work plan. Of these, six were located along the southern edge of the landfill, three were located along the northern edge, and two were located to the west. Although several holes were drilled to depths approaching the limitations of the rig, low levels of methane gas were found to persist. Deeper drilling was therefore suspended and the magnitude and vertical extent of contamination was not established. Although not required in the work plan, all boreholes were converted to monitoring wells equipped with various combinations of the following instruments: gas sampling ports, suction lysimeters, neutron moisture probe access tubes, thermocouples, and heat dissipation sensors.

The CPT method was initially selected instead of HSA drilling for investigating the landfill interior to enhance worker safety by providing better control of emanating landfill gases (which were found to be in locally high concentrations during the previous soil gas survey), to eliminate generation of waste drilling residuals of landfill materials, and to provide geotechnical information for corrective measure design. No elevated radioactivity was found in field screening of any sample, and isotopic analyses for selected radionuclides were not performed. Analyses for SVOCs, PCBs, and pesticides were also not performed.

because insufficient soil volumes were obtained from the CPT sampling tube for these constituents. Analyses for these constituents were given a lower priority because they are either relatively immobile (SVOCs and PCBs) or are not expected to be found in significant quantity based on historical landfill use (pesticides).

The CPT method was not capable of penetrating unweathered tuff. Therefore no samples were taken below the fill/tuff interface during the CPT program. Samples of the fill/tuff interface were subsequently collected during the interior drilling program in 1997. Although several holes were drilled into the tuff beneath the landfill, methane gas was found to persist at all locations. As a result, the magnitude and vertical extent of contamination was not established beneath the landfill. Although not required in the work plan, all boreholes were converted to monitoring wells equipped with various combinations of the following instruments: gas sampling ports, suction lysimeters, neutron moisture probe access tubes, thermocouples, and heat dissipation sensors.

Task 3, Activity 3; Scope: The original scope of Task 3, Activity 3 called for the drilling of coreholes at the waste oil pit and debris disposal area to confirm containment of contaminants and/or to determine the vertical extent of contaminant migration. One corehole was to be drilled in the waste oil pit and field screened for organic vapor. A sample was to be collected from the core interval with the highest screening reading or with visible staining or contamination. If positive field screening results were obtained, coring was to continue until field screening indicated no evidence of contamination, and a second sample was to be collected of uncontaminated material. Both samples were to be analyzed for selected radionuclides, VOCs, SVOCs, TAL metals, PCBs, and pesticides as described in the RFI work plan.

Three coreholes were to be drilled to the fill/tuff interface along the axes of each of the two debris disposal trenches and continuously screened for organic vapors and gross alpha, beta, and gamma radiation. If positive field screening results were obtained, coring and sampling were to continue at 5-foot intervals until field screening indicated no evidence of contamination. All samples that indicated a positive screen response, and 50% of the remaining samples (or a minimum of two samples per trench) were to be analyzed for selected radionuclides, VOCs, SVOCs, TAL metals, PCBs, and pesticides as described in the RFI work plan.

Status: The exact location of the waste oil pit was uncertain and was therefore estimated from historical photographs to be near the east end of the north debris disposal area trench. One hole installed by CPT methods in that area in 1995 provided a waste/tuff interface sample and may have intersected the waste oil pit; however, historic photographs show the pit to be north of this location. This sample was analyzed for gross alpha, beta, and gamma radiation, TAL metals, and VOCs. Geotechnical data was collected, and a sample of landfill soil gas was also taken.

Five holes were located in the debris disposal area in 1995, also using CPT methods, and five samples of the fill/tuff interface were taken. These samples were analyzed for gross alpha, beta, and gamma radiation, TAL metals, and VOCs. Geotechnical data was collected, and five samples of landfill soil gas were also taken. Based upon the depths of the fill/tuff interface, these holes are believed to have penetrated the south trench and the berm between the south and north trenches. Access to the north trench was not

available because of the steep slope of fill material above that location.

A total of six borings were drilled within the interior of the debris disposal area in 1997 to depths ranging from 7 to 40 feet. Each borehole was drilled through the landfill refuse and approximately 10 feet into the tuff beneath the debris disposal area. Core samples were collected at selected 5-foot intervals and field screened for VOCs, and gross alpha, beta, and gamma radiation. Samples were retained for submittal to the TA-21 radiochemical screening lab and screened for gross alpha, beta, and gamma, tritium, and percent moisture (by weight). In addition, samples were submitted to the SMO for fixed laboratory analyses. Vadose zone monitor wells were installed in two of the six borings drilled in the debris disposal area.

Deviations: As previously described, the CPT method was selected for the initial interior drilling instead of HSA to enhance worker safety by providing better control of emanating landfill gases, to eliminate generation of waste drilling residuals of landfill materials, and to provide geotechnical information on the waste materials. No elevated radioactivity was found in field screening of any sample, and isotopic analyses for selected radionuclides were not performed. Analyses for SVOCs, PCBs, and pesticides were also not performed because, insufficient volume was obtained from the CPT sampling tube for these constituents. The CPT method was not capable of penetrating unweathered tuff; therefore, no samples were taken below the fill/tuff interface at the location of the waste oil pit. With the subsequent HSA drilling and sampling conducted in the debris disposal area in 1997, the RFI work plan requirements for Task 3, Activity 3, associated with the debris disposal area were exceeded.

Monitoring of vadose zone wells began in November 1994 following completion of the perimeter drilling program, and ended in December 1997. The monitoring program consisted of both continuous monitoring of four of the perimeter monitor wells, and routine (monthly, quarterly, etc.) monitoring of the remaining 22 monitor wells. The following paragraphs present a brief description of the continuous and routine monitoring programs at the TA-73 landfill. A more detailed description of these monitoring programs is provided in Appendix D-3.2.

The parameters measured during the continuous monitoring program included atmospheric pressure, downhole soil gas pressure, and downhole temperature. Continuous monitoring was conducted with the use of automated data acquisition systems installed adjacent to the four individual wells. Each automated data acquisition system consisted of a single Campbell Scientific 21X Micrologger and relay configured to record the individual parameters at 45-minute intervals. Continuous monitoring began on March 2, 1995, at monitor well LP-8. On March 17, continuous monitoring at monitor wells LPS-2, LP-4, and LP-7 was initiated. Continuous monitoring at the TA-73 landfill was conducted between March and August 1995, and between April and May 1996.

Parameters measured during the routine monitoring events included downhole soil gas pressure, temperature, and composition, matric potential, relative soil moisture content, and pore liquid/leachate composition. Measurement of matric potentials was initiated in November 1994, and monitoring of downhole temperatures, soil gas pressures, relative soil moisture contents, and pore liquid/leachate composition began in January 1995. Monitoring of downhole soil gas pressures and composition began in September 1995. Routine monitoring of the individual parameters was conducted on a monthly or less frequent basis through October 1997.

2.3.4.3 Data Review

The objective of data review is simple: to identify COPCs. Interpretation of the nature, extent, fate, and transport of COPCs is provided in the revised site conceptual model section (Section 2.3.5). Calculations to support the human health and ecological risk assessments associated with COPCs are provided in the site assessments section (Section 2.4).

Data review is accomplished through an uncomplicated sequence of steps that includes a discussion of the laboratory analytical procedures used to obtain data; a summary of data quality issues; a discussion of the impact of data quality problems on identification of COPCs; and a comparison to background concentrations, or an evaluation of an analyte's detection status, as appropriate.

The data review for the Airport Landfill is presented in four subsections. These subsections present the data by analyte group: (1) inorganic chemicals; (2) radionuclides; (3) organic chemicals; and (4) other supporting data. Each analyte group was measured across multiple media (e.g., surface soil, subsurface soil and tuff, soil gas, and soil pore water).

Inorganic chemicals were measured in three media (surface soil, subsurface soil and tuff, and soil pore water). Inorganic COPCs were determined by comparing landfill concentrations to media-specific background concentrations, with the exception of samples collected from pore water. All detected inorganic chemicals were retained as COPCs due to the lack of background data for pore water. A total of 24 inorganic chemicals were retained as COPCs across all media.

Radionuclides were measured in two media: (1) surface soil, and (2) subsurface soil and tuff. The data review for radionuclides is more complex than that for inorganic chemicals, and it depends upon several factors. These include whether the radionuclide could be associated with atmospheric fallout, the media sampled, and the sample collection depth. A total of three radionuclides, all associated with atmospheric fallout, were retained as COPCs.

Organic chemicals were measured in four media: (1) surface soil, (2) subsurface soil and tuff, (3) soil gas, and (4) soil pore water. The organic chemical data review only involves simple checks of the sample-specific detection status. All detected organic chemicals, a total of 158 chemicals across all media, are retained as COPCs.

Other supporting data for the landfill include various biological, chemical, physical, and geological measures; specifically, boring logs, temperature, measures of gas emission, fixed gas measurements, moisture, and microbial activity.

2.3.4.3 (a) Inorganic Chemical Comparison with Background

Surface soil, subsurface soil and tuff, and soil pore water were analyzed for inorganic chemicals.

Surface Soil

A total of 25 samples were analyzed for inorganics. The 15 samples collected from landfill drainages were also analyzed for uranium. All samples were collected from soil, which means that the appropriate background data is the Laboratory all soil horizons soil background values. The source of the background

values is "Inorganic and Radionuclide Background Data for Soils, Canyons Sediments, and Bandelier Tuff at LANL" (58093).

As detailed in Appendix C, most of the QC problems associated with this data set were caused by high or low recoveries in the matrix spike sample. Matrix spike samples are used to assess the quality of the sample digestion, extraction and analysis procedures. A low recovery suggests that either there was incomplete recovery of an analyte in these procedures or sample heterogeneity. A high recovery indicates either sample heterogeneity or a matrix interference. One of the reasons for the repeated difficulties in the recoveries is the heterogeneous nature of soil samples. Also, for several of the analytes, there are interferences in the ICP technique which can also cause problems with the reported recoveries. Specific data qualifications were noted for seven inorganics in a subset of the samples (antimony, chromium, lead, manganese, selenium, silver, and thallium). For samples 0173-96-0101 through 0114 and 0118, silver (73% recovery) is qualified UJ for low recoveries in the matrix spike sample. For samples 0173-96-0121 through 0123 and 0128 through 0131, lead (676% recovery) is qualified J+ for a high recovery and chromium (43% recovery) is qualified UJ or J- for a low recovery in the matrix spike sample. For samples 0173-97-0042, 0044 and 0046, antimony (29% recovery) and selenium (48% recovery) are qualified UJ for low recovery, manganese (34% recovery) is qualified J- for low recoveries, and thallium (126% recovery) is qualified J+ for high recovery in the matrix spike sample.

The analytical methods for the inorganics are comparable to those used for the Laboratory background data with three exceptions. The landfill antimony data were produced by ICPES, which results in greatly elevated detection limits compared to the background data (produced by ICPMS). Similar problems are noted for cadmium, mercury, silver and thallium, although the detection limits for these inorganics are only marginally elevated above the background value.

Uranium was analyzed by KPA, which has a potential negative bias compared to the total uranium background method (ICPMS). The sample preparation for KPA involves a total sample dissolution as described in Appendix C. Thus, uranium results are compared to the total uranium all soil horizon background value, and the impact of negative bias associated with KPA is discussed in a qualitative manner.

Twenty-three inorganics were analyzed in these 25 soil samples, and uranium was analyzed in 15 samples. Twenty-two inorganics were detected in at least one sample. Two inorganics, antimony and thallium, were not detected in any sample. The detection limit of 25 antimony results and one thallium result exceeded the background values. Some of the detection limits for cadmium, mercury, selenium, and silver also exceeded the background values in three to nineteen samples. Table 2.3.4.3-1 presents the concentration range and frequency of results above the background value for the 22 detected inorganics and the two non-detect inorganics. A complete presentation of the data may be found in Appendix D.

Nine inorganics (aluminum, arsenic, barium, cobalt, magnesium, manganese, potassium, selenium and vanadium) were measured less than the background value. These chemicals will be eliminated as COPCs pending a review of data quality issues. Seven of these inorganics did not have data quality problems. The other two, manganese and selenium, had data quality problems and are discussed below.

TABLE 2.3.4.3-1

FREQUENCY OF DETECTED INORGANIC CHEMICALS IN SURFACE SOIL AND DRAINAGES

Analyte	Media Code	Number of Samples Analyzed	Number of Detects	Concentration Range (mg/kg)*	Background Value (mg/kg)	Frequency of Detects Above Background Value*
Aluminum	soil	25	25	72.8 to 13500	29200	0/25
Antimony	soil	25	0	[5 to 12]	0.83	25/25 DL>BV*
Arsenic	soil	25	9	0.63 to 6.0	8.17	0/9
Barium	soil	25	25	1.4 to 170	295	0/25
Beryllium	soil	25	7	[0.37] to 1.9	1.83	1/9
Cadmium	soil	25	6	[0.48] to 1.3	0.4	6/6 19/19 DL>BV*
Calcium	soil	25	25	767 to 7600	6120	2/25
Chromium, Total	soil	25	20	[0.96] to 23.3	19.3	1/20
Cobalt	soil	25	15	[0.97] to 5.7	8.64	0/15
Copper	soil	25	11	1.3 to 188.0	14.7	5/11
Iron	soil	25	25	386 to 21600	21500	1/25
Lead	soil	25	25	1.6 to 463	22.3	5/25
Magnesium	soil	25	25	33.6 to 2990	4610	0/25
Manganese	soil	25	25	4.5 to 450	671	0/25
Mercury	soil	25	10	[0.05] to 0.197	0.1	1/10 3/15 DL>BV*
Nickel	soil	25	13	[1.65] to 21.5	15.4	1/13
Potassium	soil	25	14	[61.2] to 1500	3460	0/14
Selenium	soil	25	1	[0.24] to [1.2]	1.52	0/1
Silver	soil	25	2	[0.5] to [2.4]	1	- 18/23 DL>BV*
Sodium	soil	25	25	66.9 to 37100	915	1/25
Thallium	soil	25	0	[0.19 to 0.76]	0.73	1/25 DL>BV*
Uranium, Total	soil	15	15/15	1.48 to 8.1	5.4*	1/15
Vanadium	soil	25	23	[1.02] to 23.2	39.6	0/23
Zinc	soil	25	25	2.7 to 608	48.8	8/25

* Values in square brackets represent non-detected results.

* Uranium, total background value

* Value is the ratio of the number of detected values exceeding the BV to the number of analyses.

* The detection limit for this analyte exceeded the background value.

These data quality problems for manganese and selenium could lead to incorrectly eliminating these analytes as COPCs and should be further evaluated. As discussed above, manganese was qualified J- in all three samples because of a low recovery in the matrix spike sample. A low recovery suggests either incomplete recovery of an analyte in these procedures or sample heterogeneity. The maximum concentration of 450 mg/kg is approximately 70% of the background value of 671 mg/kg. Most of the other manganese sample results were detected at less than half of the background value. Selenium was qualified UJ in three samples due to low matrix spike recovery, but detected in only one of the other 22 samples at one-third of the background value. Therefore, a possible low bias does not change the conclusion that manganese or selenium concentrations are less than the background value. Manganese, selenium, and the other seven inorganics mentioned above are not identified as COPCs.

Two inorganics, antimony and thallium, were not detected in any sample and had at least one detection limit above the background value. Antimony and thallium are retained as COPCs, and the results that exceed the background value are presented in Table 2.3.4.3-2.

Thirteen inorganics (beryllium, cadmium, calcium, chromium, copper, iron, lead, mercury, nickel, silver, sodium, uranium, and zinc) had at least one detected value above the background value. Three of these inorganics (chromium, lead and silver) had QC problems associated with some samples (see previous QC discussion and Appendix C for more information). Silver had low spike recoveries on the 15 drainage samples, and chromium had low recovery on the seven landfill surface samples. Low recovery could improperly eliminate a COPC that truly exceeds background. Lead had high recovery on five samples, which could create a high biased estimate of lead concentration in these samples. These QC problems are not viewed to be significant in terms of the identification of COPCs as these inorganics have already been retained as COPCs. As discussed above, uranium by KPA may have a negative bias (40% lower than data analyzed by ICPMS). This suggests that uranium concentrations may be underestimated, but because uranium was identified as a COPC, no changes to the COPC list are suggested by the potential KPA bias. These thirteen inorganics are as retained as COPCs. The sample results that exceeded background for these inorganic chemicals are presented in Table 2.3.4.3-2. Figures 2.3.4.3-1 and 2.3.4.3-2 show the locations where these elevated sample results were found.

In summary, the inorganic chemical data review yielded 15 analytes to be carried forward as COPCs (see Table 2.3.4.3-3). Thus, the inorganic chemical data were able to detect a release in surface soils or drainages. This is not surprising as surface soil and drainage samples were collected in a biased manner to increase the likelihood of detecting a release. The concentration of the chemicals eliminated as COPCs were well within the background concentration range and are justifiably excluded from further assessment. Lastly, most of the background exceedances were associated with a limited set of sample locations that suggests that the contaminant releases are of a limited spatial extent.

Subsurface Soil and Tuff

One-hundred and seven samples, collected from the subsurface at the airport landfill during sampling periods in 1994, 1995, and 1997, were analyzed for inorganics, including uranium. These samples were collected from soil and three different geologic units of Bandelier Tuff as follows: six samples from soil, one sample from Unit 1v tuff, 28 samples from Unit 2 tuff, and 72 samples from Unit 3 tuff. The units of tuff from

TABLE 2.3.4.3-2
INORGANIC CHEMICALS WITH CONCENTRATIONS AT OR ABOVE BACKGROUND VALUES
IN SURFACE SOIL AND DRAINAGES^a

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (in)
Antimony	73-02151	0173-96-0101	8.1 (U)	0.83	soil	0-8
	73-02152	0173-96-0102	8.1 (U)		soil	0-10
	73-02153	0173-96-0103	7.5 (U)		soil	0-8
	73-02154	0173-96-0104	7.9 (U)		soil	0-10
	73-02154	0173-96-0105	7.2 (U)		soil	10-20
	73-02155	0173-96-0106	7 (U)		soil	0-15
	73-02156	0173-96-0107	7.8 (U)		soil	0-10
	73-02157	0173-96-0108	7.5 (U)		soil	3-10
	73-02158	0173-96-0109	7.1 (U)		soil	0-10
	73-02159	0173-96-0110	7.9 (U)		soil	0-6
	73-02160	0173-96-0111	7.3 (U)		soil	0-6
	73-02161	0173-96-0112	8.5 (U)		soil	0-6
	73-02162	0173-96-0113	7.3 (U)		soil	0-12
	73-02163	0173-96-0114	7.3 (U)		soil	0-12
	73-02163	0173-96-0118	7.3 (U)		soil	0-12
	73-02171	0173-96-0130	5 (U)		soil	0-2
	73-02171	0173-96-0131	5 (U)		soil	0-2
	73-02172	0173-96-0129	5.1 (U)		soil	0-1
	73-02173	0173-96-0121	5.49 (U)		soil	0-3
	73-02174	0173-96-0122	5.49 (U)		soil	0-5
	73-02175	0173-96-0123	5.3 (U)		soil	0-6
	73-02176	0173-96-0128	5.1 (U)		soil	0-6
	73-02371	0173-97-0042	12 (U)		soil	6-18
	73-02372	0173-97-0044	12 (U)		soil	24-36
	73-02373	0173-97-0046	11 (U)		soil	12-18
Beryllium	73-02161	0173-96-0112	1.900	1.83	soil	0-6
Cadmium	73-02151	0173-96-0101	0.56 (U)	0.4	soil	0-8
	73-02152	0173-96-0102	0.56 (U)		soil	0-10
	73-02153	0173-96-0103	0.52 (U)		soil	0-8
	73-02154	0173-96-0104	0.55 (U)		soil	0-10
	73-02154	0173-96-0105	0.5 (U)		soil	10-20
	73-02155	0173-96-0106	0.48 (U)		soil	0-15
	73-02156	0173-96-0107	0.54 (U)		soil	0-10
	73-02157	0173-96-0108	0.52 (U)		soil	3-10
	73-02158	0173-96-0109	0.500		soil	0-10
	73-02159	0173-96-0110	0.55 (U)		soil	0-6

TABLE 2.3.4.3-2 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (in)
	73-02160	0173-96-0111	0.51 (U)		soil	0-6
	73-02161	0173-96-0112	0.59 (U)		soil	0-6
	73-02162	0173-96-0113	0.51 (U)		soil	0-12
	73-02163	0173-96-0114	0.680		soil	0-12
	73-02163	0173-96-0118	0.630		soil	0-12
	73-02171	0173-96-0130	1.000		soil	0-2
	73-02171	0173-96-0131	1.300		soil	0-2
	73-02172	0173-96-0129	0.51 (U)		soil	0-1
	73-02173	0173-96-0121	0.901		soil	0-3
	73-02174	0173-96-0122	0.549 (U)		soil	0-5
	73-02175	0173-96-0123	0.53 (U)		soil	0-6
	73-02176	0173-96-0128	0.51 (U)		soil	0-6
	73-02371	0173-97-0042	0.6 (U)		soil	6-18
	73-02372	0173-97-0044	0.58 (U)		soil	24-36
	73-02373	0173-97-0046	0.56 (U)		soil	12-18
Calcium	73-02371	0173-97-0042	6900	6120	soil	6-18
	73-02373	0173-97-0046	7600		soil	12-18
Chromium, Total	73-02173	0173-96-0121	23.30 (J-)	19.3	soil	0-3
Copper	73-02171	0173-96-0130	85.3	14.7	soil	0-2
	73-02171	0173-96-0131	35.8		soil	0-2
	73-02173	0173-96-0121	188.0		soil	0-3
	73-02174	0173-96-0122	16.0		soil	0-5
	73-02176	0173-96-0128	75.8		soil	0-6
Iron	73-02173	0173-96-0121	21600	21500	soil	0-3
Lead	73-02163	0173-96-0114	32.5	22.3	soil	0-12
	73-02163	0173-96-0118	48.4		soil	0-12
	73-02171	0173-96-0130	463 (J+)		soil	0-2
	73-02171	0173-96-0131	26.2 (J+)		soil	0-2
	73-02173	0173-96-0121	89.6 (J+)		soil	0-3
Mercury	73-02173	0173-96-0121	0.197	0.1	soil	0-3
	73-02371	0173-97-0042	0.14 (U)		soil	6-18
	73-02372	0173-97-0044	0.12 (U)		soil	24-36
	73-02373	0173-97-0046	0.14 (U)		soil	12-18
Nickel	73-02173	0173-96-0121	21.5	15.4	soil	0-3

TABLE 2.3.4.3-2 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (in)
Silver	73-02151	0173-96-0101	1.4 (U)	1	soil	0-8
	73-02152	0173-96-0102	1.4 (U)		soil	0-10
	73-02153	0173-96-0103	1.3 (U)		soil	0-8
	73-02154	0173-96-0104	1.3 (U)		soil	0-10
	73-02154	0173-96-0105	1.2 (U)		soil	10-20
	73-02155	0173-96-0106	1.2 (U)		soil	0-15
	73-02156	0173-96-0107	1.3 (U)		soil	0-10
	73-02157	0173-96-0108	1.3 (U)		soil	3-10
	73-02158	0173-96-0109	1.2 (U)		soil	0-10
	73-02159	0173-96-0110	1.3 (U)		soil	0-6
	73-02160	0173-96-0111	1.2 (U)		soil	0-6
	73-02161	0173-96-0112	1.4 (U)		soil	0-6
	73-02162	0173-96-0113	1.2 (U)		soil	0-12
	73-02163	0173-96-0114	1.2 (U)		soil	0-12
	73-02163	0173-96-0118	1.2 (U)		soil	0-12
	73-02173	0173-96-0121	1.72		soil	0-3
	73-02371	0173-97-0042	2.4 (U)		soil	6-18
	73-02372	0173-97-0044	2.3 (U)		soil	24-36
	73-02373	0173-97-0046	2.2 (U)		soil	12-18
Sodium	73-02172	0173-96-0129	37100	915	soil	0-1
Thallium	73-02161	0173-96-0112	0.76 (U)	0.73	soil	0-6
Uranium, Total	73-02163	0173-96-0114	8.1	5.4	soil	0-12
Zinc	73-02156	0173-96-0107	53.7	48.8	soil	0-10
	73-02161	0173-96-0112	56.3		soil	0-6
	73-02163	0173-96-0114	234		soil	0-12
	73-02163	0173-96-0118	173		soil	0-12
	73-02171	0173-96-0130	472		soil	0-2
	73-02171	0173-96-0131	79.3		soil	0-2
	73-02173	0173-96-0121	608		soil	0-3
	73-02176	0173-96-0128	49.2		soil	0-6

*Descriptions of the analytical methods used for the Landfill can be found in Appendix C-1, Table C-1.0-1. Detection limits can be found in Appendix D, Table D-1.0-1.

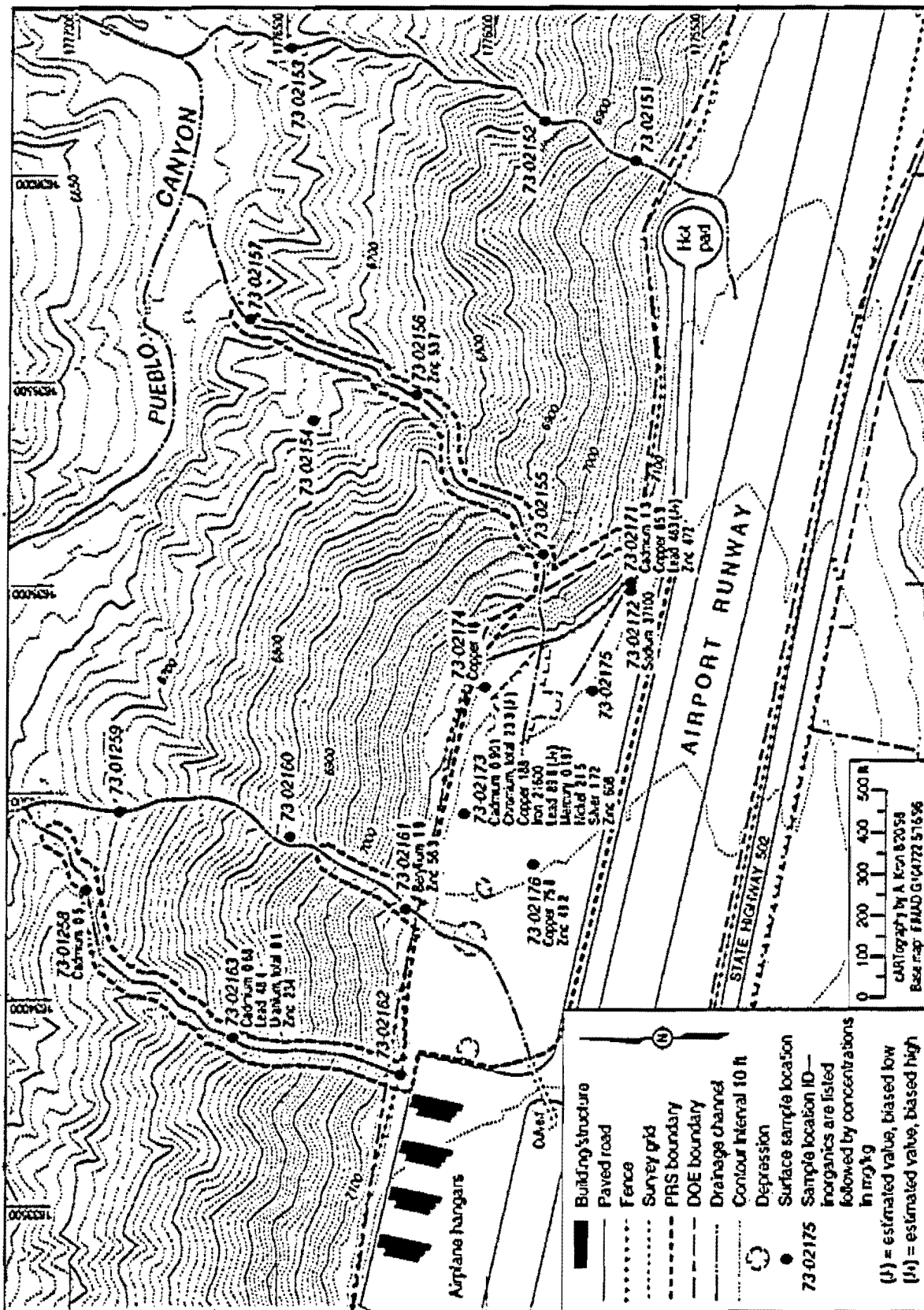


Figure 2.3.4.3-1. Inorganic COPCs in surface samples (western) with maximum concentrations shown by location



Figure 2.3.4.3-2. Inorganic COPs In surface samples (eastern) with maximum concentrations shown by location

TABLE 2.3.4.3-3
RESULTS OF INORGANIC DATA REVIEW FOR SURFACE SOIL AND DRAINAGES

Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Aluminum	Soil	Eliminated	Eliminated as COPC because no sample results exceeded the BV.
Antimony	Soil	Retained	Not detected in any samples. Retained as COPC because sample detection limits greatly exceeded the BV.
Arsenic	Soil	Eliminated	Eliminated as COPC because no sample results exceeded the BV.
Barium	Soil	Eliminated	Eliminated as COPC because no sample results exceeded the BV.
Beryllium	Soil	Retained	Retained as COPC because one sample result exceeded the BV.
Cadmium	Soil	Retained	Retained as COPC because six sample results exceeded the BV, and nineteen detection limits exceeded the BV.
Calcium	Soil	Retained	Retained as COPC because two sample results exceeded the BV.
Chromium, Total	Soil	Retained	Retained as COPC because one sample result exceeded the BV.
Cobalt	Soil	Eliminated	Eliminated as COPC because no sample results exceeded the BV.
Copper	Soil	Retained	Retained as COPC because five sample results exceeded the BV.
Iron	Soil	Retained	Retained as COPC because one sample result exceeded the BV.
Lead	Soil	Retained	Retained as COPC because five sample results exceeded the BV.
Magnesium	Soil	Eliminated	Eliminated as COPC because no sample results exceeded the BV.
Manganese	Soil	Eliminated	Eliminated as COPC because no sample results exceeded the BV.
Mercury	Soil	Retained	Retained as COPC because one sample result exceeded the BV and three detection limits exceeded the BV.
Nickel	Soil	Retained	Retained as COPC because one sample result exceeded the BV.
Potassium	Soil	Eliminated	Eliminated as COPC because no sample results exceeded the BV.
Selenium	Soil	Eliminated	Eliminated as COPC because no sample results exceeded the BV.
Silver	Soil	Retained	Retained as a COPC because one sample results in the surface data exceed the BV and eighteen detection limits exceeded the BV.
Sodium	Soil	Retained	Retained as COPC because one sample result exceeded the BV.
Thallium	Soil	Retained	Not detected in any samples. Retained as COPC because one sample detection limit exceeded the BV and fall at the upper end of the range of non-detected results in the background data set.
Uranium, Total	Soil	Retained	Retained as COPC because one sample result exceeded the BV.
Vanadium	Soil	Eliminated	Eliminated as COPC because no sample results exceeded the BV.
Zinc	Soil	Retained	Retained as COPC because eight sample results exceeded the BV.

which the samples were collected were determined by the information collected in the field and recorded on the sample collection logs. This information was used to determine the appropriate background values to use from "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at LANL" (58093) to identify COPCs.

Most of the QC problems with this data set were caused by high or low recoveries in the matrix spike sample. The normal acceptable recovery range for matrix spike samples is 75–125%. One of the reasons for the repeated difficulties in the recoveries is the heterogeneous nature of soil samples. Also, for several of the analytes, there are interferences in the ICP technique which can also cause problems with the reported recoveries. There were also several QC difficulties with the blind QC samples which were submitted in 1994 and early 1995 when CST was handling the SMO. There were several instances of samples missing the recommended holding time of 28 days for Hg. Sample AAB7473 exceeded the holding time by 20 days. Samples AAB7474 through 7478 exceeded the holding time by one day. Samples AAB7482 and 7483 exceeded the holding time by 12 days. None of these exceed the recommended holding time by more than 40%, but the data are qualified J- or UJ for the slightest possibility of low biased data. Two samples were qualified R for antimony.

These QC problems are discussed in more detail in Appendix C. Overall, only nine inorganics (antimony, arsenic, chromium, copper, lead, manganese, selenium, silver, and zinc) were qualified UJ, J-, J, or J+ in some samples due to matrix spike recoveries. An additional five inorganics (aluminum, magnesium, mercury, potassium, and vanadium) were qualified UJ, J- or J+ in some samples due to the recoveries of the blind QC sample. Mercury data was also qualified UJ or J- in eight samples because of missed holding times.

The analytical methods for the inorganics are comparable to those used for the Laboratory background data with four exceptions. The landfill antimony data were produced by both GFAA and ICPEs, which results in elevated detection limits compared to the background data (produced by ICPMS). Selenium and thallium data were also produced by both GFAA and ICPEs, which resulted in some of the detection limits for these inorganics being marginally elevated above background values. Similar problems are noted for cadmium, although the ICPEs detection limits for this inorganic are only marginally elevated above the background values.

Uranium was analyzed by KPA, which has a potential negative bias compared to the total uranium background method (ICPMS). The sample preparation for KPA involves a total sample dissolution as described in Appendix C. Thus, uranium results are compared to the total uranium background value for the appropriate geologic unit, and the impact of negative bias associated with KPA is discussed in a qualitative manner.

Twenty-four inorganics were analyzed in these one-hundred and seven samples. Twenty-two inorganics were detected in at least one sample. Uranium was analyzed in 74 of the total number of samples. Uranium was also detected in at least one sample. Table 2.3.4.3-4 presents the concentration range and number of detects for these 24 chemicals. The frequency of detects above the appropriate background value is also presented in this table. A complete presentation of the data may be found in Appendix D.

TABLE 2.3.43-4
FREQUENCY OF DETECTED INORGANIC CHEMICALS IN SUBSURFACE SOIL AND TUFF

Analyte	Media Code	Number of Samples Analyzed	Number of Detects	Concentration Range (mg/kg)*	Background Value (mg/kg)	Frequency of Detects Above Background Value*
Aluminum	SOIL	6	6	3300-62000	29200	1/6
	QBT1V	1	1	436	8170	0/1
	QBT2	28	28	127-7390	7340	1/28
	QBT3	72	72	163-32100	7340	2/72
Antimony	SOIL	6	0	[0.3-14]	0.83	0/6 (DL>BV for 1/6 results)*
	QBT1V	1	0	[4.3]	0.5	0/1 (DL>BV for 1/1 result)
	QBT2	28	0	[0.26-11]	0.5	0/28 (DL>BV for 11/28 results)*
	QBT3	72	1	[0.11]-[15]	0.5	0/72 (DL>BV for 32/72 results)*
Arsenic	SOIL	6	6	1.3-8.6	8.17	2/6
	QBT1V	1	0	[0.55]	1.81	0/1
	QBT2	28	1	[0.41]-1.2	2.79	0/28
	QBT3	72	19	[0.21]-4.5	2.79	1/72
Barium	SOIL	6	6	26-550	295	1/6
	QBT1V	1	0	[5.9]	26.5	0/1
	QBT2	28	2	[4.2]-43.3	46	0/28
	QBT3	72	29	[2.8]-240	46	5/72
Beryllium	SOIL	6	4	[0.63]-3.8	1.83	1/6
	QBT1V	1	0	[0.61]	1.70	0/1
	QBT2	28	3	[0.06]-2.5	1.21	1/28
	QBT3	72	16	[0.06]-2.9	1.21	4/72
Cadmium	SOIL	6	0	[0.07-0.7]	0.4	0/6
	QBT1V	1	0	[0.35]	0.4	0/1
	QBT2	28	0	[0.06-0.53]	1.63	0/28
	QBT3	72	4	[0.04]-1.7	1.63	1/72
Calcium	SOIL	6	6	850-23000	6120	1/6
	QBT1V	1	0	[899]	3700	0/1
	QBT2	28	6	[173]-4900	2200	3/28
	QBT3	72	40	[112]-30100	2200	5/72
Chromium, Total	SOIL	6	6	2.3-25	19.3	1/6
	QBT1V	1	1	2.3	2.24	1/1
	QBT2	28	14	[0.3]-7.9	7.14	2/28
	QBT3	72	51	[0.31]-43.7	7.14	9/72
Cobalt	SOIL	6	3	[1.1]-7.6	8.64	0/6
	QBT1V	1	0	[1.2]	1.78	0/1
	QBT2	28	0	[0.1-1.1]	3.14	0/28
	QBT3	72	12	[0.1]-1.8	3.14	0/72

TABLE 2.3.4.3-4 (continued)

Analyte	Media Code	Number of Samples Analyzed	Number of Detects	Concentration Range (mg/kg)*	Background Value (mg/kg)	Frequency of Detects Above Background Value *
Copper	SOIL	6	6	4.7-14	14.7	0/6
	QBT1V	1	0	[2.1]	3.26	0/1
	QBT2	28	2	[0.18]-25.4	4.66	2/28
	QBT3	72	24	[0.19]-91.5	4.66	18/72
Iron	SOIL	6	6	4200-28000	21500	1/6
	QBT1V	1	1	6350	9900	0/1
	QBT2	28	28	738-7460	14500	0/28
	QBT3	72	72	597-18900	14500	1/72
Lead	SOIL	6	6	8-23	22.3	1/6
	QBT1V	1	1	5.7	18.4	0/1
	QBT2	28	28	1.2-21.6	11.2	1/28
	QBT3	72	72	1.7-130	11.2	17/72
Magnesium	SOIL	6	6	180-9200	4610	1/6
	QBT1V	1	0	[132]	780	0/1
	QBT2	28	1	[27]-1330	1690	0/28
	QBT3	72	25	[27]-4740	1690	1/72
Manganese	SOIL	6	6	220-555	671	0/6
	QBT1V	1	1	336	408	0/1
	QBT2	28	28	86.9-286	482	0/28
	QBT3	72	72	72.1-553	482	1/72
Mercury	SOIL	6	0	[0.1-0.14]	0.1	0/6
	QBT1V	1	0	[0.02]	0.1	0/1
	QBT2	28	2	[0.02]-0.44	0.1	2/28
	QBT3	72	10	[0.02]-0.43	0.1	6/72
Nickel	SOIL	6	4	5.2-28	15.4	1/6
	QBT1V	1	0	[1.2]	2	0/1
	QBT2	28	1	[0.12]-5.3	6.58	0/28
	QBT3	72	15	[0.12]-16.1	6.58	5/72
Potassium	SOIL	6	6	1100-5200	3460	1/6
	QBT1V	1	0	[271]	6670	0/1
	QBT2	28	1	[74.8]-460	3500	0/28
	QBT3	72	27	[80.9]-3730	3500	1/72
Selenium	SOIL	6	0	[0.45-2.5]	1.52	0/6
	QBT1V	1	0	[0.51]	0.3	0/1
	QBT2	28	0	[0.21-1]	0.3	0/28
	QBT3	72	1	[0.21]-[1.1]	0.3	1/72

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TABLE 2.3.4.3-4 (continued)

Analyte	Media Code	Number of Samples Analyzed	Number of Detects	Concentration Range (mg/kg)*	Background Value (mg/kg)	Frequency of Detects Above Background Value*
Silver	SOIL	6	0	[0.23-8]	1	0/6 (DL>BV for 1/6 results)
	QBT1V	1	0	[0.75]	1	0/1
	QBT2	28	0	[0.20-2.10]	1	0/28 (DL>BV for 1/28 results)
	QBT3	72	0	[0.13-2.90]	1	0/72 (DL>BV for 10/72 results)
Sodium	SOIL	6	4	[87.8]-1600	915	1/6
	QBT1V	1	0	[181]	6330	0/1
	QBT2	28	1	[63.2]-790	2770	0/28
	QBT3	72	28	38.4-1100	2770	0/72
Thallium	SOIL	6	2	[0.28]-0.87	0.73	2/6
	QBT1V	1	0	[0.26]	1.24	0/1
	QBT2	28	0	[0.26-1.4]	1.10	0/28
	QBT3	72	2	[0.00084]-1.3	1.10	1/72
Uranium, Total	SOIL	2	2	1.79-3.22	5.40	0/2
	QBT1V	1	1	2.77	9.14	0/1
	QBT2	27	27	0.929-3.29	5.79	0/27
	QBT3	44	44	1.11-3.23	5.79	0/44
Vanadium	SOIL	6	6	6.8-34	39.6	0/6
	QBT1V	1	0	[1.1]	4.48	0/1
	QBT2	28	1	[0.62]-[5.8]	17	0/28
	QBT3	72	27	[0.39]-24.3	17	1/72
Zinc	SOIL	6	6	25-83	48.8	1/6
	QBT1V	1	1	59.2	84.6	0/1
	QBT2	28	28	11.4-58.4	63.5	0/28
	QBT3	72	72	9.8-136	63.5	6/72

* Values in square brackets represent non-detected results.

† Value is the ratio of the number of detected values exceeding the BV to the number of analyses.

‡ The detection limit for this analyte exceeded the background value.

Cobalt and uranium were the only two inorganics that were measured within the background range in all samples. Cobalt data did not have any QC problems indicated in Appendix C. A subset of the uranium data was qualified J (estimated value) based on the recoveries of the matrix spike samples. KPA is known to have up to a 40% negative bias. Even if the maximum uranium value was negatively biased as much as 40%, uranium would still not be identified as a COPC. Cobalt and uranium will not be retained as COPCs.

Antimony and silver were not detected in any sample; however, each chemical had at least one detection limit above the background value. Although antimony was rejected in two samples, the locations of these two samples are surrounded by other locations where antimony data was collected. Antimony and silver are retained as COPCs and the detection limits that exceed the background value are presented in Table 2.3.4.3-5.

The remaining twenty inorganics (aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, sodium, thallium, vanadium, and zinc) were detected above the background value in at least one geologic unit. Chromium and potassium were the only inorganics that had the maximum site value qualified (J+ in both cases). These maxima were already above the background value and the possible high bias could have resulted in incorrectly retaining chemicals as COPCs. However, no adjustment for positive bias is made and all twenty inorganics will also be retained as COPCs. Table 2.3.4.3-4 shows that a majority of the results that were above background screening values were in Unit 3 of the Bandelier Tuff. The data above background values for these twenty inorganics is presented in Table 2.3.4.3-5. Figures 2.3.4.3-3 and 2.3.4.3-4 show the locations where these elevated sample results were found.

It should be noted that these inorganic analytical data included samples from a very well developed, mesa-top soil, as indicated by the dark red coloration, high clay (and likely high calcium carbonate) content, and soil textures such as distinct peds. Well-developed soils such as the one sampled at location 73-02373 contain high iron content relative to less well-developed soils. Longmire et al. (1995, 48818) demonstrated a geochemical correlations between the amount of iron in the soils and the amount of inorganic constituents such as arsenic, barium, and beryllium due to the high sorptive capacity of oxyhydroxides present in the soil. Clay minerals (e.g., kaolinite and smectite) and calcium carbonate also accumulate in well-developed soils and correlate well with high aluminum and calcium concentrations. Although several inorganic constituents in sample 0173-97-0047 are above background values, it is likely that they are within normal background range for such a well-developed soil. However, these analytes associated with the well-developed soil will be retained as COPCs.

In summary, the 20 inorganics above background screening values, and the two chemicals, antimony and silver, with detection limits above background screening values will be retained as COPCs (see Table 2.3.4.3-6).

TABLE 2.3.4.3-5
INORGANIC CHEMICALS WITH CONCENTRATIONS AT OR ABOVE BACKGROUND VALUES IN
SUBSURFACE SOIL AND TUFF^a

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (ft)
Aluminum	73-02373	0173-97-0047	62000	29200	SOIL	3-3.5
	73-01010	AAC0958	7390	7340	QBT2	115-117.5
	73-01004	AAB7582	32100		QBT3	17.5-20
	73-02056	0173-95-0176	7560			55.5-56.5
Arsenic	73-02371	0173-97-0043	8.5	8.17	SOIL	3-3.5
	73-02373	0173-97-0047	8.6			3-3.5
	73-01004	AAB7582	4.5	2.79	QBT3	17.5-20
Antimony	73-02429	0173-97-0072	11 (U)	0.83	ALLH	76-77
	73-01011	AAC1629	4.3 (U)	0.5	QBT1V	197.5-200
	73-01007	AAC1615	4.5 (U)	0.5	QBT2	107.5-110
	73-01007	AAC1612	4.5 (U)			77.5-80
	73-01007	AAC1613	4.5 (U)			87.5-90
	73-01007	AAC1614	4.6 (U)			97.5-100
	73-01011	AAC1624	4.4 (U)			120-122.5
	73-01011	AAC1625	4.4 (U)			120-122.5
	73-01011	AAC1626	4.2 (U)			137.5-140
	73-01011	AAC1623	4.3 (U)			97.5-100
	73-01011	AAC1628	4.8 (U)			177.5-180
	73-01011	AAC1627	4.3 (U)			157.5-160
	73-02061	0173-95-0179	11 (U)			95-96.5
	73-01007	AAC1611	4.6 (U)	0.5	QBT3	70-72.5
	73-01007	AAC1608	4.4 (U)			47.5-50
	73-01007	AAC1610	4.6 (U)			46-57.5
	73-01007	AAC1609	4.7 (U)			46-57.5
	73-01009	AAC1618	4.4 (U)			42.5-45
	73-01009	AAC1619	4.4 (U)			42.5-45
	73-01009	AAC1617	4.6 (U)			32.5-35
	73-01009	AAC1616	4.9 (U)			22.5-25
	73-01011	AAC1622	4.4 (U)			67-82.5
	73-01011	AAC1621	4.6 (U)			46-57.5
	73-01011	AAC1620	4.5 (U)			47.5-50
	73-02051	0173-95-0171	3.6 (U)			28-29.3
	73-02052	0173-95-0172	3.4 (U)			26-27.5
	73-02053	0173-95-0173	3.6 (U)			20.5-21.5
	73-02054	0173-95-0174	3.4 (U)			20.5-21.5

TABLE 2.3.4.3-5 (continued)

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (ft)
Antimony continued	73-02055	0173-95-0175	3.7 (UJ)	0.5	QBT3	20.5-21.5
	73-02056	0173-95-0176	3.4 (UJ)			55.5-56.5
	73-02057	0173-95-0177	11 (U)			22-23
	73-02059	0173-95-0178	11 (U)			10.5-11.5
	73-02067	0173-95-0186	0.51 (U)			25-26
	73-02070	0173-95-0188	0.51 (U)			22.5-23.5
	73-02423	0173-97-0062	0.7 (U)			32-33
	73-02424	0173-97-0063	0.72 (U)			36-37
	73-02425	0173-97-0064	9 (UJ)			30-31
	73-02425	0173-97-0065	9.1 (UJ)			35-36
	73-02426	0173-97-0066	0.53 (UJ)			15-16
	73-02427	0173-97-0067	15 (UJ)			20.5-21.5
	73-02427	0173-97-0068	10 (UJ)			25.5-26.5
	73-02428	0173-97-0069	11 (UJ)			25.5-26.5
	73-02428	0173-97-0070	11 (UJ)			25.5-26.5
	73-02428	0173-97-0071	11 (UJ)			31.5-32.5
	73-02429	0173-97-0073	11 (UJ)			81-82
Barium	73-02373	0173-97-0047	550	295	SOIL	3-3.5
	73-01004	AAB7582	240	46	QBT3	17.5-20
	73-02051	0173-95-0171	47.7			28-29.3
	73-02055	0173-95-0175	51.6			20.5-21.5
	73-02056	0173-95-0176	53.1			55.5-56.5
	73-02062	0173-95-0180	62.6			74-75
Beryllium	73-02373	0173-97-0047	3.8	1.83	SOIL	3-3.5
	73-01010	AAC0958	2.5	1.21	QBT2	115-117.5
	73-01004	AAB7582	2		QBT3	17.5-20
	73-01004	AAB7585	1.4			67.5-70
	73-01007	AAC1609	2.8			55-57.5
	73-01007	AAC1610	2.9			55-57.5
Cadmium	73-01011	AAC1621	1.7	1.63	QBT3	55-57.5
Calcium	73-02373	0173-97-0047	23000	6120	SOIL	3-3.5
	73-01008	AAC0947	3200	2200	QBT2	65-67.5
	73-01008	AAC0951	4900			100-102.5
	73-01010	AAC0958	4240			115-117.5
	73-01004	AAB7582	3670		QBT3	17.5-20
	73-02051	0173-95-0171	5400			336-351.6
	73-02053	0173-95-0173	3250			20.5-21.5
	73-02055	0173-95-0175	8800			20.5-21.5
	73-02062	0173-95-0180	30100			74-75

TABLE 2.3.4.3-5 (continued)

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (ft)
Chromium, Total	73-02373	0173-97-0047	25	19.3	SOIL	3-3.5
	73-01011	AAC1629	2.3	2.24	QBT1V	197.5-166.7
	73-01011	AAC1627	7.9		QBT2	157.5-160
	73-02061	0173-95-0179	7.4	7.14	QBT3	95.5-96.5
	73-01004	AAB7582	16			17.5-20
	73-02051	0173-95-0171	34 (J+)	7.14		28-29.3
	73-02052	0173-95-0172	8.9 (J+)			26-27.5
	73-02055	0173-95-0175	43.7 (J+)			20.5-21.5
	73-02056	0173-95-0176	23.9 (J+)			55.5-56.5
	73-02059	0173-95-0178	9.8			10.5-11.5
	73-02062	0173-95-0180	7.9			74-75
	73-02064	0173-95-0183	11.4			27-28
	73-02421	0173-97-0061	7.2			37-37.5
Copper	73-01010	AAC0955	25.4	4.66	QBT2	60-62.5
	73-02061	0173-95-0179	11 (J-)			95.5-96.5
	73-01004	AAB7582	7.7		QBT3	17.5-20
	73-02051	0173-95-0171	71.5 (J+)			28-29.3
	73-02052	0173-95-0172	12.1 (J+)			26-27.5
	73-02053	0173-95-0173	5.6 (J+)			20.5-21.5
	73-02054	0173-95-0174	14.3 (J+)			20.5-21.5
	73-02055	0173-95-0175	29.3			20.5-21.5
	73-02056	0173-95-0176	31.6			55.5-56.5
	73-02057	0173-95-0177	15 (J-)			22-23
	73-02059	0173-95-0178	23 (J-)			10.5-11.5
	73-02062	0173-95-0180	73.4 (J-)			74-75
	73-02064	0173-95-0183	16.1			27-28
	73-02065	0173-95-0184	10.9			17-18
	73-02066	0173-95-0185	58.5			13.5-14.5
	73-02067	0173-95-0186	91.5			25-26
	73-02068	0173-95-0187	36.2			27.5-28.5
	73-02070	0173-95-0188	38.5			22.5-23.5
	73-02428	0173-97-0069	4.8			25.5-26.5
	73-02428	0173-97-0070	12			25.5-26.5
Iron	73-02373	0173-97-0047	28000	21500	SOIL	3-3.5
	73-01004	AAB7582	18900	14500	QBT3	17.5-20

TABLE 2.3.4.3-5 (continued)

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (ft)
Lead	73-02371	0173-97-0043	23	22.3	SOIL	3-3.5
	73-01011	AAC1623	21.6	11.2	QBT2	97.5-100
	73-01001	AAB7474	16.8		QBT3	12.5-15
	73-01001	AAB7475	19.1			22.5-25
	73-01001	AAB7476	20.5			32.5-35
	73-01001	AAB7477	23.9			32.5-35
	73-01003	AAB7478	11.8			57.5-60
	73-01004	AAB7582	21.8			17.5-20
	73-01004	AAB7584	19.7			67.5-70
	73-01004	AAB7585	23.8			67.5-70
	73-01010	AAC0952	14			5-7.5
	73-01011	AAC1621	12.8			4.6-57.5
	73-02051	0173-95-0171	27.5			28-29.3
	73-02052	0173-95-0172	130			26-27.5
	73-02055	0173-95-0175	11.8			20.5-21.5
	73-02062	0173-95-0180	21.7 (J+)			74-75
	73-02065	0173-95-0184	11.9 (J+)			17-18
	73-02067	0173-95-0186	29			25-26
	73-02428	0173-97-0069	20			25.5-26.5
Magnesium	73-02373	0173-97-0047	9200	4610	SOIL	3-3.5
	73-01004	AAB7582	4740	1690	QBT3	17.5-20
Manganese	73-02426	0173-97-0068	553	482	QBT3	15-16
Mercury	73-01004	AAC0944	0.15	0.1	QBT2	97.5-100
	73-01010	AAC0958	0.44			115-117.5
	73-01004	AAB7582	0.33		QBT3	17.5-20
	73-01004	AAB7583	0.21			57.5-60
	73-01004	AAB7585	0.34			67.5-70
	73-01004	AAB7586	0.3			6.7-82.5
	73-01007	AAC1605	0.43			15-17.5
	73-01008	AAC0945	0.3			22.5-25
Nickel	73-02373	0173-97-0047	28	15.4	SOIL	3-3.5
	73-01004	AAB7582	15.2	6.58	QBT3	17.5-20
	73-02051	0173-95-0171	11.7			28-29.3
	73-02055	0173-95-0175	16.1			20.5-21.5
	73-02056	0173-95-0176	8.2			55.5-56.5
	73-02062	0173-95-0180	6.6			74-75
Potassium	73-02373	0173-97-0047	5200	3460	SOIL	3-3.5
	73-01004	AAB7582	3730 (J+)	3500	QBT3	17.5-20
Selenium	73-02424	0173-97-0063	0.72	0.3	QBT3	36-37

TABLE 2.3.4.3-5 (continued)

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (ft)
Silver	73-02429	0173-97-0072	2.3 (U)	1	SOIL	76-77
	73-02061	0173-95-0179	2.1 (UJ)	1	QBT2	95.5-96.5
	73-02057	0173-95-0177	2.1 (UJ)	1	QBT3	22-23
	73-02059	0173-95-0178	2.2 (UJ)			10.5-11.5
	73-02425	0173-97-0065	1.4 (U)			35-36
	73-02425	0173-97-0064	1.4 (U)			30-31
	73-02427	0173-97-0068	2.1 (U)			25.5-26.5
	73-02427	0173-97-0067	2.9 (U)			20.5-21.5
	73-02428	0173-97-0071	2.1 (U)			31.5-32.5
	73-02428	0173-97-0070	2.2 (U)			25.5-26.5
	73-02428	0173-97-0069	2.2 (U)			25.5-26.5
	73-02429	0173-97-0073	2.2 (U)			81-82
Sodium	73-02429	0173-97-0072	1600	915	SOIL	76-77
Thallium	73-02371	0173-97-0043	0.87 (J+)	0.73	SOIL	3-3.5
	73-02373	0173-97-0047	0.83 (J+)			3-3.5
	73-02424	0173-97-0063	1.3	1.10	QBT3	36-37
Vanadium	73-01004	AAB7582	24.3 (J+)	17	QBT3	17.5-20
Zinc	73-02373	0173-97-0047	83	48.8	SOIL	3-3.5
	73-01006	AAB7580	63.9	63.5	QBT3	22.5-25
	73-02059	0173-95-0178	76			10.5-11.5
	73-02062	0173-95-0180	111 (J+)			74-75
	73-02065	0173-95-0184	136			17-18
	73-02066	0173-95-0185	63.6			13.5-14.5
	73-02067	0173-95-0186	102 (J-)			25-26

* Descriptions of the analytical methods used for the Landfill can be found in Appendix C-1, Table C-1.0-1. Detection limits can be found in Appendix D, Table D-1.0-1.

**TABLE 2.3.4.3-6
RESULTS OF INORGANIC DATA REVIEW FOR SUBSURFACE SOIL AND TUFF**

Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Aluminum	QBT2,QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 2 BV and two sample values exceeded the QBT 3 BV.
Antimony	SOIL,QBT2,QBT3,QBT1V	Retained	Not detected in any samples. Retained as COPC because sample detection limits greatly exceeded the BV.
Arsenic	QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 3 BV.
Barium	QBT3	Retained	Retained as COPC because five sample values exceeded the QBT 3 BV.
Beryllium	QBT2,QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 2 BV and four sample values exceeded the QBT 3 BV.
Cadmium	QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 3 BV.
Calcium	QBT2,QBT3	Retained	Retained as COPC because three sample values exceeded the QBT 2 BV and five sample values exceeded the QBT 3 BV.
Chromium, Total	QBT2,QBT3,QBT1V	Retained	Retained as COPC because one sample value exceeded the QBT 1v BV, two sample values exceeded the QBT 2 BV, and nine sample values exceeded the QBT 3 BV.
Cobalt	SOIL,QBT2,QBT3,QBT1V	Eliminated	Eliminated as COPC because no sample values exceeded the BV.
Copper	QBT2,QBT3	Retained	Retained as COPC because two sample values exceeded the QBT 2 BV and eighteen sample values exceeded the QBT 3 BV.
Iron	QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 3 BV.
Lead	QBT2,QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 2 BV and seventeen sample values exceeded the QBT 3 BV.
Magnesium	QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 3 BV.
Manganese	QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 3 BV.
Mercury	QBT2,QBT3	Retained	Retained as COPC because two sample values exceeded the QBT 2 BV and six sample values exceeded the QBT 3 BV.
Nickel	QBT3	Retained	Retained as COPC because five sample values exceeded the QBT 3 BV.
Potassium	QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 3 BV.
Selenium	QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 3 BV.
Silver	SOIL,QBT2,QBT3,QBT1V	Retained	Not detected in any samples. Retained as COPC because sample detection limits exceeded the BV.
Sodium	SOIL	Retained	Retained as COPC because one sample value exceeded the all soil horizon BV.
Thallium	QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 3 BV.
Uranium, Total	SOIL,QBT2,QBT3,QBT1V	Eliminated	Eliminated as COPC because no sample values exceeded the BV.
Vanadium	QBT3	Retained	Retained as COPC because one sample value exceeded the QBT 3 BV.
Zinc	QBT3	Retained	Retained as COPC because six sample values exceeded the QBT 3 BV.

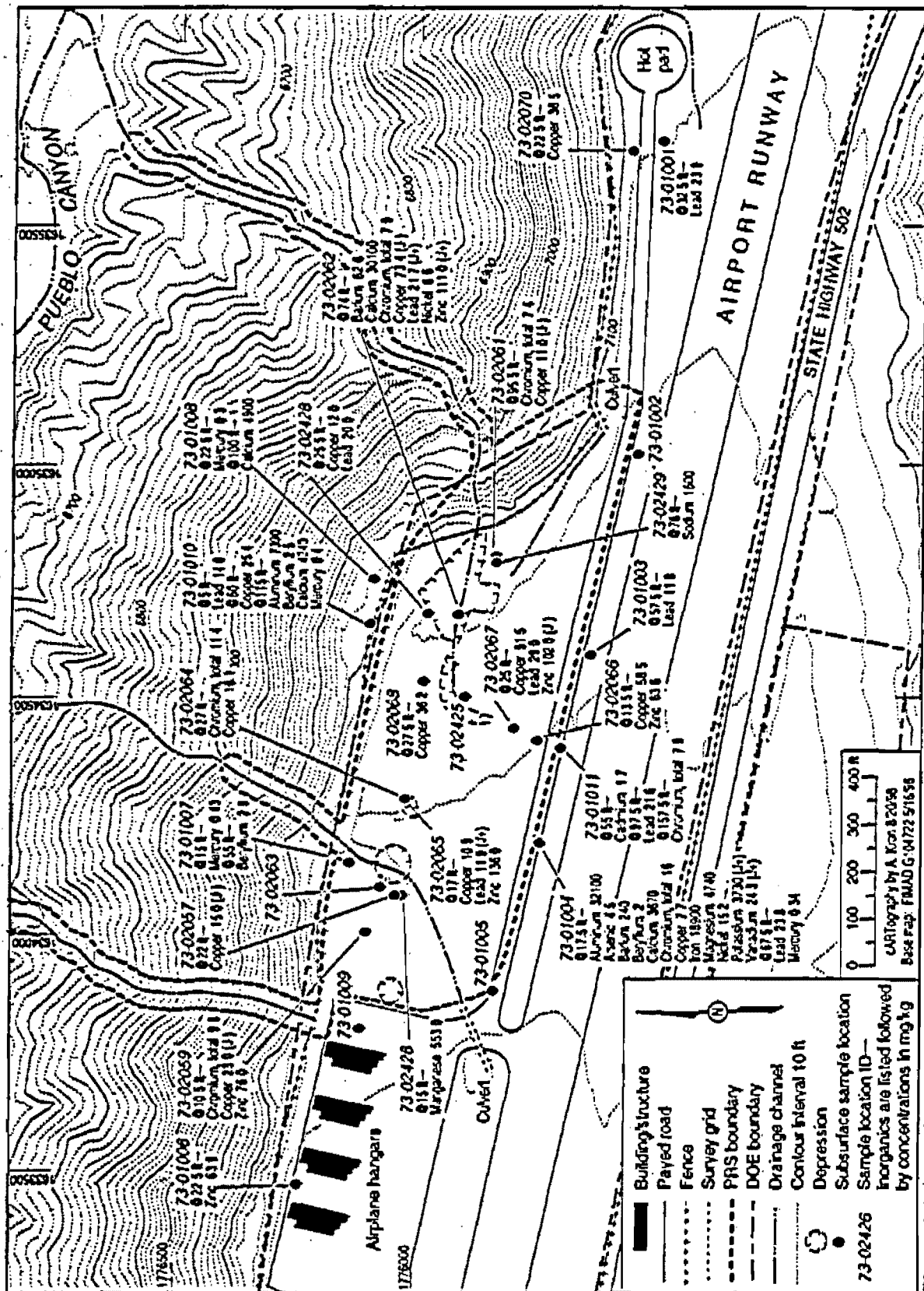


Figure 2.3.4.3-3, Inorganic COPCs in subsurface samples (western) with maximum concentrations shown by location and depth



Figure 2.3.4.3-4. Inorganic COPCs in subsurface samples (eastern) with maximum concentrations shown by location and depth.

Soil Porewater

Twenty-two samples, collected from lysimeters at the Airport Landfill during sampling periods in 1995, 1996, and 1997, were analyzed for inorganics. Two of these samples were also analyzed for uranium. Due to lack of established background data for soil porewater samples, the inorganic chemicals that were detected in at least one sample were retained as COPCs in order to maintain conservative risk calculations.

There were several QC problems with samples in this sample set, which are detailed in Appendix C. For sample 0173-97-0361, uranium data was rejected based on spectral interferences from iron. This interference caused the detection of uranium to be highly suspect. For sample 0173-95-0104, Hg was qualified UJ for a low recovery in the matrix spike sample (70%). For sample 0173-96-0064, Se was qualified UJ for a low recovery in the matrix spike sample (55%). For samples 0173-96-0452 and -0453 Fe and Ag were qualified UJ for low recoveries in the matrix spike sample (53% and 37%). In all cases the normal acceptable range for matrix spike samples is 75-125%. No other QC criteria required data qualification. All of the data above, except uranium, are not significantly impacted by the qualifications. The analytes were not detected in all cases, so the low matrix spike recoveries would not cause large changes in the analyte concentrations and therefore would not affect the data set as a whole.

Table 2.3.4.3-7 presents the concentration range and frequency of detects for the inorganic chemicals. Antimony, cadmium, and uranium were the only inorganic chemicals that were not detected in any sample. A complete presentation of the data may be found in Appendix D. The detected sample results are presented in Table 2.3.4.3-8. Figure 2.3.4.3-5 shows the locations where these detected inorganic chemicals were found.

In summary, 21 inorganic chemicals detected in the soil pore water will be retained as COPCs. The list of these chemicals can be found in Table 2.3.4.3-9.

Soil Gas

No soil gas samples were analyzed for inorganics.

2.3.4.3(b) Radionuclide Comparison with Background/Fallout Radionuclide Concentrations

Surface soil and subsurface soil and tuff were analyzed for radionuclides.

Surface Soil

Fifteen samples from the Landfill drainages were analyzed for radionuclides by either alpha spectroscopy or gamma spectroscopy. No radionuclide analyses were requested from Landfill surface samples. All samples were collected from soil, which means that the appropriate background data is the Laboratory all soil horizons soil background values. The source of the background values is "Inorganic and Radionuclide Background Data for Soils, Canyons Sediments, and Bandelier Tuff at LANL" (58093).

Detection status was determined either by the contract agreed upon quantitation limits, the laboratory determined minimum detectable activity or the 3 sigma TPU. Gamma spectroscopy detects were determined according to the LANL guidelines for data validation. As detailed in Appendix C, there were a

**TABLE 2.3.4.3-8
DETECTED INORGANICS IN SOIL POREWATER^a**

Analyte	Location ID	Sample Id	Sample Concentration (ug/l)	Media Code	Depth (ft)
Aluminum	73-01009	0173-96-0196	81.1	water	26
	73-01005	0173-96-0453	38.1	water	10.7
	73-02426	0173-97-0215	42.1	water	23.3
	73-02428	0173-97-0361	87.8	water	28.8
Arsenic	73-01009	0173-95-0104	2.6	water	26
	73-01009	0173-96-0064	2.3	water	26
	73-01009	0173-96-0196	2.1	water	26
	73-01009	0173-96-0522	4	water	26
	73-02426	0173-97-0215	6.5	water	23.3
	73-02428	0173-97-0361	15.6	water	28.8
	73-01007	AAC3267	12.1	water	55
	73-01005	AAC3271	15.2	water	10.7
	73-01011	AAC4163	13.9	water	20.2
Barium	73-01009	0173-95-0104	51.8	water	26
	73-01009	0173-96-0064	147	water	26
	73-01009	0173-96-0196	141	water	26
	73-01009	0173-96-0452	135	water	26
	73-01005	0173-96-0453	111	water	10.7
	73-01009	0173-96-0522	124	water	26
	73-01009	0173-96-0525	136	water	26
	73-01005	0173-96-0526	98.2	water	10.7
	73-01009	0173-96-0652	143	water	26
	73-01005	0173-96-0653	94	water	10.7
	73-02426	0173-97-0212	200	water	23.3
	73-02426	0173-97-0215	572	water	23.3
	73-02428	0173-97-0361	65.3	water	28.8
Beryllium	73-02428	0173-97-0361	1.9	water	28.8
Calcium	73-01005	0173-95-0037	30800	water	10.7
	73-01009	0173-95-0040	165000	water	26
	73-01009	0173-95-0104	23400	water	26
	73-01009	0173-96-0064	165000	water	26
	73-01009	0173-96-0196	178000	water	26
	73-01009	0173-96-0452	185000	water	26
	73-01005	0173-96-0453	313000	water	10.7
	73-01009	0173-96-0522	188000	water	26
	73-01009	0173-96-0525	195000	water	26
	73-01005	0173-96-0526	246000	water	10.7
	73-01009	0173-96-0652	207000	water	26
	73-01005	0173-96-0653	230000	water	10.7
	73-02428	0173-97-0211	330000	water	28.8

TABLE 2.3.4.3-8 (continued)

Analyte	Location ID	Sample Id	Sample Concentration (ug/l)	Media Code	Depth (ft)
	73-02426	0173-97-0212	210000	water	23.3
	73-02426	0173-97-0215	183000	water	23.3
	73-02428	0173-97-0361	870000	water	28.8
	73-01007	AAC3267	23000	water	55
	73-01009	AAC3268	148000	water	26
	73-01005	AAC3271	62500	water	10.7
	73-01005	AAC4159	394000	water	10.7
	73-01009	AAC4162	164000	water	26
	73-01011	AAC4163	22600	water	20.2
Chromium, Total	73-01005	0173-95-0037	2.1	water	10.7
	73-01005	0173-96-0453	7.1	water	10.7
	73-01009	0173-96-0522	2.3	water	26
	73-02426	0173-97-0212	20	water	23.3
	73-02428	0173-97-0361	0.59	water	28.8
	73-01009	AAC3268	57.7	water	26
	73-01005	AAC4159	14.1	water	10.7
	73-01009	AAC4162	13	water	26
Cobalt	73-01009	0173-96-0522	0.9	water	26
	73-02426	0173-97-0215	1.8	water	23.3
	73-02428	0173-97-0361	15.4	water	28.8
Copper	73-01009	0173-95-0104	27.7	water	26
	73-01009	0173-96-0196	7.4	water	26
	73-01009	0173-96-0452	8.5	water	26
	73-01009	0173-96-0522	3.6	water	26
	73-02426	0173-97-0215	0.95	water	23.3
	73-02428	0173-97-0361	3.3	water	28.8
Iron	73-01009	0173-95-0104	33.4	water	26
	73-01009	0173-96-0196	37.5	water	26
	73-01009	0173-96-0522	25.6	water	26
	73-02428	0173-97-0211	2900	water	28.8
	73-02426	0173-97-0212	2900	water	23.3
	73-02426	0173-97-0215	3520	water	23.3
	73-02428	0173-97-0361	16600	water	28.8
Lead	73-01009	0173-96-0196	3.5	water	26
	73-01009	0173-96-0525	21	water	26
	73-02426	0173-97-0212	2000	water	23.3
	73-01007	AAC3267	5.3	water	55

TABLE 2.3.4.3-8 (continued)

Analyte	Location ID	Sample Id	Sample Concentration (ug/l)	Media Code	Depth (ft)
Magnesium	73-01005	0173-95-0037	15700	water	10.7
	73-01009	0173-95-0040	83100	water	26
	73-01009	0173-95-0104	6570	water	26
	73-01009	0173-96-0064	68200	water	26
	73-01009	0173-96-0196	58100	water	26
	73-01009	0173-96-0452	58000	water	26
	73-01005	0173-96-0453	44700	water	10.7
	73-01009	0173-96-0522	54200	water	26
	73-01009	0173-96-0525	57700	water	26
	73-01005	0173-96-0526	34400	water	10.7
	73-01009	0173-96-0652	58800	water	26
	73-01005	0173-96-0653	32300	water	10.7
	73-02428	0173-97-0211	120000	water	28.8
	73-02426	0173-97-0212	45000	water	23.3
	73-02426	0173-97-0215	40600	water	23.3
	73-02428	0173-97-0361	299000	water	28.8
	73-01007	AAC3267	11000	water	55
	73-01009	AAC3268	37100	water	26
	73-01005	AAC3271	8280	water	10.7
	73-01005	AAC4159	52200	water	10.7
	73-01009	AAC4162	76200	water	26
	73-01011	AAC4163	5840	water	20.2
Manganese	73-01005	0173-95-0037	17.5	water	10.7
	73-01009	0173-95-0040	87.8	water	26
	73-01009	0173-96-0064	46.9	water	26
	73-01009	0173-96-0196	18	water	26
	73-01009	0173-96-0452	9.2	water	26
	73-01005	0173-96-0453	1.8	water	10.7
	73-01009	0173-96-0522	9.2	water	26
	73-02428	0173-97-0211	42000	water	28.8
	73-02426	0173-97-0212	41000	water	23.3
	73-02426	0173-97-0215	42300	water	23.3
	73-02428	0173-97-0361	79000	water	28.8
	73-01007	AAC3267	29.8	water	55
	73-01009	AAC4162	120	water	26
Mercury	73-01009	0173-96-0522	0.03	water	26
	73-01009	AAC3268	0.4	water	26
Nickel	73-01009	0173-95-0040	176	water	26
	73-01005	0173-96-0064	183	water	26
	73-01009	0173-96-0196	73.8	water	26

TABLE 2.3.4.3-8 (continued)

Analyte	Location ID	Sample Id	Sample Concentration (ug/l)	Media Code	Depth (ft)
	73-01009	0173-96-0452	21.4	water	26
	73-01009	0173-96-0522	16.8	water	26
	73-02426	0173-97-0215	10.2	water	23.3
	73-02428	0173-97-0361	110	water	28.8
	73-01007	AAC3257	514	water	55
	73-01005	AAC3271	259	water	10.7
	73-01005	AAC4159	99.3	water	10.7
	73-01009	AAC4162	149	water	26
	73-01011	AAC4163	64.4	water	20.2
Potassium	73-01005	0173-95-0037	6550	water	10.7
	73-01009	0173-95-0040	45900	water	26
	73-01009	0173-95-0104	4030	water	26
	73-01009	0173-96-0064	25600	water	26
	73-01009	0173-96-0196	27400	water	26
	73-01009	0173-96-0452	59700	water	26
	73-01005	0173-96-0453	5020	water	10.7
	73-01009	0173-96-0522	31400	water	26
	73-01009	0173-96-0525	26500	water	26
	73-01009	0173-96-0652	31300	water	26
	73-02428	0173-97-0211	21000	water	28.8
	73-02426	0173-97-0212	18000	water	23.3
	73-02426	0173-97-0215	23000	water	23.3
	73-02428	0173-97-0361	99300	water	28.8
	73-01005	AAC3271	6580	water	10.7
	73-01005	AAC4159	8510	water	10.7
	73-01009	AAC4162	39600	water	26
Selenium	73-01005	0173-96-0453	8 (J+)	water	10.7
	73-01009	0173-96-0522	4.6	water	26
	73-02426	0173-97-0215	23.8	water	23.3
	73-02428	0173-97-0361	18.7	water	28.8
	73-01005	AAC4159	20.5	water	10.7
Silver	73-01009	0173-96-0522	1.2	water	26
	73-02426	0173-97-0215	1.7	water	23.3
	73-02428	0173-97-0361	2.5	water	28.8
	73-01005	AAC4159	14.9	water	10.7
Sodium	73-01005	0173-95-0037	380000	water	10.7
	73-01009	0173-95-0040	400000	water	26
	73-01009	0173-95-0104	25100	water	26
	73-01009	0173-96-0064	510000	water	26
	73-01009	0173-96-0196	510000	water	26

TABLE 2.3.4.3-8 (continued)

Analyte	Location ID	Sample Id	Sample Concentration (ug/l)	Media Code	Depth (ft)
	73-01009	0173-96-0452	254000	water	26
	73-01005	0173-96-0453	226000	water	10.7
	73-01009	0173-96-0522	618000	water	26
	73-01009	0173-96-0525	548000	water	26
	73-01005	0173-96-0526	396000	water	10.7
	73-01009	0173-96-0652	562000	water	26
	73-01005	0173-96-0653	376000	water	10.7
	73-02428	0173-97-0211	330000	water	28.8
	73-02426	0173-97-0212	350000	water	23.3
	73-02426	0173-97-0215	363000	water	23.3
	73-02428	0173-97-0361	772000	water	28.8
	73-01007	AAC3267	24600	water	55
	73-01005	AAC3271	51100	water	10.7
	73-01005	AAC4159	3410	water	10.7
	73-01009	AAC4162	410	water	26
Thallium	73-02426	0173-97-0215	14.8	water	23.3
	73-02428	0173-97-0361	28.3	water	28.8
Vanadium	73-01009	0173-95-0104	19.3	water	26
	73-01009	0173-96-0064	19.6	water	26
	73-01009	0173-96-0196	18.6	water	26
	73-01009	0173-96-0452	14.2	water	26
	73-01005	0173-96-0453	8	water	10.7
	73-01009	0173-96-0522	12.5	water	26
	73-02426	0173-97-0212	60	water	23.3
	73-02426	0173-97-0215	47.8	water	23.3
	73-02428	0173-97-0361	17	water	28.8
	73-01007	AAC3267	324	water	55
	73-01009	AAC3268	157	water	26
	73-01005	AAC3271	115	water	10.7
	73-01009	AAC4162	66.7	water	26
	73-01011	AAC4163	240	water	20.2

TABLE 2.3.4.3-8 (continued)

Analyte	Location ID	Sample Id	Sample Concentration (ug/l)	Media Code	Depth (ft)
Zinc	73-01009	0173-95-0040	50.7	water	26
	73-01009	0173-95-0104	8.6	water	26
	73-01009	0173-96-0064	52.1	water	26
	73-01009	0173-96-0196	49.5	water	26
	73-01009	0173-96-0452	16.1	water	26
	73-01005	0173-96-0453	19.5	water	10.7
	73-01009	0173-96-0522	128	water	26
	73-01009	0173-96-0525	105	water	26
	73-01005	0173-96-0526	149	water	10.7
	73-01009	0173-96-0652	69.3	water	26
	73-02426	0173-97-0212	10	water	23.3
	73-02426	0173-97-0215	9.4	water	23.3
	73-02428	0173-97-0361	23.1	water	28.8
	73-01007	AAC3267	325	water	55
	73-01009	AAC3268	106	water	26
	73-01005	AAC3271	132	water	10.7
	73-01009	AAC4162	130	water	26
	73-01011	AAC4163	186	water	20.2

* Descriptions of the analytical methods used for the Landfill can be found in Appendix C; detection limits can be found in Appendix D.

**TABLE 2.3.4.3-9
RESULTS OF INORGANIC DATA REVIEW FOR PORE WATER**

Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Aluminum	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Antimony	water	Eliminated	Eliminated as a COPC because the analyte was not detected in any sample.
Arsenic	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Barium	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Beryllium	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Cadmium	water	Eliminated	Eliminated as a COPC because the analyte was not detected in any sample.
Calcium	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Chromium, Total	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Cobalt	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Copper	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Iron	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Lead	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Magnesium	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Manganese	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Mercury	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Nickel	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Potassium	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Selenium	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Silver	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Sodium	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Thallium	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Uranium, Total	water	Eliminated	Eliminated as a COPC because analyte was not detected in any sample.
Vanadium	water	Retained	Retained as a COPC because analyte was detected in at least one sample.
Zinc	water	Retained	Retained as a COPC because analyte was detected in at least one sample.

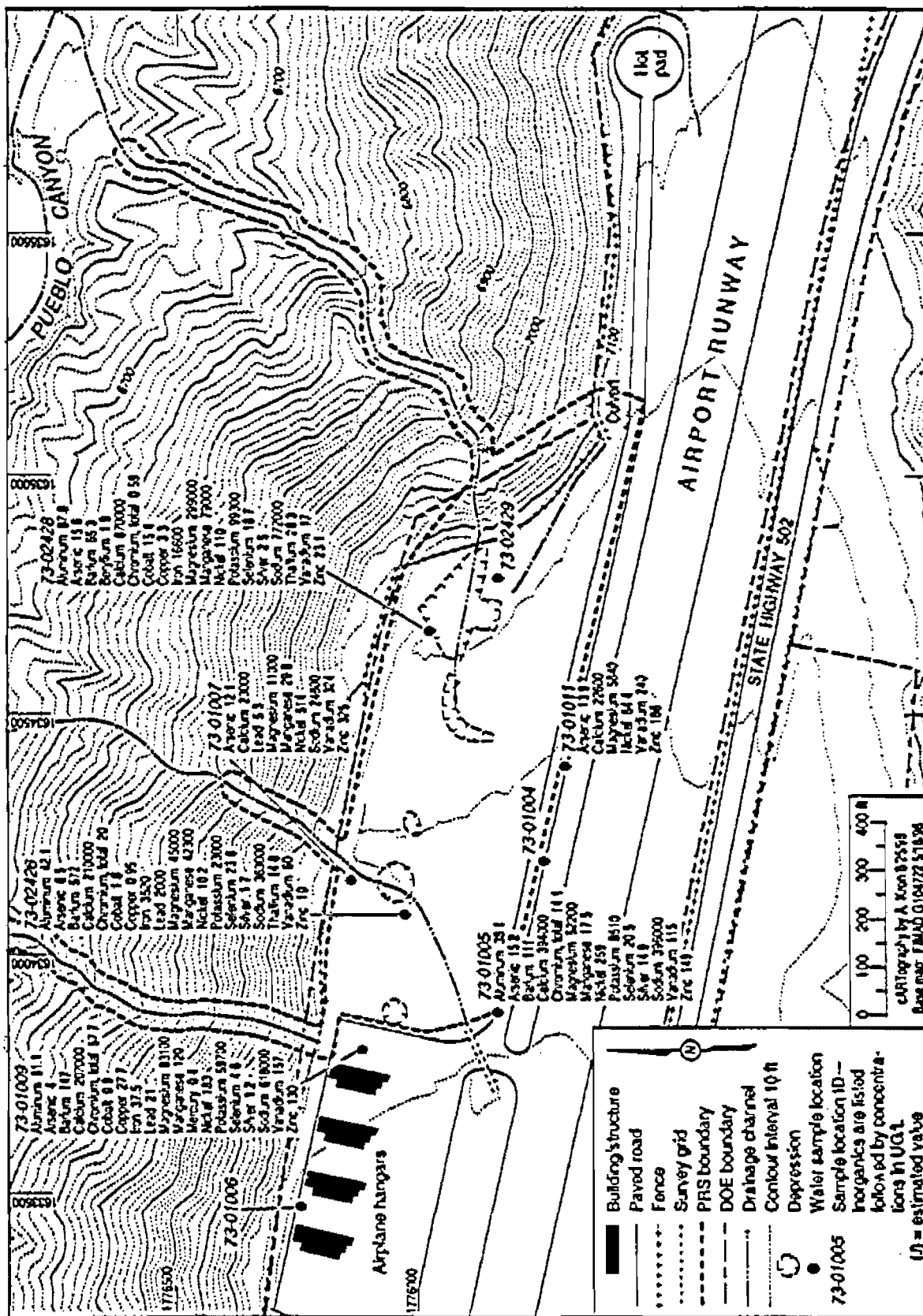


Figure 2.3.4.3-5. Detected Inorganic chemicals in pore water

number of minor problems with QC parameters. For samples 0173-96-0101 through 0113 and 0118 the duplicate sample had a greater than 3 sigma difference for cesium-137. Therefore the detected data for cesium-137 are qualified J. This problem is not viewed to impact the identification of COPCs, as cesium-137 was retained as a COPC.

Two radionuclides, cesium-137 and plutonium-239, were detected. These radionuclides are associated with regional fallout. As discussed in "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at LANL" (58093), the default procedure is to apply fallout radionuclide data to the surface soil samples only (0- to 6- in. sample depth) because of the atmospheric deposition mechanism of these radionuclides. Because no geomorphic information for the surface soil samples is presented to support a different depth horizon for surface samples, fallout values apply only to samples collected within 0-6 inch depth intervals. For these detected radionuclides (cesium-137 and plutonium-239), the samples were collected between the surface and a depth of 12 inches. Because these samples were collected deeper than six inches, the detects of cesium-137 or plutonium-239 identified these radionuclides as COPCs. Had fallout values been applicable to these samples, cesium-137 would have been eliminated as a COPC, and plutonium-239 would have been retained as a COPC.

Table 2.3.4.3-10 presents the concentration ranges for these radionuclides. A complete presentation of the data may be found in Appendix D. The sample results for these detected radionuclides are presented in Table 2.3.4.3-11. Figure 2.3.4.3-6 shows the locations where these detected radionuclides were found.

In summary, the radionuclide data review yielded 2 analytes to be carried forward as COPCs (see Table 2.3.4.3-12). It is appropriate to note that the data review procedure employed a conservative method because all detected values were retained as COPCs regardless of the concentration observed for the radionuclide. The samples collected in these surface drainages may represent sediment accumulation areas where greater than 6 inches of material could reasonably have received regional fallout. If fallout values had been used, only plutonium-239 would have been identified as a COPC.

TABLE 2.3.4.3-10

FREQUENCY OF DETECTED RADIONUCLIDES IN SURFACE SOIL AND DRAINAGES

Analyte	Media Code	Number of Samples Analyzed	Number of Detects	Concentration Range (pCi/g) ^a	Background Value/Fallout (pCi/g)	Frequency of Detects Above Background/Fallout Value ^c
Am-241	soil	15	0	[-0.135 to 0.095]	MDA ^b	0/15
Cs-137	soil	15	3	[0.002] to 0.193	MDA ^b	3/15
Pu-238	soil	15	6	[0 to 0.052]	MDA ^b	0/15
Pu-239	soil	15	7	[0] to 0.419	MDA ^b	7/15
Sr-90	soil	15	0	[-0.11 to 0.42]	MDA ^b	0/15

^a Values in square brackets represent non-detected results.

^b MDA = minimum detectable activity

^c Value is the ratio of the number of detected values exceeding the BV to the number of analyses.

TABLE 2.3.4.3-11

RADIONUCLIDES WITH CONCENTRATIONS AT OR ABOVE BACKGROUND FALLOUT VALUES
IN SURFACE SOIL AND DRAINAGES

Analyte	Media Code	Number of Samples Analyzed	Number of Detects	Concentration Range (pCi/g) ^a	Background Value/Fallout (pCi/g)	Frequency of Detects Above Background Value/Fallout ^b
Am-241	SOIL	2	0	[0.0015-0.261]	MDA ^b	0/2
	QBT1V	1	0	[0.0027]	MDA	0/1
	QBT2	27	0	[-0.0015-0.302]	MDA	0/27
	QBT3	44	0	[0.0014-0.439]	MDA	0/44
Cs-137	SOIL	2	0	[-0.0337-0.2084]	MDA	0/2
	QBT1V	1	0	[0.1568]	MDA	0/1
	QBT2	27	0	[-0.0618-0.2849]	MDA	0/27
	QBT3	44	0	[-0.0547-0.2035]	MDA	0/44
Pu-238	SOIL	2	0	[0.0039-0.0441]	MDA	0/2
	QBT1V	1	0	[0.0089]	MDA	0/1
	QBT2	27	0	[-0.0019-0.206]	MDA	0/27
	QBT3	44	0	[-0.0013-0.31]	MDA	0/44
Pu-239	SOIL	2	0	[0.0012-0.0049]	MDA	0/2
	QBT1V	1	0	[0.0011]	MDA	0/1
	QBT2	27	0	[-0.0047-0.0185]	MDA	0/27
	QBT3	44	0	[-0.0007-0.0107]	MDA	0/44
Sr-90	SOIL	2	0	[0.012-0.255]	MDA	0/2
	QBT1V	1	0	[-0.07]	MDA	0/1
	QBT2	27	2	[-1.27]-4.4	MDA	2/27
	QBT3	44	3	[-0.7]-4.03	MDA	3/44

^a Descriptions of the analytical methods used for the Landfill can be found in Appendix C-1, Table C-1.0-1. Detection limits can be found in Appendix D, Table D-1.0-1.

^b MDA= minimum detectable activity.

TABLE 2.3.4.3-12

RESULTS OF RADIONUCLIDE DATA REVIEW FOR SURFACE SOIL AND DRAINAGES

Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Cs-137	Soil	Retained	Retained as COPC because cesium-137 was detected in three sample results and fallout values do not apply to these samples.
Pu-239	Soil	Retained	Retained as a COPC because plutonium-239 was detected in seven samples and some of these sample results were greater than the Pu-239 fallout value.

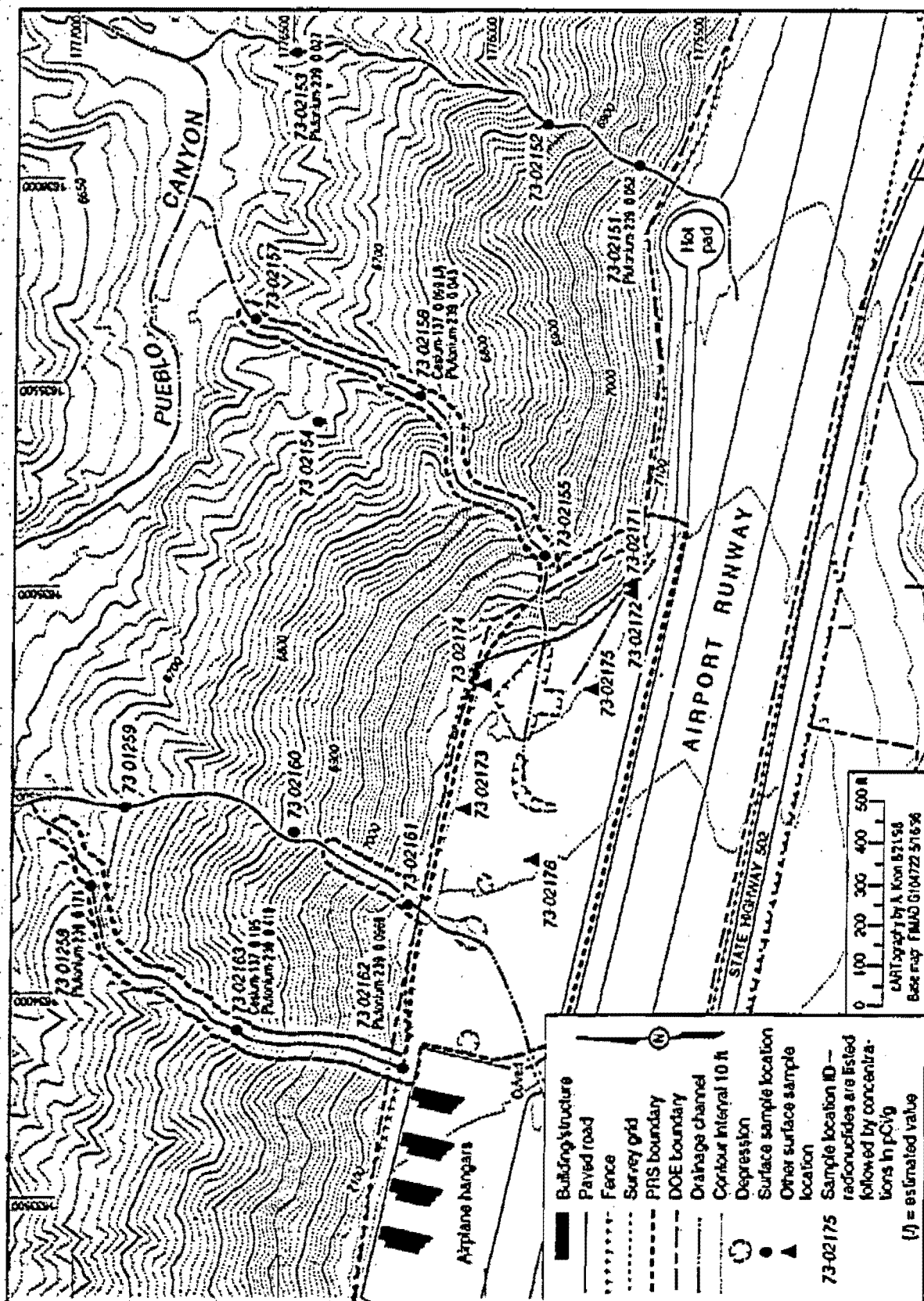


Figure 2.3.4.3-6. Radionuclide COPCs in surface samples (western) with maximum concentrations shown by location

Subsurface Soil and Tuff

Seventy-four samples, collected from the subsurface at the Airport Landfill during sampling periods in 1994, were analyzed by either alpha spectroscopy (americium-241, plutonium-238, plutonium-239), gamma spectroscopy (cesium-137), or gas proportional counting (strontium-90). These samples were collected from fill material and three different units of Bandelier tuff as follows: two samples from fill material (below 6 inches), one sample from Unit 1v tuff, twenty-seven samples from Unit 2 tuff, and forty-four samples from Unit 3 tuff. Because all samples were subsurface (greater than 2 feet depth) and fallout values do not apply to samples collected from a depth of greater than 6 inches below ground surface, data review for these fallout radionuclides consists of determining whether sample results are detects or non-detects. See "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at LANL" (58093) for more information on the application of fallout values to radiological sample results.

Sample detection status was determined either by the contract agreed upon quantitation limits, the laboratory determined minimum detectable activity or the 3 sigma TPU. Gamma spectroscopy detects were determined according to the LANL guidelines for data validation. There were a number of minor problems with QC parameters as well as a few major problems. Overall, data for plutonium-238, plutonium-239, americium-241, and strontium-90 were qualified J or UJ for some samples due to high or low recoveries for the matrix spike, the tracer, or the blind QC sample. In addition, there was an interference problem with americium-241 and plutonium-238 data analyzed by EcoTek, resulting in this data qualified as U. The strontium-90 data is somewhat questionable based on the evaluation of factors such as laboratory duplicates, laboratory control samples, matrix spikes, blind QC samples, and QC samples with elevated amounts of strontium-90. These data are discussed in further detail in Appendix C.

All radionuclides analyzed in subsurface soil and tuff samples are fallout radionuclides and have no background values for the subsurface. Only detected radionuclides will be retained as COPCs. The analytical methods for the airport landfill radionuclide analyses are viewed to be comparable to required analytical methods. Detection limits were generally within the acceptable range. Some detection limits were elevated because of interferences that caused the data to be qualified U.

These seventy-four samples were analyzed for americium-241, cesium-137, plutonium-238, plutonium-239, and strontium-90. Table 2.3.4.3-13 presents analytical results for strontium-90. A complete presentation of the data may be found in Appendix D. Cesium-137, americium-241, plutonium-238, and plutonium-239 were not detected in any of these subsurface samples; therefore, they are eliminated as COPCs. The strontium-90 data were compared to the appropriate background value based on the geologic unit where the sample was collected. Strontium-90 was above its background value in five samples. Although some of the data for strontium-90 was J-qualified, indicating that the results may be biased low, it does not impact the identification of strontium-90 as a COPC. The data above the background value for strontium-90 is presented in Table 2.3.4.3-14 (Radionuclides with Concentrations at or above Background/Fallout Values).

In summary, the radionuclide data review yielded one radionuclide, strontium-90, as a COPC (Table 2.3.4.3-15). The locations strontium-90 was present above background values are shown in Figure 2.3.4.3-7.

TABLE 2.3.4.3-13

FREQUENCY OF DETECTED RADIONUCLIDES IN SUBSURFACE SOIL AND TUFF

Analyte	Media Code	Number of Samples Analyzed	Number of Detects	Concentration Range (pCi/g) *	Background Value/Fallout (pCi/g)	Frequency of Detects Above Background Value/Fallout*
Am-241	SOIL	2	0	[0.0015-0.261]	MDA ^b	0/2
	QBT1V	1	0	[0.0027]	MDA	0/1
	QBT2	27	0	[-0.0015-0.302]	MDA	0/27
	QBT3	44	0	[0.0014-0.439]	MDA	0/44
Cs-137	SOIL	2	0	[-0.0337-0.2084]	MDA	0/2
	QBT1V	1	0	[0.1568]	MDA	0/1
	QBT2	27	0	[-0.0618-0.2849]	MDA	0/27
	QBT3	44	0	[-0.0547-0.2035]	MDA	0/44
Pu-238	SOIL	2	0	[0.0039-0.0441]	MDA	0/2
	QBT1V	1	0	[0.0089]	MDA	0/1
	QBT2	27	0	[-0.0019-0.206]	MDA	0/27
	QBT3	44	0	[-0.0013-0.31]	MDA	0/44
Pu-239	SOIL	2	0	[0.0012-0.0049]	MDA	0/2
	QBT1V	1	0	[0.0011]	MDA	0/1
	QBT2	27	0	[-0.0047-0.0185]	MDA	0/27
	QBT3	44	0	[-0.0007-0.0107]	MDA	0/44
Sr-90	SOIL	2	0	[0.012-0.255]	MDA	0/2
	QBT1V	1	0	[-0.07]	MDA	0/1
	QBT2	27	2	[-1.27]-4.4	MDA	2/27
	QBT3	44	3	[-0.7]-4.03	MDA	3/44

* Values in square brackets represent non-detected results.

^b Background Value is based on the MDA.

* Value is the ratio of the number of detected values exceeding the BV to the number of analyses.

TABLE 2.3.4.3-14

**RADIONUCLIDES WITH CONCENTRATIONS AT OR ABOVE BACKGROUND/ FALLOUT VALUES
IN SUBSURFACE SOIL AND TUFF^a**

Analyte	Location ID	Sample ID	Sample Concentration (pCi/g)	Background Value (pCi/g)	Media Code	Depth (feet)
SR-90	73-01008	AAC0951	4.4 (J-)	MDA ^b	QBT2	100-102.5
	73-01011	AAC1625	2.8 (J-)			120-122.5
	73-01002	AAB7573	1.83 (J-)		QBT3	32.5-35
	73-01008	AAC0945	4.03 (J-)			22.5-25
	73-01011	AAC1621	2.13 (J)			55-57.5

^a Descriptions of the analytical methods used for the Landfill can be found in Appendix C; detection limits can be found in Appendix D.

^b Minimum detectable activity.

TABLE 2.3.4.3-15

RESULTS OF RADIONUCLIDE DATA REVIEW FOR SUBSURFACE SOIL AND TUFF

Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Sr-90	QBT2, QBT3	Retained	Retained as a COPC because five sample results for strontium-90 were greater than the MDA ^b .

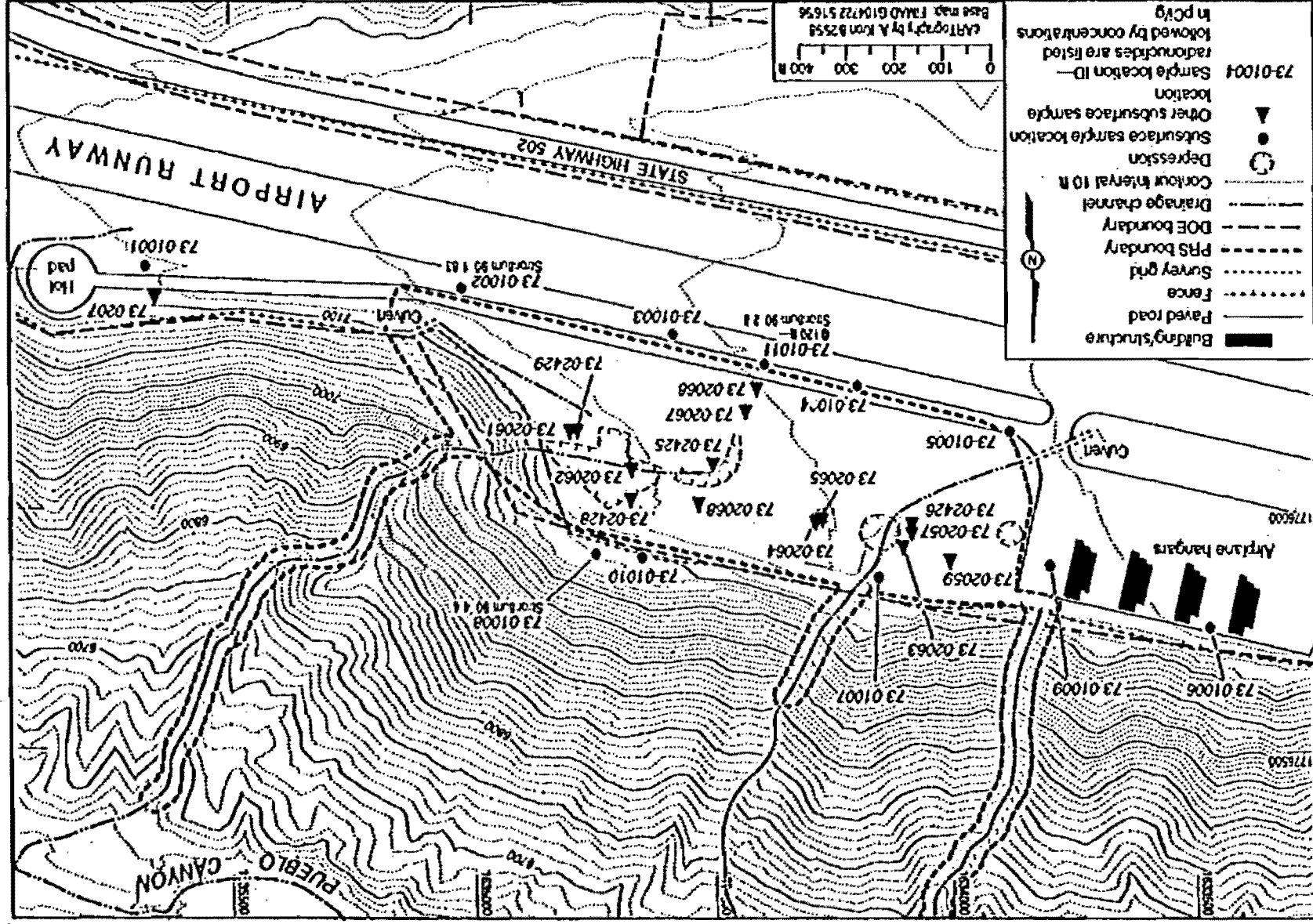


Figure 2.3.4.3-7. Radionuclide COPCs in subsurface samples with maximum concentrations shown by location and depth

No soil porewater samples were analyzed for radionuclides.

Soil Gas

No soil gas samples were analyzed for radionuclides.

2.3.4.3 (c). Evaluation of Organic Chemicals

Surface soil, subsurface soil and tuff, soil pore water, and soil gas were analyzed for organic chemicals.

Surface Soil

Twenty-five samples were analyzed for semivolatile organics and PCBs/pesticides. Five samples were analyzed for volatile organic chemicals. Thirty organic chemicals were detected in these samples.

As detailed in Appendix C, the main QC problems associated with the organic analyses result from sample dilutions and matrix interferences. On occasion, samples have to be diluted during analysis which results in higher quantitation limits. This can be caused by high levels of target analytes or other organic material in the sample. In this case, dilutions were required because of the sample matrix (field observations indicate the sample was collected from parafin-like material). When this occurs, the laboratories normally report both the diluted and undiluted analyses so that only the analytes which exceeded the linear calibration range or had interferences in the undiluted sample are reported with elevated quantitation limits. Specific data qualifications were noted for three samples. For samples 0173-96-0130 and 0131 all volatile organic data are qualified J or UJ for 3 low internal standards and 1 low and 1 high surrogate recovery. The sample was reanalyzed with similar results. For sample 0173-96-0114 all semivolatile organic surrogates had low recoveries (15-50%). The sample was reanalyzed with similar results. All data were qualified J- or UJ. There were elevated detection limits for three samples, 0173-96-0129, 130 and 131 due to sample matrix problems. The dilutions required for the semivolatile analysis of these samples elevated the detection limits by a factor of 200 above the contract required EQL. The nature of these samples did not permit a lower detection limit. It is important to note that two of these samples had detectable amounts of PCBs, so matrix interferences did not limit the ability to detect all organics. These QC problems are not expected to significantly affect the identification of COPCs.

Table 2.3.4.3-16 presents the concentration range and frequency of detects for these analytes. A complete presentation of the data may be found in Appendix D. The detected sample results are presented in Table 2.3.4.3-17. Figure 2.3.4.3-8 shows the locations where these elevated sample results were found.

In summary, 30 organic chemicals were retained as COPCs. The reason for retaining these chemicals is the positive detection in at least one sample, as presented in Table 2.3.4.3-18.

TABLE 2.3.4.3-16

FREQUENCY OF DETECTED ORGANIC CHEMICALS IN SURFACE SOIL AND DRAINAGES

Analyte	Media	Number of Samples Analyzed	Number of Detects	EQL (mg/kg)	Concentration Range (mg/kg) ^a	Frequency of Detects ^b
Acenaphthene	Soil	25	4	0.33	0.043 to [77]	4/25
Anthracene	Soil	25	7	0.33	0.035 to [77]	7/25
Aroclor-1254	Soil	25	5	0.033	[0.034] to 7.6	5/25
Aroclor-1260	Soil	25	3	0.033	[0.034] to [0.67]	3/25
Benzo(a)anthracene	Soil	25	10	0.33	0.036 to [77]	10/25
Benzo(a)pyrene	Soil	25	7	0.33	0.11 to [77]	7/25
Benzo(b)fluoranthene	Soil	25	8	0.33	0.072 to [77]	8/25
Benzo(g,h,i)perylene	Soil	25	6	0.33	0.091 to [77]	6/25
Benzo(k)fluoranthene	Soil	25	8	0.33	0.065 to [77]	8/25
Bis(2-ethyhexyl)phthalate	Soil	25	3	0.33	0.04 to [77]	3/25
Chlordane [alpha-]	Soil	25	2	0.00165	[0.0017] to [0.034]	2/25
Chlordane [gamma-]	Soil	25	3	0.00165	[0.0017] to [0.034]	3/25
Chrysene	Soil	25	9	0.33	0.087 to [77]	9/25
DDE [4,4-]	Soil	25	1	0.0033	[0.00005] to [0.04]	1/25
DDT [4,4-]	Soil	25	9	0.0033	[0.0034] to [0.067]	9/25
Di-n-butylphthalate	Soil	25	1	0.33	[0.34] to [77]	1/25
Dibenz(a,h)anthracene	Soil	25	3	0.33	0.072 to [77]	3/25
Dibenzofuran	Soil	25	1	0.33	0.29 to [77]	1/25
Dichloroethane[1,1-]	Soil	5	2	0.005	0.002 to [0.007]	2/5
Fluoranthene	Soil	25	12	0.33	0.043 to [77]	12/25
Fluorene	Soil	25	3	0.33	0.047 to [77]	3/25
Indeno(1,2,3-cd)pyrene	Soil	25	6	0.33	0.073 to [77]	6/25
Methoxychlor[4,4-]	Soil	25	2	0.0165	[0.017] to 2.1	2/25
Methylnaphthalene[2-]	Soil	25	1	0.33	0.085 to [77]	1/25
Naphthalene	Soil	25	1	0.33	[0.34] to [77]	1/25
Phenanthrene	Soil	25	9	0.33	0.06 to [77]	9/25
Pyrene	Soil	25	11	0.33	0.06 to [77]	11/25
Tetrachloroethene	Soil	5	2	0.005	[0.006] to 0.018	2/5
Toluene	Soil	5	2	0.005	0.002 to [0.007]	2/5
Trichloroethane[1,1,1-]	soil	5	2	0.005	[0.006] to 0.13	2/5

^a Values in square brackets represent non-detected results.

^b Value is the ratio of the number of detected values exceeding the BV to the number of analyses.

TABLE 2.3.43-17
DETECTED ORGANIC CHEMICALS IN SURFACE SOIL AND DRAINAGES

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Media	Depth (in)
Acenaphthene	73-02154	0173-96-0105	0.054 (J)	Soil	10-20
	73-02156	0173-96-0107	0.043 (J)	Soil	0-10
	73-02157	0173-96-0108	0.044 (J)	Soil	3-10
	73-02158	0173-96-0109	0.64	Soil	0-10
Anthracene	73-02154	0173-96-0105	0.13 (J)	Soil	10-20
	73-02155	0173-96-0106	0.035 (J)	Soil	0-15
	73-02156	0173-96-0107	0.094 (J)	Soil	0-10
	73-02157	0173-96-0108	0.089 (J)	Soil	3-10
	73-02158	0173-96-0109	0.94	Soil	0-10
	73-02163	0173-96-0118	0.044 (J)	Soil	0-12
	73-02176	0173-96-0128	0.2 (J)	Soil	0-6
Aroclor-1254	73-02163	0173-96-0114	0.12	Soil	0-12
	73-02163	0173-96-0118	0.077	Soil	0-12
	73-02171	0173-96-0130	2	Soil	0-2
	73-02171	0173-96-0131	7.6	Soil	0-2
	73-02173	0173-96-0121	0.081	Soil	0-3
Aroclor-1260	73-02151	0173-96-0101	0.055	Soil	0-8
	73-02155	0173-96-0106	0.089	Soil	0-15
	73-02173	0173-96-0121	0.13	Soil	0-3
Benzo(a)anthracene	73-02154	0173-96-0105	0.29 (J)	Soil	10-20
	73-02155	0173-96-0106	0.094 (J)	Soil	0-15
	73-02156	0173-96-0107	0.26 (J)	Soil	0-10
	73-02157	0173-96-0108	0.3 (J)	soil	3-10
	73-02158	0173-96-0109	1.6	Soil	0-10
	73-02162	0173-96-0113	0.036 (J)	Soil	0-12
	73-02163	0173-96-0114	0.081 (J)	Soil	0-12
	73-02163	0173-96-0118	0.11 (J)	Soil	0-12
	73-02174	0173-96-0122	0.24 (J)	Soil	0-5
	73-02176	0173-96-0128	0.41 (J)	Soil	0-6
Benzo(a)pyrene	73-02154	0173-96-0105	0.34 (J)	Soil	10-20
	73-02155	0173-96-0106	0.11 (J)	Soil	0-15
	73-02156	0173-96-0107	0.31 (J)	Soil	0-10
	73-02157	0173-96-0108	0.37	Soil	3-10
	73-02158	0173-96-0109	1.4	Soil	0-10
	73-02174	0173-96-0122	0.24 (J)	Soil	0-5
	73-02176	0173-96-0128	0.44 (J)	Soil	0-6
Benzo(b)fluoranthene	73-02154	0173-96-0105	0.25 (J)	Soil	10-20
	73-02155	0173-96-0106	0.072 (J)	Soil	0-15
	73-02156	0173-96-0107	0.23 (J)	Soil	0-10
	73-02157	0173-96-0108	0.31 (J)	Soil	3-10

TABLE 2.3.43-17 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Media	Depth (in)
	73-02158	0173-96-0109	1.4	Soil	0-10
	73-02163	0173-96-0114	0.095 (J-)	Soil	0-12
	73-02174	0173-96-0122	0.2 (J)	Soil	0-5
	73-02176	0173-96-0128	0.28 (J)	Soil	0-6
Benzo(g,h,i)perylene	73-02154	0173-96-0105	0.23 (J)	Soil	10-20
	73-02155	0173-96-0106	0.091 (J)	Soil	0-15
	73-02156	0173-96-0107	0.26 (J)	Soil	0-10
	73-02157	0173-96-0108	0.25 (J)	Soil	3-10
	73-02158	0173-96-0109	0.92	Soil	0-10
	73-02176	0173-96-0128	0.37 (J)	Soil	0-6
Benzo(k)fluoranthene	73-02154	0173-96-0105	0.28 (J)	Soil	10-20
	73-02155	0173-96-0106	0.089 (J)	Soil	0-15
	73-02156	0173-96-0107	0.25 (J)	Soil	0-10
	73-02157	0173-96-0108	0.28 (J)	Soil	3-10
	73-02158	0173-96-0109	1.4	Soil	0-10
	73-02163	0173-96-0114	0.065 (J-)	Soil	0-12
	73-02174	0173-96-0122	0.2 (J)	Soil	0-5
	73-02176	0173-96-0128	0.4 (J)	Soil	0-6
Bis(2-ethylhexyl)phthalate	73-02159	0173-96-0110	0.37 (J)	Soil	0-6
	73-02163	0173-96-0118	0.04 (J)	Soil	0-12
	73-02173	0173-96-0121	0.84 (J)	Soil	0-3
Chlordane[alpha-]	73-02163	0173-96-0114	0.0056	Soil	0-12
	73-02163	0173-96-0118	0.0074	Soil	0-12
Chlordane[gamma-]	73-02158	0173-96-0109	0.0044	Soil	0-10
	73-02163	0173-96-0114	0.013	Soil	0-12
	73-02163	0173-96-0118	0.015	Soil	0-12
Chrysene	73-02154	0173-96-0105	0.33 (J)	Soil	10-20
	73-02155	0173-96-0106	0.11 (J)	Soil	0-15
	73-02156	0173-96-0107	0.31 (J)	Soil	0-10
	73-02157	0173-96-0108	0.34 (J)	Soil	3-10
	73-02158	0173-96-0109	1.8	Soil	0-10
	73-02163	0173-96-0114	0.087 (J-)	Soil	0-12
	73-02163	0173-96-0118	0.11 (J)	Soil	0-12
	73-02174	0173-96-0122	0.29 (J)	Soil	0-5
	73-02176	0173-96-0128	0.47 (J)	Soil	0-6
DDE [4,4-]	73-02157	0173-96-0108	0.0036	Soil	3-10

TABLE 2.3.4.3-17 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Media	Depth (In)
DDT[4,4-]	73-02155	0173-96-0106	0.0067	Soil	0-15
	73-02156	0173-96-0107	0.0093	Soil	0-10
	73-02157	0173-96-0108	0.019	Soil	3-10
	73-02158	0173-96-0109	0.038	Soil	0-10
	73-02162	0173-96-0113	0.0035	Soil	0-12
	73-02163	0173-96-0114	0.048	Soil	0-12
	73-02163	0173-96-0118	0.057	Soil	0-12
	73-02173	0173-96-0121	0.0069	Soil	0-3
	73-02176	0173-96-0128	0.031	Soil	0-6
Di-n-butylphthalate	73-02163	0173-96-0118	0.93	Soil	0-12
Dibenz(a,h)anthracene	73-02154	0173-96-0105	0.072 (J)	Soil	10-20
	73-02157	0173-96-0108	0.1 (J)	soil	3-10
	73-02158	0173-96-0109	0.24 (J)	Soil	0-10
Dibenzofuran	73-02158	0173-96-0109	0.29 (J)	Soil	0-10
Dichloroethane[1,1-]	73-02171	0173-96-0130	0.002 (J-)	Soil	0-2
	73-02171	0173-96-0131	0.002 (J-)	Soil	0-2
Fluoranthene	73-02154	0173-96-0104	0.043 (J)	Soil	0-10
	73-02154	0173-96-0105	0.57	Soil	10-20
	73-02155	0173-96-0106	0.21 (J)	Soil	0-15
	73-02156	0173-96-0107	0.57	Soil	0-10
	73-02157	0173-96-0108	0.58	Soil	3-10
	73-02158	0173-96-0109	3.8	Soil	0-10
	73-02162	0173-96-0113	0.05 (J)	Soil	0-12
	73-02163	0173-96-0114	0.13 (J-)	Soil	0-12
	73-02163	0173-96-0118	0.18 (J)	Soil	0-12
	73-02173	0173-96-0121	0.11 (J)	Soil	0-3
	73-02174	0173-96-0122	0.66 (J)	Soil	0-5
	73-02176	0173-96-0128	0.98 (J)	Soil	0-6
Fluorene	73-02154	0173-96-0105	0.065 (J)	Soil	10-20
	73-02156	0173-96-0107	0.047 (J)	Soil	0-10
	73-02158	0173-96-0109	0.52	Soil	0-10
Indeno(1,2,3-cd)pyrene	73-02154	0173-96-0105	0.21 (J)	Soil	10-20
	73-02155	0173-96-0106	0.073 (J)	Soil	0-15
	73-02156	0173-96-0107	0.21 (J)	Soil	0-10
	73-02157	0173-96-0108	0.21 (J)	Soil	3-10
	73-02158	0173-96-0109	0.85	Soil	0-10
	73-02176	0173-96-0128	0.3 (J)	Soil	0-6
Methoxychlor[4,4-]	73-02171	0173-96-0130	2.1	Soil	0-2
	73-02171	0173-96-0131	0.69	Soil	0-2
Methylnaphthalene[2-]	73-02158	0173-96-0109	0.085 (J)	Soil	0-10

TABLE 2.3.4.3-17 (continued)

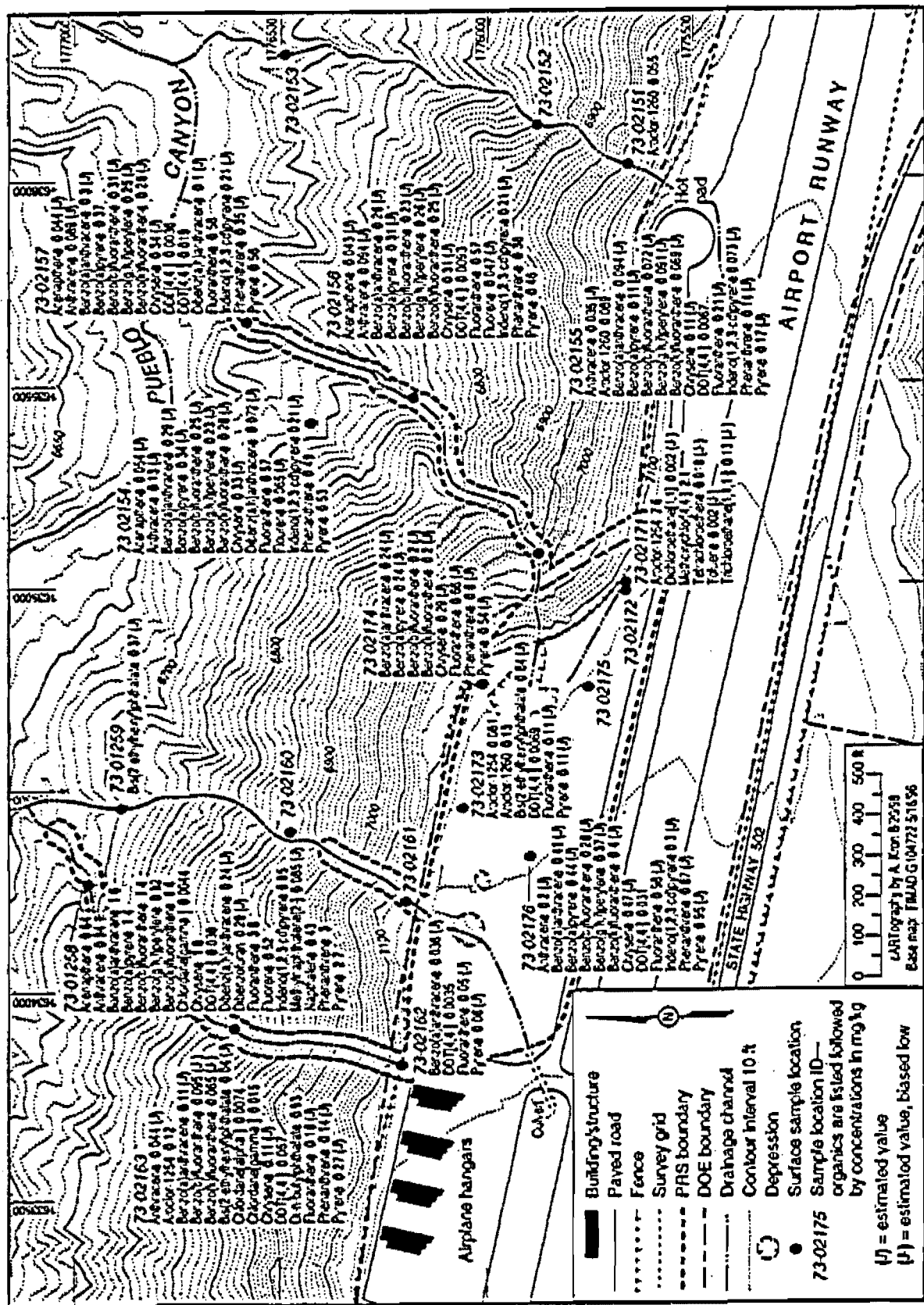
Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Media	Depth (In)
Naphthalene	73-02158	0173-96-0109	0.43	Soil	0-10
Phenanthrene	73-02154	0173-96-0105	0.49	Soil	10-20
	73-02155	0173-96-0106	0.14 (J)	Soil	0-15
	73-02156	0173-96-0107	0.38	Soil	0-10
	73-02157	0173-96-0108	0.35 (J)	Soil	3-10
	73-02158	0173-96-0109	3	Soil	0-10
	73-02163	0173-96-0114	0.06 (J)	Soil	0-12
	73-02163	0173-96-0118	0.14 (J)	Soil	0-12
	73-02174	0173-96-0122	0.6 (J)	Soil	0-5
	73-02176	0173-96-0128	0.87 (J)	Soil	0-6
Pyrene	73-02154	0173-96-0105	0.53	Soil	10-20
	73-02155	0173-96-0106	0.17 (J)	Soil	0-15
	73-02156	0173-96-0107	0.46	Soil	0-10
	73-02157	0173-96-0108	0.56	Soil	3-10
	73-02158	0173-96-0109	2.7	Soil	0-10
	73-02162	0173-96-0113	0.06 (J)	Soil	0-12
	73-02163	0173-96-0114	0.13 (J-)	Soil	0-12
	73-02163	0173-96-0118	0.27 (J)	Soil	0-12
	73-02173	0173-96-0121	0.11 (J)	Soil	0-3
	73-02174	0173-96-0122	0.54 (J)	Soil	0-5
	73-02176	0173-96-0128	0.95 (J)	Soil	0-6
Tetrachloroethene	73-02171	0173-96-0130	0.018 (J-)	Soil	0-2
	73-02171	0173-96-0131	0.01 (J-)	Soil	0-2
Toluene	73-02171	0173-96-0130	0.002 (J-)	Soil	0-2
	73-02171	0173-96-0131	0.002 (J-)	Soil	0-2
Trichloroethane[1,1,1-]	73-02171	0173-96-0130	0.13 (J-)	Soil	0-2
	73-02171	0173-96-0131	0.1 (J-)	Soil	0-2

a. Descriptions of the analytical methods used for the Landfill can be found in Appendix C; detection limits can be found in Appendix D.

TABLE 23.43-18

RESULTS OF ORGANIC DATA REVIEW FOR SURFACE SOIL AND DRAINAGES

Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Acenaphthene	Soil	Retained	Analyte was detected in at least one sample result
Anthracene	Soil	Retained	Analyte was detected in at least one sample result
Aroclor-1254	Soil	Retained	Analyte was detected in at least one sample result
Aroclor-1260	Soil	Retained	Analyte was detected in at least one sample result
Benzo(a)anthracene	soil	Retained	Analyte was detected in at least one sample result
Benzo(a)pyrene	Soil	Retained	Analyte was detected in at least one sample result
Benzo(b)fluoranthene	Soil	Retained	Analyte was detected in at least one sample result
Benzo(g,h,i)perylene	Soil	Retained	Analyte was detected in at least one sample result
Benzo(k)fluoranthene	Soil	Retained	Analyte was detected in at least one sample result
Bis(2-ethylhexyl)phthalate	Soil	Retained	Analyte was detected in at least one sample result
Chlordane [alpha-]	Soil	Retained	Analyte was detected in at least one sample result
Chlordane [gamma-]	Soil	Retained	Analyte was detected in at least one sample result
Chrysene	Soil	Retained	Analyte was detected in at least one sample result
DDE [4,4-]	Soil	Retained	Analyte was detected in at least one sample result
DDT [4,4-]	Soil	Retained	Analyte was detected in at least one sample result
Di-n-butylphthalate	Soil	Retained	Analyte was detected in at least one sample result
Dibenz(a,h)anthracene	Soil	Retained	Analyte was detected in at least one sample result
Dibenzofuran	Soil	Retained	Analyte was detected in at least one sample result
Dichloroethane[1,1-]	Soil	Retained	Analyte was detected in at least one sample result
Fluoranthene	Soil	Retained	Analyte was detected in at least one sample result
Fluorene	Soil	Retained	Analyte was detected in at least one sample result
Indeno(1,2,3-cd)pyrene	Soil	Retained	Analyte was detected in at least one sample result
Methoxychlor[4,4-]	Soil	Retained	Analyte was detected in at least one sample result
Methylnaphthalene[2-]	Soil	Retained	Analyte was detected in at least one sample result
Naphthalene	Soil	Retained	Analyte was detected in at least one sample result
Phenanthrene	Soil	Retained	Analyte was detected in at least one sample result
Pyrene	Soil	Retained	Analyte was detected in at least one sample result
Tetrachloroethene	Soil	Retained	Analyte was detected in at least one sample result
Toluene	Soil	Retained	Analyte was detected in at least one sample result
Trichloroethane[1,1,1-]	soil	Retained	Analyte was detected in at least one sample result



Subsurface Soil and Tuff

One-hundred and seven samples, collected from the subsurface at the airport landfill during sampling periods in 1994, 1995, and 1997, were analyzed for organic chemicals. These samples were collected from fill material and three different units of Bandelier tuff as follows: six samples from fill material (below 6 inches), one sample from Unit 1v tuff, twenty-eight samples from Unit 2 tuff, and seventy-two samples from Unit 3 tuff. The units of tuff from which the samples were collected were determined by the information collected in the field and recorded on the sample collection logs.

Acetone and methylene chloride are common laboratory contaminants in method blanks. When they are detected in method blanks, detects in the samples are considered nondetects when the concentration in the sample is less than 10 times the concentration found in the blank. Only three request numbers were affected by acetone or methylene chloride in the method blanks.

The QC difficulties with this data set are described in detail in Appendix C. Overall, volatile chemicals associated with the 4th internal standard were qualified J or J- in three samples and volatile chemicals associated with the 3rd internal standard were qualified UJ in 12 samples due to the recoveries of the internal standards. Acetone was qualified UJ in 8 samples for inadequate precision in the initial and continuing calibrations which leads to greater uncertainty in the analyte concentration. All VOC data in one sample were qualified UJ based on the surrogate recovery, and aroclor-1242 data was qualified UJ in seven samples based on the recovery of the blind QC sample.

Of these 107 samples, 106 were analyzed for volatile organic chemicals, 90 were analyzed for semivolatile organic chemicals and pesticides, and four samples were analyzed for PCBs. Table 2.3.4.3-19 (Frequency of Detected Organic Chemicals) presents the concentration range and frequency of detects for these organic chemicals. A complete presentation of the data may be found in Appendix D. Twenty-seven organic chemicals were detected in these samples. Only 3% of the data were qualified J (estimated value) and the remainder of the qualified data were qualified UJ (estimated and not detected); therefore, these qualifiers do not impact the identification of COPCs. The data for these detected chemicals is presented in Table 2.3.4.3-20 (Detected Organic Chemicals). Figures 2.3.4.3-9 and 2.3.4.3-10 show the locations where these elevated sample results were found.

In summary, twenty-seven organic chemicals were retained as COPCs. The reason for retaining these chemicals is the positive detection in at least one sample, as presented in Table 2.3.4.3-21.

Soil Pore Water

Thirty-seven samples, collected from lysimeters at the airport landfill during sampling periods in 1995, 1996, and 1997, were analyzed for volatile organic chemicals. Twenty-two volatile organic chemicals were detected in these samples.

As detailed in Appendix C, the only QC problem with this sample set was for samples 0173-96-0521, 0522 and 0523. Acetone was found in the method blank at a concentration of 12 ug/kg and in the samples between 8 and 11 ug/kg. The acetone values for these samples were all considered not detected because of the blank contamination. No other QC criteria required data qualification.

TABLE 2.3.4.3-19

FREQUENCY OF DETECTED ORGANIC CHEMICALS IN SUBSURFACE SOIL AND TUFF

Analyte	Number of Samples Analyzed	Number of Detects	EQL (mg/kg)	Range of Concentrations (mg/kg) ^a	Frequency of Detects ^b
Acetone	103	20	0.02	0.005-0.46	20/103
Benzene	103	1	0.005	0.001-[0.006]	1/103
Benzo(a)anthracene	87	1	0.33	0.22-[0.68]	1/87
Benzo(a)pyrene	87	1	0.33	0.093-[0.68]	1/87
Benzo(b)fluoranthene	87	1	0.33	0.2-[0.68]	1/87
Bis(2-ethylhexyl)phthalate	87	5	0.33	0.077-14	5/87
Butanone [2-]	103	9	0.02	0.001-0.13	9/103
Butylbenzene [n-]	103	1	0.005	0.003-[0.028]	1/103
Carbon Disulfide	103	1	0.005	[0.005]-[0.006]	1/103
Chlordane [alpha-]	19	1	0.00165	[0.0017]-0.0045	1/19
Chlordane [gamma-]	19	1	0.00165	[0.0017]-0.008	1/19
Chloromethane	103	1	0.01	[0.004]-[0.012]	1/103
Chrysene	87	1	0.33	0.15-[0.68]	1/87
Dichlorobenzene [1,4-]	104	1	0.005	[0.005]-[0.4] ¹	1/104
Dichloroethene [cis-1,2-]	33	1	0.005	[0.005]-0.015	1/33
Ethylbenzene	103	1	0.005	0.003-[0.006]	1/103
Fluoranthene	87	1	0.33	0.24-[0.68]	1/87
Isopropyltoluene [4-]	103	3	0.005	0.004-0.11	3/103
Methyl-2-pentanone [4-]	103	2	0.02	0.005-[0.024]	2/103
Methylene Chloride	103	3	0.005	0.004-0.011	3/103
Phenanthrene	87	1	0.33	0.13-[0.68]	1/87
Pyrene	87	2	0.33	0.15-[0.68]	2/87
Toluene	103	1	0.005	0.003-[0.006]	1/103
Trichloroethene	103	1	0.005	0.003-[0.006]	1/103
Trimethylbenzene [1,2,4-]	103	3	0.005	0.003-0.01	3/103
Trimethylbenzene [1,3,5-]	103	1	0.005	0.003-[0.028]	1/103
Xylene (Total)	103	1	0.005	[0.005]-0.013	1/103

^a Values in square brackets represent non-detected results.^b Value is the ratio of the number of detected values to the number of analyses.

TABLE 2.3.4.3-20 (continued)

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Media Code	Depth (ft)
Butylbenzene [n-]	73-02055	0173-95-0175	0.003	QBT3	20.5-21.5
Carbon Disulfide	73-02055	0173-95-0175	0.005	QBT3	20.5-21.5
Chlordane [alpha-]	73-02428	0173-97-0070	0.0045	QBT3	25.5-26.5
Chlordane [gamma-]	73-02428	0173-97-0070	0.008	QBT3	25.5-26.5
Chloromethane	73-02423	0173-97-0062	0.004 (J)	QBT3	32-33
Chrysene	73-02425	0173-97-0064	0.15 (J)	QBT3	30-31
Dichlorobenzene [1,4-]	73-02066	0173-95-0185	0.009	QBT3	13.5-14.5
Dichloroethene [cis-1,2-]	73-02066	0173-95-0185	0.015	QBT3	13.5-14.5
Ethylbenzene	73-02066	0173-95-0185	0.003 (J)	QBT3	13.5-14.5
Fluoranthene	73-02425	0173-97-0064	0.24 (J)	QBT3	30-31
Isopropyltoluene [4-]	73-02051	0173-95-0171	0.11 (J-)	QBT3	28-29.3
	73-02055	0173-95-0175	0.031 (J-)		20.5-21.5
	73-02056	0173-95-0176	0.004 (J)		55.5-56.5
Methyl-2-pentanone [4-]	73-02051	0173-95-0171	0.005 (J-)	QBT3	28-29.3
	73-02063	0173-95-0181	0.005 (J)		75-76
Methylene Chloride	73-02423	0173-97-0062	0.004 (J)	QBT3	32-33
	73-02424	0173-97-0063	0.004 (J)		36-37
	73-02425	0173-97-0065	0.011		35-36
Phenanthrene	73-02425	0173-97-0064	0.13 (J)	QBT3	30-31
Pyrene	73-02425	0173-97-0064	0.32 (J)	QBT3	30-31
	73-02425	0173-97-0065	0.15 (J)		35-36
Toluene	73-02051	0173-95-0171	0.003 (J-)	QBT3	28-29.3
Trichloroethene	73-02425	0173-97-0064	0.003 (J)	QBT3	30-31
Trimethylbenzene [1,2,4-]	73-02051	0173-95-0171	0.004	QBT3	28-29.3
	73-02055	0173-95-0175	0.003 (J-)		20.5-21.5
	73-02066	0173-95-0185	0.01		13.5-14.5
Trimethylbenzene [1,3,5-]	73-02066	0173-95-0185	0.003 (J)	QBT3	13.5-14.5
Xylene (Total)	73-02066	0173-95-0185	0.013	QBT3	13.5-14.5

* Descriptions of the analytical methods used for the landfill can be found in Appendix C; detection limits can be found in Appendix D.

TABLE 2.3.4.3-21
RESULTS OF ORGANIC DATA REVIEW FOR SUBSURFACE SOIL AND TUFF

Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Acetone	SOIL, QBT2, QBT3	Retained	Analyte was detected in at least one sample result
Benzene	QBT3	Retained	Analyte was detected in at least one sample result
Benzo(a)anthracene	QBT3	Retained	Analyte was detected in at least one sample result
Benzo(a)pyrene	QBT3	Retained	Analyte was detected in at least one sample result
Benzo(b)fluoranthene	QBT3	Retained	Analyte was detected in at least one sample result
Bis(2-ethylhexyl)phthalate	QBT2, QBT3	Retained	Analyte was detected in at least one sample result
Butanone[2-]	QBT3	Retained	Analyte was detected in at least one sample result
Butylbenzene[n-]	QBT3	Retained	Analyte was detected in at least one sample result
Carbon disulfide	QBT3	Retained	Analyte was detected in at least one sample result
Chlordane [alpha-]	QBT3	Retained	Analyte was detected in at least one sample result
Chlordane [gamma-]	QBT3	Retained	Analyte was detected in at least one sample result
Chloromethane	QBT3	Retained	Analyte was detected in at least one sample result
Chrysene	QBT3	Retained	Analyte was detected in at least one sample result
Dichlorobenzene[1,4-]	QBT3	Retained	Analyte was detected in at least one sample result
Dichloroethene[cis-1,2-]	QBT3	Retained	Analyte was detected in at least one sample result
Ethylbenzene	QBT3	Retained	Analyte was detected in at least one sample result
Fluoranthene	QBT3	Retained	Analyte was detected in at least one sample result
Isopropyltoluene[4-]	QBT3	Retained	Analyte was detected in at least one sample result
Methyl-2-pentanone[4-]	QBT3	Retained	Analyte was detected in at least one sample result
Methylene chloride	QBT3	Retained	Analyte was detected in at least one sample result
Phenanthrene	QBT3	Retained	Analyte was detected in at least one sample result
Pyrene	QBT3	Retained	Analyte was detected in at least one sample result
Tetrachloroethene	QBT3	Retained	Analyte was detected in at least one sample result.
Toluene	QBT3	Retained	Analyte was detected in at least one sample result
Trimethylbenzene[1,2,4-]	QBT3	Retained	Analyte was detected in at least one sample result
Trimethylbenzene[1,3,5-]	QBT3	Retained	Analyte was detected in at least one sample result
Xylene (Total)	QBT3	Retained	Analyte was detected in at least one sample result

Figure 2.3.4.3-9. Detected organic chemicals in subsurface samples (western) with maximum concentrations shown by location and depth



Table 2.3.4.3-22 presents the concentration range and frequency of detects for these volatile organic chemicals. A complete presentation of the data may be found in Appendix D. The detected sample results are presented in Table 2.3.4.3-23. Figure 2.3.4.3-11 shows the locations where these detected volatile organic chemicals were found.

In summary, 22 volatile organic chemicals were retained as COPCs. The reason for retaining these chemicals is the positive detection in at least one sample, as presented in Table 2.3.4.3-24.

Soil Gas

Four hundred forty-four samples were analyzed for volatile organics. It is important to note that the analyte suite was broadened from 38 volatiles to 123 volatiles after the first year's data collection. Four other chemicals were reported only five times, which brings the total volatile organic analyte list to 127 chemicals. Of these 127 organic chemicals, 114 organic chemicals were detected in these samples.

The analyses of the soil gas samples were all done using non-routine methods. For these analyses, it was common to have methylene chloride and chloromethane in the method blanks at low levels. When this occurred, if the analytes in the samples were detected at less than five times the level in the blank for chloromethane and ten times for methylene chloride, the quantitation limit was raised to the detected level and the data were qualified U.

There were a number of other QC difficulties with this data set, which are described in detail in Appendix C. The minor QC difficulties included duplicate analysis differences, internal standard differences, and NIST analyte recoveries out of control limits. These problems lead to adding J or UJ qualifiers to selected samples. These minor QC problems affected a total of 43 samples. One sample, 0173-97-0099, had a serious QC problem associated with spiking the sample with QC compounds before analysis; the data for this sample were rejected. Five other samples missed holding times for hydrogen sulfide and were J qualified. Thus, the QC problems affected a small percentage of the overall samples, roughly 10%, and are not viewed to significantly impact the detection of COPCs.

As an initial check on the data, many of the detected analytes were plotted in time series plots to evaluate general time trends and to identify suspect values in these data. During this data evaluation, it was noted that one sample period (June 1996) had exceptionally high concentration values of several petroleum-related volatile organics. Three example time series plots are provided for benzene, butadiene, and isoprene (all in Figure 2.3.4.3-12). No laboratory QC problems were found for these samples, nor were there any documented differences in field sample collection procedures. However, the June 1996 sample period is viewed to be anomalous with regard to sample periods before and after this date. Thus, the June 1996 data was excluded to avoid improperly skewing the results of the soil gas monitoring data.

Table 2.3.4.3-25 presents the concentration range and frequency of detects for these analytes (without June 1996). A complete presentation of the data may be found in Appendix D. The detected sample results are presented in Table 2.3.4.3-26 (without June 1996). It is logistically not possible to map all detected VOCs in soil gas. Vinyl chloride was selected as a typical soil gas constituent. Figures 2.3.4.3-13 and 2.3.4.3-14 show the range of concentrations and total number of samples at each location for vinyl chloride. Because of the large number of detected organics, the correlation in concentrations was also

TABLE 2.3.4.3-22
FREQUENCY OF DETECTED ORGANIC CHEMICALS IN SOIL PORE WATER

Analyte	Media	Number of Samples Analyzed	Number of Detects	EQL (µg/l)	Concentration Range (µg/l) ^a	Frequency of Detects ^a
Acetone	Water	37	26	20	8-17000	26/37
Benzene	Water	37	7	5	2-6	7/37
Butanone[2-]	Water	37	7	20	5.9-1500	7/37
Butylbenzene[tert-]	Water	37	1	5	4.5	1/37
Carbon Disulfide	Water	37	20	5	3.6-83	20/37
Chloromethane	Water	37	2	10	4.2-8.4	2/37
Dichlorobenzene [1,3-]	Water	37	2	5	2-10	2/37
Dichlorobenzene [1,4-]	Water	37	8	5	2-23	8/37
Dichloroethane [1,2-]	Water	37	2	5	4.8-11	2/37
Dichloroethene [cis-1,2-]	Water	32	11	10	7-90	11/32
Dichloroethene [cis/trans-1,2-]	Water	5	2	10	18	2/5
Dichloroethene [trans-1,2-]	Water	32	1	10	21	1/32
Ethylbenzene	Water	37	6	5	6.3-32	6/37
Hexanone[2-]	Water	37	2	20	48-50	2/37
Iodomethane	Water	37	1	5	1	1/37
Isopropyltoluene[4-]	Water	37	3	5	2.8-6	3/37
Methyl-2-pentanone[4-]	Water	37	1	20	44	1/37
Tetrachloroethene	Water	37	1	5	1-[5]	1/37
Toluene	Water	37	4	5	4.7-11	4/37
Trimethylbenzene [1,2,4-]	Water	37	7	5	4.7-15	7/37
Xylene (Total)	Water	37	7	5	15-46	7/37
Xylene[1,2-]	Water	1	1	5	7.9	1/1

* - Values in square brackets represent non-detected results.

^b. Value is the ratio of the number of detected values to the number of analyses.

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TABLE 2.3.4.3-23
DETECTED ORGANIC CHEMICALS IN SOIL PORE WATER^a

Analyte	Location Id	Sample Id	Sample Concentration (ug/l)	Media Code	Depth (ft)
Acetone	73-01004	0173-95-0036	20 (J)	water	34.4
	73-01004	0173-96-0527	23	water	34.4
	73-01005	0173-95-0102	54	water	10.7
	73-01005	0173-96-0063	5 (J)	water	10.7
	73-01005	0173-96-0523	11 (J)	water	10.7
	73-01005	0173-96-0653	7 (J)	water	10.7
	73-01005	AAC4159	22	water	10.7
	73-01007	0173-95-0103	8 (J)	water	55
	73-01007	0173-96-0451	10 (J)	water	55
	73-01007	0173-96-0521	8.2 (J)	water	55
	73-01007	0173-96-0651	8 (J)	water	55
	73-01007	AAC4161	24	water	55
	73-01009	0173-95-0104	5 (J)	water	26
	73-01009	0173-96-0062	4 (J)	water	26
	73-01009	0173-96-0196	6 (J)	water	26
	73-01009	0173-96-0452	4 (J)	water	26
	73-01009	0173-96-0522	8.4 (J)	water	26
	73-01009	0173-96-0652	5 (J)	water	26
	73-01011	AAC4163	45	water	20.2
	73-02426	0173-97-0082	88	water	23.3
	73-02426	0173-97-0083	17000	water	23.3
	73-02426	0173-97-0212	16000	water	23.3
	73-02426	0173-97-0214	6700	water	23.3
	73-02428	0173-97-0211	110	water	28.8
	73-02428	0173-97-0213	730	water	28.8
	73-02429	0173-97-0081	25	water	76
Benzene	73-01004	0173-95-0036	3 (J)	water	34.4
	73-01007	0173-95-0103	5	water	55
	73-01007	0173-96-0451	3 (J)	water	55
	73-01007	0173-96-0524	2 (J)	water	55
	73-01007	AAC4161	6	water	55
	73-02426	0173-97-0082	2.8 (J)	water	23.3
	73-02426	0173-97-0214	5	water	23.3
Butanone[2-]	73-02426	0173-97-0082	8.7 (J)	water	23.3
	73-02426	0173-97-0083	670	water	23.3
	73-02426	0173-97-0212	1000	water	23.3
	73-02426	0173-97-0214	630	water	23.3
	73-02428	0173-97-0211	150	water	28.8
	73-02428	0173-97-0213	1500	water	28.8
	73-02429	0173-97-0081	5.9 (J)	water	76

TABLE 2.3.4.3-23 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (ug/l)	Media Code	Depth (ft)
Butylbenzene[tert-]	73-02428	0173-97-0361	4.5	water	28.8
Carbon Disulfide	73-01004	0173-95-0036	9	water	34.4
	73-01004	0173-96-0527	21	water	34.4
	73-01005	0173-95-0102	6	water	10.7
	73-01005	0173-96-0063	3 (J)	water	10.7
	73-01005	0173-96-0653	6	water	10.7
	73-01007	0173-95-0103	23	water	55
	73-01007	0173-96-0524	5.5	water	55
	73-01007	0173-96-0651	8	water	55
	73-01007	AAC4161	10	water	55
	73-01009	0173-95-0040	4 (J)	water	26
	73-01009	0173-95-0104	3 (J)	water	26
	73-01009	0173-96-0062	3 (J)	water	26
	73-01009	0173-96-0525	2 (J)	water	26
	73-01009	AAC4162	5	water	26
	73-02426	0173-97-0082	5.8	water	23.3
	73-02426	0173-97-0212	78	water	23.3
	73-02426	0173-97-0214	83	water	23.3
	73-02428	0173-97-0211	6	water	28.8
	73-02428	0173-97-0213	20	water	28.8
	73-02428	0173-97-0361	3.5	water	28.8
Chloromethane	73-02426	0173-97-0082	8.4 (J)	water	23.3
	73-02429	0173-97-0081	4.2 (J)	water	76
Dichlorobenzene [1,3-]	73-01007	0173-96-0651	2 (J)	water	55
	73-02428	0173-97-0211	10	water	28.8
Dichlorobenzene [1,4-]	73-01007	0173-96-0524	2 (J)	water	55
	73-01007	0173-96-0651	2 (J)	water	55
	73-02426	0173-97-0082	8.1	water	23.3
	73-02426	0173-97-0083	9	water	23.3
	73-02426	0173-97-0212	15	water	23.3
	73-02426	0173-97-0214	23	water	23.3
	73-02428	0173-97-0213	11	water	28.8
	73-02428	0173-97-0361	9	water	28.8
	73-02429	0173-97-0081	4.8 (J)	water	76

TABLE 2.3.4.3-23 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (ug/l)	Media Code	Depth (ft)
Dichloroethene [cis-1,2-]	73-01004	0173-95-0036	7	water	34.4
	73-01004	0173-96-0527	11	water	34.4
	73-01007	0173-95-0103	20	water	55
	73-01007	0173-96-0451	21	water	55
	73-01007	0173-96-0521	18	water	55
	73-01007	0173-96-0524	25	water	55
	73-01007	0173-96-0651	40	water	55
	73-02426	0173-97-0082	57	water	23.3
	73-02426	0173-97-0083	50	water	23.3
	73-02426	0173-97-0212	74	water	23.3
	73-02426	0173-97-0214	90	water	23.3
Dichloroethene [cis/trans-1,2-]	73-01007	AAC4161	18	water	55
	73-01011	AAC4163	27	water	20.2
Dichloroethene [trans-1,2-]	73-01007	0173-96-0451	21	water	55
Ethylbenzene	73-02426	0173-97-0082	12	water	23.3
	73-02426	0173-97-0212	21	water	23.3
	73-02426	0173-97-0214	32	water	23.3
	73-02428	0173-97-0211	9	water	28.8
	73-02428	0173-97-0213	12	water	28.8
	73-02428	0173-97-0361	6.3	water	28.8
Hexanone[2-]	73-02426	0173-97-0212	48	water	23.3
	73-02426	0173-97-0214	50	water	23.3
Iodomethane	73-01004	0173-96-0527	1 (J)	water	34.4
Isopropyltoluene[4-]	73-02426	0173-97-0082	2.8 (J)	water	23.3
	73-02428	0173-97-0213	6	water	28.8
	73-02428	0173-97-0361	3.3	water	28.8
Methyl-2-pentanone[4-]	73-02428	0173-97-0213	44	water	28.8
Tetrachloroethene	73-01005	0173-96-0526	1 (J)	water	10.7
Toluene	73-01005	0173-96-0526	1 (J)	water	10.7
	73-02428	0173-97-0211	7	water	28.8
	73-02428	0173-97-0213	11	water	28.8
	73-02428	0173-97-0361	4.7	water	28.8

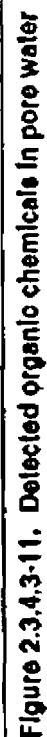
TABLE 2.3.4.3-23 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
Trimethylbenzene [1,2,4-]	73-02426	0173-97-0082	4.7 (J)	water	23.3
	73-02426	0173-97-0083	6	water	23.3
	73-02426	0173-97-0212	11	water	23.3
	73-02426	0173-97-0214	15	water	23.3
	73-02428	0173-97-0211	10	water	28.8
	73-02428	0173-97-0213	12	water	28.8
	73-02428	0173-97-0361	7.8	water	28.8
Xylene (Total)	73-02426	0173-97-0082	15	water	23.3
	73-02426	0173-97-0083	15	water	23.3
	73-02426	0173-97-0212	34	water	23.3
	73-02426	0173-97-0214	46	water	23.3
	73-02428	0173-97-0211	29	water	28.8
	73-02428	0173-97-0213	39	water	28.8
	73-02428	0173-97-0361	18.7	water	28.8
Xylene[1,2-]	73-02426	0173-97-0082	7.9	water	23.3

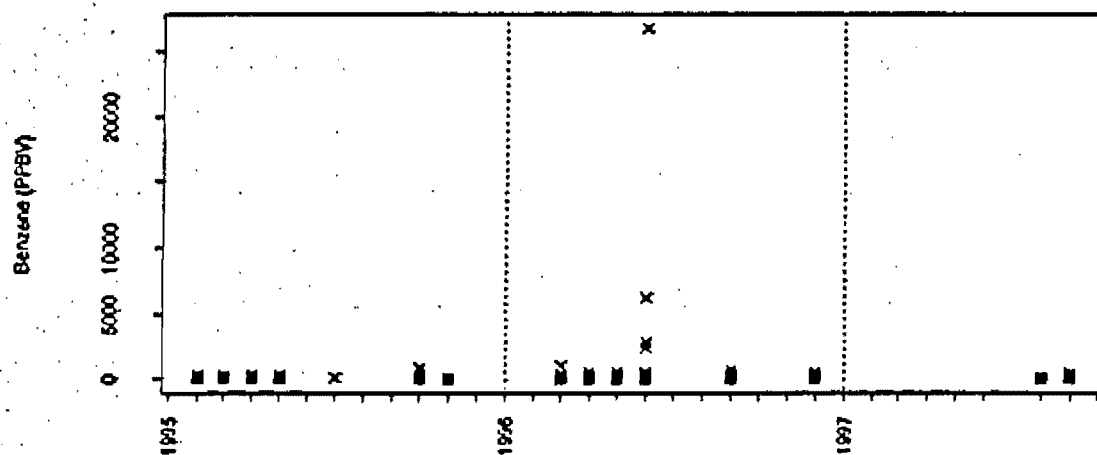
* Descriptions of the analytical methods used for the Landfill can be found in Appendix G; detection limits can be found in Appendix D.

TABLE 2.3.4.3-24
RESULTS OF ORGANIC DATA REVIEW FOR PORE WATER

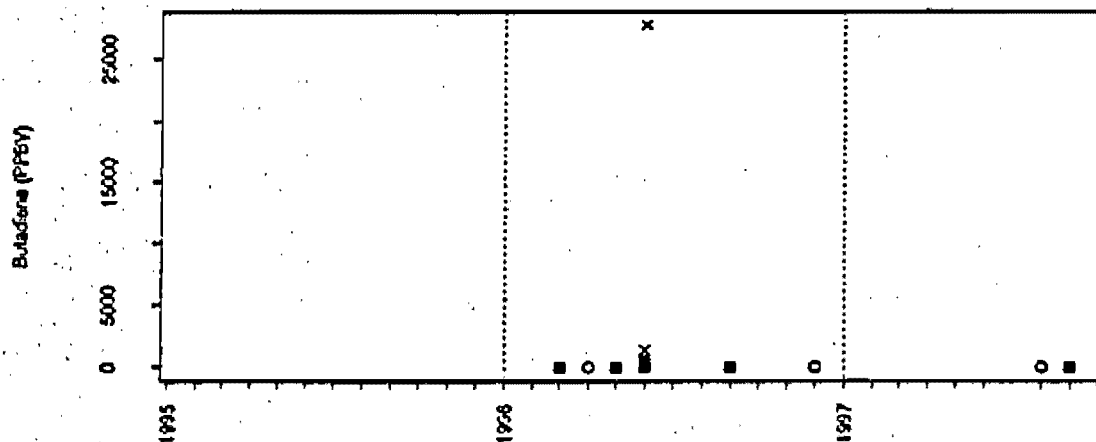
Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Acetone	water	Retained	Analyte was detected in at least one sample result
Benzene	water	Retained	Analyte was detected in at least one sample result
Butanone[2-]	water	Retained	Analyte was detected in at least one sample result
Butylbenzene[tert-]	water	Retained	Analyte was detected in at least one sample result
Carbon disulfide	water	Retained	Analyte was detected in at least one sample result
Chloromethane	water	Retained	Analyte was detected in at least one sample result
Dichlorobenzene[1,3-]	water	Retained	Analyte was detected in at least one sample result
Dichlorobenzene[1,4-]	water	Retained	Analyte was detected in at least one sample result
Dichloroethane[1,2-]	water	Retained	Analyte was detected in at least one sample result
Dichloroethene[cis-1,2-]	water	Retained	Analyte was detected in at least one sample result
Dichloroethene[cis/trans-1,2-]	water	Retained	Analyte was detected in at least one sample result
Dichloroethene[trans-1,2-]	water	Retained	Analyte was detected in at least one sample result
Ethylbenzene	water	Retained	Analyte was detected in at least one sample result
Hexanone[2-]	water	Retained	Analyte was detected in at least one sample result
Iodomethane	water	Retained	Analyte was detected in at least one sample result
Isopropyltoluene[4-]	water	Retained	Analyte was detected in at least one sample result
Methyl-2-pentanone[4-]	water	Retained	Analyte was detected in at least one sample result
Tetrachloroethene	Water	Retained	Analyte was detected in at least one sample result
Trimethylbenzene[1,2,4-]	water	Retained	Analyte was detected in at least one sample result
Toluene	water	Retained	Analyte was detected in at least one sample result
Xylene (Total)	water	Retained	Analyte was detected in at least one sample result
Xylene[1,2-]	water	Retained	Analyte was detected in at least one sample result



a. Time series plot for benzene



b. Time series plot for butadiene



c. Time series plot for isoprene

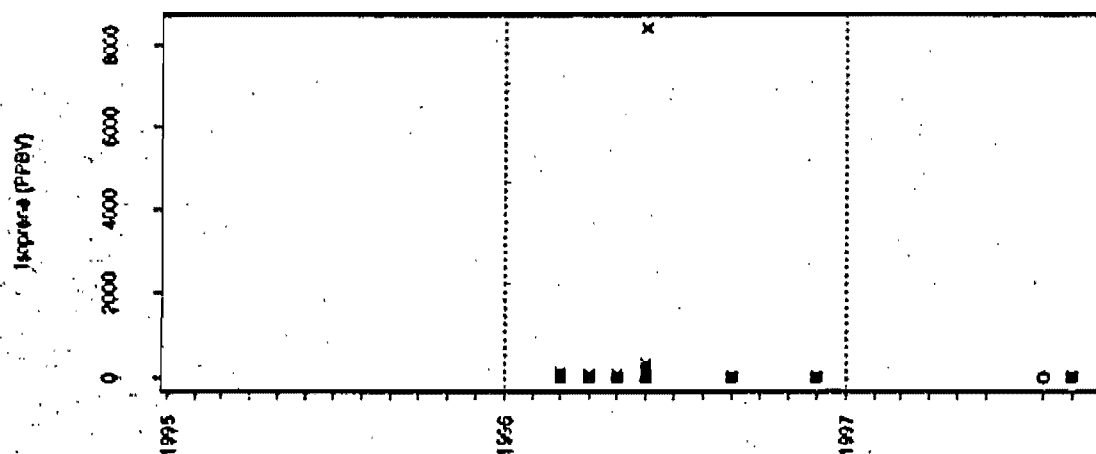


Figure 23.43-12 (a, b, c). Time series plots for benzene, butadiene, and isoprene

TABLE 2.3.4.3-25
FREQUENCY OF DETECTED ORGANIC CHEMICALS IN SOIL GAS

Analyte	Media	Number of Samples Analyzed	Number of Detects	Concentration Range (PPBV, unless otherwise indicated)*	Ratio of Detects to Number of Analyses*
Acetone	Soil gas	234	76	2 - 12100	76/234
Acetonitrile	Soil gas	168	6	[2] - 225	6/168
Acetophenone	Soil gas	168	4	[2] - 832	4/168
Acrolein	Soil gas	168	1	[2] - [100]	1/168
Acrylonitrile	Soil gas	168	4	[2] - [100]	4/168
Benzene	Soil gas	395	218	[1] - 986	218/395
Benzonitrile	Soil gas	234	6	[2] - 201	6/234
Benzyl Chloride	Soil gas	395	21	[1] - 125	21/395
Bromodichloromethane	Soil gas	234	8	1 - 65	8/234
Bromoform	Soil gas	168	0	[1] - [10]	0/168
Bromomethane	Soil gas	395	1	1 - [62.5]	1/395
Butadiene[1,3-]	Soil gas	234	17	[1] - [55]	17/234
Butane[n-]	Soil gas	234	158	1 - 2380	158/234
Butanol[1-]	Soil gas	234	8	2 - 479	8/234
Butanone[2-]	Soil gas	234	32	[2] - 38300	32/234
Butene[1-]	Soil gas	234	146	1 - 2680	146/234
Butene[cis-2-]	Soil gas	234	110	1 - 83.8	110/234
Butene[trans-2-]	Soil gas	234	107	1 - 893	107/234
Carbon Disulfide	Soil gas	234	4	0 - 201	4/234
Carbon Tetrachloride	Soil gas	395	6	1 - [62.5]	6/395
Chloro-1,3-butadiene[2-]	Soil gas	168	0	[1] - [10]	0/168
Chloro-1-propene[3-]	Soil gas	167	0	[1] - [10]	0/167
Chlorobenzene	Soil gas	395	125	1 - 1180	125/395
Chlorodibromomethane	Soil gas	168	0	[1] - [10]	0/168
Chlorodifluoromethane	Soil gas	395	295	1 - 33100	295/395
Chloroethane	Soil gas	395	169	1 - 212	169/395
Chloroform	Soil gas	395	53	1 - 246	53/395
Chloromethane	Soil gas	395	145	[1] - 974	145/395
Cyclohexane	Soil gas	234	141	1 - 1490	141/234
Cyclohexanone	Soil gas	234	10	[2] - 2500	10/234
Cyclopentane	Soil gas	168	38	1 - 49.4	38/168
Cyclopentene	Soil gas	168	4	1 - [10]	4/168

TABLE 2.3.43-25 (continued)

Analyte	Media	Number of Samples Analyzed	Number of Detects	Concentration Range (PPBV, unless otherwise indicated) ^a	Ratio of Detects to Number of Analyses ^b
Dibromoethane[1,2-]	Soil gas	395	17	1 - 69.6	17/395
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	Soil gas	395	295	1 - 493	295/395
Dichlorobenzene[1,2-]	Soil gas	395	20	[1] - 65	20/395
Dichlorobenzene[1,3-]	Soil gas	395	5	1 - [63]	5/395
Dichlorobenzene[1,4-]	Soil gas	395	182	1 - 6150	182/395
Dichlorodifluoromethane	Soil gas	395	371	1 - 7950	371/395
Dichloroethane[1,1-]	Soil gas	395	43	1 - 101	43/395
Dichloroethane[1,2-]	Soil gas	395	66	[1] - 110	66/395
Dichloroethene[1,1-]	Soil gas	395	141	1 - 251	141/395
Dichloroethene[cis-1,2-]	Soil gas	395	233	1 - 36000	233/395
Dichloroethene[trans-1,2-]	Soil gas	393	170	1 - 622	170/393
Dichloropropane[1,2-]	Soil gas	394	51	1 - [62.5]	51/394
Dichloropropene[cis-1,3-]	Soil gas	395	1	1 - [62.5]	1/395
Dichloropropene[trans-1,3-]	Soil gas	393	1	[1] - [62.5]	1/393
Diethyl Ether	Soil gas	234	52	[2] - 587	52/234
Dimethyl Disulfide	Soil gas	5	1	[0.5] - 0.73 ^c	1/5
Dimethyl Sulfide	Soil gas	5	1	[3] - 3.2 ^c	1/5
Dimethylbutane[2,2-]	Soil gas	234	124	1 - 130	124/234
Dimethylbutane[2,3-]	Soil gas	234	115	1 - 550	115/234
Dimethylpentane[2,3-]	Soil gas	234	117	[1] - 395	117/234
Dioxane[1,4-]	Soil gas	168	0	[2] - [100]	0/168
Ethanol	Soil gas	234	21	[1] - 2640	21/234
Ethyl Acrylate	Soil gas	168	5	[2] - [100]	5/168
Ethyl tert-Butyl Ether	Soil gas	168	0	[2] - [100]	0/168
Ethylbenzene	Soil gas	395	144	1 - 5280	144/395
Heptane	Soil gas	234	135	1 - 6610	135/234
Hexachlorobutadiene	Soil gas	395	0	[1] - [62]	0/395
Hexane	Soil gas	234	138	1 - 4070	138/234
Hexanone[2-]	Soil gas	234	7	[2] - 338	7/234
Hexene[cis-3-]	Soil gas	234	62	1 - 31.6	62/234
Hexene[trans-2-]	Soil gas	168	10	[1] - 14	10/168
Hydrogen Sulfide	Soil gas	5	0	[1] - [1] ^c	0/5

TABLE 2.3.4.3-25 (continued)

Analyte	Media	Number of Samples Analyzed	Number of Detects	Concentration Range (PPBV, unless otherwise indicated)*	Ratio of Detects to Number of Analyses*
Isobutane	Soil gas	233	201	1 - 36300	201/233
Isooctane	Soil gas	233	105	1 - 766	105/233
Isopentane	Soil gas	234	141	1 - 327	141/234
Isoprene	Soil gas	234	41	1 - 150	41/234
Isopropylbenzene	Soil gas	233	84	1 - 577	84/233
Methacrylonitrile	Soil gas	168	0	[2] - [100]	0/168
Methanol	Soil gas	233	62	[2] - 10900	62/233
Methyl Mercaptan	Soil gas	5	0	[50] - [50] ^c	0/5
Methyl Methacrylate	Soil gas	168	1	[2] - [100]	1/168
Methyl tert-Butyl Ether	Soil gas	168	0	[2] - [100]	0/168
Methyl-1-butene[3-]	Soil gas	234	133	1 - 195	133/234
Methyl-1-pentene[2-]	Soil gas	234	89	1 - 52.8	89/234
Methyl-1-pentene[4-]	Soil gas	168	19	1 - 51.7	19/168
Methyl-2-butene[2-]	Soil gas	234	125	1 - 134	125/234
Methyl-2-pentanone[4-]	Soil gas	234	16	[2] - 3880	16/234
Methylcyclohexane	Soil gas	233	138	1 - 8310	138/233
Methylcyclopentane	Soil gas	234	135	1 - 1950	135/234
Methylene Chloride	Soil gas	395	156	1 - 1820	156/395
Methylheptane[2-]	Soil gas	234	128	1 - 3710	128/234
Methylheptane[3-]	Soil gas	234	129	1 - 4130	129/234
Methylhexane[2-]	Soil gas	233	77	1 - 69.2	77/233
Methylhexane[3-]	Soil gas	234	135	1 - 802	135/234
Methylpentane[2-]	Soil gas	234	137	1 - 913	137/234
Methylpentane[3-]	Soil gas	234	138	1 - 1320	138/234
Methylstyrene[alpha-]	Soil gas	234	14	[1] - 33.2	14/234
Nitrobenzene	Soil gas	167	5	[2] - 153	5/167
Nitropropane[2-]	Soil gas	234	14	[0.5] - 3940	14/234
Nonane[1-]	Soil gas	232	144	1 - 18600	144/232
Octane[n-]	Soil gas	234	131	1 - 5280	131/234
Pentane	Soil gas	233	138	1 - 522	138/233
Pentene[1-]	Soil gas	234	123	1 - 582	123/234
Pentene[cis-2-]	Soil gas	234	65	1 - 128	65/234
Pentene[trans-2-]	Soil gas	234	73	1 - 67.6	73/234

TABLE 2.3.4.3-25 (continued)

Analyte	Media	Number of Samples Analyzed	Number of Detects	Concentration Range (PPBV, unless otherwise indicated) ^a	Ratio of Detects to Number of Analyses ^b
Pinene[alpha-]	Soil gas	233	135	1 - 3300	135/233
Pinene[beta-]	Soil gas	233	110	1 - 22300	110/233
Propanol[2-]	Soil gas	234	9	[2] - 1310	9/234
Propionitrile	Soil gas	168	0	[2] - [100]	0/168
Propylbenzene[1-]	Soil gas	233	72	1 - 906	72/233
Propylene	Soil gas	234	183	1 - 3600	183/234
Styrene	Soil gas	395	67	1 - 346	67/395
Tetrachloroethane[1,1,2,2-]	Soil gas	394	13	[1] - [62]	13/394
Tetrachloroethene	Soil gas	395	314	1 - 14700	314/395
Tetrahydrofuran	Soil gas	233	33	[2] - 1590	33/233
Toluene	Soil gas	395	169	1 - 15700	169/395
Trichloro-1,2,2-trifluoroethane[1,1,2-]	Soil gas	395	20	1 - 172	20/395
Trichlorobenzene[1,2,4-]	Soil gas	395	48	[1] - 124	48/395
Trichloroethane[1,1,1-]	Soil gas	395	51	1 - 119	51/395
Trichloroethane[1,1,2-]	Soil gas	395	2	[1] - [62]	2/395
Trichloroethene	Soil gas	395	217	1 - 587	217/395
Trichlorofluoromethane	Soil gas	395	155	1 - 9670	155/395
Trimethylbenzene[1,2,4-]	Soil gas	395	202	1 - 2900	202/395
Trimethylbenzene[1,3,5-]	Soil gas	395	148	1 - 973	148/395
Trimethylpentane[2,3,4-]	Soil gas	234	117	1 - 1720	117/234
Vinyl Acetate	Soil gas	234	19	[2] - 331	19/234
Vinyl Chloride	Soil gas	395	201	1 - 1990	201/395
Xylene (Total)	Soil gas	64	24	[1] - 2329	24/64
Xylene[1,2-]	Soil gas	331	114	1 - 2960	114/331
Xylene[1,3-]	Soil gas	207	115	1 - 9250	115/207
Xylene[1,3-]+Xylene[1,4-]	Soil gas	123	52	[1] - 5170	52/123

^a Values in square brackets represent non-detected results.

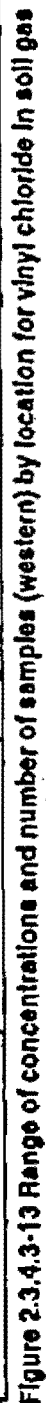
^b Value is the ratio of the number of detected values exceeding the BV to the number of analyses.

^c Units in PPM

TABLE 2.3.4.3-26

DETECTED ORGANIC CHEMICALS IN SOIL GAS

Due to extreme length, this table is included at the end of this report as Attachment 1.



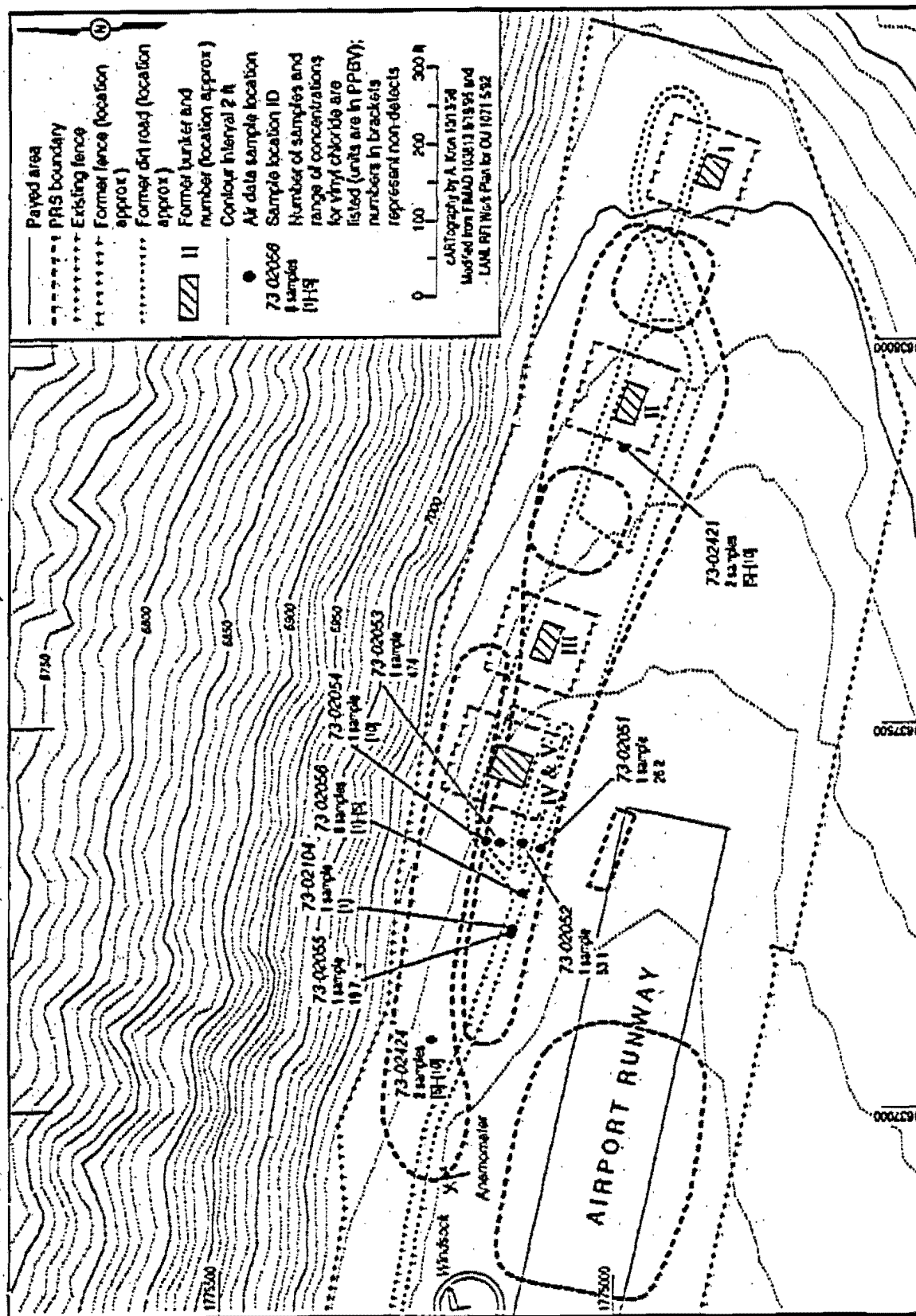


Figure 2.3.4.3-14 Range of concentrations and number of samples (eastern) by location for vinyl chloride in soil gas.

evaluated. Appendix E presents the Spearman rank correlation of some selected organics. This analysis shows a high correlation in concentration between these analytes. This correlation analysis will be discussed in more detail in section 2.3.5 Nature and Extent of Contamination.

In summary, 114 organic chemicals were retained as COPCs. The reason for retaining these chemicals is the positive detection in at least one sample, as presented in Table 2.3.4.3-27.

2.3.4.3 (d) Other Supporting Data

Major Gases in Soil Gas

The concentrations of methane, carbon dioxide, oxygen, nitrogen, and hydrogen have been determined during multiple sampling events on soil gas samples collected from the permanent soil gas monitor wells. During the first four sampling events (2/95 through 5/95), both laboratory and field analyses were performed. Laboratory testing included analysis of methane, carbon dioxide, oxygen, nitrogen, and hydrogen via gas chromatography. Field testing of soil gas included analysis of methane, carbon dioxide, and oxygen using a Landtec GA-90 multi-gas monitor, as described in greater detail in Section 2.3.4.2.

Table 2.3.4.3-28 compares the field results for deep soil gas samples with those reported by the laboratory. The concentrations of carbon dioxide, methane, and oxygen reported by the laboratory for the SUMMA canister samples agree quite well with those determined in the field using the portable multi-gas monitor, and are generally within $\pm 1\%$ by volume. Following four sampling events, it was apparent that the field and laboratory datasets were comparable, and that the field results were of sufficiently high quality to determine the extent of landfill gas within and adjacent to the landfill. Therefore, laboratory testing of major gas concentrations was discontinued beginning in June 1995 as a cost saving measure. Because the field dataset is much larger, and to ensure consistency among the results, the field results for major gas concentrations in soil vapor will be used in subsequent discussions of the nature and extent of landfill gas migration.

Boring Logs

A total of 19 soil borings were drilled at the main landfill area [73-001(a)] to depths ranging between 40 and 186 feet bgs, and 6 soil borings were drilled within 73-001(d) to depths ranging between 7 and 40 feet bgs as part of the Subsurface Sampling program. The boring logs present the subsurface lithology (or refuse materials) encountered during borehole drilling and additional observations made during drilling (e.g., presence of free water, odors, staining, sample intervals, etc.). Individual boring logs are presented in Attachment 4. The 11 LP-series (landfill perimeter) and LPS-series (landfill perimeter slanted-hole) boring logs are from the perimeter drilling program conducted during October and November, 1994. The eight LI-series (landfill interior) and six DDA-series (debris disposal area) logs are from the interior drilling program which was conducted during June and July, 1997. Both of these investigations were conducted in support of Task 3 (Subsurface Sampling), Activity 1 (Gas Monitoring Wells), Activity 2 (Coring at the main landfill), and Activity 3 (Coring at the Waste Oil Pit and Debris Disposal Areas) of the RFI work plan.

TABLE 2.3.4.3-27
RESULTS OF ORGANIC DATA REVIEW FOR SOIL GAS

Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Acetone	Soil gas	Retained	Analyte was detected in at least one sample result
Acetonitrile	Soil gas	Retained	Analyte was detected in at least one sample result
Acetophenone	Soil gas	Retained	Analyte was detected in at least one sample result
Acrolein	Soil gas	Retained	Analyte was detected in at least one sample result
Acrylonitrile	Soil gas	Retained	Analyte was detected in at least one sample result
Benzene	Soil gas	Retained	Analyte was detected in at least one sample result
Benzonitrile	Soil gas	Retained	Analyte was detected in at least one sample result
Benzyl Chloride	Soil gas	Retained	Analyte was detected in at least one sample result
Bromodichloromethane	Soil gas	Retained	Analyte was detected in at least one sample result
Bromomethane	Soil gas	Retained	Analyte was detected in at least one sample result
Butadiene[1,3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Butane[n-]	Soil gas	Retained	Analyte was detected in at least one sample result
Butanol[1-]	Soil gas	Retained	Analyte was detected in at least one sample result
Butanone[2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Butene[1-]	Soil gas	Retained	Analyte was detected in at least one sample result
Butene[cis-2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Butene[trans-2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Carbon Dioxide	Soil gas	Retained	Analyte was detected in at least one sample result
Carbon Disulfide	Soil gas	Retained	Analyte was detected in at least one sample result
Carbon Tetrachloride	Soil gas	Retained	Analyte was detected in at least one sample result
Chlorobenzene	Soil gas	Retained	Analyte was detected in at least one sample result
Chlorodifluoromethane	Soil gas	Retained	Analyte was detected in at least one sample result
Chloroethane	Soil gas	Retained	Analyte was detected in at least one sample result
Chloroform	Soil gas	Retained	Analyte was detected in at least one sample result
Chloromethane	Soil gas	Retained	Analyte was detected in at least one sample result
Cyclohexane	Soil gas	Retained	Analyte was detected in at least one sample result
Cyclohexanone	Soil gas	Retained	Analyte was detected in at least one sample result
Cyclopentane	Soil gas	Retained	Analyte was detected in at least one sample result
Cyclopentene	Soil gas	Retained	Analyte was detected in at least one sample result
Dibromoethane[1,2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichlorobenzene[1,2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichlorobenzene[1,3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichlorobenzene[1,4-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichloroethane[1,1-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichloroethane[1,2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichloroethene[1,1-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichloroethene[cis-1,2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichloroethene[trans-1,2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichloropropane[1,2-]	Soil gas	Retained	Analyte was detected in at least one sample result

TABLE 2.3.4.3-27 (continued)

Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Dichloropropene[cis-1,3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dichloropropene[trans-1,3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Diethyl Ether	Soil gas	Retained	Analyte was detected in at least one sample result
Dimethyl Disulfide	Soil gas	Retained	Analyte was detected in at least one sample result
Dimethyl Sulfide	Soil gas	Retained	Analyte was detected in at least one sample result
Dimethylbutane[2,2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dimethylbutane[2,3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Dimethylpentane[2,3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Ethanol	Soil gas	Retained	Analyte was detected in at least one sample result
Ethyl Acrylate	Soil gas	Retained	Analyte was detected in at least one sample result
Ethylbenzene	Soil gas	Retained	Analyte was detected in at least one sample result
Heptane	Soil gas	Retained	Analyte was detected in at least one sample result
Hexane	Soil gas	Retained	Analyte was detected in at least one sample result
Hexanone[2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Hexene[cis-3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Hexene[trans-2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Isobutane	Soil gas	Retained	Analyte was detected in at least one sample result
Isooctane	Soil gas	Retained	Analyte was detected in at least one sample result.
Isopentane	Soil gas	Retained	Analyte was detected in at least one sample result
Isoprene	Soil gas	Retained	Analyte was detected in at least one sample result
Isopropylbenzene	Soil gas	Retained	Analyte was detected in at least one sample result
Methane	Soil gas	Retained	Analyte was detected in at least one sample result
Methanol	Soil gas	Retained	Analyte was detected in at least one sample result
Methyl Methacrylate	Soil gas	Retained	Analyte was detected in at least one sample result
Methyl-1-butene[3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methyl-1-pentene[2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methyl-1-pentene[4-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methyl-2-butene[2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methyl-2-pentanone[4-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methylcyclohexane	Soil gas	Retained	Analyte was detected in at least one sample result
Methylcyclopentane	Soil gas	Retained	Analyte was detected in at least one sample result
Methylene Chloride	Soil gas	Retained	Analyte was detected in at least one sample result
Methylheptane[2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methylheptane[3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methylhexane[2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methylhexane[3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methylpentane[2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methylpentane[3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Methylstyrene[alpha-]	Soil gas	Retained	Analyte was detected in at least one sample result
Nitrobenzene	Soil gas	Retained	Analyte was detected in at least one sample result
Nitrogen, Molecular	Soil gas	Retained	Analyte was detected in at least one sample result

TABLE 2.3.4.3-27 (continued)

Analyte	Media	Result	Rationale for Retaining or Eliminating as a COPC
Nitropropane[2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Nonane[1-]	Soil gas	Retained	Analyte was detected in at least one sample result
Octane[n-]	Soil gas	Retained	Analyte was detected in at least one sample result
Oxygen, Molecular	Soil gas	Retained	Analyte was detected in at least one sample result
Pentane	Soil gas	Retained	Analyte was detected in at least one sample result
Pentene[1-]	Soil gas	Retained	Analyte was detected in at least one sample result
Pentene(cis-2-)	Soil gas	Retained	Analyte was detected in at least one sample result.
Pentene(trans-2-)	Soil gas	Retained	Analyte was detected in at least one sample result
Pinene(alpha-)	Soil gas	Retained	Analyte was detected in at least one sample result
Pinene(beta-)	Soil gas	Retained	Analyte was detected in at least one sample result
Propanol[2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Propylbenzene[1-]	Soil gas	Retained	Analyte was detected in at least one sample result
Propylene	Soil gas	Retained	Analyte was detected in at least one sample result
Styrene	Soil gas	Retained	Analyte was detected in at least one sample result
Tetrachloroethane[1,1,2,2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Tetrachloroethene	Soil gas	Retained	Analyte was detected in at least one sample result
Tetrahydrofuran	Soil gas	Retained	Analyte was detected in at least one sample result
Toluene	Soil gas	Retained	Analyte was detected in at least one sample result
Trichloro-1,2,2-trifluoroethane[1,1,2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Trichlorobenzene[1,2,4-]	Soil gas	Retained	Analyte was detected in at least one sample result
Trichloroethane[1,1,1-]	Soil gas	Retained	Analyte was detected in at least one sample result
Trichloroethane[1,1,2-]	Soil gas	Retained	Analyte was detected in at least one sample result
Trichloroethene	Soil gas	Retained	Analyte was detected in at least one sample result
Trichlorofluoromethane	Soil gas	Retained	Analyte was detected in at least one sample result
Trimethylbenzene[1,2,4-]	Soil gas	Retained	Analyte was detected in at least one sample result
Trimethylbenzene[1,3,5-]	Soil gas	Retained	Analyte was detected in at least one sample result
Trimethylpentane[2,3,4-]	Soil gas	Retained	Analyte was detected in at least one sample result
Vinyl Acetate	Soil gas	Retained	Analyte was detected in at least one sample result
Vinyl Chloride	Soil gas	Retained	Analyte was detected in at least one sample result
Xylene (Total)	Soil gas	Retained	Analyte was detected in at least one sample result
Xylene[1,2-]	Soil gas	Retained	Analyte was detected in at least one sample result.
Xylene[1,3-]	Soil gas	Retained	Analyte was detected in at least one sample result
Xylene[1,3-] +Xylene[1,4-]	Soil gas	Retained	Analyte was detected in at least one sample result

TABLE 2.3.4.3-28

COMPARISON OF FIELD- AND LABORATORY-MEASURED CONCENTRATIONS OF MAJOR GASES IN SOIL VAPOR

Monitor Well	Soil Gas Port	Depth (ft)	Sample Date	Concentration (% vol)							
				Methane (CH ₄) (Volume %)		Carbon Dioxide (CO ₂) (Volume %)		Oxygen (O ₂) (Volume %)		Nitrogen (N ₂) (Volume %)	Hydrogen (H ₂) (Volume %)
				Field ^a	Laboratory ^b	Field ^a	Laboratory ^b	Field ^a	Laboratory ^b	Laboratory ^b	Laboratory ^b
LP-1	GP1	40.2	02/21/95	0.0	<0.200	1.1	1.57	20.5	21.5	80.4	<0.100
			03/27/95	0.0	<0.100	1.5	1.43	20.4	20.3	75.8	<0.100
			04/25/95	0.0	<0.100	1.8	1.32	20.0	20.3	74.3	NM
			05/23/95	0.0	<0.100	1.8	<0.100	19.2	19.9	72.6	<0.100
	GP2	10.2	02/21/95	0.1	<0.200	1.7	2.14	20.1	20.8	80.8	<0.100
			03/27/95	0.0	<0.100	1.8	2.07	20.6	19.6	75.4	<0.100
			04/25/95	0.0	<0.100	2.3	2.00	19.7	19.7	73.7	NM
			05/23/95	0.1	<0.100	2.4	2.06	18.8	19.0	71.4	<0.100
LP-2	GP1	36	02/21/95	0.0	<0.200	4.9	6.94	14.9	16.7	84.2	<0.100
			03/27/95	0.0	<0.100	4.9	6.13	15.2	14.8	75.2	<0.100
			04/25/95	0.1	<0.100	5.4	5.95	14.5	14.5	72.3	NM
			05/23/95	0.0	<0.100	5.8	5.84	14.0	14.4	71.4	<0.100
LP-3	GP1	99.2	02/22/95	2.0	3.16	16.9	20.1	3.2	2.16	72.8	<0.100
			03/29/95	2.5	2.72	21.0	19.0	1.8	1.19	75.1	<0.100
			04/26/95	1.9	2.24	17.6	18.6	0.6	0.847	73.2	NM
			05/23/95	3.0	3.18	20.7	18.7	0.0	0.508	71.1	<0.100
	GP2	91.2	02/22/95	2.4	3.34	17.9	19.5	1.7	0.807	73.3	<0.100
			03/29/95	3.7	3.81	19.8	19.5	2.7	1.15	74.8	<0.100
	GP2	91.2	04/25/95	2.9	4.10	18.7	23.0	0.2	<0.150	82.8	NM
			05/23/95	3.6	3.63	20.3	18.9	0.0	0.727	70.9	<0.100

TABLE 2.3,4.3-28 (continued)

Monitor Well	Soil Gas Port	Depth (ft)	Sample Date	Concentration (% vol)							
				Methane (CH ₄) (Volume %)		Carbon Dioxide (CO ₂) (Volume %)		Oxygen (O ₂) (Volume %)		Nitrogen (N ₂) (Volume %)	Hydrogen (H ₂) (Volume %)
				Field ^a	Laboratory ^b	Field ^a	Laboratory ^b	Field ^a	Laboratory ^b	Laboratory ^a	Laboratory ^b
LP-3 (cont.)	GP3	39.2	02/22/95	12.9	10.9	24.9	21.4	0.6	1.88	66.8	<0.100
			03/29/95	13.6	12.2	27.1	24.3	0.6	1.01	62.3	<0.100
			04/25/95	10.8	11.9	22.9	23.7	0.2	<0.100	59.1	NM
			05/23/95	11.4	9.72	25.6	20.5	0.0	1.50	70.3	<0.100
	GP4	9.2	02/22/95	20.0	21.0	28.7	26.7	0.7	1.44	57.1	<0.100
			03/29/95	20.7	19.5	29.0	26.7	0.2	0.886	52.0	<0.100
			04/25/95	16.4	19.0	26.0	26.6	0.2	<0.100	50.9	NM
			05/23/95	18.8	17.5	29.6	25.9	0.0	0.964	52.1	<0.100
LP-4	GP1	99.35	02/22/95	7.0	6.92	22.3	21.3	0.6	0.996	74.2	<0.100
			03/28/95	6.9	5.99	21.9	19.8	0.6	1.08	68.2	<0.100
			04/25/95	3.2	6.72	16.4	21.5	1.4	<0.100	70.3	NM
			05/24/95	6.8	5.74	22.6	19.7	0.1	0.815	68.4	<0.100
	GP2	75.35	02/22/95	8.8	8.30	22.7	21.4	0.6	1.76	65.8	<0.100
			03/28/95	8.6	8.15	23.2	21.5	0.6	1.17	66.2	<0.100
			04/25/95	7.9	8.57	23.5	22.5	0.0	<0.100	68.1	NM
			05/24/95	8.8	7.90	23.6	20.7	0.1	1.04	66.5	<0.100
	GP3	46.35	02/22/95	16.6	16.8	27.2	26.5	0.6	1.58	61.6	<0.100
			03/28/95	11.6 ^c	10.8 ^c	18.5 ^c	17.5 ^c	6.0 ^c	5.94 ^c	61.2 ^c	<0.100 ^c
			04/25/95	15.4	15.3	25.7	25.1	0.0	<0.100	59.4	NM
			05/24/95	13.9	12.9	25.7	22.2	0.1	1.10	59.8	<0.100

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TABLE 2.3.4.3-28 (continued)

Monitor Well	Soil Gas Port	Depth (ft)	Sample Date	Concentration (% vol)							
				Methane (CH ₄) (Volume %)		Carbon Dioxide (CO ₂) (Volume %)		Oxygen (O ₂) (Volume %)		Nitrogen (N ₂) (Volume %)	Hydrogen (H ₂) (Volume %)
				Field ^a	Laboratory ^b	Field ^a	Laboratory ^b	Field ^a	Laboratory ^b	Laboratory ^b	Laboratory ^b
LP-7 (cont.)	GP3	18	02/23/95	17.0	16.0	31.4	26.6	0.8	1.43	56.2	<0.100
			03/29/95	14.9	14.8	27.9	27.7	0.7	0.932	54.3	<0.100
			04/26/95	18.6	18.0	28.5	28.5	0.0	0.846	51.2	NM
			05/24/95	22.9	20.1	36.2	29.4	0.2	0.686	46.2	<0.100
LP-8	GP1	91.5	02/23/95	0.1	<0.100	0.4	9.25	20.4	10.2	83.3	<0.100
			03/27/95	0.0	<0.100	0.4	<0.100	20.9	21.0	77.0	<0.100
			04/26/95	0.0	<0.100	0.4	<0.100	21.1	21.5	76.1	NM
			05/24/95	0.0	<0.100	0.6	0.609	20.3	20.7	75.5	<0.100
	GP2	43.5	02/23/95	0.1	<0.100	1.5	0.564	19.8	19.5	76.5	<0.100
			03/27/95	0.0	<0.100	1.1	<0.100	20.1	20.7	75.9	<0.100
			04/26/95	0.0	<0.100	1.2	<0.100	19.4	20.7	75.2	NM
			05/24/95	0.0	<0.100	1.4	<0.100	19.8	19.8	74.6	<0.100
	GP3	15.5	02/23/95	0.1	<0.100	1.4	1.55	19.6	18.6	76.3	<0.100
			03/27/95	0.0	<0.100	1.3	1.29	19.7	20.0	75.6	<0.100
			04/26/95	0.0	<0.100	1.6	1.49	19.2	20.9	77.3	NM
			05/24/95	0.0	<0.100	3.7	3.76	17.1	17.4	75.2	<0.100
LP-9	GP1	41	02/22/95	0.0	<0.100	13.5	14.8	7.6	10.3	76.4	<0.100
			03/28/95	0.0	<0.100	13.0	13.8	7.9	8.40	76.3	<0.100
			04/26/95	0.0	<0.100	13.0	13.6	7.6	8.71	75.5	NM
			05/24/95	0.0	<0.100	13.0	11.7	7.9	9.39	72.4	<0.100

TABLE 2.3.4.3-28 (continued)

Monitor Well	Soil Gas Port	Depth (ft)	Sample Date	Concentration (% vol)							
				Methane (CH ₄) (Volume %)		Carbon Dioxide (CO ₂) (Volume %)		Oxygen (O ₂) (Volume %)		Nitrogen (N ₂) (Volume %)	Hydrogen (H ₂) (Volume %)
				Field ^a	Laboratory ^b	Field ^a	Laboratory ^b	Field ^a	Laboratory ^b	Laboratory ^b	Laboratory ^b
LP-9 (cont.)	GP2	11.15	02/22/95	0.0	<0.100	11.9	10.1	6.6	1.22	88.2	<0.100
			03/28/95	0.0	<0.100	13.0	12.9	7.2	7.40	78.9	<0.100
			04/26/95	0.0	<0.100	11.9	12.4	6.5	7.32	74.4	NM
			05/24/95	0.0	<0.100	12.5	13.8	6.8	8.71	75.5	<0.100
LPS-1	GP1	145	02/23/95	0.0	0.165	5.6	7.33	14.2	2.32	79.1	<0.100
			03/27/95	0.0	<0.100	5.8	6.81	13.2	13.0	75.9	<0.100
			04/26/95	0.3	<0.100	6.0	6.76	13.6	13.6	75.2	NM
			05/24/95	0.0	<0.100	6.0	6.32	13.4	13.9	74.7	<0.100
	GP2	114	02/23/95	0.0	<0.100	4.9	6.67	15.8	16.6	85.8	<0.100
			03/27/95	0.0	<0.100	4.8	5.72	14.7	15.1	77.2	<0.100
	GP2	114	04/26/95	0.3	<0.100	4.9	5.37	15.8	15.8	75.9	NM
			05/24/95	0.0	<0.100	4.9	4.89	15.5	15.8	75.0	<0.100
	GP3	61	02/23/95	0.0	<0.100	2.4	3.09	18.2	8.53	76.3	<0.100
			03/27/95	0.0	<0.100	2.7	2.83	17.3	18.3	76.3	<0.100
			04/26/95	0.0	<0.100	2.7	2.53	18.9	18.7	75.5	NM
			05/24/95	0.0	<0.100	3.1	2.87	17.6	17.6	73.9	<0.100
	GP4	22	02/23/95	0.0	<0.100	8.1	10.00	11.6	0.494	75.4	<0.100
			03/27/95	0.0	<0.100	8.3	11.1	11.0	9.35	74.7	<0.100
			04/26/95	0.0	<0.100	9.3	10.8	10.4	10.7	75.6	NM
			05/24/95	0.0	<0.100	14.1	14.2	5.3	6.17	74.8	NM

TABLE 2.3.4.3-28 (continued)

Monitor Well	Soil Gas Port	Depth (ft)	Sample Date	Concentration (% vol)							
				Methane (CH ₄) (Volume %)		Carbon Dioxide (CO ₂) (Volume %)		Oxygen (O ₂) (Volume %)		Nitrogen (N ₂) (Volume %)	Hydrogen (H ₂) (Volume %)
				Field ^a	Laboratory ^b	Field ^a	Laboratory ^b	Field ^a	Laboratory ^b	Laboratory ^b	Laboratory ^b
LPS-1 (cont.)	GP5	7.5	02/23/95	0.0	<0.100	6.8	10.00	13.0	6.51	74.0	<0.100
			03/27/95	0.0	<0.100	5.9	9.55	13.6	11.6	77.0	<0.100
			04/28/95	0.0	<0.100	7.4	8.69	12.8	12.9	75.0	NM
			05/24/95	0.0	<0.100	10.5	10.8	9.1	10.4	76.0	<0.100
LPS-2	GP1	178	02/22/95	4.1	4.35	17.8	19.4	2.6	3.03	80.6	<0.100
			03/29/95	4.3	4.07	19.4	18.1	1.5	2.57	74.6	<0.100
			04/25/95	3.2	4.10	16.6	18.1	1.4	2.69	72.9	NM
			05/23/95	3.8	3.84	18.4	17.4	0.5	1.67	71.0	<0.100
	GP2	125	02/22/95	8.8	8.49	21.7	22.5	0.6	0.133	74.3	<0.100
			03/29/95	8.6	7.51	23.7	20.4	0.0	1.15	67.2	<0.100
			04/25/95	6.7	7.33	20.2	19.5	0.1	2.65	68.3	NM
			05/23/95	7.0	6.46	19.3	17.8	1.2	3.50	67.0	<0.100
	GP3	87	02/22/95	15.8	13.9	26.2	22.5	0.6	1.51	58.2	<0.100
			03/29/95	10.3	9.52 ^c	16.5 ^c	15.6 ^c	7.9 ^c	7.43 ^c	64.1 ^c	<0.100 ^c
			04/25/95	12.4	14.5	22.8	23.9	0.0	0.455	60.1	NM
			05/23/95	14.6	13.3	24.7	22.1	0.0	0.678	58.2	<0.100
	GP4	29	02/22/95	27.0	24.1	30.8	26.2	0.6	1.09	44.1	<0.100
			03/29/95	25.8	24.7	28.6	27.4	0.3	0.783	45.1	<0.100
			04/25/95	21.6	25.4	27.1	27.9	0.0	0.454	46.4	NM
			05/23/95	25.8	23.6	29.2	26.5	0.0	0.159	44.2	<0.100

^aSoil gas composition determined in the field during purging using Landtec GA-90 multi gas monitor. ^bSoil gas composition reported by ESE-Gainesville for SUMMA canister samples analyzed by GC-TCD Method 133 (Lodge, 1989). ^cAir leak occurred during sampling; values not representative of subsurface conditions NM = Not measured CONC_MGT5.DOC

CPT Logs

A total of 48 cone penetrometer tests were conducted within the interior of the main landfill and four tests within the debris disposal area in October 1995. The penetration depths of the cone penetrometer ranged between 1.0 feet (CP-3B and CP-21A) and 88.7 feet (CP-13C). The CPT locations are shown in Figure 2.3.4.2-17. The CPT process produces a small diameter (nominal 2-in.) hole solely by penetration without drilling. Since no samples or cuttings were produced, lithology logs were not prepared for the CP-series holes. Instead, hard copies of the sounding data output files produced by Tonto Environmental Drilling Co. during the CPT program are provided in Appendix D-3.1. These data include measurements of tip resistance, sidewall friction, and pore pressure made during rod penetration at each CPT site. Also included are soil type interpretations produced by a proprietary algorithm which interprets the CPT data for representative soil properties. These interpreted soil types may not accurately depict the encountered lithologies, since confirmation of downhole lithology by visual observation was precluded by the nature of the CPT process.

Well Completion Logs

A total of 23 vadose zone monitor wells were installed in boreholes and CP holes at the main landfill and three monitor wells were installed within the debris disposal area as part of the subsurface sampling program. The well completion logs present details on the individual well constructions, including instrumentation types and depths of emplacement, backfill materials, and subsurface lithology encountered (not shown on CP wells). Individual well completion logs and details of well construction backfill materials are presented in Appendix D-3.1. The wells were installed in support of Task 3 (subsurface sampling), Activity 1 (gas monitoring wells).

Soil Gas Pressure Monitoring Results

Continuous soil gas pressure monitoring began on March 2, 1995, at monitor well LP-8. On March 17, monitor wells LPS-2, LP-4, and LP-7 were also connected to data acquisition units. Continuous monitoring was conducted between March and August 1995, and between April and May 1996. During various periods of the monitoring program several of the data acquisition units experienced problems related to condensation accumulating in the datalogger enclosures. Graphical and tabular presentations of pressure data collected from three gas ports at each of the four wells are presented in Appendix D-3.5. Soil gas pressure data collected during the routine monitoring program are not presented in this appendix due to their limited usefulness in interpreting subsurface pressure responses created by atmospheric pressure fluctuations. This results from the lack of atmospheric pressure data collected prior to the individual monitoring events. The continuous monitoring data allows for simultaneous measurements of barometric pressure and soil gas pressures for extended periods of time. These data allow for more thorough evaluation of subsurface soil gas pressure fluctuations.

Figure 2.3.4.3-15 shows pressure responses at three soil gas ports in monitor well LP-4. The downhole pressure responses are in phase with each other but lag behind atmospheric pressure changes. Nevertheless, all three gas ports appear to be in good communication with the atmosphere. The maximum pressure differential recorded is ~ 3 cm water, and the common fluctuations range between ± 1.5 cm. The

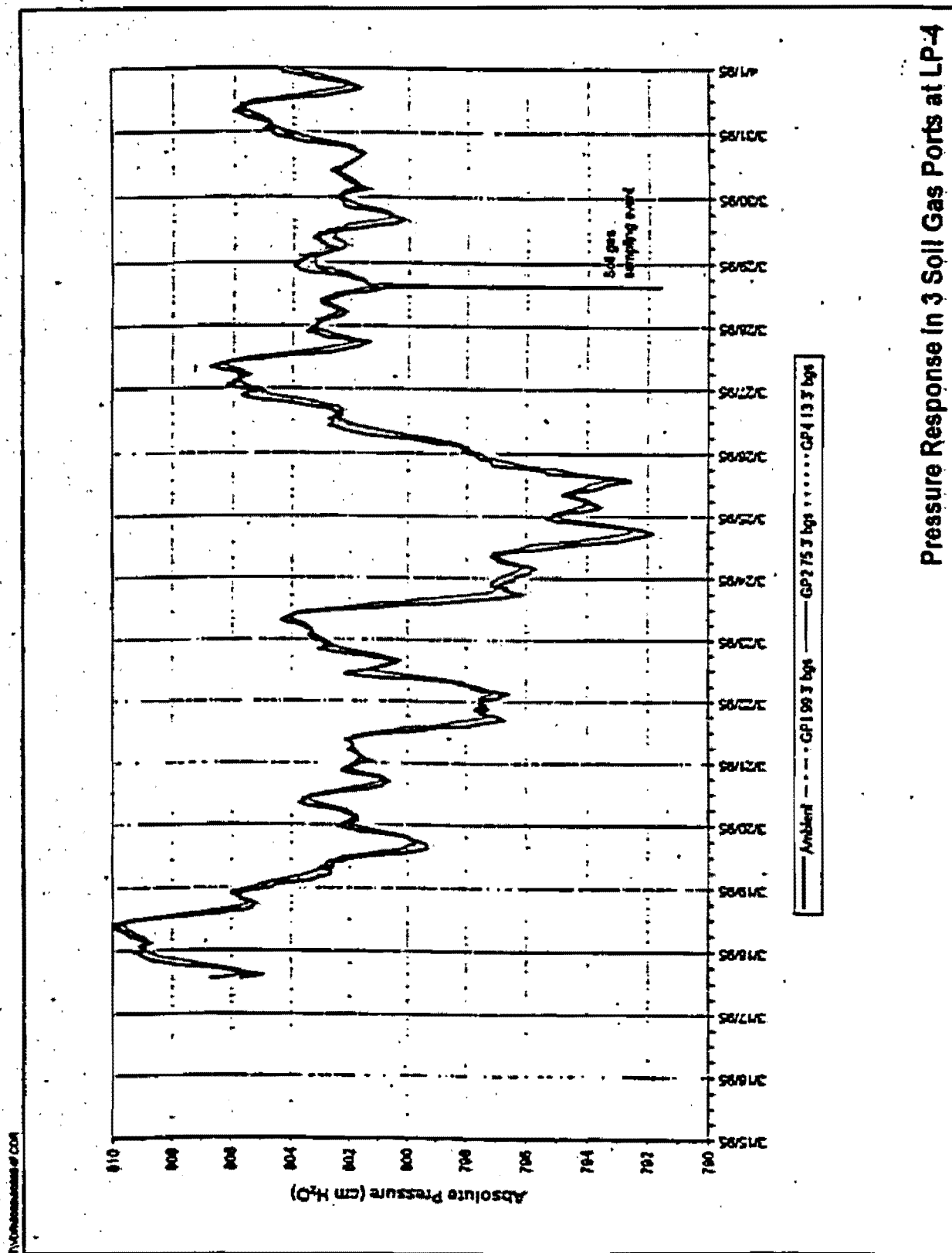


Figure 2.3.4.3-15

large variation from atmospheric pressure at GP2 on March 28, is due to the coincidence of a pressure data collection interval with the monthly gas sampling.

Gas pressure monitoring at the three soil gas ports in monitor well LP-7 shows virtually no pressure attenuation or lag from atmospheric pressure with depth (Figure 2.3.4.3-16). All three gas ports appear to be in excellent communication with the surface and/or with Pueblo Canyon. With the exceptions of the vacuum anomaly produced by gas sampling on March 29, no pressure differentials (ambient vs. soil gas port) greater than 1 cm water have been recorded. After soil gas sampling of the three ports in March, a persistent, relatively low pressure was noted in the monitored ports. Upon further inspection and after changing the data acquisition system to eliminate possible hardware problems, the low pressure measured appears to be the result of water accumulation within the stainless steel gas port tubing. Soil gas sampling has apparently allowed water to build up in the tubing, probably by condensation, thereby yielding an apparent vacuum equal to the length of water in the tube. While future sampling may induce the same problem, the effect on the continuous pressure monitoring data is insignificant.

As at LP-7, gas pressure measurements at monitor well LP-8 show virtually no pressure attenuation or lag (Figure 2.3.4.3-17). All of the gas ports are in good communication with the atmosphere. Pressure differentials between soil gas and the atmosphere are usually in the range of 0.2 cm water, although a few have been recorded as high as 0.8 cm.

Figure 2.3.4.3-18 shows pressure responses at three soil gas ports in monitor well LPS-2. This monitor well shows the largest pressure differentials recorded to date. Gas port GP1, at a depth of 178 ft, shows the greatest attenuation and lag from atmospheric pressure. The maximum differential recorded was over 10 cm of water. Commonly, the differential recorded at GP1 is in the range of 4 cm. The other shallower ports, GP2 and GP4, show a roughly 2-cm differential and track each other very closely. All three ports are out of phase with the atmosphere, and GP1 is out of phase with GP2 and GP4 as well. GP3 has not been monitored continuously to date.

In conclusion, the results of the continuous monitoring of soil gas pressures suggest that barometric pressure fluctuations propagate with only slight attenuation through the vadose zone to a depth of at least 160 feet below surface.

Neutron Logging Results

Periodic neutron logging was conducted between January 1995 and April 1997 in 11 vadose zone monitor wells installed during the perimeter drilling program (LP-1 through LP-9, LPS-1 and LPS-2). Also, limited periodic neutron logging was conducted between August and October, 1997 in 4 vadose zone monitor wells installed during the interior drilling program (LI-1, LI-6, DDA-1, and DDA-3). A Campbell Pacific Nuclear (CPN) Model 503DR Hydroprobe (50 mCi americium 241/beryllium source) was used to monitor subsurface moisture content at different depths in each well.

Neutron logging data provide an indication of whether the geologic materials surrounding the boreholes are losing water, gaining water, or are in a steady-state condition. (i.e. losses are balanced by gains). However, these data alone cannot provide specific information regarding the direction of water movement. Matrix potential data are necessary to predict the direction of flow.

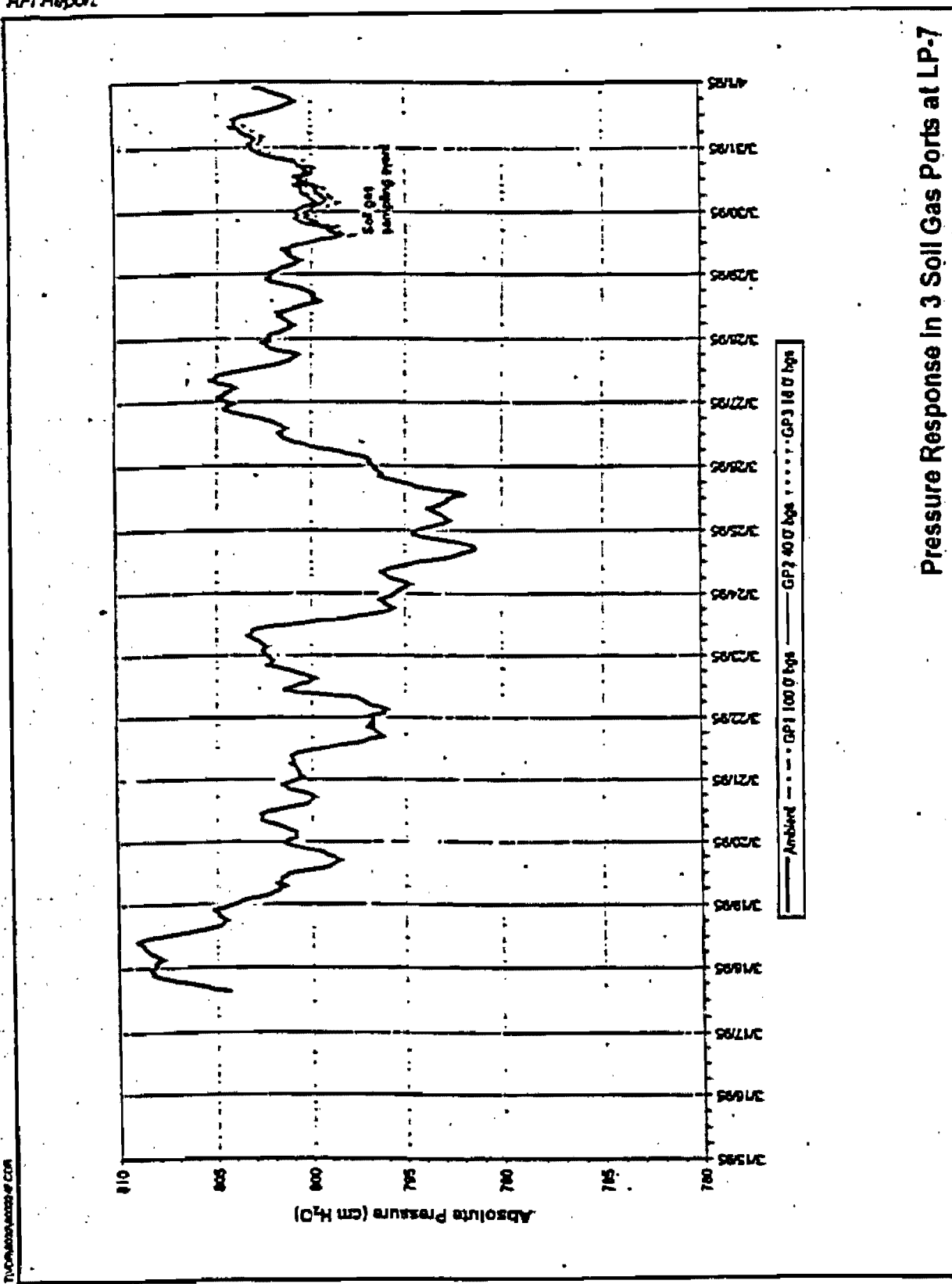


Figure 2.3.4.3-16

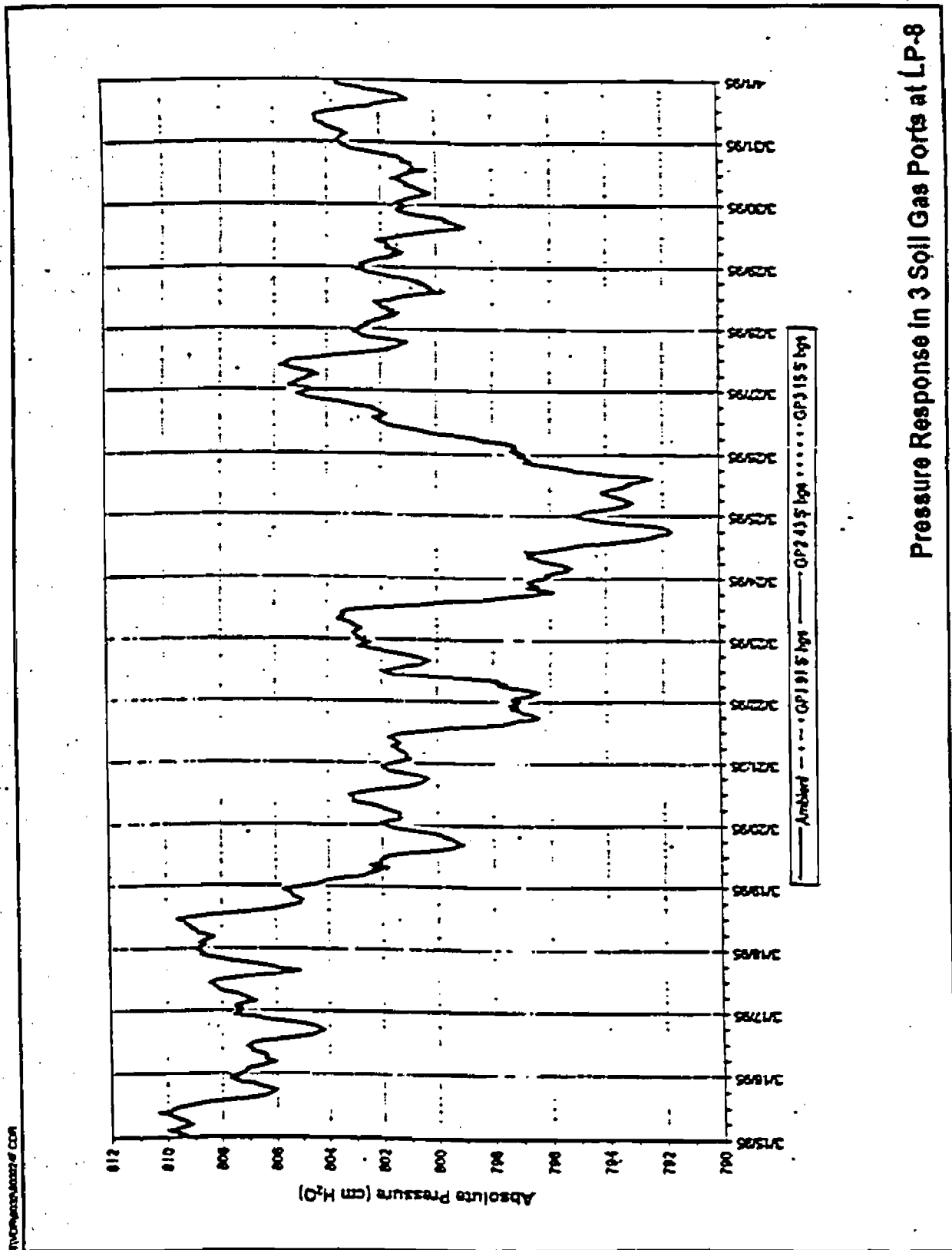
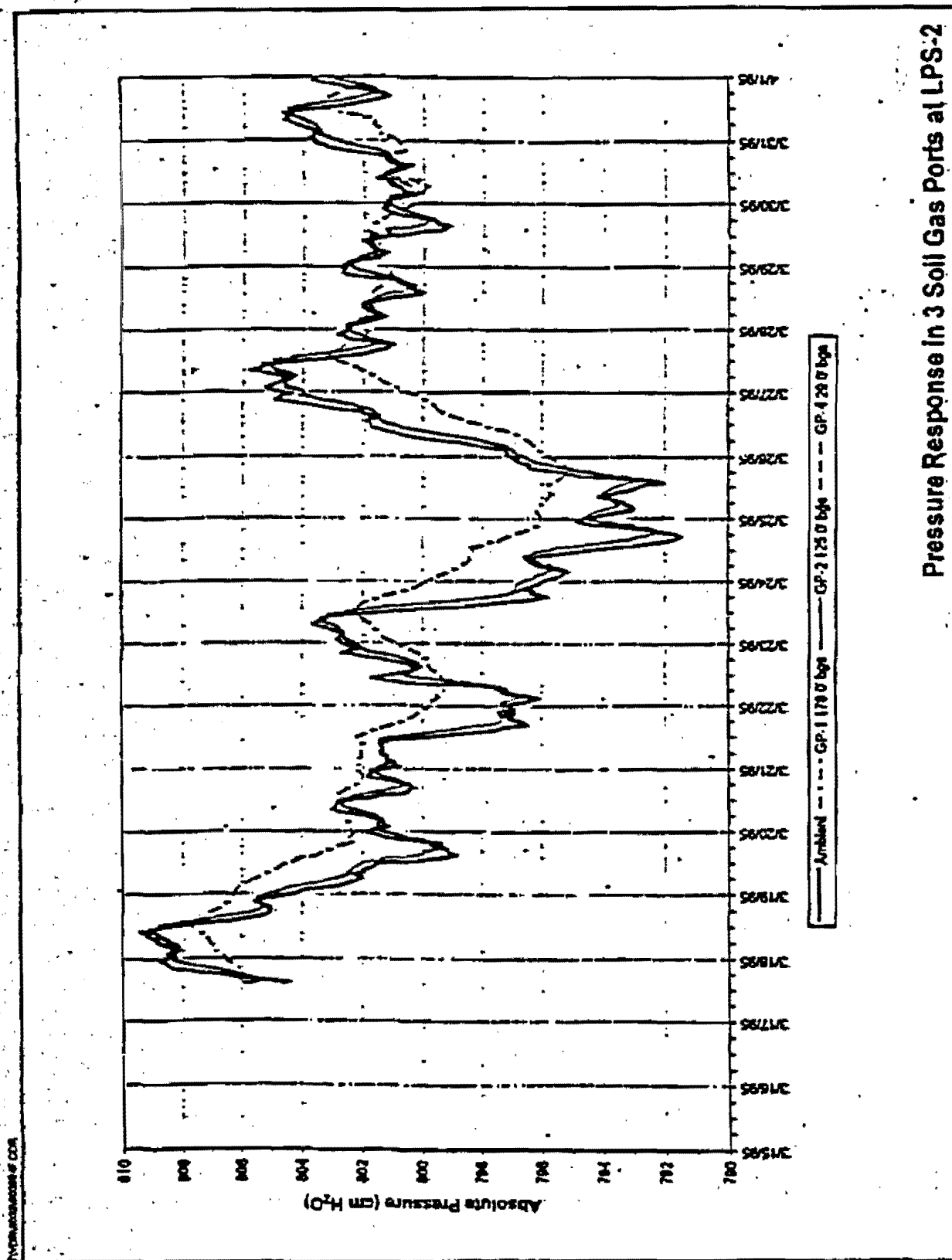


Figure 2.3.4.3-17



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Figure 2.3.4.3-18

The output, or count ratio, from the neutron moisture meter is generally linearly related to moisture content. This relationship must be determined for site-specific conditions by performing a linear regression of moisture contents of core samples (i.e., the dependent variable) versus count ratios (i.e., the independent variable) measured at depths corresponding to the core sample depths. The resulting calibration curve is dependent on a number of borehole-, backfill-, casing-, and formation-specific factors and therefore must be determined separately for different borehole, backfill, casing, and formation types.

Calibration curves were developed for the sieved-tuff- and silica-sand-backfilled intervals in each of the 11 vadose zone wells installed during the landfill perimeter soil boring program. The calibration curves were produced by correlating gravimetric moisture content values determined for core samples from these intervals with neutron probe count ratios at corresponding intervals determined during the initial logging event. Plots of moisture contents vs count ratios for the sieved-tuff- and silica-sand-backfilled intervals with superimposed graphs of the regression curves are presented in Figures 2.3.4.3-19 and 2.3.4.3-20, respectively. The linear coefficients (slope and y-intercept) of the regression equations are also noted in each figure. The coefficients of determination (r^2) for the straight line calibration curves are 0.6372 for the sieved tuff backfill and 0.5075 for the silica sand backfill. This result is not surprising given the limited moisture retention response of the silica sand backfill (10-20 mesh) over the range of measured matric potentials. In effect, the silica sand will remain relatively dry unless the surrounding tuff/refuse approaches saturation. Thus, count ratio measurements in the silica sand backfill intervals are relatively insensitive to changes in the moisture content of the surrounding native tuff and/or refuse.

The utility of each of the linear regression equations was checked by conducting zero slope tests and calculating confidence intervals on the slopes of each equation. In both cases, the zero slope tests suggested that measured count ratios contribute information to the prediction of gravimetric moisture content at the 97.5% significance level. However, calculated confidence intervals of $\pm 15\%$ for the silica-sand backfill slope and $\pm 12\%$ for the sieved-tuff backfill slope reflect the significant uncertainty of predicted gravimetric moisture content for both equations.

While there is considerable uncertainty associated with the accuracy of each field calibration, the calibration curves are repeatable. This indicates that the precision of the instrument and the measurement method is high. Therefore, the neutron logging data are useful for monitoring relative changes in formation moisture content of the sieved tuff backfill intervals over long periods of time, even though actual determinations of moisture content using the developed calibration curves have a high degree of uncertainty.

The measured neutron count ratio data are provided in electronic format as Excel 4.0 spreadsheet workbook files in Appendix D-3.2. Separate files for the landfill perimeter and landfill interior (plus debris disposal area) wells include the measured count ratios and corresponding depths below ground surface. Also included are separate files in which the changes in count ratios between observations have been determined for each set of wells. Because of the degree of uncertainty for the developed calibration curves, no attempt was made to predict absolute soil moisture contents from these data.

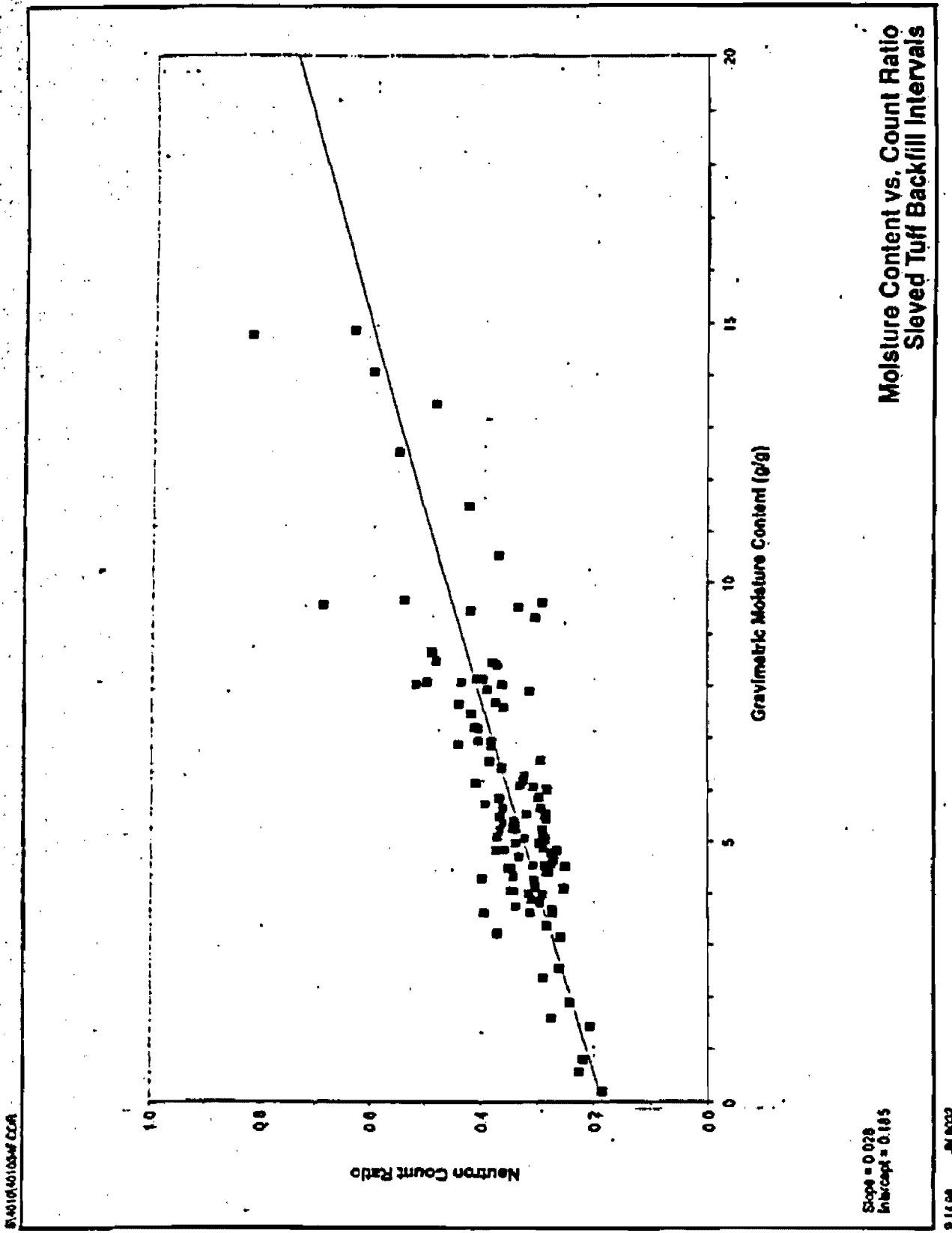


Figure 2.3.4.3-19

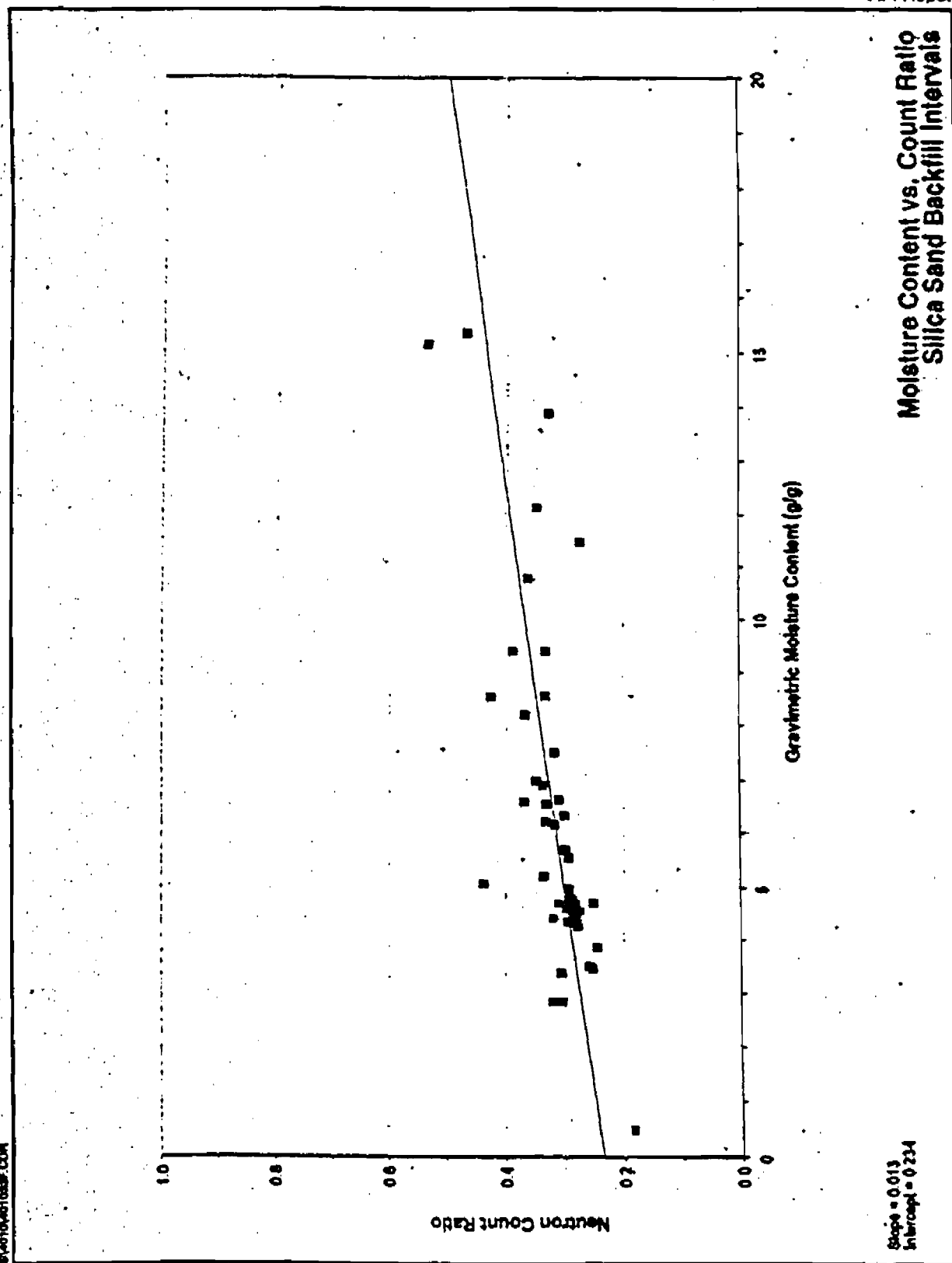


Figure 2.3.4.3-20

HDS Monitoring Results

Appendix D-3.3 contains graphs of data from all HDSs emplaced at the TA73 landfill. Also plotted are precipitation data collected at the TA-53 weather station for the same time period. This was done to identify matric potential changes at depth in response to precipitation events. In order to smooth the data, precipitation is presented as a 30-day moving average. It should be noted that during calibration we found that potentials wetter than approximately 0.33 bar produced anomalous readings that were not representative of the surrounding conditions. Such values indicate "wet" soil but accuracy and precision are lost in this range. This "noise" in the wet range should be taken into account while analyzing HDS data.

In general, the perimeter LP borehole sensors show wetting and drying sequences that suggest transient movement of water in the perimeter area of the landfill. Monitor wells LP-5 and LP-9 seem to remain wetter than other perimeter wells, and show less variation in matric potential. Three of the five CP sensors indicate wet conditions with matric potentials consistently wetter than 0.5 bar tension. CP-7D and CP-10A have much more pronounced wetting and drying cycles with some indications of a lag between precipitation cycles and response of the probe. LI boreholes are also in the wet range with matric potentials generally wetter than 0.5 bar. The exception occurs at well LI-4 which again shows pronounced wetting and drying cycles with a lag between precipitation cycles and probe response. DDA-1 shows the apparent lag between precipitation events and probe response. DDA-3 may have a damaged probe or an installation problem of poor contact with the backfill material. More data are needed to determine if the probe is working properly.

The variability of matric potential through time suggests that transient downward vertical moisture movement is occurring within the refuse, and in the tuff around the perimeter. More frequent data would be needed to determine true response time of each probe after precipitation events. Some variability may be due to a number of factors including transient moisture movement and field measurement error. Currently, stormwater runoff controls are under construction which will greatly reduce the amount of moisture moving through the landfill by changing the existing drainage scheme of the airport property.

The HDS data are provided in electronic format as an Excel 4.0 spreadsheet workbook file in Appendix D. The file containing these data is named HDST4.XLS. This file contains several individual worksheets, which include the raw collected HDS data, the determined matric potentials, time-series graphs of matric potential, and combined soil temperature data from both the HDSs and thermocouples. The individual worksheet names along with brief descriptions of their contents and time intervals of data collection are provided in Table D-3.3.

Downhole Temperature Monitoring Results

Figure 2.3.4.3-21 contains graphical temperature data of a typical thermocouple set being monitored in LPS-1. Except for LP-1, LP-5 and perhaps LP-6, temperatures measured in all monitor wells are significantly greater than expected given the site mean average annual temperature (approximately 10°C) and geothermal gradient (approximately 0.03°C/m).

RFI Report

Downhole Temperatures LPS-1

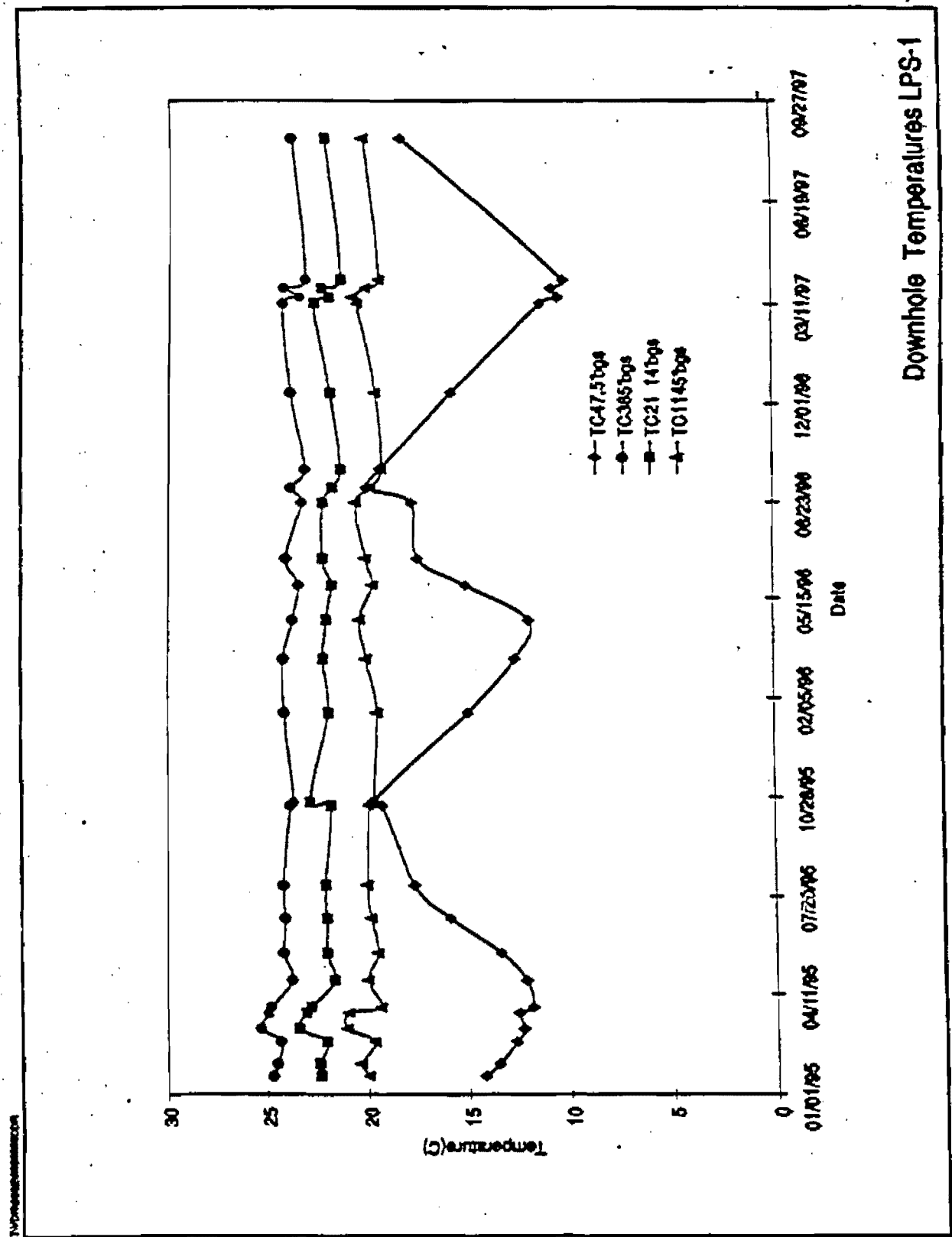


Figure 2.3.4.3-21

Figure 2.3.4.3-21 shows temperatures at different depths below surface. Large vertical temperature gradients exist in several of the wells, presumably as a result of subsurface heat generation via exothermic oxidation of biogenic methane. Temperatures measured at shallow depths respond to seasonal changes in air temperature. As depth increases, the amplitude of the seasonal changes is damped, and for depths greater than approximately 20 feet bgs, subsurface temperatures appear to be relatively constant over the period of monitoring. Temperatures over 55 °C have been measured consistently in wells CP-1 and LI-1 at depths of 75 feet bgs. The lowest temperature recorded to date was approximately 10°C in several wells at monitoring points with depths less than 12 feet bgs. The downhole temperature data are provided in electronic format as an Excel 4.0 spreadsheet workbook file in Appendix D-3.3. As mentioned above, the file containing these data is named HDST4.XLS and is contained on a disk. The individual worksheet names along with brief descriptions of their contents and time intervals of data collection are provided in Table D-3.3.

Investigation of Potential Landfill Gas Emission to Pueblo Canyon

On March 25, 1996, a field screening survey was performed to determine if landfill gas from the northern perimeter of the TA-73 main landfill could be detected along the south wall of Pueblo Canyon. A Foxboro OVA FID meter was used to screen for VOCs at the ppm level, and a Landtec GA-90 multi-gas monitor was used to measure methane, carbon dioxide, and oxygen concentrations in soil gas and ambient air. The GA-90 also measured absolute barometric pressure, which is useful in identifying periods of falling barometric pressure when exhalation of soil gas is most likely to occur.

The survey was conducted by walking over the area shown on Figure 2.3.4.3-22 and checking the composition of the soil gas in animal burrows, soil fissures, and joints in the volcanic tuff bedrock. Where the soil was soft, a short section of 1/4-inch stainless steel tubing was driven into the soil to permit sampling of soil gas 1 to 2 inches below the surface. The survey was conducted between 12:00 noon and 4:00 PM during a period of falling barometric pressure, when soil gas exhalation would have been expected to be occurring. The GA-90 instrument indicated that the barometric pressure fell from 777 mbar to 774 mbar during this 4-hour period. The weather was very windy and cool.

The slope along the canyon wall is very steep, which made access difficult. The area covered included most of the upper portion of the slope immediately north of the TA-73 boundary fence, but did not cover the area of exposed refuse in the erosion gully along the northeast boundary of the landfill. The results of field screening were that methane, carbon dioxide, and VOCs were not detected in burrows, fissures, or joints along the wall of Pueblo Canyon north of the boundary fence. Although considerable surface trash and debris was visible along the canyon wall/slope, no evidence of significant exhalation of landfill gas was observed to the north of the landfill outside of the fenced area. While it is possible that some landfill gas may periodically escape along the canyon wall, the quantities are likely much smaller than those emitted from the landfill surface, and the subsequent dispersion upon mixing into the atmosphere would reduce the concentrations of hazardous constituents below detection limits.

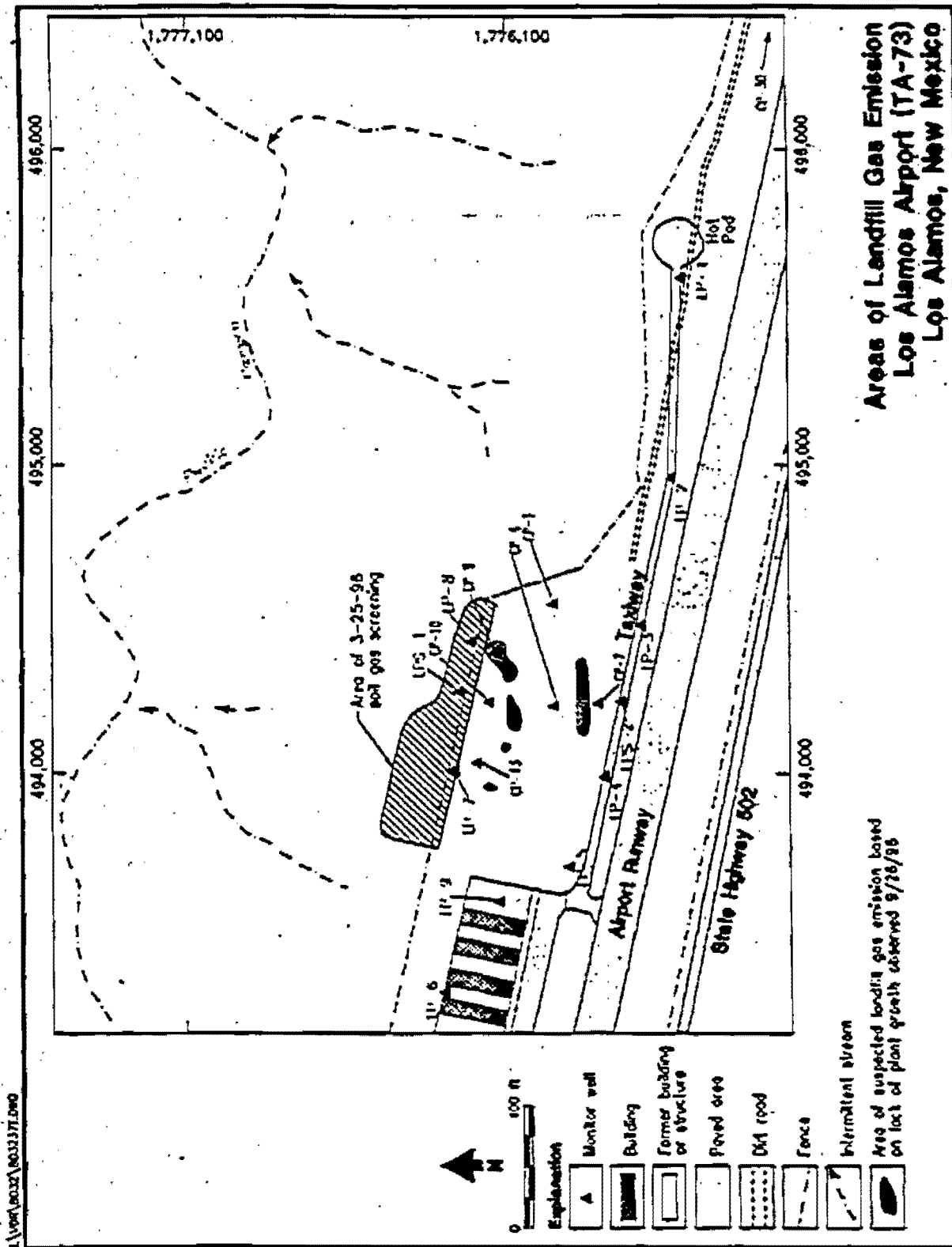


Figure 2.3.4.3-22

Soil Gas Flux Chamber Testing

This investigation was undertaken to address the data requirements necessary for source characterization of the landfill area as stipulated in the RFI work plan. These include the characterization of vadose zone gases at the landfill (LANL 1992, 07667). The investigation was undertaken as part of Task 1, Field Surveys, Activity 4, Soil Gas Surveys, as described in the work plan. The activities performed included the measurement of gas emission flux rates at ground surface at 17 locations within the landfill area using a surface isolation flux chamber (Klenbusch 1986, 59101). These locations are shown in Figure 2.3.4.3-23. Gas samples were also collected from the flux chamber and submitted to an off-site laboratory for analysis of volatile organic compounds (VOCs) using gas chromatography/mass spectrometry (GC/MS) by Environmental Protection Agency (EPA) Method TO-14, along with fixed gas analysis for methane.

Calculated total gas emission rates for the entire landfill area showed that, in addition to methane, the most significant soil gas constituents being emitted are chlorodifluoromethane, m-p-xylene, cis 1,2-dichloroethene, 1,4-dichlorobenzene, and dichlorofluoromethane. Overall results showed that a wide variety of volatile organic vapors are emanating from the surface of the landfill with a high degree of temporal and spatial variability (ERM/Golder 1995, 59102). Areas of greatest landfill gas emission included flux sampling location SG-1 and SG-11 in the central portion of the landfill, and SG-14 in the eastern area (Figure 2.3.4.3-23).

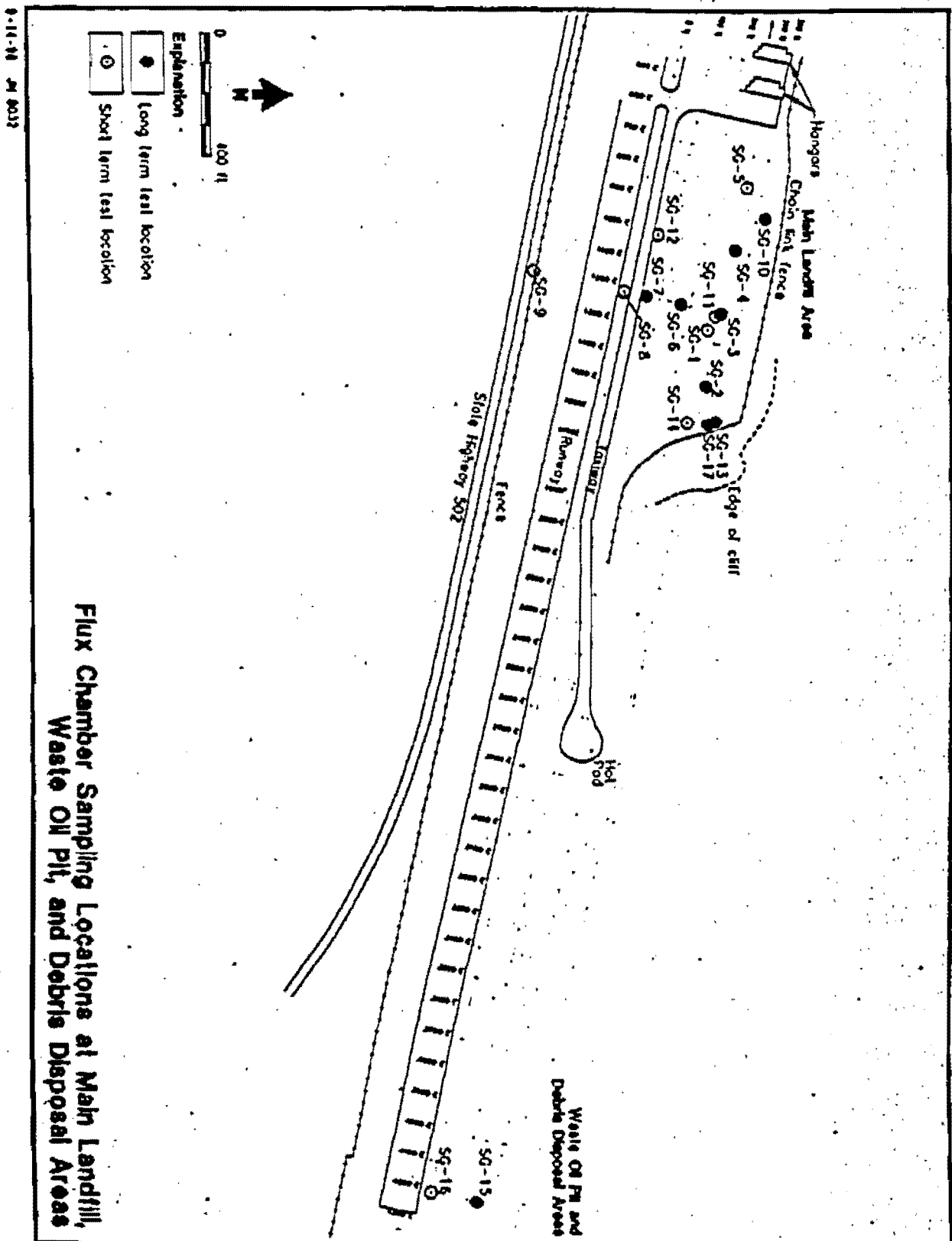
QA/QC sampling consisted of collecting two system blank samples and two replicate samples which were submitted for laboratory analysis along with the primary samples. A more detailed discussion of the QA/QC procedures and their results is provided in Appendix C.

Other Evidence of Landfill Gas Emission from Landfill Surface

During the period October 8-11, 1995, the effect of barometric pumping on landfill gas emissions from the landfill surface was investigated. Short lengths of stainless steel tubing were inserted into the soil to a depth of approximately 5cm at two locations. One of the locations corresponded with soil gas flux chamber sampling location SG-5 (Figure 2.3.4.3-23), and the other location was approximately 50 feet further east. At each location, the concentrations of methane, carbon dioxide, and oxygen in soil gas immediately beneath the surface of the ground were monitored periodically over the 3-day period using a Landtec GA-90 multigas monitor. During this same period, barometric pressure was monitored hourly at the nearby airport terminal.

Figure 2.3.4.3-24 shows changes in shallow soil vapor composition over time in response to fluctuations in barometric pressure. This figure shows that methane and carbon dioxide in soil gas near the soil surface rise markedly during periods of falling barometric pressure, while oxygen concentrations decline during the same periods. The reverse process occurs during periods of rising barometric pressure. At this location, the soil gas immediately beneath the surface is seen to be highly variable, alternately resembling pure landfill gas and pure atmospheric air. This demonstrates that when barometric pressure falls, landfill gas begins to exhalate from the main landfill surface. When the pressure rises, fresh atmospheric air penetrates downward a short distance into the soil as the column of soil gas below becomes compressed. As shown in this figure, regular barometric pressure fluctuations occur daily, with the highest pressure generally occurring at approximately 10:00 AM, and a corresponding low pressure at 4:00 PM. This

Figure 2.3.4.3-23

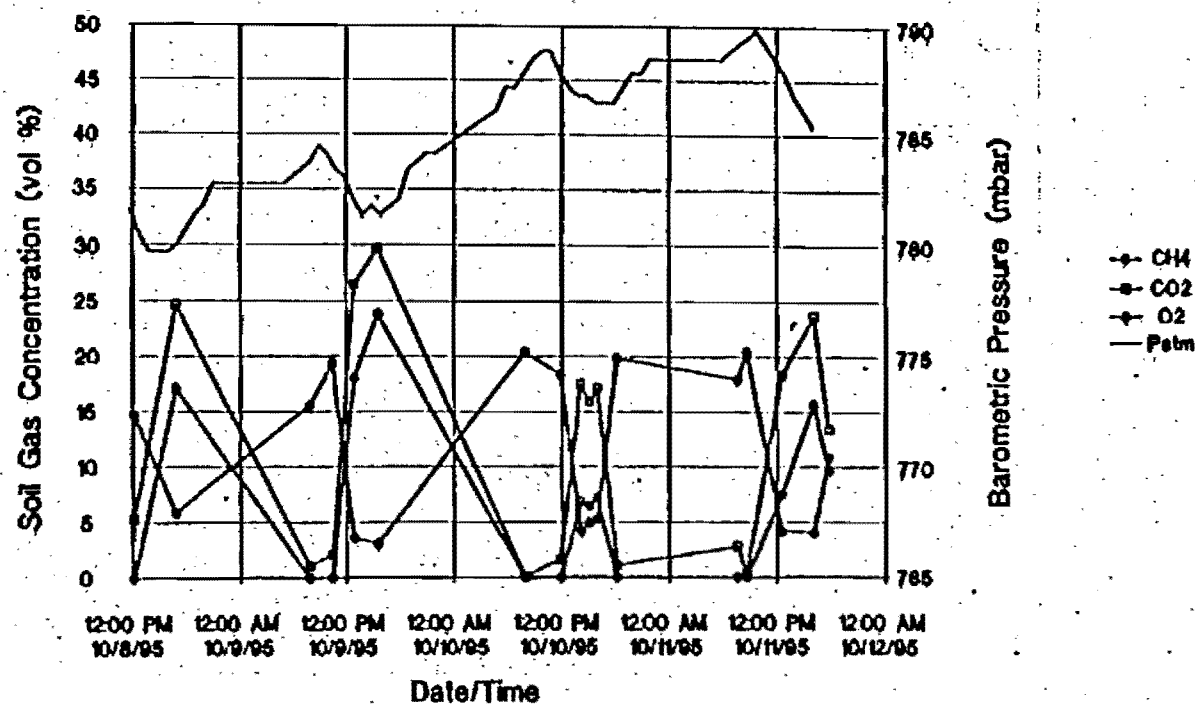


Flux Chamber Sampling Locations at Main Landfill,
Waste Oil Pit, and Debris Disposal Areas

Figure 23.A.3-24

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Changes in Shallow Soil Gas Composition
at TA-73 Landfill in Response Barometric Pumping
(soil gas sampled Oct. 8-11, 1995 at 5-cm depth)



pattern results from so-called atmospheric tides. These observations demonstrate that exhalation of landfill gas is not continuous, but rather periodic in response to atmospheric pressure fluctuations at the surface.

Vegetation patterns provide indirect evidence of landfill gas emission from the surface of the main landfill. Figure 2.3.4.3-22 shows areas where plant growth was minimal or absent on September 26, 1998. At that time, previous rains had resulted in a lush growth of weeds over most of the landfill. The distinct areas of bare soil are believed to coincide with locations where emissions of landfill gas has displaced oxygen from the soil. Oxygen is required for root respiration. Areas bare of vegetation coincide approximately with flux chamber sampling locations SG-1 and SG-11 (Figure 2.3.4.3-23), where significant emissions of methane were observed.

Stable Isotopic Analysis of Water Samples

On April 27, 1995, DBS&A collected three water samples from the TA-73 landfill for analysis of stable oxygen and hydrogen isotope ratios. The purpose of the analysis was to determine if a significant quantity of biogenic water was present in the landfill. Biogenic water is water produced via the chemical reaction of methane with oxygen as follows:



It was theorized that biogenic water ought to have an unusual isotopic composition very different from that of meteoric water. Two of the water samples were collected from suction lysimeters at monitor wells LP-5 and LPS-2, while the third consisted of water vapor frozen out from soil gas port GP-3 at well LP-4 using a cold trap placed in dry ice. Stable isotope analyses were performed by Dr. Andy Campbell of the New Mexico Institute of Mining and Technology in Socorro, New Mexico. The results of the stable isotope analysis were as follows:

Sample	Type	d18O (permil SMOW ^a)	d2H (permil SMOW)
LP-5 Lys	porewater	-10.742	-101.036
LPS-2 Lys	porewater	-7.682	-67.591
LP-4/GP-3	soil vapor	-29.447	-213.057

a. SMOW = Standard mean ocean water

Relative to meteoric water, it was expected that biogenic water would be enriched in ^{18}O , but depleted in ^2H , and would therefore plot to the right of the meteoric water line. This is because the hydrogen in biogenic water would be derived from methane, with d2H in the range of -170 to -400 permil (Hoefs 1987, 59068, p. 164), whereas the oxygen is derived from atmospheric O_2 , with d18O of about +23 permil (Faure 1977, 59067).

The results of the isotopic analysis showed that all three samples plotted close to the meteoric water line. While the soil vapor sample was depleted in both ^{18}O and ^2H relative to the liquid pore water samples as a result of equilibrium fractionation, none of the samples showed enrichment in d18O, as would be

expected for biogenic water. The pore water samples are within the ranges predicted for precipitation in this area (Adams et al. 1995, 59066). This suggested that the water samples collected along the taxiway consist primarily of meteoric water, and that the fraction of biogenic water, if any, is relatively insignificant. However, further isotopic analyses would be required to determine if this holds true in the vicinity of monitor wells CP-1, LI-1, and LI-6, where methane oxidation is now known to be rapidly occurring.

Characterization of Cultivable Microbes in Landfill Refuse

The abundance of cultivable, heterotrophic, aerobic bacteria in core samples from the TA-73 Airport Landfill was determined by plate counts performed by personnel under the direction of Jim Brainard of CST-18. Aseptic samples of landfill refuse and the underlying tuff were collected in split spoon samplers obtained during auger drilling of interior monitor well LI-5 on June 30, 1997. Core sample "S" (refuse) was collected from a depth of 12.5-15.0 feet, and sample "T" (tuff) was collected from a depth of 27.5-30.0 feet below surface. The contact between the refuse and the tuff was at a depth of 25.5 feet at this location. Samples were received from the drillers and the split spoon samplers disassembled in a sterile transfer hood. 50-100 cm³ portions of the cores were transferred into sterile containers and stored at 4°C for two weeks prior to plate counts and enrichments.

For plates counts and enrichments for DCA degrading bacteria, 20-25 g samples of the cores were broken up with a sterile spatula and mixed with 180 ml sterile 0.4 M sodium pyrophosphate, shaken for 15 minutes, and left for 15 minutes to settle the solids. Ten ml of the supernatant was diluted with 90 ml of sterile Ringers solution, and subsequently used for triplicate serial dilutions on R2A agar plates. Plates were incubated at 23°C and counts were obtained seven days after plating. For enrichments, 50 ml samples of the supernate were added to duplicate vials containing 20 ml of minimal medium plus vitamins and either 5 mM DCA, 1 mM DCA, or no added carbon source, and incubated with shaking at 24°C.

The cores obtained were extremely heterogeneous in texture and color. In almost all cases, creating a ~20 g homogeneous sample for subculturing was impossible. The number of cultivable aerobic heterotrophs in the two core samples, designated "S" and "T" are given in Table 2.3.4.3-29. Cores were further subsampled, with "S1" being from the bottom portion of the core, and "S4" from the top. Each subsample of the core was dispersed, and the plate counts on each subsample performed in triplicate.

These results show that the number of cultivable aerobic heterotrophic bacteria in the landfill samples are quite variable and are on the low side of the counts usually obtained from soils and sediments. This observation is consistent with anaerobic conditions in the landfill, since the population of heterotrophic aerobes would be expected to be low under anaerobic conditions. Unfortunately, because of relocation of laboratories from TA-21 to TA-35 immediately after the sampling, facilities for anaerobic culture conditions were not available.

The results from the enrichment cultures are shown in Table 2.3.4.3-30. These results show that enrichment for organisms able to grow aerobically on 1,2-dichloroethane as their sole carbon source was unsuccessful. Although this is not unequivocal evidence, the inability to enrich for these organisms suggests that the potential for aerobic degradation of DCA at this site is minimal.

CULTIVABLE, AEROBIC HETEROTROPHIC BACTERIA IN TA-73 AIRPORT LANDFILL REFUSE SAMPLES

Sample Designation	AbundanceCFU/g	SD CFU/g
S1	2.87E+07	2.80E+07
S2	2.31E+07	3.22E+07
S3	6.33E+06	2.08E+06
S4	1.43E+08	1.40E+08
T1	1.14E+07	1.63E+07
T2	1.00E+07	1.73E+07
T3	4.67E+08	2.08E+08
T4	3.50E+08	2.78E+08

ENRICHMENT OF MICROORGANISMS FROM AIRPORT LANDFILL ABLE TO GROW ON 1,2-DICHLOROETHANE

Days After Inoculation	5 mM DCA	1 mM DCA	No Substrate
4 days	no visible growth	no visible growth	no visible growth
10 days	no visible growth	no visible growth	no visible growth

2.3.5 Revised Site Conceptual Model

This section presents the revised conceptual model for the airport landfill, and includes a detailed discussion of the nature and extent of contamination and environmental fate of the COPCs.

As discussed in Section 2.3.3, the preliminary site conceptual model for the airport landfill was based solely on site setting and history, which suggested that the airport landfill is a former municipal landfill, typical of those that operated across the country during the same time period. The preliminary site conceptual model is shown in Figure 2.3.3-1, and can be summarized as follows:

- Potential contaminants may have been released from the airport landfill via mass movement, leaching/dispersion, volatilization, or entrainment in water or air.
- Contaminants released from the airport landfill may be present in surface soil, either on top of the landfill or as channel sediments in Pueblo Canyon; soil pore water; vegetation; air; or subsurface soil or tuff. Groundwater was not included because of the considerable depth to the regional aquifer and the lack of active water supply wells in the vicinity.
- Potential human receptors to contaminants released from the landfill could include off-site residents, site visitors (visitors to the airport itself or to the slopes of Pueblo Canyon adjacent to the airport), and on-site workers. Potential nonhuman receptors include terrestrial animals that live in and around the airport landfill, including Pueblo Canyon.

Based on the preliminary site conceptual model, a series of investigations were undertaken to adequately characterize the nature and extent of releases from the airport landfill. As discussed in Section 2.3.4.2, these investigations provided an extensive survey of potential contaminants in surface and subsurface soils, shallow and deep soil gas, pore water, and visible surface debris. These data were subsequently reviewed to identify COPCs in these environmental media (see Section 2.3.4.3).

In combination, the results of the site investigations and data review were used to confirm the contaminant release, transport, and exposure components of the preliminary site conceptual model and to revise the site conceptual model to more accurately reflect site conditions. This section of the report discusses the contaminant release and transport mechanism component of the site conceptual model within the context of the nature and extent of contamination and environmental fate of the COPCs. The exposure components of the site conceptual model are discussed in Sections 2.4.2.1 and 2.4.3.1 for human receptors and in Section 2.4.2.2 for terrestrial organisms.

The biochemical process model of the contaminant release and transport mechanisms for the airport landfill is presented in Figure 2.3.5-1. This figure identifies both surface and subsurface processes based on both chemical and physical data collected at the landfill for the sampled media. As discussed further below, the results of the site investigations confirm the nature of contaminants within the airport landfill to be consistent with other former municipal landfills of similar age (CARB 1990, 59084). Specifically, landfill gas, primarily methane and carbon dioxide, associated with the decomposing refuse is present in the subsurface. The highest concentrations of landfill gas were detected within the refuse, and concentrations decrease significantly both laterally and vertically with increasing distance from the refuse. In addition, the relative concentration of methane also decreases with increasing distance from the refuse, indicating that

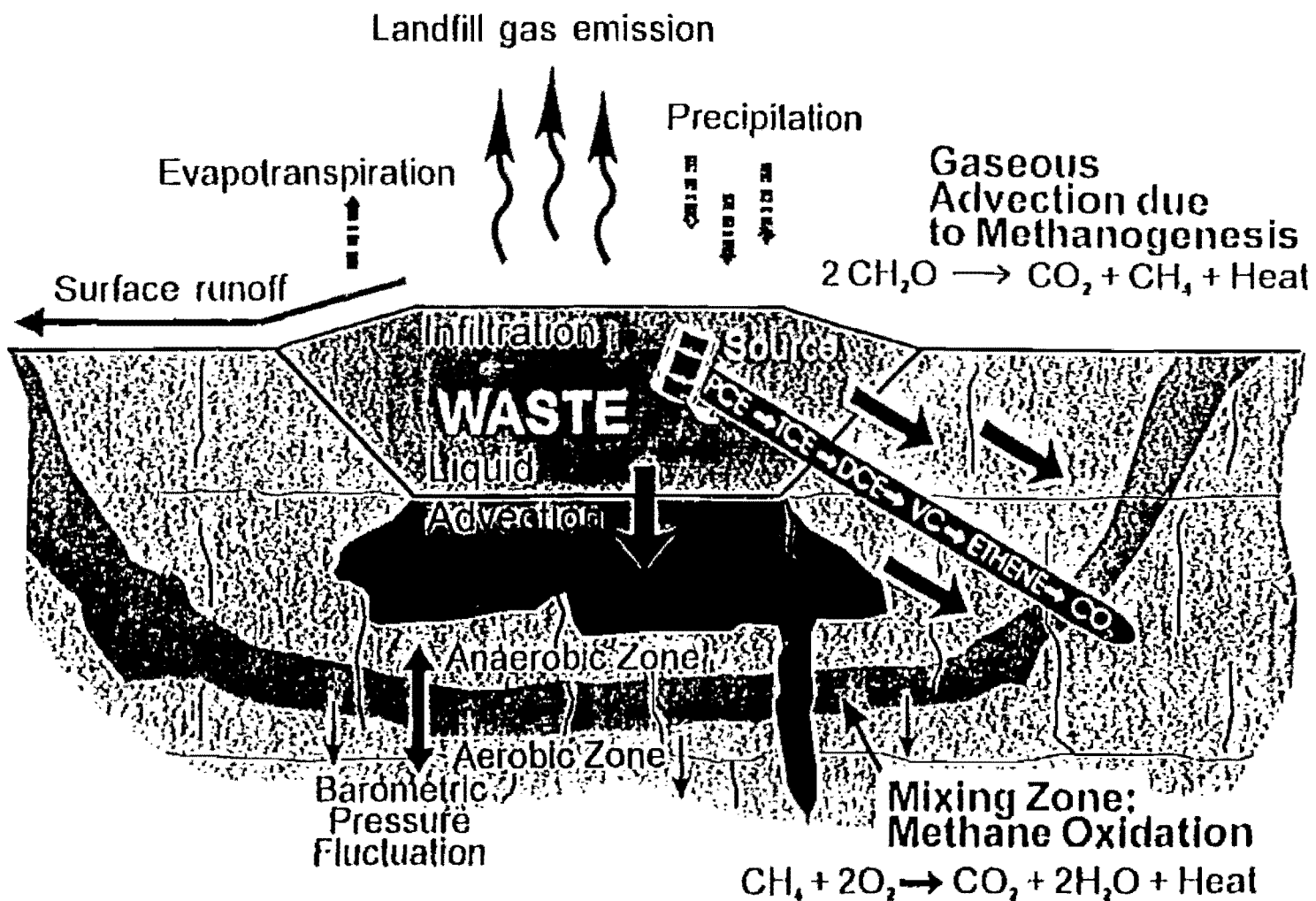


Figure 2.3.5-1. Biochemical processes model for TA-73 landfill

methanogenesis is occurring in the anaerobic zone within and in the immediate vicinity of the refuse and methane oxidation is occurring in the aerobic zone. Elevated temperatures at depth provide additional evidence of methane oxidation.

Several VOCs were detected in soil gas. These VOCs included organic chemicals commonly used both by LANL and the general public during the time the landfill was active, including freons associated with refrigerants, tetrachloroethene and trichloroethene associated with degreasing, and petroleum hydrocarbons associated with fuels or fuel oils. The types and concentrations of VOCs observed in soil gas agree with those observed at other municipal landfills. This will be discussed in detail in Section 2.3.5.1. Similar VOCs were present in pore water and subsurface soil/tuff samples collected at the site, but VOCs were generally not detected in surface soil.

The results of surface soil samples coupled with visual observations of surficial debris suggest that metals, radionuclides, and SVOCs, are present in limited areas on the landfill surface at low concentrations and in the drainages adjacent to the landfill. The presence of these COPCs in the drainages confirms erosion has occurred across the entire airport, but the low concentrations of the COPCs suggest that sediment transport is of relatively minor importance as a potential pathway. With the exception of strontium-90, radionuclides were not detected in subsurface soil; however, based on a review of the laboratory QA/QC, the results for strontium-90 are considered questionable. No radionuclides were detected in pore water. Therefore, the presence of radionuclides in surface soil is likely related to airborne deposition from historic stack emissions at the plutonium-processing facilities at TA-21, which are in close proximity to the airport landfill. Some metals were also detected in pore water and subsurface soil/tuff samples collected within or immediately below the refuse, thereby confirming that inorganic constituents, such as iron and manganese, are leaching out of the refuse to a minor degree as confirmed by extant samples taken both laterally from and beneath the landfill. However, metal concentrations in pore water and subsurface soil further away from the refuse both laterally and vertically are indicative of background, suggesting that the mobility of these metals beyond the influence of the refuse is limited. Some SVOCs were also detected in subsurface soil/tuff, and may be related to historical burning activities at the landfill. However, all SVOCs detected were present at extremely low levels and were of limited extent. Therefore, this pathway is not considered to be of relative importance.

The nature and extent of the organic and inorganic chemicals detected in the various media is consistent with the environmental fate of these chemicals under the conditions observed within and adjacent to the airport landfill. For example, many organic chemicals degrade over time in landfill environments as a result of biological and abiotic processes. The presence of dichloroethene and vinyl chloride in soil gas, both of which are degradation products of tetrachloroethene and trichloroethene, provides evidence that such degradation is occurring. Organic chemicals are also expected to be mobile, either in the gas or aqueous phase. Surface vapor flux measurements demonstrate that VOCs are being emitted from the landfill; however, these emissions appear to be intermittent and originate from only a portion of the landfill surface. In addition, analysis of subsurface soil gas and pore water samples indicate that VOCs have migrated downward away from the refuse; however, concentrations in soil gas decreased significantly with depth and concentrations in pore water are relatively low. With regard to inorganic chemicals, most would be expected to remain relatively immobile under the geochemical conditions that prevail within the refuse, except for those metals such as manganese and iron, which are solubilized under anoxic condi-

tions. Analytical data for pore water samples are consistent with this conclusion, in which manganese and iron were detected at relatively high concentrations. However, both of these chemicals are predicted to precipitate rapidly upon encountering aerobic conditions below the landfill, and thus it is very unlikely that these constituents could be transported to groundwater since existing data trends indicate precipitation of these metals is occurring below the refuse/ tuff interface.

In total, the nature and extent of contamination and environmental fate of the COPCs is consistent with the preliminary conceptual model that the airport landfill is a former municipal landfill typical of those that operated during the same time period. Section 2.3.5.1 details the comparison of organics and inorganics in pore water/ leachate and major soil gases to an extensive group of landfills, thereby depicting the TA-73 airport landfill's municipal landfill nature. In addition, all of the contaminant release and transport mechanisms identified in the preliminary site conceptual model were confirmed (Figure 2.3.3-1). The potential transport to groundwater was not included in the preliminary site conceptual model due to the considerable depth to the regional aquifer, and the results of the site investigation activities support this premise. The results show that VOC concentrations in soil gas attenuate significantly with distance away from the landfill. In addition, relatively small amounts of leachate appear to occur at isolated locations beneath the landfill. The leachate contains very low levels of organics and somewhat higher levels of some inorganics; however, the potential for transport of these constituents is expected to be limited.

2.3.5.1 Nature and Extent of Contamination

Sampling and analysis of soil gas and pore water samples collected at the TA-73 landfill indicates the presence of a wide range of organic and inorganic constituents. Many of the inorganic constituents detected in pore water (e.g., calcium) are likely of natural origin, while most, if not all, of the organic compounds in soil gas and pore water are derived from the refuse placed in the landfill. The nature of contaminants is briefly summarized below, followed by a more detailed discussion of the areal and vertical extent of these constituents.

Based on the results of our investigations to date, the types of constituents and concentrations observed at the airport landfill are typical of those reported for most other municipal landfills. The maximum concentrations of selected constituents detected in samples from the TA-73 landfill are listed in Tables 2.3.5.1-1 (soil gas), 2.3.5.1-2 (organics in pore water), and 2.3.5.1-3 (inorganics in pore water). Also shown are the mean and maximum concentrations for these same constituents as reported for other municipal landfills located elsewhere, along with relevant numerical regulatory standards. The results for each medium (soil gas and pore water) are summarized below.

A comparison of soil gas from the airport landfill (landfill gas) with other landfills is provided in Table 2.3.5.1-1. This table shows the maximum concentrations of methane and VOCs observed in soil gas samples collected from the permanent soil gas monitor wells at the airport landfill, along with the average (mean) and maximum concentrations of these same constituents reported in a study of landfill gas from 340 landfills in California (CARB 1990, 59084). As documented in the California study, low part-per-million concentrations of compounds such as benzene, methylene chloride, PCE, and vinyl chloride are present in landfill gas at the majority of landfills.

TABLE 2.3.5.1-1
COMPARISON OF TA-73 LANDFILL GAS WITH CALIFORNIA LANDFILLS

Constituent	TA-73 Landfill ^a	California Landfills ^b	
	Maximum	Mean	Maximum
Methane	54.3%	19%	73%
Benzene	986	2500	480 000
Carbon tetrachloride	12	11	2100
Chloroform	246	360	11 000
EDB	65.5 ^c	4	660
EDC	110	600	98 000
Methylene chloride	1820	4800	160 000
PCE	907	1100	45 000
TCA	90	650	96 000
TCE	512	840	11 000
Vinyl chloride	1990	2200	72 000

a. Maximum concentration reported by ESE-Gainesville laboratory for soil gas samples collected in 1995-1997 from permanent soil gas monitor wells within and surrounding TA-73 landfill.

b. Concentrations reported in landfill gas samples from approximately 340 municipal landfills in California (CARB1900, 59084 Table 2)

c. Reported concentration for EDB is anomalously high compared to field duplicate results (<25 ppb) and results for subsequent samples collected from same location.

Notes: Methane concentrations in volume percent; all others in ppbv. All landfill gas samples were collected in 1995-1997 from permanent multi-port soil gas monitor wells located within and surrounding the TA-73 airport landfill.

TABLE 2.3.5.1-2
COMPARISON OF VOCs IN TA-73 AIRPORT LANDFILL PORE WATER
WITH OTHER MUNICIPAL SOLID WASTE (MSW) LANDFILLS

	EPA Drinking Water MCL	NMWWCC Ground Water Standard	Range in MSW Landfills ^a	Range in MSW Landfill ^b	Maximum at TA-73 Landfill
Acetone	NA	NA	4(J)-4,600	140-11,000	17,000
2-Butanone	NA	NA	120-12,000	NA	1,500
Chloromethane	NA	NA	NA	10-170	8.4
1,2-DCA	5	10	NA	0-11,000	11
cis 1,2-DCE	70	NA	NA	4-190	90
2-Hexanone	NA	NA	6(J)-690	NA	50
Methylene chloride	5	100	2(J)-360	NA	7.6
4-Methyl-2-pentanone	NA	NA	61-570	NA	44
Tetrachloroethene	5	20	NA	2-620	[5]
Benzene	5	10	NA	2-6080	6.0
Ethylbenzene	700	750	ND-15(J)	5-4900	32
Toluene	1000	750	73-1100	2-3200	11
M+P Xylenes	10,000 (total)	620 (total)	ND-290 (total)	21-79 (m-xylene)	46 (total)
O-Xylene	NA	NA	ND-290 (total)	12-50 (o-p xylene)	7.9
1,2,4- Trimethylbenzene	NA	NA	NA	NA	15
1,2-Dichlorobenzene	600	NA	NA	NA	11
1,3-Dichlorobenzene	600	NA	NA	NA	10
1,4-Dichlorobenzene	75	NA	NA	2-37	23

- a. Ranges of organic concentrations in 19 leachate samples collected from six sites. Presented in *Characterization of MWC Ashes and Leachates from MSW Landfills, Monofills, and Co-Disposal Site* (U.S. EPA, October 1987, 59100).
- b. Ranges of organic concentrations in leachate samples collected from 64 sites (20 sites from Wisconsin report and 44 sites from Sobotka report). Presented in *Characterization of MWC Ashes and Leachates from MSW Landfills, Monofills, and Co-Disposal Sites* (U.S. EPA, October 1987, 59100).

Notes:

All concentrations are in $\mu\text{g/L}$; values in square brackets represent nondetects.

(J) = Estimated value

ND = Below detection limit

TABLE 2.3.5.1-3
COMPARISON OF INORGANICS IN TA-73 LANDFILL PORE WATER
WITH OTHER MUNICIPAL SOLID WASTE (MSW) LANDFILLS

	EPA Drinking Water MCL	NMWQCC Ground Water Standard	Range in MSW Landfills ^a	Range in MSW Landfills ^b	Maximum at TA-73 Landfill ^c
Aluminum	0.2 ^d	5.0 ^d	1.6-5.8	ND-85	1.3
Antimony	0.006	NA	0.01-0.02	NA	[0.5]
Arsenic	0.05	0.1	0.01-0.046	ND-70.2	[0.02]
Barium	2.0	1.0	0.27-1.64	ND-12.5	0.572
Beryllium	0.004	NA	ND	ND-0.36	[0.04]
Cadmium	0.005	0.01	0.002-0.011	ND-0.1	[0.05]
Calcium	NA	NA	146-803	95.5-2100	870
Chromium	0.1	0.05	0.002-0.039	ND-5.6	[0.1]
Cobalt	NA	0.05 ^d	ND	NA	[0.1]
Copper	1.3	1.0	0.18-0.20	ND-4.06	[0.1]
Iron	0.3 ^e	1.0 ^e	6.4-268	ND-1500	16.6
Lead	0.015	0.05	0.006-0.053	ND-14.2	[5.0]
Magnesium	NA	NA	74-424	ND-927	299
Manganese	0.05 ^e	0.2 ^e	0.27-11.3	ND-43	79
Mercury	0.002	0.002	ND	ND-0.02	[0.0013]
Nickel	0.1	0.2 ^d	0.13-0.24	ND-7.5	0.514
Potassium	NA	NA	145.2-871.1	ND-2800	99.3
Selenium	0.05	0.05	0.006-0.006	NA	[0.025]
Silver	0.1	0.05	ND	NA	[0.05]
Sodium	NA	NA	552.5-2,280	12-6010	772
Thallium	0.002	NA	ND	NA	0.0283
Uranium	0.020	5.0	NA	NA	[0.0702]
Vanadium	NA	NA	0.009-0.029	0.01	0.324
Zinc	5 ^e	10	0.07-2.59	ND-731	0.325

- a. Ranges of inorganic concentrations in 19 leachate samples collected from six sites. Presented in *Characterization of MWC Ashes and Leachates from MSW Landfills, Monofills, and Co-Disposal Sites* (U.S. EPA, October 1987, 59100).
- b. Ranges of inorganic concentrations in leachate samples collected from 64 sites (20 sites from Wisconsin report and 44 sites from Sebotta report). Presented in *Characterization of MWC Ashes and Leachates from MSW Landfills, Monofills, and Co-Disposal Sites* (U.S. EPA, October 1987, 59100).
- c. Aesthetic standard.
- d. Irrigation standard.

Notes:

All concentrations in mg/L; values in square brackets represent nondetects.

ND = Below detection limit.

NA = Not applicable.

The only inorganics present at concentrations outside the expected range are manganese and vanadium. Manganese was detected at concentrations up to 79 mg/L in monitor well LI-5 (location ID 73-02428). A concentration of 42 mg/L was reported for this same location on another date, and similarly high concentrations were reported for pore water samples collected from monitor well LI-3 (location ID 73-02426). Thus, it appears that relatively high concentrations of manganese are indeed present in pore water at the site. The presence of high dissolved manganese and iron concentrations is consistent with the strongly anoxic conditions that exist within the refuse. The maximum reported concentration of vanadium in pore water (0.325 mg/L) appears suspect, however, because the vanadium results for samples collected from this and other lysimeters on that date are all anomalously high, as compared to the results for subsequent sampling events. In any case, the concentrations of inorganic constituents in pore water at the airport landfill are typical of those at most municipal landfills.

To facilitate the assessment of the nature of contamination detected in environmental samples collected at the airport landfill, five tables were prepared that show the COPCs identified across the individual media sampled. These tables show the inorganic COPCs (Table 2.3.5.1-4), the radionuclide COPCs (Table 2.3.5.1-5), volatile organic COPCs (Table 2.3.5.1-6), PCB/pesticide COPCs (Table 2.3.5.1-7) and semivolatile organic COPCs (Table 2.3.5.1-8). To show the magnitude of the concentration of COPCs across each media, ratio plots were developed for all COPCs except the radionuclides. These line plots show the ratio of the maximum concentration of COPCs by media to the relevant BV or detection limit for the analyte. No symbol is plotted where the analyte was not detected. The inorganic chemical ratio plots are provided in Figure 2.3.5.1-1. The organic chemicals ratio plots are provided in Figure 2.3.5.1-2(a,b,c).

The number of inorganic COPCs is greatest in the subsurface for the Bandelier Tuff (Qbt-3), and few inorganic COPCs are identified in the other subsurface geologic units. Qbt 3 is stratigraphically higher than Qbt 2 or Qbt LV, which suggests that the extent of contamination is bounded for these inorganic COPCs. The list of inorganic COPCs in pore water is mostly a subset of what was identified in Qbt 3. There is also a high overlap in the COPC lists between the landfill surface and the subsurface Qbt 3. The drainage samples identified a limited list of COPCs, which are a subset of the airport landfill samples. The inorganic ratio plot (Figure 2.3.5.1-1) shows a great variation in the relative exceedences of the BV in various media. For example, manganese is only measured above background in the pore water, and antimony is measured above the BV in the soil or tuff samples due to elevated detection limits for antimony in these samples. As noted in Section 2.3.4.3.1, most of the inorganic COPCs were associated with a limited set of sample locations that suggest the contaminant releases are of a limited spatial extent.

None of the radionuclide COPCs are in the naturally occurring uranium or thorium series. The radionuclides are either fallout radionuclides or reactor fission products. The sparse detection of radionuclides in the drainage samples seems consistent with locally elevated levels, perhaps associated with the proximity of the airport landfill to TA-21. The detection of strontium-90 in subsurface geologic units at depth was not expected. As mentioned in Section 2.3.4.3 and discussed further in Appendix C, the strontium-90 data is questionable based on evaluation of factors such as laboratory duplicates, laboratory control samples, matrix spikes, blind QC samples, and QC samples with elevated amounts of strontium-90. However, the maximum strontium-90 sample result is about four times the minimum detectable activity, which emphasizes the small magnitude of background exceedences for strontium-90 in the tuff samples. The radionuclide extent of contamination will be discussed in detail below.

The volatile organic chemical COPC list shows good correspondence between the soil gas, the subsurface soils, and the pore water samples. Twelve VOCs were detected in all three media, which is expected given the known exchange between the gas and liquid phases. The magnitude of the concentration across media is not as similar (Figure 2.3.5.1-2, part c). However, 2-butanone and acetone have the highest detected concentrations in all media except soil. Few VOCs were detected in the airport landfill surface, which is also not surprising. For the other organics, no PCBs were identified as COPCs in the subsurface. The pesticides, PAHs, and other semivolatile organics were more commonly seen in the landfill surface or drainages. PAHs were only detected above the EQL in the airport landfill surface samples or drainages. One explanation is that these organics are not associated with the municipal waste found in the subsurface. The semivolatile organics could be associated with runoff of PAHs from the

TABLE 2.3.5.1-4
NATURE OF INORGANIC CONTAMINATION

Analyte	Subsurface				Pore Water	Surface	
	Soil	Obt 3	Obt 2	Obt IV		Landfill	Drainage
Aluminum	—	COPC*	COPC	—	—	—	—
Antimony	COPC DL ^b	COPC DL	COPC DL	COPC DL	—	COPC DL	COPC DL
Arsenic	COPC	COPC	—	—	COPC	—	—
Barium	—	COPC	—	—	COPC	—	—
Beryllium	—	COPC	COPC	—	—	COPC	—
Cadmium	COPC DL	COPC	—	—	—	COPC DL	COPC DL
Calcium	—	COPC	COPC	—	COPC	COPC	—
Chromium, Total	—	COPC	COPC	COPC	—	COPC	—
Cobalt	—	—	—	—	—	—	—
Copper	—	COPC	COPC	—	—	COPC	—
Iron	—	COPC	—	—	COPC	COPC	—
Lead	—	COPC	COPC	—	COPC	COPC	COPC
Magnesium	—	COPC	—	—	COPC	—	—
Manganese	—	COPC	—	—	COPC	—	—
Mercury	COPC DL	COPC	COPC	—	—	COPC	—
Nickel	—	COPC	—	—	—	COPC	—
Potassium	—	COPC	—	—	—	—	—
Selenium	—	COPC	—	—	—	—	—
Silver	COPC DL	COPC DL	COPC DL	COPC DL	—	COPC	COPC DL
Sodium	COPC	COPC	—	—	—	COPC	—
Thallium	COPC	COPC	—	—	COPC	—	COPC DL
Uranium, Total	—	—	—	—	—	—	COPC
Vanadium	—	COPC	—	—	—	—	—
Zinc	—	COPC	—	—	—	COPC	COPC
Total	7	22	9	3	8	13	7

* COPC: identified as a COPC based on detected values

^b COPC DL: identified as a COPC based on elevated detection limits

TABLE 2.3.5.1-5
NATURE OF RADIONUCLIDE CONTAMINATION

Analyte	Subsurface				Pore Water	Surface	
	Soil	Obt 3	Obt 2	Obt IV		Landfill	Drainage
Cesium-137	—	—	—	—	N/A	N/A	COPC
Plutonium-239	—	—	—	—	N/A	N/A	COPC
Strontium-90	—	COPC	COPC	—	N/A	N/A	—
Total	0	1	1	0	0	0	2

* COPC = identified as a COPC based on detected values

^b Not applicable. No samples were analyzed for these radionuclides.

TABLE 2.3.5.1-6
NATURE OF VOLATILE ORGANIC CONTAMINATION^a

Analyte	Soil Gas	Subsurface ^c	Pore Water	Surface	
				Landfill	Drainage
Acetone	COPC ^b	COPC	COPC	—	N/A ^d
Benzene	COPC	COPC	COPC	—	N/A
Butanone[2-1]	COPC	COPC	COPC	—	N/A
Butylbenzene[n-1]	—	COPC	—	—	N/A
Butylbenzene[tert-1]	—	—	COPC	—	N/A
Carbon Disulfide	COPC	COPC	COPC	—	N/A
Chloromethane	COPC	COPC	COPC	—	N/A
Dichlorobenzene[1,3-1]	COPC	—	COPC	—	N/A
Dichlorobenzene[1,4-1]	COPC	COPC	COPC	—	N/A
Dichloroethane[1,1-1]	COPC	—	—	COPC	N/A
Dichloroethane[1,2-1]	COPC	—	COPC	—	N/A
Dichloroethene[cis-1,2-1]	COPC	COPC	COPC	—	N/A
Dichloroethene[cis/trans-1,2-1]	—	—	COPC	—	N/A
Dichloroethene[trans-1,2-1]	COPC	—	COPC	—	N/A
Ethylbenzene	COPC	COPC	COPC	—	N/A
Hexanone[2-1]	COPC	—	COPC	—	N/A
Idomethane	—	—	COPC	—	N/A
Isopropyltoluene[4-1]	—	COPC	COPC	—	N/A
Methyl-2-pentanone[4-1]	COPC	COPC	COPC	—	N/A
Methylene Chloride	COPC	COPC	—	—	N/A
Tetrachloroethene	COPC	—	COPC	COPC	N/A
Tolulene	COPC	COPC	COPC	COPC	N/A
Trichloroethane[1,1,1-1]	COPC	—	—	COPC	N/A
Trichloroethene	COPC	COPC	—	—	N/A
Trimethylbenzene[1,2,4-1]	COPC	COPC	COPC	—	N/A
Trimethylbenzene[1,3,5-1]	COPC	COPC	—	—	N/A
Xylene (Total)	COPC	COPC	COPC	—	N/A
Xylenef[1,2-1]	COPC	—	COPC	—	N/A
Total	23	17	22	4	0

- a. 104 other volatile organics were detected in the soil gas only.
b. COPC = identified as a COPC based on detected values.
c. Includes tuff units Qbt 3, Qbt 2, Qbt 1, and subsurface soil.
d. Not applicable. No samples were analyzed for volatile organic chemicals.

TABLE 2.3.5.1-7
NATURE OF PCB/PESTICIDE CONTAMINATION

Analyte	Soil Gas	Subsurface	Pore Water	Surface	
				Landfill	Drainage
Aroclor-1254	n/a	—	n/a	COPC	COPC
Aroclor-1260	n/a	—	n/a	COPC	COPC
Chlordane[alpha-]	n/a	COPC	n/a	—	COPC
Chlordane[gamma-]	n/a	COPC	n/a	—	COPC
DDE[4,4-]	n/a	—	n/a	—	COPC
DDT[4,4-]	n/a	—	n/a	COPC	COPC
Methoxychlor[4,4-]	n/a	—	n/a	COPC	—
TOTAL	0	2	0	4	6

a. COPC = Identified as a COPC based on detected values.

NA = Not applicable. Samples were not analyzed for PCBs or pesticides.

TABLE 2.3.5.1-8
NATURE OF SEMIVOLATILE ORGANIC CONTAMINATION

Analyte	Soil Gas	Subsurface	Pore Water	Surface	
				Landfill	Drainage
Acenaphthene	n/a	—	n/a	—	COPC
Anthracene	n/a	—	n/a	COPC	COPC
Benzo(a)anthracene	n/a	COPC	n/a	COPC	COPC
Benzo(a)pyrene	n/a	COPC	n/a	COPC	COPC
Benzo(b)fluoranthene	n/a	COPC	n/a	COPC	COPC
Benzo(g,h,i)perylene	n/a	—	n/a	COPC	COPC
Benzo(k)fluoranthene	n/a	—	n/a	COPC	COPC
Bis(2-ethylhexyl)phthalate	n/a	COPC	n/a	COPC	COPC
Chrysene	n/a	COPC	n/a	COPC	COPC
Dibenz(a,h)anthracene	n/a	—	n/a	—	COPC
Dibenzofuran	n/a	—	n/a	—	COPC
Di-n-butylphthalate	n/a	—	n/a	—	COPC
Fluoranthene	n/a	COPC	n/a	COPC	COPC
Fluorene	n/a	—	n/a	—	COPC
Indeno(1,2,3-cd)pyrene	n/a	—	n/a	COPC	COPC
Methylnaphthalene[2-]	n/a	—	n/a	—	COPC
Naphthalene	n/a	—	n/a	—	COPC
Phenanthrene	n/a	COPC	n/a	COPC	COPC
Pyrene	n/a	COPC	n/a	COPC	COPC
TOTAL	0	8	0	12	19

a. COPC = Identified as a COPC based on detected values.

NA = Not applicable. Samples were not analyzed for semivolatile organic chemicals.

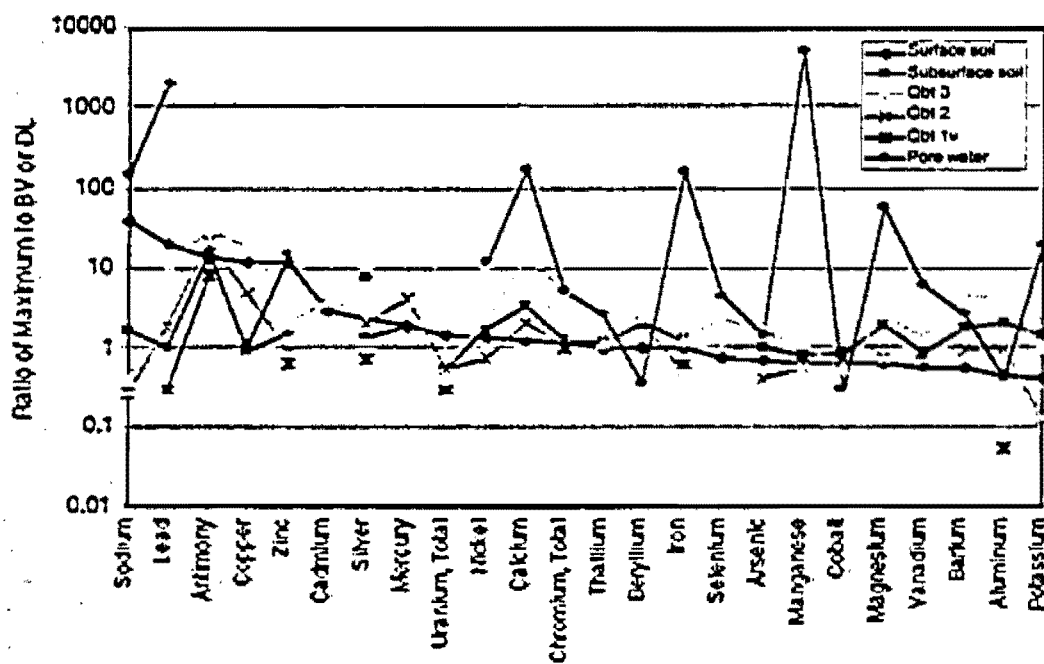


Figure 2.3.5.1-1. Plot showing ratio of maximum media concentration of inorganic chemicals to BVs or detection limits by media sampled

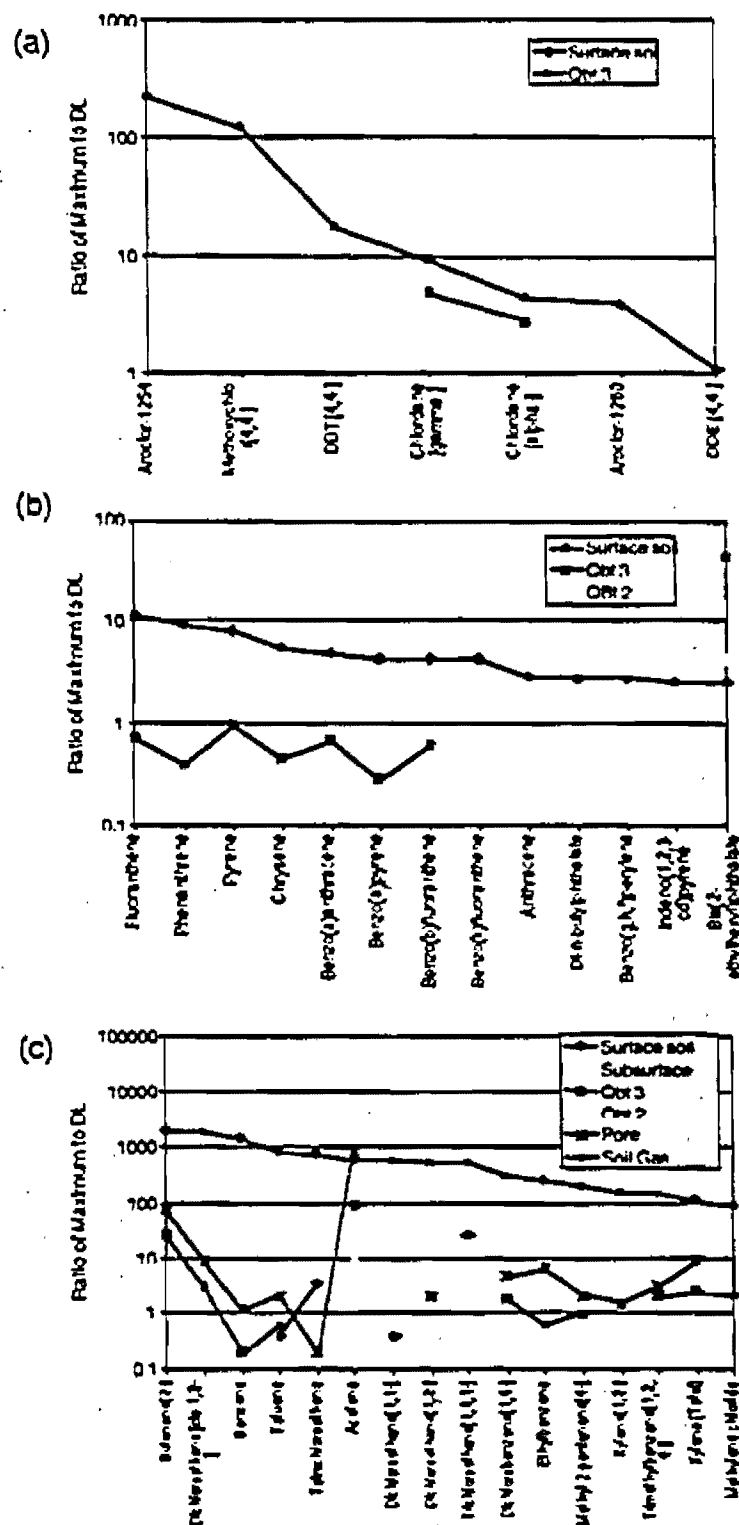


Figure 2.3.5.1-2. Plot showing ratio of maximum media concentration of organic chemicals to detection limits. (a) PCBs/pesticides; (b) selected semivolatile organics; (c) selected volatile organics

airport runway or taxi strip, visible asphalt debris in the current landfill surface, or other miscellaneous point sources. It is also possible that trace quantities of pesticides were disposed with the municipal waste or that PAHs are associated with the practice of burning the trash in the disposal trenches.

Finally, there is a fairly distinct set of analytes identified as COPCs in the surface compared to the subsurface. The conceptual model would also relate some contaminants to the subsurface (municipal waste) and some contaminants to the current airport landfill surface. The first section discusses the extent of contamination associated with the airport landfill surface and drainages (in either soil or sediment samples). The second section discusses the extent of contamination associated with the airport landfill subsurface. The subsurface is divided into three subsections: the extent of contamination associated with the subsurface landfill gas, the extent of contamination in subsurface pore water, and the extent of contamination associated with the subsurface landfill soil and tuff.

2.3.5.1 (a) Landfill Surface and Drainages

In order to properly evaluate the landfill surface and drainage samples, it is necessary to recognize that these samples mostly represent biased locations. Most landfill surface locations were biased to spots where suspect material is visible on the surface. The drainage samples are biased to sediment accumulation pockets within the major drainages leading off the mesa. It is also important to recognize the analyte suites and data quality issues associated with some of the samples. For example, the samples collected of the white paraffin-like material visible at the eastern end of the main landfill (sample locations 73-02171 and 73-02172) required exceptionally high dilutions for the semivolatile analyses. The dilutions raised the detection limits of selected samples, which limits the ability to identify all COPCs. The detection limits for some of the inorganics were greater than the BV (antimony, cadmium, mercury, silver, and thallium). Another consideration is the lack of laboratory radiological analyses for the landfill surface, which is somewhat compensated by the extensive radiological screening of the landfill surface (see Section 2.3.4.2 Field Investigations). Given these caveats the extent of information provided by the existing sample data can be evaluated.

Of the 22 surface soil and drainage locations sampled, five are notable due to the number of COPCs identified and the relative concentrations of COPCs (based on a review of Figures 2.3.4.3-1, 2.3.4.3-6 and Table 2.3.4.3-16). The highest value of every COPC is captured in one of these five locations. These include three landfill surface locations (73-02171, 73-02172 and 73-02173) and two drainage locations (73-02158 and 73-02163). Two of the surface locations represent the white paraffin-like material found on the eastern perimeter of the main landfill, and the other surface location was collected near the northern boundary of the main landfill. Both drainage locations are in the western-most set of locations. There are no bounding sample locations for the landfill surface locations, but based on visual observations the paraffin-like material being sampled is of quite limited spatial extent. In the case of the drainage samples, the downgradient sample location (73-02158) has lower inorganic and radionuclide concentrations than the upgradient location (73-02163). However, the concentration of many organics are higher in location 72-02158 than location 73-02163.

The remaining 17 locations sampled do not exhibit any pattern or trend of note, except in showing that the concentration and detection of COPCs is limited to a select number of surface sample locations. Using this information to help revise the conceptual site model would suggest that the landfill surface is not an entirely uncontaminated matrix. However, the chemical contamination of the landfill surface is limited in extent and likely related to some specific spots of contamination (e.g., the paraffin-like material discussed above). Some of this contamination is evident in the form of debris on the landfill surface or on the northern perimeter of the main landfill area. Radiological contamination can be quantitatively evaluated in the drainages. The relatively low detection frequency of radionuclides and the results of the landfill surface radiological screening survey are consistent with a negligible quantity of radiological contamination on the landfill surface. The most likely explanation for the surface radionuclide COPCs is airborne deposition from stack emissions at TA-21.

2.3.5.1 (b) Landfill Subsurface

Subsurface Landfill Gas

Landfill gas was analyzed for fixed gases, including methane, carbon dioxide, and oxygen, and for volatile organic compounds. This section discusses the extent of the landfill gas plume, the density of the landfill gas, volatile organic compounds detected in the landfill gas, and their correlation with other municipal landfills.

The extent of landfill gas can readily be seen by examining two sets of box plots that show concentration versus monitoring well location. Box plots are used to show the difference in concentration between data groups. The data groups in Figure 2.3.5.1-3(a,b) represent the TA-73 monitor well IDs. The box shows the interquartile range in concentration (or the 25th percentile, the median as the line within the box, and the 75th percentile). These box plots also show the actual results at each location, where detected sample results are plotted as "x" symbols and non-detects are shown as "o" symbols. These box plots combine all sampling events at each location (except the June 1996 sampling event, as discussed in Section 2.3.4.3). The reader can readily see that cis-1,2-dichloroethene and vinyl chloride exhibit similar trends across individual monitor wells. These box plots can also be used to identify those monitor wells that are within the main landfill gas plume ("high gas") and those that are outside ("low gas"). Sample locations in the debris disposal area (DDA) wells are spatially removed from the main landfill and are kept as a distinct group. This information, along with the original location group designation is provided in Table 2.3-5.1-9. To further show the difference between the "high gas," "low gas," and the debris disposal area location groups, a second series of box plots is presented for cis-1,2-dichloroethene and vinyl chloride. As clearly shown in Figure 2.3.5.1-4, the concentration of these gases in the "low gas" or "debris disposal area" location groups is much less than the "high gas" sample locations.

Figure 2.3.5.1-5 shows the approximate lateral extent of methane in soil gas at the main landfill. The eastern extent of methane in soil gas at the main landfill is bounded by monitor well LP-2, and the western extent by LP-5 and LP-9, each of which has failed to show the presence of methane during multiple sampling events. The northern extent of the landfill gas plume is bounded by LPS-1 and LP-8, which contain little or no methane. Monitor wells LP-1 and LP-6 may be considered representative of background soil gas, which generally contains no methane, 1%-3% carbon dioxide, 18%-21% oxygen, and the balance nitrogen.

cis-1,2-dichloroethene (PPBV)

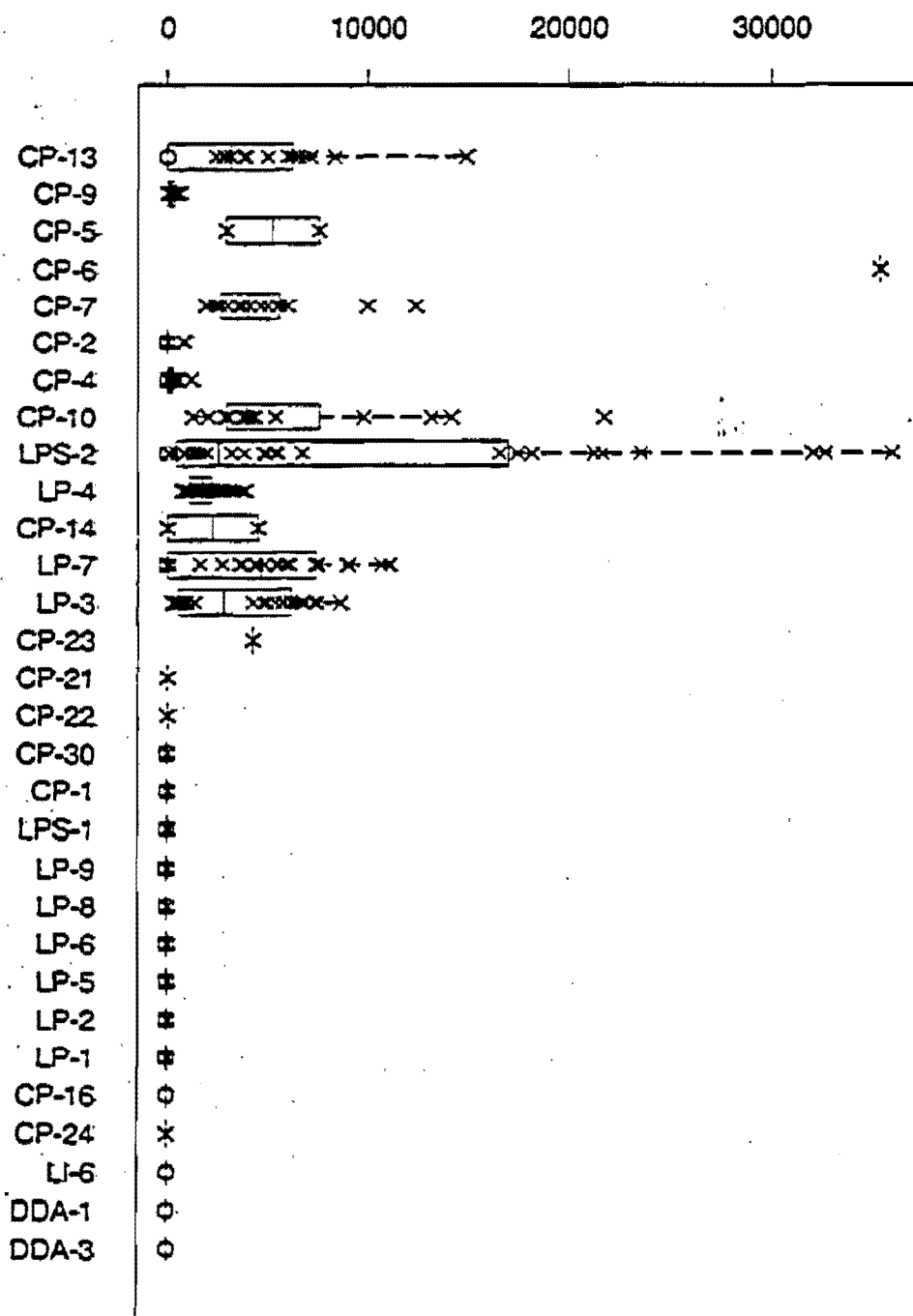


Figure 2.3.5.1-3(a). Box plots of cis-1,2-dichloroethene by well

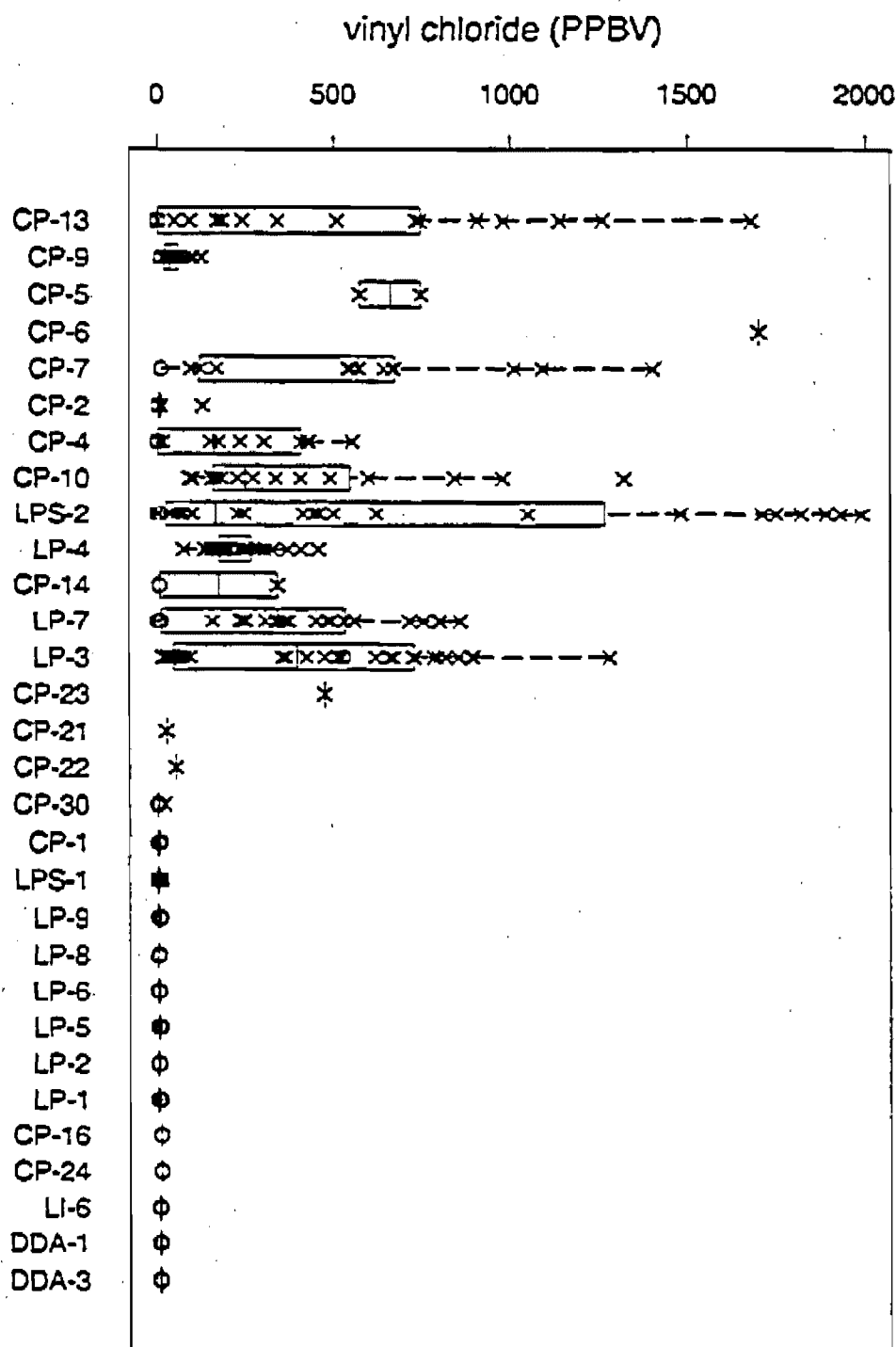
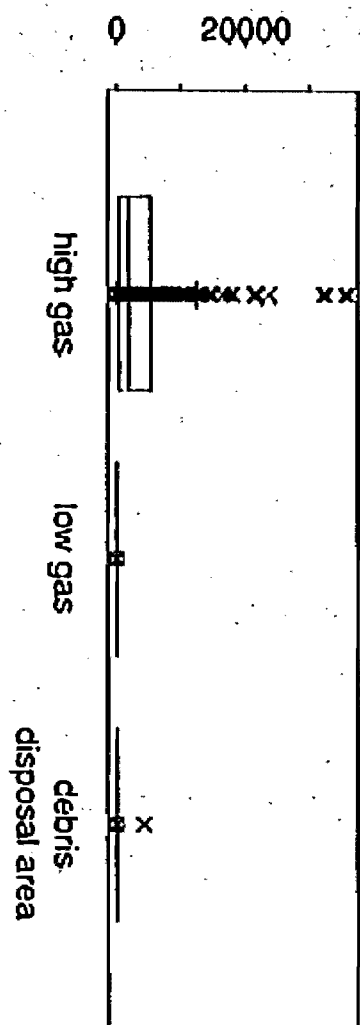


Figure 23.5.1-3(b). Box plots of vinyl chloride by well

cls-1,2-dichloroethene (PPBV)



vinyl chloride (PPBV)

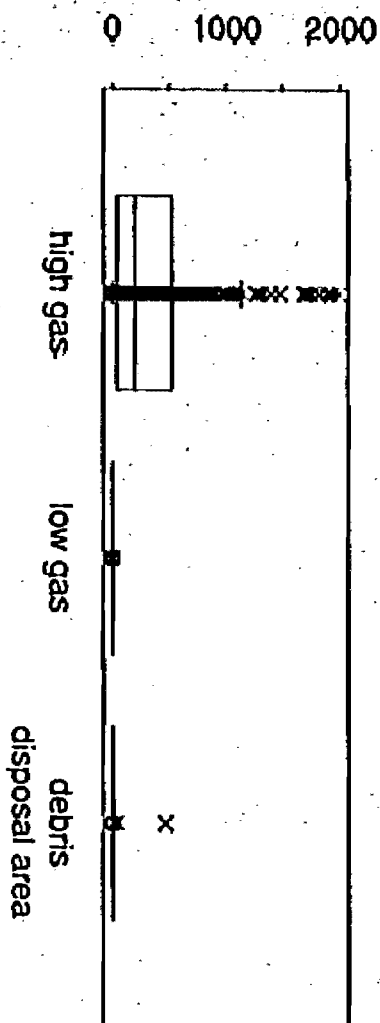


Figure 2.3.5.1-4

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TABLE 2.3-5.1-9
SUMMARY OF SOIL GAS MONITORING WELLS BY GROUP

Monitoring Well ID	Original Group	Revised Group
CP-1	Interior	Low Gas
CP-2	Interior	High Gas
CP-10	Interior	High Gas
CP-13	Interior	High Gas
CP-14	Interior	High Gas
CP-16	Interior	Low Gas
CP-21	Debris Disposal Area	Debris Disposal Area
CP-22	Debris Disposal Area	Debris Disposal Area
CP-23	Debris Disposal Area	Debris Disposal Area
CP-24	Debris Disposal Area	Debris Disposal Area
CP-30	Debris Disposal Area	Debris Disposal Area
CP-4	Interior	High Gas
CP-5	Interior	High Gas
CP-6	Interior	High Gas
CP-7	Interior	High Gas
CP-9	Interior	High Gas
DDA-1	Debris Disposal Area	Debris Disposal Area
DDA-3	Debris Disposal Area	Debris Disposal Area
LI-6	Interior	Low Gas
LP-1	Perimeter	Low Gas
LP-2	Perimeter	Low Gas
LP-3	Perimeter	High Gas
LP-5	Perimeter	Low Gas
LP-7	Perimeter	High Gas
LP-8	Perimeter	Low Gas
LP-9	Perimeter	Low Gas
LPS-1	Perimeter	Low Gas
LPS-2	Perimeter	High Gas

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The southern extent of soil gas methane plume has not been completely defined (Figure 2.3.5.1-5). Based on examination of the methane concentration contours on the north, east, and west sides of the landfill, we estimate that the methane plume extends southward beneath the airport runway, but probably not beyond it. A separate, but much smaller, methane plume is present in the vicinity of the debris disposal area, where methane concentrations of 1% to 10% have been observed in monitor wells DDA-1 and DDA-3.

Figure 2.3.5.1-6 shows the vertical extent of methane in soil gas in the vicinity of the main landfill. This figure shows that landfill gas has migrated from the landfill refuse both laterally and vertically into the surrounding Bandelier tuff. Methane can be detected in monitor well LPS-2 to a depth of 178 feet below surface, the deepest depth monitored during this investigation. At this location, methane was present during multiple sampling events at concentrations of approximately 4%. Although the vertical extent of methane in soil gas has not been fully defined beneath the main landfill, it can be inferred that the methane plume extends to depths of at least 200 feet. Figure 2.3.5.1-7 shows a north-south cross-section through the main landfill, and Figure 2.3.5.1-6 is our best estimate of the vertical distribution of methane in soil gas along this profile. Methane concentrations exceeding 50% (by volume) occur within the refuse itself, declining steadily with depth to approximately 4% at the deepest depth sampled (LPS-2 at 178 feet). Along the southern portion of the landfill, the methane plume extends further away from the refuse than it does on the north. This asymmetry in the landfill gas plume geometry is believed to result from more rapid oxidation of methane along the northern edge of the main landfill near the steep sloping wall of Pueblo Canyon. In this area, better subsurface ventilation presumably maintains the boundary between the anoxic landfill gas plume and the surrounding aerobic soil gas closer to the refuse source.

Figure 2.3.5.1-8 shows methane, carbon dioxide, and oxygen concentration profiles versus depth for one of the multi-port monitor wells located along the taxiway. This profile is typical of monitor wells located within the landfill gas plume. Concentrations of methane and carbon dioxide fall off rapidly with depth, while oxygen concentrations increase with depth. This pattern reflects the fact that the source of the landfill gas is refuse buried at relatively shallow depths, mostly less than 50 feet below surface. Therefore, the highest methane and carbon dioxide concentrations in soil gas occur within 50 feet of the surface, with declining concentrations observed at deeper depths where landfill gas is mixing with the underlying soil gas composed primarily of nitrogen and oxygen.

A cross-section showing the vertical extent of elevated carbon dioxide in soil gas at the main landfill (Figure 2.3.5.1-9) appears similar to that for methane, except that the carbon dioxide concentrations are higher at depth. This is to be expected, given not only the primary source of carbon dioxide in the refuse due to methanogenesis, but the secondary source the perimeter of the anoxic landfill gas plume, where methane is being oxidized to carbon dioxide, as shown in the conceptual model (Figure 2.3.5-1).

Figure 2.3.5.1-10 shows a 3D scatter plot of methane, carbon dioxide, and oxygen concentrations in soil gas samples collected from the TA-73 monitor wells. As shown here, the majority of samples are mixtures of carbon dioxide and either methane or oxygen, but generally not both methane and oxygen. This observation reflects the fact that, in the presence of free oxygen, subsurface methane is thermodynamically unstable, and tends to be rapidly oxidized by methanotrophic bacteria. Therefore, as shown in the revised biochemical processed model (Figure 2.3.5-1) mixing of methane and oxygen occurs over a

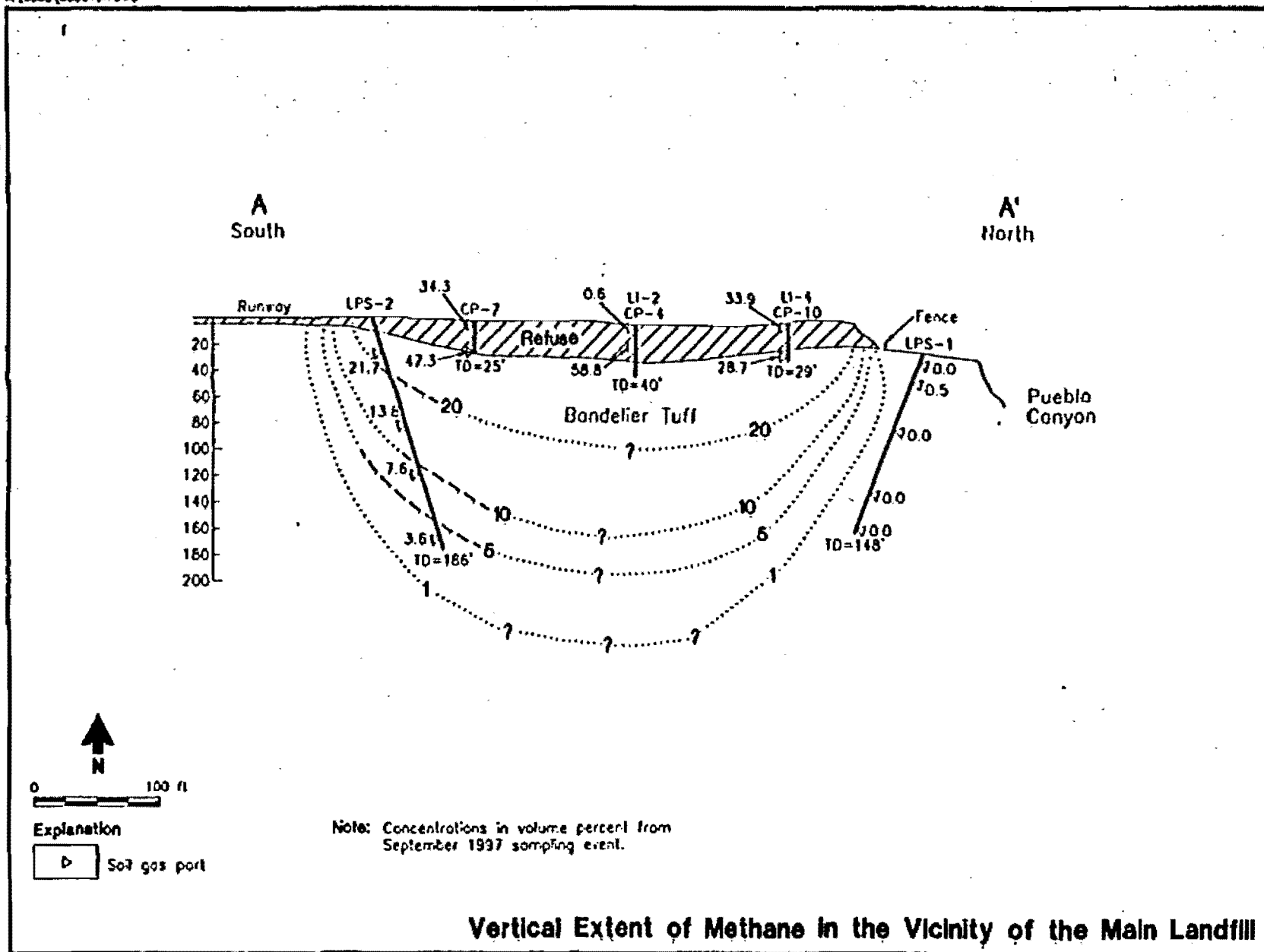
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Figure 2.3.5.1-6

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Major Gas Concentrations vs. Depth for Well LP-3

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Concentration (Vol %)

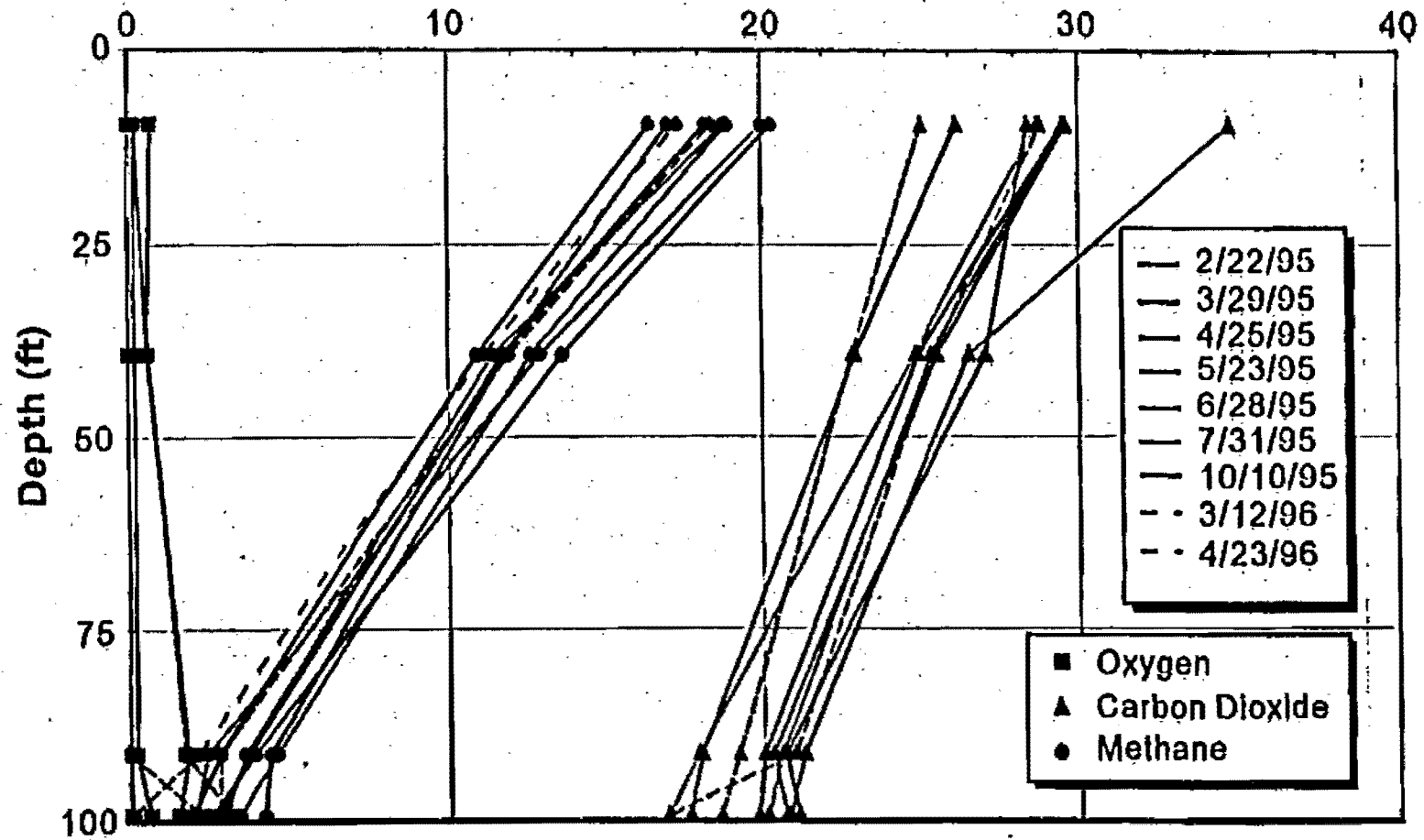
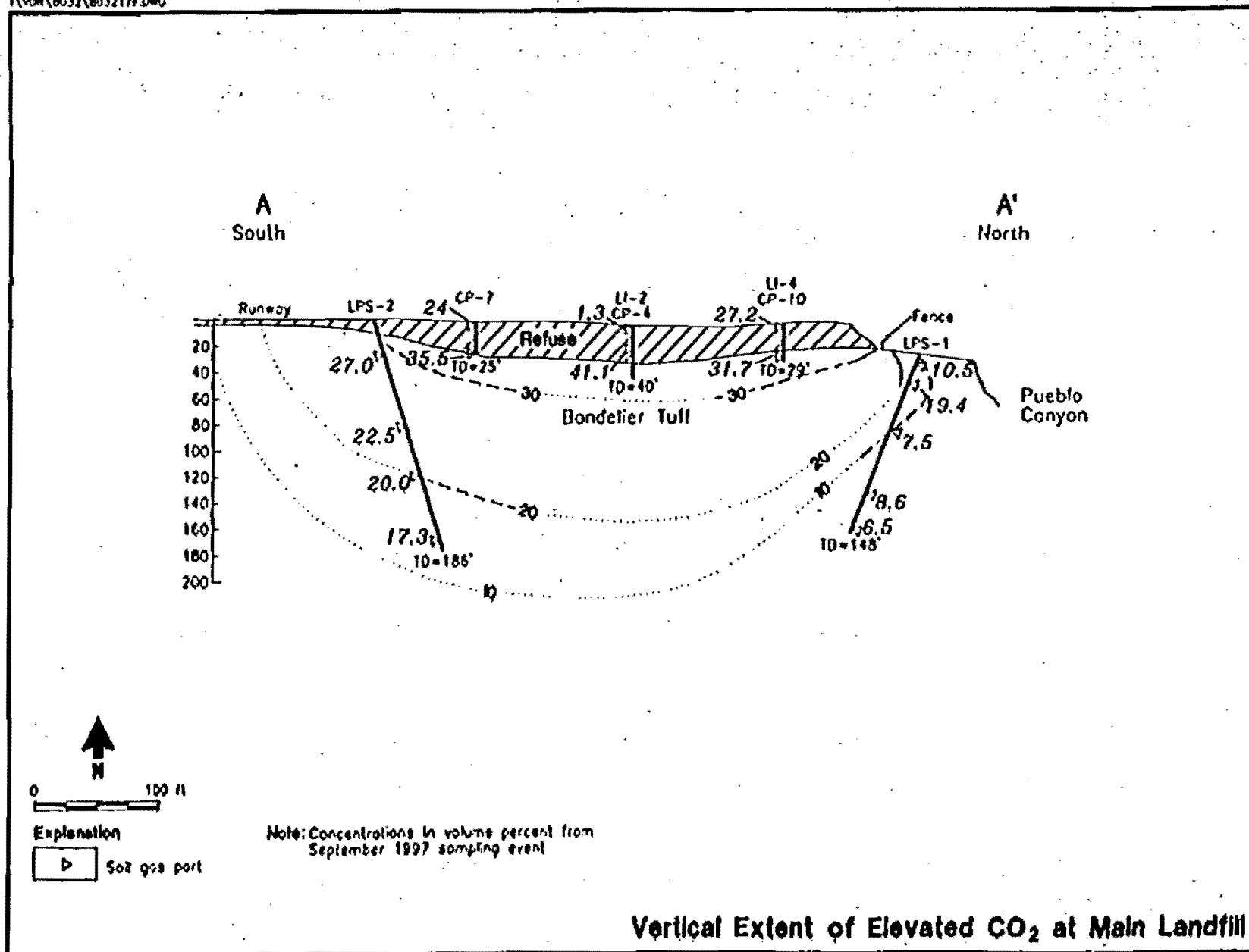


Figure 2.3.5.1-9



Soil Gas Composition at TA-73 Landfill

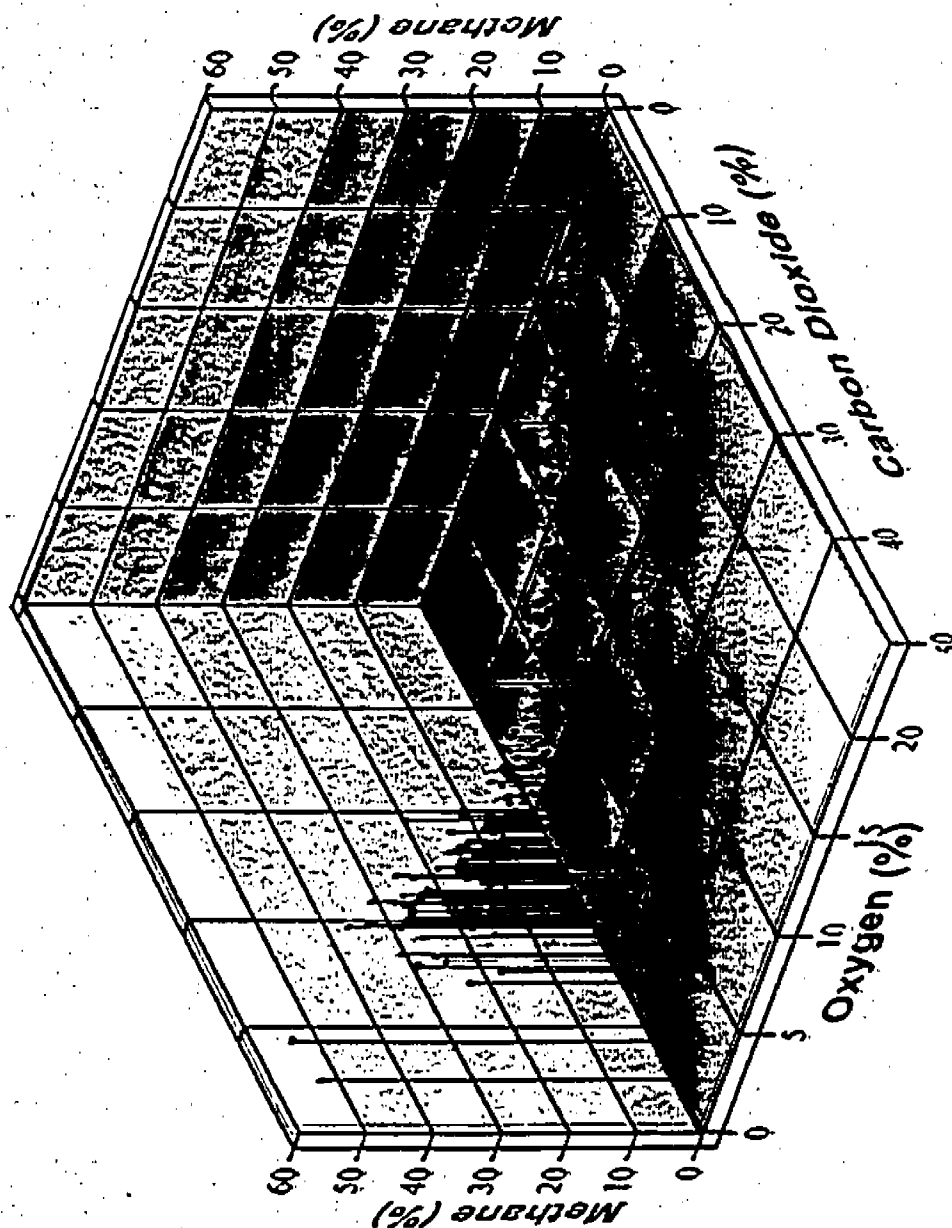


Figure 2.3.5.1-10

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rather narrow zone, with generation of large amounts of heat. The eastern edge of the mixing zone approximately coincides with monitor wells LI-1/CP-1 and LI-6, as evidenced by the elevated subsurface temperatures observed at these locations, which range from approximately 45°C to 65°C (115°F to 150°F) (see Appx. D-3).

Seasonal changes in soil gas composition have been noted in a number of monitor wells. Figure 2.3.5.1-11 shows fluctuations in methane concentrations of selected CP-series wells and soil gas ports located within the interior of the main landfill. While the sampling frequency was not adequate to thoroughly define the patterns, most of these wells show increasing concentrations of methane during the spring and summer months, with an abrupt decline apparent during the autumn. There are two possible explanations for this observation. First, rates of methanogenesis within the refuse are expected to be proportional to temperature. Subsurface temperature monitoring (Appendix D-3) has shown that significant seasonal temperature oscillations can be detected to depths of approximately 15 feet. Because appreciable quantities of the landfill refuse lie at shallower depths, we would expect that the overall rate of methanogenesis should reach a maximum during the late summer, when subsurface temperatures have peaked. This is consistent with the observed maximum in methane concentrations in the interior monitor wells at this time of year.

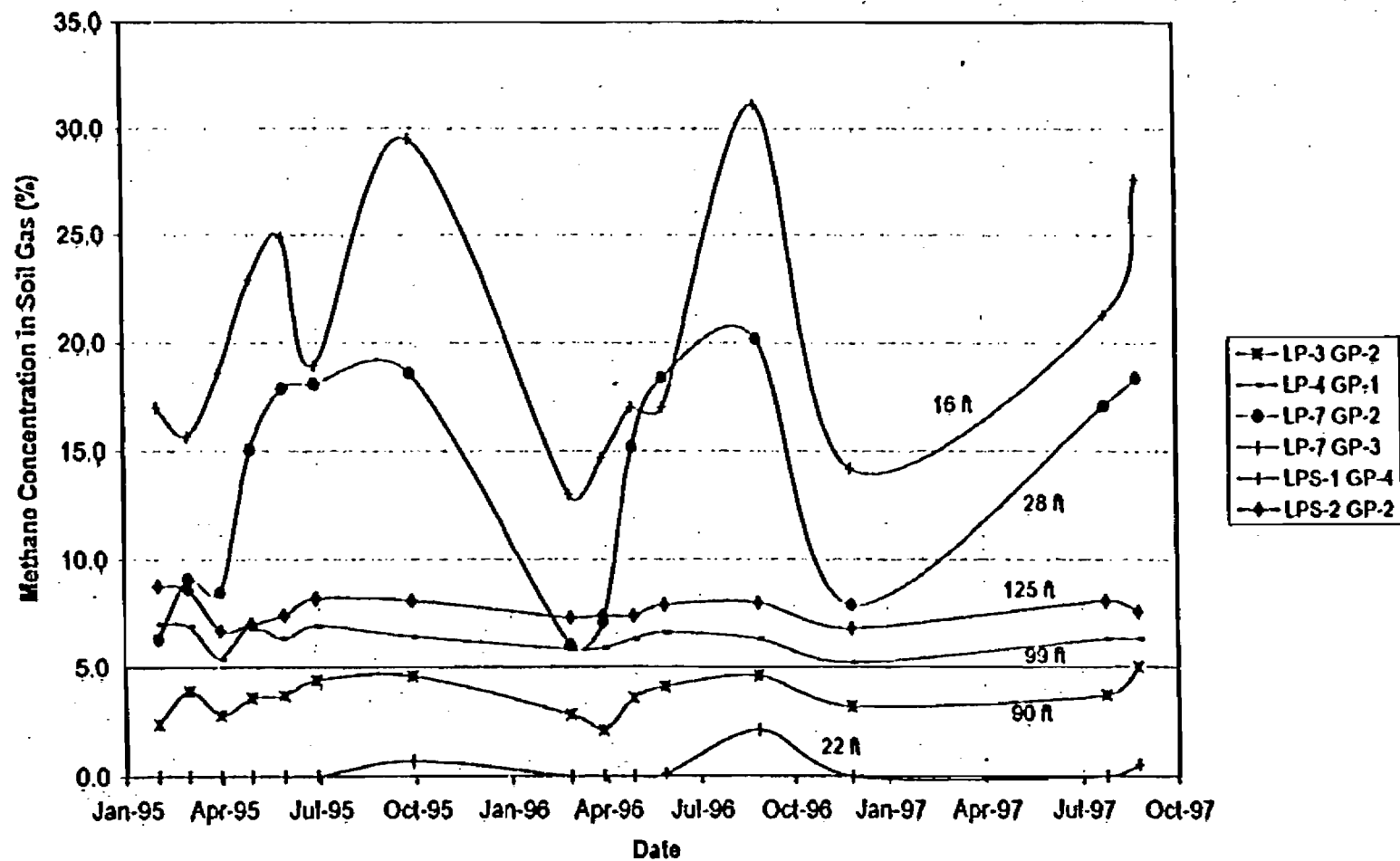
Another possible factor is the moisture content of the soil surface. Because much of the total precipitation occurs during the summer, it seems reasonable that the gas permeability of the landfill surface might be lower then in response to partial filling of the pore spaces with water. Even if the methane production rate remained constant, and if the flux of landfill gas to the atmosphere were reduced due to a reduction in gas permeability, a buildup of methane within the refuse during the summer could occur. The relative importance of these two effects (temperature and precipitation) are unknown, but it is probable that temperature is the dominant factor.

Figure 2.3.5.1-12 shows similar fluctuations in soil gas concentrations of carbon dioxide and oxygen at the 15-foot depth in monitor well LP-8 located north of the landfill on the edge of Pueblo Canyon. At this location, which is outside the perimeter of the landfill gas plume, no methane is present, but carbon dioxide concentrations rise markedly throughout the spring and summer, with concomitant declines in oxygen. The reverse process occurs during the late autumn. This is consistent with the seasonal expansion and contraction of the landfill gas plume, as described above, with the plume reaching its maximum lateral extent during late summer or early autumn.

Subsurface Landfill Gas Density

Depending on the relative proportions of methane and carbon dioxide, landfill gas may either be denser or less dense than air. The relative vapor densities (RVD) of soil gas samples collected from the TA-73 monitor wells were calculated to assess the likelihood that soil gas would rise or sink due to anomalous density. Figure 2.3.5.1-13 shows ranked RVD values for 111 landfill gas samples collected from the CP-series monitor wells located within the interior of the main landfill, with a relative vapor density of 1.0 being equal to that of pure air at the same temperature and humidity. As shown here, approximately 80% of the samples have RVD values greater than one, indicating they are denser than air, and would therefore have a tendency to sink. Some of the landfill gas samples are found to be up to 8% denser than air.

Figure 2.3.5.1-11



Seasonal Fluctuations in Soil Gas Composition in Selected CP Wells in Main Landfill

Seasonal Changes in Soil Gas Composition at 15-ft Depth in Well LP-8

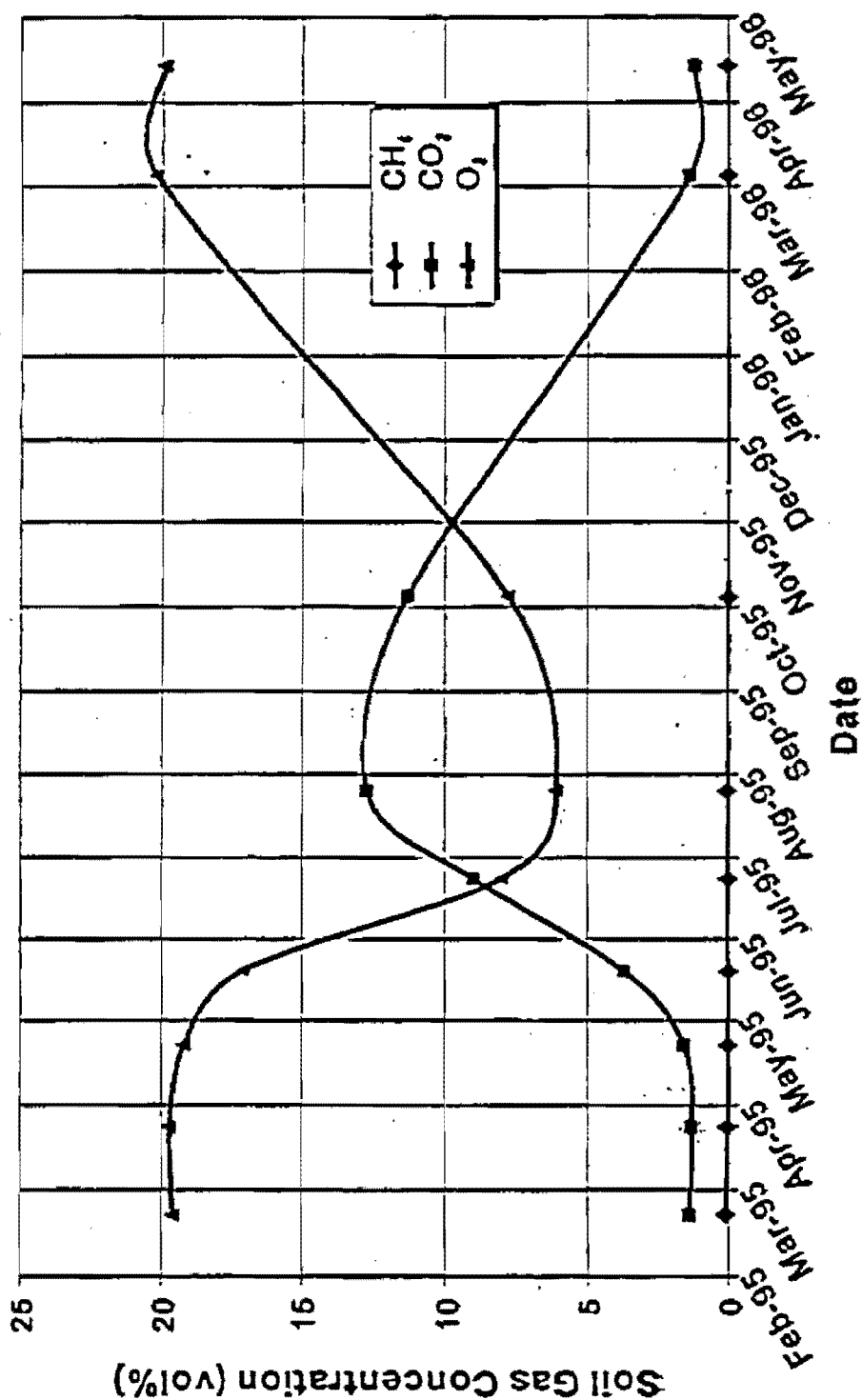
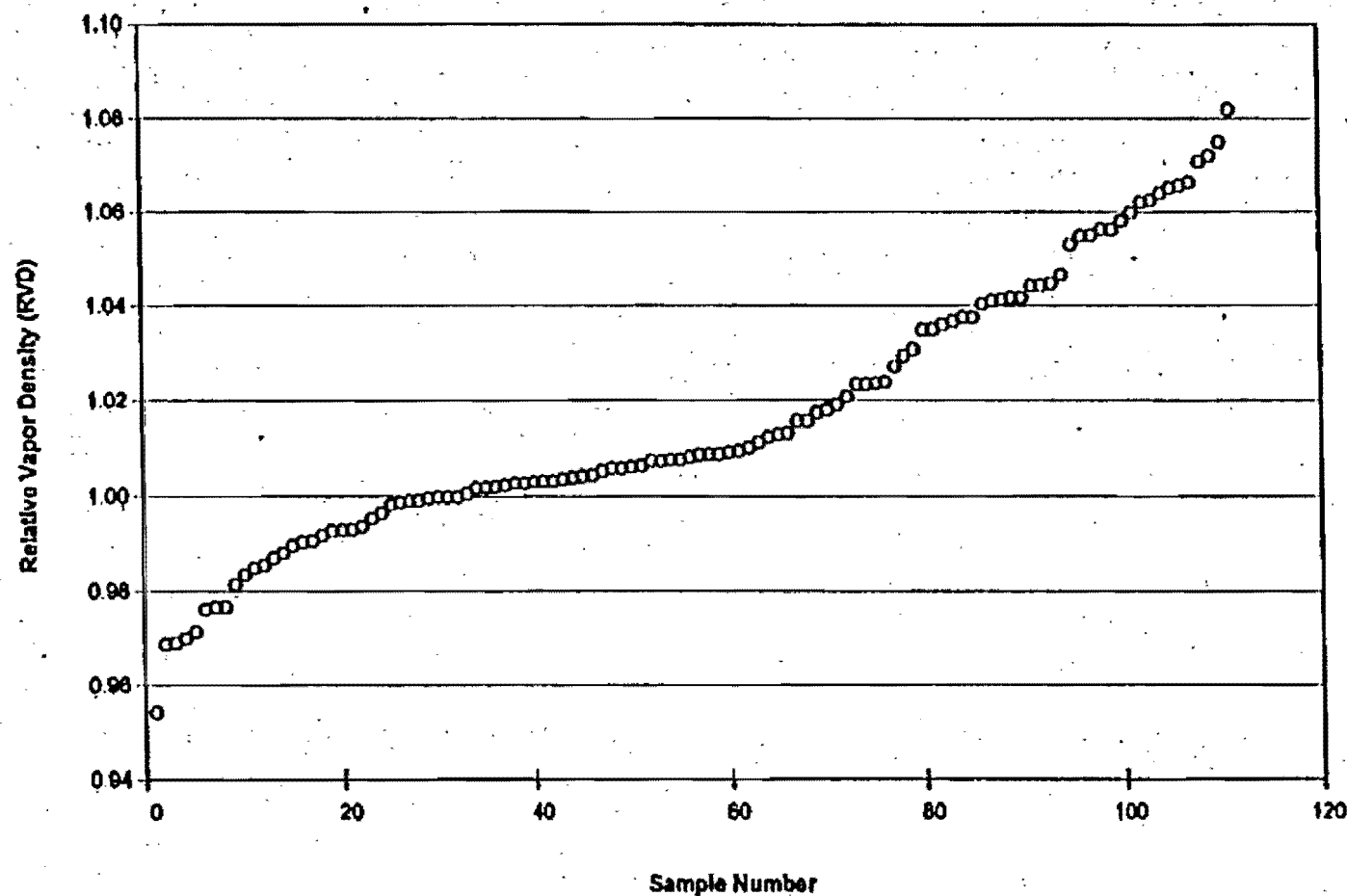


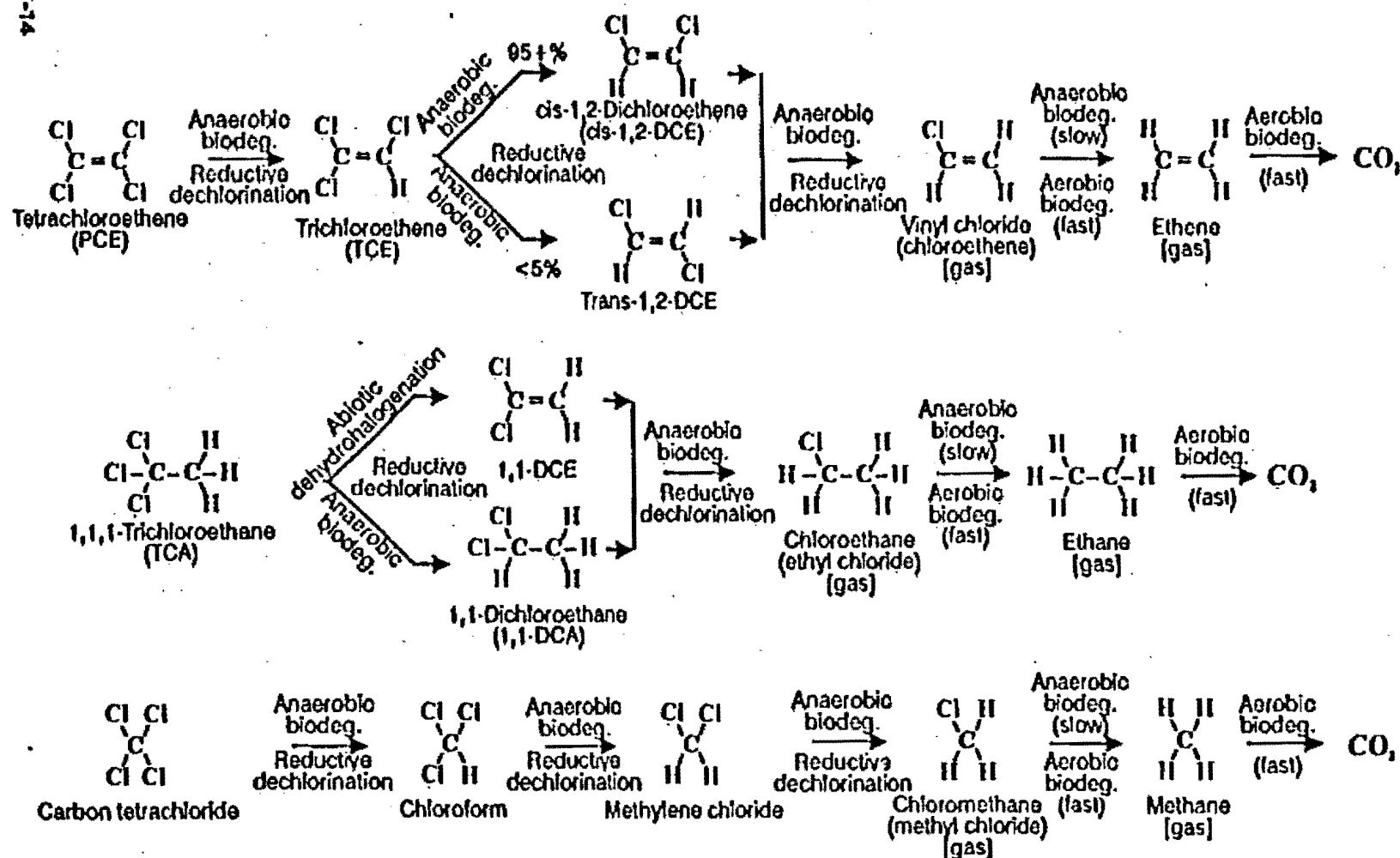
Figure 2.3.5.1-12

Figure 23.5.1-13



RVD Values for 111 Landfill Gas Samples Collected from CP Wells

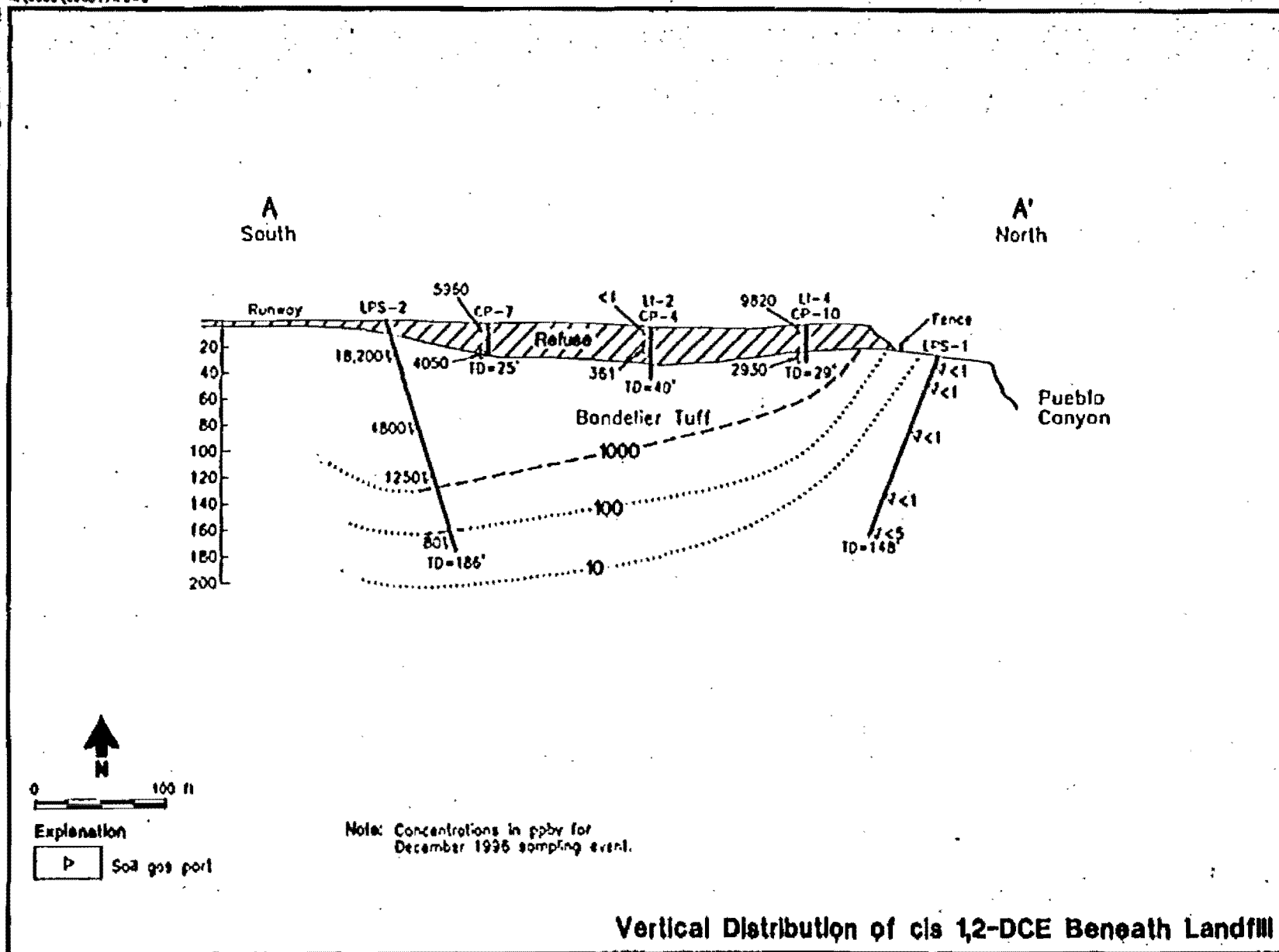
Chlorinated Hydrocarbon Degradation Pathways



Source: McCarty, 1994, An Overview of Anaerobic Transformation of Chlorinated Solvents, Symposium on Intrinsic Bioremediation of Ground Water, pages 135-142, Arizona Dept. of Environmental Quality, unpublished data.

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Figures 2.3.5.1-15



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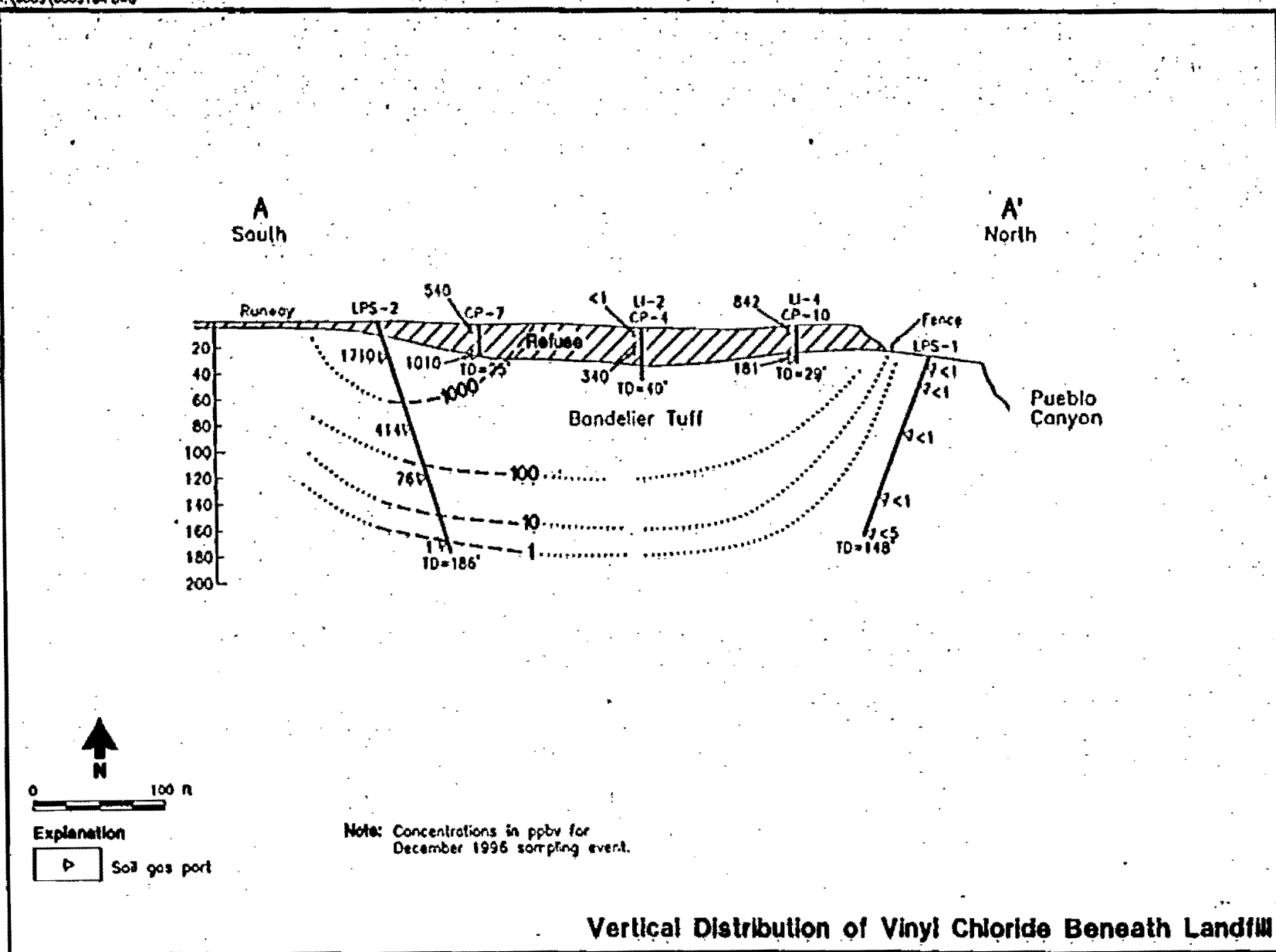
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Figures 2.3.5.1-16

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Because deep soil gas monitor wells have not yet been installed beneath the central portion of the main landfill, no information exists on the vertical distribution of VOCs directly below the thickest deposits of refuse. However, comparison of soil gas data from the interior monitor wells (CP-series) with those of the perimeter wells suggests that chlorinated VOC concentrations observed beneath the southern portion of the landfill adjacent to the taxiway are as high or higher than those that may or potentially exist within the refuse itself.

Throughout the present study, it has been noted that the highest VOC concentrations in soil gas are observed at those locations with the most methane. Figure 2.3.5.1-17 shows the concentration profiles of methane, carbon dioxide, cis 1,2-DCE, and vinyl chloride in monitor well LPS-2 during the December 1996 sampling event. This graph clearly shows how the concentrations of the two chlorinated VOCs parallel that of methane. This same pattern holds for other monitor wells located within the landfill gas plume (e.g., LP-3, LP-4, LP-7).

Figure 2.3.5.1-18 shows a cross-plot of methane versus vinyl chloride for deep soil gas samples collected from monitor wells at the main landfill. A crude, but distinct, positive correlation is apparent. As shown here, the presence of vinyl chloride in soil gas is nearly always accompanied by the presence of methane. Similar correlations exist for cis 1,2-DCE (Figure 2.3.5.1-19) and other VOCs.

The explanation for the positive correlation between methane and VOCs is probably two-fold. First, landfill gas consisting of methane and carbon dioxide is generated within the refuse in the same areas where solvents were previously disposed in the landfill. Therefore, as landfill gas migrates away from the refuse, it carries with it any VOCs that may have been present. Landfill gas thus serves as a carrier gas for transport of VOCs. Secondly, many chlorinated VOCs, such as vinyl chloride, are readily biodegraded at the anaerobic/aerobic boundary (mixing zone) of the landfill gas plume (Figure 2.3.5-1), where oxidation of methane is rapidly occurring. In this environment, biodegradation of chlorinated VOCs occurs via co-metabolism by methanotrophic bacteria, a process that has been shown to be very effective in the presence of methane and oxygen (Roberts et al. 1989, 59064). The biodegradation of chlorinated VOCs within and adjacent to the landfill is discussed further in Section 2.3.5.2.

As discussed previously for methane, VOC concentrations within the interior of the main landfill appear to show a seasonal cycle, with peak concentrations occurring during the summer and early autumn months. Figure 2.3.5.1-20 shows this pattern for cis 1,2-DCE in three of the CP-series monitor wells. A similar, though slightly less pronounced, trend can be seen for vinyl chloride (Figure 2.3.5.1-21). The observation that seasonal variations in VOC concentrations in soil gas parallel those of methane is further confirmation for our conceptual model that landfill gas serves as a carrier for the transport of hazardous VOCs.

Although soil gas sampling at the Debris Disposal Area indicates the presence of methane (DDA-1 and DDA-3), observed concentrations of VOCs are generally much lower than those at the Main Landfill (see Table 2.3.4.3-26). Therefore, the quantities of VOCs present in this area appear to be relatively small.

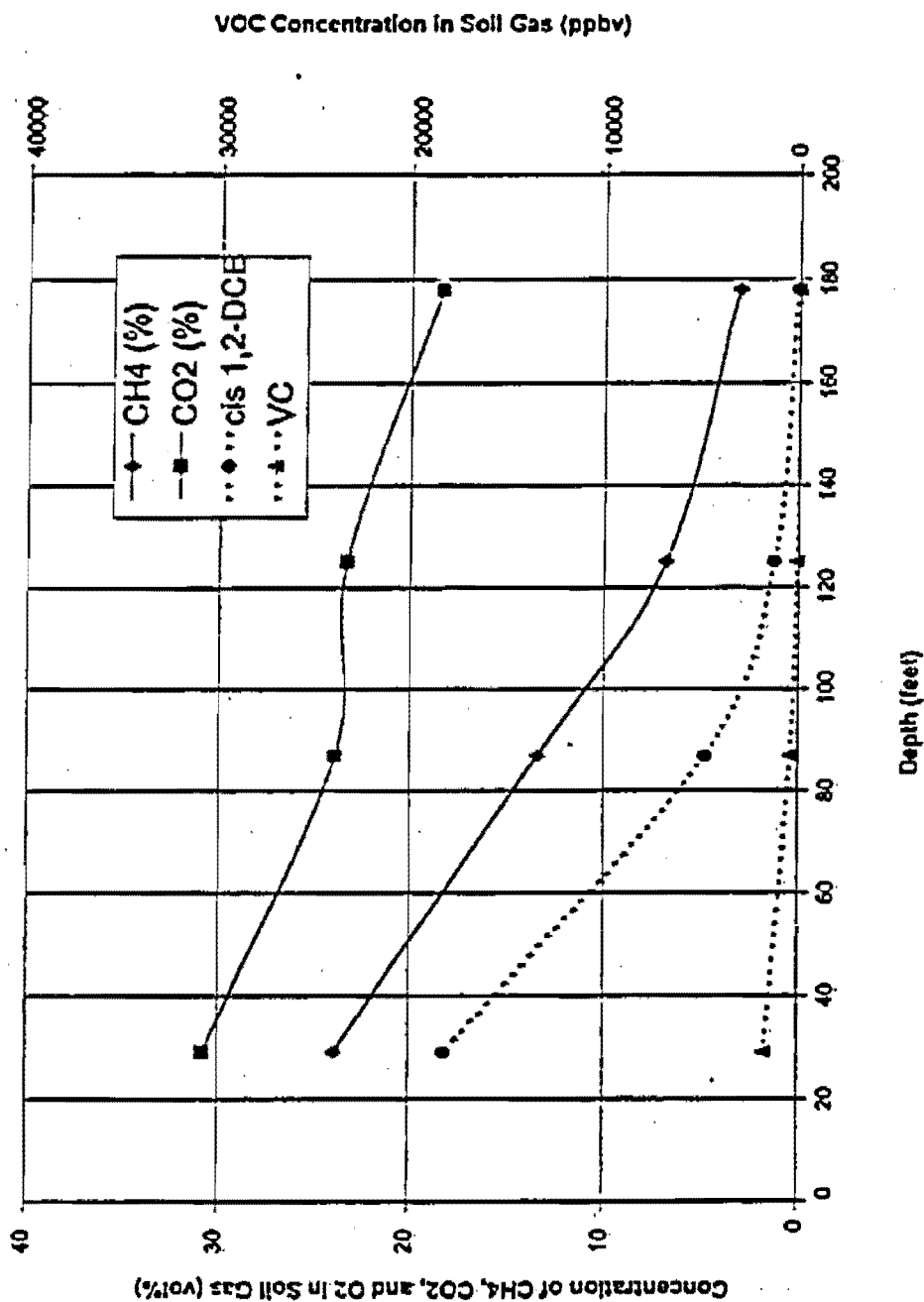
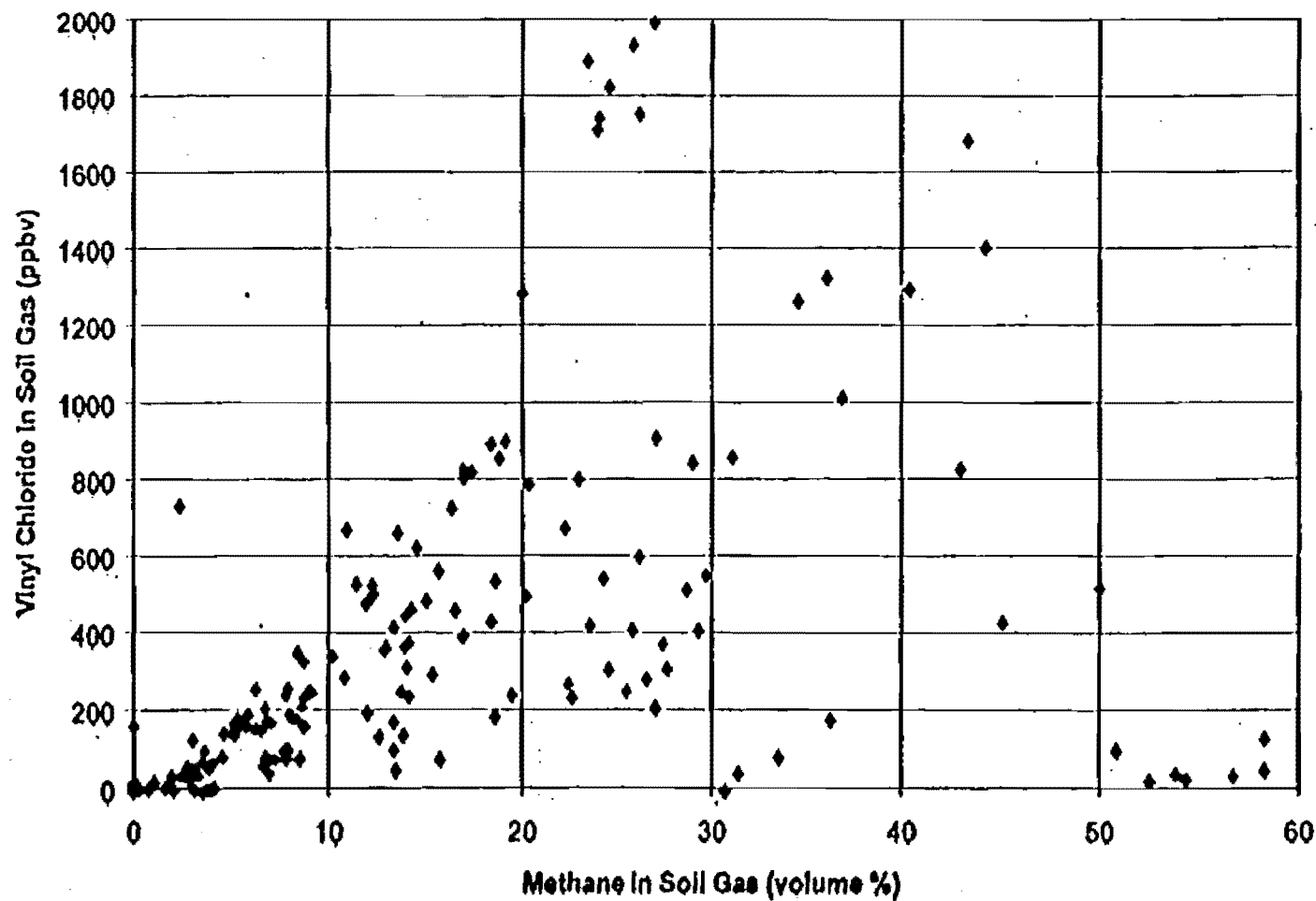


Figure 2.3.5.1-17

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Figure 2.3.5.1-18



Cross-Plot of Methane vs Vinyl Chloride in Deep Soil Gas at Landfill

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Figure 2.3.5.1-19

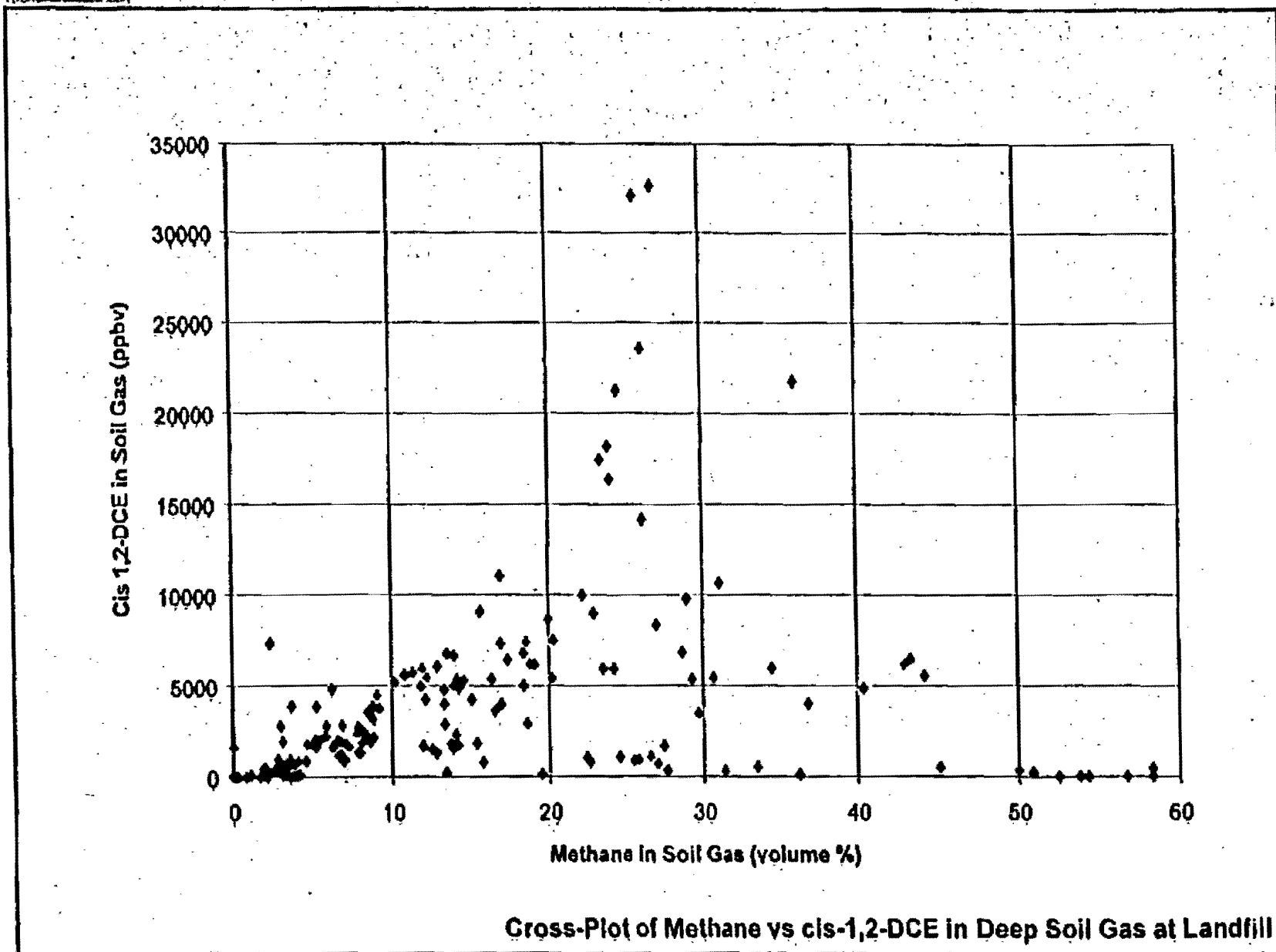
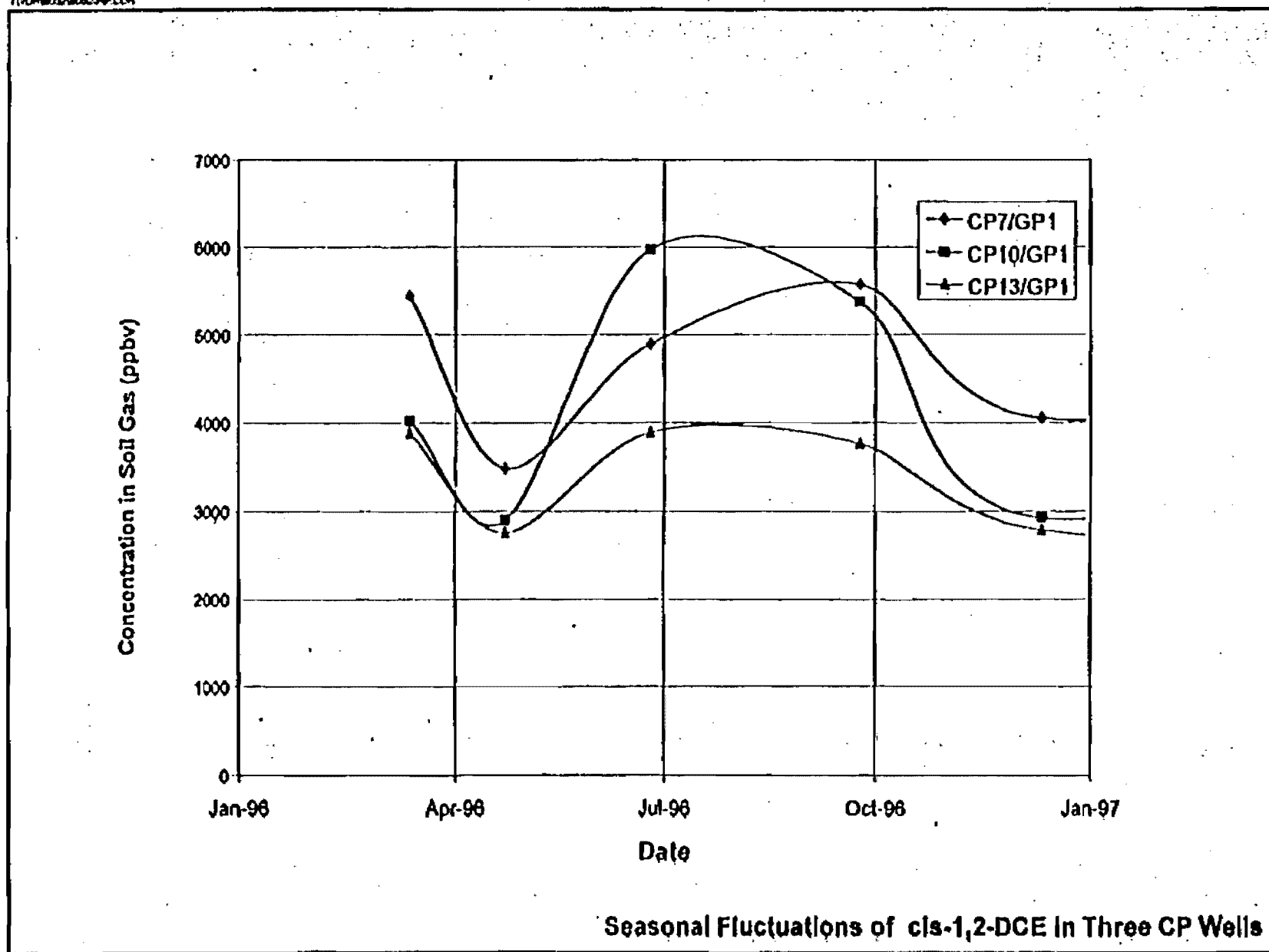


Figure 2.3.5.1-20

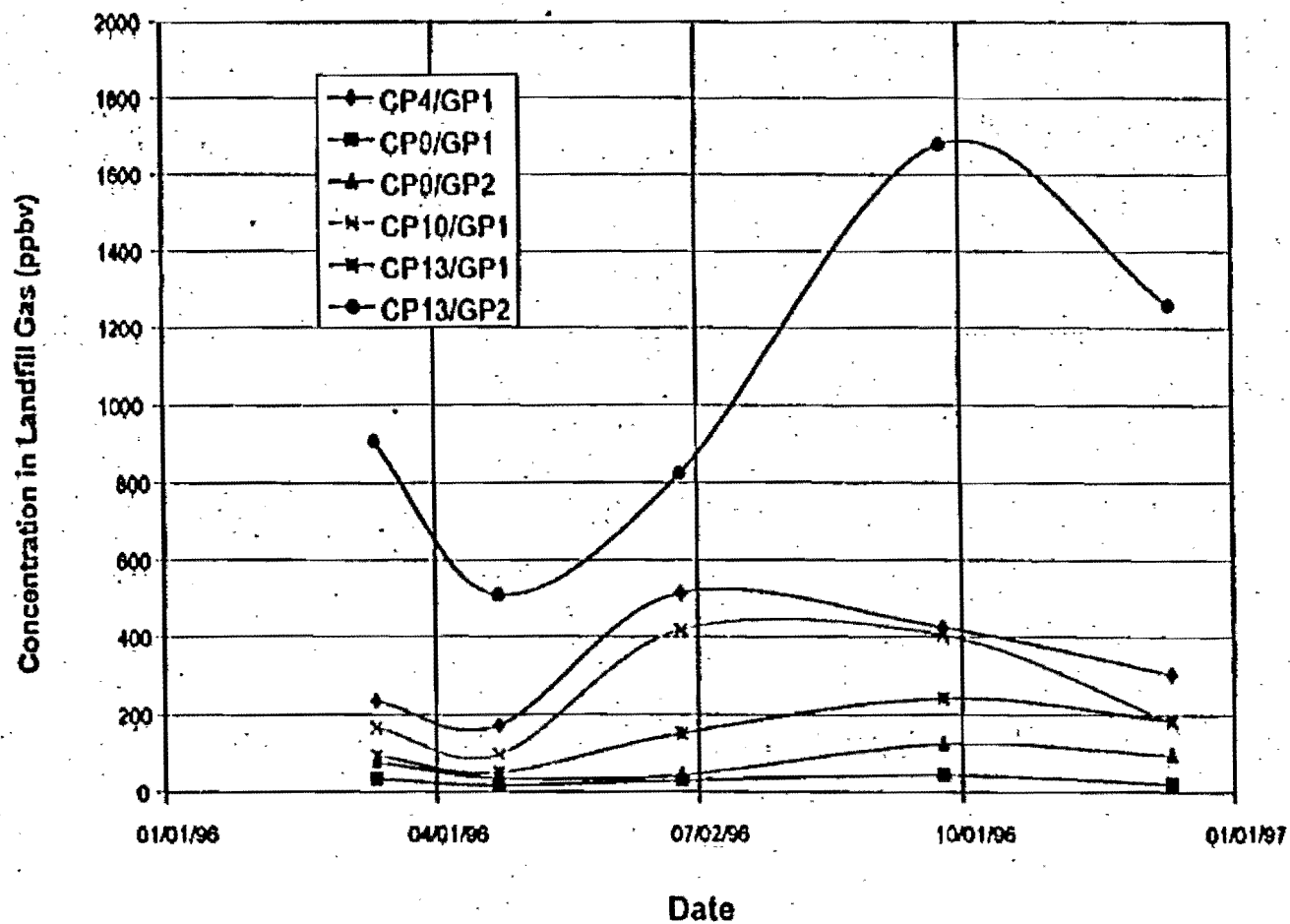


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Figure 2.3.5.1-21



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2.3.5.1 (c) Pore Water

Pore water samples collected from the suction lysimeters were analyzed for volatile organic compounds, inorganic chemicals, and uranium. Results for each of these suites of analytes are discussed below.

VOCs in Pore Water

Pore water samples were collected from suction lysimeters installed within and surrounding the main landfill. Most of the lysimeters yielded water intermittently, and others not at all. There are at least two reasons why some lysimeters failed to yield pore water: (1) poor contact between the porous ceramic cup and the surrounding soil material, and (2) suction lysimeters are only capable of sampling pore water from unsaturated soil with water potential (matric potential) wetter than about 0.5 bar tension. Water samples cannot be collected from locations drier than this. Further discussion of measured soil water potentials may be found in Appendix D-3.

Because of the problems described above, the pore water chemistry database is much less extensive than that for soil gas. Suction lysimeters that have yielded sufficient water for VOC analysis include landfill interior monitor wells LI-1, LI-3, LI-5, and perimeter monitor wells LP-4, LP-5, LP-7, and LP-9. Neither of the two lysimeters located near the Debris Disposal Area yielded water (DDA-1 and DDA-3), probably because it is too dry in this area. Samples collected from the interior of the landfill are believed to represent landfill leachate, whereas samples collected from the perimeter monitor wells appear to represent relatively unimpacted pore water.

Based on the results of laboratory analysis of leachate from the interior monitor wells, the nature of VOCs in pore water within and adjacent to the landfill are now reasonably well known. However, given the relatively small number of locations and depths where pore water samples have been collected, it is not really possible to define the extent of landfill leachate at this time, and indeed this may never be possible due to the difficulty in obtaining water samples from unsaturated soils. In addition, suction lysimeters are not ideal for sampling VOCs in water, as loss of VOCs is possible during the sampling process. Nevertheless, this method is the best available technology when dealing with unsaturated soils.

A total of 22 different VOCs were detected in pore water samples collected from the suction lysimeters (see Table 2.3.4.3-22). The list of VOCs in pore water is similar to that detected in the soil gas samples (see Table 2.3.4.3-26; Attachment 1). In addition, the suite of VOCs detected in pore water are all comparable to VOCs detected in other municipal landfills. Among the compounds commonly detected were acetone, 2-butanone, carbon disulfide, cis 1,2-DCE, the BTEX compounds, trimethylbenzene, and dichlorobenzenes. The lysimeter in monitor well LI-3 yielded the samples most representative of landfill leachate. Water from this lysimeter was of a grayish color and had a strong sulfide odor. Table 2.3.5.1-10 shows ranges of VOC concentrations detected in the water samples collected from the suction lysimeters.

In order to document the "municipal" nature of the TA-73 landfill, VOC concentrations in pore water were compared to VOC concentrations from other municipal landfills as documented by the EPA. As can be seen in Table 2.3.5.1-2, all VOCs present at the TA-73 landfill are comparable to the documented levels.

TABLE 2.3.5.1-10
CONCENTRATION RANGES OF VOCs DETECTED IN PORE WATER SAMPLE

	Concentrations (µg/L)						
	Interior Wells			Perimeter Wells			
	LI-1 Lysimeter @ 76' bgs	LI-3 Lysimeter @ 23.3' bgs	LI-5 Lysimeter @ 28.8' bgs	LP-4 Lysimeter @ 34.3' bgs	LP-5 Lysimeter @ 10.7' bgs	LP-7 Lysimeter @ 55' bgs	LP-9 Lysimeter @ 26' bgs
Acetone	25	88-17,000	ND-730	ND	ND-11	ND-10	ND-8
2-Butanone	5.9	8.7-1000	ND-1500	ND	ND	ND	ND
Carbon Disulfide	ND	ND-83	ND-20	9	ND-3	ND	ND-3
Chloromethane	4.2	ND-8.4	ND	ND	ND	ND	ND
1,2-DCA	4.8	ND-11	ND	ND	ND	ND	ND
cis 1,2-DCE	ND	50-90	ND	7	ND	ND-21	ND
2-Hexanone	ND	ND-50	ND	ND	ND	ND	ND
Methylene chloride	ND	ND	ND-7.6	ND	ND	ND	ND
4-Methyl-2-pentanone	ND	ND	ND-44	ND	ND	ND	ND
Benzene	ND	ND-5.0	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND-32	ND-12	ND	ND	ND	ND
Toluene	ND	ND	ND-11	ND	ND	ND	ND
M+P Xylenes	ND	15-46	ND-39 (total)	ND	ND	ND	ND
O-Xylene	ND	ND-7.9	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	4.7-15	ND-12	ND	ND	ND	ND
P-Isopropyltoluene	ND	ND-2.8	ND-11	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND-6.0	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND-10	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	8.1	ND	ND	ND	ND	ND

ND = Not Detected

Acetone was detected at the highest concentration in leachate of any VOC (17,000 µg/L in LI-3). Lower concentrations of acetone were detected in interior lysimeters at LI-1 (25 µg/L) and LI-5 (up to 730 µg/L). Trace concentrations of acetone were reported in perimeter lysimeters LP-5, LP-7, and LP-9. Using the relationship predicted by Henry's Law, the highest acetone concentration observed in leachate (17,000 µg/L) compares well with the highest concentration observed in soil gas (12,100 ppbv), and is similar to that observed at other municipal landfill sites (Senior 1990, 59065). Other ketones, including methyl ethyl ketone (MEK, 2-butanone) and methyl isobutyl ketone (MIBK, 4-methyl-2-pentanone) were present in leachate samples at lower concentrations of up to 1500 µg/L and 44 µg/L, respectively. Because of their high water solubilities and low Henry's law constants, these three ketones have a tendency to partition preferentially into the aqueous phase.

Two possible sources exist for the acetone observed in the landfill leachate: (1) liquid acetone solvents previously disposed in the landfill, and (2) acetone produced as a byproduct of the decomposition of higher molecular weight hydrocarbons. According to Mormile, et al. (1994, 59063), acetone, MEK, and MIBK are all readily and rapidly degraded by methanogenic bacteria. This suggests that either: (1) sufficient ketones were emplaced in the landfill prior to 1973 that complete biodegradation has not yet occurred, or (2) ketones are being produced and destroyed at comparable rates via fermentation reactions.

Among the chlorinated VOCs, *cis* 1,2-DCE was detected at the highest concentration in pore water (90 µg/L in LI-3 lysimeter at 23.3 feet bgs). This compound was also detected in pore water during multiple sampling events at monitor wells LP-4 and LP-7. This compound is believed to be a biodegradation product of PCE and TCE, as discussed previously in this section (Figure 2.3.5.1-14). Given its prevalence in the landfill gas, it is not surprising that *cis* 1,2-DCE is also present in the leachate and pore water. The maximum concentration reported in the pore water (90 µg/L) is very close to that predicted by Henry's Law (approx. 80 µg/L) based on the maximum concentration in soil gas observed at the nearest soil gas port (8,350 ppbv in CP-13 at the 30-foot depth). This suggests that the pore water and the soil gas are in approximate equilibrium with respect to the distribution of this compound.

BTEX compounds were reported at concentrations up to a few tenths of µg/L in leachate samples collected from LI-3 and LI-5 lysimeters, with ethylbenzene and xylenes being the most prevalent. These VOCs are most likely derived from gasoline and other fuel hydrocarbons disposed of in the landfill before its closure or used as an accelerant while refuse was being routinely burned.

In summary, a variety of dissolved VOCs were detected in leachate samples collected within the main landfill, with acetone being by far the most abundant. Although the leachate samples containing VOCs were primarily collected along the northern portion of the landfill, this is believed to be mainly a reflection of the spatial distribution of the lysimeter sampling devices from which pore water could be extracted. While VOC concentrations are clearly highest within and immediately below the refuse, the number of pore water samples that were collected were insufficient to create isopleth maps showing the detailed distribution of VOCs in leachate.

Inorganics in Pore Water

A total of 22 pore water samples collected from the suction lysimeters were analyzed for inorganics. Lysimeters sampled for inorganics included LI-3 and LI-5 located within the interior of the main landfill, and LP-5, LP-7, LP-9, and LPS-2 located around the perimeter. Samples collected from the interior of the landfill appear to represent landfill leachate, whereas samples collected from the perimeter monitor wells are believed to consist of relatively unimpacted pore water. Because of the larger volumes required for TAL inorganics analysis, fewer pore water samples were analyzed for these constituents than for VOCs.

Table 2.3.5.1-11 shows the ranges of concentrations of inorganics reported for the pore water and leachate samples. Inorganics detected in the leachate at high concentrations included calcium, magnesium, iron, potassium, and manganese.

Dissolved iron and manganese concentrations are commonly elevated above background in anaerobic environments, such as landfills (Cartwright et al. 1977, 59062). As discussed further in Section 2.3.5.2, chemical reduction of these two metals to lower valence states may result in an increase in their solubilities. While the pore water data are insufficient to define the extent of elevated iron and manganese in pore water, it is to be expected that elevated concentrations of these constituents exist everywhere within the refuse (see Figures 2.3.5.1-5 and 2.3.5.1-6). The mobility of these metals is dependent on the existence of anaerobic conditions. Iron, and to a lesser extent manganese, would be expected to precipitate rapidly upon encountering aerobic conditions at depth beneath the landfill (Whitemore and Langmuir 1975, 59368).

Elevated calcium concentrations have also been commonly reported in landfill leachates (Cartwright et al. 1977, 59062). Potential sources of calcium within the landfill include sheetrock, cement, and other construction materials.

Uranium was analyzed in only two pore water samples from the landfill interior. The result from one of these samples was rejected due to iron interferences (see Appendix C), and the other sample result has a high detection limit because of the analytical method used. Therefore, no conclusions can be drawn about the presence of uranium.

In summary, leachate samples collected from the suction lysimeters contained elevated concentrations of several inorganics, primarily as a result of solubilization of these elements under anoxic conditions. Further discussion of the environmental fate of inorganic constituents is provided in Section 2.3.5.2.

2.3.5.1 (d) Subsurface Soils and Tuff

Subsurface soil and tuff samples were analyzed for inorganic chemicals, radionuclides, and organic chemicals. This section discusses the extent of the inorganic chemicals and radionuclides identified as COPCs. Then a discussion is presented of the organic chemicals which were detected in the landfill.

TABLE 2.3.5.1-11

METALS RESULTS FOR LANDFILL PORE WATER SAMPLES

Constituent (mg/L)	Concentrations (mg/L)		Landfill Perimeter				Landfill Interior			
	EPA MCL	NMWQCC Groundwater Standard	LP5 Lysimeter @ 10.7' bgs		LP9 Lysimeter @ 26' bgs		LI-3 Lysimeter @ 23.3' bgs		LI-5 Lysimeter @ 28.8' bgs	
			09/06/96	09/25/96	05/29/96	09/25/96	09/03/97	9/23/97	09/03/97	10/22/97
Aluminum	0.2 a	5.0 ^l	<0.0065	<0.5	0.081	<0.5	<0.1	0.0421	1.3	0.0878
Antimony	0.006	---	<0.003	<0.5	<0.05	<0.5	<0.02	<0.0034	<0.02	<0.0034
Arsenic	0.05	0.1	0.004	<0.02	0.0021	<0.02	<0.004	0.0065	<0.02	0.0156
Barium	2.0	1.0	0.124	0.0982	0.141	0.136	0.2	0.572	<0.05	0.0653
Beryllium	0.004	---	<0.0001	<0.04	<0.004	<0.04	<0.004	<0.0004	<0.02	0.0019
Cadmium	0.005	0.01	<0.0003	<0.05	<0.005	<0.05	<0.005	<0.0004	<0.025	<0.0002
Calcium	---	---	188	246	178	195	210	183	330	870
Chromium	0.1	0.05	0.0023	<0.1	<0.01	<0.1	0.02	<0.0009	<0.05	0.00059
Cobalt	---	0.05 ^l	0.0009	<0.1	<0.01	<0.1	<0.02	0.0018	<0.1	0.0154
Copper	1.3	1.0	0.0036	<0.05	0.0074	<0.05	<0.02	0.00095	<0.1	0.0033
Iron	0.3 a	1.0 a	0.0256	<0.1	0.0375	<0.1	2.9	3.52	2.9	18.6
Lead	0.015	0.05	<0.0012	<0.015	0.0035	0.021	0.002	<0.008	<0.001	<0.013
Magnesium	---	---	54.2	34.4	68.1	57.7	45	40.8	120	299
Manganese	0.05 a	0.2 a	0.0092	<0.025	0.018	<0.025	41	42.3	42	79
Mercury	0.002	0.002	0.00003	<0.001	<0.0001	<0.001	<0.0002	0.00004	<0.001	<0.00004
Nickel	0.1	0.2 ^l	0.0168	<0.15	0.0738	<0.15	<0.04	0.0102	<0.2	0.11
Potassium	---	---	31.4	<6.0	27.4	26.5	18	23	21	99.3
Selenium	0.05	0.05	0.0046	<0.025	<0.0025	<0.025	<0.004	0.0238	<0.004	0.0187
Silver	0.1	0.05	0.0012	<0.05	<0.005	<0.05	<0.01	0.0017	<0.05	0.0025
Sodium	---	---	618	396	510	548	350	363	330	772
Thallium	0.002	---	<0.0034	<0.02	<0.002	<0.02	<0.005	0.0148	<0.005	0.0283
Uranium	0.020	5.0	NM	NM	NM	NM	NM	<0.0702	NM	NM
Vanadium	---	---	0.0125	<0.1	0.0188	<0.1	0.06	0.0478	<0.05	0.017
Zinc	5 a	10	0.128	0.149	0.0495	0.105	0.01	0.0094	0.12	0.0231

a = aesthetic standard

l = irrigation standard

Note: Bolded values exceed regulatory standard.

Inorganics in Subsurface Soil and Tuff

Of the 36 locations sampled at depth at the landfill, only four locations did not have any inorganic chemicals above background values. Of the locations where at least one inorganic chemical was above the background value, a majority of these inorganic chemicals were in Qbt3.

Six samples were grouped with the subsurface samples because they were collected in soil below a depth of two feet. Seven inorganic chemicals (antimony, arsenic, cadmium, mercury, silver, sodium, and thallium) were identified as COPCs in these samples. With the exception of arsenic, this list of inorganic chemicals overlaps with the list of COPCs from the surface samples. Arsenic is the only inorganic COPC in the subsurface that was not identified above its background value in any surface sample. Antimony and silver were identified as COPCs because detection limits were elevated above the background value.

A majority of the subsurface samples (72 out of 107) were collected in the Qbt3 tuff. These samples were collected in the perimeter wells and the interior wells as well as the debris disposal area. Samples were collected from six perimeter wells (including the two slanted boreholes) and one interior well (73-02061) in the Qbt2 tuff. The last sample in 73-01011 was collected in the QbtIV tuff. Twenty-one inorganic chemicals were identified as COPCs in the Qbt3 samples. All of the COPCs identified in the Qbt1v tuff were also identified in the Qbt2 tuff and the Qbt3 tuff.

Figure 2.3.4.3-3 shows six locations that contained the most inorganic chemicals above background values. Two of these locations (73-01004 and 73-02062) are in the main landfill and the other four locations (73-02371, 73-02055, 73-02056, and 73-02051) are in the debris disposal area. The relationship of these elevated inorganics to the landfill gas (or methane) plume will be discussed below. The list of COPCs for these six locations all contain the following inorganic chemicals: barium, chromium, and nickel. Calcium, copper, and lead were identified in at least four of these six locations. Upon further evaluation of the distribution of elevated inorganic chemicals, Figure 2.3.4.3-3 also shows that in most locations that have multiple inorganic chemicals above background values, at least two of the inorganic chemicals have their maximum result at the same depth. The six boreholes mentioned above with the highest number of inorganic chemicals above background values clearly show that the maximum concentrations are at the same depth in most cases. In 73-01004, the maximum for twelve inorganic chemicals was found at a depth of 17.5 feet and the two other inorganic chemicals above background have maximum concentrations at 67.5 feet. In the other five boreholes (73-02371, 73-02062, 73-02055, 73-02056, and 73-02051), all of the maximum concentrations of the inorganic chemicals were found at each location (see Figures 2.3.4.3-3 and 2.3.4.3-4). Copper was elevated at numerous locations other than the six discussed above. Of the 19 wells where copper was detected above the background value, sixteen of them were CP wells. During the CPT sampling investigation, a brass sleeve was used to collect the samples. In this case, a potential bias may have been introduced by the CPT sampling since the brass contains copper and possibly zinc.

In summary, inorganic chemicals above background values appear to be found in the same samples (see Figures 2.3.4.3-3 and 2.3.4.3-4). In most cases, these inorganic chemicals above background values are in the soil or Qbt3. Some inorganic chemicals that are detected throughout the landfill may be expected to be found based on knowledge of municipal landfills or sampling techniques. For example, calcium may be

contained within a municipal landfill from materials such as sheetrock, cement, or other construction materials. As mentioned above, copper and possibly zinc may be found based on the CPT sampling technique used. The two locations in the main landfill that have a majority of the inorganic chemicals above background, 73-01004 and 73-02062, are both in the area of the methane plume. However, the locations of the higher methane concentrations do not appear to be directly correlated with the locations where elevated inorganic chemicals are present. Table 2.3.5.1-12 shows the number of detects by gas group for the inorganic COPCs.

Radionuclides In Subsurface Soil and Tuff

As discussed in Section 2.3.4.2 (Field Investigations), all subsurface samples were screened in the field for elevated radioactivity. The only samples analyzed for radionuclides by a fixed laboratory were collected from perimeter wells around the main landfill. Given that the radiological field screening showed no elevated results for any subsurface samples, the fixed laboratory results discussed here are assumed to be representative of radionuclide activities for the landfill. Only one radionuclide, strontium-90, was identified as a COPC in the subsurface samples. As mentioned in Section 2.3.4.3 and discussed further in Appendix C, the strontium-90 data is questionable based on evaluation of factors such as laboratory duplicates, laboratory control samples, matrix spikes, blind QC samples, and QC samples with elevated amounts of strontium-90 (see Appendix C). However, the maximum strontium-90 sample result is about fourtimes the minimum detectable activity, which emphasizes the small magnitude of background exceedences for strontium-90 in the tuff samples.

Strontium-90 was only detected above background values in five samples in Qbt2 and Qbt3. The two highest concentrations of strontium-90 were approximately 4 pCi/g and were both in borehole LP-8, on the northeast corner of the main landfill. Although these two highest concentrations were in the same borehole, they were detected at depths of 22.5 and 100 feet which suggest a limited amount of strontium-90 at each depth. The next two highest concentrations of strontium-90 were both in borehole LPS-2, on the south side of the landfill, at concentrations of 2.13 and 2.8 pCi/g and depths of 55 and 120 feet, respectively. One sample was collected in Qbt2 and one sample was collected in Qbt3 in each of these boreholes. The remaining detect of strontium-90 above its background value was found in LP-2 at a depth of 32.5 feet. This location is on the far southeast corner of the main landfill. The concentration of strontium-90 in this sample was 1.83 pCi/g.

Although strontium-90 was detected in the landfill subsurface samples, no pattern or trend by location or depth is obvious in these detected results. The subsurface locations where the strontium-90 was detected are not consistent with the subsurface locations where most of the inorganic chemicals above background values and the detected organic chemicals were found. Table 2.3.5.1-13 shows the frequency of detects for strontium-90 as well as four selected inorganic and organic chemical COPCs according to groups based on the locations where strontium-90 was analyzed and detected. This table helps illustrate that the inorganic and organic chemical COPCs are not consistently found at the same locations as strontium-90. Given that strontium-90 does not appear to be collocated with other COPCs and is also detected with no obvious pattern in the landfill subsurface, no conclusions can be drawn on potential landfill-related sources. However, the limited number and concentration of strontium-90 detects suggests that strontium-90 is not widespread at elevated levels in the subsurface.

TABLE 2.3.5.1-12

FREQUENCY OF DETECTS ABOVE BACKGROUND VALUES FOR INORGANIC CHEMICAL COPCS BY SOIL GAS GROUP

Analyte	Main Landfill High Gas	Main Landfill Low Gas	Debris Disposal Area
Aluminum	1 of 54	1 of 41	2 of 12
Antimony	31* of 54	6 of 41	8* of 12
Arsenic	1 of 54	0 of 41	2 of 12
Barium	2 of 54	0 of 41	4 of 12
Beryllium	4 of 54	1 of 41	1 of 12
Cadmium	1 of 54	0 of 41	0 of 12
Calcium	2 of 54	3 of 41	4 of 12
Chromium, Total	6 of 54	1 of 41	6 of 12
Copper	11 of 54	3 of 41	6 of 12
Iron	1 of 54	0 of 41	1 of 12
Lead	10 of 54	5 of 41	4 of 12
Magnesium	1 of 54	0 of 41	1 of 12
Manganese	1 of 54	0 of 41	0 of 12
Mercury	6 of 54	2 of 41	0 of 12
Nickel	2 of 54	0 of 41	4 of 12
Potassium	1 of 54	0 of 41	1 of 12
Selenium	0 of 54	0 of 41	1 of 12
Silver	11* of 54	1* of 41	0 of 12
Sodium	1 of 54	0 of 41	0 of 12
Thallium	0 of 54	0 of 41	3 of 12
Vanadium	1 of 54	0 of 41	0 of 12
Zinc	5 of 54	1 of 41	1 of 12

* Frequency of detection limits above the background value.

TABLE 2.3.5.1-13
FREQUENCY OF DETECTS ABOVE BACKGROUND VALUES
FOR RADIONUCLIDE COPCs AND SELECTED INORGANIC AND ORGANIC
CHEMICAL COPCs BY GROUP

Group Description	Group Locations	Strontium-90	Copper	Lead	Acetone	2-butanone
Locations where strontium-90 was detected	73-01002, 73-01008, 73-01011	5 of 22	0 of 22	2 of 22	1 of 22	0 of 22
Locations where strontium-90 was not detected	73-01001, 73-01003, 73-01004, 73-01005, 73-01006, 73-01007, 73-01009, 73-01010	0 of 52	2 of 52	9 of 52	4 of 52	0 of 52
Locations where strontium-90 was not analyzed	73-02051 to 73-02057, 73-02059, 73-02061 to 73-02068, 73-02070, 73-02421, 73-02423 to 73-02429	0 of 30	18 of 30	8 of 30	15 of 30	9 of 30

Organic Chemicals In Subsurface Soil and Tuff

Volatile and semivolatile organic chemicals, pesticides, and PCBs were analyzed for in subsurface samples in the main landfill area as well as the debris disposal area. Of 28 detected organic chemicals, only eight organic chemicals were detected in more than one sample, indicating that the extent of the other 20 organic chemicals in the subsurface is limited.

Acetone was detected in twenty samples out of 103 subsurface samples at a maximum concentration of 0.45 mg/kg. The highest detects of acetone were in the debris disposal area at concentrations of approximately 0.4 mg/kg at 26-28 feet below ground surface in Qbt3. (Two boreholes directly west also contained acetone, but at lower concentrations (0.089 and 0.2 mg/kg). The remaining boreholes in the debris disposal area did not have acetone detected in any sample. In the main landfill area, acetone was not detected above 0.2 mg/kg in any sample. Given that acetone was detected in leachate and soil gas samples throughout the landfill as well as in the subsurface tuff, and possible sources do exist for acetone in landfill leachate (see VOCs in Pore Water section), the extent of acetone in the landfill can be related to where acetone was detected in the leachate and the soil gas.

2-butanone was detected in nine out of 103 subsurface samples. Five of these detects were in the interior of the main landfill in wells CP-6, LI-2, and LI-4. The detects were all less than 0.13 mg/kg and within 35 feet of the surface of the landfill. The other four detects were in the debris disposal area. Because only one sample was collected from each borehole in the debris disposal area, it is difficult to evaluate the extent of this chemical. Three of the four detects in the debris disposal area were within 30 feet of the surface and the fourth detect was at a depth of 55.5 feet.

Bis(2-ethyl hexyl)phthalate, detected in five out of eighty-seven subsurface samples, was only detected in the debris disposal area in one sample at a concentration well below the EQL in the borehole farthest east. However, bis(2-ethyl hexyl)phthalate was detected in three different boreholes in the main landfill. Two of these boreholes, LP-6 and LP-7, are on the northwest side of the landfill. Bis(2-ethyl hexyl)phthalate was detected in LP-6 at 14 mg/kg at 12.5 feet. The field duplicate of this sample was a non-detect as well as the two samples from the next two consecutive depths indicating that the extent of the bis(2-ethyl hexyl)phthalate in this area is limited. Bis(2-ethyl hexyl)phthalate wasn't detected in LP-7 until a depth of 22.5 feet. The concentration at this depth was 4.4 mg/kg and decreased to 0.45 mg/kg by 27.5 feet. The next seven samples collected at depth in this borehole were non-detects, which indicates that vertical extent in this area is also limited. The only other borehole that contained any detects of bis(2-ethyl hexyl)phthalate was LP-3, which is on the south side of the landfill next to the runway. Except for the bis(2-ethyl hexyl)phthalate detected in the deepest sample at LP-3, this chemical seems to be limited in extent in the rest of the landfill.

An overview of the other detected organic chemicals shows that boreholes CP-30 and CP-21 in the debris disposal area and CP-6 and LI-2 in the main landfill (see Figure 2.3.4.3-9) contain most of the detected chemicals. Further evaluation shows that the maximum detected concentrations of these organic chemicals are found at the same depth in a given borehole. For example, in borehole CP-6, the maximum concentrations of the detected organic chemicals are at a depth of 13.5 feet. Similarly, maximum concen-

trations of detected organic chemicals are found in LI-2 at 30 feet, CP-30 at 20.5 feet, and CP-21 at 28 feet. In the debris disposal area, only one sample was collected from each borehole. Most samples were collected between 20 and 40 feet. By considering the depths of the samples and the spatial relationships of these locations, it appears that there are no detected organic chemicals that are widespread in the subsurface of the debris disposal area.

LI-2, located in the middle of the main landfill, contains detected PAHs at a depth of 30 feet. PAHs may be related to the burning of trash at the landfill. Section 2.2.2 describes that heavy equipment was used to push the burned residues and ash into whichever permanent disposal area within the landfill was being used at the time. This may explain why multiple PAHs were detected in the same sample. The sample collected 5 feet deeper did not contain any detected PAHs, indicating that the vertical extent may be defined. The surrounding boreholes had samples collected at depths similar to the depth where the PAHs were found. None of these samples contained detected PAHs, indicating that the PAHs in LI-2 are also limited in horizontal extent.

In summary, of the twenty-seven organic chemicals detected in the subsurface, nineteen chemicals were only detected once. The extent of these nineteen chemicals is limited given that they were rarely detected in the subsurface. Acetone, 2-butanone, and bis(2-ethyl hexyl)phthalate were the most frequently detected organic chemicals in the tuff. Acetone was also detected in the pore water and the soil gas. Because possible sources do exist for acetone, the extent of acetone in the tuff can be related to the extent of acetone in the pore water and the soil gas. Bis(2-ethyl hexyl)phthalate is a common laboratory contaminant and is also found in plastics, which are most likely contained in the landfill. Bis(2-ethyl hexyl)phthalate was detected in various locations and at various depths. The highest concentration was found in well LP-6, which is near the airplane hangars. The field duplicate of this sample was a non-detect as were the deeper samples at this location, indicating that bis(2-ethyl hexyl)phthalate is of limited extent in this area twelve feet below the surface. 2-butanone was detected in less than ten percent of the samples in the tuff. It was also detected in pore water samples, which may indicate that 2-butanone is present in small quantities in areas of the landfill. Table 2.3.5.1-6 summarizes the detection frequency of the organic COPCs by soil gas group. The table shows that most of the detected organic chemicals are in the area of either the high gas or the debris disposal area. The two organic chemicals (acetone and bis(2-ethyl hexyl)phthalate) that were detected in the low gas area were detected at a higher frequency in the high gas area. Therefore, the detected organic chemicals seem to be in the same area as the methane plumes in both the main landfill and the debris disposal area.

2.3.5.2 Environmental Fate

The following sections discuss general considerations regarding environmental fate, as well as more detailed analyses of the probable fates of organic and inorganic contaminants derived from the landfill.

As with other municipal landfills, a complex mixture of heterogeneous solids and liquids were deposited in the airport landfill during operation, including both organic and inorganic substances. Based on the results of the field and laboratory investigations, the types and quantities of materials in the landfill appear to be similar to those in other municipal landfills of similar age. The nature of the landfill refuse changes over time due to physical and chemical processes.

Many organic compounds degrade over time in the landfill as a result of bacterial breakdown. Bacteria in the landfill are capable of transforming complex organic chemicals into simpler organic compounds. Trichloroethene (TCE) is an example of an organic solvent that is subject to biodegradation within the landfill. Under anoxic conditions within the landfill, TCE is transformed into dichloroethene (DCE) plus chloride ions (Figure 2.3.5.1-14). Further degradation of DCE by bacteria produces vinyl chloride gas plus chloride ions.

Analysis of the chemical composition of solids, liquids, and gases within the refuse and surrounding volcanic tuff at the airport landfill indicates that organic breakdown is occurring. Furthermore, it is possible that metallic materials within the landfill may be accelerating the degradation rate of organic solvents via catalysis. However, it is difficult to distinguish between bacterial and abiotic reactions, because they produce similar breakdown products. (The rate of transformation of organic compounds at the airport landfill is not known, but transformation will probably continue for some decades into the future, based on transformation rates observed at other landfills.)

Degradation of organic compounds within the landfill and surrounding volcanic rock destroys some contaminants before they can escape. However, soil gas flux studies demonstrate that a minority of VOCs, at extremely low concentrations, do escape through the upper surface of the landfill into the atmosphere, along with biogenic landfill gas produced as a result of refuse decomposition. Analysis of soil gas outside and below the landfill indicate that low levels of landfill gas containing VOCs has migrated both laterally and vertically away from the refuse source. As discussed in Section 2.3.5.1, soil gas concentrations have been delineated vertically and horizontally, with concentrations decreasing three to four orders of magnitude moving away from the landfill.

Inorganic contaminants (e.g., metals) exist primarily as solids or as ions dissolved in water. Some inorganic contaminants like hydrogen sulfide and ammonia may also exist in gaseous forms, but these gases appear not to be abundant at the airport landfill.

Although a large number of different inorganic substances were probably deposited in the airport landfill, chemical analysis of the landfill pore water indicates that only a few are being dissolved into the pore water. These metals include iron, manganese, and nickel. The metals are probably dissolved from metal alloy and oxide sources under the slightly acidic conditions present in the landfill in the presence of methane and carbon dioxide gas. These gases displace air and generate anoxic conditions that are especially conducive to mobilization of manganese. Of all the metals, manganese was found at the highest concentrations in the landfill pore water (79 mg/L). Iron was detected at slightly lower concentrations in pore water (up to 16.6 mg/L). Both of these metals become soluble under anoxic and/or acidic conditions, as exists within the landfill refuse.

Although large quantities of metallic wastes (cans, scrap metal, etc.) were undoubtedly disposed of in the landfill, most metals remain relatively immobile under the geochemical conditions that prevail within the refuse. Those inorganic constituents that are solubilized under the anoxic conditions within the landfill (iron and manganese) would be predicted to precipitate rapidly upon encountering aerobic conditions below. Therefore, the mobility of inorganic constituents is expected to be very limited.

More detailed discussions of factors influencing the environmental fate of landfill-derived constituents are provided below.

Transport Processes

The environmental fate of contaminants in landfills is highly dependent upon the active mass transfer processes at the site. These include:

- Direct transfer of original vapor, liquid and solid sources.
- Leaching of solid, liquid and vapor sources by meteoric water and aqueous transport.
- Gas phase transport of homogeneous and heterogeneous vapor-phase breakdown products.

Direct transfer of original contaminant sources may occur as a result of upward migration during soil maturation. Brimhall et al. (1991, 59069) have shown that deeper soil horizons may be transferred upward through the processes of freeze/thaw, bioturbation and chemically induced soil inflation/deflation. Given the relatively thin soil presently overlying the landfill materials, it is realistic to expect that receptors at the surface of the landfill could be exposed directly to raw contaminants or their breakdown products brought up from below. Moreover, contaminants may be transferred off-site as a result of erosion and "mass wasting," the term used to describe downslope movement due to gravity. Abundant debris downslope from the landfill in Pueblo Canyon provide evidence of the importance of these mass transport processes.

Leaching of refuse is indicated by the presence of elevated concentrations of dissolved constituents, particularly iron and manganese, in pore water samples collected from suction lysimeters installed within the landfill (Table 2.3.5.1-13). Leaching and percolation can result in downward contaminant migration through the vadose zone, and potentially to groundwater. Given the large thickness of the vadose zone (approximately 1250 ft) it will take a relatively long time for contaminants to reach groundwater via this pathway, if ever. However, fractures in the Bandelier Tuff could significantly shorten the travel times over that of porous medium transport alone (Committee on Fracture Characterization and Fluid Flow 1996, 59988). Conversely, clay minerals present in fractures may lower hydraulic conductivity and could result in contaminant retardation relative to the tuff matrix (Longmire 1996a, 55115). Lack of information regarding the importance of fracture flow is probably the biggest source of uncertainty with regard to predicting rates of downward migration of landfill leachate.

Volatile contaminants may also be transported in vapor phase within and beneath the landfill. Landfill gas may move upward, downward or remain neutrally buoyant, depending upon its density (see Figure 2.3.5.1-13). Soil vapor analyses have shown that the methane-carbon dioxide gas plume extends to depths of at least 180 feet below the surface, which is still approximately 1000 feet above the regional water table. Because of the great depth to groundwater, and the fact that the concentrations of methane and most VOCs decline with depth, it is unlikely that vapor-phase contaminant transport from the landfill could have any measurable impact on regional groundwater quality.

Environmental Fate of Organic Compounds at the Airport Landfill

Municipal landfills, such as the TA-73 landfill, may be considered to be large-scale bioreactors in which many complex transformations of organic compounds occur. Perhaps the most important reactions involve the decomposition of cellulose, the principal biodegradable component of refuse. Although a variety of types of bacteria are responsible for individual steps of the overall reaction, the simplified process may be thought as the anaerobic conversion of cellulose to methane and carbon dioxide (Figure 2.3.5-1). At other locations within and surrounding the landfill, aerobic bacteria oxidize the methane to carbon dioxide. Thus a municipal landfill includes both anaerobic and aerobic zones, each with its own distinct biological communities and processes.

Nearly all organic compounds are susceptible to biological or abiotic degradation in the landfill environment. Highly chlorinated VOCs, such as tetrachloroethene (PCE), may undergo reductive dechlorination within the anoxic landfill core, while petroleum hydrocarbons, such as benzene and toluene, are more rapidly biodegraded when exposed to aerobic conditions. Because landfills contain both anaerobic and aerobic zones with thriving microbial communities, the landfill environment constitutes a favorable system for transforming organic compounds to simpler products. The PCE degradation chain (Figure 2.3.5.1-14) is one such example. PCE and TCE are most readily degraded under anaerobic conditions, whereas DCE and vinyl chloride are amenable to biodegradation by aerobic microbes (McCarty 1994, 59078). Because both environments are present in the landfill, complete destruction of PCE is possible.

Many transformations of organic compounds may occur as a result of "co-metabolism," whereby a relatively recalcitrant compound does not serve as the primary energy source for the bacteria, but rather is biodegraded along with a more easily degradable substrate that is present in greater amounts. In the airport landfill, the primary substrate is cellulose derived from refuse materials, including paper wastes and plant debris.

In addition to microbiological activity, landfills contain zero-valent metals (EMCON 1980, 59075, p. 16, Table 2) that may be capable of degrading chlorinated hydrocarbons. Zero valent metals such as galvanized steel, stainless steel, aluminum, and iron cause degradation through dehalogenation (Matheson and Tratnyek 1994, 59077, p. 2045). According to Wilson (1995, 59080, p. 22) "... zinc and tin, can degrade compounds much more rapidly than iron." On page 20 she also states "Iron appears to degrade many chlorinated aliphatics..." A variety of zero-valent metals are generally present in landfills, and indeed much metallic waste can be observed along the north and east perimeter of the airport landfill. Possible reactions between metals and chlorinated organic compounds are discussed below.

Environmental Fate of Inorganic Constituents at the Airport Landfill

In addition to organic contaminants, landfills also contain a wide variety of inorganic constituents (EMCON 1980, 59075, p. 16, Table 2). Moreover, unlike natural geologic systems landfills can contain metals in the form of steel and other alloys that are less stable than the natural ore minerals from which they were derived. Processes that control the mobility and fate of metals in the environment include solubility and sorption to the solid matrix. These processes are discussed below.

Gypsum is commonly deposited in landfills as construction wastes (e.g. sheetrock) and leachate would probably dissolve that mineral and liberate Ca^{2+} and SO_4^{2-} . Within the methanogenic core of a landfill, the SO_4^{2-} would likely be reduced to form elemental S and H_2S , as well as volatile carbon-sulfur compounds, such as CS_2 . Assuming that sufficient sulfate is present, lead and barium solubility is limited by the sparingly soluble sulfate minerals anglesite and barite under oxidizing conditions. However, in the anoxic landfill, sulfide would be present and combine with lead to form galena, which also has relatively low solubility. Because of the relatively low solubility of metal sulfides, transition and precious metals would generally not be highly mobile in the landfill environment, except perhaps during the period immediately following refuse emplacement and before the onset of methanogenesis.

Metal cations may be strongly sorbed to negatively charged silicate surfaces of the tuff. In addition the neutralization and oxidation of the landfill leachate at the perimeter of the methane plume probably results in the precipitation of iron hydroxides. Sorption to ferrihydrite and other ferric oxides is likely a process of major importance in controlling the mobility of metal cations and oxyanions.

The most important mineral sorbants, Fe-oxides and clays are found in greater abundance along some fractures in the Bandelier Tuff. Even though water may travel faster along the fractures, mineral sorbants can slow the contaminant velocities. "Other fractures are open and devoid of fill material. These open fractures do not contain geochemically reactive phases; consequently, migration of contaminants could be significant" (Longmire et al. 1996(b), 56030.64, p. 96).

From a theoretical standpoint Mn^{+2} appears to be the metal that would be the most mobile in the landfill environment. In addition, other transition metals such as Cu^{+2} , Fe^{+2} , Zn^{+2} , Ni^{+2} , Co^{+2} , may be mobile under acidic conditions. Elevated concentrations of manganese and iron observed in porewater (see Section 2.3.5.1) confirm the mobility of these metals. However, the presence of reduced sulfur species in the landfill may limit the solubility of these metals through the formation of metal sulfides. Likewise, the presence of solid organic matter in the landfill refuse probably limits the mobility of lead and mercury, which tend to sorb strongly to these materials.

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2.4 Site Assessments

2.4.1 Summary

A human health screening assessment, a human health risk assessment, and an ecological screening assessment were conducted for the main landfill and debris disposal area. These assessments addressed these areas separately or in combination as appropriate. The human health screening assessment identified 19 COPCs in soil (Table 2.4.1-1).

TABLE 2.4.1-1
SUMMARY OF HUMAN HEALTH SCREENING EVALUATION

Chemical	Sample ID	Maximum sample value (mg/kg)	Soil SAL ^a (mg/kg)	1/10 Soil SAL (mg/kg)
Antimony	0173-97-0046	12(U)	30	3
Aroclor 1254	0173-96-0131	7.6	0.2	Na ^b
Aroclor 1260	0173-96-0131	0.67(U)	0.2	NA
Benzo (a) anthracene	0173-96-0129	77(U)	0.56	NA
Benzo (a) pyrene	0173-96-0129	77(U)	0.056	NA
Benzo (b) fluoranthene	0173-96-0129	77(U)	0.56	NA
Benzo (g,h,i) perylene	0173-96-0129	77(U)	N/A ^c	N/A
Benzo (k) fluoranthene	0173-96-0129	77(U)	5.6	NA
Bis(2-ethylhexyl)phthalate	0173-96-0129	77(U)	32	NA
Chrysene	0173-96-0129	77(U)	56	NA
Dibenzo (a,h)anthracene	0173-96-0129	77(U)	0.056	NA
Dibenzofuran	0173-96-0129	77(U)	210	21
Indeno (1,2,3-cd)pyrene	0173-96-0129	77(U)	0.56	NA
Iron	0173-96-0121	21,600	22,000	2200
Lead	0173-96-0130	463(J ⁺)	400	40
2-Methylnaphthalene	0173-96-0129	77(U)	N/A	N/A
Naphthalene	0173-96-0129	77(U)	55	5.5
Phenanthrene	0173-96-0129	77(U)	N/A	N/A
Thallium	0173-96-0112	0.76(U)	5.2	0.52

a. Based on USEPA Region 9 Preliminary Remediation Goals (1998) (EPA 1998, 58751)

b. Not applicable

c. Not available

A human health risk assessment was performed for these COPCs in soil and 29 other COPCs identified in soil gas. COPCs in subsurface soil and leachate were not evaluated in the human health risk assessment because (1) direct exposure to these media is not expected to occur under current or possible future uses of the site and would be precluded by an *in situ* corrective action strategy for the landfill, and (2) the potential migration of chemicals in subsurface soil or leachate to groundwater will be addressed as part of the design of the final remedy. The results of the human health risk assessment are summarized in Table 2.4.1-2. Based on these results, the following interpretations have been made:

- **Current Land Use.** Under current land use, potential noncarcinogenic and carcinogenic health risks associated with exposure to COPCs in soil and soil gas for current workers at the airport terminal and off-site adult and child residents are below those generally considered acceptable by regulatory agencies. Potential noncarcinogenic health risks associated with exposure to COPCs in soil by a hypothetical trial user are below the range generally considered acceptable by regulatory agencies. Potential carcinogenic health risks for this receptor are within the generally accepted risk range.
- **Future Land Use—Airport.** Under the probable future land use as an airport, potential noncarcinogenic and carcinogenic health risks associated with exposure to COPCs in soil and soil gas for a future visitor to the proposed tie-down area at the airport are below or within the range generally considered acceptable by regulatory agencies.
- **Hypothetical Future Residential Land Use—Main Landfill.** In the unlikely event that the main landfill is developed for residential land use, potential noncarcinogenic and carcinogenic health risks associated with exposure to COPCs in soil and soil gas by hypothetical future adult and child residents are above those generally considered acceptable by regulatory agencies. Inhalation of acetophenone, acrolein, and 2-nitropropane in soil gas released from the main landfill constitutes the majority of the total risk. Estimated risks associated with exposure to antimony, Aroclor-1254, and iron in soil are above those generally considered acceptable by regulatory agencies, but only under conservative estimates of exposure. Potential exposure to lead in soil by hypothetical future adult and child residents may be of concern, but only under conservative estimates of exposure.
- **Hypothetical Future Residential Land Use—Debris Disposal Area.** In the unlikely event that the debris disposal area is developed for residential land use, potential noncarcinogenic and carcinogenic health risks associated with exposure to COPCs in soil gas by hypothetical future adult and child residents are below or within the range generally considered acceptable by regulatory agencies.

The ecological screening assessment identified 6 inorganic chemicals (i.e., antimony, cadmium, copper, lead, mercury, and zinc) and 11 organic chemicals (i.e., acenaphthene, Aroclor 1254, Aroclor 1260, benzo(a)anthracene, benzo(a)pyrene, bis(2-ethylhexyl)phthalate, chrysene, 4,4'-DDE, 4,4'-DDT, di-n-butylphthalate, and naphthalene) as COPECs in surface soil; however, a more comprehensive ecological risk assessment was not considered necessary. Instead, the potential ecological risk posed by these chemicals was evaluated within the context of the likely site restoration activities at the site, including run-on and run-off controls, and possibly limited removal of contaminated soil and an improved landfill cover. These management activities will significantly reduce the potential risk to ecological receptors on the

TABLE 2.4.1-2
SUMMARY OF HUMAN HEALTH RISK ASSESSMENT

Land Use	Receptor	Exposure Location	Exposure Medium	Exposure Route	Hazard Index*		Cancer Risk*	
					RME ^b	MLE ^c	RME	MLE
Future	Hypothetical adult resident	Main Landfill	Surface soil	Incidental ingestion	0.7	0.004	1E-05	4E-08
				Dermal contact	2	0.001	5E-05	5E-08
			Indoor air	Inhalation of particulates	0.01	0.001	2E-07	7E-09
				Inhalation of vapors from soil	0.001	0.001	NA ^d	NA
			Homegrown produce	Ingestion	10	0.7	2E-04	4E-06
			Indoor air	Inhalation of vapors from soil gas	300	300	3E-03	1E-03
		Total		300	300	4E-03	1E-03	
	Debris Disposal Area	Indoor air	Inhalation of vapors from soil gas	0.3	0.2	1E-05	2E-06	
	Hypothetical child resident	Main Landfill	Surface soil	Incidental ingestion	6	0.1	2E-05	1E-06
				Dermal contact	20	0.01	8E-05	4E-07
			Indoor air	Inhalation of particulates	0.03	0.003	1E-07	1E-08
				Inhalation of vapors from soil	0.002	0.002	NA	NA
			Homegrown produce	Ingestion	10	0.7	5E-05	3E-06
			Indoor air	Inhalation of vapors from soil gas	600	600	2E-03	2E-03
		Total		600	600	2E-03	2E-03	
	Debris Disposal Area	Indoor air	Inhalation of vapors from soil gas	0.8	0.4	8E-06	4E-06	
	Visitor to proposed tie-down area	Main Landfill	Surface soil	Incidental ingestion	0.1	0.001	2E-06	1E-08
				Dermal contact	0.4	0.0008	7E-06	3E-08
			Ambient air	Inhalation of particulates	0.0001	0.000002	2E-09	1E-11
				Inhalation of vapors from soil	9E-07	1E-07	NA	NA
			Inhalation of vapors from soil gas	0.2	0.03	3E-06	1E-07	
Total		0.7	0.03	1E-05	1E-07			
Current	Worker at airport terminal	Off-site West of Main Landfill	Indoor air	Inhalation of particulates	Qual ^e	Qual	Qual	Qual
				Inhalation of vapors from soil gas	0.06	0.03	7E-07	1E-07
			Total		0.06	0.03	7E-07	1E-07
	Off-site adult resident	Off-site West of Main Landfill	Indoor air	Inhalation of particulates	Qual	Qual	Qual	Qual
				Inhalation of vapors from soil gas	0.05	0.05	6E-07	2E-07
			Total		0.05	0.05	6E-07	2E-07
	Off-site child resident	Off-site West of Main Landfill	Indoor air	Inhalation of particulates	Qual	Qual	Qual	Qual
				Inhalation of vapors from soil gas	0.1	0.1	3E-07	3E-07
			Total		0.1	0.1	3E-07	3E-07
	Hypothetical trail user	Pueblo Canyon Slope	Surface soil	Incidental ingestion	0.005	0.0003	3E-07	4E-09
			Dermal contact	0.02	0.0002	9E-06	2E-08	
Ambient air			Inhalation of particulates	0.0001	0.000003	4E-09	2E-11	
			Inhalation of vapors from soil	0.05	0.002	NA	NA	
Total				0.08	0.002	1E-05	2E-08	

- The sum of the values in the table may not equal the "Total" due to rounding.
- RME = reasonable maximum exposure
- MLE = more likely exposure
- NA = not applicable
- Qual = evaluated qualitatively based on results of on-site receptors

1997-1998

surface of the landfill. With regard to COPECs in the drainages, additional data may be required to determine the need for corrective action, depending on the applicability of data collected as part of the Pueblo Canyon sediment investigation.

A surface water assessment was also conducted for PRSs 73-001(a) and 73-001(d). This assessment resulted in an erosion matrix score of 85.5, which indicates a high potential for erosion (see Appendix B-4.2.1). Run-on and run-off controls will be implemented to reduce the erosion potential.

Groundwater was not encountered beneath the landfill area during this investigation, which extended to a maximum depth of 186 feet below ground surface. Based on depths to water measured in wells located in Pueblo Canyon to the north, and Los Alamos Canyon to the south, the depth of the regional aquifer beneath TA-73 is approximately 1,260 feet. Additional information regarding groundwater issues of the site can be found in Section 2.4.4.2 and Appendix B-4.3.

The final site assessment addressed the potential explosion hazard associated with methane. Methane was detected in soil gas samples well in excess of its lower explosive limit, indicating that infiltration of methane into a building constructed directly on top of the landfill or the debris disposal area may represent an explosion hazard, depending on the type of building construction, ventilation requirements, and the location of the building relative to the areas of the landfill or debris disposal area with the highest methane concentrations.

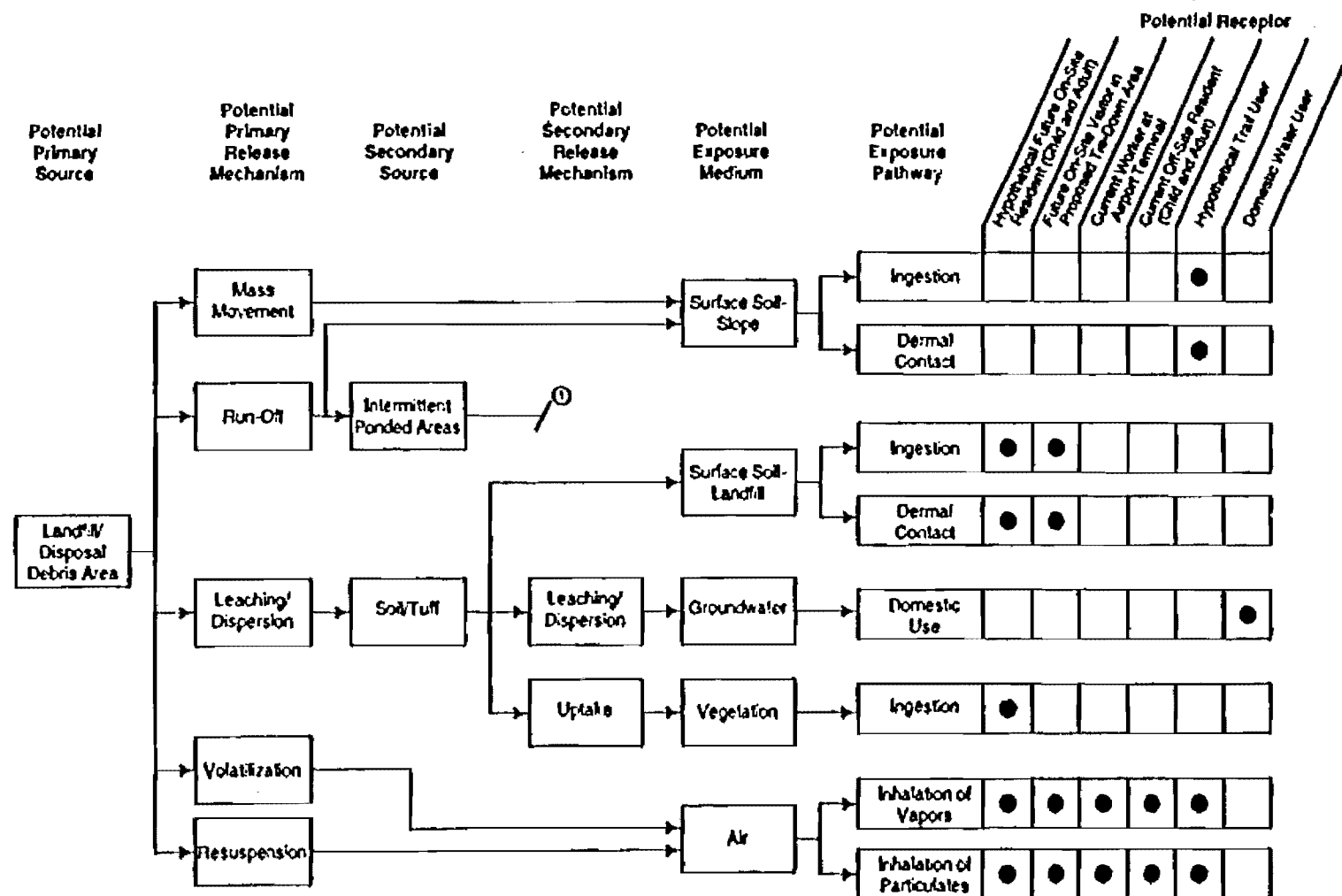
2.4.2 Screening Assessments

2.4.2.1 Human Health

2.4.2.1 (a) Scoping

The scope of this human health screening assessment and subsequent human health risk assessment is defined by the revised conceptual model described in Section 2.3.5 and possible human exposure to chemicals associated with the main landfill and debris disposal area. As discussed in Section 2.3.5, chemicals associated with the main landfill and/or debris disposal area are present in soil gas within and immediately adjacent to the waste material. In addition, chemicals that may be associated with the main landfill are present in surface soil on the main landfill and on the south slope of Pueblo Canyon immediately adjacent to the landfill. Potential human exposure to these chemicals is governed by current and potential future use of the Los Alamos airport and the surrounding areas, as shown in the site conceptual model for human health risk assessment (Figure 2.4.2.1-1). Based on current land use, airport workers and nearby residents could be exposed to chemicals in soil gas via inhalation of vapors, and to a lesser extent, chemicals in soil via inhalation of resuspended soil particulates. Recreational users of Pueblo Canyon could be exposed to chemicals in surface soil on the canyon slope via incidental ingestion, dermal contact, and inhalation of vapors or particulates. A proposed future use of the main landfill area is as an airplane tie-down area; therefore, future visitors to this area could be exposed to chemicals in soil gas via inhalation as well as chemicals in surface soil via incidental ingestion, dermal contact, and inhalation of vapors and particulates. There are no plans in the foreseeable future to re-zone the Los Alamos airport for residential housing; however, for completeness, future residents could also be exposed to

Figure 2.4.2.1-1 Site conceptual model PRSs 73-001(a) and 73-001(d)



chemicals in soil gas and surface soil via the same pathways as described for a future visitor, as well as via ingestion of homegrown produce. These exposure scenarios and exposure pathways are described further in the exposure assessment section of the Human Health Risk Assessment (HHRA; see Section 2.4.3).

Direct exposure to chemicals in subsurface soil or leachate is not expected under current or future use of the site. However, as shown in Figure 2.4.2.1-1, indirect exposure to the COPCs in these media could occur if they migrate to groundwater. As discussed in Section 2.3.5, there is no evidence that chemicals of the site have affected the regional aquifer. Additional modeling is planned to further evaluate this transport pathway; therefore, potential exposure to chemicals in subsurface soil or leachate is not evaluated in this screening evaluation and subsequent human health risk assessment.

2.4.2.1 (b) Screening Evaluation

A total of 47 chemicals were identified as COPCs in surface soil (either on the surface of the landfill or in drainage channels) based on a comparison to background for inorganics and radionuclides and an evaluation of detected organic compounds. These chemicals are evaluated further in this section by comparing the maximum detected concentration or maximum detection limit, whichever is greater, to the appropriate screening action level (SAL). SALs are based on US EPA Region 9 Preliminary Remediation Goals (EPA 1998, 58751). This comparison is done separately for noncarcinogens, carcinogens, and radionuclides. Consistent with the preamble to EPA Region Human Health Media-Specific Screening Levels, a value equal to one-tenth of the SAL is used for noncarcinogens, a value equal to the SAL is used for Class A and Class B carcinogens, and a value equal to 10 times the SAL is used for Class C carcinogens; a value equal to the SAL is used for the radionuclides. COPCs identified in subsurface soil are not included in this screening evaluation because direct exposure to subsurface soil by human receptors is not expected to occur under current and potential future uses of the site as an airport and would be precluded by in situ closure of the landfill. In addition, SALs have not been developed for soil gas; therefore, chemicals detected in soil gas are evaluated further in the HHRA (see Section 2.4.3). The results of this screening evaluation are shown in Tables 2.4.2.1-1, 2.4.2.1-2, and 2.4.2.1-3. As discussed in Section 2.3.4.3 and Appendix C, there were several, generally minor, QA/QC problems with a subset of the data collected at the site. As a result, a few of the maximum detected concentrations and maximum detection limits are qualified "J" or "UJ" meaning that the values are estimated. These qualifiers do not affect the results of this screening evaluation because either the values are above the point of comparison (i.e., SAL, one-tenth SAL, or 10 x SAL, as appropriate) (the chemical is retained as a COPC) or well below the appropriate point of comparison.

Based on the results of these comparisons, 16 constituents are retained as COPCs (i.e., antimony, Aroclor 1254, Aroclor 1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, dibenzo(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, iron, lead, naphthalene, and thallium). SALs have not been developed for five of the COPCs carried forward from the data review process (i.e., benzo(g,h,i)perylene, calcium, 2-methylnaphthalene, phenanthrene, and sodium). Benzo(g,h,i)perylene, 2-methylnaphthalene, and phenanthrene were retained as COPCs. Calcium and sodium are essential nutrients and are not expected to result in adverse health effects at concentrations found in the environment. For example, the recommended

TABLE 2.4.2.1-1

SCREENING EVALUATION - NONCARCINOGENIC HEALTH EFFECTS (ALL UNITS IN MILLIGRAMS PER KILOGRAM [MG/KG])

Chemical	Location ID	Sample ID	Depth (ft)	Maximum Sample Value (mg/kg)	Soil SAL (mg/kg)	1/10 Soil SAL (mg/kg)
Acenaphthene	73-02172	0173-96-0129	0-0.08	77 (U)	2600	260
Anthracene	73-02172	0173-96-0129	0-0.08	77 (U)	14000	1400
Antimony	73-02371/ 73-02372	0173-97-0046/ 0173-97-0044	0.5-1.5/ 2-3	12 (U)	30	3
Benzo(g,h,i)perylene	73-02172	0173-96-0129	0-0.08	77 (U)	N/A ^a	N/A
Beryllium	73-02161	0173-96-0112	0-0.5	1.9	150	15
Cadmium	73-02171	0173-96-0131	0-0.17	1.3	37	3.7
Calcium	73-02373	0173-97-0046	1.0-1.5	7600	N/A	N/A
Copper	73-02173	0173-96-0121	0-0.25	188	2800	280
Dibenzofuran	73-02172	0173-96-0129	0-0.08	77 (U)	210	21
Dichloroethane[1,1-]	73-02171/ 73-02171	0173-96-0130/ 0173-96-0131	0-0.17	0.002 (J-)	570	57
Di-n-butylphthalate	73-02163	0173-96-0118	0-0.08	77 (U)	5500	550
Fluoranthene	73-02172	0173-96-0129	0-0.08	77 (U)	2000	200
Fluorene	73-02172	0173-96-0129	0-0.08	77 (U)	1800	180
Iron	73-02173	0173-96-0121	0-0.25	21600	22000	2200
Lead	73-02171	0173-96-0130	0-0.17	463 (J+)	400	40
Mercury	73-02173	0173-96-0121	0-0.25	0.197	22	2.2
Methoxychlor[4,4'-]	73-02171	0173-96-0130	0-0.17	2.1	270	27
Methylnaphthalene[2-]	73-02172	0173-96-0129	0-0.08	77 (U)	N/A	N/A
Naphthalene	73-02172	0173-96-0129	0-0.08	77 (U)	55	5.5
Nickel	73-02173	0173-96-0121	0-0.25	21.5	1500	150
Phenanthrene	73-02173	0173-96-0129	0-0.08	77 (U)	N/A	N/A
Pyrene	73-02173	0173-96-0129	0-0.08	77 (U)	1500	150
Silver	73-02371	0173-97-0042	0.5-1.5	2.4 (U)	370	37
Sodium	73-02172	0173-96-0129	0-0.08	37000	N/A	N/A
Thallium	73-02161	0173-96-0112	0-0.5	0.76 (U)	5.2	0.52
Toluene	73-02171/ 73-02171	0173-96-0130/ 0173-96-0131	0-0.17/ 0-0.17	0.002 (J-)	520	52
Trichloroethane[1,1,1-]	73-02171	0173-96-0130	0-0.17	0.13 (J-)	680	68
Uranium	73-02163	0173-96-0114	0-1.0	8.1	230	23
Zinc	73-02173	0173-96-0121	0-0.25	608	22000	2200

a. Not available

0173-96-0129

TABLE 2.4.2.1-2

**SCREENING EVALUATION - CARCINOGENIC HEALTH EFFECTS (ALL UNITS IN
MILLIGRAMS PER KILOGRAM [MG/KG])**

Chemical	Class	Location ID	Sample ID	Depth (ft)	Maximum Sample Value (mg/kg)	Soil SAL (mg/kg)	10x Soil SAL (mg/kg)
Aroclor-1254	B2	73-02171	0173-96-0131	0-0.17	7.6	0.2	NA ^a
Aroclor-1260	B2	73-02171	0173-96-0131	0-0.17	0.67 (U)	0.2	NA
Benzo(a)anthracene	B2	73-02172	0173-96-0129	0-0.08	77 (U)	0.56	NA
Benzo(a)pyrene	B2	73-02172	0173-96-0129	0-0.08	77 (U)	0.056	NA
Benzo(b)fluoranthene	B2	73-02172	0173-96-0129	0-0.08	77 (U)	0.56	NA
Benzo(k)fluoranthene	B2	73-02172	0173-96-0129	0-0.08	77 (U)	5.6	NA
Bis(2-ethylhexyl)phthalate	B2	73-02172	0173-96-0129	0-0.08	77 (U)	32	NA
Chlordane[alpha-]	B2	73-02171	0173-96-0131	0-0.17	0.034 (U)	1.6	NA
Chlordane[gamma-]	B2	73-02171	0173-96-0131	0-0.17	0.034 (U)	1.6	NA
Chromium, Total	A	73-02173	0173-96-0121	0-0.25	23.30 (J-)	210	NA
Chrysene	B2	73-02172	0173-96-0129	0-0.08	77 (U)	56	NA
DDE[4,4'-]	B2	73-02171	0173-96-0131	0-0.17	0.2 (U)	1.7	NA
DDT[4,4'-]	B2	73-02171	0173-96-0131	0-0.17	0.067 (U)	1.7	NA
Dibenz(a,h)anthracene	B2	73-02172	0173-96-0129	0-0.08	77 (U)	0.056	NA
Indeno(1,2,3-cd)pyrene	B2	73-02172	0173-96-0129	0-0.08	77 (U)	0.56	NA
Tetrachloroethene	B2-C ^b	73-02171	0173-96-0130	0-0.17	0.018 (J-)	4.7	47

a. Not applicable

b. The classification of tetrachloroethene is currently under review. The most recent guidance from EPA is that the weight-of-evidence for the carcinogenicity of tetrachloroethene is on a continuum between categories B2 and C.

TABLE 2.4.2.1-3

**SCREENING EVALUATION - RADIATION HEALTH EFFECTS (ALL UNITS IN
PICOCURIES PER GRAM [pCi/g], EXCEPT WHERE NOTED)**

Chemical	Location ID	Sample ID	Depth (ft)	Maximum Sample Value (pCi/g)	Soil SAL (pCi/g)
Cesium-137	73-02163	0173-96-0118	0-1.0	0.193 (J)	5.1
Plutonium-239	73-02163	0173-96-0114	0-0.83	0.419	24
Uranium	73-02163	0173-96-0114	0-1.0	8.1 mg/kg	29 mg/kg

dietary allowances (RDAs) for calcium and sodium established by the US National Academy of Sciences are 800 and 400 mg/day, respectively, for children seven to ten years of age and 600 and 120 (calcium) to 200 mg/day (sodium) for infants. Using the lower values for an infant and assuming a default soil ingestion rate of 200 mg/day, the concentration in soil that would be equivalent to the RDA is greater than 1,000,000 mg/kg for calcium and 600,000 mg/kg for sodium (e.g., $120 \text{ mg}_{\text{Na}}/\text{day} \div 200 \text{ mg}_{\text{soil}}/\text{day} \times [1,000,000 \text{ mg}_{\text{soil}}/\text{kg}_{\text{soil}}] = 600,000 \text{ mg/kg}$). Given that the maximum detected concentrations for calcium and sodium are 7,600 and 3,700 mg/kg, respectively, these chemicals were not retained as COPCs for further evaluation in the HHRA.

2.4.2.2 Ecological

The ecological risk screening assessment methodology is fully described in Kelly et al. (1998, 57916). The ecological screening assessment consists of four parts: the scoping evaluation, the screening evaluation, uncertainty analysis and interpretation.

The scoping evaluation includes (1) the data assessment step, which identifies the list of COPCs for the PRS, (2) the problem formulation step for the specific PRSs under investigation, and (3) the bioaccumulation evaluation step, which evaluates the level of concern for persistent bioaccumulation and/or biomagnification from contaminants in the PRSs. The basis for the PRS-specific problem formulation is found in the scoping checklist, which is included as Appendix F-2.0. The scoping checklist is a useful tool for organizing existing ecological information and focusing the site visit on the information needed to develop the site conceptual model. The scoping checklist also provides the basis for evaluating the adequacy of the data for ecological risk screening.

The screening evaluation includes the calculation of hazard quotients (HQs) and hazard indices (HIs) for all COPCs and all appropriate screening receptors. The HQ can be thought of as the ratio of the calculated exposure dose to the receptor (based on contaminant levels for the landfill) to a dose that has been determined to be acceptable (based on toxicity studies for the receptor). The HI is the sum of HQ values for chemicals with common toxicological effects for a given receptor. An HQ or HI greater than 1 is considered an indicator of potential adverse impacts, and the chemical constituents contributing to an HI greater than 1 are identified as contaminants of potential ecological concern (COPECs). HQ/HI calculations require toxicity, bioconcentration and bioaccumulation information for all chemicals for all receptors, which are provided in Appendix F.

An uncertainty analysis follows the COPEC identification. This section describes the key sources of uncertainty in the screening assessment. The uncertainty analysis can result in adding chemical constituents to or removing them from the list of COPECs.

Following the COPEC evaluation, the results of the screening assessment are interpreted in the context of a risk management decision. Possible decisions include a recommendation of the appropriate corrective action, in terms of ecological concerns. Possible recommendations include ecological NFA, voluntary corrective action (VCA), expedited cleanup (EC), voluntary corrective measure (VCM), and corrective measures study (CMS), any of which will be incorporated into an integrated risk management decision to

include human health risk evaluations, ground and surface water issues, and other applicable regulations. If the data are not adequate to support a recommendation, further investigation will be conducted to support an aggregate or baseline risk assessment.

2.4.2.2 (a) Scoping

Data Assessment

The surface soil and drainage concentration data for the airport landfill are viewed to be adequate for a screening assessment because the landfill surface was sampled in a biased manner to intentionally capture the worst-case conditions, and the drainage samples provide an indication if there are significant amounts of contaminants being transported into the canyon. Lastly, if the contaminant source is the landfill, then the landfill would be expected to have higher contaminant concentrations than the drainage samples.

The nature of the contaminants is well documented, with most of the COPCs being typical of those found at municipal landfills. Limitations of the data with regard to extent of contamination were discussed in section 2.3.5.1. These limitations are not expected to greatly influence the maximum reported concentration, which is the value used in the screening-level ecological risk calculations.

Problem Formulation

The purpose of the problem formulation is to provide information to: (1) confirm that ecological receptors can be affected by a release; (2) determine if the PRS should be combined with other PRSs for screening and establish the functional/operational boundaries of the assessment; and (3) gather information to develop the ecological conceptual site model (e.g., what are the dominant/important transport pathways, exposure routes, and receptors).

The landfill has not been used since 1973, and there are some ecological receptors that inhabit the landfill area. The landfill surface is within an area of the airport that is routinely mowed. Thus vegetation on the landfill surface is limited to grasses and forbs. The landfill surface also has abundant evidence of burrowing mammals. The drainages below the landfill (to the north) are relatively undisturbed north facing slope biological communities. Ecological receptors may be affected by releases associated with the landfill.

Threatened and endangered (T&E) species are potential receptors for contaminant releases at the landfill. Specifically, the Mexican spotted owl and the peregrine falcon may establish nests nearby or forage within the airport landfill boundary (LANL 1998, 59117). Bald eagle foraging is not likely at the airport landfill, and is thus not considered relevant for screening-level ecological risk assessments. The kestrel screening ecological receptor with an all flesh diet serves as the surrogate for falcon and owl in the screening calculations.

The airport landfill consists of one main PRS, PRS-73-001(a), but also includes the debris disposal area [PRS-73-001(d)]. Most of the contamination at the landfill is subsurface, but also includes surface material where the waste is exposed. As discussed in Section 2.1.1, TA-73 has other PRSs, but none are in close proximity to the landfill. The spatial boundaries of the ecological risk screening are given by extent of

contamination discussed in Section 2.3.5.1, including landfill gases near the surface and contamination found in surface drainages from the landfill that go into Pueblo Canyon. The surface soils (which include samples collected from the surface to a depth of 3 feet) covering the landfill and drainages from the landfill leading into Pueblo Canyon are the primary exposure media for ecological receptors. Exposure of ecological receptors to surficial expressions of landfill gas will be evaluated in a qualitative manner only.

Because of the lack of landfill-specific information on rooting depths of plants and fossorial activity of animals, judgement must be applied to define the appropriate depth for evaluating exposure to surface soil. Ecological screening is thus conditional on the assumption that most biological activity at the landfill is within 3 ft of the ground surface or that the highest concentrations of COPCs are within 3 ft of the ground surface. As stated above, landfill-specific data are lacking to define a biologically meaningful exposure depth. However, there are data to suggest where the maximum concentrations of COPCs occur. For soil gas constituents higher concentrations of COPCs are found at depth, but for most COPCs the highest soil or tuff concentrations were measured in the 0 to 3 ft interval. One exception is samples collected from the red clay deposits, which are a naturally-occurring material found in the eastern part of the landfill. These red clays are naturally elevated in the concentrations of several inorganic chemicals. Thus, with the exception of the red clay deposits, the definition of 3 ft as the maximum depth of surface soil is not expected to make ecological screening any less protective than would selecting a deeper ending depth for surface soils. The benefit of selecting 3 ft as the maximum depth of surface soil is consistency of ecological screening with other report sections, including: data review, nature and extent of contamination, and the human health screening assessment.

Most of the current landfill surface consists of clean fill material, but there are areas of suspected contamination that were sampled. Visual inspection of the landfill surface has shown these suspected contaminated areas to be of limited extent. There are also areas on the landfill surface where water ponds for some period of time following heavy rains (see areas marked as depressions in Figures 2.3.4.3-1 and 2.3.4.3-8). If these ponded areas also correspond to contaminated areas, then contaminated water would potentially be available for wildlife exposure. Given the limited size and duration of any ponded water, exposure to contaminated water is viewed as an unlikely exposure pathway. However, none of these surface depressions were sampled in the surface sample data. The subsurface has the majority of the waste associated with the landfill, and this waste is bio-degrading and producing landfill gases (primarily methane and carbon dioxide). Associated with the landfill gases are some chlorinated solvents and breakdown products of chlorinated solvents. Receptors could be exposed to landfill gas constituents through inhalation or respiration. It is possible that contaminants could be transported to groundwater from the unsaturated zone below the landfill. However, it is not likely that such contaminated groundwater would be available to ecological receptors, as the nearest saturated zone is the regional aquifer for Los Alamos.

The ecological conceptual site model is presented graphically in Figure 2.4.2.2-1. The conceptual site model identifies which exposure pathways represent major, minor, unlikely, or no pathway to ecological receptors. The major exposure pathway is respiration of volatile chemicals in air. Quantifying the effect of this pathway is not possible in ecological screening assessment, as only food web uptake and direct soil exposure are modelled in the ESL calculations. The vapor respiration pathway to ecological receptors will

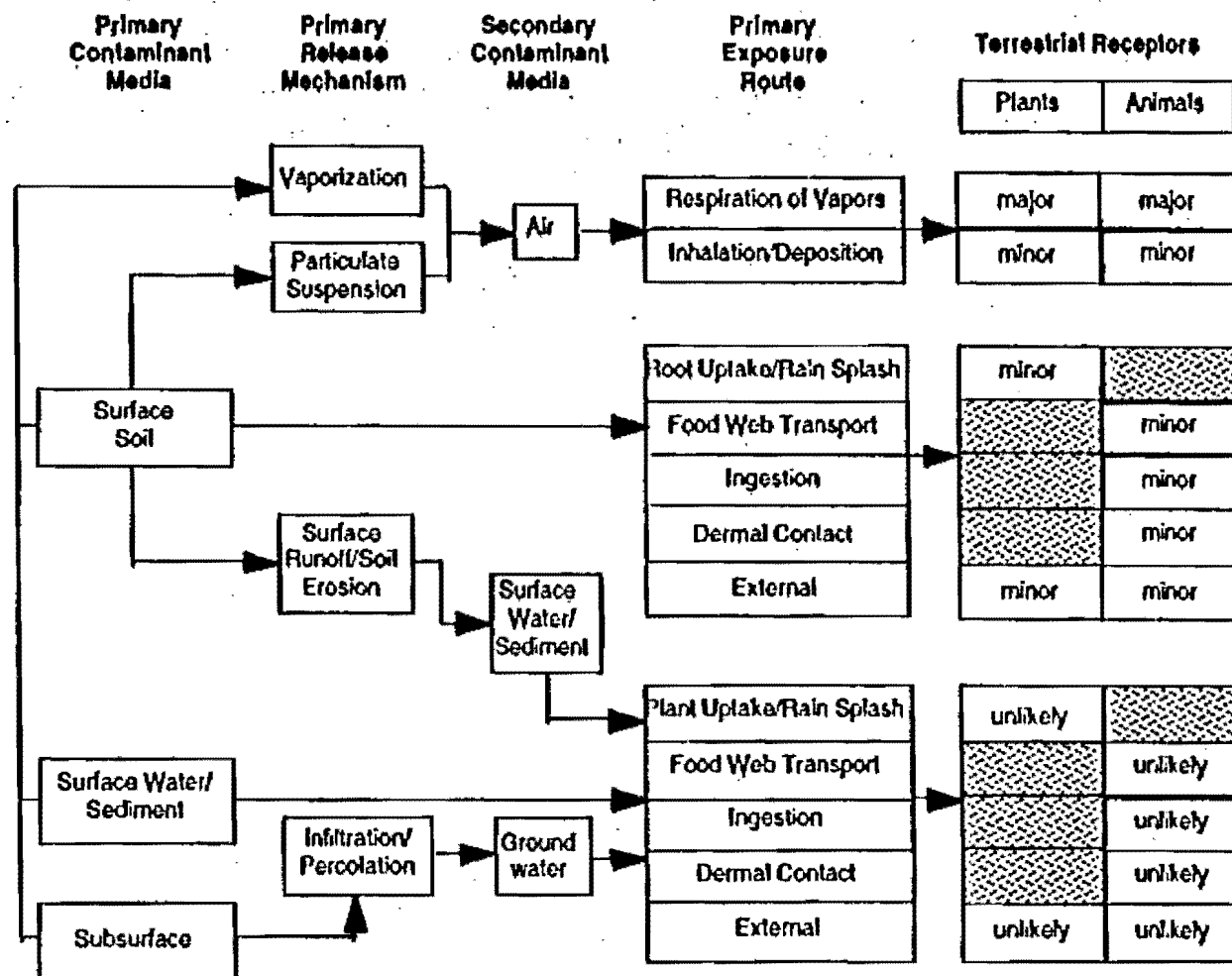


Figure 2.4.2.2-1. Conceptual site model for ecological receptors

be evaluated in a qualitative manner only. Most of the remaining exposure pathways are related to exposure to contaminated surface soil, which include root uptake, food web transport, inhalation of dust, incidental soil ingestion or dermal contact. For example, small mammals are known to inhabit the surface soil above the landfill and could be exposed to contaminated soil and food items. Predators of these small mammals (e.g., coyotes and raptors) could be exposed to analytes that bioaccumulate. The direct ingestion pathway for surface soil exposure is viewed to be minor due to the relatively small quantity of soil directly ingested versus quantity of food ingested in the diet. Lastly, dermal contact to surface soils is a minor pathway due the small quantity of surface soil expected to adhere to animal pelts and subsequently be absorbed into the animal. Of the remaining exposure pathways to terrestrial receptors, the external gamma exposure pathway is viewed to be unimportant due to the low activity (close to background levels) of gamma-emitting radionuclides on the COPC list. All of the surface water exposure pathways for terrestrial receptors (plant uptake/rain splash, food web transport, ingestion and dermal contact) are viewed to be unlikely due to the limited area and duration of surface water sources at the landfill.

Typically all complete exposure pathways should be at least qualitatively evaluated in the screening evaluation. However, because of the lack of screening values for inhalation of volatile organic to terrestrial receptors, the screening evaluation presented below will evaluate only soil related exposure pathways to terrestrial receptors (exclusive of dermal exposure and inhalation of particulates). In addition, there is no surface water sample data for the ephemeral ponds noted to be present on the site, which precludes an ecological screening evaluation for surface water exposure pathways.

Bioaccumulation Evaluation

The list of COPCs for the surface soil are summarized in Table 2.4.2.2-1. Table 2.4.2.2-1 notes which of these analytes are potentially bioaccumulators. Bioaccumulation is defined based on the potential for bioaccumulation in aquatic environments. Because aquatic pathways are not relevant for the airport landfill ecological screening assessment, none of these potentially bioaccumulating chemicals warrant any specialized bioaccumulation evaluation. The potential for food web uptake and dietary exposure will be modelled to terrestrial screening receptors.

2.4.2.2 (b) Screening Evaluation

Ecological screening is based on exposure to terrestrial receptors from surficial contamination. It is important to remember that the purpose of the screening evaluation is to identify COPECs, and not to calculate risk. The HQ analysis is used as an indicator of potential risk. The HQ analysis is intended to be conservative and minimize the chance of missing an analyte that potentially poses an ecological risk.

The HQ analysis is based on the maximum sample result or detection limit for each analyte identified as a COPC in surface soil or drainage samples (see section 2.3.4.3). The HQ is calculated by dividing the maximum analyte concentration by the soil ESL for nine screening ecological risk receptors. These receptors include a generic vascular plant, a soil invertebrate (earthworm), American robin, American kestrel, American kestrel with an all-flesh diet to act as a surrogate for avian T&E species, desert cottontail, deer mouse, vagrant shrew, and red fox. Kelly et al. (1998, 57916) describe the rationale for selecting these receptors for terrestrial ecological risk screening at Laboratory PRSs. Table 2.4.2.2-2a shows the maximum concentration of each analyte, the BV (or detection limit for each analyte without a BV), the

TABLE 2.4.2.2-1
COPCs FOR THE ECOLOGICAL SCREENING EVALUATION

Analyte Group	Analyte Names
Inorganics	Antimony; Beryllium; Cadmium ^a ; Chromium, Total; Copper ^a ; Iron; Lead ^a ; Mercury ^a ; Nickel ^a ; Silver; Sodium; Thallium; Uranium; Zinc
Radionuclides	Cesium-137 ^a ; Plutonium-239 ^a
Pesticides	Chlordane[alpha-] ^a ; Chlordane[gamma-] ^a ; DDE[4,4'-] ^a ; DDT[4,4'-] ^a ; Methoxychlor[4,4'-] ^a
PCBs	Aroclor-1254 ^a ; Aroclor-1260 ^a
Semivolatile organics	Acenaphthene ^a ; Anthracene ^a ; Benzo(a)anthracene ^a ; Benzo(a)pyrene ^a ; Benzo(b)fluoranthene ^a ; Benzo(g,h,i)perylene ^a ; Benzo(k)fluoranthene ^a ; Bis(2-ethylhexyl)phthalate ^a ; Chrysene ^a ; Di-n-butylphthalate ^a ; Dibenzo(a,h)anthracene ^a ; Dibenzofuran; Fluoranthene ^a ; Fluorene ^a ; Indeno(1,2,3-cd)pyrene ^a ; Methylanthralone[2-]; Naphthalene; Phenanthrene ^a ; Pyrene ^a
Volatile organics	Dichloroethane[1,1-]; Tetrachloroethene; Toluene; Trichloroethane[1,1,1-]

a. Potentially persistent bioaccumulator as defined by NMED

TABLE 2.4.2.2-2 (a)
SUMMARY OF HAZARD INDEX ANALYSIS

Receptor	Radionuclide HI	Total COPC/COPCs with ESLs	Non-radionuclide HI	Total COPC/COPCs with ESLs
Plant	<0.01	2/2	155	21/45
Invertebrate	<0.01	2/2	32.9	8/45
Robin	0.02	2/2	135	19/45
Kestrel	<0.01	2/2	27.9	19/45
Kestrel *	<0.01	2/2	29.9	19/45
Cottontail	<0.01	2/2	2.3	41/45
Mouse	<0.01	2/2	59.1	41/45
Shrew	<0.01	2/2	56.5	41/45
Fox	<0.01	2/2	11.7	41/45

* 100% flesh diet

minimum ESL, the receptor with the minimum ESL, the HQ for the minimum ESL, and the HQ for the BV (or detection limit). The detailed presentation of the HQ calculations for all ecological receptors is provided in Appendix F.

Because of the potential T&E species exposure to these COPCs, it is important to note those COPCs where the surrogate ecological receptor (kestrel with a flesh diet) has the lowest ESL. Bis(2-ethylhexyl)phthalate is the only COPC where the kestrel has the lowest soil ESL [Table 2.4.2.2-2(a,b)].

The HI is a sum of HQ values for chemicals with common toxicological effects for a given receptor. For the purposes of ecological screening, it can be assumed that radionuclides have a common, additive, toxicological effect (i.e., radiological dose) and that all non-radionuclide COPCs could have a common, additive, toxicological effect. It is likely that the assumption of common toxicological effects among non-radionuclides is not correct, and that many COPCs have no cumulative effect and others may act synergistically in mixtures. However, there is no information on the toxicity of chemical mixtures found at the Airport Landfill to make a more realistic summation of effects. The summary of the HI analysis is provided in Table 2.4.2.2-2a, and supporting information for the HI is provided in Appendix F. The HI analysis clearly shows that radionuclides have small cumulative effects (all HI values are less than 0.02), which suggests that the observed concentrations of radionuclides pose no hazard to ecological receptors. The non-radionuclide HI values show that all receptors have an HI greater than 1, which suggests potential ecological risk. In addition, Table 2.4.2.2-2a shows that plant, invertebrate and avian toxicity information needed to calculate a meaningful HI is absent for most COPCs. All but four COPCs have mammalian toxicity information, and the COPCs without mammalian toxicity information include: calcium, iron, sodium, and dibenzofuran. Based on the availability of toxicity information, an ecological screening assessment was successfully completed for the mammalian receptors.

To help focus the list of COPCs that contribute the largest share to the HI, an HI subtotal for each chemical group (e.g., inorganics, radionuclides, PAHs, non-PAH semivolatile organics, PCBs/pesticides, and volatile organics) is calculated for each screening receptor. The details of the HI subtotals are provided in Appendix F. The subtotal value for analyte group is provided as an indicator of cumulative effects across chemicals. If the subtotal for all receptors for a chemical group is much less than 1, then that entire group of chemicals can be eliminated as posing no ecological risk. The HQ subtotals show that the volatile organics do not pose an unacceptable ecological risk (see Appendix F). Because the HQ subtotals for at least one receptor for the other analyte groups are greater than 1, all analytes with a HQ greater than 0.1 are considered to be COPECs (see Appendix F). In addition, three inorganics (calcium, iron, and sodium) without ESLs are also identified as COPECs. Table 2.4.2.2-3 summarizes the analytes identified as COPECs during the HQ portion of the screening-level ecological risk evaluation. All of the inorganics identified as COPCs are now identified as COPECs. None of the radionuclides or volatile organics identified as COPCs are identified as COPECs. Twelve semivolatile organic chemicals, PCBs, or pesticides are identified as COPECs.

To facilitate an understanding of the relative hazard posed by analytes, ordered HQ line plots have been prepared. The ordered HQ line plot shows the HQ by analyte ordered from highest to lowest for an analyte group. To serve as a point of reference the HQ of the BV (or detection limit) is plotted for each analyte.

TABLE 2.4.2.2-2 (b)
SUMMARY OF HAZARD QUOTIENT ANALYSIS

Analyte	Maximum value ^a	BV ^a	Minimum ESL ^a	Receptor	HQ	HQ BV
Antimony	12	0.83	0.5E+00	Plant	24	1.66
Beryllium	1.9	1.83	1.0E+00	Plant	1.9	1.83
Cadmium	1.3	0.4	1.0E+00	Plant	1.3	0.4
Calcium	7600	6120	n/a	n/a	n/a	n/a
Chromium	23.3	19.3	3.1E+00	Plant	2.5	6.2
Copper	188	14.7	1.3E+01	Invert	14.5	1.1
Iron	21600	21500	n/a	n/a	n/a	n/a
Lead	463	22.3	2.0E+01	Plant	23.1	1.11
Mercury	0.197	0.1	1.2E-02	Robin	16.0	8.10
Nickel	21.5	15.4	2.0E+01	Plant	1.08	0.77
Silver	1.72	1	2.0E-01	Plant	8.6	5.0
Sodium	37100	915	n/a	n/a	n/a	n/a
Thallium	0.76	0.73	6.8E-02	Shrew	11.2	10.8
Uranium	8.1	5.4	5.0E-01	Plant	16.2	10.8
Zinc	608	48.8	1.0E+01	Plant	60.8	4.88
Cesium-137	0.193	1.65	4.3E+01	Robin	<0.01	0.04
Plutonium-239	0.419	0.054	3.3E+01	Robin	0.01	<0.01
Acenaphthene	0.64	0.33 ^b	2.5E+00	Plant	0.26	0.13
Anthracene	0.94	0.33 ^b	4.4E+02	Mouse	<0.01	<0.01
Benzo(a)anthracene	1.6	0.33 ^b	6.7E+00	Shrew	0.24	0.05
Benzo(a)pyrene	1.4	0.33 ^b	3.8E+00	Shrew	0.37	0.09
Benzo(b)fluoranthene	1.4	0.33 ^b	1.5E+01	Shrew	0.09	0.02
Benzo(g,h,i)perylene	0.92	0.33 ^b	1.6E+01	Fox	0.06	0.02
Benzo(k)fluoranthene	1.4	0.33 ^b	2.7E+01	Shrew	0.05	0.01
Chrysene	1.8	0.33 ^b	6.7E+00	Shrew	0.27	0.05
Dibenzo(a,h)anthracene	0.24	0.33 ^b	3.0E+00	Fox	0.08	0.11
Fluoranthene	3.8	0.33 ^b	5.3E+01	Shrew	0.07	0.01
Fluorene	0.52	0.33 ^b	5.6E+01	Mouse	0.01	0.01
Indeno(1,2,3-cd)pyrene	0.85	0.33 ^b	1.8E+01	Fox	0.05	0.02
Methylnaphthalene[2-]	0.085	0.33 ^b	1.1E+01	Mouse	0.01	0.03
Naphthalene	0.43	0.33 ^b	1.5E-01	Robin	2.89	2.22
Phenanthrene	3	0.33 ^b	2.3E+02	Mouse	0.01	<0.01
Pyrene	2.7	0.33 ^b	3.2E+01	Shrew	0.09	0.01

TABLE 2.4.2.2-2 (b) (continued)

Analyte	Maximum value ^a	BV ^a	Minimum ESL ^a	Receptor	HQ	HQ BV
Aroclor-1254	7.6	0.033 ^b	1.4E-01	Robin	52.7	0.23
Aroclor-1260	0.13	0.033 ^b	3.7E-02	Robin	3.50	0.89
Bis(2-ethylhexyl)phthalate	0.84	0.33 ^b	2.4E-01	Kestrel *	3.57	1.40
Chlordane[alpha-]	0.0074	0.00165 ^b	1.7E+00	Robin	<0.01	<0.01
Chlordane[gamma-]	0.015	0.00165 ^b	1.7E+00	Robin	0.01	<0.01
DDE[4,4'-]	0.0036	0.0033 ^b	3.1E-03	Kestrel	1.17	1.08
DDT[4,4'-]	0.057	0.0033 ^b	6.0E-03	Kestrel	9.53	1.55
Di-n-butylphthalate	0.93	0.33 ^b	1.0E-01	Robin	9.02	3.20
Dibenzofuran	0.29	0.33 ^b	6.2E+01	Plant	<0.01	<0.01
Methoxychlor[4,4'-]	2.1	0.0165 ^b	1.7E+01	Shrew	0.12	<0.01
Dichloroethane[1,1-]	0.002	0.005 ^b	7.4E+02	Mouse	<0.01	<0.01
Tetrachloroethene	0.018	0.005 ^b	4.9E+00	Mouse	<0.01	<0.01
Toluene	0.002	0.005 ^b	9.4E+01	Mouse	<0.01	<0.01
Trichloroethane[1,1,1-]	0.13	0.005 ^a	3.2E+03	Mouse	<0.01	<0.01

a. Units are mg/kg, except for cesium-137 and plutonium-239, with units of pCi/g

b. Values noted are detection limits

* Kestrel with an all-flesh diet

n/a = not available

TABLE 2.4.2.2-3
SUMMARY OF COPECs FROM ECOLOGICAL RISK SCREENING

Analyte	COPEC	Basis
Antimony	Yes	HQ > 0.1
Beryllium	Yes	HQ > 0.1
Cadmium	Yes	HQ > 0.1
Calcium	Yes	No ESLs
Chromium	Yes	HQ > 0.1
Copper	Yes	HQ > 0.1
Iron	Yes	No ESLs
Lead	Yes	HQ > 0.1
Mercury	Yes	HQ > 0.1
Nickel	Yes	HQ > 0.1
Silver	Yes	HQ > 0.1
Sodium	Yes	No ESLs
Thallium	Yes	HQ > 0.1
Uranium	Yes	HQ > 0.1
Zinc	Yes	HQ > 0.1
Cesium-137	No	HQ < 0.1
Plutonium-239	No	HQ < 0.1
Acenaphthene	Yes	HQ > 0.1
Anthracene	No	HQ < 0.1
Benzo(a)anthracene	Yes	HQ > 0.1
Benzo(a)pyrene	Yes	HQ > 0.1
Benzo(b)fluoranthene	No	HQ < 0.1
Benzo(g,h,i)perylene	No	HQ < 0.1
Benzo(k)fluoranthene	No	HQ < 0.1
Chrysene	Yes	HQ > 0.1
Dibenzo(a,h)anthracene	No	HQ < 0.1
Fluoranthene	No	HQ < 0.1
Fluorene	No	HQ < 0.1
Indeno(1,2,3-cd)pyrene	No	HQ < 0.1
Methylnaphthalene[2-]	No	HQ < 0.1
Naphthalene	Yes	HQ > 0.1
Phenanthrene	No	HQ < 0.1
Pyrene	No	HQ < 0.1
Aroclor-1254	Yes	HQ > 0.1
Aroclor-1260	Yes	HQ > 0.1
Bis(2-ethylhexyl)phthalate	Yes	HQ > 0.1

TABLE 2.4.2.2-3 (continued)

Analyte	COPEC	Basis
Chlordane[alpha-]	No	HQ < 0.1
Chlordane[gamma-]	No	HQ < 0.1
DDE[4,4'-]	Yes	HQ > 0.1
DDT[4,4'-]	Yes	HQ > 0.1
Di-n-butylphthalate	Yes	HQ > 0.1
Dibenzofuran	No	HQ < 0.1
Methoxychlor[4,4'-]	Yes	HQ > 0.1
Dichloroethane[1,1-]	No	HQ < 0.1
Tetrachloroethene	No	HQ < 0.1
Toluene	No	HQ < 0.1
Trichloroethane[1,1,1-]	No	HQ < 0.1

Figure 2.4.2.2-2 shows the ordered HQ for metals and radionuclides. This plot shows that six inorganics have HQ values greater than 10 (zinc, antimony, lead, uranium, mercury, copper, and thallium). Upon closer inspection of these inorganics, the thallium HQ differs little from the thallium BV HQ, but the antimony, copper, lead, mercury, and zinc HQ values are at least two times the background HQ. All other inorganics have HQ values greater than 1. The beryllium and chromium HQs differ little from the BV HQ. None of the radionuclides have HQ values greater than 0.01, which emphasizes the apparent minimal ecological risk associated with maximum activity of landfill radionuclide COPECs.

Figure 2.4.2.2-3 shows the ordered HQ for PAHs, PCBs/pesticides and non-PAH semivolatiles, and volatile organics. The PAH ordered HQ plot shows that naphthalene has an HQ greater than 1, and the first five PAHs listed in 2.4.2.2-3(a) all have HQs greater than 0.2. The remaining eleven do not show potential for ecological risk, which may provide a basis for further focusing the list of PAHs that may pose ecological risk to naphthalene, benzo(a)pyrene, chrysene, acenaphthene, and benzo(a)anthracene. Figure 2.4.2.2-3(b) shows that the highest organic analyte HQs are observed for Aroclor-1254, DDT, di-n-butylphthalate, bis(2-ethylhexyl)phthalate, aroclor-1260, and DDE. None of the volatile organic HQ values are greater than 0.01, which emphasizes the apparent minimal ecological risk associated with maximum landfill volatile concentrations for the direct soil ingestion and food web uptake pathways (Figure 2.4.2.2-3). Exposure to constituents associated with soil gas will be discussed qualitatively in the uncertainty analysis section below.

2.4.2.2 (c) Uncertainty Analysis

The screening evaluation identified a total of 27 COPECs, including 15 inorganic and 12 organic chemicals. These analytes and 20 others eliminated as COPECs in the screening evaluation are considered in the uncertainty analysis. Table 2.4.2.2-4 presents a summary of the uncertainty analysis for these analytes.

The uncertainty analysis eliminated 9 previously identified inorganics as COPECs (beryllium, calcium, chromium, iron, nickel, silver, sodium, thallium and uranium). The primary reason for eliminating these inorganics is small relative difference between the landfill HQ and the background HQ. Most of the eliminated inorganics also had a low frequency of detection above background (typically one sample result above the BV), which also suggests that average landfill exposure will be nearly identical to exposure from background concentrations. None of these metals was identified as having a HQ more than 50% greater than the BV HQ (see Figure 2.4.2.2-2).

One organic chemical was eliminated as a COPEC during the uncertainty analysis. Methoxychlor[4,4'-] had an HQ marginally above 0.1 for the maximum sample result (HQ=0.12), and is eliminated as a COPEC because likely average exposure concentration is much less than the maximum concentration as it was only detected in one other sample and the detection limits for other samples are roughly 100 times less than the maximum detected sample result.

In considering whether to identify additional COPECs in the uncertainty analysis, the main consideration was availability of toxicity information and the importance of exposure pathways. The inhalation exposure pathway was identified to be an important pathway, especially for volatile organics. This pathway was not

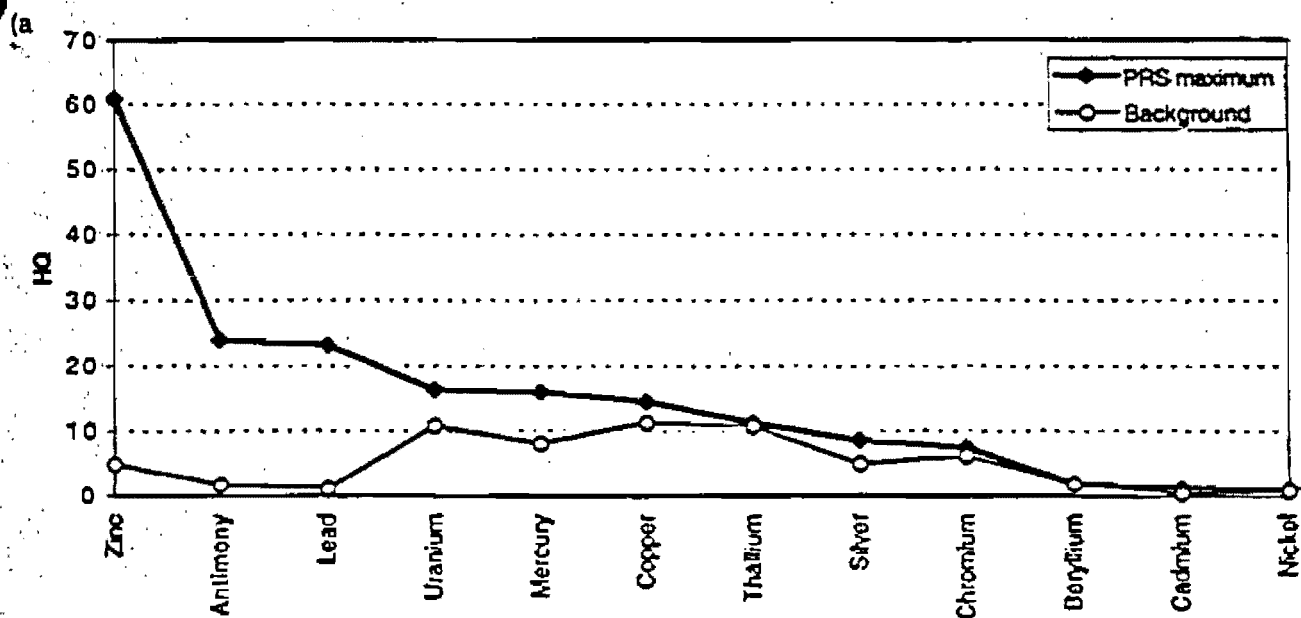
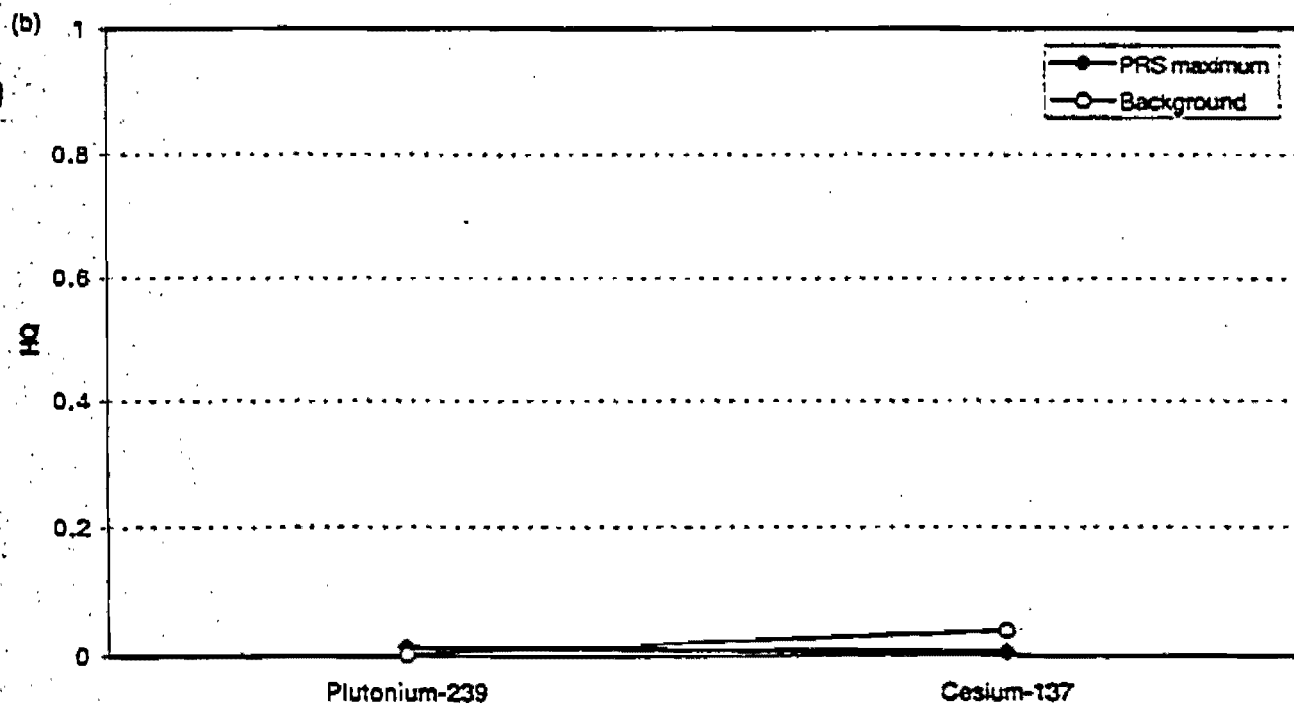


Figure 2.4.2.2-2. Hazard Quotients for most sensitive receptor. (a) Inorganics, (b) radionuclides.

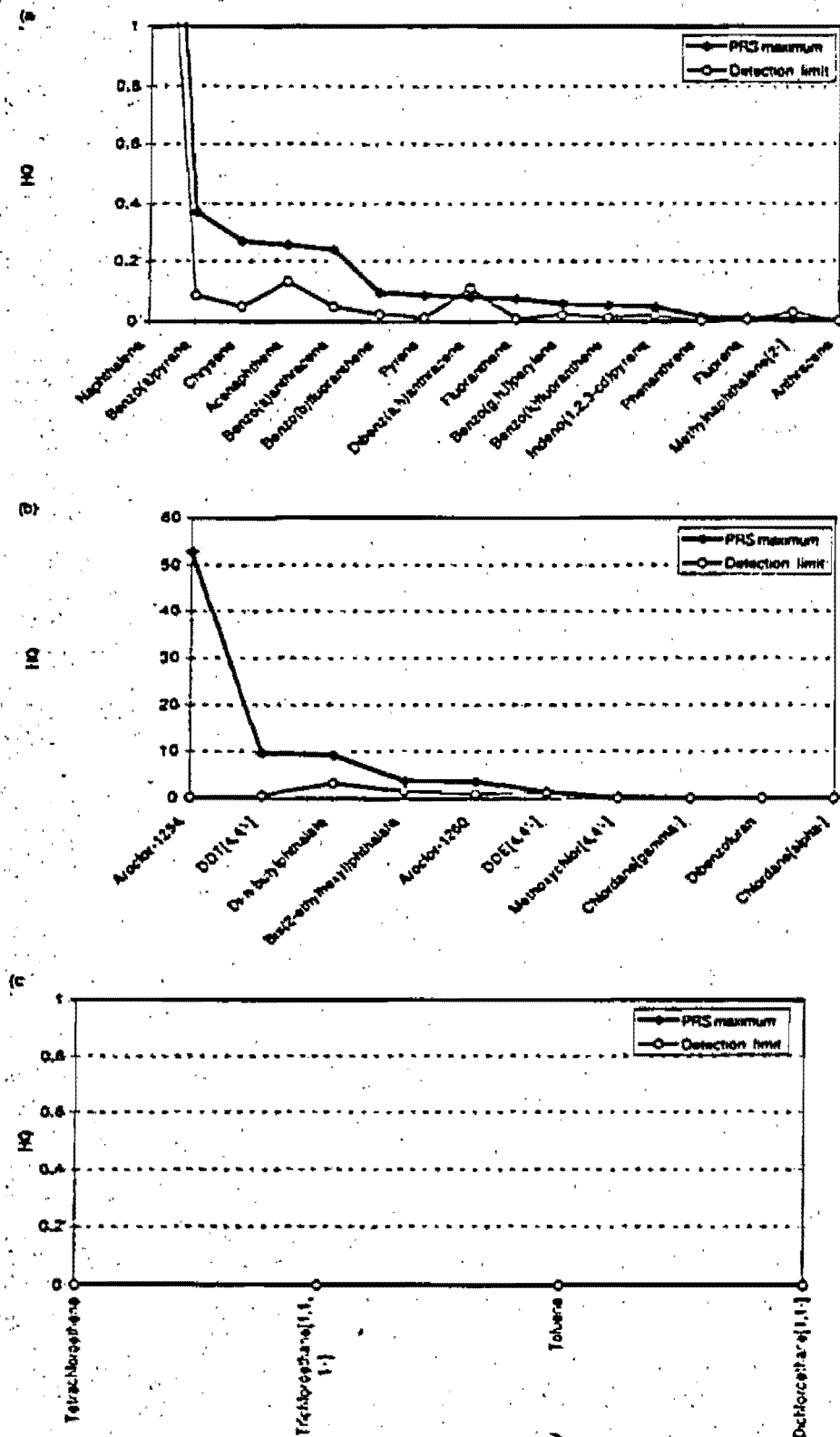


Figure 2.4.2.2-3. Hazard Quotient for most sensitive receptor: (a) PAHs, (b) PCBs/pesticides and non-PAH semivolatiles, (c) volatile organics

TABLE 2.4.2.2-4
COPEC UNCERTAINTY ANALYSIS

Analyte	COPEC Before Uncertainty Analysis	COPEC After Uncertainty Analysis	Toxicity Information	Exposure Information	Data Quality
Antimony	Yes	Yes	Have ESLs for plant and mammal's. Toxicity information considered adequate.	Antimony was not detected in any sample, however the detection limits were raised by an order of magnitude versus background. Using the detection limit as a maximum concentration resulted in an HQ for the most sensitive receptor (plant) of 24.	The detection limits for antimony in the drainage samples were 5 mg/kg, which is elevated above background. The need for further assessment of antimony can be made based on the evaluation of the Pueblo Canyon reach sediment data.
Beryllium	Yes	No	Have ESLs for plant and mammal's. Toxicity information considered adequate.	The maximum beryllium concentration was 4% greater than the BV, and the BV was exceeded in this single sample. Thus, average exposure is nearly identical to that posed by background beryllium concentrations.	No data quality issues.
Cadmium	Yes	Yes	Have ESLs for all receptors. Toxicity information considered adequate.	Cadmium measured above the BV in 6 of 25 samples. The maximum cadmium value yielded a HQ of 1.3 for the most sensitive receptor (plant). The highest cadmium values were associated with the stained areas on the landfill surface.	No data quality issues.
Calcium	Yes	No	No ESLs available, but calcium is an essential nutrient and does not warrant further ecological risk evaluations.	Calcium was as much as 20% above the BV in two samples. Thus, average exposure is nearly identical to that posed by background calcium concentrations.	No data quality issues.
Chromium, Total	Yes	No	Have ESLs for all receptors. Chromium was evaluated under the assumption that it was in the hexavalent form, which is not the most likely form in the environment. Toxicity information is likely to be conservative.	There was only a single chromium result collected from the landfill surface that measured above the BV. Thus, average exposure is nearly identical to that posed by background chromium concentrations.	Many chromium values, including the maximum were J-qualified, which suggests that the results could be biased low.

Table 2.4.2.2-4 (continued)

Analyte	COPEQ Before Uncertainty Analysis	COPEQ After Uncertainty Analysis	Toxicity Information	Exposure Information	Data Quality
Copper	Yes	Yes	Have ESLs for all receptors.	Copper measured above the BV in 5 of 10 landfill surface samples and none of the drainage samples. Thus, exposure to elevated copper is limited to the landfill surface.	No data quality issues.
Iron	Yes	No	No ESLs available, but iron is an essential nutrient and does not warrant further ecological risk evaluations.	Iron was measured above the background value (by 0.5%) in one sample. Thus, average exposure is nearly identical to that posed by background iron concentrations.	No data quality issues.
Lead	Yes	Yes	Have ESLs for all receptors.	Lead was measured above the background value in 3 of 10 surface samples and 2 of 15 drainage samples.	The lead surface samples were J+ qualified, which suggests that the true environmental concentration is less than that reported by the analytical laboratory.
Mercury	Yes	Yes	Have ESLs for birds and mammals. Mercury was evaluated under the assumption that it was in the organic (or methylated) form. This is not the likely form for this environmental setting.	Mercury was detected above the BV in one of 10 landfill surface samples. None of the drainage samples exceeded the BV.	No data quality issues.
Nickel	Yes	No	Have ESLs for all receptors.	Nickel measured 40% above the BV in one of 10 landfill surface samples. Thus, average exposure is nearly identical to that posed by background nickel concentrations.	No data quality issues.

Table 2.4.2.2-4 (continued)

Analyte	COPEC Before Uncertainty Analysis	COPEC After Uncertainty Analysis	Toxicity Information	Exposure Information	Data Quality
Silver	Yes	No	Have ESLs for plants, birds, and mammals. Toxicity information is considered adequate.	Silver measured above the BV in one of 25 samples. The detection limits in the drainage samples was modestly elevated above background (1.4 mg/kg versus 1 mg/kg). Thus, average exposure is similar to that posed by background silver concentrations.	Detection limits are considered adequate for evaluating risk. There are no other data quality issues.
Sodium	Yes	No	No ESLs available, but sodium is necessary micronutrient. Sodium toxicity does not seem to be an important issue.	Sodium measured above background in one sample. The sodium maximum value is roughly 40 times the background value. Except for this one elevated value, average exposure is nearly identical to that posed by background sodium concentrations.	No data quality issues.
Thallium	Yes	No	Have ESLs for plants and mammals. Toxicity information is considered adequate.	Thallium was not detected in any sample. One detection limit was about 5% greater than the background value. Thus, average exposure is nearly identical to that posed by background thallium concentrations.	Detection limits are typically less than the background value. There are no other data quality issues.
Uranium	Yes	No	Have ESLs for plant, birds, and mammals. Toxicity information is considered adequate.	Uranium measured 50% above the BV in 1 of 15 drainage samples. No other uranium sample results exceeded the BV. Thus, average exposure is similar to that posed by background uranium concentrations.	There are no uranium results for the surface samples. Uranium was analyzed by KPA, which may underestimate exposure concentrations by up to 40%. However, the average exposure is still expected to be similar to background uranium.
Zinc	Yes	Yes	Have ESLs for all receptors.	Zinc was measured above background value in 4 of 10 surface samples and 4 of 15 drainage samples. Concentrations were generally lower in the drainages compared to the surface. Thus, elevated zinc found in landfill surface is more relevant to exposure than the modestly elevated zinc drainage concentrations.	No data quality issues.

Table 2.4.2.2-4 (continued)

Analyte	COPEO Before Uncertainty Analysis	COPEO After Uncertainty Analysis	Toxicity Information	Exposure Information	Data Quality
Acenaphthene	Yes	Yes	Have ESLs for plant and mammals. Toxicity information is considered adequate.	One detected value above the EQL in the drainage samples.	High detection limits in three biased samples collected from the landfill surface.
Anthracene	No	No	Have ESLs for mammals. Toxicity information is considered adequate.	One detected value above the EQL in the drainage samples.	High detection limits in three biased samples collected from the landfill surface.
Benzo(a)-anthracene	Yes	Yes	Have ESLs for plant and mammals. Toxicity information is considered adequate.	Two detected values above the EQL with one result from the landfill surface and one from the drainage.	High detection limits in three biased samples collected from the landfill surface.
Benzo(a)pyrene	Yes	Yes	Have ESLs for mammals. Toxicity information is considered adequate.	Three detected values above the EQL with one result from the landfill surface and two from the drainage.	High detection limits in three biased samples collected from the landfill surface.
Benzo(b)-fluoranthene	No	No	Have ESLs for plant and mammals. Toxicity information is considered adequate.	One detected value above the EQL in the drainage samples.	High detection limits in three biased samples collected from the landfill surface.
Benzo(g,h,i)-perylene	No	No	Have ESLs for mammals. Toxicity information is considered adequate.	Two detected values above the EQL with one result from the landfill surface and one from the drainage.	High detection limits in three biased samples collected from the landfill surface.
Benzo(k)-fluoranthene	No	No	Have ESLs for mammals. Toxicity information is considered adequate.	Two detected values above the EQL with one result from the landfill surface and one from the drainage.	High detection limits in three biased samples collected from the landfill surface.
Chrysene	Yes	Yes	Have ESLs for mammals. Toxicity information is considered adequate.	Three detected values above the EQL with one result from the landfill surface and two from the drainage.	High detection limits in three biased samples collected from the landfill surface.
Dibenzo(a,h)-anthracene	No	No	Have ESLs for mammals. Toxicity information is considered adequate.	No detected values above the EQL.	High detection limits in three biased samples collected from the landfill surface.
Fluoranthene	No	No	Have ESLs for mammals. Toxicity information is considered adequate.	Six detected values above the EQL with two results from the landfill surface and four from the drainage.	High detection limits in three biased samples collected from the landfill surface.

Table 2.4.2.2-4 (continued)s

Analyte	COPEC Before Uncertainty Analysis	COPEC After Uncertainty Analysis	Toxicity Information	Exposure Information	Data Quality
Fluorene	No	No	Have ESLs for invertebrate and mammals. Toxicity information is considered adequate.	One detected value above the EQL in the drainage samples.	High detection limits in three biased samples collected from the landfill surface.
Indeno (1,2,3-cd)pyrene	No	No	Have ESLs for mammals. Toxicity information is considered adequate.	One detected value above the EQL in the drainage samples.	High detection limits in three biased samples collected from the landfill surface.
Methylnaphthalene [2-]	No	No	Have ESLs for mammals. Toxicity information is considered adequate.	No detected values above the EQL.	High detection limits in three biased samples collected from the landfill surface.
Naphthalene	Yes	Yes	Have ESLs for mammals. Toxicity information is considered adequate.	One detected value above the EQL in the drainage samples.	High detection limits in three biased samples collected from the landfill surface.
Phenanthrene	No	No	Have ESLs for mammals. Toxicity information is considered adequate.	Six detected values above the EQL with two results from the landfill surface and four from the drainage.	High detection limits in three biased samples collected from the landfill surface.
Pyrene	No	No	Have ESLs for mammals. Toxicity information is considered adequate.	Six detected values above the EQL with two results from the landfill surface and four from the drainage.	High detection limits in three biased samples collected from the landfill surface.
Aroclor-1254	Yes	Yes	Have ESLs for plant, birds and mammals. Toxicity information considered adequate.	Three detected values were on the surface and two were in drainage samples.	No data quality issues.
Aroclor-1260	Yes	Yes	Have ESLs for birds and mammals. Toxicity information considered adequate.	One detected value was on the surface and two were in drainage samples.	No data quality issues.
Chlordane (alpha-)	No	No	Have ESLs for plant, birds, and mammals. Toxicity information considered adequate.	Two detected values in the drainage samples.	No data quality issues.
Chlordane (gamma-)	No	No	Have ESLs for plant, birds, and mammals. Toxicity information considered adequate.	Three detected values in the drainage samples.	No data quality issues.

Table 2.4.2.2-4 (continued)

Analyte	COPEC Before Uncertainty Analysis	COPEC After Uncertainty Analysis	Toxicity Information	Exposure Information	Data Quality
DDE[4,4']	Yes	Yes	Have ESLs for birds and mammals. Toxicity information considered adequate.	One detected value in the drainage samples, but the related chemical, DDT[4,4'], was detected in nine samples (see next table row).	No data quality issues.
DDT[4,4']	Yes	Yes	Have ESLs for birds and mammals. Toxicity information considered adequate.	Two of seven surface samples were detects and 7 of 15 drainage samples were detects.	No data quality issues.
Methoxychlor [4,4']	Yes	No	Have ESLs for birds and mammals. Toxicity information considered adequate.	Two detects in the surface samples.	No data quality issues.
Cesium-137	No	No	Have ESLs for all receptors.	Five cesium-137 values were reported as detects. Due to the depth of sample collection (> 6 inches), these detects were not compared to fallout and were carried forward for screening.	There are no cesium-137 results for the surface samples. There are no other data quality issues.
Plutonium-239	No	No	Have ESLs for all receptors.	Four plutonium-239 values were above the fallout value.	There are no plutonium-239 results for the surface samples. There are no other data quality issues.
Bis(2-ethylhexyl)-phthalate	Yes	Yes	Have ESLs for birds and mammals. Toxicity information considered adequate.	Two detected values above the EQL.	High detection limits in three biased samples collected from the surface.
Di-n-butylphthalate	Yes	Yes	Have ESLs for plant, birds and mammals. Toxicity information considered adequate.	One detected value above the EQL.	High detection limits in three biased samples collected from the surface.
Dibenzofuran	No	No	Have ESL for the plant. Toxicity information is limited.	One detect was reported at a value less than the EQL, which does not warrant a detailed risk evaluation.	No data quality issues.
Dichloroethane [1,1-]	No	No	Have ESLs for mammals. Toxicity information is considered adequate.	Two detects were reported at values less than the EQL, which does not warrant a detailed risk evaluation.	No data quality issues.

evaluated in the ESL calculation, but the direct ingestion and food web uptake pathways were evaluated for volatile organics. Because the HQ for volatile organics for these pathways was roughly zero, the HQ analysis was viewed to be sufficient evidence to eliminate volatile organics from surface soil as COPECs. The inhalation pathway for COPCs in subsurface soil or soil gas have not been eliminated by this analysis. However, the HQ for soil gas constituents would have to be 15,000 times greater than the maximum HQ of detected VOCs in surface soil for a soil gas constituent to have a larger HQ than Aroclor-1254 (which is the maximum HQ in surface soil). Toxicity information was missing altogether for three analytes (calcium, iron and sodium) that are also essential nutrients, and the rationale for eliminating these inorganics was discussed above in this uncertainty analysis. Because of potential exposure to avian T&E species, the HQ values for the vertebrate predators were reviewed in detail. For COPECs with avian ESLs, the kestrel with a flesh diet was used as the surrogate for the T&E species. For the remaining COPECs, the red fox was used as a vertebrate predator surrogate for the T&E species. The vertebrate predator HQ value for four COPECs (aroclor-1254, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, and 4,4'-DDT) is greater than 1, and all of these chemicals have been previously identified as COPECs. The mercury ESL is based on the assumption that mercury exists in the organic (or methylated) form. Organic mercury is more likely to be present in strongly reducing environments (ATSDR 1997, 56531.3), which are atypical of conditions found in surficial soils at the Laboratory. However, mercury is retained as a COPEC to ensure protectiveness of T&E species concerns.

In summary, the uncertainty analysis led to retaining 6 inorganic and 11 organic chemicals as COPECs. Recommendations on further action to mitigate or evaluate potential ecological risk will be discussed in the interpretation section.

2.4.2.2 (d) Interpretation

The airport landfill has surficial contamination that poses potential ecological risk. In addition, there is subsurface soil gas that may also affect plants and animals inhabiting the landfill. However, the landfill exists within an actively managed airport facility. Routine site-management activities include mowing the vegetative cover on the majority of the landfill. This routine mowing modifies the type and density of ecological receptors that could be exposed to contamination. As discussed in Section 2.4.4.1, current planned restoration activities include run-on and runoff controls for surface water. Such controls will likely affect the type and density of vegetation present on the landfill. Potential ecological risk must be viewed in context of the overall site-management activities at the airport landfill.

It may be most cost-effective to mitigate potential ecological risk posed by surficial contamination through limited removal of debris and areas of contamination. Coupled with other site restoration activities, including an improved landfill cover, this corrective action would greatly reduce risk to ecological receptors. The ecological screening was sufficient to identify potential risk. An ecological risk assessment is not needed at this time to move forward with planned site restoration activities. Further ecological assessments may be needed to evaluate the efficacy of interim site remedial activities. Another consideration is that planned restoration activities would not mitigate potential ecological risk resulting from contamination found in the drainages leading into Pueblo Canyon. For most COPECs, the concentration of contaminants is lower in the drainages compared to the landfill surface, which suggests that most of the problem

would be corrected by addressing the landfill surface proper. However, for the PAHs, concentrations were higher in the drainages and some further data collection may be needed to evaluate the need for corrective action in the drainages. To help address this potential data gap, the Pueblo Canyon sediment investigation results should be evaluated in light of the results for the airport landfill surface and drainages.

2.4.3 Risk Assessments

A human health risk assessment is presented in Section 2.4.3.1; an ecological risk assessment was not applicable for this report.

2.4.3.1 Human Health

This section presents the results of the human health risk assessment (HHRA) for the Airport Landfill and Debris Disposal Area. Provided below is a brief summary of the entire HHRA process and results. The complete details of the analysis are provided in later subsections.

The HHRA consisted of the following steps:

- Selection of Chemicals of Potential Concern (COPCs)
- Exposure Assessment
- Toxicity Assessment
- Risk and Dose Characterization
- Uncertainty Analysis

Selection of Chemicals of Potential Concern

The purpose of the selection of COPCs is to identify those chemicals of potential concern in each environmental medium that are to be carried through the quantitative analysis. There are two media of potential concern at the airport: soil and soil gas. Based on the human health screening assessment described in Section 2.4.2.1, 19 COPCs were identified in soil. This was done by comparison of maximum detected concentrations or maximum detection limits to SALs. There are no SALs for soil gas. Therefore, COPCs for soil gas were selected from the over 100 chemicals detected by identifying the subset of chemicals most likely to contribute to potential risk. This screening was performed based on a combination of chemical toxicity and measured concentrations. A total of 29 COPCs were selected for soil gas.

Exposure Assessment

The purpose of the exposure assessment is to identify the mechanisms by which people (receptors) might come in contact with COPCs at the site, and to estimate the intensity, frequency, and duration of contact. The aspects of the site that might influence human exposure were examined to identify the potential receptors under current land use as well as probable future and hypothetical future land uses. Using the physical characteristics of the site, current and foreseeable land use, sources of COPCs at the site, points

of release and potential migration pathways, and potential exposure routes, potential pathways of human exposure for the potential receptors were then identified. Table 2.4.3.1-1 summarizes the results of the exposure assessment, which are further described below.

The Main Landfill and Debris Disposal Area are located within the boundaries of the Los Alamos Airport, adjacent to and beyond the edge of the runway. These areas of the airport are not used by anyone on a regular basis. Therefore, under current conditions, potential receptors are limited to workers in the airport terminal and to off-site residents to the west of the airport. Another possible receptor, under current conditions, is a recreational user of the south slope of Pueblo Canyon, which is directly adjacent to the airport. This receptor is not very likely given the steep slope and the absence of walking trails in the area; however, in the event that someone walks through this area, a hypothetical trail user is included in this HHRA. Groundwater is over 1000 ft below the surface of the landfill. It is not known if chemicals from the Main Landfill or Debris Disposal Area have affected groundwater quality; however, existing information suggests that this is unlikely. Therefore, potential exposure to chemicals in groundwater under current land use was not evaluated in this HHRA, but will be considered within the context of the final remedy.

- *Current Worker at Airport Terminal.* Current workers at the airport terminal may be exposed to COPCs in soil gas via inhalation of vapors. While this exposure could occur either indoors or outdoors, airport workers spend the majority of their time indoors; therefore, only inhalation of vapors in indoor air was evaluated in this HHRA. This receptor could also be exposed to nonvolatile COPCs via inhalation of resuspended soil particulates (i.e., dust). Current workers at the airport terminal are not expected to be exposed to COPCs in surface soil because the affected soil is in an area of the airport that is not currently used.
- *Current Off-site Resident.* The nearest residents to the Main Landfill and Debris Disposal Area are located west of the site. These residents may be exposed to COPCs in soil gas via inhalation of vapors. While this exposure could occur either indoors or outdoors, residents spend the majority of their time indoors; therefore, only inhalation of vapors in indoor air was evaluated in this HHRA. This receptor could also be exposed to nonvolatile COPCs via inhalation of resuspended soil particulates (i.e., dust). These residents are not expected to be exposed to COPCs in surface soil, because the affected soil is in a restricted (i.e., access-controlled) area of the airport. It is theoretically possible for off-site residents to also be exposed to COPCs via ingestion of homegrown produce grown in soil upon which soil particulates have been deposited. However, a quantitative evaluation of this pathway is not necessary because the majority of the landfill surface is vegetated, limiting the potential for dusts to actually become entrained in air. If dusts were generated, off-site soil concentrations are likely to be extremely low due to the attenuation that would occur as a result of air dispersion, deposition, and mixing within the root zone in off-site soil.
- *Current Hypothetical Trail User.* In the event that a recreational user of Pueblo Canyon walks along the south slope of the canyon immediately below the main landfill, this hypothetical trail user may be exposed to COPCs in surface soil via incidental ingestion and dermal contact, and via inhalation of vapors or resuspended soil particulates (i.e., dust).

The intended future use of the site is as an airport. Under such conditions, there would be no cause for people to visit the Main Landfill or Debris Disposal Area on a regular basis. However, Los Alamos County

TABLE 2.4.3.1-1
SUMMARY OF HUMAN HEALTH EXPOSURE ASSESSMENT

Land Use	Receptor	Exposure Point	Exposure Medium	Exposure Route
Future	Hypothetical adult resident	Main Landfill	Surface soil	Incidental ingestion
				Dermal contact
			Indoor air	Inhalation of particulates
				Inhalation of vapors from soil
		Debris Disposal Area	Homegrown produce	Ingestion
			Indoor air	Inhalation of vapors from soil gas
	Hypothetical child resident	Main Landfill	Surface soil	Incidental ingestion
				Dermal contact
			Indoor air	Inhalation of particulates
				Inhalation of vapors from soil
		Debris Disposal Area	Homegrown produce	Ingestion
			Indoor air	Inhalation of vapors from soil gas
	Visitor to proposed tie-down area	Main Landfill	Surface soil	Incidental ingestion
				Dermal contact
			Ambient air	Inhalation of particulates
				Inhalation of vapors from soil
				Inhalation of vapors from soil gas
Current	Worker at airport terminal	Off-site West of Main Landfill	Indoor air	Inhalation of particulates
				Inhalation of vapors from soil gas
	Off-site adult resident	Off-site West of Main Landfill	Indoor air	Inhalation of particulates
				Inhalation of vapors from soil gas
	Off-site child resident	Off-site West of Main Landfill	Indoor air	Inhalation of particulates
				Inhalation of vapors from soil gas
	Hypothetical trail user	Pueblo Canyon Slope	Surface soil	Incidental ingestion
				Dermal contact
			Ambient air	Inhalation of particulates
				Inhalation of vapors from soil

would like to install additional airplane "tie-downs" along the north side of the runway, directly on top of the main landfill. Therefore, under the probable future use, one potential receptor could be a periodic visitor to this area of the airport. There are no other potential receptors under this future-use scenario.

Future residential development of the airport is not foreseen at this time. However, in the event that the airport is redeveloped into a residential area, a hypothetical future on-site resident is included in this HHRA. As indicated, it is not known if groundwater quality has been affected by the site. Therefore, potential exposure to chemicals in groundwater was not evaluated under future land use in this HHRA.

- *Future On-Site Visitor in Proposed Tie-Down Area.* In the event that Los Alamos County installs airplane tie-downs directly on top of the main landfill, future visitors to this area of the site may be exposed to chemicals in surface soil via incidental ingestion and dermal contact, and via inhalation of vapors or resuspended soil particulates (i.e., dust). This receptor may also be exposed to COPCs in soil gas via inhalation of vapors in ambient air.
- *Hypothetical Future On-Site Adult and Child Resident.* In the event the site is redeveloped for residential use some time in the future, hypothetical future on-site residents may be exposed to COPCs in surface soil via incidental ingestion and dermal contact, and via inhalation of vapors or resuspended soil particulates (i.e., dust). In addition, depending on the type of residential development (single family vs. multi-family housing), hypothetical future on-site residents may also be exposed to COPCs in soil via ingestion of homegrown produce. Hypothetical future on-site residents may also be exposed to COPCs in soil gas via inhalation of vapors. While this exposure could occur either indoors or outdoors, residents spend the majority of their time indoors; therefore, only inhalation of vapors in indoor air was evaluated in this HHRA. All of the pathways listed here are applicable to the main landfill. However, only the inhalation of soil gas in indoor air is applicable to the Debris Disposal Area as there is no information to indicate that surface soil in this area is affected.

Given the exposure pathways identified above, estimated doses associated with exposure to the COPCs in soil and soil gas were developed. Doses were estimated based on both a "reasonable maximum exposure" (RME) scenario and a "more likely exposure" (MLE) scenario. RME exposures were estimated based on conservative estimates of the representative concentrations of each COPC in soil and soil gas (i.e., maximum values or upper confidence limit values) and conservative estimates of the amount, frequency, and duration of exposure to soil and soil gas. MLE exposures were estimated by combining mean or median concentrations with more realistic estimates of exposure amount, frequency, and duration.

Toxicity Assessment

The purpose of the toxicity assessment is to characterize the relationship between the dose of a chemical and the potential adverse effects. This dose-response relationship is characterized using toxicity criteria established by the EPA. Potential noncarcinogenic effects associated with exposure to the COPCs at the airport were evaluated using reference doses (RfDs). Potential carcinogenic risks were evaluated using cancer slope factors (CSFs). The RfDs and CSFs for COPCs at the airport were gathered from EPA

sources. Toxicity criteria were not available for two chemicals detected at low concentrations in soil gas; therefore, these chemicals could not be evaluated quantitatively. However, based on the limited toxicity data available, the exclusion of these chemicals from the quantitative evaluation does not affect the conclusions of the HHRA. Lead does not have an EPA RfD or CSF. Potential adverse effects associated with lead were evaluated by using the current EPA models for assessing lead exposure in children and adults.

Risk and Dose Characterization

Risk characterization combines the exposure and toxicity information (as described in the previous two sections) to develop quantitative and/or qualitative estimates of potential risks. Potential noncarcinogenic risks were evaluated by comparing the estimated exposure doses with RfDs to calculate a hazard quotient. Hazard quotients were combined to calculate hazard indices. The results of the noncarcinogenic risk characterization were compared with a target hazard index of 1. Potential carcinogenic risks were estimated by comparing the estimated doses with CSFs to calculate a theoretical excess lifetime cancer risk. The results were compared with a target risk range of 1×10^{-6} to 1×10^{-4} , established by EPA. The results of the risk characterization are presented in Table 2.4.3.1-2.

As indicated in Table 2.4.3.1-2, potential noncarcinogenic risks are below the target of 1 for the receptors most likely to be exposed to COPCs at the airport under current and probable future land use: current airport worker, current off-site resident, current hypothetical trail user, and the future visitor to the proposed tie-down area. Potential noncarcinogenic risks are also below the target of 1 under hypothetical future residential land use of the Debris Disposal Area. Only under the hypothetical future residential land use of the main landfill do hazard indices exceed the target of 1. Under both the MLE and RME scenarios, potential exposure to COPCs in soil gas emissions from the main landfill results in hazard indices well above 1. Acetophenone and acrolein are the COPCs responsible for the hazard index being above 1. Potential noncarcinogenic risks associated with exposure to COPCs in soil are above the target of 1 under the RME scenario, but are below the target of 1 under the MLE scenario. In this case, ingestion of Aroclor-1254 in homegrown produce and dermal contact with Aroclor-1254 in soil is responsible for the RME hazard index being above 1.

Potential carcinogenic risks to receptors under current and probable future land use are all below or within the acceptable risk range of 1×10^{-6} to 1×10^{-4} under both the RME and MLE scenarios. Potential risks to the current airport terminal worker and current off-site residents are below 1×10^{-6} under both RME and MLE scenarios. Potential risks to the hypothetical trail user and future visitor to the proposed tie-down area are below 1×10^{-6} under the MLE scenario, and within the 1×10^{-6} to 1×10^{-4} range under the RME scenario.

Under hypothetical future residential land use, potential risks to a hypothetical future resident on the Debris Disposal Area are within the acceptable risk range of 1×10^{-6} to 1×10^{-4} under both the RME and MLE scenarios. However, potential exposure to COPCs in soil gas emissions from the main landfill results in potential carcinogenic risks above 1×10^{-4} under both the MLE and RME scenarios. Inhalation of 2-nitropropane is responsible for the majority of the risk associated with soil gas. Potential carcinogenic risks to a hypothetical future resident associated with exposure to COPCs in soil at the main landfill are

TABLE 2.4.3.1-2
SUMMARY OF HUMAN HEALTH RISK ASSESSMENT

Land Use	Receptor	Exposure Location	Exposure Medium	Exposure Route	Hazard Index ^a		Cancer Risk ^a	
					RME ^b	MLE ^c	RME	MLE
Future	Hypo- thetical adult resident	Main Landfill	Surface soil	Incidental ingestion	0.7	0.004	1E-05	4E-08
				Dermal contact	2	0.001	5E-05	5E-08
			Indoor air	Inhalation of particulates	0.01	0.001	2E-07	7E-09
				Inhalation of vapors from soil	0.001	0.001	NA ^d	NA
			Homegrown produce	Ingestion	10	0.7	2E-04	4E-06
			Indoor air	Inhalation of vapors from soil gas	300	300	3E-03	1E-03
			Total		300	300	4E-03	1E-03
	Hypo- thetical child resident	Main Landfill	Surface soil	Incidental ingestion	6	0.1	2E-05	1E-06
				Dermal contact	20	0.01	8E-05	4E-07
			Indoor air	Inhalation of particulates	0.03	0.003	1E-07	1E-08
				Inhalation of vapors from soil	0.002	0.002	NA	NA
			Homegrown produce	Ingestion	10	0.7	5E-05	3E-06
			Indoor air	Inhalation of vapors from soil gas	600	600	2E-03	2E-03
			Total		600	600	2E-03	2E-03
	Visitor to proposed tie-down area	Main Landfill	Surface soil	Incidental ingestion	0.1	0.001	2E-06	1E-08
				Dermal contact	0.4	0.0008	7E-06	3E-08
			Ambient air	Inhalation of particulates	0.0001	0.000002	2E-09	1E-11
				Inhalation of vapors from soil	9E-07	1E-07	NA	NA
				Inhalation of vapors from soil gas	0.2	0.03	3E-06	1E-07
			Total		0.7	0.03	1E-05	1E-07
Current	Worker at airport terminal	Off-site West of Main Landfill	Indoor air	Inhalation of particulates	Qual ^e	Qual	Qual	Qual
				Inhalation of vapors from soil gas	0.06	0.03	7E-07	1E-07
			Total		0.06	0.03	7E-07	1E-07
	Off-site adult resident	Off-site West of Main Landfill	Indoor air	Inhalation of particulates	Qual	Qual	Qual	Qual
				Inhalation of vapors from soil gas	0.05	0.05	6E-07	2E-07
			Total		0.05	0.05	6E-07	2E-07
	Off-site child resident	Off-site West of Main Landfill	Indoor air	Inhalation of particulates	Qual	Qual	Qual	Qual
				Inhalation of vapors from soil gas	0.1	0.1	3E-07	3E-07
			Total		0.1	0.1	3E-07	3E-07
	Hypo- thetical trail user	Pueblo Canyon Slope	Surface soil	Incidental ingestion	0.005	0.0003	3E-07	4E-09
				Dermal contact	0.02	0.0002	9E-06	2E-08
			Ambient air	Inhalation of particulates	0.0001	0.000003	4E-09	2E-11
				Inhalation of vapors from soil	0.05	0.002	NA	NA
			Total		0.08	0.002	1E-05	2E-08

- a. The sum of the values in the table may not equal the "total" due to rounding.
b. RME = reasonable maximum exposure
c. MLE = more likely exposure
d. NA = not applicable
e. Qual = evaluated qualitatively based on results of on-site receptors.

above 1×10^{-4} under the RME scenario, but are within the acceptable risk range of 1×10^{-6} to 1×10^{-4} under the MLE scenario. In this case, ingestion of Aroclor-1254 in homegrown produce as well as dermal contact with Aroclor-1254 in soil is responsible for the RME risk being above 1×10^{-4} .

The evaluation of potential adverse effects associated with exposure to lead in soil indicated that, under RME exposures, potential blood-lead levels of future residents may exceed the target blood-lead level of 10 mg/dl. Under MLE exposures, estimated blood-lead levels are below the target of 10 mg/dl. Estimated blood-lead levels of the receptors under current and probable future land use were all below the 10 mg/dl target.

Uncertainty Analysis

Uncertainty analysis is that step of the risk assessment process when the results are discussed within the context of uncertainties in the information upon which the results are based. The assumptions that have the greatest potential impact on the results are identified so that risk managers can put the risk numbers in context.

All risk estimates associated with current and probable future land use are below or within acceptable risk levels established by the EPA. The only risk estimates that exceed acceptable levels are those associated with hypothetical future land use of the Main Landfill as a result of inhalation of soil gas and ingestion of homegrown produce.

These risk estimates are highly uncertain for two reasons. First and foremost, it is highly unlikely that the main landfill will ever be developed for residential land use. Second, the majority of the estimated risk is attributable to inhalation of a few COPCs in soil (landfill) gas that is assumed to be released from the surface and to migrate into indoor air.

The risk assessment calculations associated with the above pathway are highly uncertain. For example, representative concentrations of many COPCs, including the primary risk drivers (acetophenone, acrolein, and 2-nitropropane) were based on nondetect values because these chemicals were detected in a small percentage of the samples. In addition, a default gas emission velocity was employed due to the lack of a site-specific value. To compensate for the use of the default value, emissions were assumed to be coming from the entire landfill surface, even though existing data indicate that this is not the case. Therefore, the estimated risks presented above for inhalation of soil gas should be considered highly uncertain.

Lastly, the risks attributed to ingestion of Aroclor-1254 as taken up by homegrown produce are likely to be overestimated. These risks are based on plant uptake factors that are calculated from the chemical-specific octanol-water partition coefficient using a simplistic equation. It is likely that the uptake of chemicals into plants is also a function of how tightly they bind to organic matter in soil, which the model does not take into consideration. This is likely to be especially important for chemicals such as Aroclor-1254 that bind very strongly to organic matter.

Given the uncertainties identified above, the risks to a hypothetical future resident overestimate the true risks associated with the site, which are likely to be within the acceptable risk range.

2.4.3.1 (a) Selection of Chemicals of Potential Concern

Nineteen COPCs in soil were identified based on the results of a screening evaluation presented in Section 2.4.2.1(b) (i.e., antimony, Aroclor 1254, Aroclor 1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, dibenzo(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, iron, lead, 2-methylnaphthalene, naphthalene, phenanthrene, and thallium).

A screening evaluation could not be conducted for chemicals detected in soil gas because SALs have not been developed for this medium. In the absence of a screening evaluation, one option would be to include all of the detected chemicals in the HHRA. However, more than 100 chemicals were detected in soil gas, and it is likely that most of these chemicals do not contribute significantly to the overall risk posed by exposure to chemicals in soil gas. Therefore, an alternative screening process was developed to identify COPCs in soil gas. This process included four steps: (1) identifying representative concentrations for each chemical detected in soil gas, (2) identifying carcinogenic and noncarcinogenic toxicity criteria, (3) calculating "normalized" values based on the representative concentrations and toxicity criteria, and (4) identifying those chemicals that contribute to the majority of the total normalized value. For purposes of this screening process, the maximum detected value or median value was considered to be a representative concentration to address both the magnitude and distribution of chemicals at the site. Toxicity criteria were obtained from EPA's Integrated Risk Information System (IRIS) or other EPA sources. For those chemicals without established toxicity criteria, surrogate values were derived from occupational standards or from information in the scientific literature where possible. Based on this information, normalized values were calculated for noncarcinogenic chemicals by dividing the representative concentration by the noncarcinogenic toxicity criterion. For carcinogenic chemicals normalized values were calculated by multiplying the representative concentration by the carcinogenic toxicity criterion. Those chemicals contributing to 99% of the total normalized value based on either the maximum or median concentration were identified as COPCs in soil gas. The decision criterion of 99% is considered to be sufficiently conservative to account for any possible synergistic effects between two or more of the detected chemicals. The results of this screening process are summarized in Table 2.4.3.1-3; a more detailed discussion of the process and supporting documentation are provided in Appendix F-1.0.

2.4.3.1 (b) Exposure Assessment

Exposure assessment is the process of measuring or estimating the intensity, frequency, and duration of human exposure. The principal elements of exposure assessment consist of

- evaluating the influence of fate and transport processes for the COPCs,
- identifying potential exposure scenarios (i.e., receptors) and exposure pathways,
- calculating representative chemical concentrations, and
- estimating potential chemical uptake.

The exposure assessment is conducted within the context of a site conceptual model. As described in the U.S. EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (EPA 1988, 59107), the purpose of a site conceptual model is to describe what is currently known about

chemical sources, likely migration pathways, exposure routes, and possible exposure scenarios so that the data necessary to complete a risk assessment are identified. The site conceptual model developed for this human health risk assessment is presented in Figure 2.4.2.1-1. Each component of the site conceptual model is discussed in the following sections.

Environmental Fate and Transport of Chemicals of Potential Concern

The environmental fate of the COPCs is controlled by the cumulative interaction of transport and transformation processes. Once released into the environment, a chemical may partition among various environmental media (soil, water, air). The transport processes that define the movement of chemicals between media are highly dependent on the physicochemical properties of both the chemicals and the environmental media.

The environmental fate of the COPCs is described in detail in Section 2.3.5.2. Based on this discussion, environmental media (e.g., soil or air) that may significantly contribute to an individual's exposure to a chemical can be determined based on this general understanding of the environmental transport mechanisms of the COPCs. As shown previously in Figure 2.4.2.1-1, COPCs at the site may be present in soil, air, groundwater, or vegetation.

Identifying Potential Receptors and Exposure Pathways

The main landfill and debris disposal area are located within the boundaries of the Los Alamos airport, adjacent to and beyond the edge of the runway. These areas of the airport are not used by anyone on a regular basis. In addition, the site is intended to be used as an airport for the foreseeable future. Therefore, under current and probable future use conditions, potential receptors include nearby workers in the airport terminal and nearby residents to the west of the airport. Another possible receptor under current and probable future use conditions is a recreational user of the south slope of Pueblo Canyon, which is directly adjacent to the airport. This receptor is not very likely given the steepness of the slope and the absence of walking trails in the area. However, in the event that someone walks through this area, a hypothetical trail user is included in this HHRA. Los Alamos County would like to install additional airplane "tie-downs" along the north side of the runway, directly on top of the main landfill. Another potential receptor would be a periodic visitor to this area of the airport. Future residential development of the airport is not considered viable at this time. However, in the unlikely event that the airport were redeveloped as a residential area, a hypothetical future on-site resident is included in this HHRA. These receptors may come into contact with one or more of the following exposure media:

- surface soil on the south slope of Pueblo Canyon,
- surface soil on top of the main landfill,
- edible vegetation in the unlikely event that the site is developed for residential use, and
- ambient or indoor air.

It is not known at this time whether chemicals associated with the landfill have affected groundwater, either perched zones or the regional aquifer. As discussed in Section 2.3.5, relatively small amounts of

TABLE 2.4.3.1-3
SUMMARY OF CHEMICALS OF POTENTIAL CONCERN IN SOIL GAS

Chemical of Potential Concern	Rationale
Acetophenone	Contributes to 99% of total normalized value based on both the maximum and median values
Acrolein	Contributes to 99% of total normalized value based on both the maximum and median values
Acrylonitrile	Contributes to 99% of total normalized value based on the median value
Benzene	Contributes to 99% of total normalized value based on both the maximum and median values
Benzyl Chloride	Contributes to 99% of total normalized value based on the median value
Bromodichloromethane	Contributes to 99% of total normalized value based on the median value
Bromomethane	Contributes to 99% of total normalized value based on the median value
Butadiene[1,3-]	Contributes to 99% of total normalized value based on the median value
Carbon Tetrachloride	Contributes to 99% of total normalized value based on the median value
Dibromoethane[1,2-]	Contributes to 99% of total normalized value based on both the maximum and median values
Dichlorobenzene[1,4-]	Contributes to 99% of total normalized value based on the maximum value
Dichlorodifluoromethane	Contributes to 99% of total normalized value based on the median value
Dichloroethene[1,1-]	Contributes to 99% of total normalized value based on the median value
Dichloroethene[cis-1,2-]	Contributes to 99% of total normalized value based on the maximum value
Dichloropropane[1,2-]	Contributes to 99% of total normalized value based on the median value
Dichloropropene[cis-1,3-]	Contributes to 99% of total normalized value based on the median value
Dichloropropene[trans-1,3-]	Contributes to 99% of total normalized value based on the median value
Dimethyl Disulfide	Contributes to 99% of total normalized value based on the median value
Ethyl Acrylate	Contributes to 99% of total normalized value based on the median value
Isobutane	Contributes to 99% of total normalized value based on both the maximum and median values
Isoprene	Contributes to 99% of total normalized value based on the median value
Nitrobenzene	Contributes to 99% of total normalized value based on both the maximum and median values
Nitropropane[2-]	Contributes to 99% of total normalized value based on both the maximum and median values
Pinene[beta-]	Contributes to 99% of total normalized value based on the maximum value
Tetrachloroethane[1,1,2,2-]	Contributes to 99% of total normalized value based on the median value
Tetrachloroethene	Contributes to 99% of total normalized value based on both the maximum and median values
Trimethylbenzene[1,2,4-]	Contributes to 99% of total normalized value based on both the maximum and median values
Trimethylbenzene[1,3,5-]	Contributes to 99% of total normalized value based on the maximum value
Vinyl Chloride	Contributes to 99% of total normalized value based on both the maximum and median values

leachate appear to occur at isolated locations beneath the landfill. The leachate contains very low levels of organics, generally below drinking water criteria, and some inorganics at concentrations that exceed drinking water criteria; however, the potential for these inorganic chemicals to migrate is expected to be limited. In addition, the chemical concentrations in soil gas appear to attenuate significantly with depth below the bottom of the landfill. These data suggest that groundwater may not have been or will be significantly impacted by chemicals associated with the landfill, if at all. The potential importance of this transport pathway will be evaluated within the context of the final remedy design for the site. Therefore, potential exposure to chemicals in groundwater is not evaluated in this HHRA.

Exposure pathways are the means through which an individual may contact a chemical in the environment. Exposure pathways are governed by environmental conditions (e.g., depth to groundwater or prevailing wind direction); by the potential for the chemical to move from one medium (water or air) to another; and by the general lifestyles and/or work activities of potentially exposed populations (e.g., gardening or office work). Although several potential pathways may exist, only a few may be complete. For a pathway to be complete, each of the following elements must exist:

- a source and mechanism for chemical release,
- an environmental transport medium (e.g., air, water),
- a point of potential contact with the medium, and
- an exposure route at the contact point (e.g., inhalation, dermal contact).

The exposure pathways through which the identified receptors may contact the identified exposure media are discussed below.

In the unlikely event the site is redeveloped for residential use some time in the future, hypothetical future on-site residents may be exposed to COPCs in surface soil via incidental ingestion, dermal contact, and inhalation of vapors or resuspended soil particulates (i.e., dust), and depending on the type of residential development (single family vs. multi-family housing), ingestion of homegrown produce. Hypothetical future on-site residents may also be exposed to COPCs in soil gas via inhalation of vapors. While this exposure could occur either indoors or outdoors, residents spend the majority of their time indoors (EPA 1995, 59106, pages 5-14 to 5-67); therefore, only inhalation of vapors in indoor air was evaluated in this HHRA. As stated previously, it is currently unknown if chemicals have affected groundwater associated with the landfill. Therefore, potential exposure to chemicals in groundwater by hypothetical future on-site residents is not evaluated in this HHRA.

In the event that Los Alamos County installs airplane tie-downs directly on top of the main landfill, future visitors to this area of the site may be exposed to chemicals in surface soil via incidental ingestion, dermal contact, and inhalation of vapors or resuspended soil particulates (i.e., dust). Future on-site visitors in the proposed tie-down area may also be exposed to COPCs in soil gas via inhalation of vapors in ambient air.

Current workers at the airport terminal may be exposed to COPCs in soil gas via inhalation of vapors. Similar to the hypothetical future on-site resident, this exposure is assumed to occur indoors. Current workers at the airport terminal are not expected to have direct contact with COPCs in surface soil, because the affected soil is in an area of the airport that is not currently used. However, it is possible that

current workers at the airport terminal may be indirectly exposed to COPCs in surface soil via inhalation of resuspended particulates. This exposure pathway is not expected to contribute substantially to the overall exposure to this receptor, given the distance between the main landfill and the airport terminal. Therefore, this pathway will be evaluated qualitatively based on the results of the future hypothetical on-site resident.

The nearest residents to the main landfill and debris disposal area are located west of the site (approximately 2,500 ft from the western edge of the main landfill). These residents may be exposed to COPCs in soil gas via inhalation of vapors. Similar to the hypothetical future on-site resident, this exposure is assumed to occur indoors. These residents are not expected to have direct contact with COPCs in surface soil, because the affected soil is in a restricted (i.e., access controlled) area of the airport. Potential exposure to COPCs in surface soil via inhalation of resuspended particulates is possible but not expected to contribute substantially to the overall exposure to this receptor, given the distance between the main landfill and the nearest residence. Therefore, this pathway will be evaluated qualitatively, based on the results of the hypothetical future on-site resident. It is theoretically possible for off-site residents to also be exposed to COPCs via ingestion of homegrown produce grown in soil upon which soil particulates are deposited. However, a quantitative evaluation of this pathway is not necessary because the majority of the landfill surface is vegetated, limiting the potential for dusts to actually become entrained in air. If dusts were generated, off-site soil concentrations are likely to be extremely low due to the attenuation that would occur as a result of air dispersion, deposition, and mixing within the root zone in off-site soil.

In the event that a recreational user of Pueblo Canyon walks along the south slope of the canyon immediately below the main landfill, this hypothetical trail user may be exposed to COPCs in surface soil via incidental ingestion, dermal contact, and inhalation of vapors or resuspended soil particulates (i.e., dust). The hypothetical trail user is not expected to be exposed to soil gas within the landfill because landfill gas does not appear to be emanating from the side of the landfill (i.e., landfill gas was not detected in LP-8 and LPS-1 or during a field screening survey conducted along the south wall of Pueblo Canyon).

Exposure Point Concentrations

Estimates of exposure point concentrations are necessary for evaluating chemical uptake in exposed individuals. The COPCs identified in soil and soil gas have been detected in these media at varying concentrations, but not all COPCs have been detected at all locations. Chemical concentrations that are considered representative of the average to which an individual might be exposed over an extended period were estimated as follows:

- **Surface Soil:** Representative soil concentrations for hypothetical future on-site residents and future visitors to the proposed tie-down area were based on the 7 surface soil samples collected on top of the main landfill. For hypothetical trail users, representative soil concentrations were based on the 15 surface soil samples collected on the slope of Pueblo Canyon.
- **Soil Gas:** Representative soil gas concentrations for hypothetical future on-site residents, future visitors to the proposed tie-down area, current workers at the airport terminal, and current off-site residents were based on soil gas measurements from monitoring locations within the "high gas" area of the main landfill (defined in Section 2.3.5.1) and from monitoring locations within the debris

disposal area. Representative concentrations were estimated for each of these source areas separately. As discussed in Section 2.3.5.1, data from June 1996 are considered anomalous and were not considered in estimating representative concentrations for chemicals in soil gas.

Two representative concentrations were estimated, one for a "reasonable maximum exposure" (RME) scenario and a second for a "more likely exposure" (MLE) scenario. The EPA defines the RME scenario as "the highest exposure that is reasonably expected to occur at the site (EPA 1989, 58694, p. 6-4 to 6-5). The EPA also states that, "The intent of the RME is to estimate a conservative exposure case (i.e., well above the average) that is still within the range of possible exposures" (EPA 1989, 58694, p. 6-4 to 6-5). The intent of the MLE scenario is to provide a more realistic estimate of potential exposure.

As part of the RME scenario, EPA specifies that the representative concentration for each COPC be equal to the 95 percent upper confidence limit (95% UCL) of the arithmetic mean of a given set of chemical concentration data to account for the uncertainty with estimating the true average concentration at a site (EPA 1992, 59182, p.1). The arithmetic mean of the concentration data is then generally used for the MLE scenario. Unfortunately, none of the data sets for the airport landfill are suitable for estimating a mean or UCL of the mean concentration. For example, the number of surface soil samples is low (seven samples from the surface of the landfill and 15 samples from the drainages) and the samples were collected from biased locations. Therefore, the maximum value was conservatively assumed to be representative for the RME scenario and the median value of the detected and nondetected values was assumed to be representative for the MLE scenario. In the event that the median value was a nondetect value that was greater than the maximum detected concentration, the maximum detected concentration was used for both the RME and MLE scenarios. Two COPCs in surface soil were not detected in any sample (antimony and thallium). In these cases, the maximum and median nondetect values were used for the RME and MLE scenarios, respectively. For the soil gas data, a sufficient number of samples were collected, especially in the main landfill, to calculate a mean or UCL of the mean concentration; however, the frequency of nondetects made it difficult to determine the distribution of the data. Therefore, the 95% UCL of the median of the detected and nondetected values was used for the RME scenario and the median of the detected and nondetected values was used for the MLE scenario. Similar to the representative soil concentrations, if the 95% UCL of the median or the median concentration was greater than the maximum detected concentration, then the maximum detected concentration was used.

The representative concentrations for soil and soil gas are presented in Tables 2.4.3.1-4 and 2.4.3.1-5, respectively. A more detailed discussion of the rationale and associated statistics is provided in Appendix E-1.0.

Inhalation of Vapors from Soil

Three of the COPCs in soil (i.e., 2-methylnaphthalene, naphthalene, and phenanthrene) are considered volatile [i.e., a Henry's Law constant greater than 10^{-5} atm-m³/mole and a molecular weight less than 200 g/mole (EPA 1991, 58234, p. 13)]. To evaluate exposure to these chemicals via inhalation of vapors, air concentrations were estimated based on their representative concentrations in soil. The emission rate of these volatile COPCs from the affected soil was estimated using EPA's volatilization factor (VF) model (EPA 1991, 58234, p. 26-29). The VF model is a simple screening model that assumes all phases are in

equilibrium (vapor, liquid, and solid phases) and that the source remains constant over time (i.e., does not account for source depletion). Several chemical-specific input parameters required for the VF model are presented in Table 2.4.3.1-6a; several non-chemical-specific input parameters are presented in Table 2.4.3.1-6b. The emissions area for the main landfill and slope of Pueblo Canyon are shown on Figures 2.4.2.1-2 and 2.4.2.1-3, respectively. A more detailed description of the VF model is provided in Appendix F-1.0.

The emission rates estimated by the VF model were then used in conjunction with a box model to estimate ambient air concentrations for the future visitor in the proposed tie-down area and hypothetical trail user and indoor air concentrations for the hypothetical future adult and child on-site resident. The box model is a simple mass balance equation that is based on the concept of a theoretically enclosed space over the area of interest. Several input parameters required for the box model are presented in Table 2.4.3.1-7a; a more detailed description of the box model is provided in Appendix F-1.0.

Inhalation of Vapors from Soil Gas

Air concentrations of COPCs in soil gas were estimated in a manner similar to that described above for volatile COPCs in soil. First, the emission rates of COPCs in soil gas were estimated using EPA's "Volatile Nonmethane Organic Compound Emissions Model from Co-Disposal Landfills" (NMOC model) (EPA 1992, 58916, pp. 18-19). The NMOC model assumes that the emission rate of volatile organic compound is dependent on the concentration of that compound in soil gas, the landfill gas velocity, and the surface area of the source. Input parameters required for the NMOC model are presented in Table 2.4.3.1-7b; a more detailed discussion of the NMOC model is provided in Appendix F-1.0.

The emissions rates from the NMOC model were then used in conjunction with a box model to estimate indoor air concentrations for the hypothetical future on-site adult and child resident and ambient air concentrations for the future visitor to the proposed tie-down area. In the event that future residential development occurs on both the main landfill and the debris disposal area, separate indoor air concentrations were predicted for these two source areas. The emission rates from the NMOC model were also used to estimate off-site air concentrations for the current worker at the airport terminal and the current off-site adult and child resident using EPA's Industrial Source Complex - Short Term (ISCST3) dispersion model (EPA 1995, 59106, all pages). ISCST3 is a Gaussian plume model that incorporates site-specific meteorological data to predict hourly or annual average air concentrations at some distance from the source or sources. For purposes of this assessment, the main landfill and debris disposal area were modeled as separate sources. One year of meteorological data from TA-53 (June 1994 through May 1995) was used. Data from TA-53 were used because it is the closest meteorological station to the Los Alamos airport that collects sufficient meteorological data for the ISC model. Off-site air concentrations were predicted at the airport terminal building and the nearest resident west of the site based on a hypothetical unit emission rate of 1 gram per second (1g/sec). Emission rates and predicted air concentrations are related in a linear manner (i.e., doubling the emission rate will double the predicted concentration). Therefore, a single modeling run based on a unit emission rate can be used to relate emissions rates and predicted air concentrations for each COPC. Selected input parameters for the ISCST3 model are presented in Table 2.4.3.1-7c; a more detailed discussion of the ISCST model is provided in Appendix F-1.0. The output from the ISCST model is summarized in Table 2.4.3.1-8.

TABLE 2.4.3.1-5
REPRESENTATIVE CONCENTRATIONS FOR
CHEMICALS OF POTENTIAL CONCERN IN SOIL GAS

Chemical	PRS 73-001(a) (Main Landfill)		PRS 73-001(d) (Debris Disposal Area)	
	RME ^a ppb/v	MLE ^b ppb/v	RME	MLE
Acetophenone	50	50	ND ^c	ND
Acrolein	50	50	ND	ND
Acrylonitrile	15.8	15.8	ND	ND
Benzene	60.5	52	15.6	6.4
Benzyl Chloride	10	5	ND	ND
Bromodichloromethane	5	5	ND	ND
Bromomethane	ND	ND	ND	ND
Butadiene[1,3-]	8.4	5	ND	ND
Carbon Tetrachloride	5	5	ND	ND
Dibromoethane[1,2-]	5	5	ND	ND
Dichlorobenzene[1,4-]	54.6	48.1	10	5
Dichlorodifluoromethane	541	475	108	39.7
Dichloroethene[1,1-]	12.1	10	10	5
Dichloroethene[cis-1,2-]	2730	1940	15.8	5
Dichloropropane[1,2-]	10	5.7	ND	ND
Dichloropropene[cis-1,3-]	5	5	ND	ND
Dichloropropene[trans-1,3-]	1.02	1.02	ND	ND
Dimethyl Disulfide	0.73	0.5	N/A ^d	N/A
Ethyl Acrylate	50	50	ND	ND
Isobutane	1190	952.5	41.8	7.86
Isoprene	10	7.34	ND	ND
Nitrobenzene	50	50	3.26	3.26
Nitropropane[2-]	50	50	ND	ND
Pinene[beta-]	130	43.15	34.6	3.04
Tetrachloroethane[1,1,2,2-]	5	5	ND	ND
Tetrachloroethene	73.3	65.4	12.1	10
Trimethylbenzene[1,2,4-]	50	34.4	21.6	10
Trimethylbenzene[1,3,5-]	29.6	21.2	11.8	5
Vinyl Chloride	246	201	10	5

- a. Reasonable maximum exposure.
b. More likely exposure.
c. Not detected.
d. Not analyzed.

TABLE 2.4.3.1-6(a)
PHYSICAL CONSTANTS FOR CHEMICALS OF POTENTIAL CONCERN IN SOIL -
VOLATILIZATION FACTOR MODEL

Chemical	Molecular Weight (MW) (g/mol)	Source	Soil Sorption Coefficient (Koc) (L/Kg)	Source	Solubility (S) (mg/L)	Source	Henry's Law Constant (H) (atm-m ³ /mol)	Source	Diffusivity in Air (Dl) (cm ² /s)	Source
Antimony	NA ^a	--	NA	--	NA	--	NA	--	NA	--
Aroclor 1254	NA	--	NA	--	NA	--	NA	--	NA	--
Aroclor 1260	NA	--	NA	--	NA	--	NA	--	NA	--
Benzo(a)anthracene	NA	--	NA	--	NA	--	NA	--	NA	--
Benzo(a)pyrene	NA	--	NA	--	NA	--	NA	--	NA	--
Benzo(b)fluoranthene	NA	--	NA	--	NA	--	NA	--	NA	--
Benzo(g,h,i)perylene	NA	--	NA	--	NA	--	NA	--	NA	--
Benzo(k)fluoranthene	NA	--	NA	--	NA	--	NA	--	NA	--
Bis(2-ethylhexyl)phthalate	NA	--	NA	--	NA	--	NA	--	NA	--
Chrysene	NA	--	NA	--	NA	--	NA	--	NA	--
Dibenzo(a,h)anthracene	NA	--	NA	--	NA	--	NA	--	NA	--
Dibenzofuran	NA	--	NA	--	NA	--	NA	--	NA	--
Indeno (1,2,3-cd)pyrene	NA	--	NA	--	NA	--	NA	--	NA	--
2-Methylnaphthalene	142.2	Montgomery, 1996	3221	Montgomery, 1996	24.33	Montgomery, 1996	0.000318	Montgomery, 1996	0.066	Calculated
Naphthalene	128.18	Montgomery, 1996	2000	EPA, 1996	31	EPA, 1996	0.000483	EPA, 1996	0.059	EPA, 1996
Phenanthrene	178.24	Montgomery, 1996	19500	Montgomery, 1996	1.01	Montgomery, 1996	0.00039	Montgomery, 1996	0.060	Calculated
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

a. Not applicable.

TABLE 2.4.3.1-6 (b)

EMISSION RATE INPUT PARAMETERS - VOLATILIZATION FACTOR MODEL

Parameter	Units	Value	Source/Rationale
Emissions Area (A)	cm ²	6.25E+08 (Main Landfill) 2.60E+10 (Slope)	Site-specific
Total Soil Porosity (Pt)	cm ³ /cm ³	0.43	Default value (EPA 1998, page 19)
Air-Filled Soil Porosity (Pa)	cm ³ /cm ³	0.28	Default value (EPA 1998, page 19)
Fraction of Organic Carbon (foc)	(unitless)	0.006	Default value (EPA 1998, page 19)
Particle Density (r)	g/cm ³	2.65	Default value (EPA 1998, page 19)
Time (T)	sec	Variable	Equal to 1 year for noncarcinogenic health risks and equal to the exposure duration for carcinogenic health risks.

TABLE 2.4.3.1-7 (a)

AIR DISPERSION MODELING INPUT PARAMETERS - BOX MODEL

Parameter	Units	Value	Source/Rationale
<i>Ambient Air Concentrations</i>			
Length of Box (LS)	m	150 (Main Landfill) 75 (Debris Disposal Area) 335 (Slope)	Site-specific
Wind Speed (WS)	m/sec	2.8	Average wind speed based on one year of meteorological data from TA-53 (6/1/94 - 5/31/95)
Mixing Height (MH)	m	2	Default value (EPA 1991, page 29, 0302)
<i>Indoor Air Concentrations</i>			
Fraction of Floor that is Cracked (F)	unitless	0.001	Upper end of range report for a house (Grimsrud et al 1983, pages 422 to 452)
Air Exchange Rate (ACH)	hour ⁻¹	0.5	Lower end of range reported for a house (EPA 1992, pages A18 -A20)
Volume of Building (V)	m ³	420	Assumes a 1500 ft ² house with 9-foot ceilings.

Exposure Equations and Input Parameters

This section presents the exposure equations and input parameters used to calculate the average daily dose (ADD) and lifetime average daily dose (LADD) for each of the identified routes of exposure. The ADD and LADD both provide quantitative estimates of an individual's daily exposure to a chemical. The difference between the two estimates is the time over which the exposure is averaged. As discussed in the following section, noncarcinogenic health effects are assumed to occur only after a threshold dose is reached; therefore, the ADD represents the average daily dose during the period of exposure. Conversely, carcinogenic health risks are not considered to be threshold phenomena. Therefore, the LADD represents the average daily dose over a lifetime.

The components of each exposure equation are presented in Appendix F-1.0; values used for each input parameter, including the source and rationale, are summarized in Tables 2.4.3.1-9 through 2.4.3.1-11 for the identified scenarios. Additional chemical-specific parameters required for the exposure equations are presented in Table 2.4.3.1-12.

2.4.3.1 (c) Toxicity Assessment

The purpose of the toxicity assessment is two-fold (EPA 1989, 08021):

- to evaluate available information regarding the potential for a chemical to cause adverse health effects in exposed individuals (hazard identification), and
- to estimate the relationship between the extent of exposure and the increased likelihood (e.g., probability or chance) and/or severity of adverse effects (dose-response assessment).

Hazard identification entails determining if a chemical can cause an increase in a particular adverse effect (e.g., cancer) and the likelihood that the adverse effect will occur in humans. The result of the hazard identification is a toxicity profile that summarizes the available toxicological information and its relevance to human exposure. Dose-response assessment entails quantifying the relationship between the dose of a contaminant and the incidence of adverse effects in the exposed population. The result of the dose-response assessment is toxicity criteria that are used in the risk characterization to estimate the likelihood of adverse effects occurring in humans at different exposure levels. The toxicity criteria used to evaluate noncarcinogenic and carcinogenic health risks are commonly referred to as reference doses (RfDs) and slope factors (SFs), respectively. The basis for these criteria is described briefly in the following sections.

Toxicity Criteria for Noncarcinogenic Health Risks

Observable noncancer biological effects of chemical substances occur only after a threshold dose is reached. For purposes of establishing health criteria, this threshold dose is usually estimated from the no-observed adverse effect level (NOAEL) or the lowest-observed adverse effect level (LOAEL) determined in chronic animal exposure studies. The NOAEL is defined as the highest dose at which no adverse

TABLE 2.4.3.1-7 (b)

EMISSION RATE INPUT PARAMETERS – VOLATILE NONMETHANE ORGANIC COMPOUND
EMISSIONS MODEL FROM CODISPOSAL LANDFILLS

Parameter	Units	Value	Source/Rationale
Emissions Area (A)	cm ²	6.25E+08 (Main Landfill) 2.94E+08 (Debris Disposal Area)	Site-specific.
Landfill Gas Velocity (V)	cm/sec	0.00163	Default value (EPA 1992, 58916, pp.18-19)

TABLE 2.4.3.1-7 (c)

AIR DISPERSION MODELING INPUT PARAMETERS – INDUSTRIAL SOURCE COMPLEX
SHORT TERM (ISCST) MODEL

Emission Source	Source Description	X-Coordinate (m)	Y-Coordinate (m)	X-Dimension (m)	Y-Dimension (m)	Angle Relative to North (degrees)	Emission Rate ^a (g/m ² -s)
Source 1	Main Landfill	1123.2	1785.2	421.7	152.3	103	1.6E-05
Source 2	Debris Disposal Area	2131.1	1591.5	396.7	73.53	109	3.4E-05

- a. The main landfill and debris disposal area are area sources rather than point (stack) sources. Therefore, the unit emission rate of 1 gram per second (g/sec) was converted to units of grams per square meter per second (g/m²-sec) by dividing by the area of the source (see Figure RISK-2).

TABLE 2.4.3.1-8

AIR DISPERSION MODELING OUTPUT – INDUSTRIAL SOURCE COMPLEX SHORT
TERM (ISCST) MODEL

Receptor ID	Receptor ID	X-Coordinate (m)	Y-Coordinate (m)	Predicted Concentration for Source 1 (Main Landfill) (mg/m ³)	Predicted Concentration for Source 2 (Debris Disposal Area) (mg/m ³)
Receptor 1	Worker at Airport Terminal	883.1	1904.9	8.42	1.15
Receptor 2	Nearest Resident	551.5	1957.1	3.17	0.85

TABLE 2.4.3.1-9
EXPOSURE PARAMETERS FOR HYPOTHETICAL FUTURE ON-SITE RESIDENT

Parameters	Hypothetical Future On-Site Resident			
	Child		Adult	
	MLE ^a	RME ^b	MLE	RME
<i>General Parameters</i>				
ED = Exposure Duration (years)	7 ^c	7 ^c	9 ^d	30 ^e
BW = Body Weight (kg)	15 ^f	15 ^f	70 ^g	70 ^g
AT = Averaging Time (period over which exposure is averaged - days)				
- Non-carcinogenic effects	2555 ^h	2555 ^h	3285 ^h	10950 ^h
- Carcinogenic effects	25550 ⁱ	25550 ⁱ	25550 ⁱ	25550 ⁱ
<i>Inhalation of Vapors and Resuspended Particulates</i>				
IR = Inhalation Rate (m ³ /hour)	0.42 ^j	0.42 ^j	0.83 ^k	0.83 ^k
PC = Particulate Concentration (kg/m ³)	9E-08 ^l	9E-08 ^l	9E-08 ^l	9E-08 ^l
ET = Exposure Time (hours/day)	24 ^m	24 ^m	24 ^m	24 ^m
EF = Exposure Frequency (days/year)	350 ⁿ	350 ⁿ	350 ⁿ	350 ⁿ
<i>Ingestion of Soil</i>				
IR = Ingestion Rate (mg soil/day)	200 ^o	200 ^o	100 ^o	100 ^o
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06
FI = Fraction Ingested from Contaminated Source (unitless)	0.5 ^p	1 ^q	0.5 ^p	1 ^q
EF = Exposure Frequency (days/year)	120 ^r	350 ⁿ	40 ^r	350 ⁿ
<i>Dermal Contact with Soil</i>				
CF = Conversion Factor (kg/mg)	1E-06	1E-06	1E-06	1E-06
SA = Skin Surface Area Available for Contact (cm ² /event)	1500 ^s	4600 ^t	2000 ^s	3200 ^s
AF = Soil to Skin Adherence Factor (mg/cm ²)	0.2 ^u	1.0 ^u	0.2 ^u	1.0 ^u
ABS = Absorption Factor (unitless)	Chemical-specific ^v	Chemical-specific ^v	Chemical-specific ^v	Chemical-specific ^v
EF = Exposure Frequency (events/year)	120 ^r	350 ⁿ	40 ^r	350 ⁿ
<i>Ingestion of Homegrown Produce</i>				
IRI = Ingestion Rate for Homegrown Food (l) (kg/day)				
- Vegetables	0.014 ^w	0.069 ^y	0.065 ^y	0.32 ^y
- Fruits	0.02 ^x	0.087 ^z	0.097 ^z	0.41 ^z
FI = Fraction Ingested from Contaminated Source (unitless)	1 ^{aa}	1 ^{aa}	1 ^{aa}	1 ^{aa}
EFI = Exposure Frequency for Food (l) (day/year)				
- Vegetables	350 ⁿ	350 ⁿ	350 ⁿ	350 ⁿ
- Fruits	350 ⁿ	350 ⁿ	350 ⁿ	350 ⁿ

- a. MLE = More likely exposure
- b. RME = Reasonable maximum exposure
- c. From birth through the age of six years.
- d. National median time-50th percentile-at one residence (EPA 1989, 58694.14, p. 5-34).
- e. National upper bound time-90th percentile-at one residence (EPA 1989, 58694.14, p. 5-34).
- f. 1 through 6 years old, average body weight (EPA 1991, 56140, p. 15).
- g. Default value (EPA 1989, 58694.14, p. 5-7).
- h. ED x 365 days/year
- i. 70 years x 365 days/year
- j. Default value based on 10 m³/day (EPA 1989, 58694.14, p. 3-4).
- k. Default value based on 20 m³/day (EPA 1991, 56140, p. 15).
- l. Concentrations in fugitive dust calculated from chemical concentrations in soil and a measured particulate concentration in air of 0.09 mg/m³ (EPG 1990, 06995). VOCs are present at very few sites; concentrations will be measured or modeled using site-specific parameters.
- m. Assumes a resident is at home all day
- n. Days/year spent at home (EPA 1991, 56140, p. 15).
- o. Amount of soil consumed per day, children ages 1 through 6 years (EPA 1991, 56140, p.15).
- p. Amount of soil consumed per day, age groups greater than 6 years old (EPA 1991, 56140, p.15).
- q. Best professional judgment for soil consumption from contaminated source.
- r. Default values (EPA 1992, 59184, p. 8-5).
- s. 50th percentile value for head and hands of children 6-7 years (EPA 1989, 58694.14, pp. 4-9 to 4-13).
- t. 50th percentile value for head, hands, arms, and legs of children 6-7 years (EPA 1989, 58694.14, pp. 4-9 to 4-13).
- u. Assumes individual wears long sleeve shirt, pants, and shoes. The exposed skin surface area is limited to the head and hands (EPA 1992, 59184, p. 8-10).
- v. Assumes individual wears short sleeve shirt, pants, and shoes. The exposed skin surface area is limited to the head, forearms, and hands (EPA 1992, 59184, p. 8-10).
- w. Recommended default values (EPA 1992, 59184, p. 10-6).
- x. Default values of 0.01 for inorganic chemicals and 0.1 for organic chemicals are recommended when chemical-specific values are unavailable (Smucker 1998, 58751, p.13).
- y. 50th and 90th percentile amounts of homegrown vegetables consumed per day, west region, suburban (EPA 1995, 59106, p. 2-321).
- z. 50th and 90th percentile amounts of homegrown fruits consumed per day, west region, suburban (EPA 1995, 59106, p. 2-316).
- aa. Assumes 100 % of homegrown produce is from contaminated source.

TABLE 2.4.3.1-10

EXPOSURE PARAMETERS FOR CURRENT WORKER AT AIRPORT TERMINAL, FUTURE ON-SITE VISITOR IN TIE-DOWN AREA, AND TRAIL USER

Parameters	Assumptions					
	Current Worker at Airport Terminal		Future On-Site Visitor in Tie-Down Area		Trail User	
	MLE ^a	RME ^b	MLE	RME	MLE	RME
<i>General Parameters</i>						
EF = Exposure Frequency (days/year)	250 ^b	250 ^b	26 ^d	52 ^d	12 ^e	52 ^e
ED = Exposure Duration (years)	9 ^f	25 ^b	9 ^h	30 ⁱ	9 ^h	30 ⁱ
BW = Body Weight (kg)	70 ^j	70 ^j	70 ^j	70 ^j	70 ^j	70 ^j
AT = Averaging Time (period over which exposure is averaged - days)						
- Non-carcinogenic effects	3285 ⁿ	9125 ⁿ	3285 ⁿ	10950 ⁿ	3285 ⁿ	10950 ⁿ
- Carcinogenic effects	25550 ^l	25550 ^l	25550 ^l	25550 ^l	25550 ^l	25550 ^l
<i>Inhalation of Vapors and Resuspended Particulates</i>						
IR = Inhalation Rate (m ³ /hour)	0.83 ^m	1.7 ⁿ	0.83 ^m	1.7 ⁿ	1.3 ^o	3.5 ^o
PC = Particulate Concentration (kg/m ³)	9E-08 ^p	9E-08 ^p	9E-08 ^p	9E-08 ^p	9E-08 ^p	9E-08 ^p
ET = Exposure Time (hours/day)	8 ^q	8 ^q	0.5 ^r	1 ^r	1 ^s	2 ^s
<i>Ingestion of Soil</i>						
IR = Ingestion Rate (mg soil/day)	NA ^t	NA	50 ^u	100 ^v	100 ^v	100 ^v
CF = Conversion Factor (kg/mg)	NA	NA	1E-06	1E-06	1E-06	1E-06
FI = Fraction Ingested from Contaminated Source (unitless)	NA	NA	0.5 ^w	1 ^w	0.125 ^x	0.25 ^x
<i>Dermal Contact with Soil</i>						
CF = Conversion Factor (kg/mg)	NA	NA	1E-06	1E-06	1E-06	1E-06
SA = Skin Surface Area Available for Contact (cm ² /event)	NA	NA	2000 ^y	3200 ^y	2000 ^y	5300 ^z
AF = Soil to Skin Adherence Factor (mg/cm ²)	NA	NA	0.2 ^{aa}	1.0 ^{ab}	0.2 ^{ab}	1.0 ^{ab}
ABS = Absorption Factor (unitless)	NA	NA	Chemical-specific ^{ac}	Chemical-specific ^{ac}	Chemical-specific ^{ac}	Chemical-specific ^{ac}

- a. MLE = More likely exposure
- b. RME = Reasonable maximum exposure
- c. Assumes a five-day workweek for 50 weeks (EPA 1991, 56140, p.15).
- d. Assumes one day every other week or one day per week. Airplane owners are not allowed to perform maintenance on their airplanes in the tie-down area. All maintenance activities occur at the hangers, which are located off the main landfill (personal communication, B.J. Meloy, 1995).
- e. Assumes one day per month or one day per week because of the absence of a trail and the steep terrain.
- f. Assumes individual would change job with the same frequency as relocating to new area (e.g., every 9 years; EPA 1989, 58694.14, p. 5-34).
- g. Standard default value (EPA 1991, 56140, p.15).
- h. National median time - 50th percentile at one residence (EPA 1989, 58694.14, p. 5-34).
- i. National upper bound time-90th percentile at one residence (EPA 1989, 58694.14, p. 5-34).
- j. Default value (EPA 1989, 58694.14, p. 5-7).
- k. ED x 365 day/year
- l. 70 years x 365 days/year.
- m. Default value based on 20 m³/day (EPA 1991, 56140, p. 15).
- n. Outdoor inhalation rate of 1.7 m³/hr equal to 0.5 exposure time at light activity + 0.5 exposure time at moderate activity, adult male inhalation rate (inhalation rates at activity levels given in EPA 1989, 58694.14, p. 3-4).
- o. Default outdoor inhalation rates (EPA 1995, 59106, p. 3-48).
- p. Concentration in fugitive dust calculated from chemical concentrations in soil and a measured particulate concentration in air of 0.09mg/m³ (EPA 1990, 58694).
- q. Assumes an 8-hour workday
- r. Assumes it will take approximately one-half to one hour to tie down a plane. Airplane owners are not allowed to perform maintenance on their airplanes in the tie-down area. All maintenance activities occur at the hangers, which are located off the main landfill (personal communication, B.J. Meloy, 1995).
- s. Assumes 1 or 2 hours trail use per day for MLE and RME, respectively.
- t. Not Applicable
- u. Default values (EPA 1991, 56140, p. 15).
- v. Amount of soil consumed per day; age groups greater than 6 year old (EPA 1991, 56140, p.15).
- w. Best professional judgment of soil consumption fractions from contaminated source.
- x. Assumes soil ingested from trail is proportional to fraction of 8-hour "active" day spent on trail.
- y. Assumes individual wears long sleeve shirt, pants, and shoes. The exposed skin surface area is limited to the head and hands (EPA 1992, 59184, p. 8-10).
- z. Assumes individual wears short sleeve shirt, pants, and shoes. The exposed skin surface area is limited to head, forearms, and hands. (EPA 1992, 59184, p. 8-10)
- aa. Assumes individual wears a short sleeve shirt, shorts, and shoes. The exposed skin surface is limited to the head, hands, forearms, and lower legs (EPA 1992, 59184, p. 8-10).
- bb. Recommended default values (EPA 1992, 59184, p. 10-6).
- cc. Default values of 0.01 for inorganic chemicals and 0.1 for organic chemicals are recommended when chemical-specific values are unavailable (EPA 1995, 1307).

TABLE 2.4.3.1-11
EXPOSURE PARAMETERS FOR CURRENT OFF-SITE RESIDENT

Parameters	Current Assumptions Off-Site Resident			
	Child		Adult	
	MLE	RME	MLE	RME
<i>General Parameters</i>				
ED = Exposure Duration (years)	7 ^a	7 ^a	9 ^b	30 ^c
BW = Body Weight (kg)	15 ^d	15 ^d	70 ^e	70 ^e
AT = Averaging Time (period over which exposure is averaged - days)				
- Non-carcinogenic effects	2555 ^f	2555 ^f	3285 ^f	10950 ^f
- Carcinogenic effects	25550g	25550g	25550g	25550g
<i>Inhalation of Vapors and Resuspended Particulates</i>				
IR = Inhalation Rate (m ³ /hour)	0.42 ^h	0.42 ^h	0.83 ⁱ	0.83 ⁱ
PC = Particulate Concentration (kg/m ³)	9E-08 ^j	9E-08 ^j	9E-08 ^j	9E-08 ^j
ET = Exposure Time (hours/day)	24 ^k	24 ^k	24 ^k	24 ^k
EF = Exposure Frequency (days/year)	350 ^l	350 ^l	350 ^l	350 ^l

- a. From birth through the age of six years.
b. National median time-50th percentile-at one residence (EPA 1989, 586914.14, p. 5-34).
c. National upper bound time-90th percentile-at one residence (EPA 1989, 586914.14, p. 5-34).
d. 1 through 8 years old, average body weight (EPA 1991, 56140, p. 15).
e. Default value (EPA 1989, 586914.14, p. 5-7).
f. ED x 365 days/year
g. 70 years x 365 days/year
h. Default value based on 10 m³/day (EPA 1990, 586914.14, p. 3-4).
i. Default value based on 20 m³/day (EPA 1991, 56140, p. 15).
j. Concentrations in fugitive dust calculated from chemical concentrations in soil and a measured particulate concentration in air of 0.09 mg/m³ (EPG 1990, 0497).
k. Assumes a resident is at home all day.
l. Days/year spent at home (EPA 1991, 56140, p.15).

TABLE 2.4.3.1-12

CHEMICAL-SPECIFIC INPUT PARAMETERS FOR THE CHEMICALS OF POTENTIAL CONCERN IN SOIL

Chemicals	Dermal Absorption Factor (ABS) ^a (unitless)	Plant Uptake Factor – Fruit (UF _f) ^b (unitless)	Plant Uptake Factor – Vegetable (UF _v) ^b (unitless)
Antimony	0.01	0.0001	0.0009
Aroclor 1254	0.14	0.0027	0.0027
Aroclor 1260	0.14	0.0027	0.0027
Benzo(a)anthracene	0.13	0.0049	0.0049
Benzo(a)pyrene	0.13	0.003	0.003
Benzo(b)fluoranthene	0.13	0.0014	0.0014
Benzo(g,h,i)perylene	0.13	0.0006	0.0006
Benzo(k)fluoranthene	0.13	0.0009	0.0009
Bis(2-ethylhexyl)phthalate	0.1	0.0074	0.0074
Chrysene	0.13	0.0049	0.0049
Dibenzo(a,h)anthracene	0.13	0.003	0.003
Dibenzofuran	0.1	0.0354	0.0354
Indeno(1,2,3-cd)pyrene	0.13	0.0003	0.0003
2-Methylnaphthalene	0.13	0.2032	0.2032
Naphthalene	0.13	0.0961	0.0961
Phenanthrene	0.13	0.0225	0.0225
Thallium	0.01	0.00009	0.0009

a. Default value of 0.01 for inorganics and 0.1 for organics unless specific values have otherwise been provided (Smucker 1998, 58751, p.13).

b. Travis and Arms 1988, 59355

effects occur, whereas the LOAEL is defined as the lowest dose at which adverse effects begin to occur. NOAELs and LOAELs derived from animal studies are used by EPA and other regulatory agencies to establish RfDs to evaluate human intake of noncarcinogenic compounds. RfDs, which are expressed in terms of mg/kg-day, are criteria intended to represent the dose of a chemical that is not expected to cause adverse health effects over a lifetime of daily exposure, even in sensitive individuals, with a substantial margin of safety (EPA 1989, 0305, pages 7-5 to 7-10).

Uncertainty factors are used to set RfDs in an attempt to account for limitations in the quality or quantity of available data. Most RfDs include a 100-fold uncertainty factor: a factor of 10 to account for potential uncertainties in extrapolating animal data to human health effects (i.e., interspecies variability), and another factor of 10 to account for the possible differences in sensitivity within the human population (i.e., the RfD is equal to the NOAEL divided by 100). Additional uncertainty factors may be applied if the available database is incomplete, an LOAEL is used to establish an RfD instead of an NOAEL, or if a chemical is persistent or bioaccumulative.

Toxicity Criteria for Carcinogenic Health Risks

Regulatory guidance assumes that chemicals that are carcinogenic should be treated as if they do not have thresholds (EPA 1989, 0305, pages 7-5 to 7-13). This approach assumes that the dose-response curve for carcinogens only allows for zero risk at zero dose (i.e., for all doses, some risk is assumed to be present). To estimate theoretically plausible responses at these low doses, various mathematical models are used. The accuracy of the projected risk depends on how well the model predicts the true relationship between dose and risk at dose levels where the relationship cannot be actually measured. The accuracy of these models is currently unknown, but they are believed not to underestimate the true risk.

Health risks for exposure to carcinogens are defined in terms of probabilities that quantify the likelihood of a carcinogenic response in an individual receiving a given dose of a particular compound. The SF, which is expressed in units of (mg/kg-day)⁻¹, is defined as the 95% UCL of the probability of a carcinogenic response per unit daily intake of a chemical over 70 years. By using the 95% UCL, the estimate of carcinogenic response will be conservative and will purposefully overestimate the actual risk posed by the chemical.

Toxicity Criteria for Lead

The potential adverse effects associated with exposure to lead are not evaluated based on reference doses or slope factors. Instead, EPA has developed a mathematical model designed to estimate the concentration of lead in blood resulting from contact with lead in various environmental media (e.g., soil, air, and food). The blood lead level is of interest because, unlike other chemicals, sufficient toxicology data exist to correlate the body burden of lead measured by blood lead level with a specific adverse effect (e.g., a blood lead level of "X" is associated with a particular adverse health effect). For purposes of this assessment, the potential adverse effects associated with exposure to lead were evaluated using EPA's Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children (EPA 1994, 58917) and EPA's Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil (EPA 1996, 58967).

COPCs for Which Toxicity Criteria Could Not be Developed

As discussed in Section 2.4.3.1(a) and Appendix F-1.0, a screening assessment for each of the more than 100 chemicals detected in soil gas required an estimate of a representative concentration of a toxicity criterion. In many cases, toxicity criteria were not readily available; therefore surrogate toxicity criteria were developed from occupational standards, if available, or from acute toxicity data if no other information was available. While these surrogate criteria were considered sufficient for purposes of the screening assessment, they are not considered sufficient for this more rigorous HHRA. Three chemicals were identified as COPCs in soil gas based on surrogate toxicity criteria (i.e., dimethyl disulfide, isobutane, and beta-pinene). While sufficient data were available in the scientific literature to develop a toxicity criterion for isobutane, a toxicity criteria could not be developed for dimethyl disulfide and beta-pinene. The effort undertaken to develop toxicity criteria for these chemicals is described below, as well as an assessment of the potential impacts to the conclusions of the HHRA.

EPA has not developed an inhalation or oral RfD for dimethyl disulfide. A search of the Hazardous Substances Data Bank (HSDB) identified the following information. Dimethyl disulfide occurs naturally in the environment as part of the global sulfur cycle. Sources of dimethyl disulfide include emissions from soil, plant microbes, food and animal wastes, and the oceans. Only a few toxicity studies are available, most of which are acute studies. Based on this information, dimethyl disulfide can be classified as moderately acutely toxic (LD50 values ranging from 138 to 813 mg/kg), and irritating to mucous membranes. In a 13-day study, rats exposed to 250 ppm dimethyl disulfide exhibited lethargy, difficult breathing, and reduced weight gain. No information regarding the chronic toxicity of dimethyl disulfide was found in the literature reviewed.

Insufficient information is available to develop a chronic RfD for dimethyl disulfide. However, given that this compound was detected in only 1 of the 5 samples analyzed at a concentration of 0.73 ppb, the presence of dimethyl disulfide is not expected to contribute significantly to the risk posed by exposure to soil vapor at the site.

EPA has not established an inhalation or oral RfD for beta-pinene. A search of HSDB identified the following information. Beta-pinene occurs naturally in the environment, and can be found in lemon, nutmeg, hyssop, coriander, and cumin seed oils as well as in turpentine oils. Beta-pinene is approved for use as a fragrance in soap, detergent, creams and lotions, and perfumes at concentrations up to 1 percent (10,000 ppmv). Toxicity data for beta-pinene are limited to acute toxicity studies. Beta-pinene has low acute toxicity (oral LD50 ranging from 4.7 to >5 g/kg), but can be irritating to mucous membranes at very high concentrations (Food and Cosmetics Toxicology 1978, 58921, pages 859-860). No information regarding the subchronic or chronic toxicity of beta-pinene was found in the literature reviewed.

Insufficient toxicity data are available to develop a chronic reference dose. However, given that the maximum detected concentration of beta-pinene in soil vapor at the site is less than 25 ppm, which is a factor of 400 below the concentration allowed in perfume, the presence of beta-pinene is not expected to contribute significantly to the risk posed by exposure to soil vapor at the site.

Toxicity Criteria Used In Human Health Risk Assessment

The EPA has completed toxicity assessments for the majority of the COPCs in soil and soil gas. In these cases, the toxicity criteria used in the HHRA were selected according to the following hierarchy:

- Integrated Risk Information System (IRIS); on-line database (April and May 1998)
- U.S. EPA Health Effects Summary Tables (HEAST) (FY1992 and FY1997)
- U.S. EPA Region 9 Preliminary Remediation Goals (1998, 58751)

In the event an RfD or SF was not available for the oral or inhalation route, the RfD or SF for the other route (oral if inhalation is absent, inhalation if oral is absent) was used in the calculations. In addition, toxicity criteria are not available for evaluating dermal exposure. In this case, the oral RfD or SF was used as an approximation.

The toxicity criteria used in the HHRA are presented in Tables 2.4.3.1-13 and 2.4.3.1-14 for noncarcinogens and carcinogens, respectively. The basis for these criteria, including the toxicity study, critical effects, uncertainty factors, and EPA's confidence in the criteria, is provided in Appendix F-1.0

2.4.3.1 (d) Risk and Dose Characterization

Risk characterization represents the final step in the risk assessment process, in which the results of the exposure and toxicity assessments are integrated into quantitative or qualitative estimates of potential health risks. Noncarcinogenic and carcinogenic health risks are characterized separately, as described below:

Noncarcinogenic Health Risks

Potential noncarcinogenic health risks were evaluated by comparing the ADD to the appropriate RfD. This comparison is expressed in terms of a "hazard quotient" and was calculated as follows:

$$HQ = \frac{ADD}{RfD}$$

A hazard quotient less than or equal to 1 indicates that the predicted exposure should not pose a significant noncarcinogenic health risk (EPA 1989, 0305). In cases where individual chemicals potentially act on the same organs or result in the same health endpoint (e.g., respiratory irritants), additive effects can be addressed by calculating a hazard index as follows:

$$HI = HQa + HQb + \dots + HQn$$

A hazard index of less than or equal to 1 is indicative of acceptable levels of exposure for chemicals having an additive effect. The potential for chemical interactions other than additive (e.g., synergistic, antagonistic) is discussed in the uncertainty section. In this HHRA, the hazard index was calculated by summing the hazard quotients for all chemicals, regardless of toxic endpoint. This approach likely overestimates the potential for noncarcinogenic health effects due to simultaneous exposure to multiple chemi-

TABLE 2.4.3.1-13

TOXICITY CRITERIA FOR NONCARCINOGENIC CHEMICALS OF POTENTIAL CONCERN

Chemical	Oral Reference Dose (RfDo) (mg/kg-day)	Uncertainty Factor	Source*	Inhalation Reference Dose (RfDI) (mg/kg-day)	Uncertainty Factor	Source*
Acetophenone	NE ^b	-	-	0.0000057	1000	HEAST
Acrolein	NE	-	-	0.0000057	1000	IRIS
Acrylonitrile	NE	-	-	0.00057	1000	IRIS
Antimony	0.0004	1000	IRIS	0.0004	-	Route extrapolation
Aroclor 1254	0.00002	300	IRIS	0.00002	-	Route extrapolation
Aroclor 1260	0.00002	-	Aroclor 1254 (IRIS)	0.00002	-	Route extrapolation
Benzene	NE	-	-	0.0017	-	Region 9
Benzo(a)anthracene	N/A ^c	-	-	N/A	-	-
Benzo(a)pyrene	N/A	-	-	N/A	-	-
Benzo(b)fluoranthene	N/A	-	-	N/A	-	-
Benzo(g,h,i)perylene	0.03	3000	Pyrene (IRIS)	0.03	-	Route extrapolation
Benzo(k)fluoranthene	N/A	-	-	N/A	-	-
Benzyl Chloride	NE	-	-	N/A	-	-
Bis(2-ethylhexyl)phthalate	0.02	1000	IRIS	0.02	-	Route extrapolation
Bromodichloromethane	0.02	1000	IRIS	0.02	-	Route extrapolation
Bromomethane	NE	-	-	0.0014	100	IRIS
Butadiene[1,3-]	NE	-	-	N/A	-	-
Carbon Tetrachloride	NE	-	-	0.00057	-	Region 9
Chrysene	N/A	-	-	N/A	-	-
Dibenzo(a,h)anthracene	N/A	-	-	N/A	-	-
Dibenzofuran	0.004	-	Region 9	0.004	-	Route extrapolation
Dibromoethane[1,2-]	NE	-	-	0.000057	1000	HEAST
Dichlorobenzene[1,4-]	NE	-	-	0.23	100	IRIS
Dichlorodifluoromethane	NE	-	-	0.057	10000	HEAST

TABLE 2.4.3.1-13 (continued)

Chemical	Oral Reference Dose (RfDo) (mg/kg-day)	Uncertainty Factor	Source ^a	Inhalation Reference Dose (RfDI) (mg/kg-day)	Uncertainty Factor	Source ^a
Dichloroethene[1,1-]	0.009	1000	IRIS	0.009	-	Route extrapolation
Dichloroethene[cis-1,2-]	0.01	3000	HEAST	0.01	-	Route extrapolation
Dichloropropane[1,2-]	NE	-	-	0.0011	300	IRIS
Dichloropropene[cis-1,3-]	NE	-	-	0.0057	30	IRIS
Dichloropropene [trans-1,3-]	NE	-	-	0.0057	30	IRIS
Ethyl Acrylate	NE	-	-	N/A	-	-
Indeno(1,2,3-cd)pyrene	N/A	-	-	N/A	-	-
Iron	0.3	-	Region 9	0.3	-	Route Extrapolation
Isobutane	NE	-	-	0.34	100	Stewart, 1977
Isoprene	N/A	-	-	N/A	-	-
2-Methylnaphthalene	0.02	-	Naphthalene (Region 9)	0.00086	-	Route extrapolation
Naphthalene	0.02	-	Region 9	0.00086	-	Region 9
Nitrobenzene	NE	-	-	0.00057	10000	HEAST
Nitropropane[2-]	NE	-	-	0.0057	1000	IRIS
Phenanthrene	0.3	3000	Anthracene (IRIS)	0.3	-	Route extrapolation
Tetrachloroethane [1,1,2,2-]	NE	-	-	N/A	-	-
Tetrachloroethene	0.01	1000	IRIS	0.01	-	Route extrapolation
Thallium	0.00008	3000	Thallium Sulfate (IRIS)	0.00008	-	Route extrapolation
Trimethylbenzene[1,2,4-]	NE	-	-	0.0017	-	Region 9
Trimethylbenzene[1,3,5-]	NE	-	-	0.0017	-	Region 9
Vinyl Chloride	N/A	-	-	N/A	-	-

- a. Source
b. Not evaluated via the oral pathway.
c. Not applicable.

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TABLE 2.4.3.1-14

TOXICITY CRITERIA FOR CARCINOGENIC CHEMICALS OF POTENTIAL CONCERN

Chemical	Oral Slope Factor (SF ₀) (mg/kg-day)	Source*	Inhalation Slope Factor (SF _i) (mg/kg-day)	Source*	EPA Classification	Source*
Acrylonitrile	NE ^b	—	0.24	IRIS	B1	IRIS
Aroclor 1254	2	IRIS	2	IRIS	B2	IRIS
Aroclor 1260	2	IRIS	2	IRIS	B2	IRIS
Benzene	NE	—	0.029	IRIS	A	IRIS
Benzo(a)anthracene	0.73	Region 9	0.31	Region 9	B2	IRIS
Benzo(a)pyrene	7.3	IRIS	3.1	Region 9	B2	IRIS
Benzo(b)fluoranthene	0.73	Region 9	0.31	Region 9	B2	IRIS
Benzo(k)fluoranthene	0.073	Region 9	0.031	Region 9	B2	IRIS
Benzyl Chloride	0.17	IRIS	0.17	Route extrapolation	B2	IRIS
Bis(2-ethylhexyl)phthalate	0.014	IRIS	0.014	Route extrapolation	B2	IRIS
Bromodichloromethane	0.062	IRIS	0.062	Route extrapolation	B2	IRIS
Butadiene[1,3-]	NE	—	0.98	IRIS	B2	IRIS
Carbon Tetrachloride	NE	—	0.053	IRIS	B2	IRIS
Chrysene	0.0073	Region 9	0.0031	Region 9	B2	IRIS
Dibenzo(a,h)anthracene	7.3	Region 9	3.1	Region 9	B2	IRIS
Dibromoethane[1,2-]	NE	—	0.77	IRIS	B2	IRIS
Dichlorobenzene[1,4-]	0.024	HEAST	0.024	Route extrapolation	C	HEAST
Dichloroethene[1,1-]	N/A ^c	—	0.18	IRIS	C	IRIS
Dichloropropane[1,2-]	0.068	HEAST	0.068	Route extrapolation	B2	HEAST
Dichloropropene[cis-1,3-]	NE	—	0.13	HEAST	B2	IRIS
Dichloropropene [trans-1,3-]	NE	—	0.13	HEAST	B2	IRIS
Ethyl Acrylate	0.048	HEAST	0.048	Route extrapolation	B2	HEAST
Indeno(1,2,3-cd)pyrene	0.73	Region 9	0.31	Region 9	B2	IRIS
Isoprene	NE	—	0.098	1,3-butadiene	—	—
Lead	N/A	—	N/A	—	B2	IRIS
Nitropropane[2-]	NE	—	9.4	HEAST	B2	HEAST
Tetrachloroethane [1,1,2,2-]	NE	—	0.2	IRIS	C	IRIS
Tetrachloroethene	NE	—	0.002	Region 9	—	—
Vinyl Chloride	NE	—	0.3	HEAST	A	HEAST

a. Sources:

HEAST—U.S. EPA Health Effects Assessment Summary Tables, FY1992 and FY1997.

IRIS—Integrated Risk Information System, 1998, online search, April and May.

Region 9—U.S. EPA, 1998, Region 9, Preliminary Remediation Goals.

b. Not evaluated.

c. Not available.

TABLE 2.4.3.1-15

HAZARD QUOTIENT SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE ADULT RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL - REASONABLE MAXIMUM EXPOSURE SCENARIO

Chemical	Exposure Pathway					Total ^a
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Ingestion of Homegrown Produce	
Antimony	2E-02	6E-03	3E-04	NA ^b	3E+00	3E+00
Aroclor 1254	5E-01	2E+00	9E-03	NA	1E+01	1E+01
Aroclor 1260	9E-03	4E-02	2E-04	NA	2E-01	2E-01
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	2E-05	7E-05	3E-07	NA	7E-05	2E-04
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	6E-05	2E-04	1E-06	NA	3E-03	3E-03
Chrysene	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA
Iron	1E-01	3E-02	2E-03	NA	4E-01	5E-01
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA
Phenanthrene	4E-06	2E-05	NA	1E-03	7E-04	2E-03
Thallium	4E-03	1E-03	7E-05	NA	1E-02	2E-02
TOTAL	7E-01	2E+00	1E-02	1E-03	1E+01	3E+01

- a. The sum of the values in the table may not equal the 'total' values due to rounding.
 b. NA = not applicable

TABLE 2.4.3.1-16

HAZARD QUOTIENT SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE ADULT RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL MORE LIKELY EXPOSURE SCENARIO

Chemical	Exposure Pathway					Total ^a
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Ingestion of Homegrown Produce	
Antimony	1E-03	8E-05	3E-04	NA ^b	6E-01	6E-01
Aroclor 1254	3E-04	4E-04	1E-04	NA	2E-02	3E-02
Aroclor 1260	6E-04	6E-04	2E-04	NA	4E-02	4E-02
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	1E-06	1E-06	3E-07	NA	2E-05	2E-05
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	3E-06	3E-06	1E-06	NA	7E-04	7E-04
Chrysene	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA
Iron	2E-03	2E-04	6E-04	NA	3E-02	3E-02
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA
Phenanthrene	2E-07	2E-07	NA	1E-03	1E-04	1E-03
Thallium	2E-04	1E-05	6E-05	NA	2E-03	2E-03
TOTAL ^a	4E-03	1E-03	1E-03	1E-03	7E-01	7E-01

- a. The sum of the values in the table may not equal the 'total' values due to rounding
b. NA = not applicable

Hypothetical Future On-Site Child Resident

The potential noncarcinogenic health risks associated with exposure to COPCs in surface soil by a hypothetical future on-site child resident are summarized in Tables 2.4.3.1-18 and 2.4.3.1-19; the calculation spreadsheets are presented in Appendix F-1.0. The total hazard indices are 40 and 0.8 for the RME and MLE scenarios, respectively. The value for the RME scenario is greater than 1, indicating that potential noncarcinogenic health risks associated with exposure to COPCs in soil by a hypothetical future on-site child resident may be of concern, but only under conservative estimates of human exposure. Exposure to Aroclor 1254 via dermal contact with soil and ingestion of homegrown produce comprises the majority of the total hazard index, although the hazard indices for antimony and iron are slightly greater than 1. As stated previously, the RfD for Aroclor 1254 includes an uncertainty factor of 300 and 1000, respectively; therefore, adverse health effects associated with this chemical, if any, would be associated with a hazard index substantially greater than 1.

The potential noncarcinogenic health risks associated with exposure to COPCs in soil gas by a hypothetical future on-site child resident are summarized in Table 2.4.3.1-20; the calculation spreadsheets are presented in Appendix F-1.0. The total hazard index is 600 for both the RME and MLE scenarios for a hypothetical future on-site child resident in the main landfill and the total hazard indices are 0.8 and 0.4 for the RME and MLE scenarios, respectively, for a hypothetical future on-site child resident in the debris disposal area. The values for the main landfill are greater than 1, indicating that potential noncarcinogenic health risks associated with exposure to COPCs in soil gas by a hypothetical future on-site child resident in the main landfill may be of concern. Exposure to acetophenone and acrolein comprise the majority of the total hazard index. As stated previously, the representative concentrations for these chemicals (median and 95% UCL of the median) are based on nondetect values. In addition, the RfDs for these chemicals include an uncertainty factor of 1000. Therefore, the estimated hazard indices likely overstate the likelihood that adverse health effects would be observed.

Assuming exposure to COPCs in both surface soil and soil gas in the main landfill, the total hazard index is 600 for both the RME and MLE scenarios. These results indicate that exposure to COPCs in surface soil and soil gas in the main landfill may pose a noncarcinogenic health risk to hypothetical future on-site child residents under the conditions evaluated.

Future Visitor in Proposed Tie-Down Area

The potential noncarcinogenic health risks associated with exposure to COPCs in surface soil by a future visitor in the proposed tie-down area are summarized in Tables 2.4.3.1-21 and 2.4.3.1-22; the calculation spreadsheets are presented in Appendix F-1.0. The total hazard indices are 0.5 and 0.002 for the RME and MLE scenarios, respectively. The potential noncarcinogenic health risks associated with exposure to COPCs in soil gas by a future visitor in the proposed tie-down area are summarized in Table 2.4.3.1-23; the calculation spreadsheets are presented in Appendix F-1.0. The total hazard indices are 0.2 and 0.03 for the RME and MLE scenarios, respectively. Assuming exposure to COPCs in both surface soil and soil gas, the total hazard indices are 0.7 and 0.03 for the RME and MLE scenarios, respectively. All of these values are less than 1, indicating that exposure to COPCs in surface soil and soil gas should not pose a noncarcinogenic health risk to future visitors in the proposed tie-down area under the conditions evaluated.

TABLE 2.4.3.1-17

HAZARD QUOTIENT SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE
ADULT RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL GAS - REASONABLE
MAXIMUM AND MORE LIKELY EXPOSURE SCENARIOS

Chemical	Inhalation of Vapors from Soil Gas			
	Main Landfill		Debris Disposal Area	
	RME ^a	MLE ^b	RME	MLE
Acetophenone	2E+02	2E+02	NA ^c	NA
Acrolein	8E+01	8E+01	NA	NA
Acrylonitrile	2E-01	2E-01	NA	NA
Benzene	4E-01	4E-01	5E-02	2E-02
Benzyl Chloride	NA	NA	NA	NA
Bromodichloromethane	6E-03	6E-03	NA	NA
Bromomethane	NA	NA	NA	NA
Butadiene[1,3-]	NA	NA	NA	NA
Carbon Tetrachloride	2E-01	2E-01	NA	NA
Dibromoethane[1,2-]	3E+00	3E+00	NA	NA
Dichlorobenzene[1,4-]	6E-03	5E-03	5E-04	2E-04
Dichlorodifluoromethane	2E-01	2E-01	2E-02	6E-03
Dichloroethene[1,1-]	2E-02	2E-02	8E-03	4E-03
Dichloroethene[cis-1,2-]	4E+00	3E+00	1E-02	4E-03
Dichloropropane[1,2-]	2E-01	9E-02	NA	NA
Dichloropropene[cis-1,3-]	3E-03	3E-03	NA	NA
Dichloropropene[trans-1,3-]	2E-02	2E-02	NA	NA
Dimethyl Disulfide	NA	NA	NA	NA
Ethyl Acrylate	NA	NA	NA	NA
Isobutane	3E-02	3E-02	5E-04	1E-04
Isoprene	NA	NA	NA	NA
Nitrobenzene	2E+00	2E+00	5E-02	5E-02
Nitropropane[2-]	1E-01	1E-01	NA	NA
Pinene[beta-]	NA	NA	NA	NA
Tetrachloroethane[1,1,2,2-]	NA	NA	NA	NA
Tetrachloroethene	2E-01	2E-01	1E-02	1E-02
Trimethylbenzene[1,2,4-]	6E-01	4E-01	1E-01	5E-02
Trimethylbenzene[1,3,5-]	3E-01	2E-01	6E-02	3E-02
Vinyl Chloride	NA	NA	NA	NA
Total ^d	3E+02	3E+02	3E-01	2E-01

a. Reasonable maximum exposure.

b. More likely exposure.

c. Not applicable.

d. The sum of the values in the table may not equal the "total" values due to rounding.

TABLE 2.4.3.1-18

HAZARD QUOTIENT SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE CHILD RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL

Chemical	Exposure Pathway					Total ^a
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Ingestion of Homegrown Produce	
Antimony	2E-01	4E-02	8E-04	NA ^b	3E+00	3E+00
Aroclor 1254	5E+00	2E+01	2E-02	NA	1E+01	3E+01
Aroclor 1260	8E-02	3E-01	4E-04	NA	2E-01	5E-01
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	2E-04	5E-04	7E-07	NA	7E-05	7E-04
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	5E-04	1E-03	2E-06	NA	3E-03	5E-03
Chrysene	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA
Iron	9E-01	2E-01	4E-03	NA	4E-01	2E+00
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA
Phenanthrene	4E-05	1E-04	NA	2E-03	7E-04	3E-03
Thallium	4E-02	8E-03	2E-04	NA	1E-02	6E-02
TOTAL	6E+00	2E+01	3E-02	2E-03	1E+01	4E+01

a. NA = not applicable

TABLE 2.4.3.1-19

HAZARD QUOTIENT SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE CHILD RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL MORE LIKELY EXPOSURE SCENARIO

Chemical	Exposure Pathway					
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Ingestion of Homegrown Produce	Total ^a
Antimony	3E-02	8E-04	7E-04	NA ^a	6E-01	6E-01
Aroclor 1254	9E-03	4E-03	2E-04	NA	2E-02	4E-02
Aroclor 1260	1E-02	6E-03	4E-04	NA	4E-02	6E-02
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	3E-05	1E-05	7E-07	NA	2E-05	5E-05
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	9E-05	3E-05	2E-06	NA	7E-04	8E-04
Chrysene	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA
Iron	5E-02	2E-03	1E-03	NA	3E-02	8E-02
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA
Phenanthrene	6E-06	2E-06	NA	2E-03	1E-04	2E-03
Thallium	6E-03	2E-04	2E-04	NA	2E-03	8E-03
TOTAL ^a	1E-01	1E-02	3E-03	2E-03	7E-01	8E-01

a. NA = not applicable

TABLE 2.4.3.1-20

HAZARD QUOTIENT SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE CHILD RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL GAS - REASONABLE MAXIMUM AND MORE LIKELY EXPOSURE SCENARIOS

Chemical	Inhalation of Vapors from Soil Gas			
	Main Landfill		Debris Disposal Area	
	RME ^a	MLE ^b	RME	MLE
Acetophenone	4E-02	4E+02	NA ^c	NA
Acrolein	2E+02	2E+02	NA	NA
Acrylonitrile	5E-01	5E-01	NA	NA
Benzene	1E+00	9E-01	1E-01	5E-02
Benzyl Chloride	NA	NA	NA	NA
Bromodichloromethane	2E-02	2E-02	NA	NA
Bromomethane	NA	NA	NA	NA
Butadiene[1,3-]	NA	NA	NA	NA
Carbon Tetrachloride	5E-01	5E-01	NA	NA
Dibromoethane[1,2-]	6E+00	6E+00	NA	NA
Dichlorobenzene[1,4-]	1E-02	1E-02	1E-03	6E-04
Dichlorodifluoromethane	4E-01	4E-01	4E-02	1E-02
Dichloroethene[1,1-]	5E-02	4E-02	2E-02	9E-03
Dichloroethene[cis-1,2-]	1E+01	7E+00	3E-02	8E-03
Dichloropropane[1,2-]	4E-01	2E-01	NA	NA
Dichloropropene[cis-1,3-]	7E-03	7E-03	NA	NA
Dichloropropene[trans-1,3-]	4E-02	4E-02	NA	NA
Dimethyl Disulfide	NA	NA	NA	NA
Ethyl Acrylate	NA	NA	NA	NA
Isobutane	8E-02	6E-02	1E-03	2E-04
Isoprene	NA	NA	NA	NA
Nitrobenzene	4E+00	4E+00	1E-01	1E-01
Nitropropane[2-]	3E-01	3E-01	NA	NA
Pinene[beta-]	NA	NA	NA	NA
Tetrachloroethane[1,1,2,2-]	NA	NA	NA	NA
Tetrachloroethene	5E-01	4E-01	4E-02	3E-02
Trimethylbenzene[1,2,4-]	1E+00	9E-01	3E-01	1E-01
Trimethylbenzene[1,3,5-]	8E-01	6E-01	1E-01	6E-02
Vinyl Chloride	NA	NA	NA	NA
Total ^d	6E+02	6E+02	8E-01	4E-01

a. Reasonable maximum exposure.

b. More likely exposure.

c. Not applicable.

d. The sum of the values in the table may not equal the "total" values, due to rounding.

Current Worker at Airport Terminal

The potential noncarcinogenic health risks associated with exposure to COPCs in soil gas by a current worker at the airport terminal are summarized in Table 2.4.3.1-24; the calculation spreadsheets are presented in Appendix F-1.0. The total hazard indices are 0.06 and 0.03 for the RME and MLE scenarios, respectively. These values are less than 1, indicating that exposure to COPCs in soil gas should not pose a noncarcinogenic health risk to current workers at the airport terminal under the conditions evaluated. Potential noncarcinogenic health risks associated with inhalation of resuspended particulates by current workers at the airport terminal were evaluated qualitatively based on the results for the hypothetical future on-site adult resident. The estimated hazard indices for on-site adult residents are 0.01 and 0.001 for the RME and MLE scenarios, respectively (see Tables 2.4.3.1-15 and 2.4.3.1-16). Based on these results, potential noncarcinogenic health risks to current workers at the airport terminal should not be of concern, because inhalation exposure to resuspended particulates should be significantly lower than estimated for an on-site adult resident due to dispersion and the extent of exposure.

Current Off-Site Adult Resident

The potential noncarcinogenic health risks associated with exposure to COPCs in soil gas by a current off-site adult resident are summarized in Table 2.4.3.1-25; the calculation spreadsheets are presented in Appendix F-1.0. The total hazard index is 0.05 for both the RME and MLE scenarios. This value is less than 1, indicating that exposure to COPCs in soil gas should not pose a noncarcinogenic health risk to current off-site adult residents under the conditions evaluated. Potential noncarcinogenic health risks associated with inhalation of resuspended particulates by current off-site adult residents were evaluated qualitatively based on the results for the hypothetical future on-site adult resident. The estimated hazard indices for on-site adult residents are 0.01 and 0.0006 for the RME and MLE scenarios, respectively (see Tables 2.4.3.1-15 and 2.4.3.1-16). Based on these results (which are well below a hazard index of 1), potential noncarcinogenic health risks to current off-site adult residents should not be of concern because inhalation exposure to resuspended particulates should be significantly lower than estimated for an on-site adult resident due to dispersion and the extent of exposure.

Current Off-Site Child Resident

The potential noncarcinogenic health risks associated with exposure to COPCs in soil gas by a current off-site child resident are summarized in Table 2.4.3.1-26; the calculation spreadsheets are presented in Appendix F-1.0. The total hazard index is 0.1 for both the RME and MLE scenarios. This value is less than 1, indicating that exposure to COPCs in soil gas should not pose a noncarcinogenic health risk to current off-site child residents under the conditions evaluated. Potential noncarcinogenic health risks associated with inhalation of resuspended particulates by current off-site child residents were evaluated qualitatively based on the results for the hypothetical future on-site child resident. The estimated hazard indices for on-site child residents are 0.03 and 0.003 for the RME and MLE scenarios, respectively (see

TABLE 2.4.3.1-21

HAZARD QUOTIENT SUMMARY TABLE FOR FUTURE VISITOR IN PROPOSED TIE-DOWN AREA
ASSOCIATED WITH EXPOSURE TO SOIL - REASONABLE MAXIMUM EXPOSURE SCENARIO

Chemical	Exposure Pathway				Total ^a
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	
Antimony	3E-03	9E-04	4E-06	NA ^b	4E-03
Aroclor 1254	8E-02	3E-01	1E-04	NA	4E-01
Aroclor 1260	1E-03	6E-03	2E-06	NA	7E-03
Benzo(a)anthracene	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	3E-06	1E-05	4E-09	NA	1E-05
Benzo(k)fluoranthene	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	9E-06	3E-05	1E-08	NA	4E-05
Chrysene	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA
Iron	1E-02	5E-03	2E-05	NA	2E-02
2-Methylnaphthalene	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA
Phenanthrene	6E-07	2E-06	NA	9E-07	4E-06
Thallium	6E-04	2E-04	9E-07	NA	7E-04
TOTAL	1E-01	4E-01	1E-04	9E-07	5E-01

- a. The sum of the values in the table may not equal the "total" values, due to rounding.
b. Not applicable.

TABLE 2.4.3.1-22

HAZARD QUOTIENT SUMMARY TABLE FOR FUTURE VISITOR IN PROPOSED TIE-DOWN AREA
ASSOCIATED WITH EXPOSURE TO SOIL - MORE LIKELY EXPOSURE SCENARIO

Chemical	Exposure Pathway				
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Total ^a
Antimony	3E-04	5E-05	5E-07	NA ^b	4E-04
Aroclor 1254	1E-04	2E-04	2E-07	NA	3E-04
Aroclor 1260	2E-04	4E-04	2E-07	NA	5E-04
Benzo(a)anthracene	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	3E-07	7E-07	5E-10	NA	1E-06
Benzo(k)fluoranthene	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	1E-06	2E-06	2E-09	NA	3E-06
Chrysene	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA
Iron	6E-04	1E-04	9E-07	NA	7E-04
2-Methylnaphthalene	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA
Phenanthrene	7E-08	2E-07	NA	1E-07	3E-07
Thallium	7E-05	1E-05	1E-07	NA	8E-05
TOTAL ^a	1E-03	8E-04	2E-06	1E-07	2E-03

- a. The sum of the values in the table may not equal the "total" values, due to rounding.
b. Not applicable.

TABLE 2.4.3.1-23

HAZARD QUOTIENT SUMMARY TABLE FOR FUTURE VISITOR IN PROPOSED TIE-DOWN AREA ASSOCIATED WITH EXPOSURE TO SOIL GAS - REASONABLE MAXIMUM AND MORE LIKELY EXPOSURE SCENARIOS

Chemical	Inhalation of Vapors from Soil Gas	
	RME ^a	MLE ^b
Acetophenone	1E-01	2E-02
Acrolein	7E-02	8E-03
Acrylonitrile	2E-04	2E-05
Benzene	4E-04	4E-05
Benzyl Chloride	NA ^c	NA
Bromodichloromethane	6E-06	7E-07
Bromomethane	NA	NA
Butadiene[1,3-]	NA	NA
Carbon Tetrachloride	2E-04	2E-05
Dibromoethane[1,2-]	2E-03	3E-04
Dichlorobenzene[1,4-]	5E-06	5E-07
Dichlorodifluoromethane	2E-04	2E-05
Dichloroethene[1,1-]	2E-05	2E-06
Dichloroethene[cis-1,2-]	4E-03	3E-04
Dichloropropane[1,2-]	1E-04	1E-05
Dichloropropene[cis-1,3-]	3E-06	3E-07
Dichloropropene[trans-1,3-]	1E-05	2E-06
Dimethyl Disulfide	NA	NA
Ethyl Acrylate	NA	NA
Isobutane	3E-05	3E-06
Isoprene	NA	NA
Nitrobenzene	2E-03	2E-04
Nitropropane[2-]	1E-04	1E-05
Pinene[beta-]	NA	NA
Tetrachloroethane[1,1,2,2-]	NA	NA
Tetrachloroethene	2E-04	2E-05
Trimethylbenzene[1,2,4-]	5E-04	4E-05
Trimethylbenzene[1,3,5-]	3E-04	3E-05
Vinyl Chloride	NA	NA
Total ^d	2E-01	3E-02

a. Reasonable maximum exposure.

b. More likely exposure.

c. Not applicable.

d. The sum of the values in the table may not equal the "Total" values, due to rounding.

TABLE 2.4.3.1-24

**HAZARD QUOTIENT SUMMARY TABLE FOR CURRENT WORKER AT AIRPORT
TERMINAL ASSOCIATED WITH EXPOSURE TO SOIL GAS - REASONABLE
MAXIMUM AND MORE LIKELY EXPOSURE SCENARIOS**

Chemical	Inhalation of Vapors from Soil Gas	
	RME ^a	MLE ^b
Acetophenone	4E-02	2E-02
Acrolein	2E-02	9E-03
Acrylonitrile	6E-05	3E-05
Benzene	1E-04	4E-05
Benzyl Chloride	NA ^c	NA
Bromodichloromethane	2E-06	8E-07
Bromomethane	NA	NA
Butadiene[1,3-]	NA	NA
Carbon Tetrachloride	5E-05	2E-05
Dibromoethane[1,2-]	6E-04	3E-04
Dichlorobenzene[1,4-]	1E-06	6E-07
Dichlorodifluoromethane	4E-05	2E-05
Dichloroethene[1,1-]	5E-06	2E-06
Dichloroethene[cis-1,2-]	1E-03	3E-04
Dichloropropane[1,2-]	4E-05	1E-05
Dichloropropene[cis-1,3-]	8E-07	4E-07
Dichloropropene[trans-1,3-]	4E-06	2E-06
Dimethyl Disulfide	NA	NA
Ethyl Acrylate	NA	NA
Isobutane	8E-06	3E-06
Isoprene	NA	NA
Nitrobenzene	4E-04	2E-04
Nitropropane[2-]	3E-05	1E-05
Pinene[beta-]	NA	NA
Tetrachloroethane[1,1,2,2-]	NA	NA
Tetrachloroethene	5E-05	2E-05
Trimethylbenzene[1,2,4-]	1E-04	5E-05
Trimethylbenzene[1,3,5-]	8E-05	3E-05
Vinyl Chloride	NA	NA
Total ^d	6E-02	3E-02

a. Reasonable maximum exposure.

b. More likely exposure.

c. Not applicable.

d. The sum of the values in the table may not equal the "total" values, due to rounding.

Tables 2.4.3.1-18 and 2.4.3.1-19). Based on these results (which are well below a hazard index of 1), potential noncarcinogenic health risks to current off-site child residents should not be of concern because inhalation exposure to resuspended particulates should be significantly lower than estimated for an on-site child resident due to dispersion and the extent of exposure.

Hypothetical Trail User

The potential noncarcinogenic health risks associated with exposure to COPCs in surface soil by a hypothetical trail user are summarized in Tables 2.4.3.1-27 and 2.4.3.1-28; the calculation spreadsheets are presented in Appendix F-1.0. The total hazard indices are 0.08 and 0.002 for the RME and MLE scenarios, respectively. These values are less than 1, indicating that exposure to COPCs in surface soil should not pose a noncarcinogenic health risk to hypothetical trail users under the conditions evaluated.

Carcinogenic Health Risks

Carcinogenic health risks are defined in terms of the probability of an individual developing cancer as the result of exposure to a given chemical at a given concentration and are dependent on the LADD and the appropriate SF. In this assessment, theoretical lifetime excess cancer risks were estimated as follows:

$$\text{Theoretical Lifetime Excess Cancer Risk} = \text{LADD} \times \text{SF}$$

As with hazard indices, the estimated cancer risks for each chemical and exposure route were summed to estimate the total excess cancer risk for the exposed individual. The potential for chemical interactions other than additive (e.g., synergistic, antagonistic) is discussed in the uncertainty section. The EPA considers estimates of lifetime excess cancer risk associated with exposure to chemicals of less than one-in-one-million (1×10^{-6}) to be de minimis. However, as stated in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), risks within the range of one-in-one-million to one hundred-in-one-million (1×10^{-4}) may be acceptable depending on other factors (e.g., site-specific considerations) (EPA 1990, 0559, pages 8711-8715).

It should be noted that excess cancer risks in the 1×10^{-6} to 1×10^{-4} range or higher do not necessarily mean that adverse health effects will be observed. As discussed previously, the current methodology for estimating the carcinogenic potential of chemicals is believed to not underestimate the true risk, but could overestimate the true risk by a considerable degree.

Hypothetical Future On-Site Adult Resident

The potential carcinogenic health risks associated with exposure to COPCs in surface soil by a hypothetical future on-site adult resident are summarized in Tables 2.4.3.1-29 and 2.4.3.1-30, respectively; the calculation spreadsheets are presented in Appendix F-1.0. The total theoretical lifetime excess cancer risks are 3×10^{-4} and 4×10^{-4} for the RME and MLE scenarios, respectively. The value for the RME scenario is slightly greater than the 1×10^{-6} to 1×10^{-4} range, indicating that potential carcinogenic health risks associated with exposure to COPCs in soil by a hypothetical future on-site adult resident may be of concern. The value for the MLE scenario is well within the generally accepted risk range. Exposure to Aroclor 1254 and benzo(a)pyrene via ingestion of homegrown produce and dermal contact with soil comprises the

**HAZARD QUOTIENT SUMMARY TABLE FOR CURRENT OFF-SITE
ADULT RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL GAS-
REASONABLE MAXIMUM AND MORE LIKELY EXPOSURE SCENARIOS**

Chemical	Inhalation of Vapors from Soil Gas	
	RME ^a	MLE ^b
Acetophenone	3E-02	3E-02
Acrolein	1E-02	1E-02
Acrylonitrile	4E-05	4E-05
Benzene	8E-05	7E-05
Benzyl Chloride	NA ^c	NA
Bromodichloromethane	1E-06	1E-06
Bromomethane	NA	NA
Butadiene[1,3-]	NA	NA
Carbon Tetrachloride	4E-05	4E-05
Dibromoethane[1,2-]	5E-04	5E-04
Dichlorobenzene[1,4-]	1E-06	9E-07
Dichlorodifluoromethane	3E-05	3E-05
Dichloroethene[1,1-]	4E-06	3E-06
Dichloroethene[cis-1,2-]	8E-04	5E-04
Dichloropropane[1,2-]	3E-05	2E-05
Dichloropropene[cis-1,3-]	6E-07	6E-07
Dichloropropene[trans-1,3-]	3E-06	3E-06
Dimethyl Disulfide	NA	NA
Ethyl Acrylate	NA	NA
Isobutane	6E-06	5E-06
Isoprene	NA	NA
Nitrobenzene	3E-04	3E-04
Nitropropane[2-]	2E-05	2E-05
Pinene[beta-]	NA	NA
Tetrachloroethane[1,1,2,2-]	NA	NA
Tetrachloroethene	4E-05	3E-05
Trimethylbenzene[1,2,4-]	1E-04	7E-05
Trimethylbenzene[1,3,5-]	6E-05	5E-05
Vinyl Chloride	NA	NA
Total ^d	5E-02	5E-02

- Reasonable maximum exposure.
- More likely exposure.
- Not applicable.
- The sum of the values in the table may not equal the "total" values, due to rounding.

TABLE 2.4.3.1-26

**HAZARD QUOTIENT SUMMARY TABLE FOR CURRENT OFF-SITE CHILD
RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL GAS - REASON-
ABLE MAXIMUM AND MORE LIKELY EXPOSURE SCENARIOS**

Chemical	Inhalation of Vapors from Soil Gas	
	RME ^a	MLE ^b
Acetophenone	7E-02	7E-02
Acrolein	3E-02	3E-02
Acrylonitrile	1E-04	1E-04
Benzene	2E-04	2E-04
Benzyl Chloride	NA ^c	NA
Bromodichloromethane	3E-06	3E-06
Bromomethane	NA	NA
Butadiene[1,3-]	NA	NA
Carbon Tetrachloride	9E-05	9E-05
Dibromoethane[1,2-]	1E-03	1E-03
Dichlorobenzene[1,4-]	2E-06	2E-06
Dichlorodifluoromethane	8E-05	7E-05
Dichloroethene[1,1-]	1E-05	8E-06
Dichloroethene[cis-1,2-]	2E-03	1E-03
Dichloropropane[1,2-]	7E-05	4E-05
Dichloropropene[cis-1,3-]	1E-06	1E-06
Dichloropropene[trans-1,3-]	7E-06	7E-06
Dimethyl Disulfide	NA	NA
Ethyl Acrylate	NA	NA
Isobutane	1E-05	1E-05
Isoprene	NA	NA
Nitrobenzene	8E-04	8E-04
Nitropropane[2-]	5E-05	5E-05
Pinene[beta-]	NA	NA
Tetrachloroethane[1,1,2,2-]	NA	NA
Tetrachloroethene	9E-05	8E-05
Trimethylbenzene[1,2,4-]	3E-04	2E-04
Trimethylbenzene[1,3,5-]	2E-04	1E-04
Vinyl Chloride	NA	NA
Total ^d	1E-01	1E-01

a. Reasonable maximum exposure.

b. More likely exposure.

c. Not applicable.

d. The sum of the values in the table may not equal the "total" values, due to rounding.

HAZARD QUOTIENT SUMMARY TABLE FOR HYPOTHETICAL TRAIL USER ASSOCIATED WITH EXPOSURE TO SOIL- REASONABLE MAXIMUM EXPOSURE SCENARIO

Chemical	Exposure Pathway				
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Total ^a
Antimony	1E-03	2E-03	3E-05	NA ^b	3E-03
Aroclor 1254	3E-04	9E-03	8E-08	NA	9E-03
Aroclor 1260	2E-04	7E-03	6E-08	NA	7E-03
Benzo(a)anthracene	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	2E-06	4E-05	4E-08	NA	4E-05
Benzo(k)fluoranthene	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	9E-07	2E-05	2E-08	NA	2E-05
Chrysene	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Dibenzofuran	4E-06	8E-05	9E-08	NA	8E-05
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA
Iron	3E-03	5E-03	6E-05	2E-05	8E-03
2-Methylnaphthalene	2E-07	6E-06	NA	6E-03	6E-03
Naphthalene	1E-06	3E-05	NA	4E-02	4E-02
Phenanthrene	5E-07	1E-05	NA	2E-04	3E-04
Thallium	5E-04	9E-04	1E-05	NA	2E-03
TOTAL ^a	6E-03	2E-02	1E-04	5E-02	8E-02

a. The sum of the values in the table may not equal the "total" values, due to rounding.
b. Not applicable.

Ժողով : Ընթերցելու : Գրքեր

TABLE 2.4.3.1-28

HAZARD QUOTIENT SUMMARY TABLE FOR HYPOTHETICAL TRAIL USER ASSOCIATED WITH EXPOSURE TO SOIL - MORE LIKELY EXPOSURE SCENARIO

Chemical	Exposure Pathway				Total ^a
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	
Antimony	1E-04	4E-05	1E-06	NA ^b	1E-04
Aroclor 1254	1E-05	5E-05	1E-07	NA	6E-05
Aroclor 1260	1E-05	5E-05	1E-07	NA	6E-05
Benzo(a)anthracene	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	7E-08	3E-07	7E-10	NA	4E-07
Benzo(k)fluoranthene	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	1E-07	3E-07	1E-09	NA	4E-07
Chrysene	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Dibenzofuran	4E-07	1E-06	4E-09	NA	2E-06
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA
Iron	1E-04	4E-05	1E-06	7E-07	2E-04
2-Methylnaphthalene	2E-08	1E-07	NA	2E-04	2E-04
Naphthalene	1E-07	4E-07	NA	1E-03	2E-03
Phenanthrene	7E-09	3E-08	NA	1E-06	1E-06
Thallium	5E-05	2E-05	5E-07	NA	7E-05
TOTAL ^a	3E-04	2E-04	3E-06	2E-03	2E-03

a. The sum of the values in the table may not equal the "total" values, due to rounding

b. Not applicable.

majority of the total theoretical lifetime excess cancer risk.

The potential carcinogenic health risks associated with exposure to COPCs in soil gas by a hypothetical future on-site adult resident are summarized in Table 2.4.3.1-31; the calculation spreadsheets are presented in Appendix F-1.0. The total theoretical lifetime excess cancer risks are 3×10^{-3} and 1×10^{-3} for the RME and MLE scenarios, respectively, for a hypothetical future on-site adult resident in the main landfill and 1×10^{-5} and 2×10^{-6} for the RME and MLE scenarios, respectively, for a hypothetical future on-site adult resident in the debris disposal area. The values for the main landfill are greater than the 1×10^{-4} to 1×10^{-4} range, indicating that potential carcinogenic health risks associated with exposure to COPCs in soil gas by a hypothetical future on-site adult resident in the main landfill may be of concern. The values for the debris disposal area are well within the generally accepted risk range. Exposure to 2-nitropropane comprises the majority of the total theoretical lifetime excess cancer risk in the main landfill and exposure to 1,1-dichloroethene and vinyl chloride comprises the majority of the total theoretical lifetime excess cancer risk in the debris disposal area. It should be noted that representative concentrations for these chemicals (median and 95% UCL of the median) are based on nondetect values; therefore, the estimated cancer risks likely overstate the potential carcinogenic health risk for these chemicals.

Assuming exposure to COPCs in both surface soil and soil gas in the main landfill, the total theoretical lifetime excess cancer risks are 4×10^{-3} and 1×10^{-3} for the RME and MLE scenarios. These results indicate that exposure to COPCs in surface soil and soil gas in the main landfill may pose an unacceptable carcinogenic health risk to hypothetical future on-site adult residents under the conditions evaluated.

Hypothetical Future On-Site Child Resident

The potential carcinogenic health risks associated with exposure to COPCs in surface soil by a hypothetical future on-site child resident are summarized in Tables 2.4.3.1-32 and 2.4.3.1-33, respectively; the calculation spreadsheets are presented in Appendix F-1.0. The total theoretical lifetime excess cancer risks are 2×10^{-4} and 4×10^{-4} for the RME and MLE scenarios, respectively. The value for the RME scenario is slightly greater than the 1×10^{-4} to 1×10^{-4} range, indicating that potential carcinogenic health risks associated with exposure to COPCs in soil by a hypothetical future on-site child resident may be of concern. The value for the MLE scenario is well within the generally accepted risk range. Exposure to Aroclor 1254 and benzo(a)pyrene via ingestion of homegrown produce and dermal contact with soil comprises the majority of the total theoretical lifetime excess cancer risk.

The potential carcinogenic health risks associated with exposure to COPCs in soil gas by a hypothetical future on-site child resident are summarized in Table 2.4.3.1-34; the calculation spreadsheets are presented in Appendix F-1.0. The total theoretical lifetime excess cancer risk is 2×10^{-3} for both the RME and MLE scenarios for a hypothetical future on-site child resident in the main landfill, and the total theoretical lifetime excess cancer risks are 8×10^{-4} and 4×10^{-4} for the RME and MLE scenarios, respectively, for a hypothetical future on-site child resident in the debris disposal area. The values for the main landfill are greater than 1×10^{-4} to 1×10^{-4} risk range, indicating that potential carcinogenic health risks associated with

TABLE 2.4.3.1-29

**CANCER RISK SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE ADULT RESIDENT ASSOCIATED
WITH EXPOSURE TO SOIL - REASONABLE MAXIMUM EXPOSURE SCENARIO**

Chemical	Exposure Pathway					Total ^a
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Ingestion of Homegrown Produce	
Antimony	NA ^b	NA	NA	NA	NA	NA
Aroclor 1254	9E-06	4E-05	2E-07	NA	2E-04	2E-04
Aroclor 1260	2E-07	7E-07	3E-09	NA	3E-06	4E-06
Benzo(a)anthracene	2E-07	7E-07	1E-09	NA	6E-06	7E-06
Benzo(a)pyrene	2E-06	8E-06	1E-08	NA	4E-05	5E-05
Benzo(b)fluoranthene	1E-07	5E-07	9E-10	NA	1E-06	2E-06
Benzo (g,h,i)perylene	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2E-08	7E-08	1E-10	NA	1E-07	2E-07
Bis(2-ethylhexyl)phthalate	7E-09	2E-08	1E-10	NA	4E-07	4E-07
Chrysene	2E-09	8E-09	2E-11	NA	7E-08	8E-08
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1E-07	5E-07	1E-09	NA	3E-07	9E-07
Iron		NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA	NA
TOTAL ^a	1E-05	5E-05	2E-07	NA	2E-04	3E-04

- a. The sum of the values in the table may not equal the "total" values, due to rounding.
 b. Not applicable.

TABLE 2.4.3.1-30

**CANCER RISK SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE ADULT RESIDENT
ASSOCIATED WITH EXPOSURE TO SOIL- MORE LIKELY EXPOSURE SCENARIO**

Chemical	Exposure Pathway					Total ^a
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Ingestion of Homegrown Produce	
Antimony	NA ^b	NA	NA	NA	NA	NA
Aroclor 1254	2E-09	2E-09	5E-10	NA	1E-07	1E-07
Aroclor 1260	3E-09	3E-09	8E-10	NA	2E-07	2E-07
Benzo(a)anthracene	3E-09	3E-09	4E-10	NA	4E-07	4E-07
Benzo(a)pyrene	3E-08	3E-08	4E-09	NA	3E-06	3E-06
Benzo(b)fluoranthene	2E-09	2E-09	3E-10	NA	8E-08	9E-08
Benzo (g,h,i)perylene	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	3E-10	3E-10	4E-11	NA	7E-09	8E-09
Bis(2-ethylhexyl)phthalate	1E-10	9E-11	4E-11	NA	2E-08	3E-08
Chrysene	3E-11	4E-11	5E-12	NA	5E-09	5E-09
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	2E-09	2E-09	3E-10	NA	2E-08	2E-08
Iron	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA	NA
TOTAL^a	4E-08	5E-08	7E-09	NA	4E-06	4E-06

a. The sum of the values in the table may not equal the "total" values, due to rounding.

b. Not applicable.

TABLE 2.4.3.1-31

**CANCER RISK SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE ADULT
RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL GAS - REASONABLE MAXI-
MUM AND MORE LIKELY EXPOSURE SCENARIOS**

Chemical	Inhalation of Vapors from Soil Vapor			
	Main Landfill		Debris Disposal Area	
	RME ^a	MLE ^b	RME	MLE
Acetophenone	NA ^c	NA	NA	NA
Acrolein	NA	NA	NA	NA
Acrylonitrile	1E-05	4E-06	NA	NA
Benzene	9E-06	2E-06	1E-06	1E-07
Benzyl Chloride	1E-05	2E-06	NA	NA
Bromodichloromethane	3E-06	1E-06	NA	NA
Bromomethane	NA	NA	NA	NA
Butadiene[1,3-]	3E-05	5E-06	NA	NA
Carbon Tetrachloride	3E-06	8E-07	NA	NA
Dibromoethane[1,2-]	5E-05	1E-05	NA	NA
Dichlorobenzene[1,4-]	1E-05	3E-06	1E-06	2E-07
Dichlorodifluoromethane	NA	NA	NA	NA
Dichloroethene[1,1-]	1E-05	4E-06	6E-06	8E-07
Dichloroethene[cis-1,2-]	NA	NA	NA	NA
Dichloropropane[1,2-]	5E-06	9E-07	NA	NA
Dichloropropene[cis-1,3-]	1E-06	3E-07	NA	NA
Dichloropropene[trans-1,3-]	5E-06	1E-06	NA	NA
Dimethyl Disulfide	NA	NA	NA	NA
Ethyl Acrylate	2E-05	5E-06	NA	NA
Isobutane	NA	NA	NA	NA
Isoprene	5E-06	1E-06	NA	NA
Nitrobenzene	NA	NA	NA	NA
Nitropropane[2-]	3E-03	8E-04	NA	NA
Pinene[beta-]	NA	NA	NA	NA
Tetrachloroethane[1,1,2,2-]	1E-05	3E-06	NA	NA
Tetrachloroethene	2E-06	4E-07	1E-07	3E-08
Trimethylbenzene[1,2,4-]	NA	NA	NA	NA
Trimethylbenzene[1,3,5-]	NA	NA	NA	NA
Vinyl Chloride	3E-04	8E-05	6E-06	9E-07
Total ^d	3E-03	1E-03	1E-05	2E-06

a. Reasonable maximum exposure.

b. More likely exposure.

c. Not applicable.

d. The sum of the values in the table may not equal the "total" values due to rounding.

exposure to COPCs in soil gas by a hypothetical future on-site child resident may be of concern. The values for the debris disposal area are well within the generally acceptable risk range. Exposure to 2-nitropropane comprises the majority of the total theoretical lifetime excess cancer risk in the main landfill and exposure to 1,1-dichloroethene and vinyl chloride comprises the majority of the total theoretical lifetime excess cancer risk in the debris disposal area. It should be noted that representative concentrations for these chemicals (median and 95% UCL of the median) are based on nondetect values; therefore, the estimated cancer risks likely overstate the potential carcinogenic health risk for these chemicals.

Assuming exposure to COPCs in both surface soil and soil gas in the main landfill, the total theoretical lifetime excess cancer risk is 2×10^{-3} for both the RME and MLE scenarios. These results indicate that exposure to COPCs in surface soil and soil gas in the main landfill may pose an unacceptable carcinogenic health risk to hypothetical future on-site child residents.

Future Visitor in Proposed Tie-Down Area

The potential carcinogenic health risks associated with exposure to COPCs in surface soil by a future visitor in the proposed tie-down area are summarized in Tables 2.4.3.1-35 and 2.4.3.1-36; the calculation spreadsheets are presented in Appendix F-1.0. The total theoretical lifetime excess cancer risks are 9×10^{-6} and 4×10^{-6} for the RME and MLE scenarios, respectively. These values are well within the generally accepted risk range of 1×10^{-6} to 1×10^{-4} . Exposure to Aroclor 1254 and benzo(a)pyrene via dermal contact and incidental soil ingestion comprise the majority of the estimated cancer risk.

The potential carcinogenic health risks associated with exposure to COPCs in soil gas by a future visitor in the proposed tie-down area are summarized in Table 2.4.3.1-37; the calculation spreadsheets are presented in Appendix F-1.0. The total theoretical lifetime excess cancer risks are 3×10^{-6} and 1×10^{-7} for the RME and MLE scenarios, respectively. These values are well within or below the generally accepted risk range of 1×10^{-6} to 1×10^{-4} . Exposure to 2-nitropropane comprises the majority of the estimated cancer risk. As stated previously, the representative concentrations for this chemical were based on nondetect values.

Assuming exposure to COPCs in both surface soil and soil gas, the total theoretical lifetime excess cancer risks are 1×10^{-6} and 1×10^{-7} for the RME and MLE scenarios, respectively. These values are well within the generally accepted risk range based on the conditions evaluated.

Current Worker at Airport Terminal

The potential carcinogenic health risks associated with exposure to COPCs in soil gas by a current worker at the airport terminal are summarized in Table 2.4.3.1-38; the calculation spreadsheets are presented in Appendix F-1.0. The total theoretical lifetime excess cancer risks are 7×10^{-7} and 1×10^{-7} for the RME and MLE scenarios, respectively. These values are less than 1×10^{-6} , indicating that exposure to COPCs in soil gas should not pose an unacceptable carcinogenic health risk to current workers at the airport terminal under the conditions evaluated. Potential carcinogenic health risks associated with inhalation of resuspended particulates by current workers at the airport terminal were evaluated qualitatively based on the results for the hypothetical future on-site adult resident. The estimated theoretical lifetime excess cancer risks for the on-site adult resident are 2×10^{-7} and 7×10^{-8} for the RME and MLE

TABLE 2.4.3.1-32

CANCER RISK SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE CHILD RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL- REASONABLE MAXIMUM EXPOSURE SCENARIO

Chemical	Exposure Pathway					Total ^a
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Ingestion of Homegrown Produce	
Antimony	NA ^b	NA	NA	NA	NA	NA
Aroclor 1254	2E-05	6E-05	9E-08	NA	4E-05	1E-04
Aroclor 1260	3E-07	1E-06	2E-09	NA	7E-07	2E-08
Benzo(a)anthracene	4E-07	1E-06	7E-10	NA	1E-06	3E-06
Benzo(a)pyrene	4E-06	1E-05	8E-09	NA	1E-05	3E-05
Benzo(b)fluoranthene	3E-07	8E-07	5E-10	NA	3E-07	1E-06
Benzo (g,h,i)perylene	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4E-08	1E-07	7E-11	NA	3E-08	2E-07
Bis(2-ethylhexyl)phthalate	2E-08	3E-08	7E-11	NA	9E-08	1E-07
Chrysene	4E-09	1E-08	8E-12	NA	2E-08	3E-08
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	3E-07	8E-07	5E-10	NA	7E-08	1E-06
Iron	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA	NA
TOTAL^a	2E-05	8E-05	1E-07	NA	5E-05	2E-04

- a. The sum of the values in the table may not equal the "total" values, due to rounding.
 b. Not applicable.

TABLE 2.4.3.1-33

CANCER RISK SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE CHILD RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL - MOST LIKELY EXPOSURE SCENARIO

Chemical	Exposure Pathway					Total ^a
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Ingestion of Homegrown Produce	
Antimony	NA ^b	NA	NA	NA	NA	NA
Aroclor 1254	4E-08	1E-08	9E-10	NA	1E-07	1E-07
Aroclor 1260	6E-08	2E-08	2E-09	NA	2E-07	2E-07
Benzo(a)anthracene	7E-08	3E-08	7E-10	NA	3E-07	4E-07
Benzo(a)pyrene	7E-07	3E-07	8E-09	NA	2E-06	3E-06
Benzo(b)fluoranthene	4E-08	2E-08	5E-10	NA	6E-08	1E-07
Benzo (g,h,i)perylene	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	6E-09	2E-09	7E-11	NA	6E-09	1E-08
Bis(2-ethylhexyl)phthalate	3E-09	8E-10	7E-11	NA	2E-08	2E-08
Chrysene	8E-10	3E-10	8E-12	NA	4E-09	5E-09
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5E-08	2E-08	5E-10	NA	1E-08	8E-08
Iron	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA	NA
TOTAL^a	1E-06	4E-07	1E-08	NA	3E-06	4E-06

- a. The sum of the values in the table may not equal the "total" values, due to rounding
 b. Not applicable

TABLE 2.4.3.1-34

**CANCER RISK SUMMARY TABLE FOR HYPOTHETICAL FUTURE ON-SITE CHILD
RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL GAS- REASONABLE MAXI-
MUM AND MORE LIKELY EXPOSURE SCENARIOS**

Chemical	Inhalation of Vapors from Soil Gas			
	Main Landfill ^a		Debris Disposal Area	
	RME ^b	MLE ^b	RME	MLE
Acetophenone	NA ^c	NA	NA	NA
Acrolein	NA	NA	NA	NA
Acrylonitrile	7E-06	7E-06	NA	NA
Benzene	5E-06	4E-06	6E-07	3E-07
Benzyl Chloride	8E-06	4E-06	NA	NA
Bromodichloromethane	2E-06	2E-06	NA	NA
Bromomethane	NA	NA	NA	NA
Butadiene[1,3-]	2E-05	1E-05	NA	NA
Carbon Tetrachloride	2E-06	2E-06	NA	NA
Dibromoethane[1,2-]	3E-05	3E-05	NA	NA
Dichlorobenzene[1,4-]	7E-06	6E-06	6E-07	3E-07
Dichlorodifluoromethane	NA	NA	NA	NA
Dichloroethene[1,1-]	8E-06	7E-06	3E-06	2E-06
Dichloroethene[cis-1,2-]	NA	NA	NA	NA
Dichloropropane[1,2-]	3E-06	2E-06	NA	NA
Dichloropropene[cis-1,3-]	5E-07	5E-07	NA	NA
Dichloropropene[trans-1,3-]	3E-06	3E-06	NA	NA
Dimethyl Disulfide	NA	NA	NA	NA
Ethyl Acrylate	9E-06	9E-06	NA	NA
Isobutane	NA	NA	NA	NA
Isoprene	2E-06	2E-06	NA	NA
Nitrobenzene	NA	NA	NA	NA
Nitropropane[2-]	2E-03	2E-03	NA	NA
Pinene[beta-]	NA	NA	NA	NA
Tetrachloroethane[1,1,2,2-]	6E-06	6E-06	NA	NA
Tetrachloroethene	9E-07	8E-07	7E-08	6E-08
Trimethylbenzene[1,2,4-]	NA	NA	NA	NA
Trimethylbenzene[1,3,5-]	NA	NA	NA	NA
Vinyl Chloride	2E-04	1E-04	3E-06	2E-06
Total ^d	2E-03	2E-03	8E-06	4E-06

a. Reasonable maximum exposure.

b. More likely exposure.

c. Not applicable.

d. The sum of the values in the table may not equal the "total" values due to rounding.

CANCER RISK SUMMARY TABLE FOR FUTURE VISITOR IN PROPOSED TIE-DOWN AREA ASSOCIATED WITH EXPOSURE TO SOIL - REASONABLE MAXIMUM EXPOSURE SCENARIO

a. The sum of the values in the table may not equal the "total" values, due to rounding.
b. Not applicable.

TABLE 2.4.3.1-36

**CANCER RISK SUMMARY TABLE FOR FUTURE VISITOR IN PROPOSED
TIE-DOWN AREA ASSOCIATED WITH EXPOSURE TO SOIL - MORE LIKELY
EXPOSURE SCENARIO**

Chemical	Inhalation of Vapors from Soil GAS	
	RME ^a	MLE ^b
Acetophenone	NA ^a	NA
Acrolein	NA	NA
Acrylonitrile	1E-08	4E-10
Benzene	8E-09	3E-10
Benzyl Chloride	1E-08	2E-10
Bromodichloromethane	3E-09	1E-10
Bromomethane	NA	NA
Butadiene[1,3-]	3E-08	6E-10
Carbon Tetrachloride	2E-09	9E-11
Dibromomethane[1,2-]	4E-08	2E-09
Dichlorobenzene[1,4-]	1E-08	4E-10
Dichlorodifluoromethane	NA	NA
Dichloroethene[1,1-]	1E-08	4E-10
Dichloroethene[cis-1,2-]	NA	NA
Dichloropropane[1,2-]	5E-09	1E-10
Dichloropropene[cis-1,3-]	9E-10	3E-11
Dichloropropene[trans-1,3-]	4E-09	2E-10
Dimethyl Disulfide	NA	NA
Ethyl Acrylate	1E-08	5E-10
Isobutane	NA	NA
Isoprene	4E-09	1E-10
Nitrobenzene	NA	NA
Nitropropane[2-]	2E-06	9E-08
Pinene[beta-]	NA	NA
Tetrachloroethane[1,1,2,2-]	1E-08	4E-10
Tetrachloroethene	1E-09	5E-11
Trimethylbenzene[1,2,4-]	NA	NA
Trimethylbenzene[1,3,5-]	NA	NA
Vinyl Chloride	3E-07	8E-09
Total ^a	3E-06	1E-07

- a. The sum of the values in the table may not equal the "total" values, due to rounding.
b. Not applicable.

scenarios, respectively (see Tables 2.4.3.1-29 and 2.4.3.1-30). Based on these results, which are below 1×10^{-6} , potential carcinogenic health risks to current workers at the airport terminal should not be of concern, because inhalation exposure to resuspended particulates should be significantly lower than that for an on-site adult resident, due to dispersion and extent of exposure.

Current Off-Site Adult Resident

The potential carcinogenic health risks associated with exposure to COPCs in soil gas by a current off-site adult resident are summarized in Table 2.4.3.1-39; the calculation spreadsheets are presented in Appendix F-1.0. The total theoretical lifetime excess cancer risks are 6×10^{-7} and 2×10^{-7} for the RME and MLE scenarios, respectively. These values are less than 1×10^{-6} , indicating that exposure to COPCs in soil gas should not pose an unacceptable carcinogenic health risk to current off-site adult residents under the conditions evaluated. Potential carcinogenic health risks associated with inhalation of resuspended particulates by current off-site adult residents were evaluated qualitatively based on the results for the hypothetical future on-site adult resident. The estimated theoretical lifetime excess cancer risks for the on-site adult resident are 2×10^{-7} and 7×10^{-6} for the RME and MLE scenarios, respectively (see Tables 2.4.3.1-29 and 2.4.3.1-30). Based on these results, which are below 1×10^{-6} , potential carcinogenic health risks to off-site adult residents at the airport terminal should not be of concern, because inhalation exposure to resuspended particulates should be significantly lower than that for an on-site adult resident, due to dispersion and extent of exposure.

Current Off-Site Child Resident

The potential carcinogenic health risks associated with exposure to COPCs in soil gas by a current off-site child resident are summarized in Table 2.4.3.1-40; the calculation spreadsheets are presented in Appendix F-1.0. The total theoretical lifetime excess cancer risk is 3×10^{-7} for both the RME and MLE scenarios. This value is less than 1×10^{-6} , indicating that exposure to COPCs in soil gas should not pose an unacceptable carcinogenic health risk to current off-site child residents under the conditions evaluated. Potential carcinogenic health risks associated with inhalation of resuspended particulates by current off-site child residents were evaluated qualitatively based on the results for the hypothetical future on-site child resident. The estimated theoretical lifetime excess cancer risks for the on-site child resident are 1×10^{-7} and 1×10^{-6} for the RME and MLE scenarios, respectively (see Tables 2.4.3.1-32 and 2.4.3.1-33). Based on these results, which are below 1×10^{-6} , potential carcinogenic health risks to off-site child residents at the airport terminal should not be of concern, because inhalation exposure to resuspended particulates should be significantly lower than that for an on-site child resident, due to dispersion and extent of exposure.

Hypothetical Trail User

The potential carcinogenic health risks associated with exposure to COPCs in surface soil by a hypothetical trail user are summarized in Tables 2.4.3.1-41 and 2.4.3.1-42; the calculation spreadsheets are presented in Appendix F-1.0. The total theoretical lifetime excess cancer risks are 1×10^{-6} and 2×10^{-6} for the RME and MLE scenarios, respectively. These values are well within or below the generally accepted risk range of 1×10^{-6} to 1×10^{-4} . Exposure to benzo(a)pyrene and dibenzo(a,h)anthracene via dermal

TABLE 2.4.3.1-37

**CANCER RISK SUMMARY TABLE FOR FUTURE VISITOR IN PROPOSED
TIE-DOWN AREA ASSOCIATED WITH EXPOSURE TO SOIL GAS - REASON-
ABLE MAXIMUM AND MORE LIKELY EXPOSURE SCENARIOS**

Chemical	Inhalation of Vapors from Soil GAS	
	RME ^a	MLE ^b
Acetophenone	NA ^c	NA
Acrolein	NA	NA
Acrylonitrile	1E-08	4E-10
Benzene	8E-09	3E-10
Benzyl Chloride	1E-08	2E-10
Bromodichloromethane	3E-09	1E-10
Bromomethane	NA	NA
Butadiene[1,3-]	3E-08	6E-10
Carbon Tetrachloride	2E-09	9E-11
Dibromoethane[1,2-]	4E-08	2E-09
Dichlorobenzene[1,4-]	1E-08	4E-10
Dichlorodifluoromethane	NA	NA
Dichloroethene[1,1-]	1E-08	4E-10
Dichloroethene[cis-1,2-]	NA	NA
Dichloropropane[1,2-]	5E-09	1E-10
Dichloropropene[cis-1,3-]	9E-10	3E-11
Dichloropropene[trans-1,3-]	4E-09	2E-10
Dimethyl Disulfide	NA	NA
Ethyl Acrylate	1E-08	5E-10
Isobutane	NA	NA
Isoprene	4E-09	1E-10
Nitrobenzene	NA	NA
Nitropropane[2-]	2E-06	9E-08
Pinene[beta-]	NA	NA
Tetrachloroethane[1,1,2,2-]	1E-08	4E-10
Tetrachloroethene	1E-09	5E-11
Trimethylbenzene[1,2,4-]	NA	NA
Trimethylbenzene[1,3,5-]	NA	NA
Vinyl Chloride	3E-07	8E-09
Total ^d	3E-06	1E-07

a. Reasonable maximum exposure.

b. More likely exposure.

c. Not applicable.

d. The sum of the values in the table may not equal the "total" values due to rounding.

TABLE 2.4.3.1-38

**CANCER RISK SUMMARY TABLE FOR CURRENT WORKER AT AIRPORT
TERMINAL ASSOCIATED WITH EXPOSURE TO SOIL GAS - REASONABLE
MAXIMUM AND MORE LIKELY EXPOSURE SCENARIOS**

Chemical	Inhalation of Vapors from Soil Gas	
	RME ^a	MLE ^b
Acetophenone	NA ^c	NA
Acrolein	NA	NA
Acrylonitrile	3E-09	5E-10
Benzene	2E-09	3E-10
Benzyl Chloride	3E-09	3E-10
Bromodichloromethane	7E-10	1E-10
Bromomethane	NA	NA
Butadiene[1,3-]	6E-09	6E-10
Carbon Tetrachloride	6E-10	1E-10
Dibromoethane[1,2-]	1E-08	2E-09
Dichlorobenzene[1,4-]	3E-09	4E-10
Dichlorodifluoromethane	NA	NA
Dichloroethene[1,1-]	3E-09	4E-10
Dichloroethene[cis-1,2-]	NA	NA
Dichloropropane[1,2-]	1E-09	1E-10
Dichloropropene[cis-1,3-]	2E-10	3E-11
Dichloropropene[trans-1,3-]	1E-09	2E-10
Dimethyl Disulfide	NA	NA
Ethyl Acrylate	3E-09	6E-10
Isobutane	NA	NA
Isoprene	9E-10	1E-10
Nitrobenzene	NA	NA
Nitropropane[2-]	6E-07	1E-07
Pinene[beta-]	NA	NA
Tetrachloroethane[1,1,2,2-]	2E-09	4E-10
Tetrachloroethene	3E-10	5E-11
Trimethylbenzene[1,2,4-]	NA	NA
Trimethylbenzene[1,3,5-]	NA	NA
Vinyl Chloride	6E-08	9E-09
Total ^d	7E-07	1E-07

- a. Reasonable maximum exposure.
b. More likely exposure.
c. Not applicable.
d. The sum of the values in the table may not equal the "Total" values due to rounding.

TABLE 2.4.3.1-39

**CANCER RISK SUMMARY TABLE FOR CURRENT OFF-SITE ADULT RESIDENT
ASSOCIATED WITH EXPOSURE TO SOIL GAS - REASONABLE MAXIMUM AND
MORE LIKELY EXPOSURE SCENARIOS**

Chemical	Inhalation of Vapors from Soil Gas	
	RME ^a	MLE ^b
Acetophenone	NA ^c	NA
Acrolein	NA	NA
Acrylonitrile	3E-09	8E-10
Benzene	2E-09	4E-10
Benzyl Chloride	3E-09	4E-10
Bromodichloromethane	6E-10	2E-10
Bromomethane	NA	NA
Butadiene[1,3-]	6E-09	1E-09
Carbon Tetrachloride	5E-10	2E-10
Dibromoethane[1,2-]	9E-09	3E-09
Dichlorobenzene[1,4-]	2E-09	6E-10
Dichlorodifluoromethane	NA	NA
Dichloroethene[1,1-]	3E-09	7E-10
Dichloroethene[cis-1,2-]	NA	NA
Dichloropropane[1,2-]	1E-09	2E-10
Dichloropropene[cis-1,3-]	2E-10	6E-11
Dichloropropene[trans-1,3-]	9E-10	3E-10
Dimethyl Disulfide	NA	NA
Ethyl Acrylate	3E-09	9E-10
Isobutane	NA	NA
Isoprene	8E-10	2E-10
Nitrobenzene	NA	NA
Nitropropane[2-]	5E-07	2E-07
Pinene[beta-]	NA	NA
Tetrachloroethane[1,1,2,2-]	2E-09	6E-10
Tetrachloroethene	3E-10	8E-11
Trimethylbenzene[1,2,4-]	NA	NA
Trimethylbenzene[1,3,5-]	NA	NA
Vinyl Chloride	6E-08	1E-08
Total ^d	6E-07	2E-07

a. Reasonable maximum exposure.

b. More likely exposure.

c. Not applicable.

d. The sum of the values in the table may not equal the "Total" values due to rounding.

contact and incidental soil ingestion comprises the majority of the estimated cancer risk.

Noncarcinogenic Health Risks Associated with Exposure to Lead

As discussed in Section 2.4.2.3(c), the potential noncarcinogenic health risks associated with exposure to lead were evaluated using EPA's IEUBK Model for Lead in Children (EPA 1994, 58917) and EPA's Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil (EPA, 1996, 58967). The IEUBK model is designed to estimate the concentration of lead in blood of children resulting from contact with lead in various environmental media (e.g., soil, air, and food). The Centers for Disease Control (CDC) have established a blood-lead concentration of concern at 10 micrograms per deciliter (mg/dl) of whole blood for children. Input parameters for the IEUBK model are presented in Table 2.4.3.1-43; the model output is provided in Appendix F-1.0.

EPA's interim guidance for assessing risks associated with exposure to lead in soil by adults is comprised of two steps. The first step is designed to estimate the blood-lead concentration in adults based on a given concentration of lead in soil. The second step is designed to estimate the corresponding blood-lead concentration in a fetus assuming the adult is a pregnant female. The components of these equations are presented in Appendix F-1.0; values used for each input parameter, including source and rationale, are summarized in Table 2.4.3.1-44.

The results of the IEUBK model for exposure to lead by children and the above calculations for exposure to lead by adults are summarized in Table 2.4.3.1-45; the calculation spreadsheets are provided in Appendix F-1.0. The estimated blood-lead concentrations for a hypothetical future on-site child resident are 12.2 and 1.9 mg/dl for the RME and MLE scenarios, respectively. The value for the RME scenario is slightly greater than 10 mg/dl, indicating that potential noncarcinogenic health risks associated with exposure to lead in soil by a hypothetical future on-site child resident may be of concern, but only under conservative estimates of human exposure.

The estimated blood-lead concentrations for the fetus of a hypothetical future on-site adult resident are 13.2 and 6.7 mg/dl for the RME and MLE scenarios, respectively. The value for the RME scenario is slightly greater than 10 mg/dl, indicating that potential noncarcinogenic health risks associated with exposure to lead in soil by a hypothetical future on-site adult resident may be of concern if that resident bears a child, but only under conservative estimates of human exposure.

The estimated blood-lead concentrations for the fetus of a visitor in the proposed tie-down area are 7.7 and 6.7 mg/dl for the RME and MLE scenarios, respectively. The estimated blood-lead concentration for the fetus of a hypothetical trail user is 6.7 mg/dl for both the RME and MLE scenarios. All of these values are less than 10 mg/dl, indicating that exposure to lead in soil by visitors in the proposed tie-down area and hypothetical trail users should not be of concern under the conditions evaluated.

2.4.3.1 (e) Uncertainty Analysis

Uncertainty is inherent in many aspects of the risk assessment process, and generally arises from a lack

TABLE 2.4.3.1-40

CANCER RISK SUMMARY TABLE FOR CURRENT OFF-SITE CHILD RESIDENT ASSOCIATED WITH EXPOSURE TO SOIL GAS - REASONABLE MAXIMUM AND MORE LIKELY EXPOSURE SCENARIOS

Chemical	Inhalation of Vapors from Soil Gas	
	RME ^a	MLE ^b
Acetophenone	NA ^c	NA
Acrolein	NA	NA
Acrylonitrile	1E-09	1E-09
Benzene	1E-09	8E-10
Benzyl Chloride	1E-09	7E-10
Bromodichloromethane	3E-10	3E-10
Bromomethane	NA	NA
Butadiene[1,3-]	3E-09	2E-09
Carbon Tetrachloride	3E-10	3E-10
Dibromoethane[1,2-]	5E-09	5E-09
Dichlorobenzene[1,4-]	1E-09	1E-09
Dichlorodifluoromethane	NA	NA
Dichloroethane[1,1-]	2E-09	1E-09
Dichloroethene[cis-1,2-]	NA	NA
Dichloropropane[1,2-]	5E-10	3E-10
Dichloropropene[cis-1,3-]	1E-10	1E-10
Dichloropropene[trans-1,3-]	5E-10	5E-10
Dimethyl Disulfide	NA	NA
Ethyl Acrylate	2E-09	2E-09
Isobutane	NA	NA
Isoprene	5E-10	3E-10
Nitrobenzene	NA	NA
Nitropropane[2-]	3E-07	3E-07
Pinene[beta-]	NA	NA
Tetrachloroethane[1,1,2,2-]	1E-09	1E-09
Tetrachloroethene	2E-10	2E-10
Trimethylbenzene[1,2,4-]	NA	NA
Trimethylbenzene[1,3,5-]	NA	NA
Vinyl Chloride	3E-08	3E-08
Total ^d	3E-07	3E-07

- a. Reasonable maximum exposure.
b. More likely exposure.
c. Not applicable.
d. The sum of the values in the table may not equal the "total" values due to rounding.

TABLE 2.4.3.1-41

**CANCER RISK SUMMARY TABLE FOR HYPOTHETICAL TRAIL USER ASSOCIATED WITH EXPOSURE TO
SOIL • REASONABLE MAXIMUM EXPOSURE SCENARIO**

Chemical	Exposure Pathway				
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	Total ^a
Antimony	NA ^b	NA	NA	NA	NA
Aroclor 1254	5E-09	2E-07	1E-10	NA	2E-07
Aroclor 1260	4E-09	1E-07	1E-10	NA	1E-07
Benzo(a)anthracene	3E-08	7E-07	3E-10	NA	7E-07
Benzo(a)pyrene	2E-07	6E-06	2E-09	NA	6E-06
Benzo(b)fluoranthene	2E-08	6E-07	2E-10	NA	6E-07
Benzo (g,h,i)perylene	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2E-09	6E-08	2E-11	NA	6E-08
Bis(2-ethylhexyl)phthalate	1E-10	2E-09	3E-12	NA	3E-09
Chrysene	3E-10	8E-09	3E-12	NA	8E-09
Dibenzo(a,h)anthracene	4E-08	1E-06	4E-10	NA	1E-06
Dibenzofuran	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1E-08	4E-07	1E-10	NA	4E-07
Iron	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA
TOTAL^a	3E-07	9E-06	4E-09	NA	1E-05

- a. The sum of the values in the table may not equal the "total" values, due to rounding.
 b. Not applicable.

TABLE 2.4.3.1-42

CANCER RISK SUMMARY TABLE FOR HYPOTHETICAL TRAIL USER ASSOCIATED WITH EXPOSURE TO SOIL - MORE LIKELY EXPOSURE SCENARIO

Chemical	Exposure Pathway				Total ^a
	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from Soil	
Antimony	NA ^b	NA	NA	NA	NA
Aroclor 1254	6E-11	3E-10	5E-13	NA	3E-10
Aroclor 1260	6E-11	3E-10	5E-13	NA	3E-10
Benzo(a)anthracene	2E-10	8E-10	8E-13	NA	1E-09
Benzo(a)pyrene	2E-09	8E-09	8E-12	NA	1E-08
Benzo(b)fluoranthene	2E-10	8E-10	8E-13	NA	1E-09
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2E-11	8E-11	8E-14	NA	1E-10
Bis(2-ethylhexyl)phthalate	4E-12	1E-11	4E-14	NA	2E-11
Chrysene	2E-12	8E-12	8E-15	NA	1E-11
Dibenzo(a,h)anthracene	1E-09	6E-09	5E-12	NA	7E-09
Dibenzofuran	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	2E-10	8E-10	8E-13	NA	1E-09
Iron	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA
TOTAL^a	4E-09	2E-08	2E-11	NA	2E-08

- a. The sum of the values in the table may not equal the "total" values, due to rounding.
 b. Not applicable.

TABLE 2.4.3.1-43
LEAD RISK EVALUATION INPUT PARAMETERS INTEGRATED EXPOSURE UPTAKE
BIOKINETIC MODEL

<i>Exposure Scenario</i>			
Parameter	Units	RME ^a	MLE ^b
<i>Site-Specific</i>			
Air Concentration ^c	mg/m ³	0.042	0.002
Indoor % of Outdoor	percent	100	100
Soil Lead Levels	mg/g	463	17.5
Dust Lead Levels	mg/g	463	17.5
Soil Intake	g/day	0.2	0.1
<i>Default^d</i>			
Soil/Dust Weighting Factor	percent	50	50
Lung Absorption	percent	32	32
Dietary Intake			
0-1 years	mg/day	5.53	5.53
1-2 years	mg/day	5.78	5.78
2-3 years	mg/day	6.49	6.49
3-4 years	mg/day	6.24	6.24
4-5 years	mg/day	6.10	6.10
5-6 years	mg/day	6.34	6.34
6-7 years	mg/day	7.00	7.00
Bioavailability (% Accessible)			
Soil	percent	30	30
Dust	percent	30	30
Water	percent	50	50
Diet	percent	50	50
Fraction Passive/Total % Accessible	percent	20	20
Half Saturation Level	mg/day	100	100
Drinking Water Concentration	mg/l	4	4
Drinking Water Intake			
0-1 years	l/day	0.20	0.20
1-2 years	l/day	0.50	0.50
2-3 years	l/day	0.52	0.52
3-4 years	l/day	0.53	0.53
4-5 years	l/day	0.55	0.55
5-6 years	l/day	0.58	0.58
6-7 years	l/day	0.59	0.59
Mother's Blood-Lead Concentration at Birth	µg/dl	2.2	2.2

a. RME = reasonable maximum exposure

b. MLE = more likely exposure

c. Based on lead concentration in soil and default particulate concentration of 0.09 mg/m³

d. EPA 1994, 1178

TABLE 2.4.3.1-44
LEAD RISK EVALUATION INPUT PARAMETERS - ADULT
EXPOSURE MODEL

<i>Exposure Scenario</i>			
Parameter	Units	RME ^a	MLE ^b
<i>Site-Specific</i>			
<i>Concentration in Soil</i>			
Hypothetical Future On-Site Adult Resident	mg/kg	463	17.5
Future Visitor in Proposed Tie-Down Area	mg/kg	463	17.5
Hypothetical Trail User	mg/kg	48.4	11.2
<i>Soil Ingestion Rate^c</i>			
Hypothetical Future On-Site Adult Resident	g/day	0.1	0.05
Future Visitor in Proposed Tie-Down Area	g/day	0.1	0.05
Hypothetical Trail User	g/day	0.025	0.0125
<i>Exposure Frequency</i>			
Hypothetical Future On-Site Adult Resident	days/year	350	40
Future Visitor in Proposed Tie-Down Area	days/year	52	26
Hypothetical Trail User	days/year	52	12
<i>Default^d</i>			
Biokinetic Slope Factor	µg/dl per mg/day	0.4	0.4
Absorption Fraction	unitless	0.12	0.12
Averaging Time	days/year	365	365
Background Blood-Lead Concentration in Adults	µg/dl	2.2	2.2
Individual Geometric Standard Deviation	unitless	2.1	2.1
Proportionality Constant - Fetal and Maternal Blood-Lead Concentrations	unitless	0.9	0.9

- a. Reasonable maximum exposure
b. More likely exposure
c. Includes fraction from contaminated source
d. EPA 1996, page 6.

of knowledge of (1) site conditions, (2) toxicity and dose-response of the COPCs, and (3) the extent to which an individual will be exposed to those chemicals. This lack of knowledge means that assumptions must be made based on information presented in the scientific literature or professional judgment. While some assumptions have significant scientific basis, others have much less. The assumptions that introduce the greatest amount of uncertainty and their effect on the noncarcinogenic and carcinogenic risk estimates are discussed below. This discussion is qualitative in nature, reflecting the difficulty in quantifying the uncertainty in specific assumptions. In general, assumptions were selected in a manner that purposefully biases the process toward health conservatism.

Identification of Chemicals of Potential Concern

Over 100 VOCs were detected in soil gas samples collected at the site. Given that many of these chemicals were detected infrequently (e.g., less than 5%) and at low concentrations (e.g., less than 100 ppbv), a screening process was devised to identify those chemicals that contribute to the majority of the overall risk posed by exposure to soil gas. This screening process relied on measured soil gas concentrations and toxicity criteria for noncarcinogenic and carcinogenic health risks. Chronic toxicity criteria had been developed for approximately 60% of the detected chemicals. These criteria could be used as surrogate criteria (based on similar toxicological properties) for approximately 5% of the remaining detected chemicals. Surrogate criteria were developed for an additional 10% of the detected chemicals based on chronic

TABLE 2.4.3.1-45
LEAD EVALUATION RESULTS

Scenario	Predicted Blood-Lead Concentration ($\mu\text{g}/\text{dl}$)		Fetal Blood-Lead Concentration ($\mu\text{g}/\text{dl}$)	
	RME ^a	MLE ^b	RME	MLE
Hypothetical Future On-Site Child Resident	12.2	1.9	NA ^c	NA
Hypothetical Future On-Site Adult Resident	NA	NA	13.2	6.7
Future Visitor in Proposed Tie-Down Area	NA	NA	7.7	6.7
Hypothetical Trail User	NA	NA	6.7	6.7

- a. Reasonable maximum exposure
 b. More likely exposure
 c. Not applicable
 d. The end result of EPA's interim guidance for evaluating exposure to lead in soil by adults is a predicted fetal blood-lead concentration assuming the adult is pregnant. Because the fetus is more sensitive to the adverse effects of lead exposure than adults, EPA assumes that protecting the fetus will also protect the adult.

occupational standards. Of the remaining 25% of the detected chemicals, surrogate criteria were developed for approximately 5% based on the results of acute toxicity studies; there was insufficient toxicity information to develop surrogate criteria for approximately 20% of the chemicals. Based on the results of the screening process, 29 chemicals were identified as COPCs. Regardless of toxic endpoint (noncarcinogenic vs. carcinogenic), only one to four chemicals comprised greater than 95% of the total normalized value (analogous to risk). Therefore, even though there is considerable uncertainty in the surrogate criteria based on acute toxicity data and surrogate criteria could not be developed for 20% of the detected chemicals, it is unlikely that inclusion of any of the chemicals not identified as COPCs would affect the conclusions of the HHRA.

Exposure Point Concentrations

Representative concentrations in soil were based on maximum and median concentrations rather than UCL of the mean and mean concentrations because a small number of samples were collected from primarily biased locations. It is very unlikely that the maximum detected concentration is representative of the concentration to which an individual would be exposed across an exposure unit over an extended period of time, even under the conservative assumptions of the RME scenario. Therefore, the estimated risks associated with exposure to soil are likely overestimated, perhaps substantially. Representative concentrations in soil gas were based on UCL of the median and median concentrations rather than UCL of the mean and mean concentrations because the high number of nondetect values made it difficult to identify the distribution of the data. In many cases, the UCL of the median and median concentrations were equal to nondetect values, meaning that the estimated risks are based on hypothetical concentrations. In fact, the representative concentrations for the two chemicals comprising the majority of the noncarcinogenic (acetophenone) or carcinogenic (2-nitropropane) risk were nondetect values. Therefore, it is likely that the risks associated with exposure to soil gas are overestimated, again perhaps substantially.

The representative soil gas concentrations were used in conjunction with various models to estimate concentrations of chemicals in indoor and ambient air as vapors. There are varying degrees of uncertainty with these models and associated input parameters. One area of considerable uncertainty is the landfill gas emission velocity used to estimate the emission rate of COPCs in soil gas. Insufficient data have been collected at the site to estimate a site-specific value; therefore, a default value was used. This value may over- or underestimate the actual landfill gas emission velocity. However, the potential uncertainty in this assumption is countered by the assumption that landfill gas is being emitted from the entire main landfill or debris disposal area at the same rate. This should be a very conservative assumption given that the results of the soil flux chamber sampling suggest that landfill gas is not being emitted from the entire landfill, at least on a continuous basis, and the fact that distressed vegetation (as a result of high concentrations of landfill gas in the root zone) exists on only a very small portion of the main landfill (<10%). The highest estimated risks are associated with soil gas emissions from the main landfill. Therefore, it is possible that these risks have been overestimated, perhaps to a significant degree.

Exposure Scenarios

The most likely exposure scenarios under current conditions are current workers in the airport terminal and current nearby residents. In the event that Los Alamos County installs airplane tie-downs on top of

the main landfill, another possible receptor would be a future visitor in this area. A less likely scenario under current or future conditions is a recreational user of Pueblo Canyon given the steepness of the slope and the absence of trails along the canyon slope adjacent to the airport. The least likely receptor is a resident in the event the airport property is redeveloped for residential use. Given that Los Alamos County intends to continue to use the site as an airport and by far the highest risks were estimated for a hypothetical future on-site resident, the potential risks posed by COPCs in soil and soil gas are likely overestimated to a significant degree.

Exposure Assumptions and Parameters

This HHRA evaluated two scenarios, a reasonable maximum exposed (RME) individual and a more likely exposed (MLE) individual for each of the potentially exposed populations. The RME scenario is defined by EPA as the highest exposure that could reasonably be expected to occur for a given exposure pathway at a site (EPA 1989, 0305, pp. 6-4 to 6-5). In order to achieve this goal, the RME scenario uses highly conservative exposure assumptions. For example, this HHRA assumed that a hypothetical future on-site resident would reside at home 24 hours per day, 350 days per year for 30 years. Conversely, the MLE scenario is intended to provide an "average" estimate of potential exposure to COPCs in soil and soil gas as an indication of the uncertainty associated with the RME scenario. In this scenario, best estimates of exposure are used instead of upper-bound estimates. For example, the soil adherence factor used for the MLE scenario is one-fifth of the value assumed in the RME scenario. This value is equal to the lower end of the recommended range of soil-to-skin adherence factors, whereas the value used in the RME scenario is equal to the upper end of this range (EPA 1992, 1012, pp. 8-13 to 8-17). Therefore, use of upper-end values for the RME scenario likely overestimates the exposure to most individuals whereas use of best estimate values, while potentially underestimating potential exposure for some individuals, still likely represents a conservative estimate of "average" exposures.

Secondary Exposure Pathways

Risk assessments that include secondary (or indirect) exposure pathways such as ingestion of home-grown produce have shown that these pathways usually comprise the majority of the estimated health risk (Copeland et al. 1993, 58926, p. 275 to 312); Copeland et al. 1994, 58927, p. 1399 to 1413). However, these pathways contain a large amount of uncertainty, e.g., a lack of available data to quantify the uptake of chemicals from soil into plants. The plant uptake factors used in this HHRA for the organic COPCs in soil are based on a simplistic equation that relates plant uptake to a chemical's octanol-water partition coefficient (Travis and Arms 1988, 59355, p. 271 to 274). Additional research in this area suggests that plant uptake is better represented by an equation that accounts for adsorption of the chemicals onto soil particles (Ryan et al. 1988, 58924). This is especially important for those chemicals that bind very strongly to organic matter, such as Aroclor 1254, because such chemicals are less likely to dissolve into soil pore water so that they are available to be taken up by the plant's roots. The highest estimated risks for COPCs in soil are associated with exposure to Aroclor 1254 in homegrown produce. Aroclor 1254 binds very strongly to organic matter; therefore, it is likely that the risks associated with exposure to the COPCs in soil have been overestimated, perhaps to a significant degree.

Toxicity Criteria

One of the largest sources of uncertainty in any risk assessment is often associated with the scientific community's limited understanding of the toxicity of most chemicals in humans following exposure to the low concentrations generally encountered in the environment. The majority of available toxicity data are from animal studies, which are then extrapolated using mathematical models or multiple uncertainty factors to generate toxicity criteria used to predict what might occur in humans. Sources of conservatism in the toxicity criteria used in this HHRA include:

- The use of conservative methods and assumptions to extrapolate from high dose animal studies to predict the possible response in humans at exposure levels far below those administered to animals;
- The assumption that chemicals considered to be carcinogens do not have thresholds (for all doses greater than zero, some risk is assumed to be present); and
- The fact that epidemiological studies (human exposure studies) are limited and are not generally considered in a quantitative manner in deriving toxicity values.

The toxicity criteria used in this HHRA to evaluate noncarcinogenic and carcinogenic health risks were developed using different methods. The majority of the noncarcinogenic toxicity criteria (i.e., oral and inhalation RfDs) incorporate multiple uncertainty factors to account for limitations in the quality or quantity of available data (e.g., animal data in lieu of human data). These uncertainty factors are applied without regard to available data on the true likelihood of a variation in human response. Therefore, RfDs may be hundreds of times smaller than doses that would actually cause adverse health effects. For example, the highest noncarcinogenic health risks are associated with exposure to acetophenone in soil gas. The RfD for this chemical incorporates a 1000-fold safety factor. Therefore, the actual potential for noncarcinogenic health risks associated with exposure to soil gas is likely overestimated, perhaps to a significant degree.

The carcinogenic toxicity criteria (i.e., oral and inhalation SFs) also are developed using techniques that purposefully bias the criteria toward health conservatism. For example, most SFs are based on the premise that cancer data from high dose animal studies will predict cancer response in humans at dose levels thousands of times lower. The process also assumes that the carcinogenicity of a chemical in an animal model is representative of the response in humans. Finally, the statistical techniques used by regulatory agencies to extrapolate data from animals to human exposures assumes that the dose-response curve is linear and that the 95% UCL of the slope is representative of the chemical's carcinogenic potency. In aggregate, these assumptions overestimate the actual risk estimates such that they are unlikely to be higher, but could be considerably lower and, in fact, could be non-existent.

In the absence of data for a specific exposure route, the SF or RfD for another route (oral if inhalation is absent, inhalation if oral is absent) was used in the HHRA. There may be considerable uncertainty in making this assumption for inorganic chemicals based on portal of entry effects and differences in absorption efficiency (Smucker 1998, 58751, p. 5). In addition, oral SF and RfDs were used as surrogate criteria for quantifying systemic health effects associated with the dermal exposure route. As a result, the health risk estimates based on these assumptions may be over- or underestimated.

Toxicity criteria were not available or could not be developed for several of the COPCs; therefore, surrogate chemicals with available toxicity criteria were selected based on similarities in chemical, physical, and/or toxicological properties. The use of surrogate criteria may over- or underestimate the potential health risks associated with exposure to these chemicals; however, none of these chemicals contributed significantly to the overall noncarcinogenic or carcinogenic risk.

Potential Chemical Interactions

This HHRA evaluated exposure to multiple chemicals in soil and soil gas. Consistent with current EPA guidance for risk assessment of chemical mixtures, it was assumed that the interaction between chemicals is additive (i.e., the combined effect is equal to the sum of the effects of the individual chemicals) (EPA 1986, 58965, pp. 34014 to 34025). However, other interactions are possible, including no interaction, synergism, and antagonism. Synergism refers to the case where the combined effect is greater than the sum of the individual effects, whereas antagonism refers to the case where the combined effect is less than the sum of the individual effects.

Relatively little data are available regarding potential chemical interactions following exposure to chemical mixtures. However, based on a limited number of animal studies, adverse effects were not seen following exposure to multiple chemicals at levels below their individual effect levels, suggesting that no chemical interactions occurred. At exposure levels equivalent to the threshold effect levels of the individual chemicals, some minor effects may be seen. When exposure levels exceed the threshold effect levels of the individual chemicals, a variety of interactive effect may be seen, including synergistic, antagonistic, and additive effects (Seed et al. 1995, 58928, p. 76-94). These interactive effects cannot be predicted based on the known effects of the individual chemicals.

In summary, current EPA guidance for risk assessment of chemical mixtures (EPA 1986, 58965, pp. 34014-34025) recommends assuming an additive effect following exposure to multiple chemicals. Subsequent recommendations by other parties, such as the National Academy of Sciences (NAS 1988, 58920, pp. 3-4) and the Presidential-Congressional Commission on Risk Assessment and Risk Management (Risk Commission 1997, 58964, pp. 68-71), have also advocated a default assumption of additivity. Based on the limited available experimental data, interaction between multiple chemicals would not be expected at exposure levels below their individual effect levels. Based on the results of this HHRA, the estimated doses of the COPCs are below doses at which adverse effects were observed in animal studies used to derive their toxicity criteria. Therefore, the assumption that the noncarcinogenic or carcinogenic risks are additive likely overestimates the potential risks associated with simultaneous exposure to the COPCs.

These and other assumptions contribute to the overall uncertainty in the results of the HHRA. However, given that the largest sources of uncertainty generally result in overestimates of exposure or risk, it is believed that the noncarcinogenic and carcinogenic risks presented in this HHRA represent conservative estimates of the risks, if any, posed by the site.

2.4.3.1 (f) Interpretation

The HHRA presents an evaluation of the potential human health risks associated with the presence of

chemicals surface soil and soil gas at the site. The HHRA was completed in accordance with multiple risk assessment guidance documents provided by EPA. Potential noncarcinogenic and carcinogenic health risks were estimated for hypothetical future on-site adult and child residents, future visitors in the proposed tie-down area, current workers at the airport terminal, current nearby adult and child residents, and hypothetical trail users along the south slope of Pueblo Canyon adjacent to the site assuming conservative (RME) or more realistic (MLE) estimates of human exposure.

The results of the HHRA are summarized in Tables 2.4.3.1-46 (noncarcinogenic health risks) and 2.4.3.1-47 (carcinogenic health risks) and described below:

- The estimated noncarcinogenic and carcinogenic health risks associated with exposure to the COPCs in soil and soil gas by a hypothetical future on-site adult or child resident in the main landfill are well above levels generally considered acceptable by regulatory agencies. Exposure to acetophenone and acrolein in soil gas via inhalation of vapors comprises the majority of the estimated noncarcinogenic risk and exposure to 2-nitropropane via inhalation of vapors comprises the majority of the estimated carcinogenic risk. The estimated noncarcinogenic and/or carcinogenic risks associated with exposure to antimony, Aroclor 1254, and iron (child only) in soil via ingestion of homegrown produce are also greater than or at the upper end of those generally considered acceptable; but only assuming conservative estimates of exposure.
- The estimated noncarcinogenic health risks associated with exposure to the COPCs in soil gas by a hypothetical future on-site adult and child resident in the debris disposal area are below levels generally considered acceptable by regulatory agencies. The corresponding estimated carcinogenic health risks are greater than 1×10^{-6} but within the generally acceptable risk range. Exposure to 2-nitropropane via inhalation of vapors comprises the majority of the estimated risk.
- The estimated noncarcinogenic health risks associated with exposure to the COPCs in soil and soil gas by a future visitor in the proposed tie-down area are below levels generally considered acceptable by regulatory agencies. The corresponding estimated carcinogenic health risks are greater than 1×10^{-6} , but only under conservative estimates of human exposure. In addition, the estimated carcinogenic risks based on conservative or more realistic estimates of exposure are within the generally acceptable risk range. Exposure 2-nitropropane via inhalation of vapors comprises the majority of the estimated risk.
- The estimated noncarcinogenic and carcinogenic health risks associated with exposure to the COPCs in soil gas by a current worker at the airport terminal are below those generally considered acceptable by regulatory agencies. Based on the results for the hypothetical future onsite adult resident, the estimated noncarcinogenic and carcinogenic health risks associated with exposure to the COPCs in soil via inhalation resuspended particulates should not be of concern.
- The estimated noncarcinogenic and carcinogenic health risks associated with exposure to the COPCs in soil gas by a current off-site adult or child resident are below those generally considered acceptable by regulatory agencies. Based on the results for the hypothetical future onsite adult and child residents, the estimated

SUMMARY OF HUMAN HEALTH RISK ASSESSMENT RESULTS *NONCARCINOGENIC* HEALTH RISKS (HAZARD INDICES)

Scenario	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapors from soil	Ingestion of Homegrown Produce	Inhalation of Vapors from Soil Gas	Hazard Index ^a
<i>Hypothetical Future On-Site Adult Resident - Main Landfill</i>							
RME ^b	7E-01	2E+00	1E-02	1E-03	1E+01	3E+02	3E+02
MLE ^c	4E-03	1E-03	1E-03	1E-03	7E-01	3E+02	3E+02
<i>Hypothetical Future On-Site Child Resident - Main Landfill</i>							
RME	6E+00	2E+01	3E-02	2E-03	1E+01	6E+02	6E+02
MLE	1E-01	1E-02	3E-03	2E-03	7E-01	6E+02	6E+02
<i>Hypothetical Future On-Site Adult Resident - Debris Disposal Area</i>							
RME	NA ^d	NA	NA	NA	NA	3E-01	3E-01
MLE	NA	NA	NA	NA	NA	2E-01	2E-01
<i>Hypothetical Future On-Site Child Resident - Debris Disposal Area</i>							
RME	NA	NA	NA	NA	NA	8E-01	8E-01
MLE	NA	NA	NA	NA	NA	4E-01	4E-01
<i>Future Visitor in Proposed Tie-Down Area</i>							
RME	1E-01	4E-01	1E-04	9E-07	NA	2E-01	7E-01
MLE	1E-03	8E-04	2E-06	1E-07	NA	3E-02	3E-02
<i>Current Worker at Airport Terminal</i>							
RME	NA	NA	NE ^e	NA	NA	6E-02	6E-02
MLE	NA	NA	NE	NA	NA	3E-02	3E-02
<i>Current Off-Site Adult Resident</i>							
RME	NA	NA	NE	NA	NA	5E-02	5E-02
MLE	NA	NA	NE	NA	NA	5E-02	5E-02
<i>Current Off-Site Child Resident</i>							
RME	NA	NA	NE	NA	NA	1E-01	1E-01
MLE	NA	NA	NE	NA	NA	1E-01	1E-01
<i>Hypothetical Trail User</i>							
RME	5E-03	2E-02	1E-04	5E-02	NA	NA	8E-02
MLE	3E-04	2E-04	3E-06	2E-03	NA	NA	2E-03

- | | |
|----|--|
| a. | The sum of the values in the table may not equal the "total" hazard index due to rounding. |
| b. | Reasonable maximum exposure |
| c. | More likely exposure |
| d. | Not applicable |
| e. | Not evaluated. This pathway was evaluated qualitatively based on the results for the hypothetical future on-site resident. |

TABLE 2.4.3.1-47
SUMMARY OF HUMAN HEALTH RISK ASSESSMENT RESULTS CARCINOGENIC HEALTH RISKS (HAZARD INDICES)

Scenario	Incidental Soil Ingestion	Dermal Contact with Soil	Inhalation of Resuspended Particulates	Inhalation of Vapor from Soil	Ingestion of Homegrown Produce	Inhalation of Vapors from Soil Gas	Excess Cancer Risk ^a
<i>Hypothetical Future On-Site Adult Resident - Main Landfill</i>							
RME ^b	1E-05	5E-05	2E-07	NA ^d	2E-04	3E-03	4E-03
MLE ^c	4E-08	5E-08	7E-09	NA	4E-06	1E-03	1E-03
<i>Hypothetical Future On-Site Child Resident - Main Landfill</i>							
RME	2E-05	8E-05	1E-07	NA	5E-05	2E-03	2E-03
MLE	1E-06	4E-07	3E-08	NA	3E-06	2E-03	2E-03
<i>Hypothetical Future On-Site Adult Resident - Debris Disposal Area</i>							
RME	NA	NA	NA	NA	NA	1E-05	1E-05
MLE	NA	NA	NA	NA	NA	2E-06	2E-06
<i>Hypothetical Future On-Site Child Resident - Debris Disposal Area</i>							
RME	NA	NA	NA	NA	NA	8E-06	8E-06
MLE	NA	NA	NA	NA	NA	4E-06	4E-06
<i>Future Visitor in Proposed Tie-Down Area</i>							
RME	2E-06	7E-06	2E-09	NA	NA	3E-06	1E-05
MLE	1E-08	3E-08	1E-11	NA	NA	1E-07	1E-07
<i>Current Worker at Airport Terminal</i>							
RME	NA	NA	NE ^e	NA	NA	7E-07	7E-07
MLE	NA	NA	NE	NA	NA	1E-07	1E-07
<i>Current Off-Site Adult Resident</i>							
RME	NA	NA	NE	NA	NA	6E-07	6E-07
MLE	NA	NA	NE	NA	NA	2E-07	2E-07
<i>Current Off-Site Child Resident</i>							
RME	NA	NA	NE	NA	NA	3E-07	3E-07
MLE	NA	NA	NE	NA	NA	3E-07	3E-07
<i>Hypothetical Trail User</i>							
RME	3E-07	9E-06	4E-09	NA	NA	NA	1E-05
MLE	4E-09	2E-08	2E-11	NA	NA	NA	2E-08

- a. The sum of the values in the table may not equal the "total" hazard index due to rounding
 b. Reasonable maximum exposure
 c. More likely exposure
 d. Not applicable
 e. Not evaluated. This pathway was evaluated qualitatively based on the results for the hypothetical future on-site resident.

noncarcinogenic and carcinogenic health risks associated with exposure to the COPCs in soil via inhalation resuspended particulates should not be of concern.

- The estimated noncarcinogenic health risks associated with exposure to the COPCs in soil by a hypothetical trail user are below those generally considered acceptable by regulatory agencies. The corresponding carcinogenic health risks are greater than 1×10^{-6} , but only under conservative estimates of human exposure. In addition, the estimated carcinogenic risks based on conservative or more realistic estimates of exposure are within the generally acceptable risk range. Exposure to benzo(a)pyrene and chrysene via dermal contact and incidental soil ingestion comprises the majority of the estimated risk.

The results of the lead risk evaluation were summarized in Table 2.4.3.1-45. Based on this evaluation, exposure to lead in soil by a future on-site adult or child resident may be of concern, but only under conservative estimates of exposure. Exposure to lead in soil by a future visitor to the proposed tie-down area or a hypothetical trail user should not be of concern under the conditions evaluated.

The potential uncertainty in the health risk estimates should be considered when evaluating the results of the HHRA. Uncertainty is inherent in the risk assessment process due to the multitude of assumptions that must be made. In general, assumptions were selected in a manner that purposely biases the process toward health conservatism. Therefore, it is very unlikely that the health risk estimates presented in this HHRA are underestimated, but they could be substantially overestimated.

2.4.3.2 Ecological

Not applicable for this report.

2.4.4 Other Applicable Assessments

2.4.4.1 Surface Water

This section describes the surface water issues for the Los Alamos airport PRS aggregate. To date, there have been no surface water investigations conducted at these PRSs. However, a LANL SOP 2.01 assessment was completed for PRS 73-001(a) on October 15, 1997 and was revised on March 13, 1998. Part A of this procedure provided a brief operational history of the PRS and stated that the site is currently inactive. The PRS status was checked as Phase I field investigation and it was noted that surface soil and sediment data were available and attached. It also confirmed that no surface water samples had been collected and that no data were pending. Part B of SOP 2.01 provided details of the surface water site assessment and assigned an erosion matrix score of 85.5 out of a maximum possible score of 100. This relatively high score reflects the fact that the site criteria were evaluated based on observations made at the east end of the former hanging valley where a steep, relatively unvegetated slope contains several erosional gullies. Maximum scores were assigned for being within the canyon floodplain but not water-course (13), a slope in excess of 30% (13), visible evidence of runoff (5), runoff terminating in a drainage (19), visible erosional gullies (22), and existing structures that adversely affect run-on (7). A partial score

of 6.5 was assigned for a vegetation cover of from 25-75% for a total score of 85.5. Both Parts A and B of SOP 2.01 ("Surface Water Site Assessment") are included in Appendix B-4.2.1.

The description of the PRS aggregate, the operational history, and the PRS-specific topography, surface geology, geomorphology, and hydrology are included in Section 2.2 and Appendix B. Some of the relevant information presented in these sections includes the observation that vegetation in the form of grasses and weeds covers approximately 85-90 percent of the relatively flat mesa top area. The east end of the trash filled hanging valley is sloped at approximately 30-40 degrees with a sparse vegetation cover on the order of 25-30 percent. Because of these factors, erosional gullies formed on the slope after the landfill was closed. To prevent continued erosion, a shallow runoff diversion ditch was constructed along the east end of the landfill. This runoff diversion ditch directs flow to a culvert that discharges near the edge of the mesa, beyond the buried trash. A drainage ditch across the west end of the landfill was designed to direct runoff from a large area of the airport, to the edge of the mesa. Discharge from these two drainage ditches, and other runoff from the site, drains directly north to the ephemeral stream at the base of Pueblo Canyon via first order drainage channels that arise at or near the edge of the mesa. Some of the first order drainage channels receiving runoff from the landfill contain debris derived from landfill operations, primarily in the form of tires, scrap metal, and asphalt and concrete debris. The largest concentration of debris in a watercourse appears to be at the east end of the landfill in the channel originating below the hanging valley.

The only activities conducted during the Phase I RFI that are directly related to surface water were the geomorphologic mapping and the drainage channel sediment sampling tasks. Details of these activities are included in Section 2.3.4.2. Data from the sediment samples are presented in Section 2.3.4.3 and Appendix D-2.0. No surface water sampling has been done so no surface water chemistry data are available. The most notable sediment sample result was the presence of PAHs in some of the first order drainage channels connecting the landfill to the bottom of Pueblo Canyon.

Based on information from the RFI, the conceptual model for contaminant occurrence and distribution at the PRS aggregate was revised as presented in Section 2.3.5. The only portion of this revised model that is relevant to an understanding of surface water was the inclusion of a surface erosion pathway. This pathway was included because of the surficial contamination detected in both the channel sediment and landfill surface samples, and because of the visible landfill debris present in some of the drainage channels.

Human health and ecological screening assessments are presented in Sections 2.4.2.1 and 2.4.2.2. In both assessments, aquatic pathways are not relevant. There are areas on the landfill surface where water ponds for some period of time after heavy rains, which appears to be the primary source of the pore water collected within the landfill.

The human health risk assessment is presented in Section 2.4.3.1. Again, it should be noted that aquatic pathways are not relevant, but that surface water is indirectly involved because it is the transport mechanism that moves potentially contaminated surface soil from the landfill surface to the drainage channels. It was concluded that exposure to COPCs in channel sediments should not pose a health risk to hypothetical trail users.

Based on the results of SOP 2.01 assessment and the human health and ecological assessments, BMPs designed to eliminate landfill runoff and runoff were recommended and are currently being implemented. These BMPs will significantly enhance the stability of the landfill and minimize the potential for off-site transport of landfill surface soils and debris. It is also recommended that debris in the drainage channels adjacent to the landfill be removed as part of the final closure of the landfill PRSs. No surface water investigations are recommended.

2.4.4.2 Groundwater

Groundwater was not encountered beneath the landfill area during this investigation. The greatest vertical depth penetrated in this investigation was 186 feet beneath the ground surface in perimeter borehole LPS-2, and unsaturated conditions were encountered to this depth. All borings drilled within the landfill area itself encountered unsaturated conditions to a maximum drilled depth of 82 feet below ground surface. No deeper boreholes exist on the mesa-top site, and thus deeper site-specific groundwater occurrences are undefined. Based on depths to water measured in wells located in Pueblo Canyon to the north, and Los Alamos Canyon to the south, the depth to the regional aquifer beneath TA-73 is estimated to be approximately 1,260 feet (Figure B-4.3-3). A discussion of groundwater occurrences in the general vicinity of the study area is provided in Appendix B (Section B-4.3).

As discussed in Section 2.3.4.3, several chemicals were identified as COPCs in subsurface soil/tuff and soil pore water/leachate. These chemicals were not evaluated further in the human health screening assessment (Section 2.4.2.1) or human health risk assessment (Section 2.4.3.1) because direct exposure to these media would not be expected to occur under current or probably future uses of the site and would be precluded by in situ closure of the landfill. Similarly, COPCs in subsurface soil/tuff and pore water/leachate were not evaluated in the ecological screening assessments (Section 2.4.2.2) because exposure to ecological receptors is also not expected to occur (i.e., fossorial activity is expected to be limited to the upper three feet of soil). Both the human health and ecological assessments acknowledge the possibility that COPCs in subsurface soil/tuff or pore water/leachate could migrate to groundwater; however, as discussed in Section 2.3.5, the available data and the fate and transport of the COPCs suggest that this is unlikely. Nevertheless, the potential migration of these chemicals in groundwater will be addressed as part of the final remedy design.

2.4.4.3 Underground Storage Tanks

There are no UST-related issues at this PRS aggregate.

2.4.4.4 Other

The lower explosive limit (LEL) for methane in air is 5.53% by volume (Merck Index 1989, 58922, p. 938). Methane was detected in soil gas samples at concentrations up to approximately 60% by volume in the main landfill and up to approximately 10% by volume in the debris disposal area. These results suggest that infiltration of methane into a building constructed directly on top of the main landfill or debris disposal area could represent an explosion hazard. The degree of this hazard would depend on the type of build-

ing constructed (e.g., slab on grade vs. raised foundation), ventilation requirements (e.g., passive ventilation for a residence vs. active ventilation for a commercial building), and the location of the building relative to the areas of the main landfill or debris disposal area with the highest methane concentrations. Given that waste material is present essentially at the surface, construction of a subgrade structure, which would increase the risk of explosion, seems unlikely.

2.5 Conclusions and Recommendations

The investigation of these PRSs, collectively known as the airport landfill, has produced a data set from which clear conclusions can be drawn and a logical path forward can be established. Specifically, this set of PRSs is a municipal landfill in nature and character, and comparisons documented in Section 2.3.5.1 support this characterization; the PRSs are closely related and should be considered as one unit for the purposes of developing an appropriate remedial strategy. The following steps are expected to provide the path forward to final corrective action at these PRSs. The immediate implementation of stormwater run-on controls, the removal of surficial debris from adjacent hillsides, and the development and implementation of a final remedial strategy plan are based on the EPA presumptive remedy process for municipal landfills.

By analyzing the exhaustive data set collected within this set of PRSs and comparing these sets with similar data collected and compiled from over 60 municipal landfills, it is determined that the contaminant levels present in surface and subsurface soil, soil gas, and pore water at the airport landfill are consistent with other municipal landfills. Specifically, comparisons of major soil gas compositions, and organic and inorganic constituents present in pore water, provide strong evidence that the TA-73 landfill is a municipal landfill in terms of practices, history, and contaminant profile. Section 2.3.5.1 covers these correlations in great detail. Therefore, the final remedy for the airport landfill should also be consistent with state and federal regulations set forth for closure of other municipal waste landfills. Further, the PRSs discussed in this report are closely associated in terms of both character and operational history and should remain linked and addressed as a single unit when evaluating remedial alternatives.

Under current conditions, there is a plume of landfill gas—primarily methane and carbon dioxide—associated with the decomposing refuse. Temporal changes in the landfill gas constituents and concentration are also documented by the existing analytical data. Measurements of the soil water potentials confirm relatively wet, but unsaturated, conditions within the refuse and within the tuff immediately surrounding the refuse. These wet conditions likely aid in the trash decomposition, but also help to generate landfill gas. Monitoring in the tuff bordering the landfill indicates increasingly dry conditions with distance from the refuse, which demonstrates a decreasing trend in the potential for migration via soil moisture. The planned reduction in available moisture, after implementing surface water run-on controls, will further reduce the potential for contaminant migration to groundwater. This, in turn, will result in a reduced potential risk to human health and the environment from these PRSs.

Human health risk to soil gas and surficial contamination was evaluated for a variety of potential exposure scenarios. Conservative assumptions for exposure point concentrations, chemical toxicity, and exposure duration were developed and used for these assessments. For exposure scenarios consistent with current and proposed land use (no residences on the airport property), the risk to human health is within the acceptable range as set forth by the EPA. For a hypothetical exposure scenario (potential vapor inhalation under a residential scenario), the current condition of the landfill could present risk outside the acceptable range. However, the planned use for this site remains as an airport with significant access restrictions to the landfill areas. Implementation of the airport landfill path forward will also serve to reduce the potential for human health impact, and will be consistent with projected land use for this property.

There may be potential for ecological risk associated with the former municipal landfill PRSs through surficial contamination and subsurface landfill soil gases. However, due to the intense human intervention/ management inherent to an airport facility, exposure to sensitive species and/or habitats should be minimal. The potential for exposure will be further reduced once the surface water controls are implemented, surficial debris is removed, and a landfill corrective action plan is developed and implemented.

The final remedy for the airport landfill should be consistent with state and federal regulations set forth for closure of other municipal waste landfills. Further, the PRSs discussed are closely associated in terms of both character and operational history and should remain linked and addressed as a single unit when evaluating remedial alternatives.

Surface water run on controls have been planned and are currently being implemented, as a result of the development of this report, to minimize future erosion and the infiltration of water into the landfill areas. These steps will significantly enhance the stability of the landfill, serve to further reduce the formation of landfill gases, and minimize the possibility of pore water transport by minimizing the volume of introduced stormwater.

Construction and other debris associated with the former municipal landfill PRSs that has been deposited in small tributaries of Pueblo Canyon and along the northern flanks of the landfill boundary will be removed and disposed of as a part of the final corrective action plan for the landfill PRSs.

A final corrective action plan and site engineering designs will be developed according to the NMED Solid Waste Bureau guidelines for municipal landfills and with EPA Guidance presented in "Presumptive Remedy for CERCLA Municipal Landfill Sites" (EPA 1988, 59107). This report does not propose the specifics necessary to properly initiate a municipal landfill closure under the New Mexico Solid Waste Bureau regulations, but rather, indicates that such a closure is appropriate. The specific engineering, modeling, and monitoring needs required for final remedy will be developed and implemented as a part of the final remedial strategy for this set of PRSs.

The next phase of characterization will focus on evaluating existing site information and delineating specific data needs for addressing data gaps identified during the review of this report, as well as the data requirements specified by EPA when implementing presumptive remedies. Specifically, the following site characteristics will be evaluated and quantified to address EPA-specified presumptive remedy data requirements: existing soil cover will be evaluated for hydraulic conductivity and permeability, extent of refuse will be confirmed, and site topography will be delineated as needed to define final cover requirements. Once this information has been collected, design of the final remedy can begin.

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APPENDIX A: LIST OF ACRONYMS AND GLOSSARY

A-1.0 List of Acronyms

AA	Atomic absorption
ABS	Absorption factor
ACGIH	American Conference of Governmental Industrial Hygienists
ADD	Average daily dose
AF	Soil to skin adherence factor
AOC	Area of concern
AP	Administrative procedure
asl	Above sea level
ASTM	American Society for Testing and Materials
AT	Averaging time
ATSDR	Agency for Toxic Substances and Disease Registry
BOL	Below detection limits
BGS	Below ground surface
BMP	Best management practice
BV	Background value
BW	Body weight
CDC	Centers for Disease Control
CEARP	Comprehensive Environmental Assessment and Response Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGI	Combustible gas indicator
CLP	Contract Laboratory Program
CMI	Corrective measures implementation
CMP	Corrugated metal pipe
CMS	Corrective measures study
COPC	Chemical of potential concern
COPEC	Contaminant of potential ecological concern
CP	Cone penetrometer
CPN	Campbell Pacific Nuclear
CPT	Cone penetrometer testing
CST	Chemical Science Technology (Division)
DBS&A	Daniel B. Stephens and Associates
DCG	Derived concentration guide (DOE)
DDA	Debris disposal area
DL	Detection limit
DOE	US Department of Energy
DQO	Data quality objective
EC	Expedited cleanup
ECD	Electron capture detector
ED	Exposure duration
EF	Exposure frequency

EM	Electro-magnetic
EPA	US Environmental Protection Agency
EQL	Estimated quantitation limit
ER	Environmental restoration
ES&H	Environment, safety, and health
ESL	Ecological screening level
ET	Exposure time
FI	Fraction ingested
FID	Flame ionization detector
FIMAD	Facility for Information Management, Analysis, and Display
GC/MS	Gas chromatography, mass
GFAA	Graphite furnace atomic absorption
GPR	Ground-penetrating radar
GPS	Global positioning system
HDS	Heat dissipation sensor
HDPE	High-density polyethylene
HE	High explosive
HEAST	Health Effects Summary Tables
HHRA	Human health risk assessment
HI	Hazard index
HQ	Hazard quotient
HS	Health and Safety (Division) (former)
HSA	Hollow stem auger
HSDB	Hazardous Substances Data Bank
HSWA	Hazardous and Solid Waste Amendments of 1984
ICPES	Inductively coupled plasma emission spectroscopy
ICPMS	Inductively coupled plasma mass spectroscopy
ID	Inside diameter; identification
IEUBK	Integrated Exposure Uptake Biokinetic Model for Lead in Children
IR	Ingestion rate; inhalation rate
IRIS	Integrated Risk Information System
ISCST3	Industrial Source Complex—Short Term
KPA	Kinetic phosphorescence analysis
LADD	Lifetime average daily dose
LANL	Los Alamos National Laboratory
LAO	Los Alamos Alluvial Observation Wells
LEL	Lower exposure limit
LI	Landfill interior
LOAEL	Lowest observed adverse effect level
LP-LPS	Landfill perimeter; landfill perimeter-slant
MEK	Methyl ethyl ketone
MIBK	Methyl isobutyl ketone
MLE	More likely exposure
MPSG	Multiport soil gas
MTADS	Multi-sensor towed array detection
NAT	Neutron access tube

NCP	National Contingency Plan
NFA	No further action
NMED	New Mexico Environment Department (New Mexico Environmental Improvement
NMOC	Nonmethane Organic Compound Emission Model from Codisposal Landfills
NOAEL	No observed adverse effect level
OD	Outside diameter
OU	Operable unit
PAH	Polycyclic aromatic hydrocarbon
PC	Particulate concentration
PCB	Polychlorinated biphenyl
PCE	Perchloroethane
PE	Performance evaluation
PID	Photoionization detector
PQL	Practical quantitation limit
PRG	Preliminary remediation goal
PRS	Potential release site
PVC	Polyvinyl chloride
QA	Quality assurance
QAP/P	Quality assurance project plan
QC	Quality control
QL	Quantitation limit
RCRA	Resource Conservation and Recovery Act
RCT	Radiological control technician
RDA	Recommended dietary allowances
RIC	Reference concentration
RID	Reference dose
RFI	RCRA facility investigation
RME	Reasonable maximum exposure
RSP	Radiological screening personnel
RVD	Relative vapor density
SA	Skin surface area
SAL	Screening action level
SCM	Site conceptual model
SF	Slope factor
SL	Suction lysimeter
SMO	Sample Management Office (formerly Sample Management Facility)
SMOW	Standard mean ocean water
SOP	Standard operating procedure
SVOC	Semivolatile organic compound
SWAT	Surface Water Assessment Team
SWMU	Solid waste management unit
T&E	Threatened and endangered (applies to species)
TA	Technical area
TAL	Target analyte list (EPA)
TC	Thermocouple
TCA	Trichloroethane

TCE	Trichloroethylene
TD	Total depth
TEF	Toxicity equivalent factor
TLV	Threshold limit value
TLV—TWA	Threshold limit value—time-weighted average
TPU	Total propagated uncertainty
TW	Test well
TWA	Time-weighted average
UCL	Upper confidence limit
URV	Unit risk value
UST	Underground storage tank
VCA	Voluntary corrective action
VCM	Voluntary corrective measure
VCP	Vitrified clay pipe
VES	Vertical electric sounding
VF	Volatilization factor
VOC	Volatile organic compound
WP	Work plan

A-2.0 Glossary

Accuracy The extent to which the results of a calculation or measurement approach the true values of the calculated or measured quantities, and are free from error.

Action Level. A value that, when exceeded, will trigger a specified response.

Adsorption The surface retention of solid, liquid, or gas molecules, atoms, or ions by a solid or a liquid, as opposed to absorption, the penetration of substances into the bulk of the solid or liquid.

Alliquot A representative sample of a larger quantity.

Alluvial Said of materials or features deposited by running water.

Alluvium Clay, silt, sand, gravel, or other rock materials transported by water and deposited in fairly recent geologic time as sorted or semisorted sediments in riverbeds, flood plains, lake shores, and fans at the base of mountain slopes.

Alpha radiation The form of radiation composed of alpha particles emitted in the radioactive decay of certain nuclides. The least penetrating of the three common types of radiation (alpha, beta, and gamma), it can be blocked by a sheet of paper or the outer dead layer of skin.

Analysis A process used to measure one or more attributes of a sample in a clearly defined, controlled, systematic manner. Often requires treating a sample chemically or physically before measurement.

Analyte The particular chemical or radiochemical species to be identified and/or quantified.

Analytical laboratory data qualifiers Data qualifiers that are attached to sample results by the analytical laboratory that performed the sample analysis.

The following letter qualifier flags are for inorganic analyses:

"U" The compound was analyzed for but was not detected. The associated numerical value is the estimated detection limit.

"B" The reported value was obtained from a reading that was less than the estimated detection limit but greater than or equal to the instrument detection limit.

"E" The reported value is estimated because of the presence of interference.

"M" Duplicate injection precision was not within control limits.

"N" Spiked sample recovery was not within control limits.

"S" The reported value was determined by the Method of Standard Additions.

"W" Post-digestion spike for GFAA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.

"~" Duplicate sample analysis was not within control limits.

"+" Correlation coefficient for the Method of Standard Additions is less than 0.995.

The following letter qualifier flags are for organic analyses:

"U" The compound was analyzed for but was not detected. The reported numerical value is the estimated quantitation limit.

"J" Indicates an estimated value. The "J" flag is used if the compound is present but the result is less than the sample estimated quantitation limit and greater than the instrument detection limit.

"B" The analyte was found in the associated method blank as well as in the sample.

"E" The concentrations of the analyte exceeded the calibration range of the instrument.

"D" The analyte was identified in an analysis at a secondary dilution factor.

"C" Identification of a pesticide/PCB has been confirmed by GC/MS.

"P" The percent difference between a pesticide/PCB result obtained on the primary and secondary columns was greater than 25%.

"N" There is presumptive evidence of the presence of a tentatively identified compound based on mass spectral matching.

"A" A tentatively identified compound is a suspected aldol-condensation product.

Anomaly A deviation from normal variations; something that is abnormal.

Applicable, relevant, or appropriate requirement (ARARs) Those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, or that address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site.

Aquifer A permeable body of geologic material capable of yielding groundwater to wells or springs.

Aquitard A low permeability geologic material that does not readily yield groundwater to wells.

Area of concern An area at LANL known or suspected to be contaminated with radionuclides, but not contaminated by hazardous chemicals (or hazardous waste).

Assessment endpoint A quantitative or quantifiable expression of the environmental value considered to be at risk in a risk analysis (i.e. a 25% reduction in fish biomass or local extinction of an avian species).

As low as reasonably achievable (ALARA) An approach to radiation protection to control or manage exposures (both individual and collective to the work force and the general public) and releases of radioactive material to the environment as low as social, technical, economic, practical, and public policy considerations permit. Used in this sense, ALARA is not a dose limit.

Background level The naturally occurring concentrations of an inorganic chemical (including naturally occurring radionuclides) in soil.

Background radiation The amount of radioactivity naturally present in the environment, including cosmic rays from space.

Background value (BV) Background values exist for inorganic chemicals and radionuclides. The background values are the upper tolerance limits (UTLs) of background sample results, calculated as the upper 95% confidence limit for the 95th percentile. In cases where a UTL cannot be calculated, either

the detection limit or maximum reported value is used as a BV. Background values are used as simple threshold numbers to identify potentially contaminated site sample results as greater than background levels.

Baseline level Anthropogenic, non-site related concentrations of a given chemical in the soil. Examples of baseline levels are nuclear fallout and organic chemicals associated with urban activities.

Baseline risk assessment (Also known as *risk assessment*) A site-specific analysis of the potential adverse effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these releases. There are four steps in baseline risk assessment: data collection and analysis, exposure assessment, toxicity assessment, and risk characterization.

Bentonite A clay composed of the mineral montmorillonite and variable amounts of magnesium and iron, formed over time by the alteration of volcanic ash. As bentonite can adsorb large quantities of water and expand to several times its normal volume, it is a common additive to drilling mud.

Beta radiation Radioactive transformation of a nuclide in which the nucleus emits a beta particle (electron or positron). Beta radiation can be blocked by an inch of wood or by a thin sheet of aluminum.

Bias (1) The degree to which the value obtained for a measured parameter deviates from the value accepted as the true, or reference, value. (2) A systematic deviation from the true value that remains constant over replicated measurements within the statistical precision of the measurement process.

Blank sample A sample expected to have negligible or unmeasurable amounts of analytes. Results of blank sample analyses indicate whether or not field samples might have been contaminated during one or more steps of the sample collection, transport, storage, preparation and analysis process.

Blind sample See *Single blind sample* and *Double blind sample*.

Calibration A process used to identify the relationship between the true, or reference, analyte concentration or other variable and the response of a measurement instrument, chemical analysis method, or other measurement system.

Calibration blank A calibration standard prepared to contain negligible or unmeasurable amounts of analytes. It is used to establish the zero concentration point for analytical measurement calibration.

Calibration standard A sample prepared to contain known amounts of the analytes of interest and of other constituents required for the analysis.

Catchment A structure such as a basin or reservoir, for collecting or draining water; the collecting of water.

Chain of custody An unbroken, documented trail of accountability designed to ensure that the physical integrity of samples, data, and records remains uncompromised.

Chemical Any naturally occurring or man-made substance characterized by a definite molecular composition, including molecules that contain radionuclides.

Chemical of concern A chemical that is identified as a potential risk as the result of performing a site-specific human health or ecological risk assessment.

Chemical of potential concern (COPC) A chemical detected at a site that has the potential to adversely affect human and or ecological receptors due to its concentration, distribution and mechanism of toxicity. The chemical remains a concern until exposure pathways and receptors are evaluated in a site-

specific risk assessment.

Code of Federal Regulation (CFR) A codification of all regulations developed and finalized by federal government agencies in the *Federal Register*.

Collocated sample One of two or more samples collected as close together in time and space as the sampling equipment allows so that each sample is expected to be equally representative for a given analyte within the common space and time interval.

Colluvium Rock debris accumulated at the base of a cliff or on a slope principally by the action of gravity.

Comparability A qualitative measure of the degree to which one item or data set can be compared with another.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. Amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. The acts created a special tax that goes into a trust fund, commonly known as Superfund, whose mandate is to investigate and clean up abandoned or uncontrolled hazardous waste sites that may endanger health or the environment. The EPA is responsible for managing Superfund.

Conceptual model See also *Site conceptual model*.

Conceptual hydrogeologic model Perception of the occurrence, movement and quality of groundwater in an area and the relationship of groundwater to the surface water, soil water and geologic framework there.

Confluence The place where two or more streams meet; the point where a tributary meets the main stream.

Constituent Any compound or element present in environmental media, including both naturally occurring and anthropogenic elements.

Contaminant Any chemical (including radionuclides) present in environmental media or on structural debris at a concentration that may present a risk to human health or the environment.

Controlled area Any Laboratory area to which access is controlled to protect individuals from exposure to radiation and/or hazardous materials.

Corrective Action A measure taken to rectify conditions adverse to human health or the environment.

Corrective measures study If a RCRA facility investigation indicates that further action is required, a "corrective measures study" is performed to identify and evaluate cleanup alternatives for the release. This study assesses risks to human health and the environment, costs, and other factors such as disposal methods.

Corrective measures Implementation (CMI) This third step of the corrective action process includes design, construction, maintenance, and monitoring of the chosen remedy.

Curie A unit of radioactivity defined as that quantity of any radioactive nuclide that has an activity of 3.7×10^{10} disintegrations per second.

Daily Calibration A combination of calibration blank and calibration standard used to determine if the instrument response to analyte concentration is within acceptable bounds relative to the initial calibration. A daily calibration establishes the 24-hour relative response factors on which quantitations are based, thus verifying the satisfactory performance of an instrument on a day-to-day basis.

Data quality assessment A statistical and scientific evaluation of the data set to assess the validity and performance of the data collection design and statistical test, and to establish whether a data set is adequate for its intended use.

Data quality objectives (DQOs) The qualitative and quantitative goals that are developed before sampling begins that clarify the investigation objectives and identify the type, quantity and quality of data needed to support decisions.

Data validation A systematic process that applies a defined set of performance-based criteria to a body of data that may result in qualification of the data. This process is performed independently of the analytical laboratory generating the data set and occurs prior to drawing a conclusion from the data. It may comprise a standardized review (routine validation) and/or a problem-specific review (focused validation) of the data.

Data validator The person who performs data validation in accordance with LANL ER procedures.

Data verification A process of evaluating the completeness, correctness, consistency, and compliance of a laboratory data package against a specified standard or contract. Completeness means all required information is present—both hard copy and electronic. Correctness means the reported results are based on properly documented and correctly applied algorithms. Consistency means that values are the same when they are reported in different reports or are transcribed from one report to another. Compliance means that the data pass numerical QC tests based on parameters or limits specified in a contract or in an auxiliary document.

Detection limit The minimum concentration of a substance that can be measured by an instrument with a specified statistical confidence that the analytical concentration is greater than zero.

Discharge or Hazardous Waste Discharge (As defined under RCRA, 40 CFR 260.10) The accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water.

Disposal The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.

U.S. Department of Energy (DOE) The federal agency that sponsors energy research and regulates nuclear materials for weapons production.

Dose The quantity of radiation absorbed, per unit of mass, by the body or by any portion of the body.

Dose equivalent An estimate of the amount of biological damage (in rems) done by the deposition in tissue of a given unit of absorbed radiation dose.

Double blind sample A sample with analyte concentration and sample identity unknown to the analyst.

Duplicate analysis An analysis performed on one of a pair of identically prepared subsamples of the same sample.

Duplicate measurement One of a pair of measurements performed on a prepared sample under identical conditions.

Ecological Screening Level (ESL) An organism's exposure-response threshold for a given chemical constituent. It is the concentration of a substance in a particular medium that corresponds to a hazard quotient (HQ) of 1.0 for a given organism and below which no risk is indicated.

Effluent A liquid discharged as a waste, such as contaminated water from a factory or the outflow from a sewage works; water discharged from a storm sewer or from land after irrigation.

Environmental Assessment (EA) A report that identifies potentially significant environmental impacts from any federally approved or funded project that may change the physical environment. If an EA shows significant impact, an Environmental Impact Statement (EIS) is required.

Environmental Surveillance The collection and analysis of samples of air, water, soil, foodstuffs, biota, and other media to determine environmental quality of an industry or community. It is commonly performed at sites containing nuclear facilities.

Environmental Protection Agency (EPA) The federal agency responsible for enforcing environmental laws. While state regulatory agencies may be authorized to administer some of this responsibility, EPA retains oversight authority to ensure protection of human health and the environment.

Ephemeral stream Said of a stream or spring that flows only during and immediately after periods of rainfall or snowmelt.

Equipment blank A blank sample that is used to rinse the sample collection equipment and is then transferred to a sampling container. The equipment blank is collected after equipment decontamination is completed but prior to collection of another field sample.

Error Any discrepancy between a computed, observed, or measured quantity and the expected or theoretically correct value of that quantity.

Estimated quantitation limit The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine analytical laboratory operating conditions. Sample estimated quantitation limits are highly matrix-dependent, and the specified estimated quantitation limits might not always be achievable.

Evapotranspiration The combined discharge of water from the earth's surface to the atmosphere by evaporation from lakes, streams, and soil surfaces, and by transpiration from plants.

Exposure unit The bounded area or volume within which a person or other receptor may be exposed to contaminants that have been released to the environment.

Fault A fracture, or zone of fractures, in rock along which there has been vertical or horizontal movement; adjacent rock surfaces are displaced.

Field blank A blank sample either prepared in the field or carried to the sampling site, exposed to sampling conditions (e.g., bottle caps removed, preservatives added), and returned to a laboratory for analysis in the same manner in which environmental samples are analyzed. Used to identify the presence of contamination potentially added during the sampling and analysis process.

Field duplicate A second sample collected as near as possible to the original sample.

Field matrix spike A known amount of a field sample to which a known amount of the target analyte has been added. Used to compute the proportion of added analyte that is recovered upon analysis.

Field sample See also *sample*.

Field split A field sample that has been divided in the field into equally representative portions (See also *split sample*).

Focused data validation A technically based analyte-, sample-, and potentially data use-specific process that extends the qualification of data beyond method or contractual compliance and provides a level of confidence that an analyte is present or absent. If the analyte is present, the quality of the quantitation may be obtained through focused validation.

Gamma radiation A form of electromagnetic, high-energy radiation emitted from a nucleus. Gamma rays are essentially the same as x-rays and require heavy shieldings, such as concrete or steel, to be blocked.

Geohydrology The science that applies hydrologic methods to the understanding of geologic phenomena.

Grab sample A specimen collected by a single application of a field sampling procedure to a target population, e.g. the surface soil from a single hole collected following the spade and scoop sampling procedure, or a single air filter left in the field for three months.

Groundwater Water in a subsurface saturated zone.

Half-life The time required for one-half of the radioactive atoms initially present in a sample to decay. Each radionuclide has a characteristic half-life ranging from a fraction of a second to thousands of years.

Hazardous and Solid Waste Amendments (HSWA) Amendments to the Resource Conservation and Recovery Act, 1984. HSWA added land disposal restrictions, minimum technology requirements, and expanded corrective action authorities to the RCRA statute.

Hazardous substance (As defined by 40 CFR 302.3) Any substance designated pursuant to 40 CFR 302.40 CFR 302.4 – Designation of Hazardous Substances:

- (a) **Listed hazardous substances.** The elements, compounds and hazardous wastes appearing in Table 302.4 are designated as hazardous substances under section 102(a) of the CERCLA.
- (b) **Unlisted hazardous substances.** A solid waste, defined in 40 CFR 261.2, which is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b), is a hazardous substance under section 101(14) of the CERCLA if it exhibits any of the characteristics identified in 40 CFR 261.20 through 261.24. See Hazardous Waste. **Note:** This definition incorporates by reference, substances listed in CWA sections 311 and 307(a); CAA section 112; RCRA section 3001; and TSCA section 7.

Hazardous waste (As defined by RCRA 40 CFR 261.3) Any solid waste is generally a hazardous waste if it is not excluded from regulation as a hazardous waste, is listed in the regulations as a hazardous waste, exhibits any of the defined characteristics of hazardous waste (ignitability, corrosivity, reactivity, or toxicity), or is a mixture of solid waste and hazardous waste.

Holding time The maximum elapse of time that one can expect to store a sample without unacceptable changes in analyte concentrations. Holding times apply under prescribed storage conditions and deviations in storage conditions may affect the holding time. Extraction Holding Time refers to the time lapse from sample collection to sample preparation; Analytical Holding Time refers to the time lapse between sample preparation and analysis.

Hot pad An area located at an airport, or other terminal of public transportation, that is segregated from

the general public for the purposes of loading and unloading hazardous, radiological, and/or biological cargo.

HSWA module A portion of the Laboratory's permit to operate under RCRA that contains requirements specific to Los Alamos National Laboratory. It is this portion of the permit that contains the list of solid waste management units that must be cleaned up in accordance with RCRA procedures.

Hydraulic conductivity The rate at which water moves through a medium in a unit of time under a unit hydraulic gradient through a unit area measured perpendicular to the direction of flow.

Hydraulic gradient The rate of change of hydraulic head per unit of distance in the direction of groundwater flow.

Hydraulic head Elevation of the water table or potentiometric surface as measured in a well.

Hydrogeology The science that applies geologic methods to the understanding of hydrologic phenomena.

Industrial use scenario Industrial use is the future use scenario in which current Laboratory operations continue. Any necessary remediation involves cleanup to standards designed to ensure a safe and healthy work environment for Laboratory workers.

Infiltration Entry of water into the ground.

Interflow A runoff process that involves lateral subsurface flow in the soil zone.

Initial calibration The process used to establish the relationship between instrument response and analyte concentration at several analyte concentration values to demonstrate that an instrument is capable of acceptable analytical performance.

Interim measure The actions used to achieve the goal of stabilization at contaminated sites that present serious and immediate health hazards.

Interference A chemical or physical entity whose influence results in a decrease or increase in the response of an analytical method or other measurement system relative to the response obtained in the absence of the entity.

Intermittent stream Said of a stream that flows only in certain reaches due to losing and gaining characteristics of the channel bed.

Interrupted stream Said of a stream whose flow is discontinuous due to man-made structures.

Institutional controls Controls prohibiting or limiting access to contaminated media; may consist of deed restrictions, use restrictions, permitting requirements, etc.

Laboratory duplicate sample The portions of a sample taken from the same sample container, prepared for analysis and analyzed independently but under identical conditions. Each duplicate sample is expected to be equally representative of the original material.

LANL Data validation qualifiers Data qualifiers used in the LANL ER Project baseline validation process are as follows:

- "A" Contractually required data are not available for data review and evaluation.
- "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.
- "RPM" Without further review of the raw data, the sample results are unusable due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. Presence or absence cannot be verified. Any results qualified as RPM must be evaluated for relevance to data use.
- "P" Professional judgement should be applied to using the data in decision-making.
- "PM" Professional judgement should be applied to using the data in decision-making. A manual review of raw data is recommended to determine if the defect impacts data use for decision-making.
- "R" The data is rejected as a result of major problems with quality assurance/quality control (QA/QC) parameters.

Leachate A liquid that has percolated through waste, soil or rock material and mobilized chemical species in the process.

Leaching The separation or dissolving out of soluble constituents of a solid material by the natural action of percolating water or by chemicals.

Matrix See also *sample matrix*.

Matrix Relatively fine material in which coarser fragments or crystals are embedded; also called "ground mass."

Matrix spike An aliquot of sample spiked with a known concentration of target analyte(s). The spiking typically occurs before sample preparation and analysis.

Matrix spike duplicate An intralaboratory duplicate sample spiked with a known amount of target analyte(s). Spiking occurs prior to sample preparation and analysis.

Maximum contaminant level Under the Safe Drinking Water Act, the maximum permissible level of a contaminant in water that is delivered to any user of a public water system that serves 15 or more connections and 25 or more people. The standards set take into account the feasibility and cost of attaining the standard.

Medium (environmental) Any material capable of absorbing or transporting constituents including tuffs, soils and sediments derived from these tuffs, surface water, groundwater, air, structural surfaces, and debris.

Method A body of procedures and techniques for systematically performing an activity.

Method blank An analyte-free matrix to which all reagents are added in the same volumes or proportions as those used in the environmental sample processing and which is prepared and analyzed in the same manner as the corresponding environmental samples. The method blank is used to assess the potential for contamination to the sample during preparation and analysis.

Method detection limit (MDL) The minimum concentration of a substance that can be measured and reported with a known statistical confidence that the analyte concentration is greater than zero. The MDL is determined from analysis of samples of a given matrix type containing the analyte after subjecting the sample to the usual preparation and analyses. The MDL is used to establish detection status.

Migration The movement of inorganic and organic species through unsaturated or saturated materials.

Migration pathway A route (e.g., a stream or subsurface flow path that controls the potential movement of contaminants to environmental receptors (plants, animals, humans)).

Mitigation (1) Avoiding an impact altogether by not taking a certain action or parts of an action. (2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation. (3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment. (4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action. (5) Compensating for the impact by replacing or providing substitute resources or environments.

Model A mathematical approximation of a physical, biological, or social system.

Monitoring well A well drilled at a specific location on or off a hazardous waste site for the purpose of sampling groundwater or measuring water levels. Typically constructed with a moderate screen interval placed so as to straddle the water table or potentiometric surface associated with the saturated zone of interest.

No further action (NFA) A decision that no further investigation or remediation is warranted for a PRS, based on risk levels for residential use, recreational use, or industrial use.

Notice of Deficiency (NOD) A notice issued to DOE and the Laboratory by EPA or NMED stating that some aspect(s) of a plan or report does not meet their requirements. The ER Project must then propose a solution acceptable to the EPA/NMED before the plan or report will be approved.

Operable unit (OU) At LANL, one of 24 areas originally established for administering the ER Project. Set up as groups of potential release sites, the OUs were aggregated based on geographic proximity for the purpose of planning and conducting the cleanup effort. As the project matured, it became apparent that 24 were too many to allow efficient communication and to ensure consistency in approach. Therefore, in 1994, the 24 OUs were reduced to six administrative "field units".

Perched groundwater Groundwater that lies above the regional water table and is separated from it by an unsaturated zone.

Percolation Gravity flow of groundwater through the pore spaces in rock or soil below the ground surface.

Performance evaluation sample A sample of known composition with respect to selected analytes which, upon analysis, is expected to yield results that fall within a prescribed range. Performance evaluation samples are selected to mimic as closely as possible those matrices representative of environmental samples from a particular location.

Pollutant includes, but is not limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring; except that the terms "pollutant or contaminant" shall not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under Subparagraphs (A) through (F) of Paragraph (14) and shall not include natural gas, liquefied natural gas, or synthetic gas of pipeline quality (or mixtures of natural gas and such synthetic gas).

Pore water Water that occupies an open space between solid soil particles. Also called *interstitial water*.

Potential release site (PRS) A site suspected of releasing contaminants into the environment. PRS is a generic term that includes SWMUs, hazardous waste sites listed in Module VII of the Laboratory's Hazardous Waste Facility Permit, and sites that have been identified as potentially contaminated by radioactivity.

Preliminary assessment The process of collecting and reviewing available information about a known or suspected hazardous waste site or release. The extent of release and degree of threat to human health and the environment are evaluated to determine whether further study is needed and whether the release meets the criteria for a CERCLA-funded removal. (DOE 1991)

Qualifier flag A letter code indicating, on a gross scale, a verifiable or potential data deficiency. Qualifier flags are assigned to data based on the outcome of data validation checks.

Quality control (QC) sample A sample which, upon analysis, provides information useful for adjusting, controlling, or verifying continuing acceptability of sampling and/or analysis activities that are in progress.

Radiation Energy emitted in the form of rays or particles that are thrown off by disintegrating atoms. The rays or particles emitted may consist of alpha, beta, or gamma radiation.

Radioactive decay (1) The process whereby radioactive materials undergo a change from one nuclide, element, or state to another, releasing radiation in the process. This action ultimately results in a decrease in the number of radioactive nuclei present in the sample. (2) The spontaneous transformation of one nuclide into a different nuclide or into a different isotope of the same nuclide accompanied by either the emission of particles from the nucleus, nuclear capture or ejection of orbital electrons, or fission.

Radioactive tracer A radioactive material added to, or induced in, a sample for the purpose of monitoring chemical or physical losses of the target analytes. The tracer is assumed to behave in the same manner as that of the target analytes.

Radioactive waste Waste material containing radionuclides, or contaminated by radionuclides.

Radionuclide A nuclide (species of atom) that exhibits radioactivity.

Randomized sample A sampling design where every possible sample has an equal probability of being selected.

RCRA facility assessment (RFA) Usually the first step in the RCRA corrective action process, to identify potential and actual releases from SWMUs and make preliminary determinations about releases, the need for corrective action, and interim measures. The RFA is generally equivalent to the preliminary assessment/site investigation taken under Superfund.

RCRA facility investigation (RFI) The second step of a RCRA corrective action, to gather enough data to fully characterize the nature, extent, and rate of migration of contaminants to determine the appropriate response action. The RFI is generally equivalent to the RI portion of the Superfund process.

Reason code A code used in the ER data validation process to indicate why a qualifier flag has been assigned to a datum.

Receptor A person, plant, animal, or geographical location that is exposed to a chemical or physical agent released to the environment by human activities.

Recharge The process by which water is added to the zone of saturation, either directly from the overlying unsaturated zone or indirectly by way of another material in the saturated zone.

Recreational use scenario Recreational use refers to current and future use scenarios in which cleanup of a PRS is completed to a level that permits the public to safely use it on an intermittent basis for activities such as hiking and camping. The standards are more stringent than they are for the industrial use scenario but not as stringent as those for residential use.

Regulatory standard Media-specific contaminant concentration levels of potential concern that are mandated by federal or state legislation or regulation (e.g., the Safe Drinking Water Act, New Mexico Water Quality Control Commission regulations).

Release Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant), but excludes

(A) any release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such persons;

(B) emissions from the engine exhaust of a motor vehicle, rolling, stock, aircraft, vessel, or pipeline pumping station engine;

(C) release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act, if such release is subject to requirements with respect to financial protection established by the Nuclear Regulatory Commission under Section 170 of such act, or, for the purposes of Section 104 of this title or any other response action, any release of source, byproduct, or special nuclear material from any processing site designated under Section 102(a)(1) or 302(a) of the Uranium Mill Tailings Radiation Control Act of 1978, and

(D) the normal application of fertilizer. [CERCLA 101(22)]

Relative precision Precision measured relative to a particular value. Relative precision expressed as the relative standard deviation (RSD) may be calculated as the ratio of the standard deviation to the selected value.

Relevant and appropriate requirements Those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate. (DOE 1991)

Remediation The process of reducing the concentration of a contaminant (or contaminants) in air, water, or soil media to a level that poses an acceptable risk to human health; the act of restoring a contaminated area to a usable condition based on specified standards.

Remedy or remedial action Those actions consistent with permanent remedy instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment. The term includes, but is not limited to, such actions at the location of the release as storage, confinement, perimeter protection using dikes, trenches, or ditches, clay cover, neutralization, cleanup of released hazardous substances and associated contaminated materials, recycling or reuse, diversion, destruction, segregation of reactive wastes, dredging or excavations, repair or replacement of leaking containers, collection of leachate and run-off, on-site treatment or incineration, provision of alternative water supplies, and any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment. [CERCLA 101(24)] Activities conducted at DOE facilities to reduce potential risks to people and/or harm to the environment from radioactive and/or hazardous substance contamination. (DOE Order 5820.2A)

Remove or removal The cleanup or removal of released hazardous substances from the environment; such actions as may be necessary taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release. [CERCLA 101 (23)]

Replicate measurement A re-analysis (remeasurement) of a prepared sample.

Representativeness The degree to which data accurately and precisely represent a characteristic of a population or an environmental condition.

Residential use scenario The standards for residential use are the most stringent of the three current and future use scenarios being considered by the ER Project and is the level of cleanup EPA is currently specifying for SWMUs located off the Laboratory site and for those released for non-Laboratory use.

Resource Conservation and Recovery Act (RCRA) The RCRA regulations establish a comprehensive hazardous waste management system under the authority of RCRA Subtitle C. RCRA regulates hazardous waste from its point of generation through its point of final disposal. RCRA also regulates solid waste under Subtitle D.

Respond or response (As defined by Section 101 (25) of CERCLA) remove, removal, remedy, or remedial action, including enforcement activities related thereto. (DOE 1991)

Restricted Area Any area access to which is controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials. "Restricted area" shall not include areas used as residential quarters, although a separate room or rooms in a residential building may be set apart as a restricted area. (10 CFR 60.2)

Risk A measure of a negative or undesirable impact associated with an event.

Risk assessment see also *Baseline Risk Assessment*

Risk assessment, preliminary A risk assessment conducted using conservative assumptions and scenarios and assuming no mitigating or corrective measures beyond those already in place.

Risk characterization The summarization and integration of the results of toxicity and exposure assessments into quantitative and qualitative expressions of risk. The major assumptions, scientific judgments, and sources of uncertainty related to the assessment are also presented.

Risk management Risk management is the integration of risk characterization with other nonscientific considerations specified in applicable statutes to make and justify regulatory decisions. (RCRA/CERCLA Update, June 1992)

Rinsate Blank See also *Equipment blank*.

Routine analysis The analysis categories of inorganics, metals, organics, radiochemistry and high explosives as defined in the current contract laboratory statement of work.

Routine Data Validation The process of reviewing analytical data relative to quantitative routine acceptance criteria. The objective of routine data validation is two-fold: one objective is to estimate the technical quality of the data relative to minimum national standards adopted by LANL ER; the other objective is to indicate to data users the technical data quality at a gross level by assigning qualifier flags to environmental data whose quality indicators do not meet acceptance criteria.

Sample A portion of a material (e.g., rock, soil, water, air), which, alone or in combination with other samples, is expected to be representative of the material or area from which it is taken. Samples are typically sent to a laboratory for analysis or inspection or are analyzed in the field. When referring to samples of environmental media, the term *field sample* may be used.

Sample matrix In chemical analysis, that portion of a sample which is exclusive of the analytes of interest. Together, the matrix and analytes of interest form the sample.

Target analyte A chemical or parameter, the concentration, mass or magnitude of which is designed to be quantified by use of a particular test method.

Technical area (TA) The Laboratory established technical areas as administrative units for all its operations. There are currently 49 active TAs spread over 43 square miles.

Topography The physical features of a place or region.

Transport or transportation The movement of a hazardous substance by any mode, including pipeline (as defined in the Pipeline Safety Act), and in the case of hazardous substance which has been accepted for transportation by a common or contract carrier, the term "transport" or "transportation" shall include any stoppage in transit which is temporary, incidental to the transportation movement, and at the ordinary operating convenience of a common or contract carrier, and any such stoppage shall be considered as a continuity of movement and not as the storage of a hazardous substance. [CERCLA 101(26)]

Treatment Any method, technique, or process, including elementary neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

Treatment, storage, and disposal facility (TSDF) Any building, structure, or installation where a hazardous waste has been treated, stored, or disposed. TSD facilities are regulated by EPA and states under RCRA.

Trip blank A sample of analyte-free media taken to the sampling site and returned to the analytical laboratory unopened along with samples taken in the field. Used to monitor cross contamination of samples during handling and storage both in the field and in the analytical laboratory.

Tuff A compacted deposit of volcanic ash and dust that contains rock and mineral fragments accumulated during an eruption.

Ultimate disposal The final disposal of hazardous substances resulting from a removal action. It does not include temporary storage or other temporary measures of managing the waste from a removal action. (DOE 1991)

Underground storage tank (As defined in Section 9001(1) of the Solid Waste Disposal Act) The term "underground storage tank" means any one or combination of tanks (including underground pipes connected thereto) which is used to contain an accumulation of regulated substances, and the volume of which (including the volume of the underground pipes connected thereto) is 10% or more beneath the surface of the ground. Such term does not include any

- (A) farm or residential tank of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
- (B) tank used for storing heating oil for consumptive use on the premises where stored;
- (C) septic tank;
- (D) pipeline facility (including gathering lines) regulated under
 - i) the Natural Gas Pipeline Safety Act of 1968 (49 USC App. 1671 et seq.),
 - ii) the Hazardous Liquid Pipeline Safety Act of 1979 (49 USC App. 2001 et seq.), or
 - iii) which is an intrastate pipeline facility regulated under state laws comparable to the provisions of law referred to in Clause (i) or (ii) of this subparagraph;
- (E) surface impoundment, pit, pond, or lagoon,
- (F) storm water or waste water collection system;

- Welded tuff** A volcanic deposit hardened by the action of heat, pressures from overlying material, and hot gases.

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APPENDIX B: OPERATIONAL AND ENVIRONMENTAL SETTING

B-1.0 Operational History and Land Use

TA-73 has served as an airport facility continually since the late 1940s and current plans for the future use at TA-73 are for continued use as an airport. The PRSs investigated in this report occupy a small portion within the airport facility and were operational from 1943 until 1973 as a municipal landfill. The landfill was located within TA-73 primarily because it was a secure and convenient location with easy access, it was in close proximity to the Los Alamos town site, and it had plenty of room for expansion. Solid waste was collected twice weekly from the Laboratory and the townsite and was burned on the edge of the hanging valley located adjacent to the airport runway (Miller 1963, 00684). This intentional burning ceased in 1965, when the county assumed operation of the landfill (Miller and Shaykin 1966, 36692). Heavy equipment was used to push the burned residues and ash into whichever permanent disposal area within the landfill was being used at the time.

B-2.0 Climate

As a general statement, there appear to be no climatic factors that dominate or control contaminant distribution at the site.

Los Alamos County has a semiarid, temperate, mountain climate. Summers are generally sunny with moderate, warm days and cool nights. High altitude, light winds, clear skies, and dry atmosphere allow summer temperatures to range from 50°F to 80°F (for the area described in this report). During the winter, temperatures typically range from 15°F to 50°F. The average annual rainfall in the area of TA-73 is estimated at 18 in., but may range from 6.8 in. to 30.3 in. Of this total, approximately 40% occur as brief intense thunderstorms during July and August. Stream flow in canyons can occur as a result of these storms. Spring snowmelt runoff may also induce stream flow in the area canyons.

B-3.0 Geology

The environmental setting of the Laboratory is described in Section 2.4 of the Installation Work Plan (IWP) for Environmental Restoration (LANL 1995, 49822). A discussion of the environmental setting, including climate, geology, hydrology, and a conceptual hydrogeologic model for the area and its surroundings is presented in the following sections.

B-3.1 Geologic Setting

A detailed discussion of the geology of the entire Los Alamos area can be found in Section 2.5.1 of the IWP (LANL 1995, 49822). A summary of that material, emphasizing conditions expected in the TA-73 area is presented below.

TA-73 is situated on mesa tops and upper canyon slopes of the Pajarito Plateau. The surface of the plateau slopes generally eastward, with elevations ranging from approximately 7520 ft in the western part to 7280 ft in the eastern part. Pueblo Canyon bounds the northern edge of the TA while DP Canyon bounds it to the south beyond State Road 501. The walls of canyons cutting the Pajarito Plateau generally

consist of vertical ledges alternating with steep slopes.

B-3.2 Soils

The exposed bedrock at TA-73 is comprised of cooling units 2-4 of the Tshirege (upper) Member of the Bandelier Tuff. The tuff ranges from nonwelded to densely welded, depending on the cooling unit. A few ft of undifferentiated airfall separate the Tshirege member from the Otowi (underlying lower) Member of the Bandelier and water-reworked silicic tuffs designated the Cerro Toledo Tuffs. The Otowi Member is generally poorly welded to nonwelded. The basal part of the Otowi is comprised of approximately 15 ft of air-fall pumice (Guaje pumice bed). The bedrock on mesa tops and upper canyon slopes are overlain by alluvium and soil ranging locally in thickness from zero to a few ft.

Cliff-retreat occurs by detachment of small blocks along fractures in the tuff and by detachment or partial detachment of landslide blocks. Failure of small, fracture-bounded blocks is particularly important for smaller, tributary canyons. Individual landslide blocks can extend 75 ft or more from mesa edges (Reneau 1995, 54709).

B-4.0 Hydrology

B-4.1 Hydrological Conceptual Model

B-4.2 Surface Water

There are no perennial or ephemeral streams or stream channels within the TA-73 boundaries. Surface water is limited to stormwater, most of the surface drainage of the TA flows to Pueblo Canyon, generally as sheet flow off the mesa top. The ephemeral stream in Pueblo Canyon flows only in the spring as snow is melting and during extended, moderate to heavy rainfall events.

B-4.2.1 LANL-ER-AP-4.5 Assessment(s)

At the Laboratory, surface water runoff and sediment transport are among the potential migration pathways by which contaminants might be transported to off-site receptors. Surface water may also access subsurface contaminants exposed by soil erosion. Soil erosion is dependent upon several factors, including soil properties, the amount of vegetative cover, the slope of the contaminated area, exposure, the intensity and frequency of precipitation, and seismic activity.

The Laboratory's ER Project has developed Standard Operating Procedure (SOP) 2.01, "Surface Water Site Assessment," to assess sediment transport and erosion concerns at specific PRSs. SOP 2.01 provides a basis for prioritizing and scheduling actions for controlling the erosion of potentially contaminated soils at a specific PRS. The procedure is a two part evaluation. Part A is a compilation of existing PRS analytical data, site maps, and knowledge of process information. Part B is an assessment of the erosion/sediment transport potential at each PRS. Part A is initiated and completed by the ER Project; Part B is completed by LANL's Water Quality and Hydrology Group (ESH-18). A Surface Water Assessment Team comprised of representatives from ER, ESH-18, the Facility Management Group (FSS-7), and the DOE Oversight Bureau evaluates each completed assessment. If necessary, a best management practice or other action is implemented.

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the stream in DP Canyon (Purtyman 1995, 45344). Likewise, LA 5.19 Spring probably discharges from the alluvial aquifer and is recharged by seasonal snowmelt and stormwater runoff in Los Alamos Canyon. The water chemistries of DP Spring and Hamilton Bend Spring have been previously characterized, including analyses of major cations and anions, trace metals, and stable isotopes (Blake et al. 1995, 49931).

Groundwater quality in these alluvial systems is monitored in several observation wells. The locations of the alluvial observation wells in the TA-73 vicinity are shown in Figure B-4.3-1. Detailed information on the well depths, water level depths, screened intervals, and saturated units is provided in Table B-4.3-1. Water samples are collected annually as part of the Laboratory's environmental surveillance program from alluvial observation wells LAO-1, LAO-2, LAO-3, LAO-4, and LAO-4.5 in Los Alamos Canyon and APCO-1 in Pueblo Canyon. These samples are routinely analyzed for major cations and anions, trace metals, and radionuclides (^2H , ^{90}Sr , ^{137}Cs , U, ^{238}Pu , $^{239,240}\text{Pu}$, ^{241}Am , gross alpha, gross beta, and gross gamma), and these data are published annually by the Laboratory (e.g. ESP 1997, 56684). In 1996, gross beta activities of 55 pico-Curies per liter (pCi/L) and 113 pCi/L were found in wells LAO-2 and LAO-3 respectively (ESP 1997, 56684). These levels are above the Environmental Protection Agency (EPA) screening level of 50 pCi/L and above the Department of Energy (DOE) Drinking Water System Derived Concentration Guide (DCG) of 40 pCi/L for beta radiation. Also in 1996, ^{90}Sr activities of 16.5 pCi/L and 25.4 pCi/L were detected in these same respective wells in exceedance of the EPA Primary Drinking Water Standard of 8 pCi/L for ^{90}Sr (ESP 1997, 56684). These radiochemical constituents are residual contaminants from upstream sources at TA-2 in Los Alamos Canyon and TA-21 in DP Canyon, based on historical data which shows decreasing levels of radionuclide activity in the alluvial groundwater and surface water in these canyons since the 1960's following the elimination of effluent discharges from various Laboratory facilities into the canyons (LANL 1995, 49822).

Quarterly monitoring of alluvial observation wells LAUZ-1 and LAUZ-2 in DP Canyon along with discharges from DP Spring is currently ongoing as part of the TA-21 RFI investigation. These samples are also analyzed for major cations and anions, trace metals, and radionuclides, but results are not currently available pending release of the RFI report for TA-21.

B-4.3.2 Perched Waters

No perched water was encountered in the landfill area during this study and perched waters are not known with certainty to occur directly beneath the landfill. However, perched groundwater has been identified beneath Los Alamos Canyon and Pueblo Canyon. In Los Alamos Canyon, perched groundwater was encountered in the Guaje Pumice bed at a depth of 294 ft in well LAOI(a)-1.1 (Environmental Restoration Project files), and at a depth of 325 ft in borehole LADP-3 (Broxton et al. 1995, 50119) (see Figure B-4.3-1). In Pueblo Canyon, perched groundwater was encountered in the Puye Formation at a depth of 121 ft in well TW-2 (Purtyman 1995, 45344). This occurrence is located about 1000 ft directly north of the landfill (see Figure B-4.3-1), and is over 600 vertical ft beneath the mesa-top. Perched groundwater was also encountered in Unit 3 of the Basaltic Rocks of Chino Mesa at a depth of 188 ft in well TW-1 (Purtyman 1995, 45344) approximately 15 000 ft east of the landfill (see Figure B-4.3-1). Offset wells TW-2A and TW-1A monitor the groundwater quality in these zones. Detailed information on total depths, water level depths, screened intervals, and saturated units for these wells and boreholes is provided in Table

B-4.3-1. It is not known whether these perched aquifers extend beneath the mesas adjacent to the canyon-bottom well/borehole sites. However, the observation that unsaturated conditions were encountered to a depth of 800 ft in borehole LADP-4 drilled in DP Canyon (see Figure B-4.3-1) suggests that they do not.

Water samples are collected annually as part of the Laboratory's environmental surveillance program from test wells TW-1A and TW-2A. These samples are routinely analyzed for major cations and anions, trace metals, and radionuclides (^3H , ^{90}Sr , ^{137}Cs , U , ^{238}Pu , $^{239+240}\text{Pu}$, ^{241}Am , gross alpha, gross beta, and gross gamma), and these data are published annually by the Laboratory (e.g., ESP 1997, 56684). In 1996, ^3H activity was detected in TW-2A at 2253 pCi/L, indicating the influence of Laboratory contaminants, but at a level well below the EPA Primary Drinking Water Standard of 20,000 pCi/L for ^3H (ESP 1997, 56684).

B-4.3.3 Regional Aquifer

The nearest wells or boreholes which penetrate the regional aquifer are test wells TW-1 and TW-2 and supply well O-1 in Pueblo Canyon, test well TW-3 in DP Canyon, supply well O-4 and characterization borehole R-9 in Los Alamos Canyon, supply wells PM-1 and PM-3 in Sandia Canyon, and test well TW-8 in Mortandad Canyon (see Figure B-4.3-1). Detailed information on well depths, water level depths, screened intervals, and saturated units is provided in Table B-4.3-1. The hydrostratigraphic units that contain the regional aquifer include the Totavi Lenticle, the tanglemerate member of the Puye Formation, and the Santa Fe Group (Chaquehui, Chamita, and Tesuque Formations, and a fractured basalt unit).

The Totavi Lenticle is the basal unit of the Puye Formation and consists of a poorly consolidated channel fill deposit of granite, quartzite, gneiss, and schist cobbles and boulders in a sand matrix. The tanglemerate member of the Puye Formation consists of volcanic debris (cobble to boulder size) composed of latite, rhyolite, tuff, dacite, and pumice fragments in a silt/clay/sand matrix. The Tesuque and Chamita Formations consist of poorly to moderately cemented arkosic sediments ranging from siltstone and sandstone to pebbly conglomerates and clay. The Chaquehui Formation is composed of volcanic debris from the Sierra de los Valles mixed with arkosic and granitic debris from highlands to the north and east (Purtyman 1995, 45344).

The horizontal hydraulic conductivity of the Tesuque Formation has been estimated at 0.8 ft/day based on aquifer testing in supply well O-1. The horizontal hydraulic conductivity of the Chaquehui Formation averages 11 ft/day based on aquifer testing in supply wells O-4, PM-1, and PM-3. The estimated average horizontal hydraulic conductivity of a combined section including the Chaquehui Formation, the Totavi Lenticle, and the tanglemerate member of the Puye Formation is about 2.5 ft/day (Frenzel 1995, 59082).

The potentiometric surface of the regional aquifer within the study area was mapped using available water level data from 1996 (McLin et al. 1997, 57754) and is shown in Figure B-4.3-2. The gradient of the regional aquifer beneath the landfill is about 0.02 ft/ft to the east. Likely sources of recharge to the west are from the flanks of the Sierra de los Valles or canyons cut into the western edge of the plateau, with the possibility of recharge from intermountain basins such as the Valle Grande (Purtyman 1995, 45344). Discharges from the regional aquifer occur from a number of springs situated along the Rio Grande, beyond the eastern Laboratory boundary and well outside of the study area. No springs fed by the

regional aquifer occur within the immediate TA-73 vicinity. The regional aquifer exhibits unconfined conditions in the central part of the Pajarito Plateau, which includes the TA-73 vicinity, although semi-confined to confined conditions occur in the eastern part of the plateau near the Rio Grande (Purtyman 1995, 45344).

The depth relation of the regional aquifer to the landfill site is illustrated in the accompanying hydrogeologic cross-section (see Figure B-4.3-3). The location of this cross-section is shown on Figure B-4.3-1. All encountered groundwater occurrences in the immediate study area vicinity are shown, along with the subsurface stratigraphy. The cross-section shows that within the immediate study area vicinity, the regional aquifer occurs in the Puye Formation and the Totavi Lentil and is located about 1260 ft beneath the mesa-top landfill site, with no documented occurrences of perched groundwater at shallower depths directly beneath the landfill.

Groundwater quality in the regional aquifer is monitored in test wells TW-1, TW-2, TW-3, and TW-8 (see Figure B-4.3-1). Water samples are collected annually from these wells as part of the Laboratory's environmental surveillance program. These samples are routinely analyzed for major cations and anions, trace metals, and radionuclides (^3H , ^{90}Sr , ^{137}Cs , U , ^{239}Pu , ^{240}Pu , ^{241}Am , gross alpha, gross beta, and gross gamma), and these data are published annually by the Laboratory (e.g., ESP 1997, 56684). Hourly water level monitoring using pressure transducers also occurs in these wells. During 1996, no samples from these wells exceeded any DOE DCG or EPA or State of New Mexico drinking water standards for the analyzed parameters (ESP 1997, 56684).

B-4.3.4 Vadose Zone

The elevation of the main aquifer is about 6000 ft, more than 1000 ft below the level of mesa tops at TA-73. No perched or alluvial aquifers are known to be present in, or to underlie TA-73. An ephemeral stream is present in Pueblo Canyon, which bounds TA-73 on the northern side up canyon from TA-73 and a perennial stream is present in Pueblo Canyon down gradient from the Los Alamos County Waste Water Treatment Plant. A shallow aquifer is present in the alluvium of Los Alamos Canyon in the vicinity of TA-21 (Broxton et al. 1995, 50119) to the south. In addition, near TA-21 a perched groundwater zone is present beneath Los Alamos Canyon at a depth of 325 ft in the Guaje Pumice Bed. The lateral extent of this intermediate-depth perched aquifer, particularly to the south beneath TA-73, is not known, however, it is not present beneath DP Canyon to the south (Broxton et al. 1995, 50119). Following precipitation events, water may emerge from canyon slopes because of moisture storage in alluvium and/or fill along the upper edges of canyons. Drainage from the banks may result in ephemeral seeps where soil is thin and/or bedrock is exposed.

B-5.0 Ecological Resources

The only known biological resources (threatened and endangered species) that may be present in the vicinity of the site are the peregrine falcon and the Mexican spotted owl which may occupy the steep cliffs in Pueblo Canyon.

B-6.0 Cultural Resources

There are no known cultural resources that are impacted by the site.

B-6.1 Cultural Resources Survey

Not applicable for this site.

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TABLE B-4.3.1-1

TA-73 VICINITY WELL AND BOREHOLE INFORMATION

Water Level		Year	Surface	Water Level
Well	Depth ^a		Elevation ^b	Elevation
PM-1	755		6520	5765
PM-2	870	(1995)	6715	5845
PM-3	776		6640	5864
PM-4	1091		6920	5829
PM-5	1258		7095	5837
O-1	673	(1990)	6396	5723
O-4	762	(1995)	6627	5865
TW-1	551		6369	5818
TW-2	797		6648	5851
TW-3	784		6595	5811
TW-4	1176		7245	6069
TW-8	995		6878	5883
G-1	244		5973	5729
G-1A	310		6014	5704
G-2	364		6056	5692
G-3	375	(1986)	6139	5764
G-4	374		6229	5855
G-5	459	(1994)	6306	5847
G-6	581		6422	5841
* Average depth below surface in 1996 unless otherwise indicated; per: McLin, S.G., Purtyman, W.D., Maes, M.N., and Longmire, P.A., 1997. Water Supply at Los Alamos during 1996, Los Alamos National Laboratory Progress Report LA-13371-PR, Los Alamos, New Mexico, 42 p.				
* Purtyman, W.D., 1995, Geologic and Hydrologic Records of Observation Wells, Test Holes, Test Wells, Supply Wells, Springs, and Surface Water Stations in the Los Alamos Area, Los Alamos National Laboratory Report LA-12883-MS, 339 p.				

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**TABLE B-4.3.1-1
TA-73 VICINITY WELL AND BOREHOLE INFORMATION**

Well	<i>Alluvial Aquifer Wells *</i>					Use
	Total	Depth to	Date	Screened	Saturated	
	Depth (ft bgs)*	Water (ft bgs)	Measure d	Interval (ft bgs)	Unit(s)	
APCO-1	20	6.2	1990	4.7-14.7	Alluvium	Water Quality Monitoring
PAO-5N	15	7.0	1998	7.5-12.5	Alluvium	Water Quality Monitoring
PAO-5S	19.5	7.0	1998	7-17	Puye Formation underlying alluvium	Water Quality Monitoring
PO-1A ^b	18	dry	1956	10-18	Alluvium	Water Quality Monitoring
PO-2A ^b	8	2.0	1956	6-8	Alluvium	Water Quality Monitoring
PO-3 ^b	12	1.0	1956	10-12	Alluvium	Water Quality Monitoring
PO-3A ^b	22	10.0	1956	20-22	Alluvium	Water Quality Monitoring
PO-3B	59	50.8	1991	49-59	Puye Formation underlying alluvium	Water Quality Monitoring
PO-4	27	25.8	1956	25-27	Alluvium	Water Quality Monitoring
PO-4A	21	dry	1991	15-21	Alluvium	Water Quality Monitoring
PO-4B	36	dry	1991	31-36	Alluvium	Water Quality Monitoring
PAO-4	15.5	1.7	1998	2.1-6.9	Alluvium	Water Quality Monitoring
LAUZ-1	10.6	2.3	1997	5.4-10.6	Alluvium	Water Quality Monitoring
LAUZ-2	10.6	3.8	1997	5.4-10.6	Alluvium	Water Quality Monitoring
LAO-1	28	7.4	1991	8-28	Alluvium and weathered tuff	Water Quality Monitoring
LAO-1.2	18	6.3	1969	8-18	Alluvium and weathered tuff	Water Quality Monitoring
LAO-1.8	18	10.0	1969	8-18	Alluvium	Water Quality Monitoring
LAO-2	32	dry	1991	12-32	Alluvium and weathered tuff	Water Quality Monitoring

TABLE B-4.3.1-1 CONTINUED
TA-73 VICINITY WELL AND BOREHOLE INFORMATION

LAO-3	24	13.2	1991	9-24	Alluvium and weathered tuff	Water Quality/Water Level Monitoring
LAO-4	24	13.0	1991	14-24	Alluvium and weathered tuff	Water Quality/Water Level Monitoring
LAO-4.5	40	dry ^a	1991	10-40	Alluvium and Puye Formation	Water Quality Monitoring
LAO-5	25	17.4	1991	5-20	Alluvium and basalt	Water Quality Monitoring
LAO-6	16	dry	1966	6-16	Alluvium and basalt	Water Quality Monitoring
<i>Perched Aquifer (Intermediate Depth) Wells *</i>						
	Total	Depth to	Date	Screened	Saturated	
Well	Depth (ft bgs) ^a	Water (ft bgs)	Measure d	Interval (ft bgs)	Unit(s)	Use
TW-1A	225	188	1950	215-225	Basaltic Rocks of Chino Mesa-Unit 3	Water Quality Monitoring
TW-2A	133	121	1950	128-133	Puye Formation (fanglomerate member)	Water Quality Monitoring
LAOI(a)-1.1	310	292.0	1997	295-305	Guaje Pumice Bed	Water Quality/Water Level Monitoring
<i>Intermediate Depth Boreholes *</i>						
	Total	Depth to	Date	Screened	Saturated	
Borehole	Depth (ft bgs) ^a	Water (ft bgs)	Measure d	Interval (ft bgs)	Unit(s)	Use
LADP-3	350	27	1993	NA	Alluvium	Characterization
		35	1993	NA	Alluvium	
		325	1993	NA	Guaje Pumice Bed	
LADP-4	800	dry	1993	NA	NA	Characterization
<i>Regional Aquifer Wells *</i>						

TABLE B-4.3.1-1 CONTINUED
TA-73 VICINITY WELL AND BOREHOLE INFORMATION

	Total	Depth to	Date	Screened	Saturated	
Well	Depth (ft bgs) ^a	Water (ft bgs) ^a	Measure d	Interval (ft bgs)	Unit(s)	Use
TW-1	642	551	1996	632-642	Totavi Lentil	Water Quality/Water Level Monitoring
TW-2	834	797	1996	758-824	Totavi Lentil	Water Quality/Water Level Monitoring
TW-3	815	784	1996	805-815	Totavi Lentil	Water Quality/Water Level Monitoring
TW-8	1065	995	1996	953-1065	Puye Formation (fanglomerate member)	Water Quality/Water Level Monitoring
O-1	2497	673	1990	1017-2477	Tesuque Formation	Water Supply
O-4	2617	762	1995	1115-2596	Tesuque Formation	Water Supply
PM-1	2499	755	1996	945-2479	Chaquehui, Chamita, & Tesuque Fmns.	Water Supply
PM-3	2552	776	1996	956-2532	Chaquehui, Chamita, & Tesuque Fmns.	Water Supply
R-9	710	688	1998	686-706 h	Basalt (Santa Fe Group?)	Characterization

* Total depth from ground surface to bottom of casing

* Well plugged and abandoned or destroyed

* LAO-4.5 had an obstruction at 7.8 ft depth w/ measurement was attempted in 1991.

* Total drilled depth below ground surface

National Laboratory Technical Area 21, Los Alamos National Laboratory report LA-12934-MS, p. 93-109.

* Unless otherwise noted, data are from: Purtyman, W.D., 1995, Geologic and Hydrologic Records of Observation Wells, Test Holes, Test Wells, Supply Wells, Springs, and Surface Water Stations in the Los Alamos Area, Los Alamos National Laboratory report LA-12883-MS, 339 p.; except LAUZ-1, LAUZ-2, PAO-4, PAO-5S, PAO-5N, LAOI(a)-1.1, and R-9 data are from Environmental Restoration Project files.

* Data from: Broxton, D.E., Longmire, P.A., Eller, P.G., and Flores, D., 1995, Preliminary Drilling Results for Boreholes LADP-3 and LADP-4, in: Earth Science Investigations for Environmental Restoration-Los Alamos Water Supply at Los Alamos during 1996, Los Alamos National Laboratory report LA-13371-PR, 42 p.

* 1995 and 1996 water level data from: McLin, S.G., Purtyman, W.D., Maes, M.N., and Longmire, P.A., 1997,

* R-9 has temporary screen at 686-706 ft pending final well installation.

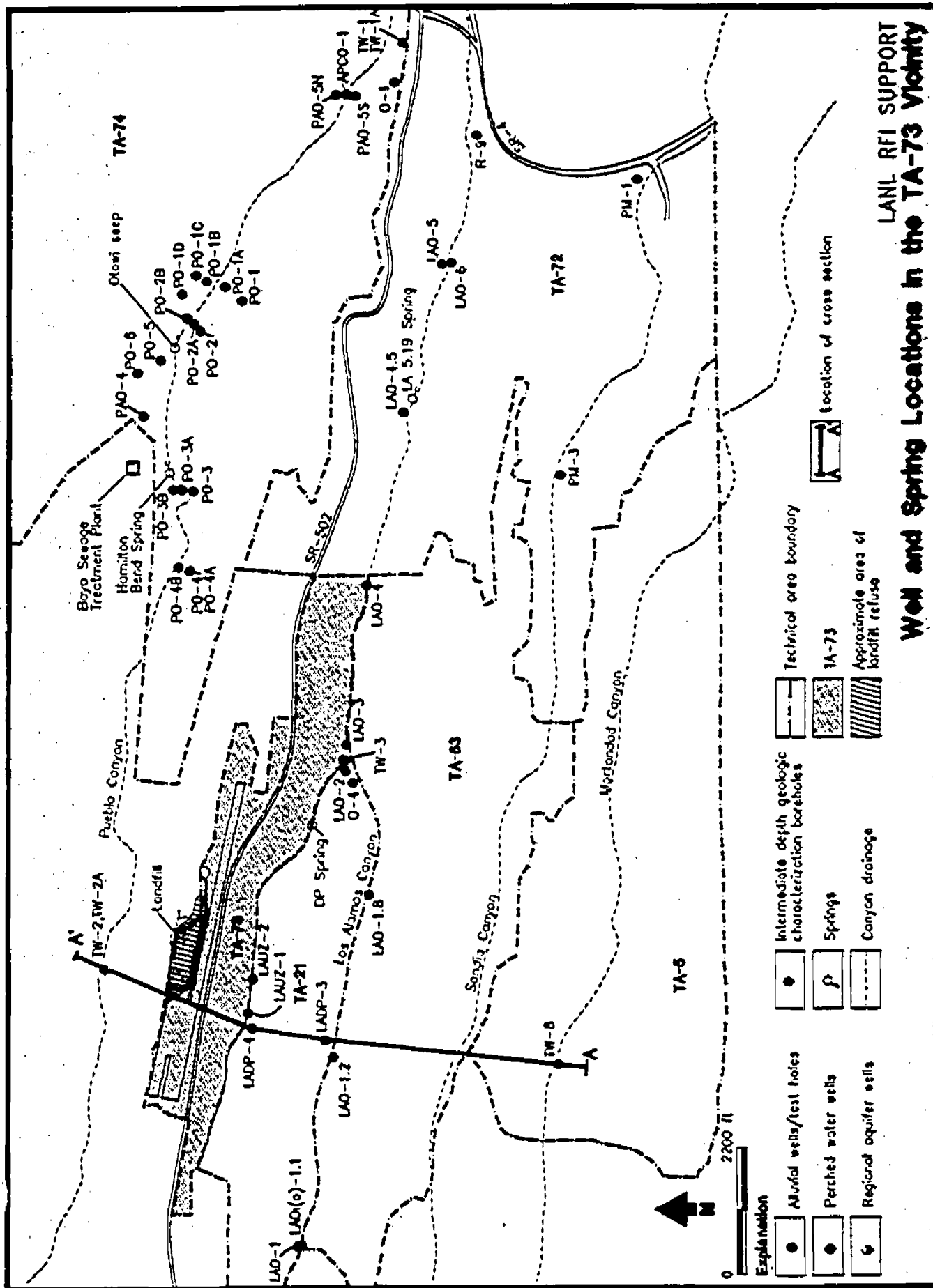
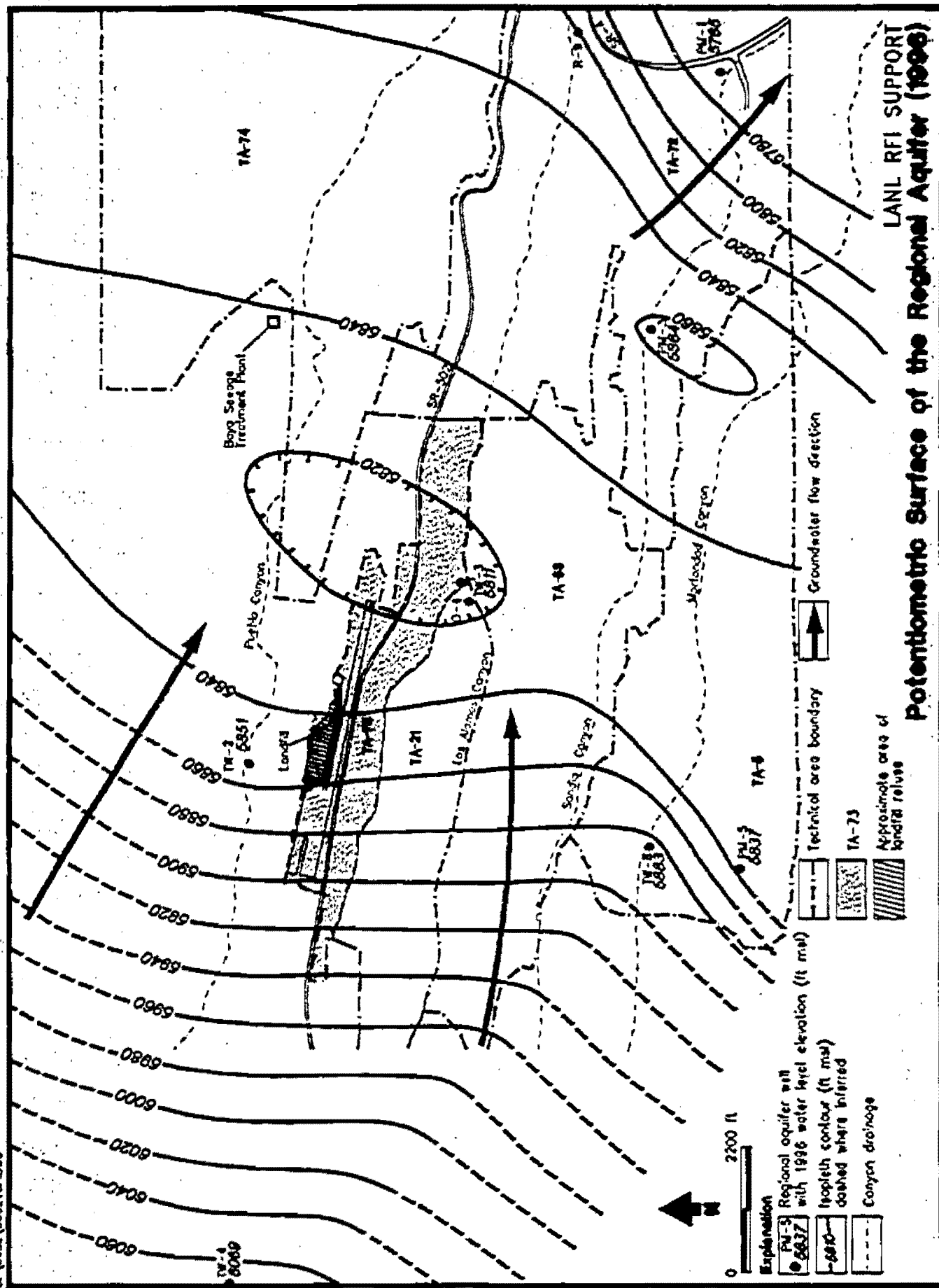
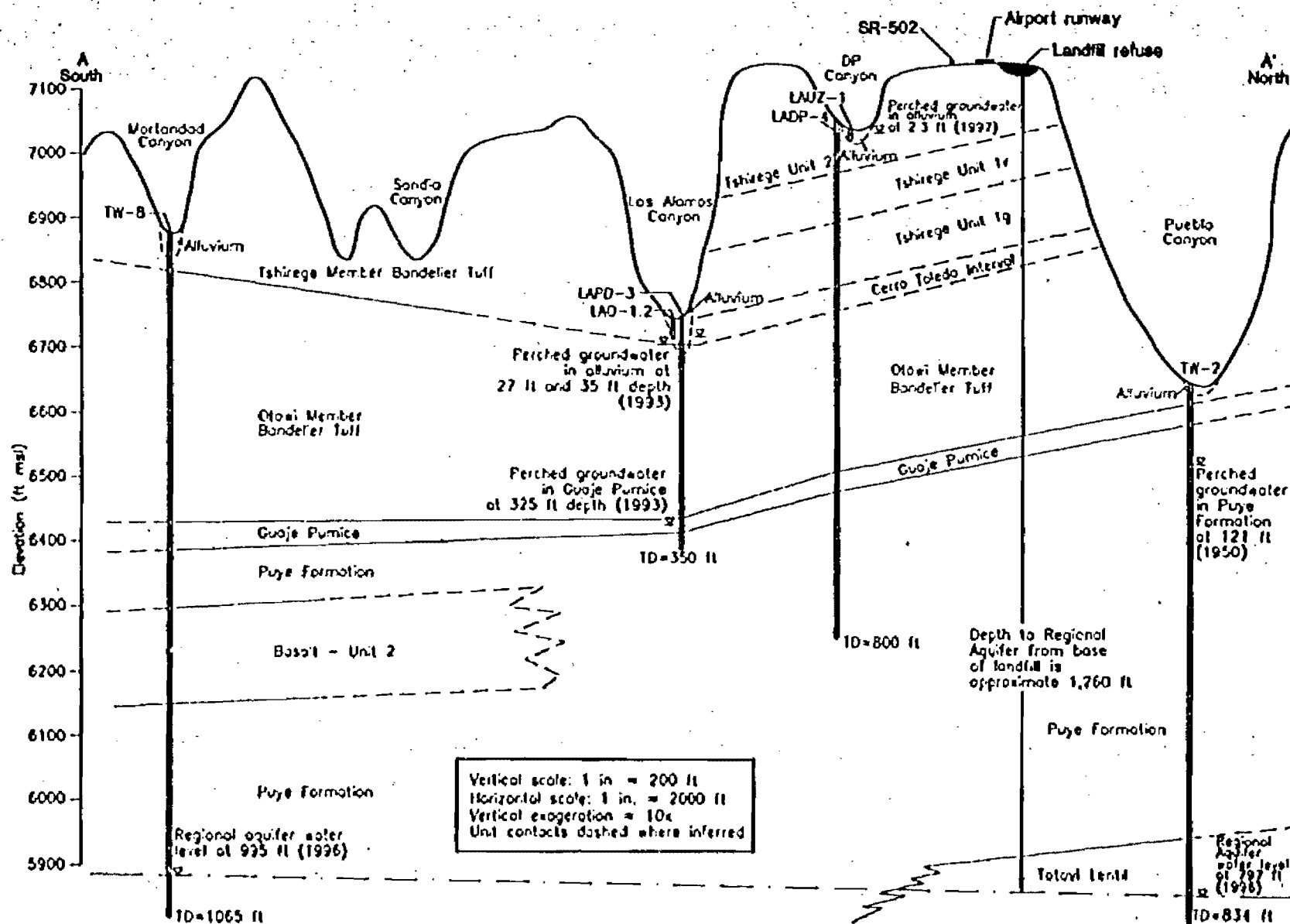


Figure B-431-1





LANL RFI SUPPORT
Hydrogeologic Cross Section A-A'

Figure B-432-2

APPENDIX C: RESULTS OF QUALITY ASSURANCE/QUALITY CONTROL ACTIVITIES

C-1.0 Summary

The samples included in this data set are all from the PRSs which make up the soil gasport landfill at the TA-73 site. Three different types of samples were evaluated in the section; soil or tuff samples, lysimeter water samples and soil gas samples collected in Summa canisters. For the soil/tuff samples, 127 were analyzed for TAL metals, 89 were analyzed for radiochemical constituents, 106 were analyzed for VOCs, 115 were analyzed for SVOCs, 114 were analyzed for pesticides/PCBs and one sample was analyzed for PCBs only. For the water samples, 37 were analyzed for VOCs and 22 were analyzed for TAL metals. There were 477 soil gas samples analyzed for VOCs and fixed gases. Five of the soil gas samples were also screened for sulfides including H_2S . Laboratory QA/QC samples were analyzed with all of the samples and blind QC samples and field duplicate samples were collected with each batch of samples.

The analytes included in each analytical suite and the quantitation limits are included in Appendix D-1.0. The analysis and method can be found in Tables C-2.2-1, C-2.2-2, and C-4.2-1.

Sample preservation and holding time requirements are given in LANL-ER-SOP-1.02. There were several missed holding times in this data set. The 5 soil gas samples analyzed for sulfides including H_2S exceeded the 7 day holding time by 2 days, and therefore these data are qualified J or UJ. This analysis was done for screening purposes only, and the data are fully adequate for this purpose. There were 3 instances of samples exceeding the 28 day recommended holding time for Hg (a total of 8 samples). The holding times were exceeded by 1, 12, and 20 days. All of these exceeded the recommended holding time by less than 20 days and therefore the missed recommended holding times should not greatly affect the data. Also, there are 118 other analyses for Hg, which show that these data fit well in the data set.

The requirements of the sampling and analysis plan, the ER Project QAPP, the analytical services statement of work, and/or ER SOPs were followed during analytical data collection and evaluation.

There were many types of QA/QC samples and indicators used in the data validation process. They include laboratory duplicates, laboratory control samples, blind QC samples, matrix spike and matrix spike duplicate samples, tracer recoveries, and daily and continuing calibrations. The definitions for most of these samples can be found in Appendix A.

There were 2 procedures that were used for routine validation of the analytical data. One was the current ER Project validation procedure described in the IWP. Data which were collected before April 1995 used the CST-3 validation procedures. Both of these data validation procedures are based on EPA national functional guidelines for data review.

Focused validation was employed when a data question was encountered by one of the technical team members. When this occurred, the team chemist would obtain the appropriate data package and try to determine the reasons for the data questions, looking at the full QA/QC component of the data package. If there was an error by the laboratory in reporting, the SMO would resolve the issue. If there was a QA/QC problem, then the focused data validator would appropriately qualify the data.

In most situations data are still usable even though qualifier flags may be applied during the routine and focused validation processes. The exceptions to this are data that are qualified R (rejected) or data qualified J (estimated) that are very close to action levels where small differences in the analyte concentration will make a difference in the decision to be made. Definitions of laboratory qualifiers, LANL qualifiers, and focused validation qualifiers are contained in the glossary.

The results of the evaluation of QA/QC activities, show that the analytical data are of sufficient quality for the intended use in this report. Data that are qualified J or UJ or U and are not close to the SALs are fully usable in the data set. Only the data listed below are not usable.

The following are data that have been qualified R and should not be used in the data set. For samples 0173-95-0180 and 0181, Sb has been qualified R for the very low recovery of Sb in the matrix spike sample (27%). For the pore water sample 0173-97-0361, U was qualified R because the method used for analysis (ICPES) is inappropriate in the presence of high Fe concentrations which cause spectral interferences and made the detection of U ambiguous at best. Also, one of the soil gas samples, 0173-97-0099 was either accidentally spiked with the QC compounds before analysis or the QC sample was analyzed in its place, as the analytes and their concentrations matched those in the QC sample. Therefore, the results for this sample have been qualified R.

A list of all the samples, requests, methods and qualifiers are in Tables C-2.2-1, C-2.2-2 and C-4.2-3.

C-2.0 INORGANIC ANALYSES

C-2.1 Field Analyses

No field analyses for inorganic chemicals were performed.

C-2.2 Fixed Laboratory Analyses

Water Samples

Twenty-two lysimeter water samples were analyzed for TAL Metals. They were analyzed for most elements using inductively coupled plasma atomic emission spectroscopy. The methods used for this technique were CLP ILM1.0, 2.0 and 3.0, CLP90-G, and EPA SW846 6010A and 6010B. For all samples, Hg was analyzed using SW846 7470 or 7470A, the cold vapor atomic absorption technique. For several samples EPA SW846 graphite furnace atomic absorption methods were used for As (method 7060), Pb (method 7421), Sb (method 7041), Se (method 7740) and Tl (7841). The methods used for each sample are listed in Table C-2.2-1.

Two of the samples were analyzed for total uranium using inductively coupled plasma atomic emission spectroscopy (ICPES) method CLP ILM3.0. This caused a problem for the U analysis for sample 0173-97-0361. U was detected at a concentration of 149 µg/L. The problem is that Fe was also present at a

TABLE C-22-1
SOIL GASPORT LANDFILL LYSIMETER WATER SAMPLE QA/QC SUMMARY

Sample Id	Analysis	Method	Request #	QC Comment
0173-95-0036	VOC	8240	75	No Data Qualification
0173-95-0037	VOC	8240	75	No Data Qualification
0173-95-0040	VOC	8240	75	No Data Qualification
0173-95-0080	VOC	8260	313	No Data Qualification
0173-95-0083	VOC	8260	313	No Data Qualification
0173-95-0102	VOC	8260	663	No Data Qualification
0173-95-0103	VOC	8260	663	No Data Qualification
0173-95-0104	VOC	8260	663	No Data Qualification
0173-96-0062	VOC	8260	1881	No Data Qualification. Holding time = 14 days for acidified samples, not 7 days.
0173-96-0063	VOC	8260	1881	No Data Qualification. Holding time = 14 days for acidified samples, not 7 days.
0173-96-0196	VOC	8260	2172	No Data Qualification
0173-96-0451	VOC	8260	2342	No Data Qualification
0173-96-0452	VOC	8260	2342	No Data Qualification
0173-96-0453	VOC	8260	2342	No Data Qualification
0173-96-0521	VOC	8260	2590	Acetone in blank (12 ug/kg) sample = 8 U
0173-96-0522	VOC	8260	2590	Acetone in blank (12 ug/kg) sample = 8 U
0173-96-0523	VOC	8260	2590	Acetone in blank (12 ug/kg) sample = 11 U
0173-96-0524	VOC	8260	2649	No Data Qualification
0173-96-0525	VOC	8260	2649	No Data Qualification
0173-96-0526	VOC	8260	2649	No Data Qualification
0173-96-0527	VOC	8260	2649	No Data Qualification
0173-96-0651	VOC	8260	2826	No Data Qualification
0173-96-0652	VOC	8260	2826	No Data Qualification
0173-96-0653	VOC	8260	2826	No Data Qualification
0173-97-0081	VOC	8260	3520R	No Data Qualification
0173-97-0082	VOC	8260	3520R	No Data Qualification
0173-97-0083	VOC	8260	3611R	No Data Qualification
0173-97-0211	VOC	8260	3665R	No Data Qualification
0173-97-0212	VOC	8260	3665R	No Data Qualification
0173-97-0213	VOC	8260	3726R	No Data Qualification
0173-97-0214	VOC	8260	3726R	No Data Qualification
0173-97-0361	VOC	8260	3834R	No Data Qualification
AAC3266	VOC	8260	21429	No Data Qualification
AAC4159	VOC	8260	21715	No Data Qualification
AAC4161	VOC	8260	21715	No Data Qualification
AAC4162	VOC	8260	21715	No Data Qualification
AAC4163	VOC	8260	21715	No Data Qualification
0173-95-0037	TAL Metals	CLP ILM01.0, Hg = 7470	76	No Data Qualification
0173-95-0040	TAL Metals	CLP ILM01.0, Hg = 7470	76	No Data Qualification
0173-95-0104	TAL Metals	CLP ILM01.0, Hg = 7470	664	Hg qualified UJ for low recovery in the matrix spike sample (70%).
0173-96-0064	TAL Metals	CLP ILM01.0, Hg = 7470	1913	Se qualified UJ for low recovery in the matrix spike sample (55%).
0173-96-0196	TAL Metals	Hg = 7470, As = 7060, Se = 7740, Ti = 7841, others = 6010	2175	No Data Qualification

0173-95-0036-0037-0040-0080-0083-0102-0103-0104-0062-0063-0196-0451-0452-0453-0521-0522-0523-0524-0525-0526-0527-0651-0652-0653-97-0081-0082-0083-97-0211-0212-0213-0214-97-0361-AAC3266-AAC4159-AAC4161-AAC4162-AAC4163-0173-95-0037-0040-0104-0064-0196

TABLE C-2.2-1 (CONTINUED)

Sample Id	Analysis	Method	Request #	QC Comment
0173-96-0452	TAL Metals	CLP ILM03.0	2343	Fe and Ag qualified UJ for low recovery in the matrix spike sample (53% and 37%)
0173-96-0453	TAL Metals	CLP ILM03.0	2343	Fe and Ag qualified UJ for low recovery in the matrix spike sample (53% and 37%)
0173-96-0522	TAL Metals	CLP ILM03.0, Hg = 7470	2591	No Data Qualification
0173-96-0525	TAL Metals	CLP90-G, Hg = 7470	2650	No Data Qualification
0173-96-0526	TAL Metals	CLP90-G, Hg = 7470	2650	No Data Qualification
0173-96-0652	TAL Metals	CLP90-G, Hg = 7470	2825	No Data Qualification
0173-96-0653	TAL Metals	CLP90-G, Hg = 7470	2825	No Data Qualification
0173-97-0211	TAL Metals	Hg = 7470, As = 7060, Pb = 7421, Sb = 7041, Se = 7740, Ti = 7841, others = 6010A	3666R	No Data Qualification
0173-97-0212	TAL Metals	Hg = 7470, As = 7060, Pb = 7421, Sb = 7041, Se = 7740, Ti = 7841, others = 6010A	3666R	No Data Qualification
0173-97-0215	TAL Metals~	CLP ILM03.0, Hg = 7470	3740R	No Data Qualification
0173-97-0361	TAL Metals~	CLP ILM03.0, Hg = 7470	3835R	U qualified 'R' because of Fe interference in analysis
AAC3267	TAL Metals	CLP ILM02.0, Hg = 7470	21431	No Data Qualification
AAC3268	TAL Metals	CLP ILM02.0, Hg = 7470	21431	No Data Qualification
AAC3271	TAL Metals	CLP ILM02.0, Hg = 7470	21431	No Data Qualification
AAC4159	TAL Metals	CLP ILM02.0, Hg = 7470	21716	No Data Qualification
AAC4162	TAL Metals	CLP ILM02.0, Hg = 7470	21716	No Data Qualification
AAC4163	TAL Metals	CLP ILM02.0, Hg = 7470	21716	No Data Qualification

high concentration (16600 µg/L) which causes spectral interferences with U. With the high concentrations of Fe in the sample, the U detection is highly suspect. U was not included in the ICP interference check sample since it is not a normal analyte in the TAL metal suite. Because of the ambiguity of the detection of U in the presence of Fe using ICPEs, the U concentration for this sample will be qualified 'R', rejected.

Standard sample preparation methods were used following the EPA SW846 3000 series procedures for water samples.

Quantitation limits for the analyses mentioned above are contained in Appendix D.

There were several QC problems with samples in this sample set. For sample 0173-95-0104, Hg was qualified UJ for a low recovery in the matrix spike sample (70%). For sample 0173-96-0064, Se was qualified UJ for a low recovery in the matrix spike sample (55%). For samples 0173-96-0452 and -0453 Fe and Ag were qualified UJ for low recoveries in the matrix spike sample (53% and 37%). In all cases the normal acceptable range for matrix spike samples is 75-125%. No other QC criteria required data qualification.

In request numbers 2650 and 2825 the detection limits were elevated because of the high levels of Ca, K, Mg and Na in the samples. When these analytes are present at high concentration, it increases the background and raises the detection levels for other analytes. Though the detection levels are increased, the quality of the analysis is still good.

All of the data above are not significantly impacted by the qualifications. The analytes were not detected in all cases, so the low matrix spike recoveries would not cause large changes in the analyte concentrations and therefore would not affect the data set as a whole. Therefore, all of the water data are usable with the exception of R-qualified uranium data.

Soil/Tuff Samples

TAL metals analysis was performed on 133 samples for the Soil gasport Landfill. The samples were analyzed for most elements using inductively coupled plasma atomic emission spectroscopy. The methods used for this technique were CLP ILM2.0 and 3.0 and EPA SW846 6010A and 6010B. For all samples Hg was analyzed using SW846 7471 or 7471A, the cold vapor atomic absorption technique. For several samples EPA SW846 graphite furnace atomic absorption methods were used for As (method 7060A), Pb (method 7421), Sb (method 7041), Se (method 7740) and Tl (7841). The methods used for each sample are listed in Table C-2.2-2.

Samples were also analyzed for total U using KPA. Because the analyses were submitted as a radiochemical analysis, they will be discussed in the radiochemical analyses section.

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TABLE C-2.2-2
LA SOIL GASPORT LANDFILL SOIL/TUFF SAMPLE QA/QC SUMMARY

Sample Id	Analysis	Method	Req #	QC Comments
0173-95-0171	VOC	8240	1316	All analytes qualified J- or UJ for 1 low IS (4th) and 1 low surrogate (69%)
0173-95-0172	VOC	8240	1316	No Data Qualification
0173-95-0173	VOC	8240	1316	No Data Qualification
0173-95-0174	VOC	8240	1316	No Data Qualification
0173-95-0175	VOC	8240	1316	1 low IS (4th), Associated data qualified J or UJ, RE confirmed the same
0173-95-0176	VOC	8240	1316	All data qualified J or UJ for 1 low IS (4th) and low surrogate recovery (DFB = 15%). RE confirmed the same
0173-95-0177	VOC	8260	1401	No Data Qualification
0173-95-0178	VOC	8260	1401	No Data Qualification
0173-95-0179	VOC	8260	1401	No Data Qualification
0173-95-0180	VOC	8260	1434	No Data Qualification
0173-95-0181	VOC	8260	1434	No Data Qualification
0173-95-0183	VOC	8240	1439	No Data Qualification
0173-95-0184	VOC	8240	1439	No Data Qualification
0173-95-0185	VOC	8240	1439	No Data Qualification
0173-95-0186	VOC	8260	1484	No Data Qualification
0173-95-0187	VOC	8260	1484	No Data Qualification
0173-95-0188	VOC	8260	1484	No Data Qualification
0173-95-0191	VOC	8260	1501	No Data Qualification
0173-96-0130	VOC	8260	1944	All data qualified J or UJ for 3 low IS and 1 low and 1 high surrogate recovery. RE confirmed the same
0173-96-0131	VOC	8260	1944	All data qualified J or UJ for 3 low IS and 1 low and 1 high surrogate recovery. RE confirmed the same
0173-97-0042	VOC	8260	3182R	No Data Qualification
0173-97-0043	VOC	8260	3182R	No Data Qualification
0173-97-0044	VOC	8260	3182R	No Data Qualification
0173-97-0045	VOC	8260	3182R	No Data Qualification
0173-97-0046	VOC	8260	3182R	No Data Qualification
0173-97-0047	VOC	8260	3182R	No Data Qualification
0173-97-0061	VOC	8260	3248R	No Data Qualification
0173-97-0062	VOC	8260	3260R	No Data Qualification
0173-97-0063	VOC	8260	3260R	No Data Qualification
0173-97-0064	VOC	8260	3263R	No Data Qualification

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TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
0173-97-0065	VOC	8260	3263R	No Data Qualification
0173-97-0066	VOC	8260	3269R	No Data Qualification
0173-97-0067	VOC	8260	3282R	No Data Qualification
0173-97-0068	VOC	8260	3282R	No Data Qualification
0173-97-0069	VOC	8260	3288R	No Data Qualification
0173-97-0070	VOC	8260	3288R	No Data Qualification
0173-97-0071	VOC	8260	3288R	No Data Qualification
0173-97-0072	VOC	8260	3302R	No Data Qualification
0173-97-0073	VOC	8260	3302R	No Data Qualification
AAB7473	VOC	8240	19587	No Data Qualification
AAB7474	VOC	8240	19618	No Data Qualification
AAB7475	VOC	8240	19618	No Data Qualification
AAB7476	VOC	8240	19618	No Data Qualification
AAB7477	VOC	8240	19618	No Data Qualification
AAB7478	VOC	8240	19633	No Data Qualification
AAB7479	VOC	8240	19652	No Data Qualification
AAB7480	VOC	8240	19652	No Data Qualification
AAB7481	VOC	8240	19652	No Data Qualification
AAB7482	VOC	8240	19654	No Data Qualification
AAB7483	VOC	8240	19654	No Data Qualification
AAB7484	VOC	8240	19685	No Data Qualification
AAB7485	VOC	8240	19685	No Data Qualification
AAB7486	VOC	8240	19685	No Data Qualification
AAB7487	VOC	8240	19685	No Data Qualification
AAB7573	VOC	8240	19685	No Data Qualification
AAB7574	VOC	8240	19688	Acetone qualified UJ for inadequate precision in the initial and continuing calibrations.
AAB7575	VOC	8240	19688	Acetone qualified UJ for inadequate precision in the initial and continuing calibrations.
AAB7576	VOC	8240	19688	Acetone qualified UJ for inadequate precision in the initial and continuing calibrations.
AAB7577	VOC	8240	19688	Acetone qualified UJ for inadequate precision in the initial and continuing calibrations.
AAB7578	VOC	8240	19688	Acetone qualified UJ for inadequate precision in the initial and continuing calibrations.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAB7579	VOC	8240	19688	Acetone qualified UJ for inadequate precision in the initial and continuing calibrations.
AAB7580	VOC	8240	19688	Acetone qualified UJ for inadequate precision in the initial and continuing calibrations.
AAB7581	VOC	8240	19688	Acetone qualified UJ for inadequate precision in the initial and continuing calibrations.
AAB7582	VOC	8240	19746	No Data Qualification
AAB7583	VOC	8240	19746	No Data Qualification
AAB7584	VOC	8240	19746	No Data Qualification
AAB7585	VOC	8240	19746	No Data Qualification
AAB7586	VOC	8240	19746	No Data Qualification
AAB7587	VOC	8240	19746	No Data Qualification
AAC0944	VOC	8240	19746	No Data Qualification
AAC0945	VOC	8240	19899	No Data Qualification
AAC0946	VOC	8240	19899	3rd IS low. All associated analytes are qualified UJ.
AAC0947	VOC	8240	19899	No Data Qualification
AAC0948	VOC	8240	19899	No Data Qualification
AAC0949	VOC	8240	19899	No Data Qualification
AAC0950	VOC	8240	19899	No Data Qualification
AAC0951	VOC	8240	19899	No Data Qualification
AAC0952	VOC	8240	19927	No Data Qualification (Ignore CST QC spike)
AAC0953	VOC	8240	19927	No Data Qualification (Ignore CST QC spike)
AAC0954	VOC	8240	19927	No Data Qualification (Ignore CST QC spike)
AAC0955	VOC	8240	19927	No Data Qualification (Ignore CST QC spike)
AAC0956	VOC	8240	19982	No Data Qualification
AAC0957	VOC	8240	19982	No Data Qualification
AAC1601	VOC	8240	19982	No Data Qualification
AAC1602	VOC	8240	19983	No Data Qualification
AAC1603	VOC	8240	19983	No Data Qualification
AAC1604	VOC	8240	19983	No Data Qualification
AAC1605	VOC	8240	19983	No Data Qualification
AAC1606	VOC	8240	19983	No Data Qualification
AAC1607	VOC	8240	19983	No Data Qualification
AAC1608	VOC	8240	20035	3rd F136d IS low. All associated analytes are qualified UJ.
AAC1609	VOC	8240	20035	3rd IS low. All associated analytes are qualified UJ.
AAC1610	VOC	8240	20035	3rd IS low. All associated analytes are qualified UJ.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAC1611	VOC	8240	20035	3rd IS low. All associated analytes are qualified UJ.
AAC1612	VOC	8240	20035	3rd IS low. All associated analytes are qualified UJ.
AAC1613	VOC	8240	20035	3rd IS low. All associated analytes are qualified UJ.
AAC1614	VOC	8240	20035	3rd IS low. All associated analytes are qualified UJ.
AAC1615	VOC	8240	20035	3rd IS low. All associated analytes are qualified UJ.
AAC1616	VOC	8240	20035	3th IS low. All associated analytes are qualified UJ.
AAC1617	VOC	8240	20035	3rd IS low. All associated analytes are qualified UJ.
AAC1618	VOC	8240	20035	3rd IS low. All associated analytes are qualified UJ.
AAC1619	VOC	8240	20035	3rd IS low. All associated analytes are qualified UJ.
AAC1620	VOC	8240	20206	No Data Qualification
AAC1621	VOC	8240	20206	No Data Qualification
AAC1622	VOC	8240	20233	No Data Qualification
AAC1623	VOC	8240	20233	No Data Qualification
AAC1624	VOC	8240	20233	No Data Qualification
AAC1625	VOC	8240	20233	No Data Qualification
AAC1626	VOC	8240	20233	No Data Qualification
AAC1627	VOC	8240	20237	No Data Qualification
AAC1628	VOC	8240	20237	All data qualified UJ for 1 low surrogate recovery (Toluene-d8 at 80%)
AAC1629	VOC	8240	20237	No Data Qualification
0173-96-0101	SVOC	8270	1923	No Data Qualification
0173-96-0102	SVOC	8270	1923	No Data Qualification
0173-96-0103	SVOC	8270	1923	No Data Qualification
0173-96-0104	SVOC	8270	1923	No Data Qualification
0173-96-0105	SVOC	8270	1923	No Data Qualification
0173-96-0106	SVOC	8270	1923	No Data Qualification
0173-96-0107	SVOC	8270	1923	No Data Qualification
0173-96-0108	SVOC	8270	1923	No Data Qualification
0173-96-0109	SVOC	8270	1923	No Data Qualification
0173-96-0110	SVOC	8270	1923	No Data Qualification
0173-96-0111	SVOC	8270	1923	No Data Qualification
0173-96-0112	SVOC	8270	1923	No Data Qualification
0173-96-0113	SVOC	8270	1923	No Data Qualification
0173-96-0114	SVOC	8270	1923	All surrogates had low recoveries (15-50%). All data qualified J- or UJ. RE confirmed the same.

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TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
0173-98-0118	SVOC	8270	1923	No Data Qualification
0173-98-0121	SVOC	8270	1944	No Data Qualification
0173-98-0122	SVOC	8270	1944	No Data Qualification
0173-98-0123	SVOC	8270	1944	No Data Qualification
0173-98-0128	SVOC	8270	1944	No Data Qualification
0173-98-0129	SVOC	8270	1944	No Data Qualification
0173-98-0130	SVOC	8270	1944	No Data Qualification
0173-98-0131	SVOC	8270	1944	No Data Qualification
0173-97-0042	SVOC	8270	3182R	No Data Qualification
0173-97-0043	SVOC	8270	3182R	No Data Qualification
0173-97-0044	SVOC	8270	3182R	No Data Qualification
0173-97-0045	SVOC	8270	3182R	No Data Qualification
0173-97-0046	SVOC	8270	3182R	No Data Qualification
0173-97-0047	SVOC	8270	3182R	No Data Qualification
0173-97-0066	SVOC	8270	3269R	No Data Qualification
0173-97-0067	SVOC	8270	3282R	No Data Qualification
0173-97-0068	SVOC	8270	3282R	No Data Qualification
0173-97-0069	SVOC	8270	3288R	No Data Qualification
0173-97-0070	SVOC	8270	3288R	No Data Qualification
0173-97-0071	SVOC	8270	3288R	No Data Qualification
0173-97-0072	SVOC	8270	3302R	No Data Qualification
0173-97-0073	SVOC	8270	3302R	No Data Qualification
AAB7473	SVOC	8270	19587	No Data Qualification
AAB7474	SVOC	8270	19618	No Data Qualification
AAB7475	SVOC	8270	19618	No Data Qualification
AAB7476	SVOC	8270	19618	No Data Qualification
AAB7477	SVOC	8270	19618	No Data Qualification
AAB7478	SVOC	8270	19633	No Data Qualification
AAB7479	SVOC	8270	19652	No Data Qualification
AAB7480	SVOC	8270	19652	No Data Qualification
AAB7481	SVOC	8270	19652	No Data Qualification
AAB7482	SVOC	8270	19654	No Data Qualification
AAB7483	SVOC	8270	19654	No Data Qualification
AAB7484	SVOC	8270	19685	No Data Qualification
AAB7485	SVOC	8270	19685	No Data Qualification

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TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAB7486	SVOC	8270	19685	No Data Qualification
AAB7487	SVOC	8270	19685	No Data Qualification
AAB7573	SVOC	8270	19685	No Data Qualification
AAB7574	SVOC	8270	19688	No Data Qualification
AAB7575	SVOC	8270	19688	No Data Qualification
AAB7576	SVOC	8270	19688	No Data Qualification
AAB7577	SVOC	8270	19688	No Data Qualification
AAB7578	SVOC	8270	19688	No Data Qualification
AAB7579	SVOC	8270	19688	No Data Qualification
AAB7580	SVOC	8270	19688	No Data Qualification
AAB7581	SVOC	8270	19688	No Data Qualification
AAB7582	SVOC	8270	19746	No Data Qualification
AAB7583	SVOC	8270	19746	No Data Qualification
AAB7584	SVOC	8270	19746	No Data Qualification
AAB7585	SVOC	8270	19746	No Data Qualification
AAB7586	SVOC	8270	19746	No Data Qualification
AAB7587	SVOC	8270	19746	No Data Qualification
AAC0944	SVOC	8270	19746	No Data Qualification
AAC0945	SVOC	8270	19899	No Data Qualification
AAC0946	SVOC	8270	19899	No Data Qualification
AAC0947	SVOC	8270	19899	No Data Qualification
AAC0948	SVOC	8270	19899	No Data Qualification
AAC0949	SVOC	8270	19899	No Data Qualification
AAC0950	SVOC	8270	19899	No Data Qualification
AAC0951	SVOC	8270	19899	No Data Qualification
AAC0952	SVOC	8270	19927	No Data Qualification
AAC0953	SVOC	8270	19927	No Data Qualification
AAC0954	SVOC	8270	19927	No Data Qualification
AAC0955	SVOC	8270	19927	No Data Qualification
AAC0956	SVOC	8270	19982	No Data Qualification
AAC0957	SVOC	8270	19982	No Data Qualification
AAC0958	SVOC	8270	19982	No Data Qualification
AAC1601	SVOC	8270	19982	No Data Qualification
AAC1602	SVOC	8270	19983	No Data Qualification
AAC1603	SVOC	8270	19983	No Data Qualification

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAC1604	SVOC	8270	19983	No Data Qualification
AAC1605	SVOC	8270	19983	No Data Qualification
AAC1606	SVOC	8270	19983	No Data Qualification
AAC1607	SVOC	8270	19983	No Data Qualification
AAC1608	SVOC	8270	20035	No Data Qualification
AAC1609	SVOC	8270	20035	No Data Qualification
AAC1610	SVOC	8270	20035	No Data Qualification
AAC1611	SVOC	8270	20035	No Data Qualification
AAC1612	SVOC	8270	20035	No Data Qualification
AAC1613	SVOC	8270	20035	No Data Qualification
AAC1614	SVOC	8270	20035	No Data Qualification
AAC1615	SVOC	8270	20035	No Data Qualification
AAC1616	SVOC	8270	20035	No Data Qualification
AAC1617	SVOC	8270	20035	No Data Qualification
AAC1618	SVOC	8270	20035	No Data Qualification
AAC1619	SVOC	8270	20035	No Data Qualification
AAC1620	SVOC	8270	20206	No Data Qualification
AAC1621	SVOC	8270	20206	No Data Qualification
AAC1622	SVOC	8270	20233	No Data Qualification
AAC1623	SVOC	8270	20233	No Data Qualification
AAC1624	SVOC	8270	20233	No Data Qualification
AAC1625	SVOC	8270	20233	No Data Qualification
AAC1626	SVOC	8270	20233	No Data Qualification
AAC1627	SVOC	8270	20237	No Data Qualification
AAC1628	SVOC	8270	20237	No Data Qualification
AAC1629	SVOC	8270	20237	No Data Qualification
0173-96-0101	Pest/PCB	8081	1923	No Data Qualification
0173-96-0102	Pest/PCB	8081	1923	No Data Qualification
0173-96-0103	Pest/PCB	8081	1923	No Data Qualification
0173-96-0104	Pest/PCB	8081	1923	No Data Qualification
0173-96-0105	Pest/PCB	8081	1923	No Data Qualification
0173-96-0106	Pest/PCB	8081	1923	No Data Qualification
0173-96-0107	Pest/PCB	8081	1923	No Data Qualification
0173-96-0108	Pest/PCB	8081	1923	No Data Qualification
0173-96-0109	Pest/PCB	8081	1923	No Data Qualification

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TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
0173-96-0110	Pest/PCB	8081	1923	No Data Qualification
0173-96-0111	Pest/PCB	8081	1923	No Data Qualification
0173-96-0112	Pest/PCB	8081	1923	No Data Qualification
0173-96-0113	Pest/PCB	8081	1923	No Data Qualification
0173-96-0114	Pest/PCB	8081	1923	No Data Qualification
0173-96-0118	Pest/PCB	8081	1923	No Data Qualification
0173-96-0121	Pest/PCB	8081	1944	No Data Qualification
0173-96-0122	Pest/PCB	8081	1944	No Data Qualification
0173-96-0123	Pest/PCB	8081	1944	No Data Qualification
0173-96-0128	Pest/PCB	8081	1944	No Data Qualification
0173-96-0129	Pest/PCB	8081	1944	No Data Qualification
0173-96-0130	Pest/PCB	8081	1944	No Data Qualification
0173-96-0131	Pest/PCB	8081	1944	No Data Qualification
0173-97-0042	PEST/PCB	8081	3182R	No Data Qualification
0173-97-0043	PEST/PCB	8081	3182R	No Data Qualification
0173-97-0044	PEST/PCB	8081	3182R	No Data Qualification
0173-97-0045	PEST/PCB	8081	3182R	No Data Qualification
0173-97-0046	PEST/PCB	8081	3182R	No Data Qualification
0173-97-0047	PEST/PCB	8081	3182R	No Data Qualification
0173-97-0066	PCB only	8081	3269R	No Data Qualification
0173-97-0067	Pest/PCB	8081	3282R	No Data Qualification
0173-97-0068	Pest/PCB	8081	3282R	No Data Qualification
0173-97-0069	Pest/PCB	8081	3288R	No Data Qualification
0173-97-0070	Pest/PCB	8081	3288R	No Data Qualification
0173-97-0071	Pest/PCB	8081	3288R	No Data Qualification
0173-97-0072	Pest/PCB	8081	3302R	No Data Qualification
0173-97-0073	Pest/PCB	8081	3302R	No Data Qualification
AAB7473	Pest/PCB	8080	19587	No Data Qualification
AAB7474	Pest/PCB	8080	19618	No Data Qualification

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAB7475	Pest/PCB	8080	19618	No Data Qualification
AAB7476	Pest/PCB	8080	19618	No Data Qualification
AAB7477	Pest/PCB	8080	19618	No Data Qualification
AAB7478	Pest/PCB	8080	19633	No Data Qualification
AAB7479	Pest/PCB	8080	19652	No Data Qualification
AAB7480	Pest/PCB	8080	19652	No Data Qualification
AAB7481	Pest/PCB	8080	19652	No Data Qualification
AAB7482	Pest/PCB	8080	19654	No Data Qualification
AAB7483	Pest/PCB	8080	19654	No Data Qualification
AAB7484	Pest/PCB	8080	19685	No Data Qualification
AAB7485	Pest/PCB	8080	19685	No Data Qualification
AAB7486	Pest/PCB	8080	19685	No Data Qualification
AAB7487	Pest/PCB	8080	19685	No Data Qualification
AAB7573	Pest/PCB	8080	19685	No Data Qualification
AAB7574	Pest/PCB	8080	19688	No Data Qualification
AAB7575	Pest/PCB	8080	19688	No Data Qualification
AAB7576	Pest/PCB	8080	19688	No Data Qualification
AAB7577	Pest/PCB	8080	19688	No Data Qualification
AAB7578	Pest/PCB	8080	19688	No Data Qualification
AAB7579	Pest/PCB	8080	19688	No Data Qualification
AAB7580	Pest/PCB	8080	19688	No Data Qualification
AAB7581	Pest/PCB	8080	19688	No Data Qualification
AAB7582	Pest/PCB	8080	19746	Aroclor 1242 qualified UJ for low recovery in the QC sample (50%)
AAB7583	Pest/PCB	8080	19746	Aroclor 1242 qualified UJ for low recovery in the QC sample (50%)
AAB7584	Pest/PCB	8080	19746	Aroclor 1242 qualified UJ for low recovery in the QC sample (50%)
AAB7585	Pest/PCB	8080	19746	Aroclor 1242 qualified UJ for low recovery in the QC sample (50%)
AAB7586	Pest/PCB	8080	19746	Aroclor 1242 qualified UJ for low recovery in the QC sample (50%)
AAB7587	Pest/PCB	8080	19746	Aroclor 1242 qualified UJ for low recovery in the QC sample (50%)

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAC0944	Pest/PCB	8080	19746	Aroclor 1242 qualified UJ for low recovery in the QC sample (50%)
AAC0945	Pest/PCB	8080	19899	No Data Qualification
AAC0946	Pest/PCB	8080	19899	No Data Qualification
AAC0947	Pest/PCB	8080	19899	No Data Qualification
AAC0948	Pest/PCB	8080	19899	No Data Qualification
AAC0949	Pest/PCB	8080	19899	No Data Qualification
AAC0950	Pest/PCB	8080	19899	No Data Qualification
AAC0951	Pest/PCB	8080	19899	No Data Qualification
AAC0952	Pest/PCB	8080	19927	No Data Qualification
AAC0953	Pest/PCB	8080	19927	No Data Qualification
AAC0954	Pest/PCB	8080	19927	No Data Qualification
AAC0955	Pest/PCB	8080	19927	No Data Qualification
AAC0956	Pest/PCB	8080	19982	No Data Qualification
AAC0957	Pest/PCB	8080	19982	No Data Qualification
AAC0958	Pest/PCB	8080	19982	No Data Qualification
AAC1601	Pest/PCB	8080	19982	No Data Qualification
AAC1602	Pest/PCB	8080	19983	No Data Qualification
AAC1603	Pest/PCB	8080	19983	No Data Qualification
AAC1604	Pest/PCB	8080	19983	No Data Qualification
AAC1605	Pest/PCB	8080	19983	No Data Qualification
AAC1606	Pest/PCB	8080	19983	No Data Qualification
AAC1607	Pest/PCB	8080	19983	No Data Qualification
AAC1608	Pest/PCB	8080	20035	No Data Qualification
AAC1609	Pest/PCB	8080	20035	No Data Qualification
AAC1610	Pest/PCB	8080	20035	No Data Qualification
AAC1611	Pest/PCB	8080	20035	No Data Qualification
AAC1612	Pest/PCB	8080	20035	No Data Qualification
AAC1613	Pest/PCB	8080	20035	No Data Qualification
AAC1614	Pest/PCB	8080	20035	No Data Qualification
AAC1615	Pest/PCB	8080	20035	No Data Qualification
AAC1616	Pest/PCB	8080	20035	No Data Qualification
AAC1617	Pest/PCB	8080	20035	No Data Qualification
AAC1618	Pest/PCB	8080	20035	No Data Qualification
AAC1619	Pest/PCB	8080	20035	No Data Qualification

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TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAC1620	Pest/PCB	8080	20206	No Data Qualification
AAC1621	Pest/PCB	8080	20206	No Data Qualification
AAC1622	Pest/PCB	8080	20233	No Data Qualification
AAC1623	Pest/PCB	8080	20233	No Data Qualification
AAC1624	Pest/PCB	8080	20233	No Data Qualification
AAC1625	Pest/PCB	8080	20233	No Data Qualification
AAC1626	Pest/PCB	8080	20233	No Data Qualification
AAC1627	Pest/PCB	8080	20237	No Data Qualification
AAC1628	Pest/PCB	8080	20237	No Data Qualification
AAC1629	Pest/PCB	8080	20237	No Data Qualification
0173-95-0171	TAL Metals	CLP ILM03.0, Hg = 7471	1317	Cr (145%), Cu (134%), Mn (208%) qualified J+ for high recovery and Se (42%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0172	TAL Metals	CLP ILM03.0, Hg = 7471	1317	Cr (145%), Cu (134%), Mn (208%) qualified J+ for high recovery and Se (42%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0173	TAL Metals	CLP ILM03.0, Hg = 7471	1317	Cr (145%), Cu (134%), Mn (208%) qualified J+ for high recovery and Se (42%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0174	TAL Metals	CLP ILM03.0, Hg = 7471	1317	Cr (145%), Cu (134%), Mn (208%) qualified J+ for high recovery and Se (42%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0175	TAL Metals	CLP ILM03.0, Hg = 7471	1319	Cr (170%) qualified J+ for high recovery and Se (43%) and Sb (51%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0176	TAL Metals	CLP ILM03.0, Hg = 7471	1319	Cr (170%) qualified J+ for high recovery and Se (43%) and Sb (51%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0177	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1402	Ag (66%) and Cu (72%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0178	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1402	Ag (66%) and Cu (72%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0179	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1402	Ag (66%) and Cu (72%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0180	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1435	Zn (129%) and Pb (142%) qualified J+ for high recovery and Cu (47%) qualified UJ or J- and Sb (27%) qualified R for low recovery in matrix spike sample.

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TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
0173-95-0181	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1435	Zn (129%) and Pb (142%) qualified J+ for high recovery and Cu (47%) and Sb (27%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0183	TAL Metals	CLP ILM03.0, Hg = 7471	1440	Pb (163%) qualified J+ for high recovery and Se (55%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0184	TAL Metals	CLP ILM03.0, Hg = 7471	1440	Pb (163%) qualified J+ for high recovery and Se (55%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0185	TAL Metals	CLP ILM03.0, Hg = 7471	1440	Pb (163%) qualified J+ for high recovery and Se (55%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0186	TAL Metals	Hg = 7471A, all others = 6010A	1487	Mn (35%) and Zn (59%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0187	TAL Metals	Hg = 7471A, all others = 6010A	1487	Mn (35%) and Zn (59%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0188	TAL Metals	Hg = 7471A, all others = 6010A	1487	Mn (35%) and Zn (59%) qualified UJ or J- for low recovery in matrix spike sample.
0173-95-0191	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1502	Mn (33%) and As (75%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0101	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0102	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0103	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0104	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0105	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0106	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0107	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0108	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0109	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
0173-96-0110	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0111	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0112	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0113	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0114	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0118	TAL Metals	Hg = 7471A, all others = 6010A	1924	Ag (73%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0121	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1945	Pb (676%) qualified J+ for high recovery and Cr (43%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0122	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1945	Pb (676%) qualified J+ for high recovery and Cr (43%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0123	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1945	Pb (676%) qualified J+ for high recovery and Cr (43%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0128	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1945	Pb (676%) qualified J+ for high recovery and Cr (43%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0129	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1945	Pb (676%) qualified J+ for high recovery and Cr (43%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0130	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1945	Pb (676%) qualified J+ for high recovery and Cr (43%) qualified UJ or J- for low recovery in matrix spike sample.
0173-96-0131	TAL Metals	Hg = 7471A, As = 7060A, Se = 7740, Ti = 7841, others = 6010A	1945	Pb (676%) qualified J+ for high recovery and Cr (43%) qualified UJ or J- for low recovery in matrix spike sample.
0173-97-0042	TAL Metals	Hg = 7471A, all others = 6010A	3183R	Sb, Mn and Se qualified J- or UJ and Ti qualified J+ for low and high recoveries in the matrix spike sample respectively.
0173-97-0043	TAL Metals	Hg = 7471A, all others = 6010A	3183R	Sb, Mn and Se qualified J- or UJ and Ti qualified J+ for low and high recoveries in the matrix spike sample respectively.
0173-97-0044	TAL Metals	Hg = 7471A, all others = 6010A	3183R	Sb, Mn and Se qualified J- or UJ and Ti qualified J+ for low and high recoveries in the matrix spike sample respectively.
0173-97-0045	TAL Metals	Hg = 7471A, all others = 6010A	3183R	Sb, Mn and Se qualified J- or UJ and Ti qualified J+ for low and high recoveries in the matrix spike sample respectively.
0173-97-0046	TAL Metals	Hg = 7471A, all others = 6010A	3183R	Sb, Mn and Se qualified J- or UJ and Ti qualified J+ for low and high recoveries in the matrix spike sample respectively.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
0173-97-0047	TAL Metals	Hg = 7471A, all others = 6010A	3183R	Sb, Mn and Se qualified J- or UJ and Tl qualified J+ for low and high recoveries in the matrix spike sample respectively.
0173-97-0068	TAL Metals	Hg = 7471A, all others = 6010A	3270R	Sb (72%) qualified UJ or J- for low recovery in matrix spike sample.
0173-97-0067	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	3283R	Mn (70%) and Sb (68%) qualified UJ or J- for low recovery in matrix spike sample.
0173-97-0068	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	3283R	Mn (70%) and Sb (68%) qualified UJ or J- for low recovery in matrix spike sample.
0173-97-0069	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	3289R	Mn (70%) and Sb (68%) qualified UJ or J- for low recovery in matrix spike sample.
0173-97-0070	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	3289R	Mn (70%) and Sb (68%) qualified UJ or J- for low recovery in matrix spike sample.
0173-97-0071	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	3289R	Mn (70%) and Sb (68%) qualified UJ or J- for low recovery in matrix spike sample.
0173-97-0072	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	3303R	Mn (70%) and Sb (68%) qualified UJ or J- for low recovery in matrix spike sample.
0173-97-0073	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	3303R	Mn (70%) and Sb (68%) qualified UJ or J- for low recovery in matrix spike sample.
AAB7473	TAL Metals	Hg = 7470, all others = 6010A	20532	Hg qualified UJ for exceeding holding time by 20 days.
AAB7474	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	20098	Hg qualified J or UJ for exceeding holding time by 1 day.
AAB7475	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	20098	Hg qualified J or UJ for exceeding holding time by 1 day.
AAB7476	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	20098	Hg qualified J or UJ for exceeding holding time by 1 day.
AAB7477	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	20098	Hg qualified J or UJ for exceeding holding time by 1 day.
AAB7478	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	20099	Hg qualified J or UJ for exceeding holding time by 1 day.
AAB7479	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	20100	No Data Qualification
AAB7480	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	20100	No Data Qualification
AAB7481	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Tl = 7841, others = 6010A	20100	No Data Qualification

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAB7482	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20102	Hg qualified J or UJ for exceeding holding time by 12 day.
AAB7483	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20102	Hg qualified J or UJ for exceeding holding time by 12 day.
AAB7484	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20105	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7485	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20105	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7486	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20105	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7487	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20105	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7573	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20105	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7574	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20104	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7575	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20104	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7576	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20104	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7577	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20104	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7578	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20104	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7579	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20104	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7580	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20104	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7581	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20104	Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the QC sample and are qualified J- or UJ.
AAB7582	TAL Metals	CLP ILM02.0, Hg = 7471A	19994	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAB7583	TAL Metals	CLP ILM02.0, Hg = 7471A	19994	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAB7584	TAL Metals	CLP ILM02.0, Hg = 7471A	19994	K (162%) and V (128%) qualified J+ for high recovery in QC sample.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAB7585	TAL Metals	CLP ILM02.0, Hg =7471A	19994	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAB7586	TAL Metals	CLP ILM02.0, Hg =7471A	19994	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAB7587	TAL Metals	CLP ILM02.0, Hg =7471A	19994	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAC0944	TAL Metals	CLP ILM02.0, Hg =7471A	19994	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAC0945	TAL Metals	CLP ILM02.0, Hg =7471A	19995	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAC0946	TAL Metals	CLP ILM02.0, Hg =7471A	19995	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAC0947	TAL Metals	CLP ILM02.0, Hg =7471A	19995	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAC0948	TAL Metals	CLP ILM02.0, Hg =7471A	19995	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAC0949	TAL Metals	CLP ILM02.0, Hg =7471A	19995	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAC0950	TAL Metals	CLP ILM02.0, Hg =7471A	19995	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAC0951	TAL Metals	CLP ILM02.0, Hg =7471A	19995	K (162%) and V (128%) qualified J+ for high recovery in QC sample.
AAC0952	TAL Metals	CLP ILM02.0 Hg =7471A	20038	K (141%) qualified J+ for high recovery in QC sample.
AAC0953	TAL Metals	CLP ILM02.0 Hg =7471A	20038	K (141%) qualified J+ for high recovery in QC sample.
AAC0954	TAL Metals	CLP ILM02.0 Hg =7471A	20038	K (141%) qualified J+ for high recovery in QC sample.
AAC0955	TAL Metals	CLP ILM02.0 Hg =7471A	20038	K (141%) qualified J+ for high recovery in QC sample.
AAC0956	TAL Metals	CLP ILM02.0 Hg =7471A	20041	K (141%) qualified J+ for high recovery in QC sample.
AAC0957	TAL Metals	CLP ILM02.0 Hg =7471A	20041	K (141%) qualified J+ for high recovery in QC sample.
AAC0958	TAL Metals	CLP ILM02.0 Hg =7471A	20041	K (141%) qualified J+ for high recovery in QC sample.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analyte	Method	Req #	QO Comments
AAC1601	TAL Metals	CLP ILM02.0 Hg = 7471A	20041	K (141%) qualified J+ for high recovery in QO sample.
AAC1602	TAL Metals	CLP ILM02.0 Hg = 7471A	20030	No data qualification.
AAC1603	TAL Metals	CLP ILM02.0 Hg = 7471A	20030	No data qualification.
AAC1604	TAL Metals	CLP ILM02.0 Hg = 7471A	20030	No data qualification.
AAC1605	TAL Metals	CLP ILM02.0 Hg = 7471A	20030	No data qualification.
AAC1606	TAL Metals	CLP ILM02.0 Hg = 7471A	20030	No data qualification.
AAC1607	TAL Metals	CLP ILM02.0 Hg = 7471A	20030	No data qualification.
AAC1608	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1609	TAL Metals	Hg = 7471A, As = 7050A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1610	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1611	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1612	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1613	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1614	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1615	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1616	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1617	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1618	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAC1619	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20265	No data qualification.
AAC1620	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20266	No data qualification.
AAC1621	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20266	No data qualification.
AAC1622	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20268	Cr(66%) and Ig (50%) had low recoveries in the QC sample and are qualified J- or UJ.
AAC1623	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20268	Cr(66%) and Ig (50%) had low recoveries in the QC sample and are qualified J- or UJ.
AAC1624	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20268	Cr(66%) and Ig (50%) had low recoveries in the QC sample and are qualified J- or UJ.
AAC1625	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20268	Cr(66%) and Ig (50%) had low recoveries in the QC sample and are qualified J- or UJ.
AAC1626	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20268	Cr(66%) and Ig (50%) had low recoveries in the QC sample and are qualified J- or UJ.
AAC1627	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20270	No data qualification.
AAC1628	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20270	No data qualification.
AAC1629	TAL Metals	Hg = 7471A, As = 7060A, Pb = 7421, Se = 7740, Ti = 7841, others = 6010A	20270	No data qualification.
0173-96-0101	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
0173-96-0102	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
0173-96-0103	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
0173-96-0104	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
0173-96-0105	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
0173-96-0106	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
0173-96-0107	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analyte	Method	Req #	QC Comments
Q173-98-Q108	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
Q173-98-Q109	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
Q173-98-Q110	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
Q173-98-Q111	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
Q173-98-Q112	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
Q173-98-Q113	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
Q173-98-Q114	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
Q173-98-Q118	RAD	U by KPA, Pu by Alpha spec, Sr-90 by gas proportional counting, and Gamma Spec	1925	K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237 qualified J for > 3 sigma difference in duplicate.
AAB7473	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20026	Low recovery for U in QC sample (43%). U data qualified J.
AAB7474	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20027	Low recovery for U in QC sample (43%). Out of control recoveries in matrix spike (157%) and LCS (70%) for Sr-90 and low tracer recovery for Pu (<20%). Data for these analytes are qualified J or U.
AAB7475	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20027	Low recovery for U in QC sample (43%). Out of control recoveries in matrix spike (157%) and LCS (70%) for Sr-90 and low tracer recovery for Pu (<20%). Data for these analytes are qualified J or U.
AAB7476	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20027	Low recovery for U in QC sample (43%). Out of control recoveries in matrix spike (157%) and LCS (70%) for Sr-90 and low tracer recovery for Pu (<20%). Data for these analytes are qualified J or U.
AAB7477	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20027	Low recovery for U in QC sample (43%). Out of control recoveries in matrix spike (157%) and LCS (70%) for Sr-90 and low tracer recovery for Pu (<20%). Data for these analytes are qualified J or U.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAB7478	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20028	Low recovery for U in QC sample (43%). U data qualified J.
AAB7479	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20194	Pu-238 and Am-241 qualified U for peak misidentification.
AAB7480	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20194	Pu-238 and Am-241 qualified U for peak misidentification.
AAB7481	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20194	Pu-238 and Am-241 qualified U for peak misidentification.
AAB7482	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20192	Low recovery for Sr-90 in LCS (79%) and matrix spike (77%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7483	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20192	Low recovery for Sr-90 in LCS (79%) and matrix spike (77%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7484	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20199	Low recovery for Sr-90 in QC sample (54%) and matrix spike (47%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7485	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20199	Low recovery for Sr-90 in QC sample (54%) and matrix spike (47%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7486	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20199	Low recovery for Sr-90 in QC sample (54%) and matrix spike (47%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7487	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20199	Low recovery for Sr-90 in QC sample (54%) and matrix spike (47%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7573	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20199	Low recovery for Sr-90 in QC sample (54%) and matrix spike (47%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7574	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20196	Low recovery for U (85%) and Sr-90 (79%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAB7575	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20196	Low recovery for U (85%) and Sr-90 (79%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7576	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20196	Low recovery for U (85%) and Sr-90 (79%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7577	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20196	Low recovery for U (85%) and Sr-90 (79%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7578	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20196	Low recovery for U (85%) and Sr-90 (79%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7579	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20196	Low recovery for U (85%) and Sr-90 (79%) in QC sample. U and Sr-90 data qualified J-. Am-241 qualified J for low tracer recovery (27%). Pu-238 and Am-241 qualified U for peak misidentification.
AAB7580	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20196	Low recovery for U (85%) and Sr-90 (79%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7581	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20196	Low recovery for U (85%) and Sr-90 (79%) in QC sample. U and Sr-90 data qualified J-. Am-241 qualified J for low tracer recovery (29%). Pu-238 and Am-241 qualified U for peak misidentification.
AAB7582	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20200	Low recovery for Sr-90 in QC sample (75%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7583	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20200	Low recovery for Sr-90 in QC sample (75%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7584	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20200	Low recovery for Sr-90 in QC sample (75%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7585	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20200	Low recovery for Sr-90 in QC sample (75%). Sr-90 data qualified J-. Am-241 qualified J for low tracer recovery (20%). Pu-238 and Am-241 qualified U for peak misidentification.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAB7586	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20200	Low recovery for Sr-90 in QC sample (75%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAB7587	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20200	Low recovery for Sr-90 in QC sample (75%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0944	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20200	Low recovery for Sr-90 in QC sample (75%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0945	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20202	Low recovery for U (60%) and Sr-90 (56%), Pu-239 (82%) in QC sample. U and Sr-90 Pu-239 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0946	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20202	Low recovery for U (60%) and Sr-90 (56%), Pu-239 (82%) in QC sample. U and Sr-90 Pu-239 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0947	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20202	Low recovery for U (60%) and Sr-90 (56%), Pu-239 (82%) in QC sample. U and Sr-90 Pu-239 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0948	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20202	Low recovery for U (60%) and Sr-90 (56%), Pu-239 (82%) in QC sample. U and Sr-90 Pu-239 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0949	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20202	Low recovery for U (60%) and Sr-90 (56%), Pu-239 (82%) in QC sample. U and Sr-90 Pu-239 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0950	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20202	Low recovery for U (60%) and Sr-90 (56%), Pu-239 (82%) in QC sample. U and Sr-90 Pu-239 data qualified J-. Am-241 qualified J for low tracer recovery (23%). Pu-238 and Am-241 qualified U for peak misidentification.
AAC0951	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20202	Low recovery for U (60%) and Sr-90 (56%), Pu-239 (82%) in QC sample. U and Sr-90 Pu-239 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0952	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20189	Low recovery for Sr-90 in LCS (68%) and Matrix spike (79%). Sr-90 data qualified UJ. Pu-238 and Am-241 qualified U for peak misidentification.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAC0953	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20189	Low recovery for Sr-90 in LCS (68%) and Matrix spike (79%). Sr-90 data qualified UJIF534. Am-241 qualified J for low tracer recovery (19%). Pu-238 and Am-241 qualified U for peak misidentification.
AAC0954	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20189	Low recovery for Sr-90 in LCS (79%). Sr-90 data qualified J-. Am-241 qualified J for low tracer recovery (28%). Pu-238 and Am-241 qualified U for peak misidentification.
AAC0955	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20189	Low recovery for Sr-90 in LCS (79%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0956	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20188	Low recovery for Sr-90 in LCS (68%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0957	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20188	Low recovery for Sr-90 in LCS (68%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC0958	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20188	Low recovery for Sr-90 in LCS (68%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1601	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20188	Low recovery for Sr-90 in LCS (68%). Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1602	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20201	Low recovery for U (64%) and Sr-90 (48%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1603	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20201	Low recovery for U (64%) and Sr-90 (48%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1604	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20201	Low recovery for U (64%) and Sr-90 (48%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1605	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20201	Low recovery for U (64%) and Sr-90 (48%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1606	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20201	Low recovery for U (64%) and Sr-90 (48%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAC1607	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20201	Low recovery for U (64%) and Sr-90 (48%) in QC sample. U and Sr-90 data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1608	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1609	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1610	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1611	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1612	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1613	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1614	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Am-241 qualified J for low tracer recovery (30%). Pu-238 and Am-241 qualified U for peak misidentification.
AAC1615	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1616	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1617	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1618	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.

TABLE C-2.2-2 (CONTINUED)

Sample Id	Analysis	Method	Req #	QC Comments
AAC1619	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20187	Low recovery for U in QC sample (68%). U data qualified J-. Pu-238 and Am-241 qualified U for peak misidentification.
AAC1620	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20287	Sr-90 qualified J+ for high recovery in the matrix spike (185%)
AAC1621	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20287	Sr-90 qualified J+ for high recovery in the matrix spike (185%)
AAC1622	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20288	Low recovery for U (43%) and Sr-90 (46%) in QC sample. U and Sr-90 data qualified J-.
AAC1623	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20288	Low recovery for U (43%) and Sr-90 (46%) in QC sample. U and Sr-90 data qualified J-.
AAC1624	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20288	Low recovery for U (43%) and Sr-90 (46%) in QC sample. U and Sr-90 data qualified J-.
AAC1625	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20288	Low recovery for U (43%) and Sr-90 (46%) in QC sample. U and Sr-90 data qualified J-.
AAC1626	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20288	Low recovery for U (43%) and Sr-90 (46%) in QC sample. U and Sr-90 data qualified J-.
AAC1627	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20289	Low recovery for Sr-90 in the LCS (70%). Sr-90 data qualified UJ
AAC1628	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20289	Low recovery for Sr-90 in the LCS (70%). Sr-90 data qualified UJ
AAC1629	RAD	Gamma Spec, Am-241 by alpha spec, Pu by Alpha spec, Sr-90 by gas proportional counting, U by KPA	20289	Low recovery for Sr-90 in the LCS (70%). Sr-90 data qualified UJ

Standard sample preparation methods were used following the EPA SW846 3000 series procedures for solid samples.

Quantitation limits for the analyses mentioned above are contained in Appendix D.

Most of the QC problems with this data set were caused by high or low recoveries in the matrix spike sample. The normal acceptable recovery range for matrix spike samples is 75-125%. Matrix spike samples are used to assess the quality of the sample digestion, extraction and analysis procedures. A low recovery suggests that either there was incomplete recovery of an analyte in these procedures or sample heterogeneity. A high recovery indicates either sample heterogeneity or a matrix interference. One of the reasons for the repeated difficulties in the recoveries is the heterogeneous nature of soil samples. Also, for several of the analytes, there are interferences in the ICP technique which can also cause problems with the reported recoveries.

The specific data qualifications are as follows. For samples 0173-95-0171 through 0174, Cr (145%), Cu (134%) and Mn (208%) detects are qualified J+ for high recoveries and Se (42%) is qualified UJ or J- for a low recovery in the matrix spike sample. For samples 0173-95-0175 and 0176, Cr (170%) detects are qualified J+ for a high recovery and Se (43%) and Sb (51%) are qualified UJ or J- for low recoveries in the matrix spike sample. For samples 0173-95-0177 through 0179, Ag (66%) and Cu (72%) are qualified UJ or J- for low recoveries in the matrix spike sample. For samples 0173-95-0180 and 0181, Zn (129%) and Pb (142%) are qualified J+ for high recoveries and Cu (47%) is qualified UJ or J- and Sb (27%) is qualified R for low recoveries in the matrix spike sample. For samples 0173-95-0183 through 0185, Pb (163%) is qualified J+ for a high recovery and Se (55%) is qualified UJ or J- for low a recovery in the matrix spike sample. For samples 0173-95-0186 through 0188, Mn (35%) and Zn (59%) are qualified UJ or J- for low recoveries in the matrix spike sample. For sample 0173-95-0191 Mn (33%) and As (75%) are qualified UJ or J- for low recoveries in the matrix spike sample. For samples 0173-96-0101 through 0114 and 0118, Ag (73%) is qualified UJ or J for low recoveries in the matrix spike sample. For samples 0173-96-0121 through 0123 and 0128 through 0131, Pb (676%) is qualified J+ for a high recovery and Cr (43%) is qualified UJ or J- for a low recovery in the matrix spike sample. For samples 0173-97-0064 and 0065, Mn (174%) is qualified J+ for a high recovery and Sb (68%) is qualified UJ or J- for a low recovery in the matrix spike sample. For sample 0173-97-0066 Sb (72%) is qualified UJ or J- for a low recovery in the matrix spike sample. For samples 0173-97-0067 through 0073, Mn (70%) and Sb (68%) are qualified UJ or J- for low recoveries in the matrix spike sample.

For samples 0173-97-0042 to 0047 antimony (29%), manganese (34%) and selenium (48%) had low recoveries and thallium (126%) a high recovery in the matrix spike sample. To address this problem, post-digestion spikes, which are used to assess the sample extraction and analysis procedures, were performed for antimony, manganese, selenium and thallium. The recoveries for the post-digestion spikes were within the limits allowed in USEPA SW846 guidelines, which are 75%-125%. As required by the ER

data validation procedure, UJ and J- qualifiers were added to all manganese and selenium data and J+ qualifiers to all thallium data in this request. Normally an R qualifier would be required for all nondetected antimony data for a matrix spike recovery of less than 30%. However, since the low recovery in the matrix spike could be due to sample heterogeneity or matrix effects, and since the recovery is only 1% below the required recovery, it is prudent to look at other QC parameters in the analysis. For this request, the post digestion spike, the laboratory control sample, the inductively coupled plasma (ICP) interference check sample, the initial and continuing calibrations, the initial and continuing calibration blanks and the duplicate value for antimony were all well within the ER validation criteria. Because all other QC parameters were within the acceptance criteria, the antimony data will be qualified UJ for the low recovery in the matrix spike.

There were also several QC difficulties with the blind QC samples which were submitted in 1994 and early 1995 when CST was handling the SMO. For samples AAB7484 through AAB7487 and AAB7573 through AAB7581, Al (64%), Cr(72%), Mg(72%) and V(75%) had low recoveries in the blind QC sample and are qualified J- or UJ. For samples AAB7582 through AAB7587 and AAC0944 through AAC0951, K (162%) and V (128%) detects are qualified J+ for high recoveries in the blind QC sample. For samples AAC0952 through AAC0958 and AAC1601 K (141%) is qualified J+ for a high recovery in the blind QC sample. For samples AAC1622 through AAC1626, Cr (66%) and Hg (50%) had low recoveries in the blind QC sample and are qualified J- or UJ.

There were several problems with samples missing the recommended holding time of 28 days for Hg. Sample AAB7473 exceeded the holding time by 20 days. Samples AAB7474 through 7478 exceeded the holding time by 1 day. Samples AAB7482 and 7483 exceeded the holding time by 12 days. None of these grossly exceed the recommended holding time, but the data are qualified J- or UJ for the slightest possibility of low biased data.

Soil Gas Samples

No inorganic analyses were done for the soil gas samples.

C-3.0 RADIOCHEMICAL ANALYSES

C-3.1 Field Analyses

No field analyses for radiochemicals were performed.

C-3.2 Fixed Laboratory Analyses

Water Samples

The water samples were not analyzed for radiochemical constituents. Though some of the samples were analyzed for U, it was submitted as an inorganic analysis and is discussed in the inorganic section.

Soil/Tuff Samples

Eight-nine samples were analyzed for a variety of radiochemical analytes. These analytes included gamma emitting analytes using gamma spectroscopy, Am-241, Pu-238 and Pu-239 by alpha spectroscopy, Sr-90 by gas proportional counting and total uranium by kinetic phosphorescence analysis (KPA).

For these analyses, KPA used a total dissolution technique for sample preparation, therefore the results should be comparable to the results from the background studies. There is a problem with negative bias when using KPA for the analysis of soil samples. While KPA is an excellent technique for water samples, it often has a negative bias of 20-40% for soil samples which can vary with the sample matrix.

Quantitation limits for the analyses mentioned above are contained in Appendix D.

Detection status was determined by the minimum detectable activity or the 3 sigma TPU.

There was an interference problem for Am-241 and Pu-238 for samples that were analyzed by one analytical lab, Ecotek LSI. The affected samples were in request numbers 20187, 20188, 20189, 20192, 20194, 20196, 20199, 20200, 20201 and 20202. The problem was that Ecotek used separation techniques for both Am and Pu that did not completely remove Th from the sample. The result was that 3 Th isotopes (Th-232 and Th-228, daughters of U-238, and also Th-230) appeared in the alpha spectra for each sample, and Th-228 has an alpha energy approximately the same as Am-241 and Pu-238. This resulted in false positive identification of Am-241 and Pu-238 in most of the samples since all of the soil samples contain natural U and Th. However, the presence of Th-228 and not Am-241 or Pu-238 was confirmed in each sample by the presence of Th-230 and Th-232 at similar levels but at different energies in the spectra. Because of these interferences, the minimum detection levels for Am-241 and Pu-238 in these samples were elevated to the concentration reported and were qualified U, not detected.

There were a number of minor problems with QC parameters. For samples 0173-96-0101 through 0114 and 0118 the duplicate sample had a greater than 3-sigma difference for K-40, Cs-137, Bi-211, Pb-211, Th-211, Ra-226 and Np-237. Therefore the detected data for these analytes are qualified J. For samples AAB7473 through AAB7478 U was qualified J for a low recovery (43%) in the blind QC sample. For samples AAB7474 through AAB7477 Pu was qualified UJ for a low tracer recovery (19%) and Sr-90 was qualified J or UJ for a high recovery in the matrix spike (157%) and a low recovery in the LCS (70%). For samples AAB7482 through AAB7487 and AAB7573, Sr-90 was qualified J- or UJ for low recoveries in the LCS (79%) and the matrix spike (77%). For samples AAB7574 through AAB7581 U and Sr-90 were qualified J- or UJ for a low recoveries, 85% and 79%, in the blind QC sample. For samples AAB7579 and AAB7581 Am-241 was qualified UJ for low tracer recoveries (27% and 29%). For samples AAB7582 through AAB7587 and AAC0944 Sr-90 is qualified J- for a low recovery (75%) in the blind QC sample. For sample AAB7585 Am-241 was qualified UJ for a low tracer recovery (20%). For samples AAC0945 through AAC0951 U (60%) Sr-90 (56%) and Pu-239 (82%) were qualified J- or UJ for low recoveries in the blind QC sample. For sample AAC0950 Am-241 was qualified J for a low tracer recovery (23%). For samples AAC0952 through AAC0958 and AAC1601 Sr-90 is qualified UJ for a low recoveries (68%) in the LCS and the matrix spike (79%). For samples AAC0953 and AAC0954 Am-241 was qualified UJ for low tracer recoveries (19% and 28%). For samples AAC1602 through AAC1607 U (64%) and Sr-90 (48%)

were qualified J- or UJ for low recoveries in the blind QC sample. For samples AAC1608 through AAC1619 U is qualified J- for a low recovery (68%) in the blind QC sample. For sample AAC1614 Am-241 was qualified J for a low tracer recovery (30%). For samples AAC1620 and AAC1621 Sr-90 is qualified UJ and J- for a high recovery (185%) in the matrix spike sample. For samples AAC1622 through AAC1626 U (43%) and Sr-90 (46%) were qualified J- or UJ for low recoveries in the blind QC sample. For samples AAC1627 through AAC1629 Sr-90 is qualified UJ for a low recovery (70%) in the matrix spike sample.

There were 5 detects of Sr-90 above background values in the subsurface. While there are no definitive data to disqualify these data, there are some questionable factors which cast some doubt on each of the detects. For sample AAB7573, Sr-90 was detected at 1.83 pCi/g but the laboratory duplicate value was nondetect (-0.786 pCi/g). For samples AAC0945 and AAC0951 Sr-90 values were 4.03 and 4.4 pCi/g but both of these samples were analyzed immediately after QC samples containing elevated amounts of Sr-90 (9.5 and 13.3 pCi/g). Sample AAC1621 had an activity of 2.13 pCi/g which happened to correspond exactly with the activity in the LCS. A duplicate analysis gave a higher value (3.23 pCi/g) and the matrix spike gave a yield of 185%. For sample AAC1625 there was no MS sample analyzed with the batch and the blind QC sample had a low recovery.

While none of these factors would cause rejection of these data, the data are brought to the readers attention to point out that the detects of Sr-90 in the subsurface are questionable.

Soil gas Samples

No radiochemical analyses were performed for the soil gas samples.

C-4.0 ORGANIC ANALYSES

C-4.1 Field Analyses

C-4.2 Fixed Laboratory Analyses

Water Samples

VOC

Thirty-seven lysimeter water samples were analyzed for VOCs using EPA SW846 method 8240 or 8260.

The quantitation limits for these methods can be found in appendix D.

The only QC problem with this sample set was for samples 0173-96-0521, 0522 and 0523. Acetone was found in the method blank at a concentration of 12 µg/kg and in the samples between 8 and 11 µg/kg. The acetone values for these samples were all considered not detected because of the blank contamination. No other QC criteria required data qualification.

The only QC problem with this data set was blank contamination, which raised the quantitation limits for 2 samples. This does not in any way affect the quality of the data set. All water data are usable.

Soil/Tuff Samples

VOC

VOC analyses were run for 112 samples in this data set using EPA SW846 method 8240 or 8260.

The quantitation limits for these methods can be found in appendix D.

On occasion, samples have to be diluted during analysis which results in higher quantitation limits. This can be caused by high levels of target analytes or other organic material in the sample. When this occurs, the laboratories normally report both the diluted and undiluted analyses so that only the analytes which exceeded the linear calibration range or had interferences in the undiluted sample are reported with elevated quantitation limits.

Acetone and methylene chloride are often found in method blanks. When this occurs, detects in the samples are considered non-detects when the concentration in the sample is less than 10 times the concentration found in the blank (EPA National Functional Guidelines).

There were a number of QC difficulties with this data set. For sample 0173-95-0171 all analytes were qualified J- or UJ for 1 low internal standard (IS) (4th) and 1 low surrogate recovery (69%). For sample 0173-95-0175 there was 1 low IS recovery (4th). The sample was reanalyzed with similar results. Associated data were qualified J or UJ. For sample 0173-95-0176 all data were qualified J or UJ for 1 low IS (4th) and 1 low surrogate recovery (DFB = 15%). The sample was reanalyzed with similar results. For samples 0173-96-0130 and 0131 all data are qualified J or UJ for 3 low IS and 1 low and 1 high surrogate recovery. The sample was reanalyzed with similar results. For samples AAB7574 through AAB7581 acetone was qualified UJ for inadequate precision in the initial and continuing calibrations which leads to greater uncertainty in the analyte concentration. Sample AAB7580 had low internal standard recoveries so all analytes were qualified UJ. For sample AAC0946 there was 1 low IS recovery (3rd). The sample was reanalyzed with similar results. Associated data were qualified UJ. For samples AAC1608 through AAC1619 there was 1 low IS recovery (3rd). The samples were reanalyzed with similar results. Associated data were qualified UJ. For sample AAC1628 all data were qualified UJ for 1 low surrogate recovery (Toluene-d8 at 80%).

All data are usable as qualified and will be adequate for the intended data uses.

SVOC

SVOC analyses were run for 115 samples in this data set using EPA SW846 method 8270.

The quantitation limits for these methods can be found in appendix D.

On occasion, samples have to be diluted during analysis which results in higher quantitation limits. This can be caused by high levels of target analytes or other organic material in the sample. When this occurs, the laboratories normally reports both the diluted and undiluted analyses so that only the analytes which exceeded the linear calibration range or had interference in the undiluted sample are reported with elevated quantitation limits.

There were a number of QC difficulties with this data set. For sample 0173-96-0114 all surrogates had low recoveries (15-50%). The sample was reanalyzed with similar results. All data were qualified J- or UJ. For sample 0173-97-0061 the last 2 IS had low responses. All associated data were qualified J or UJ.

All data are usable as qualified and will be adequate for the intended data uses.

Pesticides/PCBs

Pesticide/PCB analyses were run for 114 samples and PCB only for one sample (0173-97-0066) in this data set using EPA SW846 method 8080 or 8081.

The quantitation limits for these methods can be found in Appendix D.

On occasion, samples have to be diluted during analysis which results in higher quantitation limits. This can be caused by high levels of target analytes or other organic material in the sample. When this occurs, the laboratories normally reports both the diluted and undiluted analyses so that only the analytes which exceeded the linear calibration range or had interference in the undiluted sample are reported with elevated quantitation limits.

There was one QC difficulty with this data set. For samples AAB7582 through AAB7587 and AAC0944 Aroclor 1242 was qualified UJ for a low recovery (50%) in the blind QC sample. Aroclor 1242 was not detected in any of these samples.

All data are usable as qualified and will be adequate for the intended data uses.

Soil Gas Samples

Four hundred seventy-seven soil gas samples were collected in Summa canisters and were analyzed for fixed gases using EPA Method 133 and for VOCs using EPA Method TO14. Five samples were also analyzed for sulfides, including H₂S using EPA Method FP.

The analyses of the soil gas samples were all done using non-routine methods. The list of analytes and detection limits for these methods can be found in Appendix D-1.0.

For these analyses, it was common to have methylene chloride and chloromethane in the method blanks at low levels. When this occurred, if the analytes in the samples were detected at less than 5 times the level in the blank (10x for methylene chloride), the quantitation limits was raised to the detected level and the data were qualified U (EPA National Functional Guidelines).

There were a number of other QC difficulties with this data set. For samples 0173-95-0051, 0052, 0070 and 0074 the QC duplicate analysis had a >20% difference in value for chlorodifluoromethane and benzyl chloride, therefore these analytes are qualified J. For samples 0173-95-0120 and 0128 there was evidence of possible sample carryover for several target compounds. These compounds were qualified J. For samples 0173-95-0132 and 0255, there were conflicting results for the duplicate analysis. All target compounds detected in the initial sample and not in the duplicate are qualified J. Sample 0173-96-0402 had a low recovery for the third internal standard, all associated data are qualified J or UJ. Sample 0173-96-0403 had a low recovery for the third and fourth internal standards, all associated data are qualified J or UJ. Sample 0173-96-0412 had a high recovery for the fifth internal standard, all detects are qualified J. Sample 0173-96-0413 had a low recovery for the second, third, and fourth internal standards, all associated data are qualified J or UJ. For sample 0173-96-0057 the 5th IS had a high recovery. All associated analytes are qualified J. For sample 0173-96-0061 3 NIST analytes were out of control. Two are allowed by the QC rules. One analyte was only slightly above allowed limits, and if blank contamination is taken

Sample AAC3269 was inadvertently submitted as AAA3269 (a typographical error). Since it was submitted as AAA3269, this sample ID will be used in this report.

One sample, 0173-97-0099 had a problem in that the analyte concentrations appeared to be the same as the LAN/ER QC sample 0173-97-0100 (which was submitted with the collected samples). This would indicate that either sample 0173-97-0100 was accidentally analyzed twice (instead of 0173-97-0099) or that sample 0173-97-0099 was accidentally spiked with QC compounds before analysis. In either case, since the QC compounds are fsoil gasly high and affect the analysis, all data for this sample are qualified R, rejected.

In requests 3760R and 3763R high levels of tetrachloroethene were detected in many of the samples. It was also detected in the field blank, but at levels lower than in the samples. This could have been due to cross contamination or carry-over in the instrument. The high levels of this analyte required that the sample be diluted by factors of 20 to 10,000 in order for the concentration of the tetrachloroethene to be in the linear range of the instrument. While not affecting the quality of the analysis, the detection limits were elevated for some of the samples.

There was one problem with missed holding times. For samples 0173-96-0021, 0029, 0038, 0040 and 0043, the seven day holding time for H₂S was exceeded by 2 days. The data are qualified UJ. This analysis was done for screening purposes. Missing the holding time should not greatly affect the data and are the data are adequate for screening purposes.

There was one problem with the fixed gases for sample 0173-95-0144. The N₂ concentration was listed as 122% and the total of the gases was 160%. The laboratory reported some difficulty with the analysis and a dilution had to be done. This increased the error for the analysis and caused the apparent high concentration. Because of this problem, the fixed gases for this sample are qualified "J".

TABLE C-4.2-1
SOIL GASPORT LANDFILL SOIL GAS SAMPLE QA/QC SUMMARY

Sample Id	Analysis	Method	Request #	QC Comment
0173-95-0000	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0001	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0002	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0003	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0004	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0005	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0006	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0007	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0008	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0009	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0010	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0011	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0012	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0013	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0014	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0015	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0016	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0017	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0018	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0019	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0020	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0021	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0022	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0023	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0024	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0025	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0026	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0027	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0028	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0029	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0030	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0031	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0032	VOC + FG	TO14 and 133	73	No data qualification
0173-95-0033	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0034	VOC + FG	TO14 and 133	93	No data qualification
0173-95-0043	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0044	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0045	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0046	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0047	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0048	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0049	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0050	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0051	VOC + FG	TO14 and 133	303,305	QC duplicate had >20% difference in value for chlorodifluoromethane and benzyl chloride, therefore these analytes are qualified J.

FG = Fixed Gases

TABLE C-4.2-2 CONTINUED

Sample Id	Analysis	Method	Request #	QC Comment
0173-95-0052	VOC + FG	TO14 and 133	303,305	QC duplicate had >20% difference in value for chlorodifluoromethane, therefore this analyte is qualified J.
0173-95-0053	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0054	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0055	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0058	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0057	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0058	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0059	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0060	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0061	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0062	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0063	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0064	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0065	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0066	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0067	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0068	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0069	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0070	VOC + FG	TO14 and 133	303,305	QC duplicate had >20% difference in value for chlorodifluoromethane, therefore this analyte is qualified J.
0173-95-0071	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0072	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0073	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0074	VOC + FG	TO14 and 133	303,305	QC duplicate had >20% difference in value for chlorodifluoromethane and benzyl chloride, therefore these analytes are qualified J.
0173-95-0075	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0076	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0077	VOC + FG	TO14 and 133	303,305	No data qualification
0173-95-0119	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0120	VOC + FG	TO14 and 133	1202	Possible sample carryover for several target compounds. These compounds are qualified J.
0173-95-0121	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0122	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0123	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0124	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0125	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0126	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0127	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0128	VOC + FG	TO14 and 133	1202	Possible sample carryover for several target compounds. These compounds are qualified J.
0173-95-0129	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0130	VOC + FG	TO14 and 133	1202	No data qualification

FG = Fixed Gases

TABLE C-42-2 (CONTINUED)

Sample Id	Analysis	Method	Request #	QC Comment
0173-95-0131	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0132	VOC + FG	TO14 and 133	1202	Conflicting results for duplicate analysis. All target compounds detected in initial sample and not in duplicate are qualified J.
0173-95-0133	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0134	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0251	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0252	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0253	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0254	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0255	VOC + FG	TO14 and 133	1202	Conflicting results for duplicate analysis. All target compounds detected in initial sample and not in duplicate are qualified J.
0173-95-0256	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0257	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0258	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0259	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0260	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0261	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0262	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0263	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0264	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0265	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0266	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0267	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0268	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0269	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0270	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0271	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0272	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0273	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0274	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0275	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0276	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0277	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0278	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0279	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0280	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0281	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0282	VOC + FG	TO14 and 133	1202	No data qualification
0173-95-0141	VOC + FG	TO14 and 133	1320	No data qualification
0173-95-0142	VOC + FG	TO14 and 133	1320	No data qualification
0173-95-0143	VOC + FG	TO14 and 133	1320	No data qualification
0173-95-0144	VOC + FG	TO14 and 133	1320	increased error for the analysis because of dilution. All fixed gases are qualified J.
0173-95-0145	VOC + FG	TO14 and 133	1320	No data qualification
0173-95-0146	VOC + FG	TO14 and 133	1320	No data qualification
0173-95-0147	VOC + FG	TO14 and 133	1403	No data qualification

FG = Fixed Gases

TABLE C-4.2-2 (CONTINUED)

Sample Id	Analysis	Method	Request #	QC Comment
0173-95-0148	VOC + FG	TO14 and 133	1403	No data qualification
0173-95-0149	VOC + FG	TO14 and 133	1403	No data qualification
0173-95-0150	VOC + FG	TO14 and 133	1403	No data qualification
0173-95-0151	VOC + FG	TO14 and 133	1403	No data qualification
0173-95-0152	VOC + FG	TO14 and 133	1452	No data qualification
0173-95-0153	VOC + FG	TO14 and 133	1452	No data qualification
0173-95-0154	VOC + FG	TO14 and 133	1452	No data qualification
0173-95-0155	VOC + FG	TO14 and 133	1452	No data qualification
0173-95-0156	VOC + FG	TO14 and 133	1452	No data qualification
0173-95-0157	VOC + FG	TO14 and 133	1452	No data qualification
0173-95-0158	VOC + FG	TO14 and 133	1452	No data qualification
0173-95-0159	VOC + FG	TO14 and 133	1418	No data qualification
0173-95-0160	VOC + FG	TO14 and 133	1418	No data qualification
0173-95-0161	VOC + FG	TO14 and 133	1418	No data qualification
0173-95-0162	VOC + FG	TO14 and 133	1481	No data qualification
0173-95-0163	VOC + FG	TO14 and 133	1481	No data qualification
0173-95-0164	VOC + FG	TO14 and 133	1481	No data qualification
0173-95-0165	VOC + FG	TO14 and 133	1481	No data qualification
0173-95-0166	VOC + FG	TO14 and 133	1500	No data qualification
0173-95-0167	VOC + FG	TO14 and 133	1500	No data qualification
0173-95-0168	VOC + FG	TO14 and 133	1500	No data qualification
0173-95-0169	VOC + FG	TO14 and 133	1500	No data qualification
0173-95-0170	VOC + FG	TO14 and 133	1500	No data qualification
0173-95-0231	VOC + FG	TO14 and 133	1500	No data qualification
0173-95-0232	VOC + FG	TO14 and 133	1500	No data qualification
0173-95-0233	VOC + FG	TO14 and 133	1500	No data qualification
0173-96-0011	VOC + FG	TO14 and 133	1864	No data qualification
0173-96-0012	VOC + FG	TO14 and 133	1864	No data qualification
0173-96-0013	VOC + FG	TO14 and 133	1864	No data qualification
0173-96-0014	VOC + FG	TO14 and 133	1864	No data qualification
0173-96-0015	VOC + FG	TO14 and 133	1864	No data qualification
0173-96-0016	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0017	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0018	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0019	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0020	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0021	VOC + FG H2S	TO14 and 133	1865	H2S exceeded 7 day hold time by 2 days, qualified UJ
0173-96-0022	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0023	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0024	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0025	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0056	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0059	VOC + FG	TO14 and 133	1865	No data qualification
0173-96-0026	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0027	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0028	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0029	VOC + FG H2S	TO14 and 133	1871	H2S exceeded 7 day hold time by 2 days, qualified UJ

FG = Fined Gases

TABLE C-4.2-2 (CONTINUED)

Sample Id	Analysis	Method	Request #	QC Comment
0173-96-0030	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0031	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0032	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0033	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0034	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0035	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0036	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0037	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0038	VOC + FG H2S	TO14 and 133	1871	H2S exceeded 7 day hold time by 2 days, qualified UJ
0173-96-0039	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0040	VOC + FG H2S	TO14 and 133	1871	H2S exceeded 7 day hold time by 2 days, qualified UJ
0173-96-0060	VOC + FG	TO14 and 133	1871	No data qualification
0173-96-0041	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0042	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0043	VOC + FG H2S	TO14 and 133	1880	H2S exceeded 7 day hold time by 2 days, qualified UJ
0173-96-0044	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0045	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0046	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0047	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0048	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0049	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0050	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0051	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0052	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0053	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0054	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0055	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0056	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0057	VOC + FG	TO14 and 133	1880	The 5th IS had a high recovery. All associated analytes are qualified J.
0173-96-0058	VOC + FG	TO14 and 133	1880	No data qualification
0173-96-0061	VOC + FG	TO14 and 133	1914	No data qualification
0173-96-0141	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0142	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0143	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0144	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0145	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0146	VOC + FG	TO14 and 133	2007	Several IS had recoveries outside allowed limits. All associated analytes are qualified J.
0173-96-0147	VOC + FG	TO14 and 133	2007	Several IS had recoveries outside allowed limits. All associated analytes are qualified J.
0173-96-0148	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0149	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0150	VOC + FG	TO14 and 133	2007	No data qualification

FG = Fixed Gases

TABLE C-4.2-2 (CONTINUED)

Sample Id	Analysis	Method	Request #	QC Comment
0173-96-0151	VOC + FG	TO14 and 133	2007	Several IS had recoveries outside allowed limits. All associated analytes are qualified J.
0173-96-0152	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0153	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0154	VOC + FG	TO14 and 133	2007	Several IS had recoveries outside allowed limits. All associated analytes are qualified J.
0173-96-0155	VOC + FG	TO14 and 133	2007	Several IS had recoveries outside allowed limits. All associated analytes are qualified J.
0173-96-0156	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0157	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0158	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0159	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0160	VOC + FG	TO14 and 133	2007	No data qualification
0173-96-0171	VOC + FG	TO14 and 133	2174	High recovery for 5th IS. All detects are qualified J.
0173-96-0172	VOC + FG	TO14 and 133	2174	High recovery for 5th IS. All detects are qualified J.
0173-96-0173	VOC + FG	TO14 and 133	2174	High recovery for 5th IS. All detects are qualified J.
0173-96-0174	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0175	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0176	VOC + FG	TO14 and 133	2174	High recovery for 5th IS. All detects are qualified J.
0173-96-0177	VOC + FG	TO14 and 133	2174	High recovery for 5th IS. All detects are qualified J.
0173-96-0178	VOC + FG	TO14 and 133	2174	High recovery for 5th IS. All detects are qualified J.
0173-96-0179	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0180	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0181	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0182	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0183	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0184	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0185	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0186	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0187	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0188	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0189	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0190	VOC + FG	TO14 and 133	2174	No data qualification
0173-96-0401	VOC + FG	TO14 and 133	2341	No data qualification
0173-96-0402	VOC + FG	TO14 and 133	2341	Low recovery for 3rd IS. All associated data are qualified J or UJ.
0173-96-0403	VOC + FG	TO14 and 133	2341	Low recovery for 3rd and 4th IS. All associated data are qualified J or UJ.
0173-96-0404	VOC + FG	TO14 and 133	2341	No data qualification
0173-96-0405	VOC + FG	TO14 and 133	2341	No data qualification
0173-96-0406	VOC + FG	TO14 and 133	2341	No data qualification

FG = Fixed Gases

TABLE C-4.2-2 (CONTINUED)

Sample Id	Analysis	Method	Request #	QC Comment
0173-96-0407	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0408	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0409	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0410	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0411	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0412	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0413	VOC+FG	TO14 and 133	2341	Low recovery for 2nd, 3rd and 4th IS. All associated data are qualified J or UJ.
0173-96-0414	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0415	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0416	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0417	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0418	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0419	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0420	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0421	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0422	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0423	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0424	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0425	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0426	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0427	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0428	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0429	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0430	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0431	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0432	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0433	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0434	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0435	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0436	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0437	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0438	VOC+FG	TO14 and 133	2341	No data qualification
0173-96-0439	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0440	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0441	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0442	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0443	VOC+FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.

FG = Fluid Gases

TABLE C-4.2-2 (CONTINUED)

Sample Id	Analysis	Method	Request #	OC Comment
0173-96-0444	VOC + FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0445	VOC + FG	TO14 and 133	2341	No data qualification
0173-96-0446	VOC + FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0447	VOC + FG	TO14 and 133	2341	No data qualification
0173-96-0448	VOC + FG	TO14 and 133	2341	High recovery for 5th IS. All detects are qualified J.
0173-96-0449	VOC + FG	TO14 and 133	2341	No data qualification
0173-96-0450	VOC + FG	TO14 and 133	2341	No data qualification
0173-96-0601	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0602	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0603	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0604	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0605	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0606	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0607	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0608	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0609	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0610	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0611	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0612	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0613	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0614	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0615	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0616	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0617	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0618	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0619	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0620	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0621	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0622	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0623	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0624	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0625	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0626	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0627	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0628	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0629	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0630	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0631	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0632	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0633	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0634	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0635	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0636	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0637	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0638	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0639	VOC + FG	TO14 and 133	2824	No data qualification

FG = Fixed Gases

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TABLE C-4.2-2 (CONTINUED)

Sample Id	Analysis	Method	Request #	QC Comment
0173-96-0640	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0641	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0642	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0643	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0644	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0645	VOC + FG	TO14 and 133	2824	Low recovery for 5th IS. All associated data are qualified J or UJ.
0173-96-0646	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0647	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0648	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0649	VOC + FG	TO14 and 133	2824	No data qualification
0173-96-0650	VOC + FG	TO14 and 133	2824	No data qualification
0173-97-0096	VOC + FG	TO14 and 133	3500R	No data qualification
0173-97-0097	VOC + FG	TO14 and 133	3500R	No data qualification
0173-97-0098	VOC + FG	TO14 and 133	3500R	No data qualification
0173-97-0099	VOC + FG	TO14 and 133	3500R	All data qualified R for either accidental spiking or analysis of wrong sample.
0173-97-0100	VOC + FG	TO14 and 133	3500R	No data qualification
0173-97-0241	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0242	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0243	VOC + FG	TO14 and 133	3760R	1st IS had low recovery. All associated analytes qualified J or UJ.
0173-97-0244	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0245	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0246	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0247	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0248	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0249	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0250	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0251	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0252	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0253	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0254	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0255	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0256	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0257	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0258	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0259	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0260	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0261	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0262	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0263	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0264	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0265	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0266	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0267	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0268	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0269	VOC + FG	TO14 and 133	3760R	No data qualification

FG = Fugate Gas

TABLE C-42-2 (CONTINUED)

Sample Id	Analysis	Method	Request #	QC Comment
0173-97-0270	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0271	VOC + FG	TO14 and 133	3760R	No data qualification
0173-97-0273	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0274	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0275	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0276	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0277	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0278	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0279	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0280	VOC + FG	TO14 and 133	3763R	1st IS had low recovery. All associated analytes qualified J or UJ.
0173-97-0281	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0282	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0283	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0284	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0285	VOC + FG	TO14 and 133	3763R	1st IS had low recovery. All associated analytes qualified J or UJ.
0173-97-0286	VOC + FG	TO14 and 133	3763R	5th IS had low recovery. All associated analytes qualified J or UJ.
0173-97-0287	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0288	VOC + FG	TO14 and 133	3763R	1st IS had low recovery. All associated analytes qualified J or UJ.
0173-97-0289	VOC + FG	TO14 and 133	3763R	1st IS had low recovery. All associated analytes qualified J or UJ.
0173-97-0290	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0291	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0292	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0293	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0294	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0295	VOC + FG	TO14 and 133	3763R	No data qualification
0173-97-0296	VOC + FG	TO14 and 133	3763R	No data qualification
AAC3233	VOC + FG	TO14 and 133	21386	No data qualification
AAC3234	VOC + FG	TO14 and 133	21386	No data qualification
AAC3235	VOC + FG	TO14 and 133	21386	No data qualification
AAC3236	VOC + FG	TO14 and 133	21386	No data qualification
AAC3237	VOC + FG	TO14 and 133	21397	No data qualification
AAC3238	VOC + FG	TO14 and 133	21397	No data qualification
AAC3239	VOC + FG	TO14 and 133	21397	No data qualification
AAC3240	VOC + FG	TO14 and 133	21397	No data qualification
AAC3241	VOC + FG	TO14 and 133	21397	No data qualification
AAC3242	VOC + FG	TO14 and 133	21397	No data qualification
AAC3243	VOC + FG	TO14 and 133	21397	No data qualification
AAC3244	VOC + FG	TO14 and 133	21397	No data qualification
AAC3245	VOC + FG	TO14 and 133	21397	No data qualification
AAC3246	VOC + FG	TO14 and 133	21397	No data qualification
AAC3247	VOC + FG	TO14 and 133	21397	No data qualification
AAC3248	VOC + FG	TO14 and 133	21397	No data qualification
AAC3249	VOC + FG	TO14 and 133	21397	No data qualification
AAC3250	VOC + FG	TO14 and 133	21397	No data qualification

FG = Fused Gases

TABLE C-4.2-2 (CONTINUED)

Sample Id	Analysis	Method	Request #	QC Comment
AAC3251	VOC + FG	TO14 and 133	21397	No data qualification
AAC3252	VOC + FG	TO14 and 133	21397	No data qualification
AAC3253	VOC + FG	TO14 and 133	21413	No data qualification
AAC3254	VOC + FG	TO14 and 133	21413	No data qualification
AAC3255	VOC + FG	TO14 and 133	21413	No data qualification
AAC3256	VOC + FG	TO14 and 133	21413	No data qualification
AAC3257	VOC + FG	TO14 and 133	21413	No data qualification
AAC3258	VOC + FG	TO14 and 133	21413	No data qualification
AAC3259	VOC + FG	TO14 and 133	21413	No data qualification
AAC3260	VOC + FG	TO14 and 133	21413	No data qualification
AAC3261	VOC + FG	TO14 and 133	21413	No data qualification
AAC3262	VOC + FG	TO14 and 133	21413	No data qualification
AAC3263	VOC + FG	TO14 and 133	21413	No data qualification
AAC3264	VOC + FG	TO14 and 133	21413	No data qualification
AAC3265	VOC + FG	TO14 and 133	21413	No data qualification
AAA3269	VOC + FG	TO14 and 133	21416	High recovery for 5th IS. All detects are qualified J.
AAC3270	VOC + FG	TO14 and 133	21416	No data qualification
AAC4125	VOC + FG	TO14 and 133	21682	No data qualification
AAC4126	VOC + FG	TO14 and 133	21682	No data qualification
AAC4127	VOC + FG	TO14 and 133	21682	No data qualification
AAC4128	VOC + FG	TO14 and 133	21709	No data qualification
AAC4129	VOC + FG	TO14 and 133	21709	No data qualification
AAC4130	VOC + FG	TO14 and 133	21709	No data qualification
AAC4131	VOC + FG	TO14 and 133	21709	No data qualification
AAC4132	VOC + FG	TO14 and 133	21686	No data qualification
AAC4133	VOC + FG	TO14 and 133	21686	No data qualification
AAC4134	VOC + FG	TO14 and 133	21686	No data qualification
AAC4135	VOC + FG	TO14 and 133	21686	No data qualification
AAC4136	VOC + FG	TO14 and 133	21686	No data qualification
AAC4137	VOC + FG	TO14 and 133	21686	No data qualification
AAC4138	VOC + FG	TO14 and 133	21709	No data qualification
AAC4139	VOC + FG	TO14 and 133	21709	No data qualification
AAC4140	VOC + FG	TO14 and 133	21709	No data qualification
AAC4141	VOC + FG	TO14 and 133	21682	No data qualification
AAC4142	VOC + FG	TO14 and 133	21682	No data qualification
AAC4143	VOC + FG	TO14 and 133	21682	No data qualification
AAC4144	VOC + FG	TO14 and 133	21686	No data qualification
AAC4145	VOC + FG	TO14 and 133	21686	No data qualification
AAC4146	VOC + FG	TO14 and 133	21682	No data qualification
AAC4147	VOC + FG	TO14 and 133	21682	No data qualification
AAC4148	VOC + FG	TO14 and 133	21682	No data qualification
AAC4149	VOC + FG	TO14 and 133	21682	No data qualification
AAC4150	VOC + FG	TO14 and 133	21682	No data qualification

FG = Fluid Gases

TABLE C-4.2-2 (CONTINUED)

Sample Id	Analysis	Method	Request #	QC Comment
AAC4151	VOC + FG	TO14 and 133	21709	No data qualification
AAC4152	VOC + FG	TO14 and 133	21709	No data qualification
AAC4153	VOC + FG	TO14 and 133	21709	No data qualification
AAC4154	VOC + FG	TO14 and 133	21709	No data qualification
AAC4155	VOC + FG	TO14 and 133	21709	No data qualification
AAC4156	VOC + FG	TO14 and 133	21709	No data qualification
AAC4168	VOC + FG	TO14 and 133	21709	No data qualification
AAC4169	VOC + FG	TO14 and 133	21709	No data qualification
AAC4170	VOC + FG	TO14 and 133	21688	No data qualification

FG = Fixed Gases

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APPENDIX D: ANALYTICAL SUITES AND RESULTS

D-1.0 TARGET ANALYTES AND DETECTION LIMITS

Tabulated in this appendix are the analyses and related information provided through the LANL analytical laboratory contracts Statement of Work (LANL 1995, 49738). The appendix lists routine analytical services (RAS), estimated detection limits (EDLs) for inorganic analytes, and estimated quantitation limits (EQLs) for organic, and radiochemical analytes.

EDLs are based on the Contract Laboratory Program "Contract Required Detection Limits (CRDLs), which are not necessarily achievable in real world samples. EQLs listed for soil/sediment are based on wet sample weight but, normally, data are reported on a dry weight basis, thus causing EQLs higher than those cited for dry weight.

In parts of this appendix, references are made to analytical methods that are approved for quantifying specific analytes or analyte suites, by citing the associated method numbers. Method numbers in this Appendix that are preceded by "SW" indicate methods belonging to the SW-846 analytical methods compendium (EPA 1986, 31732).

Inorganics (Metals and Inorganic Compounds)

Estimated Detection Limits (EDL) are presented in Table D-1.0-1. For water samples, the EDLs are based on CLP "Contract Required Detection Limits."

TABLE D-1.0-1
DETERMINATION OF METALS

Analyte	ICPAES ¹		GFAA or ICP-MS	
	Water, µg/L	Soils, mg/Kg ²	Water, µg/L	Soils, mg/Kg ²
Aluminum	200	40		
Antimony	60	12		
Arsenic ³	NR ⁴	NR ⁴	10	2
Barium	200	40		
Beryllium	5	1		
Cadmium ⁵	5	1		
Calcium	5000	1000		
Chromium ⁵	10	2		
Cobalt	50	10		
Copper	25	5		
Iron	100	20		
Lead ⁵	3	0.6	1	0.2
Magnesium	5000	1000		
Manganese	15	3		
Nickel	40	8		
Potassium	5000	1000		
Selenium ³	NR ⁴	NR ⁴	5	1
Silver ⁵	10	2		
Sodium	5000	1000		
Thallium	NR ⁴	NR ⁴	10	2
Vanadium	50	10		
Zinc	20	4		

¹ Recommended method for ICPAES analysis is SW6010A

² Soil EDLs for ICPAES, GFAA, and ICP-MS analytes are based upon a 1 gram sample taken to a final volume of 200 mL

³ This is a Toxicity Characteristic Leaching Procedure (TCLP) metal and may be requested as a separate determination. The TCLP regulatory limits are the EDLs for these analytes. Method SW-1311 (7/92) is the method to be used for TCLP.

⁴ NR = not recommended; analyte should not be determined using this method

⁵ Atomic absorption (AA) methods or ICP-MS may also be used for these analytes.

Mercury should be determined by the cold vapor technique with EDL for water = 0.2 mg/L and EDL for Soils = 0.1 mg/Kg. The cold vapor technique soil EDL is based upon a 1 gram sample taken to a final volume of 100 mL. This is a TCLP metal and may be requested as a separate determination.

In cases where the EDL for a metal cannot be met using ICPAES or false positives are known to be a problem historically within a laboratory, the subcontractor must use the GFAA technique (e.g., method SW7841 for thallium and method SW7421 for lead) or ICP-MS technique (e.g. method SW6020).

TCLP metals are identified with an asterisk (*) and may be requested as a separate determination. Laboratories should consider EDLs for TCLP metals using the Toxicity Characterization Leaching Procedure to be the regulatory limits. Method SW-1311 (7/92) is the method to be used for TCLP.

Cyanide may be determined using methods SW9010, SW9010A, SW9012, or EPA 335.2. The EDLs for

cyanide are 10 mg/L (Water) and 0.05 mg/Kg (Soils). The soil EDL for CLP ILM03.0 method 335.2 is based upon a 5 gram sample taken to a final Volume of 250 mL.

The contractor may vary weights and final volumes for metals and cyanide analyses; however, any allowable variance must still meet the EDL.

Volatiles

Table D-1.0-2 identifies the volatile target analytes and associated EQLs. The US EPA methods that are options for use are method SW8260 (11/90 or more recent) or the CLP method for volatiles (OLM02.0 or more recent, using capillary column). These methods are based on purge and trap sample extraction/concentration followed by gas chromatography/mass spectrometry analysis.

Tentatively Identified Compounds (TICs) may be requested. If requested, they should be identified and quantitated per the CLP method for volatiles, OLM02.0 (or more recent).

TABLE D-1.02
VOLATILE TARGET ANALYTES AND EQLs

Target Analyte	Water, µg/L	Soil/Solids, µg/kg
Chloromethane	10	10
Vinyl Chloride	10	10
Bromomethane	10	10
Chloroethane	10	10
Acetone	20	20
Dichlorodifluoromethane	10	10
Iodomethane	5	5
Trichlorotrifluoroethane	5	5
Trichlorofluoromethane	5	5
Methylene Chloride	5	5
1,1-Dichloroethene	5	5
Carbon Disulfide	5	5
1,1-Dichloroethane	5	5
1,2-Dichloroethene (total)	10	10
Bromochloromethane	5	5
Chloroform	5	5
1,2-Dichloroethane	5	5
1,1-Dichloropropene	5	5
2-Butanone	20	20
2,2-Dichloropropane	5	5
1,1,1-Trichloroethane	5	5
Carbon Tetrachloride	5	5
Benzene	5	5
1,2-Dichloropropane	5	5
Trichloroethene	5	5
Dibromomethane	5	5
Bromodichloromethane	5	5
t-1,3-Dichloropropene	5	5
c-1,3-Dichloropropene	5	5

TABLE D-1.02 (continued)

Target Analyte	Water, $\mu\text{g/L}$	Soil/Solids, $\mu\text{g/kg}$
1,3-Dichloropropane	5	5
Chlorodibromomethane	5	5
4-Methyl-2-Pentanone	20	20
Toluene	5	5
2-Hexanone	20	20
1,2-Dibromoethane	5	5
Tetrachloroethene	5	5
Chlorobenzene	5	5
1,1,1,2-Tetrachloroethane	5	5
Ethylbenzene	5	5
o,m,p-Xylene (mixed)	5	5
Styrene	5	5
Bromoform	5	5
1,1,2,2-Tetrachloroethane	5	5
1,2,3-Trichloropropane	5	5
Isopropylbenzene	5	5
Bromobenzene	5	5
n-Propylbenzene	5	5
2-Chlorotoluene	5	5
4-Chlorotoluene	5	5
1,3,5-Trimethylbenzene	5	5
tert-Butylbenzene	5	5
1,2,4-Trimethylbenzene	5	5
sec-Butylbenzene	5	5
1,3-Dichlorobenzene	5	5
1,4-Dichlorobenzene	5	5
p-Isopropyltoluene	5	5
1,2-Dichlorobenzene	5	5
n-Butylbenzene	5	5
1,2-Dibromo-3-Chloropropane	10	10

Semivolatiles

Table D-1.0-3 identifies the semivolatile target analytes and associated EQLs. The US EPA methods that are options for use are method SW-8270 (11/90 or more recent) or the CLP method for semivolatiles (OLM02.0 or more recent). These methods are based on solvent extraction, concentration and GC/MS detection and quantitation.

Tentatively Identified Compounds (TICs) may be requested. If requested, they should be identified and quantitated per the CLP method for semivolatiles, OLM02.0 (or more recent).

TABLE D-1.0-3
SEMIVOLATILE TARGET ANALYTES AND ASSOCIATED EQLs

Target Analyte	Water, $\mu\text{g/L}$	Soil/Solid, $\mu\text{g/kg}^1$
Acenaphthene	10	330
Acenaphthylene	10	330
Aniline	20	660
Anthracene	10	330
Azobenzene	20	660
Benzo(a)anthracene	10	330
Benzoic acid	50	3300
Benzo(b)fluoranthene	10	330
Benzo(k)fluoranthene	10	330
Benzo(e,h,i)perylene	10	330
Benzo(a)pyrene	10	330
Benzyl alcohol	20	1300
Bis(2-chloroethoxy)methane	10	330
Bis(2-chloroethyl)ether	10	330
4-Bromophenyl phenylether	10	330
Butylbenzylphthalate	10	330
4-Chloroaniline	20	1300
4-Chloro-3-methylphenol	20	660
2-Chloronaphthalene	10	330
2-Chlorophenol	10	330
4-Chlorophenyl phenylether	10	330
Chrysene	10	330
Dibenz(a,h)anthracene	10	330
Dibenzofuran	10	330
1,2-Dichlorobenzene	10	330
1,3-Dichlorobenzene	10	330
1,4-Dichlorobenzene	10	330
3,3'-Dichlorobenzidine	20	660
2,4-Dichlorophenol	10	330
Diethylphthalate	10	330
Dimethyl phthalate	10	330
2,4-Dimethylphenol	10	330
2,4-Dinitrophenol	50	1600
Di-n-butylphthalate	10	330
4,6-Dinitro-2-methylphenol	50	1600
2,4-Dinitrotoluene	10	330
2,6-Dinitrotoluene	10	330
Di-n-octyl phthalate	10	330
Bis(2-ethylhexyl)phthalate	10	330
Fluoranthene	10	330

TABLE D-1.03 (continued)

Target Analyte	Water, $\mu\text{g/L}$	Soil/Solid, $\mu\text{g/kg}^1$
Fluorene	10	330
Hexachlorobenzene	10	330
Hexachlorobutadiene	10	330
Hexachlorocyclopentadiene	10	330
Hexachloroethane	10	330
Indeno(1,2,3-cd)pyrene	10	330
Isophorone	10	330
2-Methylnaphthalene	10	330
2-Methylphenol	10	330
4-Methylphenol	10	330
Naphthalene	10	330
2-Nitroaniline	50	1600
3-Nitroaniline	50	1600
4-Nitroaniline	20	660
Nitrobenzene	10	330
2-Nitrophenol	10	330
4-Nitrophenol	50	1600
N-Nitrosodimethylamine	10	330
N-Nitrosodiphenylamine	10	330
N-Nitroso-di-n-propylamine	10	330
2,2'-oxybis(1-Chloropropane)	10	330
Pentachlorophenol	50	1600
Phenanthrene	10	330
Phenol	10	330
Pyrene	10	330
1,2,4-Trichlorobenzene	10	330
2,4,5-Trichlorophenol	50	1600
2,4,6-Trichlorophenol	10	330

¹ EQLs for soil are based on no Gel Permeation Chromatography (GPC) clean-up being performed. The laboratories' GPC equipment will determine what the EQL is, based on the volume of extract the GPC equipment uses. However, if possible, the laboratories should concentrate the GPC extract to a volume that makes the EQL for a sample that underwent GPC clean-up no more than twice the listed EQL.

Pesticides and Aroclors

Table D-1.0-4 identifies the pesticide and aroclor target analytes and associated EQLs. The US EPA methods that are options for use are methods SW-8081, *dual column option*, (11/92 or more recent) or the CLP method for pesticides/Aroclors (OLM01.8 or more recent). These methods are based on solvent extraction, concentration, and GC/EC detection and quantitation.

Since the EQLs are sensitive to the nature of the sample matrix, Table D-1.0-5 presents factors by which the EQLs in Table D-1.0-4 are to be multiplied, depending on the matrix.

TABLE D-1.0-4
PESTICIDE/AROCLOR TARGET ANALYTES AND EQLS

Analyte	Waters, $\mu\text{g/L}$ (See also Table D-1.0-5)
Aldrin	0.05
α -BHC	0.05
β -BHC	0.05
δ -BHC	0.05
γ -BHC (Lindane)	0.05
α -Chlordane	0.05
γ -Chlordane	0.05
4,4'-DDD	0.10
4,4'-DDE	0.10
4,4'-DDT	0.10
Dieldrin	0.10
Endosulfan I	0.05
Endosulfan II	0.10
Endosulfan sulfate	0.10
Endrin	0.10
Endrin Ketone	0.10
Endrin Aldehyde	0.10
Heptachlor	0.05
Heptachlor epoxide	0.05
Methoxychlor	0.50
Toxaphene	5.00
Aroclor-1016	1.00
Aroclor-1221	2.00
Aroclor-1232	1.00
Aroclor-1242	1.00
Aroclor-1248	1.00
Aroclor-1254	1.00
Aroclor-1260	1.00

TABLE D-1.0-5
EQL ADJUSTMENT FACTORS FOR VARIOUS SAMPLE MATRICES

Matrix	Factor ¹
Ground Water	1
Low-concentration soil by sonication ²	33
High-concentration soil and sludges by sonication ²	1000
Non-water miscible waste	10,000

- ¹ To obtain the matrix-dependent EQL, multiply the EQL in Table III-4a by this factor.
- ² This factor is based on no GPC clean-up. The factor will vary for soil samples that undergo GPC, based on the GPC equipment used (volume of extract put through GPC). The laboratories should adjust the final volume of the GPC extract to keep make this factor no greater than 66, if possible.

Radiochemical Analytes

Table D-1.0-6 presents EQLs for commonly determined individual radiochemical analytes as well as analyte suites. The gamma spectroscopy analyte suite (see "Multiple isotopes" in Table D-1.0-6) is defined by Table D-1.0-7.

TABLE D-1.0-6
TARGET ANALYTE EQL BY MATRIX; PC/G OR PC/L UNLESS OTHERWISE INDICATED

Analyte	Soil	Water	Technique ²
Gross alpha/beta	10.0	3.0	gas-proportional
Gross alpha/beta	10.0	NA	liquid scintillation
Strontium-90 ³	2.0	5.0	gas-proportional
Americium-241	0.1	0.1	alpha spectroscopy
Plutonium-238, -239	0.1	0.1	alpha spectroscopy
Thorium-228, -230, -232	0.1	0.1	alpha spectroscopy
Thorium-230, -232	0.1	0.1	ICP-MS-FIA (commonly-requested non-routine analysis)
Uranium-234, -235, -238	0.1	0.1	alpha spectroscopy
Uranium-234, -235, -238	0.1	0.1	ICP-MS-FIA (commonly-requested non-routine analysis)
Tritium	300 pCi/L	300	liquid scintillation
Multiple isotopes (Table III-6b)	Am-241: 1 Cs-137: 1	Am-241: 20 Cs-137: 20	gamma spectroscopy
Gross gamma	2.0	100	NaI(Tl) or HPGE detection
Total uranium	0.5 µg/g	1 µg/L	KPA ⁴ (commonly- requested non-routine analysis)

TABLE D-1.0-6 (continued)

Analyte	Soil	Water	Technique ²
Radium-226	1.0	1.0	assorted
Radium-228	0.5	0.5	assorted
Thorium-234	1.0	20	assorted
Lead-210	2.0	5.0	assorted

¹ Estimated Quantitation Limit (EQL)

² The Los Alamos National Laboratory methods for these analytes are contained in LA-10300-M, "Health and Environmental Chemistry: Analytical Techniques, Data Management, and Quality Assurance".

³ It may be presumed that strontium-89 is not present.

⁴ Kinetic Phosphorescence Analysis, also referred to as pulsed-laser phosphorimetry (ASTM method D5174-91) or kinetic laser phosphorescence

TABLE D-1.0-7
GAMMA SPECTROSCOPY ANALYTE REQUIREMENTS

Nuclide symbol	Nuclide name	Nuclide symbol	Nuclide Name
Ac-228	actinium-228	Pa-231	protactinium-231
Am-241	americium-241	Pa-233	protactinium-233
Ann Rad	annihilation radiation	Pa-234m	protactinium-234m
Ba-140	barium-140	Pb-210	lead-210
Bi-211	bismuth-211	Pb-211	lead-211
Bi-212	bismuth-212	Pb-212	lead-212
Bi-214	bismuth-214	Pb-214	lead-214
Cd-109	cadmium-109	Ra-223	radium-223
Ce-139	cerium-139	Ra-224	radium-224
Ce-144	cerium-144	Ra-226	radium-226
Co-57	cobalt-57	Ru-106	ruthenium-106
Co-60	cobalt-60	Rn-219	radon-219
Cs-134	cesium-134	Se-75	selenium-75
Cs-137	cesium-137	Sn-113	tin-113
Eu-152	europlum-152	Sr-85	strontium-85
Hg-203	mercury-203	Th-227	thorium-227
I-129	iodine-129	Th-234	thorium-234
K-40	potassium-40	Tl-208	thallium-208
La-140	lanthanum-140	U-235	uranium-235
Mn-54	manganese-54	Y-88	yttrium-88
Na-22	sodium-22	Zn-65	zinc-65
Np-237	neptunium-237		

D-2.0 RFI ANALYTICAL RESULTS

An abridged version of all of the analytical data collected during the RFI are included in Attachment 4 to this report. More detailed data have been submitted in electronic format to NMED HRMB, DOE, and the LANL RPF. The electronic data are available in the Facility for Information Management and Display (FIMAD).

Laboratory QC data that are not currently available in electronic format are also included in Attachment 4 to this report. Copies of pages from the data packages provide information about the laboratory QC samples that were run with the airport landfill samples.

The data are included on 6 disks in Excel 4.0. The data are subdivided into files as indicated below.

Disk number	ZIP file name	Excel 4.0 file name	Attachment 4 table name
Data Disk #1	TA73DAT1.ZIP	FIELDQC.XLS	TA-73 LANDFILL FIELD QC ANALYTICAL DATA
		SURINORG.XLS	TA-73 LANDFILL ANALYTICAL DATA_ SURFACE_ DRAINAGE- INORGANIC
		SURORG.XLS	TA-73 LANDFILL ANALYTICAL DATA SURFACE_ DRAINAGE- ORGANIC
		SURRAD.XLS	TA-73 LANDFILL ANALYTICAL DATA_ SURFACE_ DRAINAGE- RADIONUCLIDES
		WATINORG.XLS	TA-73 LANDFILL ANALYTICAL DATA_ LYSIMETER -INORGANIC
		WATORG.XLS	TA-73 LANDFILL ANALYTICAL DATA_ LYSIMETER -ORGANIC
Data Disk #2	TA73DAT2.ZIP	SUBINORG.XLS	TA-73 LANDFILL ANALYTICAL DATA_ SUBSURFACE -INORGANIC
		SUBORG.XLS	TA-73 LANDFILL ANALYTICAL DATA_ SUBSURFACE -ORGANIC
		SUBRAD.XLS	TA-73 LANDFILL ANALYTICAL DATA_ SUBSURFACE -RADIONUCLIDES
Data Disk #3	TA73DAT3.ZIP	SOILGAS1.XLS	TA-73 LANDFILL ANALYTICAL DATA_ SOIL GAS- ORGANIC
Data Disk #4	TA73DAT4.ZIP	SOILGAS2.XLS	TA-73 LANDFILL ANALYTICAL DATA_ SOIL GAS- ORGANIC (CONTINUED)
Data Disk #5	TA73DAT5.ZIP	SOILGAS3.XLS	TA-73 LANDFILL ANALYTICAL DATA_ SOIL GAS- ORGANIC (CONTINUED)
Data Disk #6	TA73DAT6.ZIP	LABQC1.XLS	TA-73 LANDFILL LABORATORY QC ANALYTICAL DATA (ELECTRONIC ONLY)
		LABQC2.XLS	TA-73 LANDFILL LABORATORY QC DATA (ELECTRONIC ONLY)

Attachment 4 contains boring logs and well completion logs.

Continuous Monitoring Program

Each data acquisition system is housed inside two enclosures. The interior enclosure is a fiberglass box that contains all of the relays, valves, sensors and equipment used for continuous data acquisition. This fiberglass enclosure is contained within a larger, watertight aluminum enclosure (suitable for subgrade burial) near the monitor well. The external aluminum enclosure has a feed-through port to accept the electrical leads from the monitor well vault. Two additional ports are used as vents and are located on opposite sides of the external enclosure. The vent ports allow a small, low power fan to purge the enclosure with fresh air prior to solenoid valve actuation. Due to the high methane concentrations that exist in the shallow soil gas, the fan is required to prevent the buildup of potentially explosive gases within the enclosure prior to the actuation of the solenoids.

Continuous monitoring began on March 2, 1995, at monitor well LP-8. On March 17, monitor wells LPS-2, LP-4, and LP-7 were also connected to data acquisition units. Continuous monitoring was conducted between March and August 1995, and between April and May 1996. During various periods of the monitoring program several of the data acquisition units experienced problems related to condensation accumulating in the datalogger enclosures. The original design of the burial enclosure was modified for automated venting of each enclosure to prevent the potential buildup of explosive methane levels. However, the venting allowed condensate to accumulate inside the dataloggers which caused a few temporary datalogger malfunctions. In order to minimize such malfunctions, when condensate was encountered the datalogger units were removed, dried, and replaced. Desiccant has also been placed inside the housings and was changed frequently to minimize condensate accumulation. However, condensation continued due to the venting requirements.

Data Acquisition System: The data acquisition system at each monitored well consisted of a single Campbell Scientific 21X Micrologger and relay configured to record absolute barometric pressure, downhole soil gas pressure, and downhole temperature at 45-minute intervals. The system was powered by a single 12-volt, 17-amp-hour battery that was charged approximately monthly when the data were downloaded. Alkaline batteries housed in the datalogger enclosure were used for continuous backup and to keep the system operational while the rechargeable batteries were being replaced. The following paragraphs briefly describe the instruments used to collect the pressure and temperature data.

A single Druck PDCR911 15-psia pressure transducer was used to measure temporal fluctuations in barometric pressure at the wellhead. This absolute pressure sensor was connected directly to the 21X datalogger and vented to the atmosphere outside the data acquisition system aluminum enclosure. A single Omega PX170 14DV 0.51 psig pressure sensor was used to measure the gauge differences between a particular soil gas port and the atmosphere. The gauge pressure transducer was used to make

measurements at each soil gas port via individual solenoid valves connecting the different downhole ports to a single manifold. Switching between ports was controlled by the datalogger's internal programming and an external multi-channel control port relay. The frequency of pressure measurements was controlled by the datalogger and could be as frequent as once every 2 minutes. For ease of data collection and presentation through the techniques of spectral analysis, the pressure data in this report were collected at a frequency of one measurement every 45 minutes, or 32 measurements per day. Gauge pressures are converted into absolute pressures by adding the gauge pressure value to the absolute barometric pressure measured by the Druck transducer. Each data acquisition system was designed to monitor up to three soil gas ports at 45-minute intervals for up to one month unattended.

Downhole temperatures were measured by connecting the downhole thermocouple leads directly to the 21X datalogger. The datalogger uses an internal thermistor as a reference junction for the thermocouple measurements. The downhole temperature measurements collected every 45 minutes were averaged over one-day intervals to eliminate artifacts resulting from diurnal temperature fluctuations of the datalogger installations at the surface.

Routine Monitoring Program

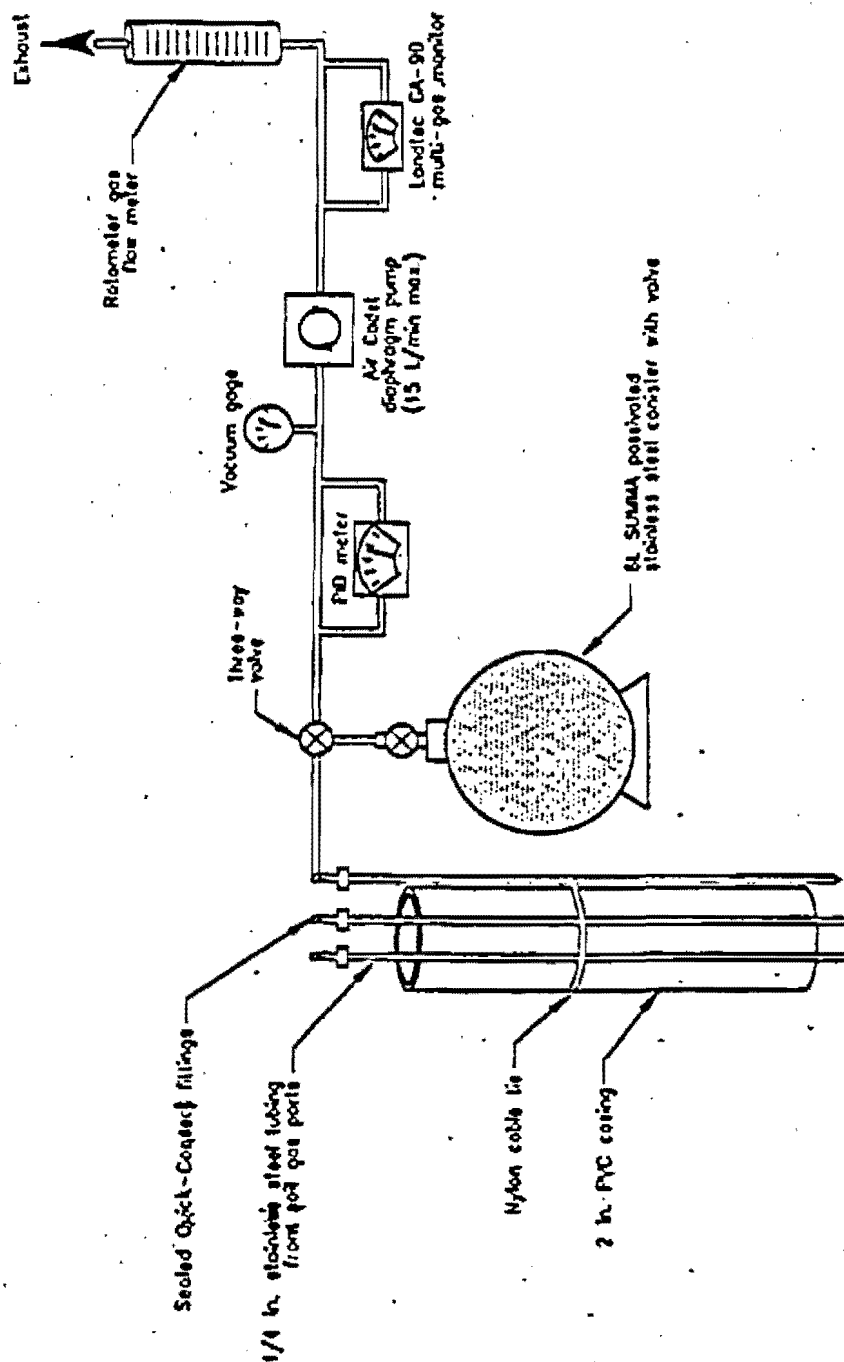
Sampling and Analysis of Deep Soil Gas from MPSG Wells

Figure D-3.0-1 shows the sampling system used to collect soil gas samples from the MPSG wells installed within and adjacent to the landfill. Each soil gas port includes a spring-loaded Swagelok quick-connect fitting that maintains a pressure seal at all times other than during sampling. In general, the sampling procedure consists of purging soil gas for 5 minutes while simultaneously monitoring the concentrations of methane, carbon dioxide, and oxygen using a Landtec GA-90 multi-gas monitor, as well as VOC concentrations using a PID meter. However, because the PID meter gives false negative readings in the presence of methane (Nyquist et al. 1990, 59099), the use of the PID meter was discontinued following the initial sampling events. Following purging, soil gas samples are collected in 6-liter stainless steel SUMMA canisters for laboratory analysis of VOCs.

Details of the soil gas sampling procedure are as follows. The GA-90 multi-gas monitor is first calibrated using a standard CH₄-CO₂-O₂ calibration gas obtained from the manufacturer. Using the quick-connect fittings, the sampling system is then connected to the soil gas port to be sampled, and the Air Cadet diaphragm pump switched on to begin purging the stainless steel tubing. The gas flow rate is adjusted to approximately 3 liters per minute, and the GA-90 instrument switched on to begin monitoring the major gas concentrations (methane, carbon dioxide, and oxygen) in the purge gas.

The stainless steel tubing used to construct the soil gas ports has an internal diameter of 0.21 inches, and an internal volume of 6.8 mL per foot of tubing. Assuming that the deepest soil gas port (178 ft) is purged at 3 L/min for a period of 5 minutes, the volume of soil gas purged prior to sampling is equivalent to approximately 12 tubing volumes. Thus the 5-minute purge period employed is more than sufficient to flush stagnant gas from the soil gas ports.

Following the 5-minute purge period, the stable major gas concentrations are recorded in the field log-book, along with the ambient barometric pressure as determined using the GA-90. The three-way valve (Figure D-3.0-1) is then switched closed, and the valve on the SUMMA canister opened slightly. The three-way valve is then switched to allow soil gas to fill the evacuated SUMMA canister. The gas flow rate through the SUMMA valve is adjusted to a low flow rate to prevent excessive cooling and condensation due to expansion of the gas (Joule-Thompson effect). The SUMMA canister is full after a period of



LANL RFI SUPPORT
Soil Gas Sampling System for
Multi-Port Soil Gas Monitor Wells

Figure D-3.0-1

approximately one minute, as evidenced by no more hissing sounds. The valve is left open for approximately one more minute to ensure complete equalization of gas pressure between the canister and the soil gas port, then the SUMMA valve is closed, and the soil gas sampling manifold disconnected from the wellhead.

The SUMMA canister serial number and sample location were recorded along with the LANL sample ID, time, and date of collection in the field logbook. The SUMMA canisters were then returned under chain-of-custody to LANL SMO for shipment to QST's laboratory in Gainesville, Florida for analysis of VOCs. In addition to the primary soil gas samples collected in SUMMA canisters from the MPSG wells, four types of QAVOC samples were also collected in identical SUMMA cans:

- field duplicates
- air blanks
- major gas PE samples
- VOC PE samples

Field duplicate soil gas samples were collected as follows. After collection of the primary soil gas sample from a given port, the 3-way valve is closed, and the SUMMA can disconnected, and another SUMMA can is immediately connected to the 3-way valve. The SUMMA valve and the 3-way valve are then opened, and the can allowed to fill in the same manner as before. The blind duplicate sample is submitted to the lab to estimate analytical precision.

Air blanks were collected by placing an evacuated SUMMA canister on the roof of the field vehicle in clear air, and opening the valve to allow it to fill. Air blanks were used to provide data on ambient air quality, and to indicate possible problems with laboratory contaminants and/or sample carryover during analysis.

Performance evaluation (PE) samples were submitted to the laboratory blind in SUMMA canisters for analysis of both major gases and VOCs. The PE samples were collected by simply filling the canister from a pressurized cylinder of standard gas of known composition using appropriate Swagelok fittings and tubing. A Tedlar bag was connected in parallel to permit the SUMMA canister to be filled to the same total pressure as the soil gas samples. Major gas PE samples consisted of standard mixtures of methane, carbon dioxide, oxygen, and nitrogen obtained from Landfill Control Technologies, Inc. VOC PE samples consisted of a standard gas containing approximately 10 ppmv of eight different halogenated VOCs in nitrogen, and was obtained from Scott Specialty Gases (Toxic Organic Blend 2). Immediately following the first sampling event in February 1994, it was recognized that the SUMMA canisters used to collect the VOC PE samples must first be humidified to prevent sorption of the heavier VOCs in the dry Scott gas standard on the dry interior surfaces of the canister. This was accomplished by injecting approximately 1-mL of deionized water into the canister prior to collecting the VOC PE sample. Humidification was not necessary for the soil gas samples, however, because the soil gas is already wet, with a relative humidity approaching 100%.

Soil gas samples were first collected from the vadose zone monitor wells in February 1995 following the

completion of the perimeter drilling program. The last soil gas sampling event at the TA-73 landfill was conducted in September 1997. Tables D-3.0-4 through D-3.0-6 provide a summary of all sampling events conducted at the TA-73 landfill. Included in this table is a designation between field monitoring of major gas concentrations (ff) and fixed lab analyses of both major gasses and VOCs (lf and lv, respectively). A summary of the QA/QC samples collected as part of the soil gas sampling program is provided in Table D-3.0-7.

Soil Gas Pressure Monitoring

Routine soil gas pressures were measured with a single Omega PX170 14DV 0.51 psig pressure sensor used to measure the gauge differences between a particular soil gas port and the atmosphere. The gauge pressure transducer was used to make measurements at each soil gas port via the Campbell Scientific 21X Micrologger. Gauge pressures were converted into absolute pressures by adding the gauge pressure value to the absolute barometric pressure measured by a Druck PDCR911 15-psia pressure transducer at the surface.

Soil gas pressures were first measured from the vadose zone monitor wells in February 1995 following the completion of the perimeter drilling program. The last soil gas pressure monitoring event at the TA-73 landfill was conducted in September 1997. Soil gas pressures were measured in all gas ports immediately prior to collecting soil gas samples. Thus, the frequency of soil gas pressure monitoring is directly proportional to the soil gas sampling frequency. Soil gas pressure data collected from each individual monitor well is presented in Appendix D-3.5.

Neutron Access Tube Monitoring

Neutron access tubes were installed in each of the 11 perimeter wells surrounding the main landfill, wells LI-1 and LI-6 in the interior of the main landfill, and wells DDA-1 and DDA-3 within the debris disposal area to allow for periodic monitoring of relative changes in subsurface moisture content. The neutron access tubes consist of 2-inch-I.D., flush-threaded, Schedule 40 PVC (with O-ring joint seals), a threaded end-plug, and a locking expansion cap. Monitor well completions are shown on the attached well completion logs (Attachment 4).

Moisture content is monitored using neutron moisture logging, a standard method used to monitor changes in moisture content at different depths in unsaturated materials. Data from these logs can provide an indication of whether the geologic materials surrounding the boreholes are losing water, gaining water, or are in a steady-state condition (i.e., losses are balanced by gains). However, these data alone cannot provide specific information regarding the direction of water movement. Matric potential data (described below) are necessary to predict the direction of flow.

A Campbell Pacific Nuclear (CPN) Model 503DR Hydroprobe (50 mCi americium 241/beryllium source) was used to monitor subsurface moisture content at different depths. The output, or count ratio, from the neutron moisture meter is generally linearly related to moisture content. This relationship can be determined by conducting a linear regression of moisture contents of core samples (i.e., the dependent variable) versus count ratios (i.e., the independent variable) measured at depths corresponding to core sample depths. The resulting calibration curve is dependent on a number of borehole-, backfill-, casing-, and formation-specific factors and therefore must be determined separately for different borehole, backfill,

casing, and formation types.

Neutron Probe Monitoring Methods: The neutron access tube monitoring protocol employed by D.B. Stevens & Associates (DBS&A) is as follows. Prior to mobilization to the site with the hydroprobe, LANL Group ESH-12 is informed as to the location and time frame of its use at Los Alamos. Upon arrival at the first monitoring location, a standard count is performed to verify instrument operation within the expected range. Prior to neutron count ratio measurements in a monitor well, the well head and access tube are checked for damage or accumulated moisture by lowering a dummy probe to the total depth of the access tube. Condensation is normally swabbed from the access tube using absorbent materials.

Water accumulated in the access tubes of monitor wells LP-3 and LPS-2 in January and March 1995, respectively. In both instances, the water appears to have been the result of surface run-on flooding the well vault, allowing water to enter the neutron probe access tube. Less than 2 gallons of water was bailed from each access tube on both occasions and stored in a 55-gallon drum. Field screening instruments showed the purged water to be low in electrical conductivity ($<400 \mu\text{mhos/cm}$ @ 25°C), of generally neutral pH (>6), and did not suggest the presence of VOCs. A program of ensuring and maintaining a tight seal on each of the access tubes appears to have eliminated the problem.

If the access tube is undamaged and contains no water, the neutron probe is set atop it, the probe is lowered to the desired depth, and a measurement is conducted. The measurements are conducted using a 32-second counting period at 1-foot intervals beginning at 1.5 feet bgs to the total depth of each well. The cable stop number corresponding to the measurement depth and the measured count ratio are recorded in a field notebook. Upon completion of measurements, a desiccant pack is hung in the access tube, the expansion cap is securely tightened, and the well vault is closed. After all the wells are logged, a standard count is again performed to verify instrument performance.

Neutron count ratio measurements were initially conducted in each of the 11 perimeter monitor wells on a monthly basis beginning in January 1995. Monitoring continued through October 1997, but at less frequent intervals. Tables D-3.0-1 through D-3.0-3 provide a summary of all nonsampling events conducted at the TA-73 landfill. Included in this table is a designation of all neutron logging events. Neutron count ratio measurement data are presented in Attachment 4.

Matric Potential Monitoring

A total of 28 heat dissipation sensors were installed in 10 of the perimeter wells, interior wells CP-1, 4C, 7D, 9, 10A, and 13C, interior wells LI-1 through LI-6, and debris disposal wells DDA-1 and DDA-3. Depths of HDS installation ranged from 11 to 145 feet bgs. The HDSs were installed to monitor matric potential (unsaturated soil water potential) at suction lysimeters and in selected locations to assess boundary conditions for numerical modeling purposes. Each HDS consists of a thermistor/thermocouple assembly embedded in a porous ceramic tip. Wires extend to the surface for connection to a Campbell Scientific 21X Micrologger. The HDS device operates on the principle that wet soil dissipates heat more rapidly than dry soil. The heat dissipation rate at various matric potentials is measured in the laboratory to develop a calibration curve for each sensor. HDSs provide a means of measuring soil moisture content in situ. A current is applied to each HDS, thereby causing heat to be generated. After discontinuing the current, the heat then dissipates into the surrounding soil. The wetter the soil, the faster the heat is dissipated. Thus,

they are used to (1) assess whether sufficient moisture is present near a suction lysimeter for collection of a sample, (2) estimate in situ matric potential, and (3) estimate qualitative temporal changes in matric potential and movement of water.

The HDSs were purchased from Campbell Scientific, Inc., (Logan, Utah) and calibrated in the DBS&A Hydrologic Testing Laboratory. The instruments were calibrated in a pressure plate against a series of descending matric potentials from saturation to approximately 5 bars soil water tension. The HDS probes were buried in a silica flour paste in a pressure plate extractor (Soil Moisture Equipment Corp.). The porous sensors were equilibrated at different potentials assuming that the probes were in equilibrium with the surrounding silica flour medium. The output, or temperature differential, was recorded daily until stable temperature readings were measured on consecutive days. The temperature differential and potential data of the sensors was fit with an exponential power function using Table Curve fitting software. Appendix D-3.3 contains data for the HDS probes calibrations and equations relating each sensor's output to matric potential.

In the testing laboratory, temperature differential was generally measured at each applied potential until consecutive readings agreed to approximately $\pm 0.02^{\circ}\text{C}$. Such agreement results in confidence intervals on matric potential ranging from approximately ± 0.05 bar at 1.0 bar applied potential to ± 0.2 bar at 4 bars tension. In the field, however, accuracy will be affected to a greater degree by a number of factors including hysteresis, the hydraulic properties of the sensors, and the sensor to soil contact. Hysteresis describes whether the moisture content of the soil and/or sensor is increasing or decreasing. The HDSs were calibrated to decreasing matric potential and, therefore, decreasing moisture content. Further, the hydraulic properties of the sensors themselves may be affected by the fluid saturating the probe. During calibration the HDS probes and silica flour mixture were saturated with Albuquerque tap water. In the field, changes in the surface tension or viscosity of the pore water will alter the way the porous tip of the probe retains water. Inadequate contact of the sensors with the backfill tuff may cause a time lag between the matric potential in the porous sensor as compared with the surrounding porous medium. In spite of these uncertainties, the heat dissipation sensor measurements have successfully guided sampling of suction lysimeters and have shown response related to precipitation events.

To conduct a measurement, the wires from the HDS are connected to the 21X datalogger and excitation module and the measurement program is initiated. The date, time, datalogger temperature, downhole sensor temperature, and differential temperature are recorded in a field notebook.

The HDS monitoring program began with biweekly monitoring of each heat dissipation sensor using a Campbell Scientific 21X datalogger in November 1994. Monitoring continued on a monthly or less frequent basis through October 1997. Tables D-3.0-1 through D-3.0-3 provide a summary of all nonsampling events conducted at the TA-73 landfill. Included in this table is a designation of all HDS monitoring events. In addition to providing measurements of matric potential, HDSs provide measurements of in-situ temperature versus depth. HDS data are presented in Attachment 4.

Soil Temperature Monitoring

Thermocouples were installed in some of the monitor wells, especially those in which high downhole methane and/or carbon dioxide concentrations indicated that a significant thermal gradient may exist due to exothermic oxidation of biogenic methane. A total of 18 thermocouples were installed in the LP wells. In

TABLE D-3.0-1
SUMMARY OF 1994-1995 NONSAMPLING ACTIVITIES

Well	Measurement Device	Depth (ft)	Nov 1994	Dec 1994	Jan 1995	Feb 1995	Mar 1995	Apr 1995	May 1995	Jun 1995	Jul 1995	Aug 1995	Sep 1995	Oct 1995	Nov 1995	
CP-1	TC1	75.0	--	--	--	--	--	--	--	--	--	--	--	3	1	--
CP-1	TC2	27.5	--	--	--	--	--	--	--	--	--	--	--	3	1	--
CP-1	TC3	2.5	--	--	--	--	--	--	--	--	--	--	--	3	1	--
CP-4	HDS1	17.6	--	--	--	--	--	--	--	--	--	--	--	--	1	--
CP-4	TC1	1.0	--	--	--	--	--	--	--	--	--	--	--	--	1	--
CP-7	HDS1	23.4	--	--	--	--	--	--	--	--	--	--	--	--	1	--
CP-7	TC1	2.0	--	--	--	--	--	--	--	--	--	--	--	--	1	--
CP-9	HDS1	19.0	--	--	--	--	--	--	--	--	--	--	--	2	1	--
CP-9	TC1	1.0	--	--	--	--	--	--	--	--	--	--	--	1	1	--
CP-10	HDS1	25.8	--	--	--	--	--	--	--	--	--	--	--	--	1	--
CP-10	TC1	1.3	--	--	--	--	--	--	--	--	--	--	--	--	1	--
CP-13	HDS1	74.0	--	--	--	--	--	--	--	--	--	--	--	--	1	--
CP-13	TC1	74.0	--	--	--	--	--	--	--	--	--	--	--	2	1	--
CP-13	TC2	30.0	--	--	--	--	--	--	--	--	--	--	--	2	1	--
CP-13	TC3	1.2	--	--	--	--	--	--	--	--	--	--	--	2	1	--
LP-1	HDS1	34.2	1	--	2	1	3	1	1	1	1	--	--	4	--	--
LP-1	NAT	2 to 42	1	--	1	1	1	1	1	--	--	--	--	--	--	--
LP-2	NAT	2 to 39	1	--	1	1	1	1	1	--	--	--	--	--	--	--
LP-3	HDS1	20.4	1	--	2	1	2	1	1	1	1	--	--	3	--	--
LP-3	NAT	2 to 100	1	--	1	1	1	1	1	--	--	--	--	--	--	--
LP-4	HDS1	34.6	--	--	1	2	2	1	1	1	1	--	--	3	--	--
LP-4	TC1	99.4	--	--	2	1	1	--	--	--	--	--	--	--	--	--
LP-4	TC2	75.4	--	--	2	1	1	--	--	--	--	--	--	--	--	--
LP-4	TC3	46.4	--	--	2	1	1	--	--	--	--	--	--	--	--	--
LP-4	TC4	13.4	--	--	2	1	1	--	--	--	--	--	--	--	--	--
LP-4	NAT	2 to 100	1	--	1	1	1	1	1	--	--	--	--	--	--	--

TABLE D-3.0-1 (continued)

Well	Measurement Device	Depth (ft)	Nov 1994	Dec 1994	Jan 1995	Feb 1995	Mar 1995	Apr 1995	May 1995	Jun 1995	Jul 1995	Aug 1995	Sep 1995	Oct 1995	Nov 1995	
LP-5	HDS1	23.0	1	—	2	1	3	1	1	1	1	—	—	3	—	—
LP-5	HDS2	11.0	1	—	2	1	3	1	1	1	1	—	—	3	—	—
LP-5	NAT	2 to 38	—	—	1	1	1	1	1	—	—	—	—	—	—	—
LP-6	HDS1	11.2	1	—	2	2	2	1	1	1	1	—	—	2	—	—
LP-6	NAT	2 to 38	—	—	1	1	1	1	1	—	—	—	—	—	—	—
LP-7	HDS1	55.0	1	—	2	2	3	1	1	1	1	—	—	12	—	—
LP-7	TC1	100.0	—	—	2	2	—	—	—	—	—	—	—	—	—	—
LP-7	TC2	28.0	—	—	2	2	—	—	—	—	—	—	—	—	—	—
LP-7	TC3	18.0	—	—	2	2	—	—	—	—	—	—	—	—	—	—
LP-7	NAT	2 to 105	1	—	1	1	1	1	1	—	—	—	—	—	—	—
LP-8	HDS1	54.5	1	—	2	2	3	1	1	1	1	—	—	3	—	—
LP-8	TC1	91.5	—	—	1	—	—	—	—	—	—	—	—	—	—	—
LP-8	TC2	43.5	—	—	1	—	—	—	—	—	—	—	—	—	—	—
LP-8	TC3	15.5	—	—	1	—	—	—	—	—	—	—	—	—	—	—
LP-8	NAT	2 to 93	—	—	1	1	1	1	1	—	—	—	—	—	—	—
LP-9	HDS1	28.2	1	—	2	1	2	1	1	1	1	—	—	3	—	—
LP-9	NAT	2 to 43	—	—	1	1	1	1	1	—	—	—	—	—	—	—
LPS-1	TC1	145.0	—	—	2	1	3	1	1	1	1	—	—	2	—	—
LPS-1	TC2	114.0	—	—	2	1	3	1	1	1	1	—	—	2	—	—
LPS-1	TC3	61.0	—	—	2	1	3	1	1	1	1	—	—	2	—	—
LPS-1	TC4	7.5	—	—	2	1	3	1	1	1	1	—	—	2	—	—
LPS-1	NAT	2 to 147	—	—	1	1	1	1	1	—	—	—	—	—	—	—
LPS-2	HDS1	160.0	—	—	2	2	3	1	1	1	1	—	—	3	—	—
LPS-2	HDS2	62.0	—	—	2	2	3	1	1	1	1	—	—	3	—	—
LPS-2	TC1	178.0	—	—	2	1	1	—	—	—	—	—	—	—	—	—
LPS-2	TC2	125.0	—	—	2	1	1	—	—	—	—	—	—	—	—	—

TABLE D-3.0-1 (continued)

Well	Measurement Device	Depth (ft)	Nov 1994	Dec 1994	Jan 1995	Feb 1995	Mar 1995	Apr 1995	May 1995	Jun 1995	Jul 1995	Aug 1995	Sep 1995	Oct 1995	Nov 1995	
LPS-2	TC3	87.0	--	--	2	1	1	--	--	--	--	--	--	--	--	--
LPS-2	TC4	29.0	--	--	2	1	1	--	--	--	--	--	--	--	--	--
LPS-2	NAT	2 to 181	--	--	1	1	--	1	1	--	--	--	--	--	--	--
LI-1	HDS1	75.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-1	HDS2	57.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-1	HDS3	35.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-1	NAT	5 to 64	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-2	HDS1	31.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-2	TC1	15.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-3	HDS1	22.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-3	TC1	10.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-4	HDS1	21.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-4	TC1	10.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-5	HDS1	27.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-5	TC1	12.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-6	HDS1	65.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-6	HDS2	19.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LI-6	NAT	5 to 63	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDA-1	HDS1	29.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDA-1	TC1	15.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDA-1	TC2	5.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDA-1	NAT	5 to 28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDA-3	HDS1	34.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDA-3	TC1	18.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDA-3	TC2	5.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDA-3	NAT	5 to 32	--	--	--	--	--	--	--	--	--	--	--	--	--	--

For each month, the number of measurements made for individual instruments is presented on the table

1 = Measurement devices include the following: heat dissipation sensors (HDS), neutron access tubes, neutron probe (NAT), and thermocouple (TC)

-- = No measurements made for specified month

TABLE D-3.0-2
SUMMARY OF 1996 NONSAMPLING ACTIVITIES

Well	Measurement Device	Depth (ft)	Jan 1996	Feb 1996	Mar 1996	Apr 1996	May 1996	Jun 1996	Jul 1996	Aug 1996	Sep 1996	Oct 1996	Nov 1996	Dec 1996
CP-1	TC1	75.0	1	—	1	1	1	—	—	1	2	—	—	1
CP-1	TC2	27.5	1	—	1	1	1	—	—	1	2	—	—	1
CP-1	TC3	2.5	1	—	1	1	1	—	—	1	2	—	—	1
CP-4	HDS1	17.6	1	—	1	1	1	—	—	1	1	—	—	1
CP-4	TC1	1.0	1	—	1	1	1	—	—	1	2	—	—	1
CP-7	HDS1	23.4	1	—	1	1	1	—	—	1	1	—	—	1
CP-7	TC1	2.0	—	—	—	1	1	—	—	1	2	—	—	1
CP-9	HDS1	19.0	1	—	1	1	1	—	—	1	1	—	—	1
CP-9	TC1	1.0	1	—	—	1	1	—	—	1	2	—	—	1
CP-10	HDS1	25.8	1	—	1	1	1	—	—	1	1	—	—	1
CP-10	TC1	1.3	1	—	—	1	1	—	—	1	2	—	—	1
CP-13	HDS1	74.0	1	—	1	1	1	—	—	1	1	—	—	1
CP-13	TC1	74.0	1	—	—	1	1	—	—	1	2	—	—	1
CP-13	TC2	30.0	1	—	—	1	1	—	—	1	2	—	—	1
CP-13	TC3	1.2	1	—	—	1	1	—	—	1	2	—	—	1
LP-1	HDS1	34.2	1	—	1	1	1	—	—	1	1	—	—	1
LP-1	NAT	2 to 42	—	—	1	—	—	1	—	—	1	—	—	—
LP-2	NAT	2 to 39	—	—	1	—	—	1	—	—	1	—	—	—
LP-3	HDS1	20.4	1	—	1	1	1	—	—	1	1	—	—	1
LP-3	NAT	2 to 100	—	—	1	—	—	1	—	—	1	—	—	—
LP-4	HDS1	34.6	1	—	2	1	1	—	—	1	2	—	—	1
LP-4	TC1	99.4	1	—	—	—	—	—	—	1	1	—	—	—
LP-4	TC2	75.4	1	—	—	—	—	—	—	1	1	—	—	—
LP-4	TC3	46.4	1	—	—	—	—	—	—	1	1	—	—	—
LP-4	TC4	13.4	1	—	—	—	—	—	—	1	1	—	—	—
LP-4	NAT	2 to 100	—	—	1	—	—	1	—	—	1	—	—	—
LP-5	HDS1	23.0	1	—	2	1	1	—	—	1	2	—	—	1

TABLE D-3.0-2 (continued)

Well	Measurement Device	Depth (ft)	Jan 1996	Feb 1996	Mar 1996	Apr 1996	May 1996	Jun 1996	Jul 1996	Aug 1996	Sep 1996	Oct 1996	Nov 1996	Dec 1996
LP-5	HDS2	11.0	1	—	1	1	1	—	—	1	2	—	—	1
LP-5	NAT	2 to 38	—	—	1	—	—	1	—	—	1	—	—	—
LP-6	HDS1	11.2	1	—	1	1	1	—	—	1	1	—	—	1
LP-6	NAT	2 to 38	—	—	1	—	—	1	—	—	1	—	—	—
LP-7	HDS1	55.0	1	—	1	1	1	—	—	—	—	—	—	—
LP-7	TC1	100.0	1	—	—	—	1	—	—	1	2	—	—	1
LP-7	TC2	28.0	1	—	—	—	1	—	—	1	2	—	—	1
LP-7	TC3	16.0	1	—	—	—	1	—	—	1	2	—	—	1
LP-7	NAT	2 to 105	—	—	1	—	—	1	—	—	1	—	—	—
LP-8	HDS1	54.5	1	—	1	1	1	1	—	1	1	—	—	1
LP-8	TC1	91.5	1	—	—	—	1	1	—	1	1	—	—	1
LP-8	TC2	43.5	1	—	—	—	1	1	—	1	1	—	—	1
LP-8	TC3	15.5	1	—	—	—	1	1	—	1	1	—	—	1
LP-8	NAT	2 to 93	—	—	1	—	—	1	—	—	1	—	—	—
LP-9	HDS1	26.2	1	—	1	1	1	—	—	1	1	—	—	1
LP-9	NAT	2 to 43	—	—	1	—	—	1	—	—	1	—	—	—
LPS-1	TC1	145.0	1	—	1	1	1	1	—	1	2	—	—	1
LPS-1	TC2	114.0	1	—	1	1	1	1	—	1	2	—	—	1
LPS-1	TC3	51.0	1	—	1	1	1	1	—	1	2	—	—	1
LPS-1	TC4	7.5	1	—	1	1	1	1	—	1	2	—	—	1
LPS-1	NAT	2 to 147	—	—	1	—	—	1	—	—	1	—	—	—
LPS-2	HDS1	160.0	1	—	2	1	1	—	—	1	1	—	—	1
LPS-2	HDS2	62.0	1	—	2	1	1	—	—	1	1	—	—	1
LPS-2	TC1	178.0	1	—	—	—	—	—	—	1	—	—	—	—
LPS-2	TC2	125.0	1	—	—	—	—	—	—	1	—	—	—	—
LPS-2	TC3	87.0	1	—	—	—	—	—	—	1	—	—	—	—

TABLE D-3.0-2 (continued)

Well	Measurement Device	Depth (ft)	Jan 1996	Feb 1996	Mar 1996	Apr 1996	May 1996	Jun 1996	Jul 1996	Aug 1996	Sep 1996	Oct 1996	Nov 1996	Dec 1996
LPS-2	TC4	29.0	1	—	—	—	—	—	—	1	—	—	—	—
LPS-2	NAT	2 to 181	—	—	1	—	—	1	—	—	1	—	—	—
LI-1	HDS1	75.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-1	HDS2	57.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-1	HDS3	35.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-1	NAT	5 to 64	—	—	—	—	—	—	—	—	—	—	—	—
LI-2	HDS1	31.5	—	—	—	—	—	—	—	—	—	—	—	—
LI-2	TC1	15.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-3	HDS1	22.5	—	—	—	—	—	—	—	—	—	—	—	—
LI-3	TC1	10.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-4	HDS1	21.3	—	—	—	—	—	—	—	—	—	—	—	—
LI-4	TC1	10.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-5	HDS1	27.8	—	—	—	—	—	—	—	—	—	—	—	—
LI-5	TC1	12.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-6	HDS1	65.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-6	HDS2	19.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-6	NAT	5 to 63	—	—	—	—	—	—	—	—	—	—	—	—
DDA-1	HDS1	29.8	—	—	—	—	—	—	—	—	—	—	—	—
DDA-1	TC1	15.0	—	—	—	—	—	—	—	—	—	—	—	—
DDA-1	TC2	5.0	—	—	—	—	—	—	—	—	—	—	—	—
DDA-1	NAT	5 to 28	—	—	—	—	—	—	—	—	—	—	—	—
DDA-3	HDS1	34.5	—	—	—	—	—	—	—	—	—	—	—	—
DDA-3	TC1	18.0	—	—	—	—	—	—	—	—	—	—	—	—
DDA-3	TC2	5.0	—	—	—	—	—	—	—	—	—	—	—	—
DDA-3	NAT	5 to 32	—	—	—	—	—	—	—	—	—	—	—	—

For each month, the number of measurements made for individual instruments is presented on the table.

1 = Measurement devices include the following: heat dissipation sensors (HDS), neutron access tubes/neutron probe (NAT), and thermocouple (TC).

— = No measurements made for specified month.

TABLE D-3.0-3
SUMMARY OF 1997 NONSAMPLING ACTIVITIES

Well	Measurement Device	Depth (ft)	Jan 1997	Feb 1997	Mar 1997	Apr 1997	May 1997	Jun 1997	Jul 1997	Aug 1997	Sep 1997	Oct 1997	Nov 1997	Dec 1997
CP-1	TC1	75.0	—	—	4	1	—	—	—	—	1	—	—	—
CP-1	TC2	27.5	—	—	4	1	—	—	—	—	1	—	—	—
CP-1	TC3	2.5	—	—	4	1	—	—	—	—	1	—	—	—
CP-4	HDS1	17.6	—	—	4	1	—	—	—	—	1	—	—	—
CP-4	TC1	1.0	—	—	3	1	—	—	—	—	1	—	—	—
CP-7	HDS1	23.4	—	—	4	1	—	—	—	—	1	—	—	—
CP-7	TC1	2.0	—	—	3	1	—	—	—	—	1	—	—	—
CP-9	HDS1	19.0	—	—	4	—	—	—	—	—	1	—	—	—
CP-9	TC1	1.0	—	—	3	1	—	—	—	—	1	—	—	—
CP-10	HDS1	25.8	—	—	4	1	—	—	—	—	1	—	—	—
CP-10	TC1	1.3	—	—	3	1	—	—	—	—	1	—	—	—
CP-13	HDS1	74.0	—	—	4	1	—	—	—	—	3	—	—	—
CP-13	TC1	74.0	—	—	4	1	—	—	—	—	2	—	—	—
CP-13	TC2	30.0	—	—	4	1	—	—	—	—	2	—	—	—
CP-13	TC3	1.2	—	—	4	1	—	—	—	—	2	—	—	—
LP-1	HDS1	34.2	—	—	4	1	—	—	—	1	1	—	—	—
LP-1	NAT	2 to 42	—	—	—	1	—	—	—	—	—	—	—	—
LP-2	NAT	2 to 39	—	—	—	1	—	—	—	—	—	—	—	—
LP-3	HDS1	20.4	—	—	4	1	—	—	—	1	1	—	—	—
LP-3	NAT	2 to 100	—	—	—	1	—	—	—	—	—	—	—	—
LP-4	HDS1	34.6	—	—	4	1	—	—	—	1	1	—	—	—
LP-4	TC1	99.4	—	—	—	—	—	—	—	—	—	—	—	—
LP-4	TC2	75.4	—	—	—	—	—	—	—	—	—	—	—	—
LP-4	TC3	46.4	—	—	—	—	—	—	—	—	—	—	—	—
LP-4	TC4	13.4	—	—	—	—	—	—	—	—	—	—	—	—
LP-4	NAT	2 to 100	—	—	—	1	—	—	—	—	—	—	—	—
LP-5	HDS1	23.0	—	—	4	1	—	—	—	1	1	—	—	—
LP-5	HDS2	11.0	—	—	4	1	—	—	—	1	1	—	—	—
LP-5	NAT	2 to 38	—	—	—	1	—	—	—	—	—	—	—	—

TABLE D-3.0-3 (continued)

Well	Measurement Device	Depth (ft)	Jan 1997	Feb 1997	Mar 1997	Apr 1997	May 1997	Jun 1997	Jul 1997	Aug 1997	Sep 1997	Oct 1997	Nov 1997	Dec 1997
LP-6	HDS1	11.2	—	—	3	1	—	—	—	1	1	—	—	—
LP-6	NAT	2 to 38	—	—	—	1	—	—	—	—	—	—	—	—
LP-7	HDS1	65.0	—	—	—	—	—	—	—	—	—	—	—	—
LP-7	TC1	100.0	—	—	4	—	—	—	—	1	1	—	—	—
LP-7	TC2	28.0	—	—	4	—	—	—	—	1	1	—	—	—
LP-7	TC3	16.0	—	—	4	—	—	—	—	1	1	—	—	—
LP-7	NAT	2 to 105	—	—	—	1	—	—	—	—	—	—	—	—
LP-8	HDS1	54.5	—	—	3	1	—	—	—	1	1	—	—	—
LP-8	TC1	91.5	—	—	3	1	—	—	—	1	1	—	—	—
LP-8	TC2	43.5	—	—	3	1	—	—	—	1	1	—	—	—
LP-8	TC3	15.5	—	—	3	1	—	—	—	1	1	—	—	—
LP-8	NAT	2 to 93	—	—	—	1	—	—	—	—	—	—	—	—
LP-9	HDS1	20.2	—	—	4	1	—	—	—	1	1	—	—	—
LP-9	NAT	2 to 43	—	—	—	1	—	—	—	—	—	—	—	—
LPS-1	TC1	145.0	—	—	3	1	—	—	—	1	—	—	—	—
LPS-1	TC2	114.0	—	—	3	1	—	—	—	1	—	—	—	—
LPS-1	TC3	51.0	—	—	3	1	—	—	—	1	—	—	—	—
LPS-1	TC4	7.5	—	—	3	1	—	—	—	1	—	—	—	—
LPS-1	NAT	2 to 147	—	—	—	1	—	—	—	—	—	—	—	—
LPS-2	HDS1	160.0	—	—	4	1	—	—	—	1	1	—	—	—
LPS-2	HDS2	62.0	—	—	4	1	—	—	—	1	1	—	—	—
LPS-2	TC1	178.0	—	—	—	—	—	—	—	—	—	—	—	—
LPS-2	TC2	125.0	—	—	—	—	—	—	—	—	—	—	—	—
LPS-2	TC3	87.0	—	—	—	—	—	—	—	—	—	—	—	—
LPS-2	TC4	29.0	—	—	—	—	—	—	—	—	—	—	—	—
LPS-2	NAT	2 to 181	—	—	—	1	—	—	—	—	—	—	—	—
LI-1	HDS1	75.0	—	—	—	—	—	—	2	3	2	1	—	—
LI-1	HDS2	57.0	—	—	—	—	—	—	2	3	2	1	—	—
LI-1	HDS3	35.0	—	—	—	—	—	—	2	2	2	1	—	—

TABLE D-3.0-3 (continued)

Well	Measurement Device	Depth (ft)	Jan 1997	Feb 1997	Mar 1997	Apr 1997	May 1997	Jun 1997	Jul 1997	Aug 1997	Sep 1997	Oct 1997	Nov 1997	Dec 1997
LI-1	NAT	5 to 64	--	--	--	--	--	--	--	1	1	1	--	--
LI-2	HDS1	31.6	--	--	--	--	--	--	2	4	2	1	--	--
LI-2	TC1	15.0	--	--	--	--	--	--	2	2	2	--	--	--
LI-3	HDS1	22.6	--	--	--	--	--	--	3	2	3	1	--	--
LI-3	TC1	10.0	--	--	--	--	--	--	3	2	3	1	--	--
LI-4	HDS1	21.3	--	--	--	--	--	--	2	2	2	1	--	--
LI-4	TC1	10.0	--	--	--	--	--	--	2	2	2	--	--	--
LI-5	HDS1	27.8	--	--	--	--	--	--	1	2	2	1	--	--
LI-5	TC1	12.0	--	--	--	--	--	--	2	2	2	--	--	--
LI-6	HDS1	65.0	--	--	--	--	--	--	1	2	2	1	--	--
LI-6	HDS2	19.0	--	--	--	--	--	--	1	1	2	1	--	--
LI-6	NAT	5 to 63	--	--	--	--	--	--	--	1	1	1	--	--
DDA-1	HDS1	29.8	--	--	--	--	--	1	2	2	2	1	--	--
DDA-1	TC1	15.0	--	--	--	--	--	1	1	2	2	1	--	--
DDA-1	TC2	5.0	--	--	--	--	--	1	1	2	2	1	--	--
DDA-1	NAT	5 to 28	--	--	--	--	--	--	--	1	1	1	--	--
DDA-3	HDS1	34.6	--	--	--	--	--	3	1	3	2	--	--	--
DDA-3	TC1	18.0	--	--	--	--	--	3	1	2	2	--	--	--
DDA-3	TC2	5.0	--	--	--	--	--	3	1	2	2	--	--	--
DDA-3	NAT	5 to 32	--	--	--	--	--	--	--	1	1	1	--	--

For each month, the number of measurements made for individual instruments is presented on the table.

1 = Measurement devices include the following: heat dissipation sensors (HDS), neutron access tubes, neutron probe (NAT), and thermocouple (TC).

-- = No measurements made for specified month.

TABLE D-3.0-4
SUMMARY OF 1995 SAMPLING ACTIVITIES

Well	Soil Gas Port	Depth (ft)	Jan 1995	Feb 1995	Mar 1995	Apr 1995	May 1995	Jun 1995	Jul 1995	Aug 1995	Sep 1995	Oct 1995	Nov 1995	Dec 1995
CP-1	GP-1	75.0	—	—	—	—	—	—	—	—	—	—	—	—
CP-1	GP-2	27.5	—	—	—	—	—	—	—	—	—	—	—	—
CP-1	GP-3	2.5	—	—	—	—	—	—	—	—	—	—	—	—
CP-4	GP-1	17.6	—	—	—	—	—	—	—	—	—	—	—	—
CP-4	GP-2	1.0	—	—	—	—	—	—	—	—	—	—	—	—
CP-7	GP-1	23.4	—	—	—	—	—	—	—	—	—	—	—	—
CP-7	GP-2	2.0	—	—	—	—	—	—	—	—	—	—	—	—
CP-9	GP-1	19.0	—	—	—	—	—	—	—	—	—	—	—	—
CP-9	GP-2	1.0	—	—	—	—	—	—	—	—	—	—	—	—
CP-10	GP-1	25.8	—	—	—	—	—	—	—	—	—	—	—	—
CP-10	GP-2	1.3	—	—	—	—	—	—	—	—	—	—	—	—
CP-13	GP-1	74.0	—	—	—	—	—	—	—	—	—	—	—	—
CP-13	GP-2	30.0	—	—	—	—	—	—	—	—	—	—	—	—
CP-13	GP-3	1.2	—	—	—	—	—	—	—	—	—	—	—	—
CP-30	GP-1	43.1	—	—	—	—	—	—	—	—	—	—	—	—
LP-1	GP-1	40.2	—	II,II,IV	II,II,IV	II,II,IV	II,II,IV	II	II	—	—	II	—	—
LP-1	GP-2	10.2	—	II,II,IV	II,II,IV	II,II,IV	II,II,IV	II	II	—	—	II	—	—
LP-2	GP-1	36.0	—	II,II,IV	II,II,IV	II,II,IV	II,II,IV	II	II	—	—	II	—	—
LP-3	GP-1	99.2	—	II,II,IV	II,II,IV	II,II,IV	II,II,IV	II	II	—	—	II	—	—
LP-3	GP-2	91.2	—	II,II,IV	II,II,IV	II,II,IV	II,II,IV	II	II	—	—	II	—	—
LP-3	GP-3	39.2	—	II,II,IV	II,II,IV	II,II,IV	II,II,IV	II	II	—	—	II	—	—
LP-3	GP-4	9.2	—	II,II,IV	II,II,IV	II,II,IV	II,II,IV	II	II	—	—	II	—	—
LP-3	LYS-1	20.0	—	—	—	—	—	—	—	—	—	—	—	—
LP-4	GP-1	99.4	—	II,II,IV	II,II,IV	II,II,IV	II,II,IV	II	II	—	—	II	—	—

TABLE D-3.0-4 (continued)

Well	Soil Gas Port	Depth (ft)	Jan 1995	Feb 1995	Mar 1995	Apr 1995	May 1995	Jun 1995	Jul 1995	Aug 1995	Sep 1995	Oct 1995	Nov 1995	Dec 1995
LP-4	GP-2	75.4	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-4	GP-3	46.4	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-4	GP-4	13.4	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-4	LYS-1	34.0	—	—	—	WV	—	—	—	—	—	—	—	—
LP-5	GP-1	33.5	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-5	LYS-1	11.0	—	WV,W	WV,W	WV,W	WV	—	—	—	—	—	—	—
LP-6	GP-1	27.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-6	LYS-1	11.0	—	WV	—	—	—	—	—	—	—	—	—	—
LP-7	GP-1	100.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-7	GP-2	28.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-7	GP-3	16.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-7	LYS-1	55.0	—	WV,W	WV	—	WV	—	—	—	—	—	—	—
LP-8	GP-1	91.5	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-8	GP-2	43.5	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-8	GP-3	15.5	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-9	GP-1	41.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-9	GP-2	11.2	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LP-9	LYS-1	26.0	—	WV,W	WV,W	WV,W	WV,W	—	—	—	—	—	—	—
LPS-1	GP-1	145.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LPS-1	GP-2	114.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LPS-1	GP-3	61.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LPS-1	GP-4	22.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LPS-1	GP-5	7.5	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LPS-2	GP-1	178.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—
LPS-2	GP-2	125.0	—	H,I,N	H,I,N	H,I,N	H,I,N	II	II	—	—	II	—	—

TABLE D-3.0-5
SUMMARY OF 1996 SAMPLING ACTIVITIES

Well	Soil Gas Port	Depth (ft)	Jan 1996	Feb 1996	Mar 1996	Apr 1996	May 1996	Jun 1996	Jul 1996	Aug 1996	Sep 1996	Oct 1996	Nov 1996	Dec 1996
CP-1	GP-1	75.0	--	--	II,IV	II,IV	II,IV	II,IV	--	--	II,IV	--	--	II,IV
CP-1	GP-2	27.5	--	--	II,IV	II,IV	II,IV	II,IV	--	--	II,IV	--	--	II,IV
CP-1	GP-3	2.5	--	--	II,IV	II	II,IV	II	--	--	II	--	--	II,IV
CP-4	GP-1	17.6	--	--	II,IV	II,IV	II,IV	II,IV	--	--	II,IV	--	--	II,IV
CP-4	GP-2	1.0	--	--	II	II	II,IV	II	--	--	II	--	--	II,IV
CP-7	GP-1	23.4	--	--	II,IV	II,IV	II,IV	II,IV	--	--	II,IV	--	--	II,IV
CP-7	GP-2	2.0	--	--	II	II	II,IV	II	--	--	II	--	--	II,IV
CP-9	GP-1	19.0	--	--	II,IV	II,IV	II,IV	II,IV	--	--	II,IV	--	--	II,IV
CP-9	GP-2	1.0	--	--	II,IV	II,IV	II,IV	II,IV	--	--	II,IV	--	--	II,IV
CP-10	GP-1	25.8	--	--	II,IV	II,IV	II,IV	II,IV	--	--	II,IV	--	--	II,IV
CP-10	GP-2	1.3	--	--	II	II	II,IV	II	--	--	II	--	--	II,IV
CP-13	GP-1	74.0	--	--	II,IV	II,IV	II,IV	II,IV	--	--	II,IV	--	--	II,IV
CP-13	GP-2	30.0	--	--	II,IV	II,IV	II,IV	II,IV	--	--	II,IV	--	--	II,IV
CP-13	GP-3	1.2	--	--	II	II	II,IV	II	--	--	II	--	--	II,IV
CP-30	GP-1	43.1	--	--	II	II	II,IV	II	--	--	II	--	--	II,IV
LP-1	GP-1	40.2	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-1	GP-2	10.2	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-2	GP-1	36.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-3	GP-1	99.2	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-3	GP-2	91.2	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-3	GP-3	39.2	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-3	GP-4	9.2	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-3	LYS-1	20.0	--	--	--	--	--	--	--	--	--	--	--	--
LP-4	GP-1	99.4	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-4	GP-2	75.4	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV

TABLE D-3.0-5 (continued)

Well	Soil Gas Port	Depth (ft)	Jan 1996	Feb 1996	Mar 1996	Apr 1996	May 1996	Jun 1996	Jul 1996	Aug 1996	Sep 1996	Oct 1996	Nov 1996	Dec 1996
LP-4	GP-3	46.4	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-4	GP-4	13.4	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-4	LYS-1	34.0	--	--	--	--	--	--	--	--	I,IV	--	--	--
LP-5	GP-1	33.5	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-5	LYS-1	11.0	--	--	I,IV	--	--	I,IV,I,IV	--	--	I,IV,I,IV	--	--	I,IV,I,IV
LP-6	GP-1	27.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-6	LYS-1	11.0	--	--	--	--	--	--	--	--	--	--	--	--
LP-7	GP-1	100.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-7	GP-2	28.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-7	GP-3	16.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-7	LYS-1	65.0	--	--	--	--	--	I,IV	--	--	I,IV	--	--	I,IV
LP-8	GP-1	91.5	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-8	GP-2	43.5	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-8	GP-3	15.5	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-9	GP-1	41.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-9	GP-2	11.2	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LP-9	LYS-1	26.0	--	--	I,IV,I,IV	--	I,IV,I,IV	I,IV,I,IV	--	--	I,IV,I,IV	--	--	I,IV,I,IV
LPS-1	GP-1	145.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LPS-1	GP-2	114.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LPS-1	GP-3	61.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LPS-1	GP-4	22.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LPS-1	GP-5	7.5	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LPS-2	GP-1	178.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LPS-2	GP-2	125.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LPS-2	GP-3	87.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV

TABLE D-3.0-5 (continued)

Well	Soil Gas Port	Depth (ft)	Jan 1996	Feb 1996	Mar 1996	Apr 1996	May 1996	Jun 1996	Jul 1996	Aug 1996	Sep 1996	Oct 1996	Nov 1996	Dec 1996
LPS-2	GP-4	29.0	--	--	II,IV	II	II	II,IV	--	--	II,IV	--	--	II,IV
LPS-2	LYS-1	62.0	--	--	--	--	--	--	--	--	--	--	--	--
LI-1	LYS-1	58.0	--	--	--	--	--	--	--	--	--	--	--	--
LI-1	LYS-2	78.0	--	--	--	--	--	--	--	--	--	--	--	--
LI-2	LYS-1	32.2	--	--	--	--	--	--	--	--	--	--	--	--
LI-3	LYS-1	23.3	--	--	--	--	--	--	--	--	--	--	--	--
LI-4	LYS-1	22.3	--	--	--	--	--	--	--	--	--	--	--	--
LI-5	LYS-1	28.8	--	--	--	--	--	--	--	--	--	--	--	--
LI-6	SG-1	60.0	--	--	--	--	--	--	--	--	--	--	--	--
LI-6	SG-2	25.0	--	--	--	--	--	--	--	--	--	--	--	--
LI-6	LYS-1	66.0	--	--	--	--	--	--	--	--	--	--	--	--
DDA-1	SG-1	24.0	--	--	--	--	--	--	--	--	--	--	--	--
DDA-1	LYS-1	31.3	--	--	--	--	--	--	--	--	--	--	--	--
DDA-3	SG-1	28.0	--	--	--	--	--	--	--	--	--	--	--	--
DDA-3	LYS-1	35.5	--	--	--	--	--	--	--	--	--	--	--	--

-- = no samples collected

Bold values indicate two samples collected and analyzed in one month

II = Soil gas samples analyzed for CH₄, CO₂, and O₂ in the field using Landtec QA 90

II = Soil gas samples analyzed in the laboratory for CH₄, CO₂, N₂, O₂, and H₂ by EPA method 133

IV = Soil gas samples analyzed in the laboratory for VOCs by EPA method TO-14

IVy = Soil water/leachate sample analyzed in the laboratory for VOCs

IVm = Soil water/leachate sample analyzed in the laboratory for Target Analyte List metals

TABLE D-3.0-6
SUMMARY OF 1997 SAMPLING ACTIVITIES

Well	Soil Gas Port	Depth (ft)	Jan 1997	Feb 1997	Mar 1997	Apr 1997	May 1997	Jun 1997	Jul 1997	Aug 1997	Sep 1997	Oct 1997	Nov 1997	Dec 1997
CP-1	GP-1	75.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-1	GP-2	27.5	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-1	GP-3	2.5	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-4	GP-1	17.6	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-4	GP-2	1.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-7	GP-1	23.4	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-7	GP-2	2.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-9	GP-1	19.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-9	GP-2	1.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-10	GP-1	25.8	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-10	GP-2	1.3	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-13	GP-1	74.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-13	GP-2	30.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-13	GP-3	1.2	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
CP-30	GP-1	43.1	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-1	GP-1	40.2	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-1	GP-2	10.2	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-2	GP-1	36.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-3	GP-1	99.2	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-3	GP-2	91.2	—	—	—	—	—	—	—	ff	ff,lv	—	—	—

TABLE D-3.0-6 (continued)

Well	Soil Gas Port	Depth (ft)	Jan 1997	Feb 1997	Mar 1997	Apr 1997	May 1997	Jun 1997	Jul 1997	Aug 1997	Sep 1997	Oct 1997	Nov 1997	Dec 1997
LP-3	GP-3	39.2	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-3	GP-4	9.2	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-3	LYS-1	20.0	—	—	—	—	—	—	—	—	—	—	—	—
LP-4	GP-1	99.4	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-4	GP-2	75.4	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-4	GP-3	46.4	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-4	GP-4	13.4	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-4	LYS-1	34.0	—	—	—	—	—	—	—	—	—	—	—	—
LP-5	GP-1	33.5	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-5	LYS-1	11.0	—	—	—	—	—	—	—	—	—	—	—	—
LP-6	GP-1	27.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-6	LYS-1	11.0	—	—	—	—	—	—	—	—	—	—	—	—
LP-7	GP-1	100.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-7	GP-2	28.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-7	GP-3	16.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-7	LYS-1	55.0	—	—	—	—	—	—	—	—	—	—	—	—
LP-8	GP-1	91.5	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-8	GP-2	43.5	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-8	GP-3	15.5	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-9	GP-1	41.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-9	GP-2	11.2	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LP-9	LYS-1	26.0	—	—	—	—	—	—	—	—	—	—	—	—
LPS-1	GP-1	145.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—

TABLE D-3.0-6 (continued)

Well	Soil Gas Port	Depth (ft)	Jan 1997	Feb 1997	Mar 1997	Apr 1997	May 1997	Jun 1997	Jul 1997	Aug 1997	Sep 1997	Oct 1997	Nov 1997	Dec 1997
LPS-1	GP-2	114.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LPS-1	GP-3	61.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LPS-1	GP-4	22.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LPS-1	GP-5	7.5	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LPS-2	GP-1	178.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LPS-2	GP-2	125.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LPS-2	GP-3	87.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LPS-2	GP-4	29.0	—	—	—	—	—	—	—	ff	ff,lv	—	—	—
LPS-2	LYS-1	62.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-1	LYS-1	58.0	—	—	—	—	—	—	—	—	—	—	—	—
LI-1	LYS-2	76.0	—	—	—	—	—	—	—	lvw	—	—	—	—
LI-2	LYS-1	32.2	—	—	—	—	—	—	—	—	—	—	—	—
LI-3	LYS-1	23.3	—	—	—	—	—	—	—	lvw	wv,lwm	—	—	—
LI-4	LYS-1	22.3	—	—	—	—	—	—	—	—	—	—	—	—
LI-5	LYS-1	28.8	—	—	—	—	—	—	—	—	wv,lwm	wv,lwm	—	—
LI-6	SG-1	60.0	—	—	—	—	—	—	—	ff,lv	ff,lv	—	—	—
LI-6	SG-2	25.0	—	—	—	—	—	—	—	ff,lv	ff,lv	—	—	—
LI-6	LYS-1	66.0	—	—	—	—	—	—	—	—	—	—	—	—
DDA-1	SG-1	24.0	—	—	—	—	—	—	—	ff,lv	ff,lv	—	—	—
DDA-1	LYS-1	31.3	—	—	—	—	—	—	—	—	—	—	—	—
DDA-3	SG-1	28.0	—	—	—	—	—	—	—	ff,lv	ff,lv	—	—	—
DDA-3	LYS-1	35.5	—	—	—	—	—	—	—	—	—	—	—	—

— = no samples collected

Bold values indicate two samples collected and analyzed in one month

ff = Soil gas samples analyzed for CH₄, CO₂, and O₂ in the field using Landtec OA-90lv = Soil gas samples analyzed in the laboratory for CH₄, CO₂, N₂, O₂, and H₂ by EPA method 133

lv = Soil gas samples analyzed in the laboratory for VOCs by EPA method TO-14

lvw = Soil water/leachate sample analyzed in the laboratory for VOCs

lwm = Soil water/leachate sample analyzed in the laboratory for Target Analyte List metals

each adjacent to a soil gas port. An additional ten thermocouples were installed in the interior CP wells, four in the LI wells, and two in the DDA wells. Table 2.3.4.2-7 shows the number and locations of thermocouples emplaced in each monitor well.

The downhole temperature monitoring program began with biweekly monitoring of each thermocouple using a Campbell Scientific 21X datalogger in January 1995. Monitoring continued on a monthly or less frequent basis through October 1997. Tables D-3.0-1 through D-3.0-3 provide a summary of all nonsampling events conducted at the TA-73 landfill. Included in this table is a designation of all downhole temperature monitoring events. Downhole temperature data are presented in Attachment 4.

Suction Lysimeter Monitoring Program

Suction lysimeters were installed in seven of the perimeter wells, interior wells LI-1 through LI-6, and debris disposal wells DDA-1 and DDA-3 in an attempt to collect both pore liquid and leachate samples. The lysimeters were installed at true depths ranging from 11 to 75 feet bgs in areas where unusually high moisture content was observed in recovered core samples and beneath the base of the refuse. High pressure vacuum lysimeters containing nominal 1-bar ceramic cups were installed at the site. A pressure-vacuum tube and discharge tube extend from the lysimeter to the ground surface. The polyethylene pressure-vacuum tube is alternately used to pull soil water into the lysimeter body through the ceramic cup and to push it to the surface through the Teflon discharge line.

Sampling of the suction lysimeters were performed as follows:

- The heat dissipation sensors were monitored to determine if the field moisture conditions permitted sampling of the suction lysimeter
- If the HDS monitoring indicated sufficient moisture, vacuum was applied to the lysimeter in an attempt to collect a pore liquid sample

Suction Lysimeter Cleaning, Testing, and Sampling Methods: Upon receipt from the manufacturer, the suction lysimeters were disassembled and cleaned using a hydrochloric acid solution to remove contaminants. The suction lysimeter parts were then triple rinsed with distilled water. Upon reassembly, distilled water was flushed through each of the lysimeters and a sample collected from one lysimeter for laboratory analysis of VOCs. No VOCs were detected. After flushing, each suction lysimeter was pressure- and vacuum-tested for leaks. After leak testing, each lysimeter was placed in a separate plastic bag to prevent contamination during storage and transport to the site. Additionally, distilled water was flushed through each suction lysimeter immediately prior to installation to remove trapped air from the porous ceramic and to serve as a final cleaning step.

Applying a vacuum to the suction lysimeter causes pore liquid to move from the surrounding soil into the porous ceramic cup. The rate at which the water sample is collected is dependent upon the matric potential of the surrounding soil, the soil wetness, and the magnitude of the applied vacuum. For moist soils, an applied vacuum of between 0.5 and 0.8 bar is generally sufficient to collect a sample in a few hours. Soils that are relatively dry or low hydraulic conductivity soils may require days or weeks to collect a sample of sufficient volume for analytical analysis. For soil matric potentials greater than 0.8 bar, it is unlikely that any sample will be collected.

order to collect a pore liquid sample, a vacuum is applied to the suction lysimeter cup by connecting the pressure-vacuum line to the vacuum port of the cadet pump used in soil gas sampling. A vacuum of approximately 0.5 bars is drawn. The suction lysimeter is allowed to remain under vacuum for approximately 24 hours before attempting to collect a sample.

The pore liquid sample is collected by attaching the pressure-vacuum tube to the discharge port of a regulated compressed nitrogen cylinder, pressure is applied, and any water collected is purged through the discharge tube. The high pressure-vacuum suction lysimeters require a slow increase of pressure to 9 psi in order to lift the sample from the porous cup to the holding chamber and shut the one-way valve between cup and chamber. Then, sufficient pressure can be applied to lift the water sample to the surface. The water samples are discharged directly to clean collection bottles.

For each pore liquid sample collected, the following information is recorded on the chain-of-custody form: LANL sample number, time, date, sample location, and requested analyses. Samples are collected for laboratory analysis based upon the liquid volume purged from the lysimeter. To date, the first 40 mL of liquid has been collected for determination of VOCs, and the next 125 mL (if sufficient volume is present) for priority pollutant metals. Insufficient water has been available in the suction lysimeters to collect samples for analysis of major ions, semivolatiles, pesticides, and radioactive constituents.

Pore water samples were initially collected from perimeter wells LP-5, LP-6, LP-7, and LP-9 in January 1995. The last pore water/leachate sampling event at the TA-73 landfill was conducted in October 1997. Tables D-3.0-4 through D-3.0-6 provide a summary of all sampling events conducted at the TA-73 landfill. Included in this table is a designation between VOC samples (lwv) and TAL metals samples (lwm). A summary of the QA/QC samples collected as part of the lysimeter sampling program is provided in Table 2.3.4.2-6.

Attachment 4 contains a summary table of TA-73 boreholes and monitor wells. It also contains two figures that depict gravimetric moisture content vs. neutron count ratio.

D-4.0 NON-RFI DATA

No applicable data.

**TABLE D-3.0-7
SUMMARY OF QA/QC GAS SAMPLES**

Date Collected	Sample Type	SUMMA ID	LANL ID	Fictitious ID	Mfr's Product No.	Comments
MAJOR GAS PE SAMPLES:						
2/24/95	PE #1	GL072	AAC3269	LP-10	LCT#543758-120993	Results Invalid; lab accidently reran SUMMA GL042.
3/29/95	PE #1	GL079	AAC4156	LP-11	LCT#543758-120993	
4/26/95	PE #2	GL061	0173-95-0033	LP-10	LCT#533189-061094	
6/24/95	PE #1	GL094	0173-95-0076	LP-10	Hazco #41644	
VOC PE SAMPLES:						
2/24/95	PE #3	GL097	AAC3270	LP-11	Scott Tox. Org. Blend 2	Results Invalid; SUMMA not humidified
3/29/95	PE #3	GL006	AAC4155	LP-10	Scott Tox. Org. Blend 2	
4/26/95	PE #3	22	0173-95-0034	LP-11	Scott Tox. Org. Blend 2	
6/24/95	PE #3	GL003	0173-95-0077	LP-11	Scott Tox. Org. Blend 2	
3/13/96	PE #3	GL094	0173-96-0060	LP10/GP1	Scott Tox. Org. Blend 2	
4/23/96	PE #3	GL075	0173-96-0159	NA	Scott Tox. Org. Blend 2	
6/29/96	PE #3	GL166	0173-96-0185	NA	Scott Tox. Org. Blend 2	
6/26/96	PE #3	GL108	0173-96-0450	NA	Scott Tox. Org. Blend 2	
9/25/96	PE #3	GL013	0173-96-0560	NA	Scott Tox. Org. Blend 2	
12/11/96	PE #3	GL111	0173-96-0649	NA	Scott Tox. Org. Blend 2	
8/6/97	PE #3	GL171	0173-97-0100	NA	Scott Tox. Org. Blend 2	
9/30/97	PE #3	GL174	0173-97-0295	NA	Scott Tox. Org. Blend 2	
FIELD AIR BLANKS:						
4/25/95	PE #4	GL024	0173-95-0030	NA	ambient air	
6/24/95	PE #4	GL098	0173-95-0075	NA	ambient air	
3/12/96	PE #4	GL108	0173-96-0059	CP13/GP4	ambient air	
4/23/96	PE #4	GL031	0173-96-0160	NA	ambient air	
6/29/96	PE #4	GL131	0173-96-0186	NA	ambient air	
6/25/96	PE #4	GL008	0173-96-0413	NA	ambient air	
9/24/96	PE #4	GL094	0173-96-0584	NA	ambient air	
12/11/96	PE #4	DL114	0173-96-0650	NA	ambient air	
9/29/97	PE #4	GL108	0173-97-0270	NA	ambient air	

PE#1 Gas standard containing 15% methane, 15% carbon dioxide, and balance nitrogen.

PE#2 Gas standard containing 4% oxygen and balance nitrogen

PE#3 Gas standard containing approximately 10 ppmv of eight halogenated VOCs in nitrogen.

NA = not applicable

PE#4 Field air blank consisting of SUMMA canister filled with ambient air.

APPENDIX E: STATISTICAL ANALYSIS

The purpose of this statistical appendix is to present detailed statistical data evaluations that support either the data review, revised conceptual model or data assessment sections of this report. Because simple BV comparisons were used in data review, no detailed statistical analyses are presented to support data review. To support the revised conceptual model, a discussion of the Spearman rank correlation of soil gas analytes is included in section E.1.0. To support the human health risk assessment, the methods used to determine the representative contaminant concentrations are provided in section E.2.0.

1.0 Spearman Rank Correlation of Soil Gas Data

This statistical analysis supports the data review and revised conceptual model sections of this report. Briefly, the statistical correlation analysis supports the contention that various volatile organic soil gas constituents exhibit similar concentration trends. Thus, locations and sampling events that produce high concentrations of one soil gas constituent also produce high concentrations of other soil gas constituents. Similarly, sampling events with low or non-detect quantities of one soil gas constituent also produce low values of other constituents. There are also positive correlations between volatile organics in soil gas with methane (as discussed in section 2.3.5.1). Thus, methane may be acting as a carrier gas for some of these volatile organics, and is at least a good indicator for the presence or absence of volatile organics. Thus, detailed discussion of methane provides a good surrogate for the extent of the soil gas plume.

Because the soil gas data do not appear to be derived from a normal statistical distribution, a nonparametric correlation was calculated. The Spearman rank correlation analysis provides a nonparametric correlation coefficient and an associated measure of statistical significance (or p-value). The Spearman rank correlation coefficient can potentially range between -1 to $+1$. A rank correlation coefficient of zero suggests no correlation between the two measurements. A rank correlation coefficient of $+1$ suggests a perfect positive rank relationship between the measurements. A rank correlation coefficient of -1 suggests a perfect negative rank relationship between the measurements.

The rank correlation is computed by using the order, or rank value, of the sample results for two variables. The variables evaluated in this application are the soil gas measurements for two different volatile organic chemicals. A simple example is provided in Table E-1. The p-value indicates the statistical significance of the result. The practical significance and importance of the various correlations is also discussed below.

Thirteen volatile organics were selected to provide an indication of the correlation structure for this group of chemicals. There are too many volatile organics detected in soil gas to construct a comprehensive correlation matrix that could be readily reviewed and interpreted by the reader. The list of volatile organics selected provides an indication of the range of correlations expected between any frequently detected volatile organics in soil gas. The volatile organics included in the correlation table are benzene, 1,3-butadiene, cis-1,2-dichloroethene, isobutane, isopropylbenzene, beta-pinene, tetrachloroethene, vinyl chloride, 1,4-dichlorobenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, dichlorodifluoromethane, and 1,1-dichloroethene. For simplicity, the detection limit is used in the correlation analysis for samples where specific volatiles were not detected.

The correlation matrix, Table E-2, is divided into three parts. Along the main diagonal, the number of sample results for each volatile organic is presented. Below the diagonal the statistical significance (or p-value) for each Spearman rank correlation value is presented. All of the correlations are highly statistically significant ($p < 0.0001$). Above the diagonal the actual Spearman rank correlation coefficient is presented. The correlation coefficients are all positive, which suggests a positive correlation between concentrations of all volatile organics presented in this table. Two volatile organics, tetrachloroethene and dichlorodifluoromethane, had lower correlation coefficients with other volatile organics (0.3 to 0.6 range for these chemicals compared to 0.8 to 0.9 for correlations between most other chemical). This suggests a weaker concentration relationship for these two volatiles (tetrachloroethene and dichlorodifluoromethane) with others in this analysis. The main reason for this discrepancy is the lower detection frequency of these chemicals compared to other organics in this analysis. This discrepancy could also be related to the relative volatility and therefore mobility of these chemicals. Some of the overall positive correlation between chemicals is derived from the non-detection of several organics in the same sample at the same detection limit. Detection limits also vary across samples with the same detection limit observed for most chemicals.

In summary, it appears that the volatile organic data support a positive correlation in concentration. Some of this correlation is derived from the common detection limits and non-detect status observed for volatile organics in landfill gas samples. This analysis also suggests that one could use a particular gas to predict the detection and concentration of other volatile organics present in soil gas.

2.0 Representative Concentrations for Human Health Risk Assessment

The methods used to estimate representative concentrations for soil and soil gas are described in the following subsections. Based on EPA guidelines (EPA 1992, 59182) and current practice, a mean and 95% UCL of the mean are used for the MLE and RME scenarios, respectively. However, the soil and soil gas data sets were not suitable for calculating a mean and 95% UCL of the mean primarily because the small sample size and/or the frequency of non-detects made it difficult to estimate the distribution of the data. Therefore, alternative methods were used to estimate representative concentrations as described below.

Surface Soil

Representative concentrations were determined for surface soil in two areas at the site. One area is referred to as the drainages on the slope of Pueblo Canyon adjacent to the main landfill, and the other is referred to as the surface of the main landfill. The samples from each of these areas are defined in Table E-3 and Table E-4, respectively. Surface soil COPCs were identified as antimony, Aroclor-1254, Aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, dibenzo(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, lead, 2-methylnaphthalene, naphthalene, phenanthrene, and thallium. The surface soil data sets did not have a sufficient number of samples to calculate a representative mean and 95% UCL of the mean. Therefore, the median was used as a representative concentration for the MLE

scenario. Note that if the data are normally distributed, the mean and the median would be exactly the same. In order to determine the median for the data set, the data were ranked from low to high according to the reported value, regardless of detect status. The median value was found and the associated qualifier was included. All non-detects with the same sample value as a detect were ranked before the detects with the same sample value.

For the representative concentrations for the RME scenario, a 95% UCL of the median could not be calculated due to small sample size. Therefore, the maximum value was used to be conservative. If the maximum value was a non-detect, then the maximum detect was used as the representative concentration. In the case of antimony and thallium, which were not detected in any of these samples, the median non-detect and the maximum non-detect were used in the calculations. The representative concentrations in soil are summarized in Table 2.4.3.1-2 in Section 2.4.3.1(b).

Landfill Gas

Representative concentrations were determined for soil gas in two areas at the Landfill. One area is referred to as the "high gas" area of the main landfill (defined in Section 2.3.5.2) and the other area is the debris disposal area. The samples from each of these areas are defined in Table E-5 and Table E-6, respectively. Soil gas COPCs are identified in Table E-7.

The frequency of non-detects for some of these chemicals was quite high, making it difficult to estimate the distribution of the data. Therefore, the median and the 95% UCL of the median were used as representative concentrations for the MLE and RME scenarios, respectively.

The median concentrations were identified as described above for the soil data. The following formula was used to calculate the rank of the 95% UCL of the median:

$$u = \frac{n+1}{2} + \frac{Z_{1-\alpha/2} \sqrt{n}}{2} \quad (\text{Gilbert 1987, 55619})$$

Where:

u = rank of UCL

n = number of samples in the data set

$Z_{1-\alpha/2} = 1.645$

The "high gas" area data set had the following ranks for the UCL based on the number of samples for each chemical (Table E-8).

The debris disposal area had the following ranks for the median and the UCL of the median based on the number of samples for each chemical (Table E-9).

The representative concentrations in soil are summarized in Section 2.4.3.1.

TABLE E-20-1
EXAMPLE SPEARMAN RANK CORRELATION ANALYSIS

Sample result of Chemical "X"	Rank of Chemical "X"	Sample result of Chemical "Y"	Rank of Chemical "Y"
1.8	3	11.6	4
9.7	9	99.3	10
4.0	5	24.5	5
2.6	4	7.4	2
9.2	8	94.5	8
9.8	10	96.9	9
5.4	7	32.2	6
5.3	6	35.2	7
0.5	1	10.0	3
0.7	2	2.7	1

Note - Spearman rank correlation coefficient for this example is 0.916 and $p < 0.001$

TABLE E-2.0-2
DRAINAGE SAMPLES

Sample ID	Location ID	Sample ID	Location ID
0173-96-0101	73-02151	0173-96-0108	73-02157
0173-96-0102	73-02152	0173-96-0109	73-02158
0173-96-0103	73-02153	0173-96-0110	73-02159
0173-96-0104	73-02154	0173-96-0111	73-02160
0173-96-0105	73-02154	0173-96-0112	73-02161
0173-96-0106	73-02155	0173-96-0113	73-02162
0173-96-0107	73-02156	0173-96-0114	73-02163

TABLE E-2.0-3
SURFACE SOIL SAMPLES

Sample ID	Location ID	Sample ID	Location ID
0173-96-0118	73-02163	0173-96-0121	73-02173
0173-96-0130	73-02171	0173-96-0122	73-02174
0173-96-0131	73-02171	0173-96-0123	73-02175
0173-96-0129	73-02172	0173-96-0128	73-02176

TABLE E-2.0-4
SAMPLES FROM THE "HIGH GAS" AREA

Well ID	Location ID	Sample ID
CP-10	73-02087	0173-97-0277, 0173-97-0278, 0173-97-0279
CP-10	73-02068	0173-95-0163, 0173-96-0019, 0173-96-0020, 0173-96-0056, 0173-96-0144, 0173-96-0145, 0173-96-0156, 0173-96-0175, 0173-96-0176, 0173-96-0563, 0173-96-0564, 0173-96-0626, 0173-96-0627
CP-13	73-02089	0173-96-0023, 0173-96-0024, 0173-96-0025, 0173-96-0141, 0173-96-0142, 0173-96-0143, 0173-96-0171, 0173-96-0172, 0173-96-0173, 0173-96-0174, 0173-96-0565, 0173-96-0566, 0173-96-0568, 0173-96-0623, 0173-96-0624, 0173-96-0625, 0173-97-0285, 0173-97-0286, 0173-97-0287
CP-13	73-02057	0173-95-0147, 0173-95-0148
CP-14	73-02060	0173-95-0150
CP-14	73-02059	0173-95-0149
CP-2	73-02062	0173-95-0152, 0173-95-0153, 0173-95-0154, 0173-95-0155, 0173-95-0156, 0173-95-0157, 0173-95-0158
CP-4	73-02069	0173-95-0164, 0173-96-0040, 0173-96-0041, 0173-96-0150, 0173-96-0151, 0173-96-0188, 0173-96-0189, 0173-96-0190, 0173-96-0558, 0173-96-0559, 0173-96-0635, 0173-96-0636, 0173-97-0280, 0173-97-0281
CP-5	73-02065	0173-95-0159, 0173-95-0160
CP-6	73-02066	0173-95-0161
CP-7	73-02067	0173-95-0162, 0173-96-0038, 0173-96-0039, 0173-96-0148, 0173-96-0149, 0173-96-0158, 0173-96-0183, 0173-96-0184, 0173-96-0556, 0173-96-0557, 0173-96-0633, 0173-96-0634, 0173-97-0282, 0173-97-0283, 0173-97-0284
CP-9	73-02071	0173-95-0166, 0173-95-0167, 0173-95-0168, 0173-96-0021, 0173-96-0022, 0173-96-0146, 0173-96-0147, 0173-96-0157, 0173-96-0177, 0173-96-0178, 0173-96-0179, 0173-96-0561, 0173-96-0562, 0173-96-0628, 0173-96-0629, 0173-97-0271, 0173-97-0296
LP-3	73-01003	0173-95-0003, 0173-95-0004, 0173-95-0005, 0173-95-0006, 0173-95-0032, 0173-95-0046, 0173-95-0047, 0173-95-0048, 0173-95-0049, 0173-95-0073
LP-3	73-01003	0173-96-0015, 0173-96-0016, 0173-96-0017, 0173-96-0018, 0173-96-0535, 0173-96-0536, 0173-96-0537, 0173-96-0538, 0173-96-0581, 0173-96-0604, 0173-96-0605, 0173-96-0606, 0173-96-0607, 0173-97-0249, 0173-97-0251, 0173-97-0252
LP-3	73-01003	AAC3237, AAC3238, AAC3239, AAC3240, AAC4128, AAC4129, AAC4130, AAC4131
LP-4	73-01004	0173-95-0007, 0173-95-0008, 0173-95-0009, 0173-95-0010, 0173-95-0050, 0173-95-0051, 0173-95-0052, 0173-95-0053, 0173-95-0074

TABLE E-2.0-5
SAMPLES FROM THE DEBRIS DISPOSAL AREA

Well ID	Location ID	Sample ID
CP-21	73-02051	0173-95-0141
CP-22	73-02052	0173-95-0142
CP-23	73-02053	0173-95-0143
CP-24	73-02054	0173-95-0144
CP-30	73-02055	0173-95-0145
CP-30	73-02056	0173-95-0146, 0173-96-0011, 0173-96-0154, 0173-96-0187, 0173-96-0531, 0173-96-0637, 0173-96-0648
CP-30	73-02104	0173-97-0245
DDA-1	73-02424	0173-97-0097, 0173-97-0244
DDA-3	73-02421	0173-97-0096, 0173-97-0243

TABLE E-2.0-6
SOIL GAS COPCs

Acetophenone	Dichloropropene[cis-1,3-]
Acrolein	Dichloropropene[trans-1,3-]
Acrylonitrile	Dimethyl Disulfide
Benzene	Ethyl Acrylate
Benzyl Chloride	Isobutane
Bromodichloromethane	Isoprene
Bromomethane	Nitrobenzene
Butadiene[1,3-]	Nitropropane[2-]
Carbon Tetrachloride	Pinene[beta-]
Cibromoethane[1,2-]	Tetrachloroethane[1,1,2,2-]
Dichlorobenzene[1,4-]	Tetrachloroethene
Dichlorodifluoromethane	Trimethylbenzene[1,2,4-]
Dichloroethene[1,1-]	Trimethylbenzene[1,3,5-]
Dichloroethene[cis-1,2-]	Vinyl Chloride
Dichloropropane[1,2-]	

TABLE E-2.0-7

RANK FOR UCL FOR "HIGH GAS" AREA

Number of samples	Rank of median*	Rank of UCL
96	48.5	57
138	69.5	80
227	114	127

* For an even number of samples, the median is based on the average of the two middle values.

TABLE E-2.0-8

RANK FOR MEDIAN AND UCL FOR DEBRIS DISPOSAL AREA

Number of samples	Rank of median*	Rank of UCL
8	4.5	7
11	6	9
17	9	13

* For an even number of samples, the median is based on the average of the two middle values.

APPENDIX F: RISK ASSESSMENT CALCULATIONS

F-1.0 Human Health

Identification of Chemicals of Potential Concern in Soil Gas

Over 100 chemicals were detected in soil gas samples collected at potential release sites (PRSs) 73-001(a) (main landfill) and 73-001(d) (debris disposal area; DDA). It is likely that most of these chemicals do not contribute significantly to the overall risk posed by exposure to chemicals in soil gas; therefore, a screening process was developed to identify chemicals of potential concern (COPCs) in this medium. The screening process consisted of four steps:

- Identifying representative concentrations for each chemical detected in soil vapor,
- Identifying carcinogenic and noncarcinogenic toxicity criteria,
- Calculating "normalized" values based on the representative concentrations and toxicity criteria, and
- Identifying those chemicals that contribute to the majority of the total normalized value

This screening process is analogous to the toxicity screen described by EPA (1989, 08021) and the multiple chemical evaluation described by EPA Region 9 (Smucker 1998, 58751). Each step of the screening process is discussed below.

Representative Concentrations

For purposes of this screening process, representative concentrations were set at either the maximum detected value or the median value of both the non-detect and detected values (i.e., the non-detect and detected values were put in rank order and the median value was identified, which may be either a non-detect or a detected value). Both concentrations were used to ensure that all chemicals that contribute significantly to the overall risk posed by chemicals in soil gas were identified.

The soil gas data are reported in terms of parts per billion by volume (ppbv). Soil gas measurements in terms of ppbv are dependent on molecular weight, i.e., 100 ppbv benzene (molecular weight of 78.12 grams per mole [g/mole]) is not the same "concentration" as 100 ppbv of toluene (molecular weight of 92.14 g/mole). Therefore, for purposes of this screening process, the maximum and median values were converted to units of milligrams per cubic meter (mg/m³) according to the following equation (ACGIH 1991, 58961):

$$\text{Soil Vapor (mg/m}^3\text{)} = \frac{\text{Soil Vapor (ppbv)} \times \text{MW (g/mole)} \times 1000 \frac{\text{l}}{\text{m}^3}}{\text{GL} \left(\frac{\text{l}}{\text{mole}} \right) \times 1000 \text{ppbv} / \text{ppmv} \times 1000 \frac{\text{mg}}{\text{g}}}$$

Soil gas (ppbv) =	Maximum or median soil gas concentration (ppbv)
MW	= Molecular weight (g/mole)
GL	= Gas Law constant (l/mole; calculated as follows)

$$GL = \frac{R \times T}{P}$$

R	=	Ideal gas constant (0.08206 l-atm/g-moles-°K)
T	=	Temperature (10°C or 283°K based on 1 year of meteorological data from TA-53 (6/1/94 – 5/31/95))
P	=	Pressure (0.77 atm based on several years of field measurements) (Forbes 1996, 58996)

The maximum detected values and median values in soil gas are presented in Tables F-1.0-1 and F-1.0-2, respectively.

Toxicity Criteria

The U.S. EPA has completed toxicity assessments for the majority of the chemicals detected in soil gas. Noncarcinogenic toxicity criteria, referred to as reference doses (RfDs), and carcinogenic toxicity criteria, referred to as slope factors (SFs), developed by the U.S. EPA were identified according to the following hierarchy:

- Integrated Risk Information System (online database, April and May 1998)
- U.S. EPA Health Effects Summary Tables (1992, 58966; 1997, 58968)
- U.S. EPA Region 9 Preliminary Remediation Goals (Smucker 1998, 58751)
- U.S. EPA Region 3 Risk-Based Concentration Tables (Johnson 1997, 58969)

In the event that an inhalation RfD or inhalation SF had not been developed, the oral RfD or oral SF was used as a surrogate. For those chemicals without established toxicity criteria, surrogate RfDs were developed where possible based on occupational standards or information in the scientific literature. The occupational standards used in this process were threshold limit values (TLVs) established by the American Conference of Government Industrial Hygienists (ACGIH). TLVs based on a time-weighted

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TABLE F-1.0-1 (continued)

Chemical	Maximum Value (ppbv)	Molecular Weight (g/mole)	Maximum Value* (mg/m ³)
Dichlorodifluoromethane	7950	120.91	3.19E+01
Dichloroethane[1,1-]	101	98.96	3.31E-01
Dichloroethane[1,2-]	110	98.96	3.61E-01
Dichloroethene[1,1-]	251	96.94	8.07E-01
Dichloroethene[cis-1,2-]	36000	96.94	1.16E+02
Dichloroethene[trans-1,2-]	622	96.94	2.00E+00
Dichloropropane[1,2-]	38.9	112.99	1.46E-01
Dichloropropene[cis-1,3-]	1.02	110.97	3.75E-03
Dichloropropene[trans-1,3-]	5.1	110.97	1.88E-02
Diethyl Ether	587	74.12	1.44E+00
Dimethyl Disulfide	0.73	94.2	2.28E-03
Dimethyl Sulfide	3.2	62.14	6.59E-03
Dimethylbutane[2,2-]	130	86.2	3.72E-01
Dimethylbutane[2,3-]	550	86.2	1.57E+00
Dimethylpentane[2,3-]	395	94.21	1.23E+00
Ethanol	2640	46.08	4.03E+00
Ethyl Acrylate	46.3	100.12	1.54E-01
Ethylbenzene	5280	106.17	1.86E+01
Heptane	6610	100.2	2.20E+01
Hexane	4070	86.18	1.16E+01
Hexanone[2-]	338	100.16	1.12E+00
Hexene[cis-2-]	31.6	84.158	8.82E-02
Hexene[trans-2-]	14	84.158	3.91E-02
Isobutane	36300	58.14	7.00E+01
Isooctane	766	114.26	2.90E+00
Isopentane	327	72.17	7.82E-01
Isoprene	150	68.13	3.39E-01
Isopropylbenzene	577	120.19	2.30E+00
Methanol	10900	32.04	1.16E+01
Methyl Methacrylate	50	100.12	1.66E-01
Methyl-1-butene[3-]	195	70.14	4.53E-01
Methyl-1-pentene[2-]	52.8	84.18	1.47E-01
Methyl-1-pentene[4-]	51.7	84.18	1.44E-01
Methyl-2-butene[2-]	134	70.15	3.12E-01
Methyl-2-pentanone[4-]	3880	100.16	1.29E+01
Methylcyclohexane	8310	98.19	2.71E+01
Methylcyclopentane	1950	84.18	5.44E+00
Methylene Chloride	1820	84.93	5.13E+00
Methylheptane[2-]	3710	86.18	1.06E+01
Methylheptane[3-]	4130	86.18	1.18E+01

TABLE F-1.0-1 (continued)

Chemical	Maximum Value (ppbv)	Molecular Weight (g/mole)	Maximum Value* (mg/m ³)
Methylhexane[2-]	69.2	100.2	2.30E-01
Methylpentane[2-]	913	86.18	2.61E+00
Methylpentane[3-]	1320	86.18	3.77E+00
Methylstyrene[alpha-]	33.2	118.18	1.30E-01
Nitrobenzene	153	123.11	6.25E-01
Nitropropane[2-]	3940	89.09	1.16E+01
Nonane[1-]	18600	128.29	7.91E+01
Octane[n-]	5280	114.22	2.00E+01
Pentane	522	72.15	1.25E+00
Pentene[1-]	582	70.14	1.35E+00
Pentene[cis-2-]	128	70.13	2.98E-01
Pentene[trans-2-]	67.6	70.13	1.57E-01
Pinene[alpha-]	3300	136.26	1.49E+01
Pinene[beta-]	22300	136.26	1.01E+02
Propanol[2-]	1310	60.11	2.61E+00
Propylbenzene[1-]	906	120.21	3.61E+00
Propylene	3600	42.08	5.02E+00
Styrene	346	104.15	1.19E+00
Tetrachloroethane[1,1,2,2-]	23.8	167.85	1.32E-01
Tetrachloroethene	14700	165.83	8.08E+01
Tetrahydrofuran	1590	72.1	3.80E+00
Toluene	15700	92.14	4.80E+01
Trichloro-1,2,2-trifluoroethane[1,1,2-]	172	187.37	1.07E+00
Trichlorobenzene[1,2,4-]	124	181.45	7.46E-01
Trichloroethane[1,1,1-]	119	133.4	5.26E-01
Trichloroethane[1,1,2-]	12.4	133.4	5.48E-02
Trichloroethene	587	131.39	2.56E+00
Trichlorofluoromethane	9670	137.37	4.40E+01
Trimethylbenzene[1,2,4-]	2900	120.19	1.16E+01
Trimethylbenzene[1,3,5-]	973	120.19	3.88E+00
Trimethylpentane[2,3,4-]	1720	114.26	6.52E+00
Vinyl Acetate	331	86.09	9.45E-01
Vinyl Chloride	1990	62.5	4.12E+00
Xylene (Total)	2329	106.18	8.20E+00
Xylenes[1,2-]	2960	106.17	1.04E+01
Xylenes[1,3-]	9250	106.17	3.26E+01
Xylenes[1,3-]+Xylenes[1,4-]	5170	106.17	1.82E+01

a. $\text{Max Value (mg/m}^3\text{)} = \{[\text{Max Value (ppbv)}/1000 \text{ ppbv/ppmv}] \cdot \text{MW}\} / (0.08206 \text{ l-atm/g-moles-}^\circ\text{K}) \cdot 283^\circ\text{K}/0.77 \text{ atm}$

Where: The average temperature is 283°K from 1 year of meteorological data; the average pressure is 0.77 atm based on several years of field data (Forbes 1996, 58996).

TABLE F-1.0-2
MEDIAN VALUES IN SOIL GAS^a

Chemical	Median Value (ppbv)	Molecular Weight (g/mole)	Median Value ^b (mg/m ³)
Acetone	50	58.08	9.63E-02
Acetonitrile	10	41.06	1.36E-02
Acetophenone	10	120.16	3.98E-02
Acrolein	10	56.07	1.86E-02
Acrylonitrile	10	53.07	1.76E-02
Benzene	12.5	78.12	3.24E-02
Benzonitrile	27.95	103.13	9.56E-02
Benzyl Chloride	5	126.59	2.10E-02
Bromodichloromethane	5	163.83	2.72E-02
Bromomethane	5	108.98	1.81E-02
Butadiene[1,3-]	5	54.1	8.97E-03
Butane[n-]	47.95	58.14	9.24E-02
Butanol[1-]	27.9	74.12	6.86E-02
Butanone[2-]	50	72.12	1.20E-01
Butene[1-]	59.1	56.11	1.10E-01
Butene[cis-2-]	9.35	56.11	1.74E-02
Butene[trans-2-]	8.35	56.11	1.55E-02
Carbon Disulfide	46.25	76.13	1.17E-01
Carbon Tetrachloride	5	153.81	2.55E-02
Chlorobenzene	5	112.56	1.87E-02
Chlorodifluoromethane	67.2	86.47	1.93E-01
Chloroethane	6.9	64.52	1.48E-02
Chloroform	5	119.37	1.98E-02
Chloromethane	15.2	50.49	2.54E-02
Cyclohexane	27.5	84.16	7.67E-02
Cyclohexanone	26.85	98.16	8.74E-02
Cyclopentane	5	70.15	1.16E-02
Cyclopentene	5	68.13	1.13E-02
Dibromoethane[1,2-]	5	187.88	3.11E-02
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	36	170.93	2.04E-01
Dichlorobenzene[1,2-]	5	147	2.44E-02
Dichlorobenzene[1,3-]	5	147	2.44E-02
Dichlorodifluoromethane	232	120.91	9.30E-01
Dichloroethane[1,1-]	5	98.96	1.64E-02

TABLE F-1.0-2 CONTINUED

Chemical	Median Value (ppbv)	Molecular Weight (g/mole)	Median Value ^b (mg/m ³)
Dichloroethane[1,2-]	5	98.96	1.64E-02
Dichloroethene[1,1-]	5	96.94	1.61E-02
Dichloroethene[cis-1,2-]	35.2	96.94	1.13E-01
Dichloroethene[trans-1,2-]	5.7	96.94	1.83E-02
Dichloropropane[1,2-]	5	112.99	1.87E-02
Dichloropropene[cis-1,3-]	5	110.97	1.84E-02
Dichloropropene[trans-1,3-]	5	110.97	1.84E-02
Diethyl Ether	50	74.12	1.23E-01
Dimethyl Disulfide	0.5	94.2	1.56E-03
Dimethyl Sulfide	3	62.14	6.18E-03
Dimethylbutane[2,2-]	10	86.2	2.86E-02
Dimethylbutane[2,3-]	10	86.2	2.86E-02
Dimethylpentane[2,3-]	10	94.21	3.12E-02
Ethanol	50	46.08	7.64E-02
Ethyl Acrylate	23.65	100.12	7.85E-02
Ethylbenzene	5	106.17	1.76E-02
Heptane	30.35	100.2	1.01E-01
Hexane	22.95	86.18	6.56E-02
Hexanone[2-]	50	100.16	1.66E-01
Hexene[cis-2-]	5	84.158	1.40E-02
Hexene[trans-2-]	5	84.158	1.40E-02
Isobutane	296	58.14	5.71E-01
Isooctane	8.6	114.26	3.26E-02
Isopentane	10	72.17	2.39E-02
Isoprene	5	68.13	1.13E-02
Isopropylbenzene	5	120.19	1.99E-02
Methanol	63.7	32.04	6.77E-02
Methyl Methacrylate	10	100.12	3.32E-02
Methyl-1-butene[3-]	13.05	70.14	3.03E-02
Methyl-1-pentene[2-]	5	84.18	1.40E-02
Methyl-1-pentene[4-]	5	84.18	1.40E-02
Methyl-2-butene[2-]	10	70.15	2.33E-02
Methyl-2-pentanone[4-]	50	100.16	1.66E-01
Methylcyclohexane	31	98.19	1.01E-01
Methylene Chloride	18.6	84.93	5.24E-02

TABLE F-1.0-2 CONTINUED

Chemical	Median Value (ppbv)	Molecular Weight (g/mole)	Median Value ^b (mg/m ³)
Methylheptane[2-]	16.5	86.18	4.71E-02
Methylheptane[3-]	11.25	86.18	3.21E-02
Methylhexane[2-]	5	100.2	1.66E-02
Methylhexane[3-]	15.45	100.2	5.13E-02
Methylpentane[2-]	16.05	86.18	4.59E-02
Methylpentane[3-]	18.2	86.18	5.20E-02
Methylstyrene[alpha-]	5	118.18	1.96E-02
Nitrobenzene	10	123.11	4.08E-02
Nitropropane[2-]	36.45	89.09	1.08E-01
Nonane[1-]	33.3	128.29	1.42E-01
Octane[n-]	13.7	114.22	5.19E-02
Pentane	18.5	72.15	4.43E-02
Pentene[1-]	10	70.14	2.33E-02
Pentene[cis-2-]	5	70.13	1.16E-02
Pentene[trans-2-]	5	70.13	1.16E-02
Pinene[alpha-]	11	136.26	4.97E-02
Pinene[beta-]	10	136.26	4.52E-02
Propanol[2-]	36.75	60.11	7.32E-02
Propylbenzene[1-]	5	120.21	1.99E-02
Propylene	189	42.08	2.64E-01
Styrene	5	104.15	1.73E-02
Tetrachloroethane[1,1,2,2-]	5	167.85	2.78E-02
Tetrachloroethene	30.6	165.83	1.68E-01
Tetrahydrofuran	50	72.1	1.20E-01
Toluene	7.6	92.14	2.32E-02
Trichloro-1,2,2-trifluoroethane[1,1,2-]	5	187.37	3.11E-02
Trichlorobenzene[1,2,4-]	5	181.45	3.01E-02
Trichloroethane[1,1,1-]	5	133.4	2.21E-02
Trichloroethane[1,1,2-]	5	133.4	2.21E-02
Trichloroethene	10	131.39	4.36E-02
Trichlorofluoromethane	6	137.37	2.73E-02
Trimethylbenzene[1,2,4-]	10	120.19	3.99E-02
Trimethylbenzene[1,3,5-]	5	120.19	1.99E-02
Trimethylpentane[2,3,4-]	10	114.26	3.79E-02
Vinyl Chloride	10	62.5	2.07E-02

TABLE F-1.0-2 CONTINUED

MEDIAN VALUES IN SOIL GAS^a

Chemical	Median Value (ppbv)	Molecular Weight (g/mole)	Median Value ^b (mg/m ³)
Xylene (Total)	8.1	106.18	2.85E-02
Xylene[1,2-]	5	106.17	1.76E-02
Xylene[1,3-]	10	106.17	3.52E-02
Xylene[1,3-]+Xylene[1,4-]	10	106.17	3.52E-02

a. Median of detected and non-detected values.

b. Med Value (mg/m³) = ([Med Value (ppbv)/1000 ppbv/ppmv]*MW)/(0.08206 L-atm/g-moles-°K*283°K/0.77atm where: The average temperature is 283°K from 1 year of meteorological data. The average pressure is 0.77 atm based on several years of field data (Forbes 1998, 58996).

average exposure (TLV-TWA) represent concentrations in air to which healthy workers may be exposed 8 hours per day, 40 hours per week, without adverse health effects. Given that not all of the potentially exposed populations are healthy workers, the TLVs were not used directly as surrogate RfDs, but were adjusted as follows (Paustenbach 1997, 58919):

$$\text{Surrogate RfD} = \frac{\text{TLV} \times \text{IR}}{420 \times \text{BW}}$$

Surrogate RfD = Surrogate inhalation RfD (mg/kg-day)

TLV = Threshold limit value (mg/m³)

IR = Inhalation rate (20 m³/day)

420 = Uncertainty factor based on a factor of 4.2 to adjust from a 40 hour work week to a full week (168 hours/40 hours), a factor of 10 to account for the relatively small margin of safety inherent in the TLVs, and a factor of 10 to account for potentially sensitive individuals in the exposed population (Paustenbach 1997, 58919, pp. 420.

BW = Body weight (70 kg)

For chemicals without U.S. EPA-derived toxicity criteria or established occupational criteria, surrogate RfDs were developed based on the results of acute toxicity studies where available. Layton (1987, 58925) suggested that, in the absence of chronic toxicity data, an acute toxicity result (i.e., lethal dose to 50% of the test population or LD50) could be divided by a factor of 100,000 to estimate a surrogate chronic toxicity value or RfD. Acute toxicity results in terms of lethal concentrations to 50% of the test population

TABLE F-1.0-3

TOXICITY CRITERIA USED IN SCREENING OF CHEMICALS IN SOIL GAS

Chemical	Noncarcinogens		Carcinogens	
	RfDI (mg/kg-day)	Criteria (Reference)	SFI (mg/kg-day) ¹	Criteria (Reference)
Acetone	0.1	RfDo (IRIS)	NA	—
Acetonitrile	0.014	RfDI (HEAST)	NA	—
Acetophenone	0.000057	RfDI (Region 9)	NA	—
Acrolein	0.000057	RfDI (IRIS)	NA	—
Acrylonitrile	0.00057	RfDI (IRIS)	0.24	SFI (IRIS)
Benzene	0.0017	RfDI (Region 9)	0.029	SFI (IRIS)
Benzonitrile	0.012	LD50 (Lewis)	NA	—
Benzyl Chloride	NA	—	0.17	SFo (IRIS)
Bromodichloromethane	0.02	RfDo (IRIS)	0.062	SFo (IRIS)
Bromomethane	0.0014	RfDI (IRIS)	NA	—
Butadiene[1,3-]	NA	—	0.98	SFI (IRIS)
Butane[n-]	1.3	TLV (ACGIH)	NA	—
Butanol[1-]	0.1	RfDo (IRIS)	NA	—
Butanone[2-]	0.29	RfDI (IRIS)	NA	—
Butene[1-]	NA	—	NA	—
Butene[cis-2-]	NA	—	NA	—
Butene[trans-2-]	NA	—	NA	—
Carbon Disulfide	0.2	RfDI (IRIS)	NA	—
Carbon Tetrachloride	0.00057	RfDI (Region 9)	0.053	SFI (IRIS)
Chlorobenzene	0.0057	RfDI (HEAST)	NA	—
Chlorodifluoromethane	14	RfDI (IRIS)	NA	—
Chloroethane	2.9	RfDI (IRIS)	NA	—
Chloroform	0.01	RfDo (IRIS)	0.081	SFI (IRIS)
Chloromethane	NA	—	0.0063	SFI (HEAST)
Cyclohexane	0.7	TLV (ACGIH)	NA	—
Cyclohexanone	5	RfDo (IRIS)	NA	—
Cyclopentane	1.2	TLV (ACGIH)	NA	—
Cyclopentene	0.017	LD50 (Lewis)	NA	—
Dibromoethane[1,2-]	0.000057	RfDI (HEAST)	0.77	SFI (IRIS)
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	4.8	TLV (ACGIH)	NA	—
Dichlorobenzene[1,2-]	0.057	RfDI (HEAST)	NA	—
Dichlorobenzene[1,3-]	0.0023	RfDI (Region 9)	NA	—
Dichlorobenzene[1,4-]	0.23	RfDI (IRIS)	0.024	SFI (HEAST)
Dichloroethane[1,2-]	0.0029	RfDI (Region 9)	0.091	SFI (IRIS)
Dichloroethene[1,1-]	0.009	RfDo (IRIS)	0.18	SFI (IRIS)
Dichloroethene[cis-1,2-]	0.01	RfDo (HEAST)	NA	—
Dichloroethene[trans-1,2-]	0.02	RfDo (IRIS)	NA	—
Dichloropropane[1,2-]	0.0011	RfDI (IRIS)	0.068	SFo (HEAST)
Dichloropropene[cis-1,3-]	0.0057	RfDI (IRIS)	0.13	SFI (HEAST)
Dichloropropene[trans-1,3-]	0.0057	RfDI (IRIS)	0.13	SFI (HEAST)
Diethyl Ether	0.82	TLV (ACGIH)	NA	—
Dimethyl Disulfide	0.00005	LC50 (Lewis)	NA	—
Dimethyl Sulfide	0.29	LC50 (Lewis)	NA	—
Dimethylbutane[2,2-]	1.2	TLV (ACGIH)	NA	—

TABLE F-1.0-3 (CONTINUED)

Chemical	Noncarcinogens		Carcinogens	
	RfDI (mg/kg-day)	Criteria (Reference)	SFI (mg/kg-day) ¹	Criteria (Reference)
Dimethylbutane[2,3-]	1.2	TLV (ACGIH)	NA	--
Dimethylpentane[2,3-]	NA	--	NA	--
Ethanol	1.3	TLV (ACGIH)	NA	--
Ethyl Acrylate	NA	--	0.048	SFo (HEAST)
Ethylbenzene	0.29	RfDI (IRIS)	NA	--
Heptane	1.1	TLV (ACGIH)	NA	--
Hexane	0.057	RfDI (IRIS)	NA	--
Hexanone[2-]	0.04	RfDo (Region 3)	NA	--
Hexene[cis-2-]	NA	--	NA	--
Hexene[trans-2-]	NA	--	NA	--
Isobutane	0.00052	LC50 (HSDB)	NA	--
Isooctane	NA	--	NA	--
Isopentane	1.2	LC50 (HSDB)	NA	--
Isoprene	NA	--	0.98	1,3-butadiene (IRIS)
Isopropylbenzene	0.0026	RfDI (HEAST)	NA	--
Methanol	0.5	RfDo (IRIS)	NA	--
Methyl Methacrylate	0.08	RfDo (HEAST)	NA	--
Methyl-1-butene[3-]	NA	--	NA	--
Methyl-1-pentene[2-]	NA	--	NA	--
Methyl-1-pentene[4-]	NA	--	NA	--
Methyl-2-butene[2-]	NA	--	NA	--
Methyl-2-pentanone[4-]	0.023	RfDI (HEAST)	NA	--
Methylcyclohexane	0.86	RfDI (HEAST)	NA	--
Methylheptane[2-]	NA	--	NA	--
Methylheptane[3-]	NA	--	NA	--
Methylhexane[2-]	NA	--	NA	--
Methylhexane[3-]	NA	--	NA	--
Methylpentane[2-]	0.057	hexane (HSDB)	NA	--
Methylpentane[3-]	0.057	hexane (HSDB)	NA	--
Methylstyrene[alpha-]	0.07	RfDI (HEAST)	NA	--
Nitrobenzene	0.00057	RfDI (HEAST)	NA	--
Nitropropane[2-]	0.0057	RfDI (IRIS)	9.4	SFI (HEAST)
Nonane[1-]	0.71	TLV (ACGIH)	NA	--
Octane[n-]	0.95	TLV (ACGIH)	NA	--
Pentane	1.2	TLV (ACGIH)	NA	--
Pentene[1-]	NA	--	NA	--
Pentene[cis-2-]	NA	--	NA	--
Pentene[trans-2-]	NA	--	NA	--
Pinene[alpha-]	0.037	LD50 (Lewis)	NA	--
Pinene[beta-]	0.047	LD50 (Lewis)	NA	--
Propanol[2-]	0.67	TLV (ACGIH)	NA	--
Propylbenzene[1-]	0.01	RfDo (Region 9)	NA	--
Propylene	NA	--	NA	--
Styrene	0.29	RfDI (IRIS)	NA	--
Tetrachloroethane[1,1,2,2-]	NA	--	0.2	SFI (IRIS)
Tetrachloroethene	0.01	RfDo (IRIS)	0.002	SFI (Region 9)

TABLE F-1.0-3

TOXICITY CRITERIA USED IN SCREENING OF CHEMICALS IN SOIL GAS

Chemical	Noncarcinogens		Carcinogens	
	RfDi (mg/kg-day)	Criteria (Reference)	SFI (mg/kg-day) ^a	Criteria (Reference)
Tetrahydrofuran	0.4	TLV (ACGIH)	NA	—
Toluene	0.11	RfDi (IRIS)	NA	—
Trichloro-1,2,2-trifluoroethane[1,1,2-]	8.6	RfDi (HEAST)	NA	—
Trichlorobenzene[1,2,4-]	0.057	RfDi (HEAST)	NA	—
Trichloroethane[1,1,1-]	0.29	RfDi (Region 9)	NA	—
Trichloroethane[1,1,2-]	0.004	RfDi (IRIS)	0.056	SFI (IRIS)
Trichloroethene	0.006	RfDi (Region 9)	0.006	SFI (Region 9)
Trichlorofluoromethane	0.2	RfDi (HEAST)	NA	—
Trimethylbenzene[1,2,4-]	0.0017	RfDi (Region 9)	NA	—
Trimethylbenzene[1,3,5-]	0.0017	RfDi (Region 9)	NA	—
Trimethylpentane[2,3,4-]	NA	—	NA	—
Vinyl Acetate	0.057	RfDi (IRIS)	NA	—
Vinyl Chloride	NA	—	0.3	SFI (HEAST)
Xylene (Total)	0.2	Xylene[1,2-] (Region 9)	NA	—
Xylene[1,2-]	0.2	RfDi (Region 9)	NA	—
Xylene[1,3-]	0.2	RfDi (Region 9)	NA	—
Xylene[1,3-]+Xylene[1,4-]	0.2	RfDi (Region 9)	NA	—

CRITERIA:

1,3-butadiene

The SFI for this compound was used as a surrogate based on similar chemical structure and reactivity.

hexane

The RfDi for this compound was used as a surrogate based on similar chemical structure and reactivity.

LC50

The concentration resulting in death for 50 percent of the treated animals. These values were converted to units of mg/m³ using the following equation:

$$\text{mg/m}^3 = (\text{ppmv} \times \text{molecular weight}) / 24.5$$

These values were then converted to surrogate RfDs by dividing by 100,000 (Layton 1987, 58925) and adjusting to units of mg/kg-day assuming an inhalation rate of 20 m³/day and a body weight of 70 kg.

LD50

The dose resulting in death for 50 percent of the treated animals. These values were converted to surrogate RfDs by dividing by 100,000 (Layton 1987, 58925).

NA

Toxicological criteria were not available.

RfDi

Inhalation reference dose; values in IRIS or HEAST were converted from units of mg/m³ to units of mg/kg-day assuming an inhalation rate of 20 m³/day and a body weight of 70 kg. If an RfDi was not available, then the following criteria were used in the order presented: RfDo, TLV, LC50, or LD50.

RfDo

Oral reference dose.

SFI

Inhalation slope factor; values from IRIS or HEAST were converted from units of (mg/m³)⁻¹ to units of (mg/kg-day)⁻¹ assuming an inhalation rate of 20 m³/day and a body weight of 70 kg. If a SFI was not available, then a SFO was used.

TLV

Threshold Limit Value. These values were converted to surrogate RfDs using the following equation (Paustenbach 1997, 58919, pp. 430):

$$\text{RfD} = \text{TLV mg/m}^3 \times 20 \text{ m}^3/\text{day} / (70 \text{ kg} \times 4.2 \times 10 \times 10)$$

where:

$$4.2 = 168 \text{ hrs/week divided by 40 work hrs/week}$$

10 = uncertainty factor to account for a relatively low margin of safety in the TLV

10 = uncertainty factor to account for potentially sensitive receptors

—

Not Applicable.

TABLE F-1.0-4
SCREENING OF CARCINOGENIC CHEMICALS IN SOIL GAS
BASED ON MAXIMUM VALUES

Chemical	Maximum Value ^a (mg/m ³)	SFI ^b (mg/kg-day) ⁻¹	Normalized Value ^c	Cumulative % Contribution to Total Normalized Value ^d
Nitropropane[2-]*	1.16E+01	9.4	1.09E+02	96.99%
Vinyl Chloride	4.12E+00	0.3	1.24E+00	98.09%
Dichlorobenzene[1,4-]	3.00E+01	0.024	7.19E-01	98.72%
Dibromoethane[1,2-]	4.34E-01	0.77	3.34E-01	99.02%
Isoprene	3.39E-01	0.98	3.32E-01	99.31%
Tetrachloroethene	8.08E+01	0.002	1.62E-01	99.46%
Dichloroethene[1,1-]	8.07E-01	0.18	1.45E-01	99.59%
Benzyl Chloride	5.25E-01	0.17	8.92E-02	99.67%
Chloroform	9.74E-01	0.081	7.89E-02	99.74%
Butadiene[1,3-]	7.71E-02	0.98	7.56E-02	99.80%
Benzene	2.55E+00	0.029	7.41E-02	99.87%
Dichloroethane[1,2-]	3.61E-01	0.091	3.28E-02	99.90%
Tetrachloroethane[1,1,2,2-]	1.32E-01	0.2	2.65E-02	99.92%
Bromodichloromethane	3.56E-01	0.062	2.21E-02	99.94%
Trichloroethene	2.56E+00	0.006	1.53E-02	99.95%
Chloromethane	1.63E+00	0.0063	1.03E-02	99.96%
Dichloropropane[1,2-]	1.46E-01	0.068	9.91E-03	99.97%
Methylene Chloride	5.13E+00	0.0016	8.20E-03	99.98%
Ethyl Acrylate	1.54E-01	0.048	7.38E-03	99.99%
Acrylonitrile	2.78E-02	0.24	6.67E-03	99.99%
Carbon Tetrachloride	6.12E-02	0.053	3.24E-03	99.99%
Trichloroethane[1,1,2-]	5.48E-02	0.056	3.07E-03	100.00%
Dichloropropene[trans-1,3-]	1.88E-02	0.13	2.44E-03	100.00%
Dichloropropene[cis-1,3-]	3.75E-03	0.13	4.88E-04	100.00%
		TOTAL	1.13E+02	

- Maximum value detected in soil gas (Table F-1.0-1).
- Inhalation slope factor (Table F-1.0-3).
- Normalized value equal to the maximum value multiplied by the SFI.
- Cumulative percent contribution to total normalized value represents the sum of the previous normalized values divided by the total normalized value.
- Chemicals in bold are considered COPCs because they account for 99% of the total normalized value (i.e., account for 99% of the total theoretical excess cancer risk).

TABLE F-1.0-5.

**SCREENING OF CARCINOGENIC CHEMICALS IN SOIL GAS
BASED ON MEDIAN VALUES**

Chemical	Median Value ^a (mg/m ³)	SFI ^b (mg/kg-day) ^c	Normalized Value ^c	Cumulative % Contribution to Total Normalized Value ^d
Nitropropane[2-]*	1.08E-01	9.4	1.01E+00	92.13%
Dibromoethane[1,2-]	3.11E-02	0.77	2.40E-02	94.31%
Isoprene	1.13E-02	0.98	1.11E-02	95.32%
Butadiene[1,3-]	8.97E-03	0.98	8.79E-03	96.12%
Vinyl Chloride	2.07E-02	0.3	6.22E-03	96.69%
Tetrachloroethane[1,1,2,2-]	2.78E-02	0.2	5.57E-03	97.19%
Acrylonitrile	1.76E-02	0.24	4.22E-03	97.58%
Ethyl Acrylate	7.85E-02	0.048	3.77E-03	97.92%
Benzyl Chloride	2.10E-02	0.17	3.57E-03	98.25%
Dichloroethene[1,1-]	1.61E-02	0.18	2.89E-03	98.51%
Dichloropropene[trans-1,3-]	7.84E-02	0.13	2.39E-03	98.73%
Dichloropropene[cis-1,3-]	1.84E-02	0.13	2.39E-03	98.94%
Bromodichloromethane	2.72E-02	0.062	1.68E-03	99.10%
Chloroform	1.98E-02	0.081	1.60E-03	99.24%
Dichloroethane[1,2-]	1.64E-02	0.091	1.49E-03	99.38%
Carbon Tetrachloride	2.55E-02	0.053	1.35E-03	99.50%
Dichloropropane[1,2-]	1.87E-02	0.068	1.27E-03	99.62%
Trichloroethane[1,1,2-]	2.21E-02	0.056	1.24E-03	99.73%
Dichlorobenzene[1,4-]	4.87E-02	0.024	1.17E-03	99.84%
Benzene	3.24E-02	0.029	9.39E-04	99.92%
Tetrachloroethene	1.68E-01	0.002	3.37E-04	99.95%
Trichloroethene	4.36E-02	0.006	2.61E-04	99.98%
Chloromethane	2.54E-02	0.0063	1.60E-04	99.99%
Methylene Chloride	5.24E-02	0.0016	8.38E-05	100.00%
		TOTAL	1.10E+00	

- Median value in soil gas (Table F-1.0-2).
- Inhalation slope factor (Table F-1.0-3).
- Normalized value equal to the median value multiplied by the SFI.
- Cumulative percent contribution to the total normalized value represents the sum of the previous normalized values divided by the total normalized value.
- Chemicals in bold are considered COPCs because they account for 99% of the total normalized value (i.e., account for 99% of the total theoretical excess cancer risk).

(LC50), which are in units of parts per million by volume (ppmv), were adjusted to units of mg/m³ using the same methodology described above, but assuming a molar volume of 24.5 based on standard temperature and pressure, and to units of mg/kg-day assuming an inhalation rate of 20 m³/day and a body weight of 70 kg.

The U.S. EPA-derived or surrogate toxicity criteria for chemicals detected in soil gas are summarized in Table F-1.0-3.

Surrogate toxicity criteria could not be developed for approximately 20 chemicals detected in soil gas due to a lack of available toxicity information. The potential impact on the results of the human health risk assessment is discussed in the uncertainty section (see Section 2.4.3.1(3)).

Normalized Values

Normalized values were calculated separately for carcinogens and noncarcinogens. For carcinogens, the normalized value is equal to the maximum or median soil gas concentration multiplied by the SF. For example, if the maximum soil gas concentration is 10 m³/day and the SFi is 10 (mg/kg-day)⁻¹, then the normalized value for this chemical is 100. The normalized value is analogous to the theoretical excess cancer risk and the sum of the normalized values, or total normalized value, is analogous to the total theoretical excess cancer risk associated with cumulative exposure to all of the carcinogenic chemicals. The carcinogenic chemicals were then sorted in descending order of the normalized value (chemical with highest normalized value first). Beginning with the first chemical, the normalized value was divided by the total normalized value to estimate the percent contribution to the total normalized value. For example, if the highest normalized value is 100 and the total normalized value is 150, then this chemical contributes approximately 67% to the total normalized value (or total theoretical excess cancer risk). With each succeeding chemical, the normalized values are summed and divided by the total normalized value to estimate the cumulative percent contribution of those chemicals to the total normalized value. For example, if the second highest normalized value is 20, then the cumulative normalized values for the first two chemicals is 120, which represents 80% of the total normalized value. In this way, the chemicals contributing to a certain percentage of the total normalized value (e.g., 99%) can be identified. The normalized values and cumulative percent contribution to the total normalized value for the carcinogenic chemicals detected in soil gas are presented in Table F-1.0-4 and F-1.0-5 for maximum and median values, respectively.

The process is essentially the same for noncarcinogens, except that the normalized value is equal to the maximum or median concentration divided by the RfDI, which is analogous to a hazard quotient. The total normalized value is then analogous to the total hazard index associated with cumulative exposure to all of the noncarcinogenic chemicals. The normalized values and cumulative percent contribution to the total normalized value for the noncarcinogenic chemicals detected soil gas are presented in Tables F-1.06 and F-1.07 for maximum and median values, respectively.

Chemicals of Potential Concern in Soil gas

For purposes of this screening process, chemicals that contribute 99% of the total normalized value, either based on the maximum or median value or based on carcinogenic or noncarcinogenic effects, are identified as COPCs in soil gas. As shown in Tables F-1.0-4 through F-1.0-7, the chemicals that were not identified as COPCs contribute less than 0.3 percent of the total normalized value, indicating that inclusion of these chemicals would not have a material effect on the results of the human health risk assessment. The COPCs in soil gas are summarized in Table F-1.0-8.

TABLE F-1.0-6

SCREENING OF NONCARCINOGENIC CHEMICALS IN SOIL GAS BASED ON MAXIMUM VALUES

Chemical	Max Value ^a (mg/m ³)	RfD ^b (mg/kg-day)	Normalized Value ^c	Cumulative % Contribution to Hazard Quotient ^d
Acetone	2.33E+01	0.1	2.33E+02	99.70%
Acetonitrile	3.06E-01	0.014	2.19E+01	99.98%
Acetophenone ^e	3.31E+00	0.0000057	5.82E+05	72.92%
Acrolein	1.76E-01	0.0000057	3.09E+04	93.67%
Acrylonitrile	2.78E-02	0.00057	4.88E+01	99.95%
Benzene	2.55E+00	0.0017	1.50E+03	98.94%
Benzonitrile	6.87E-01	0.012	5.73E+01	99.93%
Bromodichloromethane	3.56E-01	0.02	1.78E+01	99.98%
Butane[n-]	4.59E+00	1.3	3.53E+00	100.00%
Butanol[1-]	1.18E+00	0.1	1.18E+01	99.99%
Butanone[2-]	9.16E+01	0.29	3.16E+02	99.67%
Carbon Disulfide	5.07E-01	0.2	2.54E+00	100.00%
Carbon Tetrachloride	6.12E-02	0.00057	1.07E+02	99.85%
Chlorobenzene	4.40E+00	0.0057	7.73E+02	99.28%
Chlorodifluoromethane	9.49E+01	14	6.78E+00	99.99%
Chloroethane	4.54E-01	2.9	1.56E-01	100.00%
Cyclohexane	4.16E+00	0.7	5.94E+00	99.99%
Cyclohexanone	8.14E+00	5	1.63E+00	100.00%
Cyclopentane	1.15E-01	1.2	9.58E-02	100.00%
Cyclopentene	1.56E-02	0.017	9.17E-01	100.00%
Dibromoethane[1,2-]	4.34E-01	0.000057	7.61E+03	97.09%
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	2.79E+00	4.8	5.82E-01	100.00%
Dichlorobenzene[1,2-]	3.20E-01	0.057	5.62E+00	99.99%
Dichlorobenzene[1,3-]	9.75E-02	0.0023	4.24E+01	99.96%
Dichlorobenzene[1,4-]	3.00E+01	0.23	1.30E+02	99.80%
Dichlorodifluoromethane	3.19E+01	0.057	5.59E+02	99.42%
Dichloroethane[1,1-]	3.31E-01	0.14	2.37E+00	100.00%
Dichloroethane[1,2-]	3.61E-01	0.0029	1.24E+02	99.82%
Dichloroethane[1,1-]	8.07E-01	0.009	8.96E+01	99.90%
Dichloroethene[cis-1,2-]	1.16E+02	0.01	1.16E+04	95.12%
Dichloroethene[trans-1,2-]	2.00E+00	0.02	1.00E+02	99.86%
Dichloropropane[1,2-]	1.46E-01	0.0011	1.32E+02	99.79%
Dichloropropene[cis-1,3-]	3.75E-03	0.0057	6.58E-01	100.00%
Dichloropropene[trans-1,3-]	1.88E-02	0.0057	3.29E+00	100.00%
Diethyl Ether	1.44E+00	0.82	1.76E+00	100.00%
Dimethyl Disulfide	2.28E-03	0.000045	5.07E+01	99.94%
Dimethyl Sulfide	6.59E-03	0.29	2.27E-02	100.00%
Dimethylbutane[2,2-]	3.72E-01	1.2	3.10E-01	100.00%

TABLE F-1.0-6 (CONTINUED)

Chemical	Max Value ^a (mg/m ³)	RfD ^b (mg/kg-day)	Normalized Value ^c	Cumulative % Contribution to Hazard Quotient ^d
Dimethylbutane[2,3-]	1.57E+00	1.2	1.31E+00	100.00%
Ethanol	4.03E+00	1.3	3.10E+00	100.00%
Ethylbenzene	1.86E+01	0.29	6.41E+01	99.92%
Heptane	2.20E+01	1.1	2.00E+01	99.98%
Hexane	1.16E+01	0.057	2.04E+02	99.75%
Hexanone[2-]	1.12E+00	0.04	2.81E+01	99.97%
Isobutane	7.00E+01	0.00052	1.35E+05	89.80%
Isopentane	7.82E-01	1.2	6.52E-01	100.00%
Isopropylbenzene	2.30E+00	0.0026	8.84E+02	99.19%
Methanol	1.16E+01	0.5	2.32E+01	99.97%
Methyl Methacrylate	1.66E-01	0.08	2.07E+00	100.00%
Methyl-2-pentanone[4-]	1.29E+01	0.023	5.60E+02	99.35%
Methylcyclohexane	2.71E+01	0.86	3.15E+01	99.97%
Methylcyclopentane	5.44E+00	0.057	9.55E+01	99.88%
Methylene Chloride	5.13E+00	0.86	5.96E+00	99.99%
Methylpentane[2-]	2.61E+00	0.057	4.58E+01	99.95%
Methylpentane[3-]	3.77E+00	0.057	6.62E+01	99.91%
Methylstyrene[alpha-]	1.30E-01	0.07	1.86E+00	100.00%
Nitrobenzene	6.25E-01	0.00057	1.10E+03	99.07%
Nitropropane[2-]	1.16E+01	0.0057	2.04E+03	98.75%
Nonane[1-]	7.91E+01	0.71	1.11E+02	99.83%
Octane[n-]	2.00E+01	0.95	2.10E+01	99.98%
Pentane	1.25E+00	1.2	1.04E+00	100.00%
Pinene[alpha-]	1.49E+01	0.037	4.03E+02	99.58%
Pinene[beta-]	1.01E+02	0.047	2.14E+03	98.49%
Propanol[2-]	2.61E+00	0.67	3.90E+00	100.00%
Propylbenzene[1-]	3.61E+00	0.01	3.61E+02	99.63%
Styrene	1.19E+00	0.29	4.12E+00	100.00%
Tetrachloroethene	8.08E+01	0.01	8.08E+03	96.13%
Tetrahydrofuran	3.80E+00	0.4	9.50E+00	99.99%
Toluene	4.80E+01	0.11	4.36E+02	99.48%
Trichloro-1,2,2-trifluoroethane[1,1,2-]	1.07E+00	8.6	1.24E-01	100.00%
Trichlorobenzene[1,2,4-]	7.46E-01	0.057	1.31E+01	99.99%
Trichloroethane[1,1,1-]	5.26E-01	0.29	1.82E+00	100.00%
Trichloroethane[1,1,2-]	5.48E-02	0.004	1.37E+01	99.99%
Trichloroethene	2.56E+00	0.006	4.26E+02	99.53%
Trichlorofluoromethane	4.40E+01	0.2	2.20E+02	99.72%
Trimethylbenzene[1,2,4-]	1.16E+01	0.0017	6.80E+03	97.94%
Trimethylbenzene[1,3,5-]	3.88E+00	0.0017	2.28E+03	98.22%
Vinyl Acetate	9.45E-01	0.057	1.66E+01	99.99%

TABLE F-1.0-6 (CONTINUED)

Chemical	Max Value ^a (mg/m ³)	RfD ^b (mg/kg-day)	Normalized Value ^c	Cumulative % Contribution to Hazard Quotient ^d
Xylene (Total)	8.20E+00	0.2	4.10E+01	99.96%
Xylene[1,2-]	1.04E+01	0.2	5.21E+01	99.93%
Xylene[1,3-]	3.26E+01	0.2	1.63E+02	99.77%
Xylene[1,3-]+Xylene[1,4-]	1.82E+01	0.2	9.10E+01	99.89%
		TOTAL	7.97E+05	

- a. Maximum value detected in soil gas (Table F-1.0-1).
- b. Inhalation reference dose (Table F-1.0-3).
- c. Normalized value equal to the maximum value divided by the RfD.
- d. Cumulative percent contribution to the total normalized value represents the sum of the previous normalized values divided by the total normalized value.
- e. Chemicals in bold are considered COPCs because they account for 99% of the total normalized value (i.e., account for 99% of the total hazard index).

TABLE F-1.0-7

Chemical	Median Value ^a (mg/m ³)	RfD ^b (mg/kg-day)	Normalized Value ^c	Cumulative % Contribution to Hazard Quotient ^d
Acetone	9.63E-02	0.1	9.63E-01	99.91%
Acetonitrile	1.36E-02	0.014	9.72E-01	99.90%
Acetophenone	3.98E-02	0.0000057	6.99E+03	56.76%
Acrolein	1.86E-02	0.0000057	3.26E+03	83.24%
Acrylonitrile	1.76E-02	0.00057	3.09E+01	98.07%
Benzene	3.24E-02	0.0017	1.90E+01	98.41%
Benzonitrile	9.56E-02	0.012	7.96E+00	99.42%
Bromodichloromethane	2.72E-02	0.02	1.36E+00	99.87%
Bromomethane	1.81E-02	0.0014	1.29E+01	99.08%
Butane[n-]	9.24E-02	1.3	7.11E-02	100.00%
Butanol[1-]	6.86E-02	0.1	6.86E-01	99.95%
Butanone[2-]	1.20E-01	0.29	4.12E-01	99.97%
Carbon Disulfide	1.17E-01	0.2	5.84E-01	99.96%
Carbon Tetrachloride	2.55E-02	0.00057	4.47E+01	97.53%
Chlorobenzene	1.87E-02	0.0057	3.27E+00	99.75%
Chlorodifluoromethane	1.93E-01	14	1.38E-02	100.00%
Chloroethane	1.48E-02	2.9	5.09E-03	100.00%
Chloroform	1.98E-02	0.01	1.98E+00	99.83%
Cyclohexane	7.67E-02	0.7	1.10E-01	99.99%
Cyclohexanone	8.74E-02	5	1.75E-02	100.00%
Cyclopentane	1.16E-02	1.2	9.69E-03	100.00%
Cyclopentene	1.13E-02	0.017	6.64E-01	99.95%
Dibromoethane[1,2-]	3.11E-02	0.000057	5.46E+02	96.59%
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	2.04E-01	4.8	4.25E-02	100.00%
Dichlorobenzene[1,2-]	2.44E-02	0.057	4.28E-01	99.97%
Dichlorobenzene[1,3-]	2.44E-02	0.0023	1.06E+01	99.35%
Dichlorobenzene[1,4-]	4.87E-02	0.23	2.12E-01	99.98%
Dichlorodifluoromethane	9.30E-01	0.057	1.63E+01	98.97%
Dichloroethane[1,1-]	1.64E-02	0.14	1.17E-01	99.99%
Dichloroethane[1,2-]	1.64E-02	0.0029	5.66E+00	99.64%
Dichloroethene[1,1-]	1.61E-02	0.009	1.79E+00	99.85%
Dichloroethene[cis-1,2-]	1.13E-01	0.01	1.13E+01	99.27%
Dichloroethene[trans-1,2-]	1.83E-02	0.02	9.16E-01	99.92%

TABLE F-1.0-7 CONTINUED

Chemical	Median Value ^a (mg/m ³)	RfD ^b (mg/kg-day)	Normalized Value ^c	Cumulative % Contribution to Hazard Quotient ^d
Dichloropropane[1,2-]	1.87E-02	0.0011	1.70E+01	98.70%
Dichloropropene[cis-1,3-]	1.84E-02	0.0057	3.23E+00	99.80%
Dichloropropene[trans-1,3-]	1.84E-02	0.0057	3.23E+00	99.77%
Diethyl Ether	1.23E-01	0.82	1.50E-01	99.99%
Dimethyl Disulfide	1.56E-03	0.000045	3.47E+01	97.82%
Dimethyl Sulfide	6.18E-03	0.29	2.13E-02	100.00%
Dimethylbutane[2,2-]	2.86E-02	1.2	2.38E-02	100.00%
Dimethylbutane[2,3-]	2.86E-02	1.2	2.38E-02	100.00%
Ethanol	7.64E-02	1.3	5.88E-02	100.00%
Hexane	6.56E-02	0.057	1.15E+00	99.89%
Hexanone[2-]	1.66E-01	0.04	4.15E+00	99.72%
Isobutane	5.71E-01	0.00052	1.10E+03	92.15%
Isopentane	2.39E-02	1.2	1.99E-02	100.00%
Isopropylbenzene	1.99E-02	0.0026	7.66E+00	99.48%
Methanol	6.77E-02	0.5	1.35E-01	99.99%
Methyl Methacrylate	3.32E-02	0.08	4.15E-01	99.97%
Methyl-2-pentanone[4-]	1.66E-01	0.023	7.22E+00	99.60%
Methylcyclohexane	1.01E-01	0.86	1.17E-01	99.99%
Methylcyclopentane	5.15E-02	0.057	9.03E-01	99.94%
Methylene Chloride	5.24E-02	0.86	6.09E-02	100.00%
Methylpentane[2-]	4.59E-02	0.057	8.05E-01	99.94%
Methylpentane[3-]	5.20E-02	0.057	9.12E-01	99.93%
Methylstyrene[alpha-]	1.96E-02	0.07	2.80E-01	99.98%
Nitrobenzene	4.08E-02	0.00057	7.16E+01	97.17%
Nitropropane[2-]	1.08E-01	0.0057	1.89E+01	98.57%
Nonane[1-]	1.42E-01	0.71	2.00E-01	99.98%
Octane[n-]	5.19E-02	0.95	5.46E-02	100.00%
Pentane	4.43E-02	1.2	3.69E-02	100.00%
Pinene[alpha-]	4.97E-02	0.037	1.34E+00	99.88%
Pinene[beta-]	4.52E-02	0.047	9.61E-01	99.91%
Propanol[2-]	7.32E-02	0.67	1.09E-01	99.99%
Propylbenzene[1-]	1.99E-02	0.01	1.99E+00	99.82%
Styrene	1.73E-02	0.29	5.95E-02	100.00%

TABLE F-1.0-7 CONTINUED

Chemical	Median Value ^a (mg/m ³)	RfDi ^b (mg/kg-day)	Normalized Value ^c	Cumulative % Contribution to Hazard Quotient ^d
Tetrachloroethene	1.68E-01	0.01	1.68E+01	98.84%
Tetrahydrofuran	1.20E-01	0.4	2.99E-01	99.97%
Toluene	2.32E-02	0.11	2.11E-01	99.98%
Trichloro-1,2,2-trifluoroethane[1,1,2-]	3.11E-02	8.6	3.61E-03	100.00%
Trichlorobenzene[1,2,4-]	3.01E-02	0.057	5.28E-01	99.96%
Trichloroethane[1,1,1-]	2.21E-02	0.29	7.63E-02	100.00%
Trichloroethane[1,1,2-]	2.21E-02	0.004	5.53E+00	99.69%
Trichloroethene	4.36E-02	0.006	7.26E+00	99.54%
Trichlorofluoromethane	2.73E-02	0.2	1.37E-01	99.99%
Trimethylbenzene[1,2,4-]	3.99E-02	0.0017	2.34E+01	98.26%
Trimethylbenzene[1,3,5-]	1.99E-02	0.0017	1.17E+01	99.17%
Xylene (Total)	2.85E-02	0.2	1.43E-01	99.99%
Xylene[1,2-]	1.76E-02	0.2	8.80E-02	99.99%
Xylene[1,3-]	3.52E-02	0.2	1.76E-01	99.98%
Xylene[1,3-]+Xylene[1,4-]	3.52E-02	0.2	1.76E-01	99.98%
		TOTAL	1.23E+04	

- Median value in soil gas (Table F-1.0-2).
- Inhalation reference dose (Table F-1.0-3).
- Normalized value equal to the median value divided by the RfDi.
- Cumulative percent contribution to total normalized value represents the sum of the previous normalized values divided by the total normalized value.
- Chemicals in bold are considered COPCs because they account for 99% of the total normalized value (i.e., account for 99% of the total hazard index).

TABLE F-1.0-8
SUMMARY OF CHEMICALS OF POTENTIAL CONCERN IN SOIL GAS
PRSs 73-001(a) AND 73-001(d)

Chemical of Potential Concern	Rationale
Acetophenone	Contributes to 99% of total normalized value based on both the maximum and median values
Acrolein	Contributes to 99% of total normalized value based on both the maximum and median values
Acrylonitrile	Contributes to 99% of total normalized value based on the median value
Benzene	Contributes to 99% of total normalized value based on both the maximum and median values
Benzyl Chloride	Contributes to 99% of total normalized value based on the median value
Bromodichloromethane	Contributes to 99% of total normalized value based on the median value
Bromomethane	Contributes to 99% of total normalized value based on the median value
Butadiene[1,3-]	Contributes to 99% of total normalized value based on the median value
Carbon Tetrachloride	Contributes to 99% of total normalized value based on the median value
Dibromoethane[1,2-]	Contributes to 99% of total normalized value based on both the maximum and median values
Dichlorobenzene[1,4-]	Contributes to 99% of total normalized value based on the maximum value
Dichlorodifluoromethane	Contributes to 99% of total normalized value based on the median value
Dichloroethene[1,1-]	Contributes to 99% of total normalized value based on the median value
Dichloroethene[cis-1,2-]	Contributes to 99% of total normalized value based on the maximum value
Dichloropropane[1,2-]	Contributes to 99% of total normalized value based on the median value
Dichloropropene[cis-1,3-]	Contributes to 99% of total normalized value based on the median value
Dichloropropene[trans-1,3-]	Contributes to 99% of total normalized value based on the median value
Dimethyl Disulfide	Contributes to 99% of total normalized value based on the median value
Ethyl Acrylate	Contributes to 99% of total normalized value based on the median value
Isobutane	Contributes to 99% of total normalized value based on both the maximum and median values
Isoprene	Contributes to 99% of total normalized value based on the median value
Nitrobenzene	Contributes to 99% of total normalized value based on both the maximum and median values
Nitropropane[2-]	Contributes to 99% of total normalized value based on both the maximum and median values

TABLE F-1.0-8 (CONTINUED)

Chemical of Potential Concern	Rationale
Pinene[beta-]	Contributes to 99% of total normalized value based on the maximum value
Tetrachloroethane[1,1,2,2-]	Contributes to 99% of total normalized value based on the median value
Tetrachloroethene	Contributes to 99% of total normalized value based on both the maximum and median values
Trimethylbenzene[1,2,4-]	Contributes to 99% of total normalized value based on both the maximum and median values
Trimethylbenzene[1,3,5-]	Contributes to 99% of total normalized value based on the maximum value
Vinyl Chloride	Contributes to 99% of total normalized value based on both the maximum and median values

Vapor Transport Modeling

Chemical Emissions from Soil (Volatilization Factor Model)

The vapor emission rates of volatile chemicals of potential concern (COPCs) in soil were estimated using EPA's volatilization factor (VF) model (EPA 1991, 58234). The VF model is a simple screening model that assumes that all phases are in equilibrium (vapor, liquid, solid phases) and that the source remains constant over time (i.e., does not account for source depletion). The model uses chemical-specific physical properties (e.g., diffusivity in air) and assumptions regarding soil properties at the site (e.g., air-filled porosity) to predict the emission rate of volatile chemicals at the soil surface.

The VF model is not considered valid if "free phase" chemicals are present in the soil matrix. The presence of free phase chemicals can be assessed by comparing the concentration of the volatile COPCs in soil to the soil saturation concentration (C_{sat}), which is based on the adsorptive limit of the soil and the theoretical dissolution limit of each chemical in the available soil moisture. When the concentration in soil is greater than or equal to the C_{sat} , free phase material is considered to be present. The C_{sat} can be calculated using the equation presented in the U.S. EPA Soil Screening Guidance (U.S. EPA 1996, 58917). The C_{sat} was calculated for each volatile COPC in soil using the following equation; chemical-specific and model-specific input parameters, including their source and rationale, are provided in Tables R-4a and R-4b of the main text, respectively.

$$C_{sat} = \frac{S}{pb} (Kd \times Pb \times Pw \times H^* \times Pa)$$

Where:

- C_{sat} = Soil saturation concentration for volatile COPCs ($mg_{chemical}/kg_{soil}$)
- S = Chemical-specific solubility in water ($mg_{chemical}/L_{water}$; chemical-specific)
- Pb = Dry soil bulk density (kg_{soil}/L_{soil})
- Kd = Soil-water partition coefficient [cm^3_{water}/g_{soil} ; equal to the chemical-specific organic carbon partition coefficient (Koc ; L_{water}/kg_{soil} or cm^3_{water}/g_{soil}) multiplied by the fraction of organic carbon in soil (foc)].
- Pw = Water-filled soil porosity (cm^3_{water}/cm^3_{soil})
- HN = Dimensionless Henry's Law Constant [cm^3_{air}/cm^3_{water} ; equal to the Henry's Law Constant (chemical-specific) multiplied by 41 (conversion factor)]
- Pa = Air-filled soil porosity (cm^3_{air}/cm^3_{soil})

As shown in the attached calculation spreadsheets, the concentrations of COPCs in soil are less than the C_{sat} value. Therefore, use of the VF model is valid for concentrations in soil at the site. The emission rate for each volatile COPC in soil was calculated using the following equation (EPA 1991, 58234); chemical-

Where:

- November 20, 1998

On-site ambient air concentrations (i.e., directly on top of the source) resulting from emissions of volatile chemicals in soil were estimated using a box model, which is a simple mass balance equation that is based on the concept of a theoretically enclosed space over the area of interest. The model assumes that vapors enter the box from the underlying soil and are removed by the wind. The on-site ambient air concentrations for each of the volatile COPCs in soil were calculated using the following equation (EPA 1991, 58234); model-specific input parameters, including their source and rationale, are presented in Table 2.4.3.1-5a of the main text.

$$C_a = \frac{E_i}{LS \times WS \times MH}$$

Where:

C_a	=	Ambient air concentration (mg/m ³)
E_i	=	Emission rate (mg/sec; calculated using the VF)
LS	=	Length of emissions area (m; specific to exposure scenario)
WS	=	Wind speed (m/sec)
MH	=	Mixing height (m)

The estimated on-site ambient air concentrations are presented in the attached calculation spreadsheets

Indoor Air Concentrations – On-Site (Box Model)

Although the box model is typically used to estimate ambient air concentrations assuming vapors enter the box from the subsurface and are removed from the box by the wind, it can be modified to estimate indoor air concentrations by assuming that vapors enter the box via emissions through the cracks in the floor and are removed by ventilation. With these modifications, on-site indoor air concentrations (i.e., directly on top of the source) resulting from emissions of volatile chemicals in soil and soil gas were calculated using the following equation, which was taken from the U.S. EPA's "Air/Superfund National Technical Guidance Study Series Assessing Potential Indoor Air Impacts at Superfund Sites" (EPA 1992, 58915, pp. A18–A20); model-specific input parameters, including their source and rationale, are presented in Table 2.4.3.1-5a of the main text.

$$C_{in} = \frac{E_i \times F}{ACH/CF \times V}$$

Where:

C_{in}	=	Indoor air concentration (mg/m ³)
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Ei	=	Emission rate from groundwater (mg/sec; calculated previously)
F	=	Fraction of floor area that is cracked (unitless)
ACH	=	Air exchanges per hour (hr ⁻¹)
CF	=	Conversion factor (3600 sec/hr)
V	=	Volume of air in building (m ³)

The estimated on-site indoor air concentrations are presented in the attached calculation spreadsheets.

Chemical Emissions from Soil Gas Volatile (Nonmethane Organic Compound Emission Model)

The vapor emission rates of COPCs in soil gas were estimated using EPA's Volatile Nonmethane Organic Compound Emissions Model from Codisposal Landfills (NMOC model) (EPA 1992, 58916). The NMOC model assumes that VOCs are transported through the vadose zone at the same rate as the landfill gas (primarily methane and carbon dioxide) generated by natural biodegradation processes inside the landfill. The emission rate for each volatile COPC in soil gas was calculated using the following equation; model-specific input parameters, including their source and rationale, are presented in Table R-5b of the main text.

$$Ei = C_{sv} \times V \times A$$

Where:

Ei	=	Emission rate over area of interest (g/sec)
C _{sv}	=	Chemical concentration in soil gas (g/cm ³)
V	=	Mean landfill gas velocity (cm/sec)
A	=	Emissions area (cm ²)

Chemical concentrations in soil gas were measured in units of parts per billion by volume (ppbv). These values were converted to units of grams per cubic centimeter (g/cm³) using the following equation.

$$C_{sv_adj} = \frac{C_{sv} \times MW \times CF}{GL}$$

Where:

C _{sv_adj}	=	Adjusted chemical concentration in soil gas (g/cm ³)
C _{sv}	=	Measured chemical concentration in soil gas (ppbv)

MW	=	Molecular weight (g/mole)
CF	=	Conversion factor (1×10^{-12} ; g/ μ g and m ³ /cm ³)
GL	=	Gas law constant (l/mole); calculated as follows:

$$GL = \frac{R \times T}{P}$$

Where:

R	=	Ideal gas constant (0.08206 l-atm/g-moles-°K)
T	=	Temperature [10°C or 283°K based on 1 year of meteorological data from TA-53 (6/1/94-5/31/95)]
P	=	Pressure [0.77 atm based on several years of field measurements (Forbes 1996, 58996)]

The estimated adjusted soil gas concentrations and resulting emission rates are shown in the attached calculation spreadsheets. On-site ambient air concentrations results from emissions of volatile chemicals in soil gas were estimated using the box model described previously.

Air Concentrations – Off-Site (Industrial Source Complex- Short Term Dispersion Model)

Off-site air concentrations (i.e., away from the source) resulting from the emission of volatile chemicals from soil gas were estimated using EPA's Industrial Source Complex – Short Term (ISCST3) dispersion model (EPA 1995, 58918). ISCST3 is a Gaussian plume model that incorporates site-specific meteorological data to predict hourly or annual average air concentrations at some distance from a source or sources. For purposes of this assessment, ISCST3 was used to estimate annual average air concentrations corresponding to the locations of a worker in the airport terminal and a nearby resident west of the site. The modeling assumptions and results are described below.

Modeling Assumptions

The main landfill and debris disposal area were modeled separately because the composition of landfill gas, including which VOCs were detected and at what concentrations) was significantly different between the two source areas (see Figure RISK-2 of the main text). Source-specific information, including location, dimensions, and degrees from north, are presented in Table 2.4.3.1-5c of the main text. Source locations were identified relative to the State Plane coordinate system, New Mexico, Central Zone. The origin was set at (1,630,000; 1,770,000) measured in feet; however, all source locations were entered in meters. As stated previously, off-site air concentrations were predicted at the airport terminal and a nearby residence. Receptor locations, which were also entered in meters relative to the origin, are presented in Table 2.4.3.1-6 of the main text.

Off-site air concentrations for each source were predicted based on a hypothetical unit emission rate of 1 gram per second (g/sec). Emission rates and predicted air concentrations are related in a linear manner (i.e., doubling the emission rate will double the predicted concentration). Therefore, a single modeling run

based on a hypothetical unit emission rate can be used to relate the chemical-specific emissions rates estimated as described above to predicted air concentrations for each COPC in soil gas. To illustrate this point, let's assume that the predicted air concentration associated with a hypothetical unit emission rate of 1 g/sec is $10 \mu\text{g}/\text{m}^3$. Therefore, if the actual emission for a chemical is 2g/sec, then the predicted air concentration would be $20 \mu\text{g}/\text{m}^3$. The main landfill and debris disposal area were modeled as area sources rather than point (stack) sources. Therefore, the unit emission rate of 1 g/sec was converted to units of grams per square meter per second ($\text{g}/\text{m}^2\text{-sec}$) by dividing by the area of each source. The area-specific emission rates are shown in Table 2.4.3.1-5c of the main text.

One of the primary advantages of the ISCST3 model is that it incorporates site-specific meteorological data. For purposes of this assessment, one year of data (June 1994 to May 1995) was obtained from the meteorological station located nearest to the Los Alamos Airport (TA-53). Other data sources, such as the National Weather Service or the Los Alamos Airport, did not have suitable meteorological data for ISCST3 (either insufficient data had been collected or data were not in a computer format).

Modeling Results

The predicted air concentrations at the airport terminal and nearby resident based on a unit emission rate are presented in Table 2.4.3.1-6 of the main text. The input and output files for ISCST3 are included in this appendix. The ISCST3 modeling results were used to estimate off-site air concentrations for each of the COPCs based on emissions from both sources as follows.

Where:

Ca	=	Predicted off-site air concentration based on emissions from the main landfill and debris disposal area ($\mu\text{g}/\text{m}^3$)
X/Qa	=	Predicted off-site air concentration based on emissions from the main landfill [73-001(a)] assuming a unit emission rate of 1 g/sec ($\mu\text{g}/\text{m}^3$ per g/sec)
Eia	=	Chemical-specific emission rate from the main landfill (g/sec)
X/Qd	=	Predicted off-site air concentration based on emissions from the debris disposal area [73-001(d)] assuming a unit emission rate of 1 g/sec ($\mu\text{g}/\text{m}^3$ per g/sec)
Eid	=	Chemical-specific emission rate from the debris disposal area (g/sec)

The predicted off-site air concentrations are presented in the attached spreadsheets. For purposes of this assessment, these concentrations were assumed representative of both indoor and ambient air concentrations.

The components of each exposure equation are presented below, each of which is the same as or equivalent to equations presented by EPA (1989, 0305); values used for each input parameter, including source and rationatel, are summarized in Tables 2.4.3.1-7 through 2.4.3.2-9 for the identified scenarios.

Additional chemical-specific parameters required for the exposure equations are presented in Table 2.4.3.1-10.

Incidental Soil Ingestion

$$Intake_{is} = \frac{[Soil] \times IR_s \times EF \times ED \times 10^{-6}}{BW \times AT}$$

Where:

$Intake_{is}$ = Intake from incidental soil ingestion (mg/kg-day)

[Soil] = Chemical concentration in soil (mg/kg)

IR_s = Soil ingestion rate (mg/day)

EF = Exposure frequency (days/year)

ED = Exposure duration (years)

10^{-6} = Conversion factor (kg/mg)

BW = Body weight (kg)

AT = Averaging time (days)

Dermal Contact with Soil

$$Intake_{ds} = \frac{[soil] \times SA \times AF \times ABS \times EF \times ED \times 10^{-6}}{BW \times AT}$$

Where:

$Intake_{ds}$ = Intake from dermal contact with soil (mg/kg-day)

[Soil] = Chemical concentration in soil (mg/kg)

SA = Exposed skin surface area (cm²/day)

AF = Soil-skin adherence factor (mg/cm²)

ABS = Absorption fraction (unitless)

EF = Exposure frequency (days/year)

ED = Exposure duration (years)

10^{-6} = Conversion factor (kg/mg)

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BW = Body weight (kg)
 AT = Averaging time (days)

Inhalation of Resuspended Soil Particulates

$$Intake_{IP} = \frac{[soil] \times PC \times IRa \times ET \times EF \times ED}{BW \times AT}$$

Where:

Intake_{IP} = Intake from inhalation of resuspended particulates (mg/kg-day)
 [Soil] = Chemical concentration in soil (mg/kg)
 PC = Particulate concentration (kg/m³)
 IRa = Inhalation rate (m³/hour)
 ET = Exposure time (hours/day)
 EF = Exposure frequency (days/year)
 ED = Exposure duration (years)
 BW = Body weight (kg)
 AT = Averaging time (days)

Inhalation of Vapors from Soil or Soil Gas

$$Intake_{IV} = \frac{Ca \times IRa \times ET \times EF \times ED}{BW \times AT}$$

Where:

Intake_{IV} = Intake from inhalation of vapors (mg/kg-day)
 Ca = Chemical concentration in air (mg/m³)
 IRa = Inhalation rate (m³/hour)
 ET = Exposure time (hours/day)
 EF = Exposure frequency (days/year)

ED = Exposure duration (years)
 BW = Body weight (kg)
 AT = Averaging time (days)

Ingestion of Homegrown Produce

$$Intake_{HP} = \frac{[soil] \times [(UF_f \times IR_f) + (UF_v \times IR_v)] \times EF \times ED \times 10^{-3}}{BW \times AT}$$

Where:

Intake_{HP} = Intake from ingestion of homegrown produce (mg/kg-day)
 [Soil] = Chemical concentration in soil (mg/kg)
 UF_f = Soil to produce uptake factor – fruit crops (mg/kg_{fruit} per mg/kg_{soil})
 IR_f = Homegrown produce ingestion rate – fruit crops (g/day)
 UF_v = Soil to produce uptake factor – vegetable crops (mg/kg_{vegetable} per mg/kg_{soil})
 IR_v = Homegrown produce ingestion rate – vegetable crops (g/day)
 EF = Exposure frequency (days/year)
 ED = Exposure duration (years)
 10⁻³ = Conversion factor (kg/g)
 BW = Body weight (kg)
 AT = Averaging time (days)

Basis for Toxicity Criteria Used in Human Health Risk Assessment

The majority of the toxicity criteria used in this human health risk assessment were developed by EPA. The basis for these criteria is documented in IRIS, HEAST, or other EPA publications. In these cases, the following information summarizing the basis for these criteria is taken from these sources, and references to specific toxicity studies are not provided. In a few cases, toxicity criteria were developed based on information contained in the scientific literature. In these cases, references to specific toxicity studies are provided as appropriate.

Acetophenone

The inhalation reference concentration (RfC) for acetophenone was withdrawn by EPA in 1992 (IRIS 1998). However, to be conservative, the inhalation RfC provided in HEAST prior to this time was used in

this evaluation. This inhalation RfC was based on a subchronic inhalation study in rats; specific information regarding the number of animals or dose levels tested was not provided. Adverse effects observed included congested blood vessels, liver dystrophy, and decreased albumin/globulin ratio. The NOAEL for this study was 0.007 mg/m³. Based on an uncertainty factor of 1000 and an unspecified adjustment, the inhalation RfC was set at 0.00002 mg/m³; specific information regarding the components of the uncertainty factor was not provided. This concentration was converted to an inhalation RfD of 0.0000057 mg/kg-day based on an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. Information regarding EPA's confidence in this RfD at the time it was developed was not provided (HEAST 1992, 58966).

Acrolein

The inhalation RfC for acrolein is based on a subchronic study in which groups of 24 male rats were exposed to concentrations of 0, 0.917, 3.21 or 11.23 mg/m³. Observed adverse effects included squamous metaplasia and neutrophilic infiltration of nasal epithelium. A NOAEL was not established; therefore, 0.917 mg/m³ was identified as a LOAEL. The LOAEL was adjusted to account for exposure duration and differences in inhalation rate and skin surface area between rats and humans. The resulting LOAEL(HEC) [human equivalent concentration] is 0.02 mg/m³. Based on the uncertainty factor of 1000 (10 to account for sensitive individuals, 10 to account for interspecies variability, and 10 to account for the lack of chronic studies), the inhalation RfC was set at 0.00002 mg/m³. This value was converted to an inhalation RfD of 0.0000057 mg/kg-day based on an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. EPA's overall confidence in the inhalation RfC is medium because EPA has high confidence in the study used (adequate numbers of animals were used, careful attention was paid to experimental protocol) and low to medium confidence in the available data base (lack of chronic data and adequately conducted reproductive or development studies) (IRIS 1998).

Acrylonitrile

The inhalation RfC for acrylonitrile is based on a study in which 100 male and 100 female rats were exposed to 0, 20, or 80 ppm acrylonitrile for 6 hours per day for 5 days a week for 2 years. Adverse effects included degeneration and inflammation of nasal respiratory epithelium and hyperplasia of mucous secreting cells. A NOAEL was not established; therefore, the LOAEL was set at 7.7 mg/m³ (20 ppm). The LOAEL was adjusted to account for exposure duration and differences in inhalation rate and skin surface area between rats and humans. The resulting LOAEL human equivalent concentration (HEC) is 1.9 mg/m³. Based on an uncertainty factor of 1000 (10 to account for sensitive individuals, 3 because the effect level was a LOAEL instead of a NOAEL, 3 to account for interspecies variability, and 10 because the data base was incomplete), the RfC was set at 0.002 mg/m³. The value was converted to an inhalation RfD of 0.00057 mg/kg-day based on an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. EPA's overall confidence in the inhalation RfC is medium because EPA has medium confidence in the study used (only one species was used, a NOAEL was not established, and the target organ was only examined in relatively few animals at the end of the study) and medium confidence in the available data base (lack of chronic or subchronic inhalation data in a second species and lack of reproductive data) (IRIS 1998).

The inhalation unit risk value (URV) for acrylonitrile is based on an observational study in which 1345 male textile workers exposed to acrylonitrile were followed for 10 or more years. Estimated levels of exposure were 5 to 20 ppm acrylonitrile. All of the cancer cases, except for one nonrespiratory cancer,

occurred among 1128 workers with 6 or more months exposure. The inhalation URV is set at 0.000068 ($\mu\text{g}/\text{m}^3$)⁻¹. The URV was converted to an inhalation slope factor of 0.24 ($\text{mg}/\text{kg}\cdot\text{day}$)⁻¹ based on a conversion factor 1000 $\mu\text{g}/\text{mg}$ and an assumed inhalation rate of 20 m^3/day and body weight of 70 kg. EPA's confidence in the inhalation URV is based on the following: the cohort was sufficiently large and followed for an adequate time period, a dose-response relationship was seen for the increased cancer risk, and the increased risk remained after adjustments for smoking were made; however, the exposure levels were estimated by company representatives (IRIS 1998).

Antimony

The oral RfD for antimony is based on a chronic oral study in which 50 male and 50 female rats were administered 5 ppm potassium antimony tartrate in water (or 0.35 $\text{mg}/\text{kg}\cdot\text{day}$). Adverse effects observed include decreased life span, decrease glucose levels, and alterations in cholesterol levels. Because adverse effects were observed at the only dose level evaluated, a NOAEL was not established, and 0.35 $\text{mg}/\text{kg}\cdot\text{day}$ was identified as a LOAEL. Based on an uncertainty factor of 1000 (10 to account for interspecies variability, 10 to account for sensitive individuals, and 10 because the effect level was a LOAEL instead of a NOAEL), the oral RfD was set at 0.0004 $\text{mg}/\text{kg}\cdot\text{day}$. EPA's overall confidence in this RfD is low because EPA has low confidence in the study used (one species at one dose level was tested, no NOAEL was established, and gross pathology and histopathology were not well described) and low confidence in the available data base (insufficient oral studies) (IRIS 1998).

An inhalation RfC has not been developed for antimony; therefore, the oral RfD was used as a surrogate based on route-to-route extrapolation.

Aroclor 1254

The oral RfD for Aroclor 1254 is based on a subchronic study in which 16 adult female rhesus monkeys ingested gelatin capsules containing daily dosages of 0, 5, 20, 40, or 80 $\mu\text{g}/\text{kg}\cdot\text{day}$ of the chemical for more than five years. Adverse effects included ocular exudate, inflamed and prominent meibomian glands, distorted growth of finger and toe nails and decreased antibody response to sheep erythrocytes. Based on an uncertainty factor of 300 (10 to account for sensitive individuals, 3 to account for interspecies variability, 3 to account for the lack of chronic studies, and 3 because the effect level was LOAEL instead of a NOAEL), the oral RfD was set at 0.00002 $\text{mg}/\text{kg}\cdot\text{day}$. EPA's overall confidence for the RfD is medium because EPA has medium confidence in the study used (a group of 16 rhesus monkeys was used at four dose levels and a LOAEL was established on the basis of clinical signs and immunologic alterations) and medium confidence in the available data base (inconsistency in effect levels for reproductive toxicity) (IRIS 1998).

An inhalation RfD has not been developed for Aroclor 1254; therefore, the oral RfD was used as a surrogate based on route-to-route extrapolation.

In 1996, EPA revised its methodology for evaluating the potential carcinogenicity of polychlorinated biphenyl (PCB) mixtures such as Aroclor 1254. Prior to that time, insufficient data were available to develop oral and inhalation SFs for the various commercial PCB mixtures except for Aroclor 1260. Therefore, the SFs developed for Aroclor 1260 were used to estimate carcinogenic health risks for all of the commercial PCB mixtures. In 1996, EPA replaced this approach with one that recognized that the composition of commercial PCB mixtures may change in the environment, and that these changes may increase or decrease the toxicity of the mixture. Therefore, EPA developed a range of SFs based on previously existing and newly available toxicity data for commercial PCB mixtures and provided guidance

for choosing the appropriate SF based on exposure pathway. As described above, potential exposure to PCBs in soil at the Site could occur via incidental ingestion, dermal contact, inhalation of particulates, and under the hypothetical future on-site residential scenario, ingestion of homegrown produce. For these exposure pathways, EPA recommends using the highest SF in the range, or 2 (mg/kg-day)⁻¹. This value is based on the results of a study in which groups of 50 male and 50 female rats were exposed to 100 ppm Aroclor 1260 in the diet 16 months, followed by exposure to 50 ppm Aroclor 1260 in the diet for 8 months. The observed tumor types included liver hepatocellular adenomas and carcinomas (IRIS 1998).

Aroclor 1260

EPA has not developed an oral or inhalation RfD for Aroclor 1260. For the purpose of this assessment, the oral RfD developed for Aroclor 1254 was used as a surrogate. With regard to carcinogenicity, EPA has developed a range of SFs for PCB mixtures such as Aroclor 1260. Based on EPA's guidance for using this range of values, an oral and inhalation slope factor of 2 (mg/kg-day)⁻¹ was used in this assessment.

Benzene

An inhalation RfD for benzene was established by EPA's National Center for Environmental Assessment. This value is 0.0017 mg/kg-day. Information regarding the type of experiment, number of animals tested, duration of study, uncertainty factors, and confidence level was not provided (Smucker 1998, 58751, p. 2).

The inhalation URV for benzene is based on data from three different occupational exposure studies. The observed tumor type was leukemia. The inhalation URV of 0.0000083 (μg/m³)⁻¹ is equal to the geometric mean of four point estimates using pooled data. The URV was converted to an inhalation SF of 0.029 (mg/kg-day)⁻¹ based on a conversion factor of 1000 μg/mg and an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. EPA's overall confidence in the inhalation URV is based on the following: pooled cohorts were sufficiently large and were followed for an adequate time period, a total of 21 URV estimates were prepared using 6 models and various combinations of the epidemiologic data, and regression models gave an estimate similar to the geometric mean (IRIS 1998).

Benzo(a)anthracene

Toxicity criteria have not been developed for benzo(a)anthracene [B(a)A] or for several other carcinogenic polycyclic aromatic hydrocarbons (PAHs); however, EPA has developed toxicity equivalent factors (TEFs) for these chemicals based on their toxicity relative to benzo(a)pyrene [B(a)P]. The TEF for B(a)A is 0.1; therefore, the oral and inhalation SFs are 0.73 (mg/kg-day)⁻¹ and 0.31 (mg/kg-day)⁻¹, respectively (Smucker 1998, 58751).

Benzo(a)pyrene

The oral SF for B(a)P is based on a geometric mean of four slope factors obtained by different low-dose extrapolation modeling procedures, which were derived from the combination of multiple data sets from two different reports using more than one sex and species. Tumor types observed included squamous cell papillomas and carcinomas of the forestomach, larynx and/or esophagus. The resulting oral SF is 7.3 (mg/kg-day)⁻¹. EPA's overall confidence in the oral SF is based on the following: the data used to develop the oral SF is acceptable, and the use of the geometric mean of four slope factors is preferred because it makes use of more of the available data (IRIS 1998).

An inhalation SF for B(a)P has been developed by EPA's National Center for Environmental Assessment. This value is 3.1 (mg/kg-day)⁻¹. Information regarding the observed tumor type was not provided (Smucker 1998, 58751, pp. 11).

Benzo(b)fluoranthene

Toxicity criteria have not been developed for benzo(b)fluoranthene [B(b)F]; however, EPA has developed a TEF for this chemical based on its relative toxicity to B(a)P. The TEF for B(b)F is 0.1; therefore, the oral and inhalation SFs are $0.73 \text{ (mg/kg-day)}^{-1}$ and $0.31 \text{ (mg/kg-day)}^{-1}$, respectively (Smucker 1998, 58751, pp. 11).

Benzo(g,h,i)perylene

EPA has not established toxicity criteria for benzo(g,h,i)perylene. However, the oral RfD for pyrene was used as a surrogate because, of the PAHs for which noncarcinogenic toxicity criteria have been developed, pyrene is the most similar to benzo(g,h,i)perylene in chemical and physical structure (e.g., pyrene has 4 rings, benzo(g,h,i)perylene has 5 rings). The oral RfD for pyrene is based on a study in which 20 male and 20 female mice were administered 0, 75, 125, or 250 mg/kg-day of pyrene in corn oil by gavage for 13 weeks. Observed adverse effects included renal tubular pathology and decreased kidney weights. The NOAEL and LOAEL were set at 75 and 125 mg/kg-day, respectively. Based on an uncertainty factor of 3000 (10 to account for interspecies variability, 10 to account for sensitive individuals, 10 to account for the lack of chronic studies, and 3 to account for the lack of toxicity studies in a second species and data base deficiencies), the oral RfD was set at 0.03 mg/kg-day. EPA's overall confidence in the oral RfD is low because EPA has medium confidence in the study (a well designed experiment in which both NOAEL and LOAEL were identified) and low confidence in the available data base (lack of supporting subchronic, chronic, developmental and reproductive studies) (IRIS 1998).

Benzo(k)fluoranthene

Toxicity criteria have not been developed for benzo(k)fluoranthene [B(k)F]; however, EPA has developed a TEF for this chemical based on its relative toxicity to B(a)P. The TEF for B(k)F is 0.01; therefore, the oral and inhalation SFs are $0.073 \text{ (mg/kg-day)}^{-1}$ and $0.031 \text{ (mg/kg-day)}^{-1}$, respectively (Smucker 1998, 58751, pp. 11).

Benzyl Chloride

An inhalation SF has not been established for benzyl chloride. However, an oral SF for the chemical has been established by EPA, and this value was used as a surrogate based on route-to-route extrapolation. The oral SF is based on a study in which 52 male and 52 female rats and mice were administered benzyl chloride in corn oil by gavage 3 times per week for 104 weeks. The dose levels for the rats were 0, 15, and 30 mg/kg and for mice were 0, 50, and 100 mg/kg. The observed tumor types included thyroid C-cell adenoma and carcinoma. The oral SF was set at $0.17 \text{ (mg/kg-day)}^{-1}$. EPA's overall confidence in the oral SF is based on the following: sufficient number of animals were used for analysis of late-developing tumors, benzyl chloride was administered by a relevant route of exposure at two doses in both sexes of two species for the animals' life span, histological examination was comprehensive, and slope factors derived from tumor data for another species were within a factor of 3 (IRIS 1998).

Bis(2-ethylhexyl)phthalate

The oral RfD for bis(2-ethylhexyl)phthalate (DEHP) is based on a study in which guinea pigs were fed diets containing DEHP for one year. 24 males and 23 females consumed feed containing 0.13% DEHP;

23 males and 23 females consumed feed containing 0.04% DEHP; and 24 males and 22 females were fed the control diet. These dietary levels corresponded to 64 or 19 mg/kg-day based on measured food consumption. An observed adverse effect was increased relative liver weight in the females at both dose levels. A NOAEL was not established; therefore, the LOAEL was set at 19 mg/kg-day. Based on an uncertainty factor of 1000 (10 to account for interspecies variability, 10 to account for sensitive individuals, and 10 because the animals were exposed longer than subchronic but less than lifetime and because the RfD is based on a LOAEL instead of a NOAEL, but the observed effect was considered minimally adverse), the oral RfD was set at 0.02 mg/kg-day. EPA's overall confidence in the oral RfD is medium because EPA has medium confidence in the study used (sufficient numbers of animals were used and multiple endpoints were measured) and medium confidence in the available data base (there are corroborating chronic animal bioassays) (IRIS 1998).

An inhalation RfD has not been established for DEHP; therefore, the oral RfD was used as a surrogate based on route-to-route extrapolation.

The oral SF for DEHP is based on a study in which 50 male and 50 female mice per group were fed diets containing 0, 6000 or 12,000 ppm DEHP for 103 weeks. The observed tumor types included hepatocellular carcinoma and adenoma. The oral SF was set at 0.014 (mg/kg-day)⁻¹. EPA's overall confidence in the oral SF is based on the following: an adequate number of animals were observed and a statistically significant increase in the incidence of liver tumors was seen in both sexes and were dose-dependent in both sexes of mice and in another study in female rats (IRIS 1998).

An inhalation SF has not been established for DEHP; therefore, the oral SF was used as a surrogate based on route-to-route extrapolation.

Bromodichloromethane

An inhalation RfD has not been established for bromodichloromethane. However, an oral RfD for this chemical has been established by EPA, and this value was used as a surrogate based on route-to-route extrapolation. The oral RfD is based on a study in which bromodichloromethane was administered in corn oil by gavage, for 5 days a week for 102 weeks, to groups of 50 male and 50 female rats at doses of 0, 25, and 50 mg/kg-day; and to groups of 50 female mice at doses of 0, 75, and 150 mg/kg-day. Adverse effects include reduced survival for female mice, reduced body weight for mice and rats, cytomegaly, tubular cell hyperplasia of the kidney, fatty metamorphosis of the liver, eosinophilic cytoplasmic changes, clear cell changes, focal cellular change, renal cytomegaly, and cell hyperplasia of the thyroid gland. No NOAEL was established; therefore, the LOAEL was set at 25 mg/kg-day. This value was adjusted to 17.9 mg/kg-day to account for a 5 day per week dosing regimen. Based on an uncertainty factor of 1000 (10 to account for interspecies variability, 10 to account for sensitive individuals, and 10 to account for data base deficiencies), the oral RfD was set at 0.02 mg/kg-day. EPA's overall confidence in the oral RfD is medium because EPA has medium confidence in the study used (a NOAEL was not determined) and medium confidence in the available data base (discrepancies in the dose levels producing adverse effects) (IRIS 1998).

An inhalation SF has not been established for bromodichloromethane. However, an oral SF for this chemical has been established by EPA, and this value was used as a surrogate based on route-to-route extrapolation. The oral SF is based on a study in which bromodichloromethane was administered to rats in corn oil by gavage, five days a week for 102 weeks. Test groups included 50 male and 50 female rats at dose levels of 0, 50, or 100 mg/kg-day. Similarly, 50 male and 50 female mice were administered doses of 0, 25, 75, or 150 mg/kg-day. Observed tumor types included tubular cell adenoma and tubular cell

adenocarcinoma in the kidney and tumors in the large intestine. The oral SF was set at 0.062 (mg/kg-day)⁻¹. EPA's overall confidence in the oral SF is based on the following: an adequate number of animals was used for a lifetime bioassay with two animal species, bromodichloromethane was administered at two dose levels, tumors of multiple tissues types were observed in a dose-related manner, and slope factors derived from tumor incidences of kidney and large intestine are similar and within one order of magnitude (IRIS 1998).

Bromomethane

The inhalation RfC for bromomethane is based on a series of studies in which 50 male and 60 female rats were exposed to 0, 11.7, 117 and 350 mg/m³ of 98.8% pure bromomethane for 6 hours per day for 5 days a week for up to 29 months. Adverse effects included hyperkeratosis of the esophagus, degenerative and proliferative lesions of the olfactory epithelium of the nasal cavity, and cardiac lesions at the high dose level. A NOAEL was not established; therefore, the LOAEL was set at 11.7 mg/m³. The LOAEL was adjusted to account for exposure duration and differences in inhalation rate and skin surface area between rats and humans. The resulting LOAEL (HEC) is 0.48 mg/m³. Based on an uncertainty factor of 100 (10 to account for interspecies variability, three for the use of a LOAEL for mild effects, and 3 to account for sensitive individuals), the RfC was set at 0.005 mg/m³. This concentration was converted to an inhalation RfD of 0.0014 mg/kg-day based on an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. EPA's overall confidence in the inhalation RfC is high because EPA has medium confidence in the study used (because no NOAEL was established) and high confidence in available data base (there is a chronic inhalation study in two species supported by subchronic inhalation studies in several species and because data are available on the developmental and reproductive effects) (IRIS 1998).

1,3-Butadiene

The inhalation URV for 1,3-butadiene is based on a study in which 50 male and 50 female mice were exposed to 625 or 1250 ppm of 1,3-butadiene for 6 hours per day for 5 days per week. Exposure began at 8-9 weeks of age and ended at 60-61 weeks of age. The observed tumor types included hemangiosarcomas of the heart, lymphomas, and alveolar/bronchiolar adenomas and carcinomas. The inhalation URV was set at 0.00028 (mg/m³)⁻¹. The URV was converted to an inhalation RfD of 0.98 (mg/kg-day)⁻¹ based on a conversion factor of 1000 µg/mg and an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. EPA's overall confidence in the inhalation URV is based on the following: adequate numbers of animals were treated and risk estimates derived from data on mice and rats differ by a factor of three for females; however, the difference in risk estimates for males is a factor of 80 (IRIS 1998).

Carbon Tetrachloride

An inhalation RfD for carbon tetrachloride had been developed by EPA's National Center for Environmental Assessment; this value has since been withdrawn. To be conservative, the withdrawn value of 0.00057 mg/kg-day was used in this evaluation. Information regarding the study, number of animals tested, adverse effects, uncertainty factor and confidence level was not provided (Smucker 1998, 58751).

The inhalation URV for carbon tetrachloride was derived from four data sets from which a geometric mean was calculated. These four studies used a variety of animals, such as hamsters, mice and rats. The observed tumor types included hepatocellular carcinomas and hepatomas. The inhalation URV of

0.000015 (mg/m³)⁻¹ is equal to the geometric mean calculated from the URVs derived from the four data sets. The URV was converted to an inhalation SF of 0.053 (mg/kg-day)⁻¹ based on a conversion factor of 1000 µg/mg and an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. EPA's overall confidence level in the inhalation URV was based on the following: all four studies were deficient in the some respect and data from males and females were combined because of small sample sizes; however, because the risk estimates from these data (across 3-4 species and strains) vary only by 2 orders of magnitude, a geometric mean was derived as the risk estimate to accommodate the several study deficiencies (IRIS 1998).

Chrysene

Toxicity criteria have not been developed for chrysene ; however, EPA has developed a TEF for this chemical based on its relative toxicity to B(a)P. The TEF for chrysene is 0.001; therefore, the oral and inhalation SFs are 0.0073 and 0.0031 (mg/kg-day)⁻¹, respectively (Smucker 1998, 58751).

Dibenzo(a,h)anthracene

Toxicity criteria have not been developed for dibenzo(a,h)anthracene [D(a,h)A]; however, EPA has developed a TEF for this chemical based on its relative toxicity to B(a)P. The TEF for D(a,h)A is 1; therefore, the oral and inhalation SFs are 7.3 (mg/kg-day)⁻¹ and 3.1 (mg/kg-day)⁻¹, respectively (Smucker 1998, 58751, p. 11).

Dibenzofuran

An oral RfD for dibenzofuran had been developed by EPA's National Center for Environmental Assessment; however, this value has since been withdrawn. However, to be conservative, the withdrawn value of 0.004 mg/kg-day was used in this evaluation. Information regarding the type of study, number of animals used, dose levels, uncertainty factors, and level of confidence was not provided (Smucker 1998, 58751, p. 4).

An inhalation RfD for dibenzofuran has not been developed; therefore, the oral RfD was used as a surrogate based on route-to-route extrapolation.

1.2-Dibromoethane

The inhalation RfC for 1,2-dibromoethane is based on a chronic inhalation study in humans; specific information regarding the number of persons tested was not provided. An adverse effect observed was the alteration of sperm levels. The LOAEL was set at 88 ppb. Based on an uncertainty factor of 1000 and an unspecified adjustment factor, the inhalation RfC was set at 0.0002 mg/m³; specific information regarding the components of the uncertainty factor was not provided (HEAST 1997, 58968). This concentration was converted to an inhalation RfD of 0.000057 (mg/kg-day) based on an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. Information regarding EPA's confidence in the inhalation RfC was not provided (HEAST 1997, 58968).

The inhalation URV for 1,2-dibromoethane is based on a study in which rats and mice of both sexes were exposed to 1,2-dibromoethane at 0, 10, or 40 ppm for 6 hours a day for 5 days a week for their life spans. The observed tumor types include nasal cavity carcinomas, adenocarcinomas, aveolar/bronchiolar carcinomas, circulatory system hemangiosarcomas, mammary gland fibroadenomas/adenocarcinomas,

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subcutaneous fibrosarcomas, and tunica vaginalis mesotheliomas. The inhalation URV was set at $0.00022 \text{ (mg/m}^3\text{)}^{-1}$. The URV was converted to an inhalation SF of $0.77 \text{ (mg/kg-day)}^{-1}$ based on a conversion factor of $1000 \text{ }\mu\text{g/mg}$ and an assumed inhalation rate of $20 \text{ m}^3\text{/day}$ and a body weight of 70 kg . With regard to their confidence in the inhalation URV, the EPA believes that an adequate number of animals were used (IRIS 1998).

1,4-Dichlorobenzene

The inhalation RfC for 1,4-dichlorobenzene is based on a study in which 28 male and 28 female rats were exposed to 1,4-dichlorobenzene vapor at concentrations of 0, 50, 150 or 450 ppm (0, 201, 902 or 2705 mg/m^3) for 10 weeks, 6 hours/day, 7 days/week, then mated for 3 weeks. For exposure of the next generation, selected F1 weanlings were exposed to 1,4-dichlorobenzene for 11 weeks, then mated. Adverse effects included reduced body weight, reduced food consumption, increased incidence of tremors, unkempt appearance, and nasal and ocular discharges. At 450 ppm there was a statistically significant decrease in live births, decrease in pup weights, and decreased pup survival at day 4 of lactation for both the F1 and F2 generations. The NOAEL was set at 50 ppm (75 mg/m^3). The NOAEL was adjusted to account for exposure duration and differences in inhalation rate and skin surface area between rats and humans. The resulting NOAEL(HEC) is 75 mg/m^3 . Based on an uncertainty factor of 100 (10 to account for sensitive individuals, 3 to account for interspecies variability, and 3 to account for a lack of chronic studies), the inhalation RfC was set at 0.8 mg/m^3 . This concentration was converted to an inhalation RfD of 0.23 mg/kg-day based on an assumed inhalation rate of $20 \text{ m}^3\text{/day}$ and a body weight of 70 kg . EPA's overall confidence in the inhalation RfC is medium because EPA has medium confidence in the study used (study employed an extensive reproductive protocol including histopathologic examination of tissues of adults and offspring) and medium confidence in the available data base (there are a number of supporting studies for the developmental and reproductive toxicology data base) (IRIS 1998).

An inhalation SF has not been developed for 1,4-dichlorobenzene. However, an oral SF for this chemical has been developed by EPA, and this value was used as a surrogate based on route-to-route extrapolation. The oral SF is based on a study in which mice were administered 1,4-dichlorobenzene by gavage for 103 weeks. The observed tumor type was liver tumors. The oral SF was set at $0.024 \text{ (mg/kg-day)}^{-1}$. Information regarding the number of animals, dosing levels, and confidence level was not provided (HEAST 1997, 58968).

Dichlorodifluoromethane

The inhalation RfC for dichlorodifluoromethane is based on a study in which guinea pigs were dosed intermittently by inhalation for 6 weeks; specific information regarding the number of animals and dose levels tested was not provided. Observed adverse effects included liver lesions. Based on an uncertainty factor of 10,000, the inhalation RfC was set at 0.2 mg/m^3 ; specific information regarding the components of the uncertainty factor was not provided. This concentration was converted to an inhalation RfD of 0.057 mg/kg-day based on an assumed inhalation rate of $20 \text{ m}^3\text{/day}$ and a body weight of 70 kg . Information regarding EPA's confidence in the inhalation RfC was not provided (HEAST 58968, 1997).

1,1-Dichloroethene

An inhalation RfC has not been developed for 1,1-dichloroethene. However, an oral RfD for this chemical has been established by EPA, and this value was used as a surrogate based on route-to-route extrapolation. The oral RfD is based on a study in which 48 male and 48 female rats were administered

50, 100, or 200 ppm 1,1-dichloroethene in drinking water for a period of 2 years. Observed adverse effects included hepatic lesions. A NOAEL was not established; therefore, the LOAEL was set at 50 ppm, which was converted to 9 mg/kg-day by the authors of the study. Based on an uncertainty factor of 1000 (10 because the effect level was a LOAEL instead of a NOAEL, 10 to account for interspecies variability, and 10 to account for sensitive individuals), the oral RfD was set at 0.009 mg/kg-day. EPA's overall confidence in the oral RfD is medium because EPA has medium confidence in the study used (an appropriate number of animals and two species were used, several endpoints were measured over a chronic duration) and medium confidence in the available data base (there are corroborative chronic and subchronic oral bioassays) (IRIS 1998).

The inhalation URV for 1,1-dichloroethene is based on a study in which male and female mice were exposed to 10 and 25 ppm 1,1-dichloroethene for 4-5 days per week for 12 months. The observed tumor types included kidney adenocarcinoma, mammary carcinomas, and pulmonary adenomas. The inhalation URV was set at 0.00005 (mg/m³)⁻¹. The URV was converted to an inhalation SF of 0.18 (mg/kg-day)⁻¹ based on a conversion factor of 1000 µg/mg and an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. With regard to their confidence in the inhalation SF, the EPA believes that an adequate numbers of animals were used for approximately 50% of their lifetime; however, only two dose points provided data suitable for modeling (IRIS 1998).

Cis-1,2-Dichloroethene

An inhalation RfD has not been established for cis-1,2-dichloroethene. However, an oral RfD for this chemical has been established by EPA, and this value was used as a surrogate based on route-to-route extrapolation. The oral RfD is based on a 90-day subchronic rat study; specific information regarding the number of animals and dose levels tested was not provided. Adverse effects observed included decreased hematocrit and hemoglobin levels. The NOAEL was set at 32 mg/kg-day. Based on an uncertainty factor of 3000, the oral RfD was set at 0.01 mg/kg-day; specific information regarding the components of the uncertainty factor and EPA's confidence in the oral RfD was not provided (HEAST 1997, 58968).

1.2-Dichloropropane

The inhalation RfC for 1,2-dichloropropane is based on a study in which 10 male and 10 female rats per group were administered 0, 12.4, 41.3 or 124 mg/m³ of the chemical for 6 hours per day for 5 days a week for 113 weeks. Adverse effects included hyperplasia of the nasal mucosa and slight inflammation of the larynx. A NOAEL was not established; therefore, the LOAEL was set at 12.4 mg/m³. The LOAEL was adjusted to account for exposure duration and differences in inhalation rate and skin surface area between rats and humans. The resulting LOAEL(HEC) is 1.3 mg/m³. Based on an uncertainty factor of 300 (10 to account for sensitive individuals, 3 to account for the lack of chronic studies, 3 because the effect level was a LOAEL instead of a NOAEL, and 3 for interspecies variability), the RfC was set at 0.004 mg/m³. The RfC was converted to an inhalation RfD of 0.0011 mg/kg-day based on an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. EPA's overall confidence in the inhalation RfC is medium because EPA has high confidence in the study used (adequate numbers of animals, exposure concentrations and controls; examined three species; focused on known target organs; and the incidence and severity of the nasal lesions were exposure-related) and medium confidence in the available data base (there are no chronic inhalation studies) (IRIS 1998).

An inhalation SF has not been established for 1,2-dichloropropane. However, an oral SF for the chemical has been established by EPA, and this value was used as a surrogate based on route-to-route extrapolation. The oral SF is based on a study in which mice were administered 1,2-dichloropropane by

gavage. Specific information regarding the number of animals and dose levels tested and duration of study was not provided. The observed tumor type was liver tumors. The oral SF was set at $0.068 \text{ (mg/kg-day)}^{-1}$. Information regarding the EPA's confidence in this SF was not provided (HEAST 1997, 58968).

1,3-Dichloropropene

The inhalation RfC for 1,3-dichloropropene is based on a study in which 50 male and 50 female mice were exposed to 0, 3.7, 14.7 or 44.6 mg/m^3 of 1,3-dichloropropene for 6 hours per day for five days a week for two years. Observed adverse effects included changes in the urinary bladder and hypertrophy/hyperplasia of the nasal respiratory epithelium. The NOAEL was set at 3.7 mg/m^3 . The NOAEL was adjusted to account for exposure duration and differences in the inhalation rate and skin surface area between mice and humans. The resulting NOAEL(HEC) is 0.69 mg/m^3 . Based on an uncertainty factor of 30 (10 to account for sensitive individuals and 3 to account for interspecies variability), the inhalation RfC was set at 0.02 mg/m^3 . The RfC was converted to an inhalation RfD of 0.0057 mg/kg-day based on an assumed inhalation rate of $20 \text{ m}^3/\text{day}$ and a body weight of 70 kg. EPA's overall confidence in the inhalation RfC is high because EPA has high confidence in the study used (well-designed study using two species and animals of both sexes and including detailed histopathological examinations of numerous tissues; a NOAEL and LOAEL were defined) and high confidence in the available data base (several studies reported similar effects at comparable exposure levels) (IRIS 1998).

The inhalation URV for 1,3-dichloropropene is based on a study in which mice were exposed intermittently by inhalation to the chemical for two years. The observed tumor type was adenoma of the lung. Specific information regarding the number of animals and dose levels tested was not provided. The inhalation URV is set at $0.000037 \text{ (mg/m}^3\text{)}^{-1}$. The URV was converted to an inhalation SF of $0.13 \text{ (mg/kg-day)}^{-1}$ based on a conversion factor of $1000 \text{ } \mu\text{g/mg}$ and an assumed inhalation rate of $20 \text{ m}^3/\text{day}$ and a body weight of 70 kg. Information regarding EPA's confidence in the inhalation URV was not provided (HEAST 1997, 58968).

Ethyl Acrylate

An inhalation SF has not been developed for ethyl acrylate. However, EPA has developed an oral SF, and this value was used as a surrogate based on route-to-route extrapolation. The oral SF is based on a study in which rats were fed ethyl acrylate by gavage for 104 weeks. Information regarding the number of animals and dose levels tested was not provided. The observed tumor type was tumors in the forestomach. The oral SF was set at $0.048 \text{ (mg/kg-day)}^{-1}$. Information regarding EPA's confidence in the oral SF was not provided (HEAST 1997, 58968).

Indeno(1,2,3-cd)pyrene

Toxicity criteria have not been developed for indeno(1,2,3-cd)pyrene; however, EPA has developed a TEF for this chemical based on its relative toxicity to B(a)P. The TEF for indeno(1,2,3-cd)pyrene is 0.1; therefore, the oral and inhalation SFs are $0.73 \text{ (mg/kg-day)}^{-1}$ and $0.31 \text{ (mg/kg-day)}^{-1}$, respectively (Smucker 1998, 58751).

Isobutane

EPA has not developed an inhalation or oral RfD for isobutane. For purposes of this assessment, an inhalation RfD was developed for this chemical based on information contained in the scientific literature. A search of the HSDB identified one subchronic study and numerous acute studies of the toxicity of isobutane. Of these studies, the subchronic study conducted by Stewart et. al. (1977, 58913) is best

TABLE F-2.2-1

PLANT ESLs FOR SOIL CONCENTRATIONS OF RADIOACTIVE ANALYTES

Analyte	Plant ESL(pCi/g)
Cesium-137	2.7E+03
Plutonium-239	2.3E+02

TABLE F-2.2-2

INVERTEBRATE ESLs FOR SOIL CONCENTRATIONS OF RADIOACTIVE ANALYTES

Analyte	Invertebrate ESL (pCi/g)
Cesium-137	5.2E+03
Plutonium-239	9.3E+01

TABLE F-2.2-3

WILDLIFE ESLs IN UNITS OF PC/G FOR SOIL CONCENTRATION OF RADIOACTIVE ANALYTES

Analyte	ESL Robin	ESL Kestral	ESL Kestral (100% flesh diet)	ESL Cottontail	ESL Mouse	ESL Shrew	ESL Fox
Cesium-137	43	370	1.6E+03	1.0E+03	180	180	1.0E+03
Plutonium-239	33	340	8.7E+03	1.9E+04	160	150	1.2E+04

TABLE F-2.2-4

BIOACCUMULATION FACTORS (UNITLESS) USED IN EXPOSURE MODELS

FOR RADIOACTIVE ANALYTES

Analyte	Soil-to-Plant Bioaccumulation Factor ^a	Soil-to-Invertebrate Bioaccumulation Factor ^b	Food-to-Muscle Transfer Factor ^a
Cesium-137	4.00E-02	1.00E+00	3.00E-02
Plutonium-239/240	1.00E-03	1.00E+00	1.00E-04

^aFrom Wang et al. (1993).^bDefault value.

suitable for developing an inhalation RfD. In this study, human volunteers were exposed to 250 to 1000 ppm of isobutane in a controlled-environment chamber. There were no untoward responses to these acute exposures. These volunteers were then exposed to isobutane at concentrations of 500 ppm for 1, 2, or 8 hours per day for 2 weeks. No untoward subjective responses or abnormal physiological responses occurred during or following these exposures. Special emphasis was placed on evaluating the cardiac and pulmonary responses to these exposures. For purposes of this evaluation, 500 ppm was selected as the no observable effect level (NOEL), which is equivalent to approximately 1200 mg/m³. Based on an uncertainty factor of 100 (10 to account for a lack of chronic studies and 10 to account for interspecies variability) and a modifying factor of 10 (based on the fact that there is only one study), the RfC was set at 1.2 mg/m³. This value was converted to an inhalation RfD of 0.34 mg/kg-day based on an assumed inhalation rate of 20 m³/day and a body weight of 70 kg.

Isoprene

An inhalation SF for isoprene has not been developed. However, the inhalation SF for 1,3-butadiene was used as a surrogate based on similar chemical structure and reactivity.

2-Methylnaphthalene

EPA has not established toxicity criteria for 2-methylnaphthalene. However, the inhalation RfD for naphthalene was used as a surrogate based on similar chemical and physical structure.

Naphthalene

The oral and inhalation RfDs for naphthalene are 0.02 mg/kg-day and 0.00086 mg/kg-day, respectively, as reported by EPA Region 9 (Smucker 1998, 58751). Information regarding the type of study, number of animals and dose levels tested, uncertainty factors, and confidence level was not provided.

Nitrobenzene

The inhalation RfC for nitrobenzene is based on a study in which groups of 10 male and 10 female mice were administered three different dose levels of the chemical for 90 days. Observed adverse effects included lesions in kidney, liver and adrenal areas; hematological effects were also observed. A NOAEL was not established; therefore, the LOAEL was set at 25 mg/m³ (IRIS-1998). Based on the uncertainty factor of 10,000, the inhalation RfC was set at 0.002 mg/m³; specific information regarding the uncertainty factor was not provided (HEAST 1997, 58968). This concentration was converted to an inhalation RfD of 0.00057 mg/kg-day based on an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. Information regarding EPA's confidence in the inhalation RfC was not provided (HEAST 1997, 58968).

2-Nitropropane

The inhalation RfC for 2-nitropropane is based on study in which 125 male and 125 female rats received 0 and 78 mg/m³ of the chemical for 7 hours per day for 5 days a week for 22 months. Ten animals per group were sacrificed at 1, 3, 6, and 12 months. Recovery groups were also studied in which animals

TABLE F-2.3-1
PLANT ESLS FOR SOIL CONCENTRATIONS OF INORGANIC ANALYTES

Analyte *	Plant ESL (mg/kg)	Form of Chemical Tested	Test Species	Reference	Comments
Antimony	0.5	Not specified	Not specified	Efroymsen et al. (1997, 59231), Kabata-Pendias and Pendias (1984, 59814)	Based on secondary source information with no experimental details.
Beryllium	1.0	Not specified	Not specified	Kabata-Pendias and Pendias (1984)	Based on secondary source information with no experimental details.
Cadmium	1.0	Various	Various	Will and Suter (1995), Efroymsen et al. (1997, 59231)	Benchmark estimated as the 10th percentile from 73 reported LOAEL values for plants.
Chromium (total)	3.1	—	—	Efroymsen et al. (1997, 59231)	—
Copper	100	CuSO ₄	Little bluestem	Miles and Parker (1979, 59281)	Little bluestem is native to the natural vegetation at KFC.
Lead	20.0	PbCl ₂	Sycamore	Carlson and Bazzaz (1977, 59215), Efroymsen et al. (1997, 59231)	Same LOAEL also found for red oak.
Mercury (inorganic)	3.5	Not specified	Not specified	Kabata-Pendias and Pendias (1984), Efroymsen et al. (1997, 59231)	Based on secondary source information with no experimental details.
Nickel	20.0	Various	Various	Will and Suter (1995), Efroymsen et al. (1997, 59231)	Benchmark estimated as the 10th percentile from 14 reported LOAEL values for plants.
Silver	0.2	Not specified	Not specified	Kabata-Pendias and Pendias (1984), Efroymsen et al. (1997, 59231)	Based on secondary source information with no experimental details.
Thallium	0.1	Not specified	Not specified	Kabata-Pendias and Pendias (1984), Efroymsen et al. (1997, 59231)	Based on secondary source information with no experimental details.
Uranium	0.5	Uranyl nitrate	Swiss chard	Sheppard et al. (1983), Efroymsen et al. (1997, 59231)	Lowest concentration tested.
Zinc	10.0	Various	Various	Will and Suter (1995, 59312), Efroymsen et al. (1997, 59231)	Benchmark estimated as the 10th percentile from 14 reported LOAEL values for plants.

* There were no studies found for calcium, chromium, iron, and sodium

TABLE F-23-2

PLANT ESLs FOR SOIL CONCENTRATION OF SEMIVOLATILE ORGANIC ANALYTES

Analyte ^a	Plant ESL (mg/kg)	Test Species	Reference	Comments
Acenaphthene	2.5	—	Newell 1998, 59188	—
Di-n-butylphthalate	200	Corn and Soybeans	Newell 1998, 59188	Benchmark based on LOAELs (lowest concentration tested). Same species had NOAELs of 2.00 mg/kg in other soils tested.
Dibenzofuran	61.7	Lettuce	Newell 1998, 59188	Benchmark is based on response of fresh shoot weight to chemical
Benzo(a)anthracene	18	Wheat and barley	Newell 1998, 59188	Benchmark based on a NOAEL
Benzo(b)fluoranthene	18	Wheat and barley	Newell 1998, 59188	Benchmark based on a NOAEL

^a There were no studies found for Bis(2-ethylhexyl)phthalate, Anthracene, Benzo(k)fluoranthene, Benzo(a)pyrene, Benzo(g,h,i)perylene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Methylanthracene(2-), Naphthalene, Phenanthrene, Pyrene

TABLE F-23-3

PLANT ESLs FOR SOIL CONCENTRATION OF PCBs/PESTICIDES AND VOLATILE ORGANIC ANALYTES

Analyte ^a	Plant ESL (mg/kg)	Test Species	Reference	Comments
Aroclor-1254	10.0	Pigweed	Strek and Weber (1980, 59234)	40 mg/kg was the lowest effect concentration for the most sensitive strain of pigweed
Toluene	200	Corn and Soybeans	Newell 1998, 59188	Benchmark based on LOAELs (lowest concentration tested). Same species had NOAELs of 2.00 mg/kg in other soils tested.

^a There were no studies found for Aroclor-1260, DDT[4,4'-], Methoxychlor[4,4'-], Chlordane[gamma-], Chlordane[alpha-], DDE[4,4'-], Tetrachloroethene, Trichloroethane[1,1,1-], Dichloroethane[1,1-]

INVERTEBRATE ESLs IN UNITS OF MG/KG SOIL CONCENTRATION OF INORGANIC ANALYTES*

* There were no ESLs provided for Antimony, Beryllium, Calcium, Chromium, Iron, Sodium, Thallium, Uranium in TNRC (1996)

INVERTEBRATE ESLs IN UNITS OF MG/KG SOIL CONCENTRATION OF SEMIVOLATILE
ORGANIC ANALYTES

* There were no ESLs provided for Bis(2-ethylhexyl)phthalate, Di-n-butylphthalate, Dibenzofuran, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Benzo(g,h,i)perylene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, indeno(1,2,3-cd)pyrene, 2-Methylnaphthalene, Naphthalene, Phenanthrene, Pyrene in TNRC (1998).

WILDLIFE ESLs IN UNITS OF MG/KG SOIL CONCENTRATION OF INORGANIC ANALYTES

* No toxicity data were found for calcium, iron and sodium

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TABLE F-2.3-7

WILDLIFE ESLS IN UNITS OF MG/KG SOIL CONCENTRATION OF SEMIVOLATILE ORGANIC ANALYTES

Analyte *	ESL Robin	ESL Kestral	ESL Kestral (100% flesh diet)	ESL Cotton-tail	ESL Mouse	ESL Shrew	ESL Fox
Bis(2-ethylhexyl)phthalate	0.77	0.45	0.24	1.9E+04	62	60	8.9
Di-n-butylphthalate	0.1	0.98	15	1.4E+05	2.4E+03	2.4E+03	1.4E+05
Acenaphthene	n/a	n/a	n/a	8.3E+03	310	340	3.9E+04
Anthracene	n/a	n/a	n/a	2.4E+04	440	450	2.9E+04
Benzo(a)anthracene	n/a	n/a	n/a	1.1E+03	6.8	6.7	43
Benzo(b)fluoranthene	n/a	n/a	n/a	3.3E+03	15	15	30
Benzo(k)fluoranthene	n/a	n/a	n/a	5.9E+03	28	27	54
Benzo(a)pyrene	n/a	n/a	n/a	780	3.9	3.8	4
Benzo(g,h,i)perylene	n/a	n/a	n/a	6.3E+03	26	25	16
Chrysene	n/a	n/a	n/a	1.1E+03	6.8	6.7	43
Dibenz(a,h)anthracene	n/a	n/a	n/a	1.3E+03	4.8	4.7	3.0
Fluoranthene	n/a	n/a	n/a	5.2E+03	53	53	1.2E+03
Fluorene	n/a	n/a	n/a	2.1E+03	56	58	5.5E+03
Indeno(1,2,3-cd)pyrene	n/a	n/a	n/a	6.8E+3	26	26	18
2-Methylnaphthalene	n/a	n/a	n/a	270	11	12	1.4E+03
Naphthalene	.15	1.5	62	300	21	26	3.4E+03
Phenanthrene	n/a	n/a	n/a	1.2E+04	230	230	1.5E+04
Pyrene	n/a	n/a	n/a	3.1E+03	32	32	750

* no mammalian nor avian toxicity data were found for Dibenzofuran

n/a - avian toxicity data were not available for this analyte

TABLE F-23-8
WILDLIFE ESLS FOR SOIL CONCENTRATION OF PCBS/PESTICIDES AND VOLATILE ORGANIC ANALYTES

Chemical Name	ESL Robin	ESL Kestral	ESL Kestral (Falcon)	ESL Cottontail	ESL Mouse	ESL Shrew	ESL Fox
Aroclor-1254	0.14	0.79	0.91	52	0.26	0.26	0.76
Aroclor-1260	0.037	.19	.20	31	0.15	0.15	0.38
DDT[4,4']	2.1E-03	6.0E-03	4.2E-03	730	2.9	2.9	2.6
Methoxychlor[4,4']	18	1.6E+02	1.0E+02	1.6E+03	17	17	420
Chlordane[gamma-]	1.7	6.5	5.4	1.0E+03	4.4	4.3	6.6
Chlordane[alpha-]	1.7	6.5	5.4	1.0E+03	4.4	4.3	6.6
DDE[4,4']	1.7E-03	3.1E-03	1.9E-03	9.6E+03	36	35	19
Tetrachloroethene	n/a	n/a	n/a	34	4.9	7.7	1.0E+03
Trichloroethane[1,1,1-]	n/a	n/a	n/a	1.9E+04	3.2E+03	5.6E+03	7.4E+05
Dichloroethane[1,1-]	n/a	n/a	n/a	2900	740	2300	2.8E+05
Toluene	n/a	n/a	n/a	710	94	140	1.9E+04

n/a - avian toxicity data were not available for this analyte

TABLE F-23-9
BIOACCUMULATION FACTORS USED IN EXPOSURE MODELS FOR INORGANIC ANALYTES

Analyte	Soil-to-Plant Bioaccumulation Factor	Soil-to-Invertebrate Bioaccumulation Factor	Food-to-Muscle Transfer Factor
Antimony	2.00×10^{-1a}	1.00×10^{0b}	1.00×10^{-3c}
Beryllium	1.00×10^{-2a}	1.00×10^{0b}	1.00×10^{-3a}
Cadmium	5.50×10^{-1a}	6.00×10^{-1a}	5.50×10^{-4a}
Chromium (total)	4.00×10^{-2c}	1.30×10^{-1a}	3.00×10^{-2c}
Copper	8.00×10^{-1f}	2.50×10^{-1d}	1.00×10^{-2a}
Lead	9.00×10^{-2c}	4.00×10^{-2d}	8.00×10^{-4c}
Mercury	1.00×10^{0c}	1.00×10^{0b}	2.50×10^{-1a}
Nickel	2.00×10^{-1c}	3.80×10^{-1a}	6.00×10^{-3a}
Silver	1.00×10^{0c}	2.50×10^{-1d}	5.00×10^{-3c}
Thallium	4.00×10^{-2a}	1.00×10^{0b}	4.00×10^{-2a}
Uranium	2.30×10^{-2f}	1.00×10^{0b}	1.00×10^{-2c}
Zinc	1.50×10^{0a}	3.00×10^{-1d}	1.00×10^{-1a}

^aFrom Baer et al. 1984, 50788

^bDefault value

^cFrom Newell 1998, 50188

^dFrom Newell 1998, 50188

^eFrom Ma 1982, 50272

^fFrom Newell 1998, 50188

TABLE F-2.3-10
BIOACCUMULATION FACTORS USED IN EXPOSURE MODELS FOR ORGANIC ANALYTES

Analyte	Cas #	Log K_{ow} ^a	Soil-to-Plant Bioaccumulation Factor ^b	Soil-to-Invertebrate Bioaccumulation Factor ^c	Food-to-Muscle Transfer Factor ^d
Bis(2-ethylhexyl)phthalate	117-81-7	7.30	2.34×10^{-3}	2.95×10^0	15.5×10^0
Dibenzofuran	132-64-9	4.12 ^e	1.61×10^{-1}	2.05×10^0	2.65×10^{-3}
1,1-Dichloroethane	75-34-3	1.79	3.58×10^0	1.56×10^0	3.2×10^{-5}
Di-n-butylphthalate	84-74-2	4.61	8.38×10^{-2}	2.16×10^0	2.58×10^{-2}
Tetrachloroethene	127-18-4	2.67	1.11×10^0	1.73×10^0	2.6×10^{-4}
Toluene	108-88-3	2.75	9.97×10^{-1}	1.75×10^0	3.09×10^{-4}
1,1,1-Trichloroethane	71-55-6	2.48	1.43×10^0	1.69×10^0	1.63×10^{-4}
Acenaphthene	83-32-9	3.92	2.10×10^{-1}	2.00×10^0	5.00×10^{-3}
Anthracene	120-12-7	4.55	9.08×10^{-2}	2.15×10^0	2.24×10^{-2}
Benzo(a)anthracene	56-55-3	5.70	1.97×10^{-2}	2.45×10^0	3.44×10^{-1}
Benzo(a)pyrene	50-32-8	6.11	1.14×10^{-2}	2.57×10^0	9.15×10^{-1}
Benzo(b)fluoranthene	205-99-2	6.20	1.01×10^{-2}	2.60×10^0	1.13
Benzo(g,h,i)perylene	191-24-2	6.70	5.19×10^{-3}	2.75×10^0	3.72×10^0
Benzo(k)fluoranthene	207-08-9	6.20	1.01×10^{-2}	2.60×10^0	1.13
Chrysene	218-01-9	5.70	1.97×10^{-2}	2.45×10^0	3.45×10^{-1}
Dibenz(a,h)anthracene	53-70-3	6.69	5.26×10^{-3}	2.75×10^0	3.63×10^0
Fluoranthene	206-44-0	5.12	4.25×10^{-2}	2.29×10^0	8.68×10^{-2}
Fluorene	86-73-7	4.21	1.43×10^{-1}	2.07×10^0	9.97×10^{-3}
Indeno(1,2,3-cd)pyrene	193-39-5	6.65	5.55×10^{-3}	2.74×10^0	3.30×10^0
2-Methylnaphthalene	91-57-6	3.86 ^e	2.27×10^{-1}	1.98×10^0	4.33×10^{-3}
Naphthalene	91-20-3	3.36	4.43×10^{-1}	1.87×10^0	1.32×10^{-3}
Phenanthrene	85-01-8	4.55	9.08×10^{-2}	2.15×10^0	2.24×10^{-2}
Pyrene	129-00-0	5.11	4.31×10^{-2}	2.29×10^0	8.48×10^{-2}
Chlordane[gamma-]	5103-74-2	6.32	8.61×10^{-3}	2.63×10^0	1.51
Chlordane[alpha-]	5103-71-9	6.32	8.61×10^{-3}	2.63×10^0	1.51
DDE[4,4'-]	72-55-9	6.76	4.79×10^{-3}	2.77×10^0	4.29×10^0
DDT[4,4'-]	50-29-3	6.53	6.51×10^{-3}	2.70×10^0	2.48
Methoxychlor[4,4'-]	72-43-5	5.08	4.48×10^{-2}	2.28×10^0	7.89×10^{-2}
PCB, Aroclor-1254	11097-69-1	6.04 ^d	1.25×10^{-2}	2.55×10^0	7.74×10^{-1}
PCB, Aroclor-1260	11096-82-5	6.11 ^d	1.14×10^{-2}	2.57×10^0	9.15×10^{-1}

^aFrom USEPA (1985, 58960), except where noted.

^bFrom equations in Travis and Arma (1988, 59355).

^cFrom equations in Connell and Markwell (1990, 59354).

^dFrom Ryan et al. (1988, 58924).

^eFrom NLM (1997).

TABLE F-2.3-11

MAMMALIAN NO-OBSERVED-ADVERSE-EFFECTS-LEVELS (NOAELS) FOR INORGANIC ANALYTES

Analyte	Test Species NOAEL (mg/kg/day)	Test Species (Body Weight) ^a	Reference	Comments
Antimony	0.125	Mouse (0.03)	Schroeder et al. (1968, 59311)	As antimony potassium tartrate. Based on chronic LOAEL of 1.25 mg/kg/d and an uncertainty factor of 0.1.
Beryllium	0.66	Rat (0.35)	Schroeder and Mitchener (1975, 59309)	As beryllium sulfate. The NOAEL represents the maximum dose of the study, which produced no adverse effect.
Cadmium	1.0	Rat (0.303)	Sulou et al. (1980, 59326)	As CdCl ₂ .
Chromium (total)	2,737	Rat (0.35)	Ivankovlo and Preussmann (1975, 59251)	As Cr ⁺³ in Cr ₂ O ₃ . The NOAEL represents the maximum dose of the study, which produced no adverse effect.
Copper	11.7	Mink (1.0)	Aulerich et al. (1982, 59199)	As copper sulfate.
Lead	8.0	Rat (0.35)	Newell 1998, 59188	As lead acetate.
Mercury (organic)	0.032	Rat (0.35)	Verschuuren et al. (1976, 59343)	As methyl mercury chloride
Nickel	40	Rat (0.35)	Ambrose et al. (1976, 59793)	As nickel sulfate hexahydrate.
Silver	17.8	Rat (0.35)	Newell 1998, 59188	As silver nitrate. Ventricular hypertrophy observed at 89 mg/kg/d. Because this LOAEL is not considered to be of significance to populations, an uncertainty factor of 0.2 was applied.
Thallium	0.0074	Rat (0.365)	Formigli et al. (1986, 59234)	As thallium sulfate. Based on a subchronic LOAEL of 0.74 mg/kg/d with an uncertainty factor of 0.01.
Uranium	3.07	Mouse (0.028)	Paternain et al. (1989, 59294)	As uranyl acetate.
Zinc	160	Rat (0.35)	Schlicker and Cox (1968, 59308p)	As zinc oxide.

TABLE F-23-12

MAMMALIAN NO-OBSERVED-ADVERSE-EFFECTS-LEVELS (NOAELS) FOR SEMIVOLATILE ORGANIC ANALYTES

Analyte	Test Species NOAEL (mg/kg/day)	Test Species (Body Weight) ^a	Reference	Comments
Bis(2-ethylhexyl) phthalate	18.3	Mouse (0.03)	Lamb et al. (1987)	Chronic study that determined the NOAEL to be 100 mg/kg in diet based on the lowest of three concentrations evaluated
Acenaphthene	1.0	Mouse (0.03)	(see Comments)	Insufficient toxicity data available for this compound. The NOAEL for benzo(a)pyrene is used as default.
Anthracene	100	Mouse (0.03)	Newell 1998, 59188	NOAEL based on the highest dose (1,000 mg/kg/d, subchronic) and an uncertainty factor of 0.1.
Benzo(a) anthracene	1.0	Mouse (0.03)	(see Comments)	Insufficient toxicity data available for this compound. The NOAEL for benzo(a)pyrene is used as default.
Benzo(b) fluoranthene	1.0	Mouse (0.03)	(see Comments)	Insufficient toxicity data available for this compound. The NOAEL for benzo(a)pyrene is used as default.
Benzo(k) fluoranthene	1.0	Mouse (0.03)	(see Comments)	Insufficient toxicity data available for this compound. The NOAEL for benzo(a)pyrene is used as default.
Benzo(a)pyrene	1.0	Mouse (0.03)	Newell 1998, 59188	Considered the most toxic PAH to wildlife; therefore, used as the default for PAHs with insufficient toxicity information for NOAEL determination.
Benzo(g,h,i)perylene	1.0	Mouse (0.03)	(see Comments)	Insufficient toxicity data available for this compound. The NOAEL for benzo(a)pyrene is used as default.
Chrysene	1.0	Mouse (0.03)	(see Comments)	Insufficient toxicity data available for this compound. The NOAEL for benzo(a)pyrene is used as default.
Dibenz(a,h) anthracene	1.0	Mouse (0.03)	(see Comments)	Insufficient toxicity data available for this compound. The NOAEL for benzo(a)pyrene is used as default.
Fluoranthene	12.5	Mouse (0.03)	Newell 1998, 59188	Based on subchronic NOAEL of 125 mg/kg/d and an uncertainty factor of 0.1.
Fluorene	12.5	Mouse (0.03)	Newell 1998, 59188	Based on subchronic NOAEL of 125 mg/kg/d and an uncertainty factor of 0.1.
Indeno(1,2,3-cd)pyrene	1.0	Mouse (0.03)	(see Comments)	Insufficient toxicity data available for this compound. The NOAEL for benzo(a)pyrene is used as default.
2-Methylnaphthalene	2.45	Rat (0.35)	(see Comments)	Test species NOAEL based on a rat NOAEL for pyrene (4.06 mg/kg/d, scaled from mouse NOAEL of 7.5 mg/kg/d) and ratio of LD ₅₀ values (1,630/2,700) from RTECS (1997).
Naphthalene	5.00	Mouse (0.03)	(see Comments)	Test species NOAEL based on mouse NOAEL for pyrene (7.5 mg/kg/d) and ratio of LD ₅₀ values (533/800) from RTECS (1997).
Phenanthrene	1.0	Mouse (0.03)	(see Comments)	Insufficient toxicity data available for this compound. The NOAEL for benzo(a)pyrene is used as default.
Pyrene	7.5	Mouse (0.03)	Newell 1998, 59188	Based on subchronic NOAEL of 75 mg/kg/d and an uncertainty factor of 0.1.

TABLE F-2.3-13

MAMMALIAN NO-OBSERVED-ADVERSE-EFFECTS-LEVELS (NOAELS) FOR PCBs/PESTICIDES AND VOLATILE ORGANIC ANALYTES

Analyte	Test Species NOAEL (mg/kg/day)	Test Species (Body Weight) ^a	Reference	Comments
Aroclor-1254	0.068	Oldfield mouse (0.014)	McCoy et al. (1995)	Based on chronic LOAEL of 0.68 mg/kg/d and an uncertainty factor of 0.1.
Aroclor-1260	0.040	Rat (0.35)	(see Comments)	Test species NOAEL based on rat NOAEL for aroclor-1254 (0.0304 mg/kg/d, scaled from NOAEL for oldfield mouse) and ratio of LD ₅₀ values (1,315/1,010) from RTECS (1997).
DDT[4,4'-]	0.8	Rat (0.35)	Sample et al. (1996, 59306)	Chronic study that determined the NOAEL to be 10 mg/kg in diet based on the lowest of four concentrations evaluated
Di-n-butylphthalate	550	Mouse (0.03)	Lamb et al. (1987)	Chronic study that determined the NOAEL to be 3000 mg/kg in diet based on the middle of three concentrations evaluated
Methoxychlor[4,4'-]	4.0	Rat (0.35)	Sample et al. (1996, 59306)	Chronic study that determined the NOAEL to be 50 mg/kg in diet based on the second lowest of four concentrations evaluated
Chlordane[gamma-]	1.18	Mouse (0.03)	Sample et al. (1996, 59306)	Chronic study that determined the NOAEL to be 25 mg/kg in diet based on the lowest of three concentrations evaluated
Chlordane[alpha-]	1.18	Mouse (0.03)	Sample et al. (1996, 59306)	Chronic study that determined the NOAEL to be 25 mg/kg in diet based on the lowest of three concentrations evaluated
DDE[4,4'-]	10	Rat	Kornburst et al. (1986)	Reproduction and growth of offspring effects
Tetrachloroethene	1.4	Mouse (0.03)	Buben and O'Flaherty (1985, 59212)	Based on a subchronic NOAEL of 20 mg/kg/d (5 out of 7 days), multiplied by 0.07 to convert it to a chronic NOAEL for 7 out of 7 days.
Trichloroethane[1,1,1-]	1000	Mouse (0.03)	Lane et al (1982, 59263)	The NOAEL represents the maximum dose of the study, which produced no significant adverse effect.
Dichloroethane[1,1-]	382	Mouse	PRC 1996, 59989	Based on chronic NOAEL
Toluene	26	Mouse (0.03)	Nawrot and Staples (1979, 59824)	Based on chronic LOAEL of 260 mg/kg/d and an uncertainty factor of 0.1

TABLE F-2.3-14
AVIAN NO-OBSERVED-ADVERSE-EFFECTS-LEVELS (NOAELS) FOR INORGANIC ANALYTES

Analyte	Test Species NOAEL (mg/kg/day)	Test Species (Body Weight) ^a	Reference	Comments
Cadmium	1.45	Mallard (1.153)	White and Finley (1978, 59349)	As CdCl ₂ .
Chromium (total)	1.0	Black Duck (1.25)	Haseltine et al. (1985) (unpublished), as cited in Sample et al. (1996, 59306)	As Cr ³⁺ in CrK(SO ₄) ₂ .
Copper	47	Chicks (0.534)	Mehring et al. (1960, 59279)	As copper oxide.
Lead	3.85	American Kestrel (0.13)	Pattee (1984, 59295)	As metallic lead. The NOAEL is based on the maximum dose, which produced no significant adverse effects.
Mercury (organic)	0.0064	Mallard (1.0)	Heinz (1979, 59246)	As methyl mercury dicyandiamide. Based on a single dose that was considered to be a chronic LOAEL and an uncertainty factor of 0.1.
Nickel	77.4	Mallard (0.782)	Cain and Pafford (1981, 59213)	As nickel sulfate.
Uranium	16	Black Duck (1.25)	Haseltine and Sileo (1983, 59243)	As depleted metallic uranium. The NOAEL is based on highest dose (160 mg/kg/d, subchronic) and an uncertainty factor of 0.1.
Zinc	14.5	Chicken (1.935)	Stahl et al. (1990, 59321)	As zinc sulfate.

TABLE F-2.3-15

AVIAN NO-OBSERVED-ADVERSE-EFFECTS-LEVELS (NOAELS) FOR ORGANIC ANALYTES

Analyte	Test Species NOAEL (mg/kg/day)	Test Species (Body Weight) ^a	Reference	Comments
Aroclor-1254	0.18	Ring-Necked Pheasant (1.0)	Dahlgren et al. (1972, 59221)	Based on the lowest dose, which was considered to be a chronic LOAEL and an uncertainty factor of 0.1.
DDT[4,4'-]	0.0028	Brown Pelican	Sample et al. (1996, 59306)	Five year field study of reproductive effects on wild brown pelicans, 0.15 mg/kg in diet was assumed to be LOAEL and an uncertainty factor of 0.1 was applied to estimate the NOAEL.
Bis(2-ethylhexyl)phthalate	1.1	Ringed Dove (0.155)	Peakall (1974, 59297)	NOAEL based on single dose which produced no significant adverse effect.
Di-n-butylphthalate	0.11	Ringed Dove (0.155)	Peakall (1974, 59297)	NOAEL based on single dose which produced no significant adverse effect.
Methoxychlor[4,4'-]	20	Mallard Duck	PRC 1996, 59989	Based on subchronic LOAEL divided by 100.
Chlordane[gamma-]	2.14	Redwinged Blackbird	Sample et al. (1996, 59306)	Chronic study that determined the NOAEL to be 10 mg/kg in diet based on the lowest of three concentrations evaluated.
Chlordane[alpha-]	2.14	Redwinged Blackbird	Sample et al. (1996, 59306)	Chronic study that determined the NOAEL to be 10 mg/kg in diet based on the lowest of three concentrations evaluated.

were exposed for 3 and 12 months and maintained without exposure for 19 and 10 months, respectively. Adverse effects included liver focal vacuolization and nodules. A NOAEL was not established; therefore, the LOAEL was set at 78 mg/m³. The LOAEL was adjusted to account for duration and differences in inhalation rate and skin surface area between rats and humans. The resulting LOAEL(HEC) is 16 mg/m³. Based on an uncertainty factor of 1000 (10 to account for sensitive individuals, 10 because the effect level used was a LOAEL instead of a NOAEL, and 10 for an inadequate data base), the inhalation RfC was set at 0.02 mg/m³. This value was converted to an inhalation RfD of 0.0057 mg/kg-day based on an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. EPA's overall confidence in the inhalation RfC is low because EPA has low confidence in the study used (only a single exposure concentration was studied and a NOAEL was not identified) and low confidence in the available data base (lack of reproductive or developmental studies) (IRIS 1998).

The inhalation SF for 2-nitropropane is based on a 22-month intermittent inhalation rat study; specific information regarding the number of animals and dose levels tested was not provided. The observed tumor type was liver tumors. The inhalation SF was set at 9.4 (mg/kg-day)⁻¹. Information regarding the EPA's confidence in this SF was not provided (HEAST 1997, 58968).

Phenanthrene

EPA has not established toxicity criteria for phenanthrene. However, the oral RfD for anthracene was used as a surrogate based on similar chemical and physical structure (e.g., both have 3 rings, similar Henry's Law constants and soil sorption coefficients). The oral RfD for anthracene was based on a study in which groups of 20 male and 20 female mice were administered anthracene by oral gavage at doses of 0, 250, 500 and 1000 mg/kg-day, for at least 90 days. No adverse treatment related effects were observed. Therefore, the NOAEL was set at 1000 µg/kg-day. Based on an uncertainty factor of 3000 (10 to account for interspecies variability, 10 to account sensitive individuals, and 30 to account for a lack of chronic studies and for data base deficiencies), the oral RfD was set at 0.3 mg/kg-day. EPA's overall confidence in the oral RfD is low because EPA has low confidence in the study used (failure to identify a LOAEL) and low confidence in the available data base (lack of toxicity data in a second species and in developmental and reproductive studies) (IRIS 1998).

1,1,2,2-Tetrachloroethane

The inhalation URV for 1,1,2,2-tetrachloroethane is based on the results of an oral exposure study. In this study, 50 male and 50 female mice were administered 142 or 282 mg/kg-day of 1,1,2,2-tetrachloroethane in corn oil by gavage for 5 days a week for 12 weeks. The observed tumor type was hepatocellular carcinoma. The inhalation URV was set at 0.000058 (mg/m³)⁻¹. The URV was converted to an inhalation SF of 0.2 (mg/kg-day)⁻¹ based on a factor of 1000 µg/mg and an assumed inhalation rate of 20 m³/day and a body weight of 70 kg. With regard to their confidence in the inhalation URV, EPA believes that an adequate number of animals were used, malignancies increased as a function of treatment dose, and their incidence was significantly increased at both doses (IRIS 1998).

Tetrachloroethene

An inhalation RfD for tetrachloroethene has not been established. However, EPA has established an oral RfD for the chemical, and this value was used as a surrogate based on route-to-route extrapolation. The oral RfD is based on study in which mice were exposed to tetrachloroethene in corn oil by gavage at

doses of 0, 20, 100, 200, 500, 1500 or 2000 mg/kg for 5 days a week for 6 weeks. Observed adverse effects included increased liver to body weight ratios, decreased DNA content, hepatocellular necrosis, degeneration and polyploidy. The NOAEL was set at 20 mg/kg-day. This value was converted to 14 mg/kg-day to account for a 5 day per week dosing regimen. Based on an uncertainty factor of 1000 (10 to account for sensitive individuals, 10 to account for interspecies variability, and 10 because of a lack of chronic studies), the oral RfD was set at 0.01 mg/kg-day. EPA's overall confidence in the oral RfD is medium because EPA has low confidence in the study used (no one study combines the features desired for deriving an RfD and lack of complete histopathological examination at the NOAEL in the mouse study) and medium confidence in the available data base (data base is relatively complete but lacks studies of reproductive and teratology endpoints subsequent to oral exposure) (IRIS 1998).

An inhalation SF for tetrachloroethene has been developed by EPA's National Center for Environmental Assessment. This value is 0.002 (mg/kg-day)⁻¹. Specific information regarding the type of study, number of test organisms, adverse effects, and confidence was not provided (Smucker 1998, 58751).

Thallium (I) Sulfate

EPA has not established toxicity criteria for thallium. For purposes of this assessment, toxicity criteria for thallium sulfate were used. The oral RfD for thallium (I) sulfate is based on a subchronic study in which 20 male and 20 female rats were treated with 0, 0.01, 0.05, or 0.25 mg/kg-day of an aqueous solution for 90 days. No differences were observed in weight gain or loss, food consumption, or in absolute and relative organ weights among control and the treated groups. Moderate dose-related changes were observed in some blood chemistry. Findings observed at necropsy thought to be treatment-related were alopecia in female rats; however, the NOAEL was set at 0.25 mg/kg-day. Based on the uncertainty factor of 3000 (10 because of a lack of chronic studies, 10 to account for interspecies variability, 10 to account for sensitive individuals, and 3 to account for lack of reproductive and chronic toxicity data), the oral RfD was set at 0.00008 mg/kg-day. EPA's overall confidence in the oral RfD is low because EPA has low confidence in the study used (uncertainties in the results and because supporting studies show adverse health effects at doses slightly higher than the NOAEL) and low confidence in the available data base (only one subchronic study and some anecdotal human data was provided) (IRIS 1998).

An inhalation RfD has not been established for thallium; therefore, the oral RfD was used as a surrogate based on route-to-route extrapolation.

1.2.4-Trimethylbenzene

An inhalation RfD for 1,2,4-trimethylbenzene has been established by EPA's National Center for Environmental Assessment. This value is 0.0017 mg/kg-day. Information regarding the type of study, number of animals and dose levels tested, uncertainty factors, and confidence level was not provided (EPA 1996, 58917).

1.3.5-Trimethylbenzene

An inhalation RfD for 1,3,5-trimethylbenzene has been established by EPA's National Center for Environmental Assessment. This value is 0.0017 mg/kg-day. Information regarding the type of study, number of animals and dose level tested, uncertainty factors, and confidence level was not provided (Smucker 1998, 58751).

Vinyl Chloride

The inhalation SF for vinyl chloride is based on a study in which rats were administered vinyl chloride intermittently via inhalation for one year. The observed tumor type was tumors in the forestomach. The

Inhalation SF was set at 0.3 (mg/kg-day)⁻¹. Information regarding EPA's confidence in this SF was not provided (HEAST 1997, 58968).

Adult Lead Evaluation

EPA's interim guidance for assessing risks associated with exposure to lead in soil by adults is comprised of two steps. The components of the equations used for each step are presented below; values for each input parameter, including source and rationale, are summarized in Table 2.4.3.1-42 of this report.

Blood-Lead Level in Adult

$$PbB_{Adult} = \frac{[soil] \times BKSF \times IRs \times AFs \times EFs \times CF1 \times CF2}{AT} + PbB_{Adult,0}$$

Where:

PbB_{Adult}	=	Central estimate of blood lead concentration in adult (μg/dl)
$[Soil]$	=	Chemical concentration in soil (mg/kg)
BKSF	=	Biokinetic slope factor (μg/dl per μg/day)
IRs	=	Soil ingestion rate (g/day)
AFs	=	Absorption fraction (unitless)
EFs	=	Exposure frequency (days/year)
CF1	=	Conversion factor (0.001 kg/g)
CF2	=	Conversion factor (1000 μg/mg)
AT	=	Averaging time (days/year)
$PbB_{Adult,0}$	=	Typical blood-lead concentration in adults (μg/dl)

Blood-Lead Level in Fetus

$$PbB_{Fetal,0.95} = PbB_{Adult} \times (GSDi_{Adult})^{1.645} \times Rf / m$$

Where:

$PbB_{Fetal,0.95}$	=	95 percentile blood-lead concentration in fetus (μg/dl)
PbB_{Adult}	=	Central estimate of blood lead concentration in adult (μg/dl)
$GSDi_{Adult}$	=	Individual geometric standard deviation (unitless)

Rf/m = Proportionality constant between fetal blood-lead concentration at birth and maternal blood-lead concentration (unitless)

F-2.0 ECOLOGICAL

F-2.1 Ecological Scoping Checklist

The ecological scoping checklists are attached to this document as Attachment 3.

F-2.2 Radionuclide Ecological Screening Level Information

The radionuclide ecological screening levels (ESLs) are obtained by back-calculating the media concentration from the dose limit value through the dose calculations. The calculation of the internal radioactive dose to biota is dependent on the type of radiation, the biochemistry of the radionuclide, the organ in which the radionuclide may preferentially deposit, and the complexity of the food chain. For terrestrial animals, the dose resulting from food chain intake must be calculated also. These calculations are described in Kelly et al. (1998, 57916).

The radionuclide ESLs are presented in Tables F-2.2-1, F-2.2-2, F-2.2-3, and are based on equations and exposure parameters presented in work by Kelly et al. (1998, 57916) with the exception of the biological transfer factors presented in Table F-2.2-4.

F-2.3 Inorganic and Organic Ecological Screening Level Information

For plants, dose is measured as the concentration of a chemical constituent in soil; therefore the ESL values directly determine the critical dose at which $HQ=1$ is conferred. Tables F-2.3-1, F-2.3-2 and F-2.3-3 show the plant ESLs for inorganic and organic analytes. The values in the tables are taken from the literature.

For invertebrates (earthworms) dose is measured as the concentration of a chemical constituent in soil; therefore the ESL values directly determine the critical dose at which $HQ=1$ is conferred. Tables F-2.3-4 and F-2.3-5 show the invertebrate ESLs for inorganic and organic analytes. The values in the tables are taken from the literature.

Wildlife ESLs are based on a backcalculation of the Hazard Quotient (HQ) formula, which includes the ecotoxicity screening reference value (ESRV) (or No-Observed-Adverse-Effects-Level, NOAEL) and dose exposure. Tables F-2.3-6, F-2.3-7, and F-2.3-8 present the ESLs for wildlife. The dose exposure model used for vertebrates is adopted from the Wildlife Exposure Factors Handbook (EPA 1993, 45358, Chapter 4.2). It is dependent on body weight, ingestion rate of soil and water, concentration of the chemical, the total ingestion rate, the proportion of the organism's diet that is from a contaminated area. For wildlife, ESL values are based on the dietary regimen of the receptor, since ingestion is considered the major pathway. The equations for calculating the ESLs can be found in Kelly et al. (1998, 57916). Dietary contaminant concentrations are based on simple bioaccumulation factors (e.g. soil to plants).

Tables F-2.3-9 and F-2.3-10 show the bioaccumulation factors for inorganic analytes and organic analytes. The soil-to-plant factors for inorganics were taken from Baes et al. (1984), while the soil-to-plant factors for organics were taken from a regression relationship developed by Travis and Arms (1988, 59355). The soil-to-invertebrate and food-to-muscle factors were calculated from equations in the literature.

Tables F-2.3-11 through F-2.3-15 present the mammalian and avian No-Observed-Adverse-Effects-Levels (NOAELs) for both inorganic and organic analytes. The U.S. EPA defines the NOAEL as the "highest level of a stressor evaluated in a toxicity test or biological field survey that causes no statistically significant difference in effect compared with controls or a reference site," (EPA 1997, 59370). NOAELs are the same as the ecotoxicity screening reference value (ESRV) for ecological risk screening and are experimentally derived.

F-2.4 Site-Specific Hazard Quotient Results

Tables F-2.4-1 through F-2.4-4 show the site-specific Hazard Quotient (HQ) values for the plants, invertebrates and wildlife. The calculation of the hazard quotients and the hazard indices was discussed in Section 2.4.2.2. The highest value is shown in bold and is underlined so that it is easier for the reader to distinguish the main receptor. The HQ calculation is a ratio of the dose exposure to the NOAEL. HQ can also be calculated from a ratio of an observed media concentration to the media-specific and receptor-specific concentration limit, which is referred to as the ESL.

An HQ greater than 1 is considered an indicator of potential adverse impacts, and the chemical constituents resulting in an HQ greater than 1 are identified as contaminants of potential ecological concern (COPECs). As can be seen from Table F-2.4-2, antimony is of concern for plants, mice, and shrews; chromium (total) is of concern for robins; copper is of concern for plants, invertebrates, and mice; lead is of concern for plants and robins; mercury is of concern for robins, kestrel (standard diet), kestrel (100% flesh diet), and mice; uranium is of concern for plants; and zinc is of concern for plants, invertebrates, robins, kestrel (standard diet), and kestrel (100% flesh diet). Table F-2.4-3 and F-2.4-4 shows the organics including the PCBs, PAHs, SVOCs, and VOCs. The HQs that are greater than 1 include Bis(2-ethylhexyl)phthalate for robins, kestrel (standard diet), and kestrel (100% flesh diet); aroclor-1254 for robins, kestrel (standard diet), kestrel (100% flesh diet), mice, shrews, and foxes; 4,4'-DDT for robins, kestrel (standard diet), and kestrel (100% flesh diet); and di-n-butylphthalate for robins.

TABLE F-2.4-3

HQ VALUES FOR MAXIMUM SOIL CONCENTRATION OF SEMIVOLATILE ORGANIC ANALYTES

Chemical Name	HQ Plant	HQ Invertebrate	HQ Robin	HQ- Kestral	HQ Kestral Z (100% flesh diet)	HQ Cottontail	HQ Mouse	HQ Shrew	HQ Fox
Bis(2-ethylhexyl)phthalate	n/a	n/a	1.10	1.90	3.57	<0.01	0.01	0.01	0.10
Di-n-butylphthalate	<0.01	n/a	9.02	0.95	0.07	<0.01	<0.01	<0.01	<0.01
Dibenzofuran	<0.01	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Acenaphthene	n/a	n/a	n/a	n/a	n/a	0.01	0.14	0.13	<0.01
Anthracene	n/a	n/a	n/a	n/a	n/a	<0.01	<0.01	<0.01	<0.01
Benzo(a)anthracene	0.09	n/a	n/a	n/a	n/a	<0.01	0.40	0.41	0.06
Benzo(b)fluoranthene	0.08	n/a	n/a	n/a	n/a	<0.01	0.37	0.37	0.19
Benzo(k)fluoranthene	n/a	n/a	n/a	n/a	n/a	<0.01	0.37	0.37	0.19
Benzo(a)pyrene	n/a	n/a	n/a	n/a	n/a	<0.01	0.36	0.37	0.15
Benzo(g,h,i)perylene	n/a	n/a	n/a	n/a	n/a	<0.01	0.25	0.26	0.44
Chrysene	n/a	n/a	n/a	n/a	n/a	<0.01	0.45	0.46	0.07
Dibenz(a,h)anthracene	n/a	n/a	n/a	n/a	n/a	<0.01	0.07	0.07	0.11
Fluoranthene	n/a	n/a	n/a	n/a	n/a	<0.01	0.07	0.07	<0.01
Fluorene	n/a	0.02	n/a	n/a	n/a	<0.01	0.01	0.01	<0.01
Indeno(1,2,3-cd)pyrene	n/a	n/a	n/a	n/a	n/a	<0.01	0.23	0.24	0.36
2-Methylnaphthalene	n/a	n/a	n/a	n/a	n/a	<0.01	0.01	0.01	<0.01
Naphthalene	n/a	n/a	n/a	n/a	n/a	<0.01	0.02	0.02	<0.01
Phenanthrene	n/a	n/a	n/a	n/a	n/a	0.01	0.68	0.67	0.01
Pyrene	n/a	n/a	n/a	n/a	n/a	<0.01	0.08	0.09	<0.01
Subtotal	0.2	0.02	10.1	2.9	3.6	0.03	3.5	3.6	1.7

TABLE F-2.4-4

HQ VALUES FOR MAXIMUM SOIL CONCENTRATION OF PCB/PESTICIDES AND VOLATILE ORGANIC ANALYTES

Analyte	HQ Plant	HQ Invertebrate	HQ Robin	HQ Kestral	HQ Kestral 2: (100% flesh diet)	HQ Cottontail	HQ Mouse	HQ Shrew	HQ Fox
Aroclor-1254	0.19	n/a	52.74	0.69	8.61	0.15	28.81	29.39	10.35
Aroclor-1260	n/a	n/a	n/a	n/a	n/a	<0.01	0.84	0.86	0.36
DDT[4,4']	n/a	n/a	26.85	9.74	14.00	<0.01	0.02	0.02	0.02
Methoxychlor[4,4']	n/a	n/a	0.12	0.01	<0.01	<0.01	0.12	0.12	0.01
Chlordane[gamma-]	n/a	n/a	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlordane[alpha-]	n/a	n/a	≤0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
DDE[4,4']	n/a	n/a	n/a	n/a	n/a	<0.01	<0.01	<0.01	≤0.01
PCB/ Pesticide Subtotal	0.2	N/A	79.6	19.4	22.6	0.15	29.8	30.4	10.7
Tetrachloroethene	n/a	n/a	n/a	n/a	n/a	<0.01	≤0.01	<0.01	<0.01
Trichloroethane[1,1,1-]	n/a	n/a	n/a	n/a	n/a	<0.01	≤0.01	<0.01	<0.01
Dichloroethane[1,1-]	n/a	n/a	n/a	n/a	n/a	<0.01	≤0.01	<0.01	<0.01
Toluene	n/a	n/a	n/a	n/a	n/a	<0.01	≤0.01	<0.01	<0.01
VOC Subtotal	N/A	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01

APPENDIX G: RELEVANT DOCUMENTS

G-1.0 Documentation of Regulatory History

G-1.1 Corrective Action History

No corrective actions have been performed at any of the PRSs presented in this report.

G-1.2 Other Regulatory Documents

An NFA report addressing PRSs 0-034(a,b), 73-001(b), 73-004(c), 73-004(d) (LA-UR-97-3864) was submitted in September 1997. To date, LANL has received no formal Administrative Authority response as to the disposition of these PRSs.

G-2.0 Referenced Documents

All referenced documents specific to this RFI report may be found in the ER Project Reference Library (in the OU 1071 Reference Set or in the project-wide reference set).

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ATTACHMENT 1: TABLE 2.3.4.3-26

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TABLE 2.3.4.3-25

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichlorodifluoromethane	73-01002	0173-95-0002	92.7	Soil gas	432
Tetrachloroethene	73-01002	0173-95-0002	29.2	Soil gas	432
Benzene	73-01003	0173-95-0003	8.3	Soil gas	1190.4
Chlorodifluoromethane	73-01003	0173-95-0003	328	Soil gas	1190.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	0173-95-0003	52.2	Soil gas	1190.4
Dichlorobenzene[1,4-]	73-01003	0173-95-0003	17.1	Soil gas	1190.4
Dichlorodifluoromethane	73-01003	0173-95-0003	510	Soil gas	1190.4
Dichloroethene[cis-1,2-]	73-01003	0173-95-0003	462	Soil gas	1190.4
Tetrachloroethene	73-01003	0173-95-0003	96.3	Soil gas	1190.4
Trichloroethene	73-01003	0173-95-0003	8.8	Soil gas	1190.4
Trichlorofluoromethane	73-01003	0173-95-0003	7.7	Soil gas	1190.4
Trimethylbenzene[1,2,4-]	73-01003	0173-95-0003	12.4	Soil gas	1190.4
Vinyl Chloride	73-01003	0173-95-0003	16	Soil gas	1190.4
Benzene	73-01003	0173-95-0004	9.3	Soil gas	1094.4
Chlorodifluoromethane	73-01003	0173-95-0004	378	Soil gas	1094.4
Chloroethane	73-01003	0173-95-0004	6.1	Soil gas	1094.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	0173-95-0004	49.5	Soil gas	1094.4
Dichlorobenzene[1,4-]	73-01003	0173-95-0004	19.2	Soil gas	1094.4
Dichlorodifluoromethane	73-01003	0173-95-0004	423	Soil gas	1094.4
Dichloroethene[cis-1,2-]	73-01003	0173-95-0004	584	Soil gas	1094.4
Dichloroethene[trans-1,2-]	73-01003	0173-95-0004	8.4	Soil gas	1094.4
Tetrachloroethene	73-01003	0173-95-0004	62.6	Soil gas	1094.4
Trichloroethene	73-01003	0173-95-0004	8.2	Soil gas	1094.4
Trichlorofluoromethane	73-01003	0173-95-0004	6	Soil gas	1094.4
Trimethylbenzene[1,2,4-]	73-01003	0173-95-0004	15.1	Soil gas	1094.4
Trimethylbenzene[1,3,5-]	73-01003	0173-95-0004	6	Soil gas	1094.4
Vinyl Chloride	73-01003	0173-95-0004	38.2	Soil gas	1094.4
Xylene[1,3-]+Xylene[1,4-]	73-01003	0173-95-0004	7.4	Soil gas	1094.4
Benzene	73-01003	0173-95-0005	44.71	Soil gas	470.4
Chlorobenzene	73-01003	0173-95-0005	17.8	Soil gas	470.4
Chlorodifluoromethane	73-01003	0173-95-0005	723	Soil gas	470.4
Chloroethane	73-01003	0173-95-0005	35.4	Soil gas	470.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	0173-95-0005	97.8	Soil gas	470.4
Dichlorobenzene[1,4-]	73-01003	0173-95-0005	48.1	Soil gas	470.4
Dichlorodifluoromethane	73-01003	0173-95-0005	471	Soil gas	470.4
Dichloroethane[1,1-]	73-01003	0173-95-0005	6	Soil gas	470.4
Dichloroethane[1,2-]	73-01003	0173-95-0005	14.2	Soil gas	470.4
Dichloroethene[1,1-]	73-01003	0173-95-0005	20.4	Soil gas	470.4
Dichloroethene[cis-1,2-]	73-01003	0173-95-0005	5000	Soil gas	470.4
Dichloroethene[trans-1,2-]	73-01003	0173-95-0005	97.3	Soil gas	470.4
Dichloropropane[1,2-]	73-01003	0173-95-0005	9	Soil gas	470.4
Tetrachloroethene	73-01003	0173-95-0005	39	Soil gas	470.4
Toluene	73-01003	0173-95-0005	17.6	Soil gas	470.4
Toluene	73-01003	0173-95-0005	5.7	Soil gas	470.4
Trichloroethene	73-01003	0173-95-0005	26.8	Soil gas	470.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trimethylbenzene[1,2,4-]	73-01003	0173-95-0005	50.2	Soil gas	470.4
Trimethylbenzene[1,3,5-]	73-01003	0173-95-0005	22.1	Soil gas	470.4
Vinyl Chloride	73-01003	0173-95-0005	366	Soil gas	470.4
Benzene	73-01003	0173-95-0006	76.4	Soil gas	110.4
Benzyl Chloride	73-01003	0173-95-0006	26.9	Soil gas	110.4
Chlorobenzene	73-01003	0173-95-0006	17.2	Soil gas	110.4
Chlorodifluoromethane	73-01003	0173-95-0006	980	Soil gas	110.4
Chloroethane	73-01003	0173-95-0006	60.6	Soil gas	110.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	0173-95-0006	159	Soil gas	110.4
Dichlorobenzene[1,4-]	73-01003	0173-95-0006	24.4	Soil gas	110.4
Dichlorodifluoromethane	73-01003	0173-95-0006	561	Soil gas	110.4
Dichloroethane[1,1-]	73-01003	0173-95-0006	5.4	Soil gas	110.4
Dichloroethane[1,2-]	73-01003	0173-95-0006	11.6	Soil gas	110.4
Dichloroethane[1,1-]	73-01003	0173-95-0006	43.9	Soil gas	110.4
Dichloroethene[<i>cis</i> -1,2-]	73-01003	0173-95-0006	5390	Soil gas	110.4
Dichloroethene[<i>trans</i> -1,2-]	73-01003	0173-95-0006	187	Soil gas	110.4
Dichloropropane[1,2-]	73-01003	0173-95-0006	9.2	Soil gas	110.4
Tetrachloroethene	73-01003	0173-95-0006	21.4	Soil gas	110.4
Toluene	73-01003	0173-95-0006	7.1	Soil gas	110.4
Trichloroethene	73-01003	0173-95-0006	47.6	Soil gas	110.4
Vinyl Chloride	73-01003	0173-95-0006	725	Soil gas	110.4
Xylenes[1,3-]+Xylenes[1,4-]	73-01003	0173-95-0006	22.7	Soil gas	110.4
Benzene	73-01004	0173-95-0007	39.2	Soil gas	1192.2
Chlorobenzene	73-01004	0173-95-0007	5.3	Soil gas	1192.2
Chlorodifluoromethane	73-01004	0173-95-0007	3350	Soil gas	1192.2
Chloroethane	73-01004	0173-95-0007	25.4	Soil gas	1192.2
Chloromethane	73-01004	0173-95-0007	287	Soil gas	1192.2
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01004	0173-95-0007	72.9	Soil gas	1192.2
Dichlorobenzene[1,4-]	73-01004	0173-95-0007	23.4	Soil gas	1192.2
Dichlorodifluoromethane	73-01004	0173-95-0007	612	Soil gas	1192.2
Dichloroethene[1,1-]	73-01004	0173-95-0007	13.8	Soil gas	1192.2
Dichloroethene[<i>cis</i> -1,2-]	73-01004	0173-95-0007	2010	Soil gas	1192.2
Dichloroethene[<i>trans</i> -1,2-]	73-01004	0173-95-0007	30.7	Soil gas	1192.2
Tetrachloroethene	73-01004	0173-95-0007	146	Soil gas	1192.2
Toluene	73-01004	0173-95-0007	39	Soil gas	1192.2
Trichloroethene	73-01004	0173-95-0007	15.6	Soil gas	1192.2
Trichlorofluoromethane	73-01004	0173-95-0007	18	Soil gas	1192.2
Trimethylbenzene[1,2,4-]	73-01004	0173-95-0007	15.1	Soil gas	1192.2
Vinyl Chloride	73-01004	0173-95-0007	176	Soil gas	1192.2
Xylenes[1,3-]+Xylenes[1,4-]	73-01004	0173-95-0007	13.6	Soil gas	1192.2
Benzene	73-01004	0173-95-0008	53	Soil gas	904.2
Benzyl Chloride	73-01004	0173-95-0008	19	Soil gas	904.2
Chlorobenzene	73-01004	0173-95-0008	10.8	Soil gas	904.2
Chlorodifluoromethane	73-01004	0173-95-0008	3600	Soil gas	904.2
Chloroethane	73-01004	0173-95-0008	31.8	Soil gas	904.2
Chloroform	73-01004	0173-95-0008	5	Soil gas	904.2
Chloromethane	73-01004	0173-95-0008	371	Soil gas	904.2

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Toluene	73-01004	0173-95-0010	46.3	Soil gas	160.2
Trichloroethane[1,1,1-]	73-01004	0173-95-0010	28.5	Soil gas	160.2
Trichloroethene	73-01004	0173-95-0010	7.8	Soil gas	160.2
Trichlorofluoromethane	73-01004	0173-95-0010	9.8	Soil gas	160.2
Vinyl Chloride	73-01004	0173-95-0010	204	Soil gas	160.2
Chlorodifluoromethane	73-01005	0173-95-0011	8.8	Soil gas	402
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01005	0173-95-0011	36.7	Soil gas	402
Dichlorodifluoromethane	73-01005	0173-95-0011	490	Soil gas	402
Tetrachloroethene	73-01005	0173-95-0011	187	Soil gas	402
Trichlorofluoromethane	73-01005	0173-95-0011	33.2	Soil gas	402
Dichlorodifluoromethane	73-01006	0173-95-0012	33.9	Soil gas	324
Tetrachloroethene	73-01006	0173-95-0012	27.4	Soil gas	324
Trichloroethene	73-01006	0173-95-0012	11.6	Soil gas	324
Trichlorofluoromethane	73-01006	0173-95-0012	5.9	Soil gas	324
Chlorodifluoromethane	73-01007	0173-95-0013	16.4	Soil gas	1200
Chloromethane	73-01007	0173-95-0013	12.5	Soil gas	1200
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	0173-95-0013	25.3	Soil gas	1200
Dichlorodifluoromethane	73-01007	0173-95-0013	361	Soil gas	1200
Tetrachloroethene	73-01007	0173-95-0013	60.7	Soil gas	1200
Trichlorofluoromethane	73-01007	0173-95-0013	5.4	Soil gas	1200
Benzene	73-01007	0173-95-0014	150	Soil gas	336
Benzyl Chloride	73-01007	0173-95-0014	46.7	Soil gas	336
Chlorobenzene	73-01007	0173-95-0014	42.2	Soil gas	336
Chlorodifluoromethane	73-01007	0173-95-0014	864	Soil gas	336
Chloroethane	73-01007	0173-95-0014	45.2	Soil gas	336
Chloromethane	73-01007	0173-95-0014	18.2	Soil gas	336
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	0173-95-0014	91.2	Soil gas	336
Dichlorobenzene[1,4-]	73-01007	0173-95-0014	291	Soil gas	336
Dichlorodifluoromethane	73-01007	0173-95-0014	621	Soil gas	336
Dichloroethane[1,1-]	73-01007	0173-95-0014	7.7	Soil gas	336
Dichloroethane[1,2-]	73-01007	0173-95-0014	19.1	Soil gas	336
Dichloroethene[1,1-]	73-01007	0173-95-0014	26.2	Soil gas	336
Dichloroethene[cis-1,2-]	73-01007	0173-95-0014	3590	Soil gas	336
Dichloroethene[trans-1,2-]	73-01007	0173-95-0014	67.7	Soil gas	336
Dichloropropane[1,2-]	73-01007	0173-95-0014	38.9	Soil gas	336
Ethylbenzene	73-01007	0173-95-0014	495	Soil gas	336
Styrene	73-01007	0173-95-0014	35.3	Soil gas	336
Tetrachloroethene	73-01007	0173-95-0014	142	Soil gas	336
Toluene	73-01007	0173-95-0014	741	Soil gas	336
Trichlorobenzene[1,2,4-]	73-01007	0173-95-0014	14	Soil gas	336
Trichloroethene	73-01007	0173-95-0014	128	Soil gas	336
Trimethylbenzene[1,2,4-]	73-01007	0173-95-0014	331	Soil gas	336
Trimethylbenzene[1,3,5-]	73-01007	0173-95-0014	119	Soil gas	336
Vinyl Chloride	73-01007	0173-95-0014	346	Soil gas	336
Xylene[1,2-]	73-01007	0173-95-0014	93	Soil gas	336
Xylene[1,3-]+Xylene[1,4-]	73-01007	0173-95-0014	576	Soil gas	336

TABLE 23.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Benzene	73-01007	0173-95-0015	166	Soil gas	192
Chlorobenzene	73-01007	0173-95-0015	94	Soil gas	192
Chlorodifluoromethane	73-01007	0173-95-0015	822	Soil gas	192
Chloroethane	73-01007	0173-95-0015	67.5	Soil gas	192
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	0173-95-0015	131	Soil gas	192
Dichlorobenzene[1,4-]	73-01007	0173-95-0015	202	Soil gas	192
Dichlorodifluoromethane	73-01007	0173-95-0015	475	Soil gas	192
Dichloroethane[1,2-]	73-01007	0173-95-0015	13.4	Soil gas	192
Dichloroethene[1,1-]	73-01007	0173-95-0015	24.5	Soil gas	192
Dichloroethene[cis-1,2-]	73-01007	0173-95-0015	7400	Soil gas	192
Dichloroethene[trans-1,2-]	73-01007	0173-95-0015	79.3	Soil gas	192
Dichloropropane[1,2-]	73-01007	0173-95-0015	22.4	Soil gas	192
Ethylbenzene	73-01007	0173-95-0015	691	Soil gas	192
Styrene	73-01007	0173-95-0015	16.1	Soil gas	192
Tetrachloroethene	73-01007	0173-95-0015	72.5	Soil gas	192
Toluene	73-01007	0173-95-0015	510	Soil gas	192
Trichlorobenzene[1,2,4-]	73-01007	0173-95-0015	10.8	Soil gas	192
Trichloroethene	73-01007	0173-95-0015	61.7	Soil gas	192
Trimethylbenzene[1,2,4-]	73-01007	0173-95-0015	388	Soil gas	192
Trimethylbenzene[1,3,5-]	73-01007	0173-95-0015	147	Soil gas	192
Vinyl Chloride	73-01007	0173-95-0015	532	Soil gas	192
Xylene[1,2-]	73-01007	0173-95-0015	108	Soil gas	192
Xylene[1,3-]+Xylene[1,4-]	73-01007	0173-95-0015	1320	Soil gas	192
Chloromethane	73-01008	0173-95-0016	15	Soil gas	1098
Dichlorodifluoromethane	73-01008	0173-95-0016	12	Soil gas	1098
Chloromethane	73-01008	0173-95-0017	15.2	Soil gas	522
Dichlorodifluoromethane	73-01008	0173-95-0017	21.9	Soil gas	522
Tetrachloroethene	73-01008	0173-95-0017	5.7	Soil gas	522
Trichloro-1,2,2- trifluoroethane[1,1,2-]	73-01008	0173-95-0017	36.3	Soil gas	522
Chloromethane	73-01008	0173-95-0018	14.5	Soil gas	186
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	0173-95-0018	10.8	Soil gas	186
Dichlorodifluoromethane	73-01008	0173-95-0018	27.9	Soil gas	186
Chlorodifluoromethane	73-01009	0173-95-0019	37.91	Soil gas	492
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01009	0173-95-0019	28.7	Soil gas	492
Dichlorodifluoromethane	73-01009	0173-95-0019	313	Soil gas	492
Tetrachloroethene	73-01009	0173-95-0019	324	Soil gas	492
Trichloroethene	73-01009	0173-95-0019	25.1	Soil gas	492
Trichlorofluoromethane	73-01009	0173-95-0019	17.3	Soil gas	492
Chlorodifluoromethane	73-01009	0173-95-0020	9	Soil gas	133.8
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01009	0173-95-0020	14.7	Soil gas	133.8
Dichlorodifluoromethane	73-01009	0173-95-0020	156	Soil gas	133.8
Tetrachloroethene	73-01009	0173-95-0020	143	Soil gas	133.8
Trichlorofluoromethane	73-01009	0173-95-0020	7.3	Soil gas	133.8
Chlorodifluoromethane	73-01010	0173-95-0021	38.8	Soil gas	1740

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Chloromethane	73-01010	0173-95-0021	12.6	Soil gas	1740
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01010	0173-95-0021	18.7	Soil gas	1740
Dichlorodifluoromethane	73-01010	0173-95-0021	272	Soil gas	1740
Tetrachloroethene	73-01010	0173-95-0021	103	Soil gas	1740
Trichloroethene	73-01010	0173-95-0021	6.4	Soil gas	1740
Chlorodifluoromethane	73-01010	0173-95-0022	10.4	Soil gas	1368
Chloromethane	73-01010	0173-95-0022	13.1	Soil gas	1368
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01010	0173-95-0022	12.7	Soil gas	1368
Dichlorodifluoromethane	73-01010	0173-95-0022	170	Soil gas	1368
Tetrachloroethene	73-01010	0173-95-0022	61.4	Soil gas	1368
Trichlorofluoromethane	73-01010	0173-95-0022	7.1	Soil gas	1368
Chloromethane	73-01010	0173-95-0023	13.6	Soil gas	732
Dichlorodifluoromethane	73-01010	0173-95-0023	36.3	Soil gas	732
Tetrachloroethene	73-01010	0173-95-0023	8.1	Soil gas	732
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01010	0173-95-0024	43.2	Soil gas	264
Dichlorodifluoromethane	73-01010	0173-95-0024	114	Soil gas	264
Tetrachloroethene	73-01010	0173-95-0024	10	Soil gas	264
Chlorodifluoromethane	73-01010	0173-95-0025	5.4	Soil gas	90
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01010	0173-95-0025	46.2	Soil gas	90
Dichlorodifluoromethane	73-01010	0173-95-0025	101	Soil gas	90
Tetrachloroethene	73-01010	0173-95-0025	9.9	Soil gas	90
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-95-0026	67.2	Soil gas	2136
Dichlorodifluoromethane	73-01011	0173-95-0026	97.8	Soil gas	2136
Dichloroethene(cis-1,2-)	73-01011	0173-95-0026	69.5	Soil gas	2136
Tetrachloroethene	73-01011	0173-95-0026	252	Soil gas	2136
Toluene	73-01011	0173-95-0026	10.6	Soil gas	2136
Trichlorobenzene[1,2,4-]	73-01011	0173-95-0026	11.8	Soil gas	2136
Trichloroethane[1,1,1-]	73-01011	0173-95-0026	5	Soil gas	2136
Trichloroethene	73-01011	0173-95-0026	10.6	Soil gas	2136
Trichlorofluoromethane	73-01011	0173-95-0026	41.3	Soil gas	2136
Benzene	73-01011	0173-95-0027	15.1	Soil gas	1500
Chlorodifluoromethane	73-01011	0173-95-0027	745	Soil gas	1500
Chloroethane	73-01011	0173-95-0027	13.7	Soil gas	1500
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-95-0027	65.2	Soil gas	1500
Dichlorobenzene[1,4-]	73-01011	0173-95-0027	13.5	Soil gas	1500
Dichlorodifluoromethane	73-01011	0173-95-0027	558	Soil gas	1500
Dichloroethene[1,1-]	73-01011	0173-95-0027	5.1	Soil gas	1500
Dichloroethene(cis-1,2-)	73-01011	0173-95-0027	1220	Soil gas	1500
Dichloroethene(trans-1,2-)	73-01011	0173-95-0027	13.4	Soil gas	1500
Tetrachloroethene	73-01011	0173-95-0027	157	Soil gas	1500
Toluene	73-01011	0173-95-0027	40.2	Soil gas	1500
Trichlorobenzene[1,2,4-]	73-01011	0173-95-0027	14.6	Soil gas	1500
Trichloroethane[1,1,1-]	73-01011	0173-95-0027	20	Soil gas	1500

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trichloroethene	73-01011	0173-95-0027	18.1	Soil gas	1500
Trichlorofluoromethane	73-01011	0173-95-0027	31.8	Soil gas	1500
Vinyl Chloride	73-01011	0173-95-0027	56.7	Soil gas	1500
Benzene	73-01011	0173-95-0028	99.5	Soil gas	1044
Benzyl Chloride	73-01011	0173-95-0028	37	Soil gas	1044
Chlorobenzene	73-01011	0173-95-0028	19.5	Soil gas	1044
Chlorodifluoromethane	73-01011	0173-95-0028	2010	Soil gas	1044
Chloroethane	73-01011	0173-95-0028	78.6	Soil gas	1044
Chloromethane	73-01011	0173-95-0028	17.6	Soil gas	1044
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	0173-95-0028	118	Soil gas	1044
Dichlorobenzene[1,4-]	73-01011	0173-95-0028	90.7	Soil gas	1044
Dichlorodifluoromethane	73-01011	0173-95-0028	767	Soil gas	1044
Dichloroethane[1,1-]	73-01011	0173-95-0028	12.3	Soil gas	1044
Dichloroethane[1,2-]	73-01011	0173-95-0028	9.5	Soil gas	1044
Dichloroethene[1,1-]	73-01011	0173-95-0028	34.5	Soil gas	1044
Dichloroethene[cis-1,2-]	73-01011	0173-95-0028	5470	Soil gas	1044
Dichloroethene[trans-1,2-]	73-01011	0173-95-0028	98.6	Soil gas	1044
Dichloropropane[1,2-]	73-01011	0173-95-0028	8.9	Soil gas	1044
Ethylbenzene	73-01011	0173-95-0028	14.4	Soil gas	1044
Tetrachloroethene	73-01011	0173-95-0028	223	Soil gas	1044
Toluene	73-01011	0173-95-0028	19.7	Soil gas	1044
Trichlorobenzene[1,2,4-]	73-01011	0173-95-0028	66.2	Soil gas	1044
Trichloroethene	73-01011	0173-95-0028	66.6	Soil gas	1044
Trichlorofluoromethane	73-01011	0173-95-0028	20.8	Soil gas	1044
Trimethylbenzene[1,2,4-]	73-01011	0173-95-0028	28.3	Soil gas	1044
Trimethylbenzene[1,3,5-]	73-01011	0173-95-0028	14.8	Soil gas	1044
Vinyl Chloride	73-01011	0173-95-0028	499	Soil gas	1044
Xylene[1,3-]+Xylene[1,4-]	73-01011	0173-95-0028	22.2	Soil gas	1044
Benzene	73-01011	0173-95-0029	308	Soil gas	348
Chlorobenzene	73-01011	0173-95-0029	49.4	Soil gas	348
Chlorodifluoromethane	73-01011	0173-95-0029	3770	Soil gas	348
Chloroethane	73-01011	0173-95-0029	193	Soil gas	348
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	0173-95-0029	168	Soil gas	348
Dichlorobenzene[1,4-]	73-01011	0173-95-0029	256	Soil gas	348
Dichlorodifluoromethane	73-01011	0173-95-0029	737	Soil gas	348
Dichloroethane[1,1-]	73-01011	0173-95-0029	12.1	Soil gas	348
Dichloroethane[1,2-]	73-01011	0173-95-0029	23	Soil gas	348
Dichloroethene[1,1-]	73-01011	0173-95-0029	116	Soil gas	348
Dichloroethene[cis-1,2-]	73-01011	0173-95-0029	21700	Soil gas	348
Dichloroethene[trans-1,2-]	73-01011	0173-95-0029	504	Soil gas	348
Dichloropropane[1,2-]	73-01011	0173-95-0029	15.4	Soil gas	348
Ethylbenzene	73-01011	0173-95-0029	5.5	Soil gas	348
Tetrachloroethene	73-01011	0173-95-0029	114	Soil gas	348
Trichlorobenzene[1,2,4-]	73-01011	0173-95-0029	5.8	Soil gas	348
Trichloroethene	73-01011	0173-95-0029	99.5	Soil gas	348
Trimethylbenzene[1,2,4-]	73-01011	0173-95-0029	41.4	Soil gas	348
Vinyl Chloride	73-01011	0173-95-0029	1480	Soil gas	348

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Benzene	73-01007	0173-95-0031	236	Soil gas	192
Chlorobenzene	73-01007	0173-95-0031	133	Soil gas	192
Chlorodifluoromethane	73-01007	0173-95-0031	1330	Soil gas	192
Chloroethane	73-01007	0173-95-0031	83.2	Soil gas	192
Chloromethane	73-01007	0173-95-0031	19.1	Soil gas	192
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-95-0031	190	Soil gas	192
Dichlorobenzene[1,4-]	73-01007	0173-95-0031	294	Soil gas	192
Dichlorodifluoromethane	73-01007	0173-95-0031	661	Soil gas	192
Dichloroethane[1,1-]	73-01007	0173-95-0031	5	Soil gas	192
Dichloroethane[1,2-]	73-01007	0173-95-0031	19.8	Soil gas	192
Dichloroethene[1,1-]	73-01007	0173-95-0031	34	Soil gas	192
Dichloroethene[<i>cis</i> -1,2-]	73-01007	0173-95-0031	7530	Soil gas	192
Dichloroethene[<i>trans</i> -1,2-]	73-01007	0173-95-0031	116	Soil gas	192
Ethylbenzene	73-01007	0173-95-0031	847	Soil gas	192
Styrene	73-01007	0173-95-0031	26.5	Soil gas	192
Tetrachloroethene	73-01007	0173-95-0031	99	Soil gas	192
Toluene	73-01007	0173-95-0031	648	Soil gas	192
Trichlorobenzene[1,2,4-]	73-01007	0173-95-0031	12.2	Soil gas	192
Trichloroethene	73-01007	0173-95-0031	83.9	Soil gas	192
Trimethylbenzene[1,2,4-]	73-01007	0173-95-0031	582	Soil gas	192
Trimethylbenzene[1,3,5-]	73-01007	0173-95-0031	228	Soil gas	192
Vinyl Chloride	73-01007	0173-95-0031	714	Soil gas	192
Xylene[1,2-]	73-01007	0173-95-0031	170	Soil gas	192
Xylene[1,3-]+Xylene[1,4-]	73-01007	0173-95-0031	1630	Soil gas	192
Benzene	73-01003	0173-95-0032	94	Soil gas	470.4
Benzyl Chloride	73-01003	0173-95-0032	50.5	Soil gas	470.4
Chlorobenzene	73-01003	0173-95-0032	37.8	Soil gas	470.4
Chlorodifluoromethane	73-01003	0173-95-0032	1250	Soil gas	470.4
Chloroethane	73-01003	0173-95-0032	59.8	Soil gas	470.4
Chloromethane	73-01003	0173-95-0032	17.4	Soil gas	470.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-95-0032	183	Soil gas	470.4
Dichlorobenzene[1,4-]	73-01003	0173-95-0032	93.7	Soil gas	470.4
Dichlorodifluoromethane	73-01003	0173-95-0032	744	Soil gas	470.4
Dichloroethane[1,1-]	73-01003	0173-95-0032	11.3	Soil gas	470.4
Dichloroethane[1,2-]	73-01003	0173-95-0032	27.9	Soil gas	470.4
Dichloroethene[1,1-]	73-01003	0173-95-0032	39.9	Soil gas	470.4
Dichloroethene[<i>cis</i> -1,2-]	73-01003	0173-95-0032	564	Soil gas	470.4
Dichloroethene[<i>trans</i> -1,2-]	73-01003	0173-95-0032	180	Soil gas	470.4
Dichloropropane[1,2-]	73-01003	0173-95-0032	18.5	Soil gas	470.4
Ethylbenzene	73-01003	0173-95-0032	5.4	Soil gas	470.4
Tetrachloroethene	73-01003	0173-95-0032	76.1	Soil gas	470.4
Toluene	73-01003	0173-95-0032	9.6	Soil gas	470.4
Trichloroethene	73-01003	0173-95-0032	50.7	Soil gas	470.4
Trimethylbenzene[1,2,4-]	73-01003	0173-95-0032	106	Soil gas	470.4
Trimethylbenzene[1,3,5-]	73-01003	0173-95-0032	47.5	Soil gas	470.4
Vinyl Chloride	73-01003	0173-95-0032	669	Soil gas	470.4
Xylene[1,3-]+Xylene[1,4-]	73-01003	0173-95-0032	39.8	Soil gas	470.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01002	0173-95-0045	5	Soil gas	432
Dichlorodifluoromethane	73-01002	0173-95-0045	101	Soil gas	432
Tetrachloroethene	73-01002	0173-95-0045	25	Soil gas	432
Chlorodifluoromethane	73-01003	0173-95-0046	443	Soil gas	1190.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-95-0046	64.1	Soil gas	1190.4
Dichlorobenzene[1,4-]	73-01003	0173-95-0046	17	Soil gas	1190.4
Dichlorodifluoromethane	73-01003	0173-95-0046	682	Soil gas	1190.4
Dichloroethene[cis-1,2-]	73-01003	0173-95-0046	290	Soil gas	1190.4
Tetrachloroethene	73-01003	0173-95-0046	99.6	Soil gas	1190.4
Trichloroethene	73-01003	0173-95-0046	8.9	Soil gas	1190.4
Trichlorofluoromethane	73-01003	0173-95-0046	9.9	Soil gas	1190.4
Trimethylbenzene[1,2,4-]	73-01003	0173-95-0046	10.7	Soil gas	1190.4
Vinyl Chloride	73-01003	0173-95-0046	30.2	Soil gas	1190.4
Benzene	73-01003	0173-95-0047	15.5	Soil gas	1094.4
Chlorobenzene	73-01003	0173-95-0047	6.3	Soil gas	1094.4
Chlorodifluoromethane	73-01003	0173-95-0047	567	Soil gas	1094.4
Chloroethane	73-01003	0173-95-0047	8.9	Soil gas	1094.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-95-0047	75.6	Soil gas	1094.4
Dichlorobenzene[1,4-]	73-01003	0173-95-0047	30.8	Soil gas	1094.4
Dichlorodifluoromethane	73-01003	0173-95-0047	658	Soil gas	1094.4
Dichloroethene[1,1-]	73-01003	0173-95-0047	9.3	Soil gas	1094.4
Dichloroethene[cis-1,2-]	73-01003	0173-95-0047	919	Soil gas	1094.4
Dichloroethene[trans-1,2-]	73-01003	0173-95-0047	12.8	Soil gas	1094.4
Tetrachloroethene	73-01003	0173-95-0047	110	Soil gas	1094.4
Trichloroethene	73-01003	0173-95-0047	13.5	Soil gas	1094.4
Trichlorofluoromethane	73-01003	0173-95-0047	10.2	Soil gas	1094.4
Trimethylbenzene[1,2,4-]	73-01003	0173-95-0047	22.6	Soil gas	1094.4
Trimethylbenzene[1,3,5-]	73-01003	0173-95-0047	9.8	Soil gas	1094.4
Vinyl Chloride	73-01003	0173-95-0047	66.6	Soil gas	1094.4
Xylene[1,3-]	73-01003	0173-95-0047	7	Soil gas	1094.4
Benzene	73-01003	0173-95-0048	69.9	Soil gas	470.4
Benzyl Chloride	73-01003	0173-95-0048	51.4	Soil gas	470.4
Chlorobenzene	73-01003	0173-95-0048	27.7	Soil gas	470.4
Chlorodifluoromethane	73-01003	0173-95-0048	930	Soil gas	470.4
Chloroethane	73-01003	0173-95-0048	41.6	Soil gas	470.4
Chloromethane	73-01003	0173-95-0048	5	Soil gas	470.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-95-0048	120	Soil gas	470.4
Dichlorobenzene[1,4-]	73-01003	0173-95-0048	73.4	Soil gas	470.4
Dichlorodifluoromethane	73-01003	0173-95-0048	658	Soil gas	470.4
Dichloroethane[1,1-]	73-01003	0173-95-0048	9.3	Soil gas	470.4
Dichloroethane[1,2-]	73-01003	0173-95-0048	21.4	Soil gas	470.4
Dichloroethene[1,1-]	73-01003	0173-95-0048	30.3	Soil gas	470.4
Dichloroethene[cis-1,2-]	73-01003	0173-95-0048	5740	Soil gas	470.4
Dichloroethene[trans-1,2-]	73-01003	0173-95-0048	143	Soil gas	470.4
Dichloropropane[1,2-]	73-01003	0173-95-0048	13.3	Soil gas	470.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Tetrachloroethane[1,1,2,2-]	73-01003	0173-95-0048	5	Soil gas	470.4
Tetrachloroethene	73-01003	0173-95-0048	54.4	Soil gas	470.4
Toluene	73-01003	0173-95-0048	7.1	Soil gas	470.4
Trichloroethene	73-01003	0173-95-0048	37.5	Soil gas	470.4
Trimethylbenzene[1,2,4-]	73-01003	0173-95-0048	79	Soil gas	470.4
Trimethylbenzene[1,3,5-]	73-01003	0173-95-0048	37.4	Soil gas	470.4
Xylene[1,3-]	73-01003	0173-95-0048	26.6	Soil gas	470.4
Benzene	73-01003	0173-95-0049	92.6	Soil gas	110.4
Benzyl Chloride	73-01003	0173-95-0049	40.8	Soil gas	110.4
Chlorobenzene	73-01003	0173-95-0049	20.5	Soil gas	110.4
Chlorodifluoromethane	73-01003	0173-95-0049	1910	Soil gas	110.4
Chloroethane	73-01003	0173-95-0049	63.1	Soil gas	110.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	0173-95-0049	168	Soil gas	110.4
Dichlorobenzene[1,4-]	73-01003	0173-95-0049	32.2	Soil gas	110.4
Dichlorodifluoromethane	73-01003	0173-95-0049	700	Soil gas	110.4
Dichloroethane[1,1-]	73-01003	0173-95-0049	5.6	Soil gas	110.4
Dichloroethane[1,2-]	73-01003	0173-95-0049	12.4	Soil gas	110.4
Dichloroethene[1,1-]	73-01003	0173-95-0049	50.9	Soil gas	110.4
Dichloroethene[cis-1,2-]	73-01003	0173-95-0049	6200	Soil gas	110.4
Dichloroethene[trans-1,2-]	73-01003	0173-95-0049	212	Soil gas	110.4
Dichloropropane[1,2-]	73-01003	0173-95-0049	10.4	Soil gas	110.4
Tetrachloroethene	73-01003	0173-95-0049	25.3	Soil gas	110.4
Trichloroethene	73-01003	0173-95-0049	56.6	Soil gas	110.4
Trimethylbenzene[1,2,4-]	73-01003	0173-95-0049	63.3	Soil gas	110.4
Trimethylbenzene[1,3,5-]	73-01003	0173-95-0049	33.1	Soil gas	110.4
Vinyl Chloride	73-01003	0173-95-0049	854	Soil gas	110.4
Xylene[1,3-]	73-01003	0173-95-0049	27	Soil gas	110.4
Benzene	73-01004	0173-95-0050	40.4	Soil gas	1192.2
Chlorobenzene	73-01004	0173-95-0050	6.2	Soil gas	1192.2
Chlorodifluoromethane	73-01004	0173-95-0050	1010	Soil gas	1192.2
Chloroethane	73-01004	0173-95-0050	25.2	Soil gas	1192.2
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01004	0173-95-0050	73	Soil gas	1192.2
Dichlorobenzene[1,4-]	73-01004	0173-95-0050	27	Soil gas	1192.2
Dichlorodifluoromethane	73-01004	0173-95-0050	712	Soil gas	1192.2
Dichloroethene[1,1-]	73-01004	0173-95-0050	16.7	Soil gas	1192.2
Dichloroethene[cis-1,2-]	73-01004	0173-95-0050	1910	Soil gas	1192.2
Dichloroethene[trans-1,2-]	73-01004	0173-95-0050	34.2	Soil gas	1192.2
Tetrachloroethene	73-01004	0173-95-0050	160	Soil gas	1192.2
Trichloroethene	73-01004	0173-95-0050	15.9	Soil gas	1192.2
Trichlorofluoromethane	73-01004	0173-95-0050	22.5	Soil gas	1192.2
Trimethylbenzene[1,2,4-]	73-01004	0173-95-0050	18.2	Soil gas	1192.2
Vinyl Chloride	73-01004	0173-95-0050	201	Soil gas	1192.2
Xylene[1,3-]	73-01004	0173-95-0050	15.2	Soil gas	1192.2
Benzene	73-01004	0173-95-0051	26.1	Soil gas	904.2
Benzyl Chloride	73-01004	0173-95-0051	35.6	Soil gas	904.2
Chlorodifluoromethane	73-01004	0173-95-0051	922	Soil gas	904.2
Chloroethane	73-01004	0173-95-0051	15.2	Soil gas	904.2

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Tetrachloroethene	73-01005	0173-95-0054	137	Soil gas	402
Trichlorofluoromethane	73-01005	0173-95-0054	30.7	Soil gas	402
Dichlorodifluoromethane	73-01006	0173-95-0055	28.6	Soil gas	324
Tetrachloroethene	73-01006	0173-95-0055	16.1	Soil gas	324
Trichloroethene	73-01006	0173-95-0055	6.9	Soil gas	324
Chlorodifluoromethane	73-01007	0173-95-0056	15.8	Soil gas	1200
Dichlorodifluoromethane	73-01007	0173-95-0056	417	Soil gas	1200
Tetrachloroethene	73-01007	0173-95-0056	65.9	Soil gas	1200
Trichlorofluoromethane	73-01007	0173-95-0056	9.2	Soil gas	1200
Benzene	73-01007	0173-95-0057	132	Soil gas	336
Benzyl Chloride	73-01007	0173-95-0057	31.8	Soil gas	336
Chlorobenzene	73-01007	0173-95-0057	40.3	Soil gas	336
Chlorodifluoromethane	73-01007	0173-95-0057	1370	Soil gas	336
Chloroethane	73-01007	0173-95-0057	51.2	Soil gas	336
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-95-0057	87.3	Soil gas	336
Dichlorobenzene[1,4-]	73-01007	0173-95-0057	248	Soil gas	336
Dichlorodifluoromethane	73-01007	0173-95-0057	622	Soil gas	336
Dichloroethane[1,1-]	73-01007	0173-95-0057	6.8	Soil gas	336
Dichloroethane[1,2-]	73-01007	0173-95-0057	16.9	Soil gas	336
Dichloroethene[1,1-]	73-01007	0173-95-0057	31.9	Soil gas	336
Dichloroethene[cis-1,2-]	73-01007	0173-95-0057	4310	Soil gas	336
Dichloroethene[trans-1,2-]	73-01007	0173-95-0057	72.5	Soil gas	336
Dichloropropane[1,2-]	73-01007	0173-95-0057	29.2	Soil gas	336
Ethylbenzene	73-01007	0173-95-0057	454	Soil gas	336
Styrene	73-01007	0173-95-0057	185	Soil gas	336
Tetrachloroethene	73-01007	0173-95-0057	122	Soil gas	336
Toluene	73-01007	0173-95-0057	646	Soil gas	336
Trichlorobenzene[1,2,4-]	73-01007	0173-95-0057	13.5	Soil gas	336
Trichloroethene	73-01007	0173-95-0057	114	Soil gas	336
Trimethylbenzene[1,2,4-]	73-01007	0173-95-0057	305	Soil gas	336
Trimethylbenzene[1,3,5-]	73-01007	0173-95-0057	123	Soil gas	336
Vinyl Chloride	73-01007	0173-95-0057	481	Soil gas	336
Xylene[1,2-]	73-01007	0173-95-0057	200	Soil gas	336
Xylene[1,3-]	73-01007	0173-95-0057	1150	Soil gas	336
Benzene	73-01007	0173-95-0058	264	Soil gas	192
Benzyl Chloride	73-01007	0173-95-0058	93.1	Soil gas	192
Chlorobenzene	73-01007	0173-95-0058	161	Soil gas	192
Chlorodifluoromethane	73-01007	0173-95-0058	2330	Soil gas	192
Chloroethane	73-01007	0173-95-0058	108	Soil gas	192
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-95-0058	120	Soil gas	192
Dichlorobenzene[1,4-]	73-01007	0173-95-0058	370	Soil gas	192
Dichlorodifluoromethane	73-01007	0173-95-0058	673	Soil gas	192
Dichloroethane[1,2-]	73-01007	0173-95-0058	18.7	Soil gas	192
Dichloroethene[1,1-]	73-01007	0173-95-0058	41.3	Soil gas	192
Dichloroethene[cis-1,2-]	73-01007	0173-95-0058	9000	Soil gas	192
Dichloroethene[trans-1,2-]	73-01007	0173-95-0058	140	Soil gas	192
Dichloropropane[1,2-]	73-01007	0173-95-0058	37.7	Soil gas	192

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Ethylbenzene	73-01007	0173-95-0058	1120	Soil gas	192
Styrene	73-01007	0173-95-0058	132	Soil gas	192
Tetrachloroethene	73-01007	0173-95-0058	122	Soil gas	192
Toluene	73-01007	0173-95-0058	581	Soil gas	192
Trichlorobenzene[1,2,4-]	73-01007	0173-95-0058	28.6	Soil gas	192
Trichloroethene	73-01007	0173-95-0058	125	Soil gas	192
Trimethylbenzene[1,2,4-]	73-01007	0173-95-0058	557	Soil gas	192
Trimethylbenzene[1,3,5-]	73-01007	0173-95-0058	328	Soil gas	192
Vinyl Chloride	73-01007	0173-95-0058	798	Soil gas	192
Xylene[1,2-]	73-01007	0173-95-0058	302	Soil gas	192
Xylene[1,3-]	73-01007	0173-95-0058	1780	Soil gas	192
Dichlorodifluoromethane	73-01008	0173-95-0059	16.2	Soil gas	1098
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	0173-95-0060	6.2	Soil gas	522
Dichlorodifluoromethane	73-01008	0173-95-0060	31.3	Soil gas	522
Tetrachloroethene	73-01008	0173-95-0060	5.3	Soil gas	522
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	0173-95-0061	31.9	Soil gas	186
Dichlorodifluoromethane	73-01008	0173-95-0061	99.9	Soil gas	186
Tetrachloroethene	73-01008	0173-95-0061	9.1	Soil gas	186
Chlorodifluoromethane	73-01009	0173-95-0062	42.6	Soil gas	492
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01009	0173-95-0062	29.6	Soil gas	492
Dichlorodifluoromethane	73-01009	0173-95-0062	360	Soil gas	492
Tetrachloroethene	73-01009	0173-95-0062	349	Soil gas	492
Trichloroethene	73-01009	0173-95-0062	28	Soil gas	492
Trichlorofluoromethane	73-01009	0173-95-0062	26.6	Soil gas	492
Chlorodifluoromethane	73-01009	0173-95-0063	10	Soil gas	133.8
Dichlorodifluoromethane	73-01009	0173-95-0063	174	Soil gas	133.8
Tetrachloroethene	73-01009	0173-95-0063	141	Soil gas	133.8
Trichlorofluoromethane	73-01009	0173-95-0063	8.7	Soil gas	133.8
Chlorodifluoromethane	73-01010	0173-95-0064	43.2	Soil gas	1740
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-95-0064	19.1	Soil gas	1740
Dichlorodifluoromethane	73-01010	0173-95-0064	315	Soil gas	1740
Tetrachloroethene	73-01010	0173-95-0064	113	Soil gas	1740
Trichloroethene	73-01010	0173-95-0064	6.2	Soil gas	1740
Trichlorofluoromethane	73-01010	0173-95-0064	18.4	Soil gas	1740
Chlorodifluoromethane	73-01010	0173-95-0065	11.4	Soil gas	1368
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-95-0065	11.8	Soil gas	1368
Dichlorodifluoromethane	73-01010	0173-95-0065	172	Soil gas	1368
Tetrachloroethene	73-01010	0173-95-0065	60.6	Soil gas	1368
Trichlorofluoromethane	73-01010	0173-95-0065	8.3	Soil gas	1368
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-95-0066	6.1	Soil gas	732
Dichlorodifluoromethane	73-01010	0173-95-0066	54.9	Soil gas	732
Tetrachloroethene	73-01010	0173-95-0066	11	Soil gas	732
Trichloroethane[1,1,2-]	73-01010	0173-95-0066	5	Soil gas	732

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Chlorodifluoromethane	73-01010	0173-95-0067	8	Soil gas	264
Chloroform	73-01010	0173-95-0067	23.5	Soil gas	264
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01010	0173-95-0067	79.4	Soil gas	264
Dichlorodifluoromethane	73-01010	0173-95-0067	305	Soil gas	264
Tetrachloroethene	73-01010	0173-95-0067	30.1	Soil gas	264
Chlorodifluoromethane	73-01010	0173-95-0068	8.3	Soil gas	90
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01010	0173-95-0068	60	Soil gas	90
Dichlorodifluoromethane	73-01010	0173-95-0068	211	Soil gas	90
Tetrachloroethene	73-01010	0173-95-0068	18.8	Soil gas	90
Chlorodifluoromethane	73-01011	0173-95-0069	739	Soil gas	2136
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-95-0069	74.5	Soil gas	2136
Dichlorodifluoromethane	73-01011	0173-95-0069	943	Soil gas	2136
Dichloroethene[<i>cis</i> -1,2-]	73-01011	0173-95-0069	50.8	Soil gas	2136
Trichlorobenzene[1,2,4-]	73-01011	0173-95-0069	6.6	Soil gas	2136
Trichloroethene	73-01011	0173-95-0069	11.1	Soil gas	2136
Trichlorofluoromethane	73-01011	0173-95-0069	57.4	Soil gas	2136
Benzene	73-01011	0173-95-0070	11.9	Soil gas	1500
Chlorodifluoromethane	73-01011	0173-95-0070	750	Soil gas	1500
Chloroethane	73-01011	0173-95-0070	8.5	Soil gas	1500
Chloromethane	73-01011	0173-95-0070	19	Soil gas	1500
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-95-0070	42.7	Soil gas	1500
Dichlorobenzene[1,4-]	73-01011	0173-95-0070	10.3	Soil gas	1500
Dichlorodifluoromethane	73-01011	0173-95-0070	536	Soil gas	1500
Dichloroethene[<i>cis</i> -1,2-]	73-01011	0173-95-0070	899	Soil gas	1500
Dichloroethene[<i>trans</i> -1,2-]	73-01011	0173-95-0070	8.8	Soil gas	1500
Tetrachloroethene	73-01011	0173-95-0070	116	Soil gas	1500
Trichlorobenzene[1,2,4-]	73-01011	0173-95-0070	14.9	Soil gas	1500
Trichloroethene	73-01011	0173-95-0070	13.8	Soil gas	1500
Trichlorofluoromethane	73-01011	0173-95-0070	18.5	Soil gas	1500
Vinyl Chloride	73-01011	0173-95-0070	39.3	Soil gas	1500
Benzene	73-01011	0173-95-0071	100	Soil gas	1044
Chlorobenzene	73-01011	0173-95-0071	18.8	Soil gas	1044
Chlorodifluoromethane	73-01011	0173-95-0071	2030	Soil gas	1044
Chloroethane	73-01011	0173-95-0071	94.4	Soil gas	1044
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-95-0071	141	Soil gas	1044
Dichlorobenzene[1,4-]	73-01011	0173-95-0071	96.1	Soil gas	1044
Dichlorodifluoromethane	73-01011	0173-95-0071	737	Soil gas	1044
Dichloroethane[1,1-]	73-01011	0173-95-0071	12.7	Soil gas	1044
Dichloroethane[1,2-]	73-01011	0173-95-0071	10.5	Soil gas	1044
Dichloroethene[1,1-]	73-01011	0173-95-0071	42.9	Soil gas	1044
Dichloroethene[<i>cis</i> -1,2-]	73-01011	0173-95-0071	5330	Soil gas	1044
Dichloroethene[<i>trans</i> -1,2-]	73-01011	0173-95-0071	103	Soil gas	1044
Dichloropropane[1,2-]	73-01011	0173-95-0071	8.9	Soil gas	1044
Ethylbenzene	73-01011	0173-95-0071	14.4	Soil gas	1044

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Tetrachloroethene	73-01011	0173-95-0071	246	Soil gas	1044
Toluene	73-01011	0173-95-0071	59.5	Soil gas	1044
Trichlorobenzene[1,2,4-]	73-01011	0173-95-0071	77.7	Soil gas	1044
Trichloroethene	73-01011	0173-95-0071	72.9	Soil gas	1044
Trichlorofluoromethane	73-01011	0173-95-0071	25.7	Soil gas	1044
Trimethylbenzene[1,2,4-]	73-01011	0173-95-0071	30.9	Soil gas	1044
Vinyl Chloride	73-01011	0173-95-0071	620	Soil gas	1044
Xylene[1,3-]	73-01011	0173-95-0071	22.3	Soil gas	1044
Benzene	73-01011	0173-95-0072	213	Soil gas	348
Benzyl Chloride	73-01011	0173-95-0072	62.2	Soil gas	348
Chlorobenzene	73-01011	0173-95-0072	38.9	Soil gas	348
Chlorodifluoromethane	73-01011	0173-95-0072	4470	Soil gas	348
Chloroethane	73-01011	0173-95-0072	130	Soil gas	348
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	0173-95-0072	126	Soil gas	348
Dichlorobenzene[1,4-]	73-01011	0173-95-0072	194	Soil gas	348
Dichlorodifluoromethane	73-01011	0173-95-0072	768	Soil gas	348
Dichloroethane[1,1-]	73-01011	0173-95-0072	7.6	Soil gas	348
Dichloroethane[1,2-]	73-01011	0173-95-0072	17.7	Soil gas	348
Dichloroethene[1,1-]	73-01011	0173-95-0072	92.8	Soil gas	348
Dichloroethene[cis-1,2-]	73-01011	0173-95-0072	32100	Soil gas	348
Dichloroethene[trans-1,2-]	73-01011	0173-95-0072	374	Soil gas	348
Dichloropropane[1,2-]	73-01011	0173-95-0072	10	Soil gas	348
Tetrachloroethene	73-01011	0173-95-0072	84.8	Soil gas	348
Toluene	73-01011	0173-95-0072	56.9	Soil gas	348
Trichloroethene	73-01011	0173-95-0072	67.9	Soil gas	348
Trimethylbenzene[1,2,4-]	73-01011	0173-95-0072	33.5	Soil gas	348
Trimethylbenzene[1,3,5-]	73-01011	0173-95-0072	19.4	Soil gas	348
Vinyl Chloride	73-01011	0173-95-0072	1930	Soil gas	348
Benzene	NA	0173-95-0073	63.5	Soil gas	0
Chlorodifluoromethane	NA	0173-95-0073	968	Soil gas	0
Chloroethane	NA	0173-95-0073	41.5	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	NA	0173-95-0073	106	Soil gas	0
Dichlorobenzene[1,4-]	NA	0173-95-0073	21.1	Soil gas	0
Dichlorodifluoromethane	NA	0173-95-0073	532	Soil gas	0
Dichloroethane[1,2-]	NA	0173-95-0073	7.4	Soil gas	0
Dichloroethene[1,1-]	NA	0173-95-0073	34.7	Soil gas	0
Dichloroethene[cis-1,2-]	NA	0173-95-0073	6160	Soil gas	0
Dichloroethene[trans-1,2-]	NA	0173-95-0073	138	Soil gas	0
Dichloropropane[1,2-]	NA	0173-95-0073	7.2	Soil gas	0
Tetrachloroethene	NA	0173-95-0073	16.5	Soil gas	0
Toluene	NA	0173-95-0073	5.2	Soil gas	0
Trichloroethene	NA	0173-95-0073	39.1	Soil gas	0
Vinyl Chloride	NA	0173-95-0073	619	Soil gas	0
Xylene[1,3-]	NA	0173-95-0073	19.3	Soil gas	0
Benzene	NA	0173-95-0074	41.1	Soil gas	0
Benzyl Chloride	NA	0173-95-0074	62.7	Soil gas	0
Chlorodifluoromethane	NA	0173-95-0074	3160	Soil gas	0

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Chloroethane	NA	0173-95-0074	16.1	Soil gas	0
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	NA	0173-95-0074	70.4	Soil gas	0
Dichlorobenzene[1,4-]	NA	0173-95-0074	30.1	Soil gas	0
Dichlorodifluoromethane	NA	0173-95-0074	203	Soil gas	0
Dichloroethene[1,1-]	NA	0173-95-0074	5.7	Soil gas	0
Dichloroethene[cis-1,2-]	NA	0173-95-0074	746	Soil gas	0
Dichloroethene[trans-1,2-]	NA	0173-95-0074	17.8	Soil gas	0
Trichloroethene	NA	0173-95-0074	6.7	Soil gas	0
Vinyl Chloride	NA	0173-95-0074	203	Soil gas	0
Benzene	73-01007	0173-95-0105	88.4	Soil gas	336
Benzyl Chloride	73-01007	0173-95-0105	64.8	Soil gas	336
Carbon Tetrachloride	73-01007	0173-95-0105	5	Soil gas	336
Chlorobenzene	73-01007	0173-95-0105	30.1	Soil gas	336
Chlorodifluoromethane	73-01007	0173-95-0105	935	Soil gas	336
Chloroethane	73-01007	0173-95-0105	35.6	Soil gas	336
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-95-0105	43.1	Soil gas	336
Dichlorobenzene[1,4-]	73-01007	0173-95-0105	154	Soil gas	336
Dichlorodifluoromethane	73-01007	0173-95-0105	313	Soil gas	336
Dichloroethane[1,2-]	73-01007	0173-95-0105	10.7	Soil gas	336
Dichloroethene[1,1-]	73-01007	0173-95-0105	20	Soil gas	336
Dichloroethene[cis-1,2-]	73-01007	0173-95-0105	5490	Soil gas	336
Dichloroethene[trans-1,2-]	73-01007	0173-95-0105	61.8	Soil gas	336
Dichloropropane[1,2-]	73-01007	0173-95-0105	19.4	Soil gas	336
Ethylbenzene	73-01007	0173-95-0105	349	Soil gas	336
Styrene	73-01007	0173-95-0105	12.4	Soil gas	336
Tetrachloroethene	73-01007	0173-95-0105	66.7	Soil gas	336
Toluene	73-01007	0173-95-0105	560	Soil gas	336
Trichloroethene	73-01007	0173-95-0105	66.2	Soil gas	336
Trimethylbenzene[1,2,4-]	73-01007	0173-95-0105	240	Soil gas	336
Trimethylbenzene[1,3,5-]	73-01007	0173-95-0105	109	Soil gas	336
Vinyl Chloride	73-01007	0173-95-0105	309	Soil gas	336
Xylene[1,2-]	73-01007	0173-95-0105	154	Soil gas	336
Xylene[1,3-]+Xylene[1,4-]	73-01007	0173-95-0105	862	Soil gas	336
Benzene	73-01007	0173-95-0106	114	Soil gas	192
Chlorobenzene	73-01007	0173-95-0106	76.7	Soil gas	192
Chlorodifluoromethane	73-01007	0173-95-0106	1430	Soil gas	192
Chloroethane	73-01007	0173-95-0106	61.4	Soil gas	192
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-95-0106	60.8	Soil gas	192
Dichlorobenzene[1,4-]	73-01007	0173-95-0106	232	Soil gas	192
Dichlorodifluoromethane	73-01007	0173-95-0106	354	Soil gas	192
Dichloroethane[1,2-]	73-01007	0173-95-0106	10.9	Soil gas	192
Dichloroethene[1,1-]	73-01007	0173-95-0106	21.4	Soil gas	192
Dichloroethene[cis-1,2-]	73-01007	0173-95-0106	7360	Soil gas	192
Dichloroethene[trans-1,2-]	73-01007	0173-95-0106	94.2	Soil gas	192
Dichloropropane[1,2-]	73-01007	0173-95-0106	23.3	Soil gas	192
Ethylbenzene	73-01007	0173-95-0106	618	Soil gas	192

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Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Styrene	73-01007	0173-95-0106	6.7	Soil gas	192
Tetrachloroethene	73-01007	0173-95-0106	65.4	Soil gas	192
Toluene	73-01007	0173-95-0106	382	Soil gas	192
Trichloroethene	73-01007	0173-95-0106	64.4	Soil gas	192
Trimethylbenzene[1,2,4-]	73-01007	0173-95-0106	472	Soil gas	192
Trimethylbenzene[1,3,5-]	73-01007	0173-95-0106	260	Soil gas	192
Vinyl Chloride	73-01007	0173-95-0106	450	Soil gas	192
Xylene[1,2-]	73-01007	0173-95-0106	157	Soil gas	192
Xylene[1,3-]+Xylene[1,4-]	73-01007	0173-95-0106	1500	Soil gas	192
Benzene	73-02051	0173-95-0141	33.1	Soil gas	324
Chlorodifluoromethane	73-02051	0173-95-0141	336	Soil gas	324
Chloroethane	73-02051	0173-95-0141	76.8	Soil gas	324
Chloromethane	73-02051	0173-95-0141	50.8	Soil gas	324
Dichlorodifluoromethane	73-02051	0173-95-0141	22.1	Soil gas	324
Dichloroethane[1,2-]	73-02051	0173-95-0141	12.6	Soil gas	324
Dichloroethene[cis-1,2-]	73-02051	0173-95-0141	20.4	Soil gas	324
Ethylbenzene	73-02051	0173-95-0141	31	Soil gas	324
Methylene Chloride	73-02051	0173-95-0141	78.5	Soil gas	324
Toluene	73-02051	0173-95-0141	38.7	Soil gas	324
Trichlorofluoromethane	73-02051	0173-95-0141	54.9	Soil gas	324
Trimethylbenzene[1,2,4-]	73-02051	0173-95-0141	17.8	Soil gas	324
Trimethylbenzene[1,3,5-]	73-02051	0173-95-0141	13.9	Soil gas	324
Vinyl Chloride	73-02051	0173-95-0141	26.2	Soil gas	324
Xylene[1,2-]	73-02051	0173-95-0141	19	Soil gas	324
Xylene[1,3-]+Xylene[1,4-]	73-02051	0173-95-0141	43.9	Soil gas	324
Benzene	73-02052	0173-95-0142	14.6	Soil gas	318
Chlorodifluoromethane	73-02052	0173-95-0142	277	Soil gas	318
Chloroethane	73-02052	0173-95-0142	47.6	Soil gas	318
Chloromethane	73-02052	0173-95-0142	50.2	Soil gas	318
Dichlorodifluoromethane	73-02052	0173-95-0142	53.9	Soil gas	318
Dichloroethene[cis-1,2-]	73-02052	0173-95-0142	35.2	Soil gas	318
Ethylbenzene	73-02052	0173-95-0142	13.7	Soil gas	318
Methylene Chloride	73-02052	0173-95-0142	86.1	Soil gas	318
Toluene	73-02052	0173-95-0142	27.8	Soil gas	318
Trichlorofluoromethane	73-02052	0173-95-0142	88	Soil gas	318
Trimethylbenzene[1,2,4-]	73-02052	0173-95-0142	21.6	Soil gas	318
Trimethylbenzene[1,3,5-]	73-02052	0173-95-0142	35.5	Soil gas	318
Vinyl Chloride	73-02052	0173-95-0142	53.1	Soil gas	318
Xylene[1,2-]	73-02052	0173-95-0142	15.9	Soil gas	318
Xylene[1,3-]+Xylene[1,4-]	73-02052	0173-95-0142	38.5	Soil gas	318
Benzene	73-02053	0173-95-0143	68.2	Soil gas	210
Chlorodifluoromethane	73-02053	0173-95-0143	823	Soil gas	210
Chloroethane	73-02053	0173-95-0143	205	Soil gas	210
Chloromethane	73-02053	0173-95-0143	326	Soil gas	210
Dichlorodifluoromethane	73-02053	0173-95-0143	194	Soil gas	210
Dichloroethene[1,1-]	73-02053	0173-95-0143	28.4	Soil gas	210
Dichloroethene[cis-1,2-]	73-02053	0173-95-0143	4250	Soil gas	210
Dichloroethene[trans-1,2-]	73-02053	0173-95-0143	41.5	Soil gas	210
Ethylbenzene	73-02053	0173-95-0143	788	Soil gas	210

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Methylene Chloride	73-02053	0173-95-0143	79.6	Soil gas	210
Toluene	73-02053	0173-95-0143	2110	Soil gas	210
Trichloroethene	73-02053	0173-95-0143	108	Soil gas	210
Trichlorofluoromethane	73-02053	0173-95-0143	9670	Soil gas	210
Trimethylbenzene[1,2,4-]	73-02053	0173-95-0143	143	Soil gas	210
Trimethylbenzene[1,3,5-]	73-02053	0173-95-0143	58.5	Soil gas	210
Vinyl Chloride	73-02053	0173-95-0143	474	Soil gas	210
Xylene[1,2-]	73-02053	0173-95-0143	169	Soil gas	210
Xylene[1,3-]+Xylene[1,4-]	73-02053	0173-95-0143	520	Soil gas	210
Chloroform	73-02054	0173-95-0144	73.7	Soil gas	258
Chloromethane	73-02054	0173-95-0144	36.3	Soil gas	258
Dichlorodifluoromethane	73-02054	0173-95-0144	73	Soil gas	258
Dichloroethene[1,1-]	73-02054	0173-95-0144	251	Soil gas	258
Dichloroethene[cis-1,2-]	73-02054	0173-95-0144	15.8	Soil gas	258
Ethylbenzene	73-02054	0173-95-0144	14	Soil gas	258
Methylene Chloride	73-02054	0173-95-0144	76.5	Soil gas	258
Toluene	73-02054	0173-95-0144	112	Soil gas	258
Trichlorofluoromethane	73-02054	0173-95-0144	251	Soil gas	258
Trimethylbenzene[1,2,4-]	73-02054	0173-95-0144	12.5	Soil gas	258
Xylene[1,3-]+Xylene[1,4-]	73-02054	0173-95-0144	24.8	Soil gas	258
Benzene	73-02055	0173-95-0145	15.6	Soil gas	258
Chlorobenzene	73-02055	0173-95-0145	8.9	Soil gas	258
Chlorodifluoromethane	73-02055	0173-95-0145	1650	Soil gas	258
Chloroethane	73-02055	0173-95-0145	43.5	Soil gas	258
Dichlorodifluoromethane	73-02055	0173-95-0145	3850	Soil gas	258
Dichloroethene[cis-1,2-]	73-02055	0173-95-0145	17	Soil gas	258
Ethylbenzene	73-02055	0173-95-0145	74.5	Soil gas	258
Methylene Chloride	73-02055	0173-95-0145	87.6	Soil gas	258
Toluene	73-02055	0173-95-0145	338	Soil gas	258
Trichloro-1,2,2-trifluoroethane[1,1,2-]	73-02055	0173-95-0145	20.3	Soil gas	258
Trichloroethene	73-02055	0173-95-0145	5.5	Soil gas	258
Trichlorofluoromethane	73-02055	0173-95-0145	116	Soil gas	258
Trimethylbenzene[1,2,4-]	73-02055	0173-95-0145	38.8	Soil gas	258
Trimethylbenzene[1,3,5-]	73-02055	0173-95-0145	25.2	Soil gas	258
Vinyl Chloride	73-02055	0173-95-0145	19.7	Soil gas	258
Xylene[1,2-]	73-02055	0173-95-0145	23.4	Soil gas	258
Xylene[1,3-]+Xylene[1,4-]	73-02055	0173-95-0145	38.9	Soil gas	258
Benzene	73-02056	0173-95-0146	6.4	Soil gas	678
Chlorobenzene	73-02056	0173-95-0146	6.8	Soil gas	678
Chlorodifluoromethane	73-02056	0173-95-0146	130	Soil gas	678
Chloroethane	73-02056	0173-95-0146	7.7	Soil gas	678
Chloromethane	73-02056	0173-95-0146	13.8	Soil gas	678
Dichlorodifluoromethane	73-02056	0173-95-0146	108	Soil gas	678
Dichloroethene[cis-1,2-]	73-02056	0173-95-0146	10.4	Soil gas	678
Ethylbenzene	73-02056	0173-95-0146	18.7	Soil gas	678
Methylene Chloride	73-02056	0173-95-0146	74.9	Soil gas	678
Tetrachloroethene	73-02056	0173-95-0146	9.7	Soil gas	678
Toluene	73-02056	0173-95-0146	1070	Soil gas	678

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trichloro-1,2,2-trifluoroethane[1,1,2-]	73-02056	0173-95-0146	5.2	Soil gas	678
Trichlorofluoromethane	73-02056	0173-95-0146	81.8	Soil gas	678
Trimethylbenzene[1,2,4-]	73-02056	0173-95-0146	9.5	Soil gas	678
Xylene[1,2-]	73-02056	0173-95-0146	13.4	Soil gas	678
Xylene[1,3-]+Xylene[1,4-]	73-02056	0173-95-0146	27.9	Soil gas	678
Benzene	73-02057	0173-95-0147	918	Soil gas	48
Benzyl Chloride	73-02057	0173-95-0147	6.1	Soil gas	48
Chlorobenzene	73-02057	0173-95-0147	31	Soil gas	48
Chlorodifluoromethane	73-02057	0173-95-0147	1330	Soil gas	48
Chloroethane	73-02057	0173-95-0147	27	Soil gas	48
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02057	0173-95-0147	16	Soil gas	48
Dichlorobenzene[1,4-]	73-02057	0173-95-0147	40	Soil gas	48
Dichlorodifluoromethane	73-02057	0173-95-0147	239	Soil gas	48
Dichloroethane[1,2-]	73-02057	0173-95-0147	5.1	Soil gas	48
Dichloroethene[1,1-]	73-02057	0173-95-0147	50.6	Soil gas	48
Dichloroethene[cis-1,2-]	73-02057	0173-95-0147	7140	Soil gas	48
Dichloroethene[trans-1,2-]	73-02057	0173-95-0147	117	Soil gas	48
Dichloropropane[1,2-]	73-02057	0173-95-0147	5.7	Soil gas	48
Ethylbenzene	73-02057	0173-95-0147	1510	Soil gas	48
Methylene Chloride	73-02057	0173-95-0147	79.4	Soil gas	48
Styrene	73-02057	0173-95-0147	92.9	Soil gas	48
Tetrachloroethene	73-02057	0173-95-0147	75.8	Soil gas	48
Toluene	73-02057	0173-95-0147	4520	Soil gas	48
Trichloroethene	73-02057	0173-95-0147	107	Soil gas	48
Trimethylbenzene[1,2,4-]	73-02057	0173-95-0147	1440	Soil gas	48
Trimethylbenzene[1,3,5-]	73-02057	0173-95-0147	643	Soil gas	48
Vinyl Chloride	73-02057	0173-95-0147	981	Soil gas	48
Xylene[1,2-]	73-02057	0173-95-0147	868	Soil gas	48
Xylene[1,3-]	73-02057	0173-95-0147	3150	Soil gas	48
Benzene	73-02057	0173-95-0148	716	Soil gas	264
Chlorobenzene	73-02057	0173-95-0148	65.2	Soil gas	264
Chlorodifluoromethane	73-02057	0173-95-0148	3450	Soil gas	264
Chloroethane	73-02057	0173-95-0148	88.3	Soil gas	264
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02057	0173-95-0148	147	Soil gas	264
Dichlorobenzene[1,4-]	73-02057	0173-95-0148	2.44	Soil gas	264
Dichlorodifluoromethane	73-02057	0173-95-0148	884	Soil gas	264
Dichloroethane[1,2-]	73-02057	0173-95-0148	21.6	Soil gas	264
Dichloroethene[1,1-]	73-02057	0173-95-0148	61.2	Soil gas	264
Dichloroethene[cis-1,2-]	73-02057	0173-95-0148	14900	Soil gas	264
Dichloroethene[trans-1,2-]	73-02057	0173-95-0148	171	Soil gas	264
Dichloropropane[1,2-]	73-02057	0173-95-0148	21.1	Soil gas	264
Ethylbenzene	73-02057	0173-95-0148	1050	Soil gas	264
Methylene Chloride	73-02057	0173-95-0148	155	Soil gas	264
Styrene	73-02057	0173-95-0148	33	Soil gas	264
Tetrachloroethene	73-02057	0173-95-0148	97.7	Soil gas	264
Toluene	73-02057	0173-95-0148	1500	Soil gas	264

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trichloro-1,2,2-trifluoroethane[1,1,2-]	73-02057	0173-95-0148	5	Soil gas	264
Trichloroethene	73-02057	0173-95-0148	166	Soil gas	264
Trimethylbenzene[1,2,4-]	73-02057	0173-95-0148	794	Soil gas	264
Trimethylbenzene[1,3,5-]	73-02057	0173-95-0148	593	Soil gas	264
Vinyl Chloride	73-02057	0173-95-0148	1140	Soil gas	264
Xylene[1,2-]	73-02057	0173-95-0148	965	Soil gas	264
Xylene[1,3-]	73-02057	0173-95-0148	2280	Soil gas	264
Benzene	73-02059	0173-95-0149	252	Soil gas	120
Chlorobenzene	73-02059	0173-95-0149	28.8	Soil gas	120
Chlorodifluoromethane	73-02059	0173-95-0149	1120	Soil gas	120
Chloroethane	73-02059	0173-95-0149	32	Soil gas	120
Chloromethane	73-02059	0173-95-0149	46.4	Soil gas	120
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02059	0173-95-0149	125	Soil gas	120
Dichlorobenzene[1,4-]	73-02059	0173-95-0149	96.6	Soil gas	120
Dichlorodifluoromethane	73-02059	0173-95-0149	810	Soil gas	120
Dichloroethane[1,2-]	73-02059	0173-95-0149	5.3	Soil gas	120
Dichloroethene[cis-1,2-]	73-02059	0173-95-0149	4510	Soil gas	120
Dichloroethene[trans-1,2-]	73-02059	0173-95-0149	57.7	Soil gas	120
Dichloropropane[1,2-]	73-02059	0173-95-0149	38.9	Soil gas	120
Ethylbenzene	73-02059	0173-95-0149	2540	Soil gas	120
Methylene Chloride	73-02059	0173-95-0149	260	Soil gas	120
Styrene	73-02059	0173-95-0149	346	Soil gas	120
Tetrachloroethane[1,1,2,2-]	73-02059	0173-95-0149	5.6	Soil gas	120
Tetrachloroethene	73-02059	0173-95-0149	1170	Soil gas	120
Toluene	73-02059	0173-95-0149	8980	Soil gas	120
Trichloroethene	73-02059	0173-95-0149	587	Soil gas	120
Trichlorofluoromethane	73-02059	0173-95-0149	5.5	Soil gas	120
Trimethylbenzene[1,2,4-]	73-02059	0173-95-0149	885	Soil gas	120
Trimethylbenzene[1,3,5-]	73-02059	0173-95-0149	452	Soil gas	120
Vinyl Chloride	73-02059	0173-95-0149	340	Soil gas	120
Xylene[1,2-]	73-02059	0173-95-0149	2030	Soil gas	120
Xylene[1,3-]	73-02059	0173-95-0149	9250	Soil gas	120
Chlorodifluoromethane	73-02060	0173-95-0150	7.1	Soil gas	36
Dichlorodifluoromethane	73-02060	0173-95-0150	5.7	Soil gas	36
Dichloroethene[cis-1,2-]	73-02060	0173-95-0150	38.2	Soil gas	36
Ethylbenzene	73-02060	0173-95-0150	35.5	Soil gas	36
Methylene Chloride	73-02060	0173-95-0150	11.3	Soil gas	36
Tetrachloroethene	73-02060	0173-95-0150	13.9	Soil gas	36
Toluene	73-02060	0173-95-0150	96.6	Soil gas	36
Trimethylbenzene[1,2,4-]	73-02060	0173-95-0150	24.9	Soil gas	36
Trimethylbenzene[1,3,5-]	73-02060	0173-95-0150	8.8	Soil gas	36
Xylene[1,2-]	73-02060	0173-95-0150	29	Soil gas	36
Xylene[1,3-]	73-02060	0173-95-0150	130	Soil gas	36
Chlorodifluoromethane	73-02061	0173-95-0151	8.8	Soil gas	1158
Dichlorodifluoromethane	73-02061	0173-95-0151	21.3	Soil gas	1158
Dichloroethene[cis-1,2-]	73-02061	0173-95-0151	16.6	Soil gas	1158
Ethylbenzene	73-02061	0173-95-0151	21	Soil gas	1158

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylene Chloride	73-02061	0173-95-0151	8.2	Soil gas	1158
Tetrachloroethene	73-02061	0173-95-0151	8.7	Soil gas	1158
Toluene	73-02061	0173-95-0151	71.2	Soil gas	1158
Trimethylbenzene[1,2,4-]	73-02061	0173-95-0151	23.4	Soil gas	1158
Trimethylbenzene[1,3,5-]	73-02061	0173-95-0151	7.3	Soil gas	1158
Xylene[1,2-]	73-02061	0173-95-0151	18.9	Soil gas	1158
Xylene[1,3-]	73-02061	0173-95-0151	80.4	Soil gas	1158
Benzene	73-02062	0173-95-0152	181	Soil gas	120
Chlorobenzene	73-02062	0173-95-0152	22.3	Soil gas	120
Chlorodifluoromethane	73-02062	0173-95-0152	947	Soil gas	120
Chloromethane	73-02062	0173-95-0152	25.3	Soil gas	120
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02062	0173-95-0152	145	Soil gas	120
Dichlorobenzene[1,4-]	73-02062	0173-95-0152	82.3	Soil gas	120
Dichlorodifluoromethane	73-02062	0173-95-0152	887	Soil gas	120
Dichloroethene[cis-1,2-]	73-02062	0173-95-0152	819	Soil gas	120
Dichloroethene[trans-1,2-]	73-02062	0173-95-0152	5.5	Soil gas	120
Ethylbenzene	73-02062	0173-95-0152	1210	Soil gas	120
Methylene Chloride	73-02062	0173-95-0152	19.9	Soil gas	120
Styrene	73-02062	0173-95-0152	18.8	Soil gas	120
Tetrachloroethane[1,1,2,2-]	73-02062	0173-95-0152	5	Soil gas	120
Toluene	73-02062	0173-95-0152	67.1	Soil gas	120
Trichloroethene	73-02062	0173-95-0152	18	Soil gas	120
Trimethylbenzene[1,2,4-]	73-02062	0173-95-0152	885	Soil gas	120
Trimethylbenzene[1,3,5-]	73-02062	0173-95-0152	384	Soil gas	120
Vinyl Chloride	73-02062	0173-95-0152	130	Soil gas	120
Xylene[1,2-]	73-02062	0173-95-0152	163	Soil gas	120
Xylene[1,3-]	73-02062	0173-95-0152	1230	Soil gas	120
Benzene	73-02062	0173-95-0153	16.7	Soil gas	240
Chlorodifluoromethane	73-02062	0173-95-0153	409	Soil gas	240
Chloromethane	73-02062	0173-95-0153	25.9	Soil gas	240
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02062	0173-95-0153	62.9	Soil gas	240
Dichlorobenzene[1,4-]	73-02062	0173-95-0153	6.9	Soil gas	240
Dichlorodifluoromethane	73-02062	0173-95-0153	347	Soil gas	240
Ethylbenzene	73-02062	0173-95-0153	31.2	Soil gas	240
Methylene Chloride	73-02062	0173-95-0153	14.1	Soil gas	240
Toluene	73-02062	0173-95-0153	10.8	Soil gas	240
Trimethylbenzene[1,2,4-]	73-02062	0173-95-0153	45.4	Soil gas	240
Trimethylbenzene[1,3,5-]	73-02062	0173-95-0153	11.8	Soil gas	240
Xylene[1,3-]	73-02062	0173-95-0153	39.1	Soil gas	240
Benzene	73-02062	0173-95-0154	22.4	Soil gas	360
Chlorodifluoromethane	73-02062	0173-95-0154	350	Soil gas	360
Chloromethane	73-02062	0173-95-0154	24.3	Soil gas	360
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02062	0173-95-0154	53.6	Soil gas	360
Dichlorodifluoromethane	73-02062	0173-95-0154	303	Soil gas	360
Ethylbenzene	73-02062	0173-95-0154	15.7	Soil gas	360
Methylene Chloride	73-02062	0173-95-0154	13.9	Soil gas	360

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Toluene	73-02062	0173-95-0154	10.3	Soil gas	360
Trimethylbenzene[1,2,4-]	73-02062	0173-95-0154	27.8	Soil gas	360
Trimethylbenzene[1,3,5-]	73-02062	0173-95-0154	7.1	Soil gas	360
Xylene[1,3-]	73-02062	0173-95-0154	22.9	Soil gas	360
Benzene	73-02062	0173-95-0155	15	Soil gas	480
Chlorodifluoromethane	73-02062	0173-95-0155	398	Soil gas	480
Chloromethane	73-02062	0173-95-0155	25.3	Soil gas	480
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02062	0173-95-0155	71.2	Soil gas	480
Dichlorodifluoromethane	73-02062	0173-95-0155	380	Soil gas	480
Ethylbenzene	73-02062	0173-95-0155	9	Soil gas	480
Methylene Chloride	73-02062	0173-95-0155	19.5	Soil gas	480
Tetrachloroethene	73-02062	0173-95-0155	5.5	Soil gas	480
Toluene	73-02062	0173-95-0155	9.5	Soil gas	480
Trimethylbenzene[1,2,4-]	73-02062	0173-95-0155	18.6	Soil gas	480
Vinyl Chloride	73-02062	0173-95-0155	8.7	Soil gas	480
Xylene[1,3-]	73-02062	0173-95-0155	14.2	Soil gas	480
Benzene	73-02062	0173-95-0156	34.7	Soil gas	600
Chlorodifluoromethane	73-02062	0173-95-0156	384	Soil gas	600
Dichlorobenzene[1,4-]	73-02062	0173-95-0156	5.8	Soil gas	600
Dichlorodifluoromethane	73-02062	0173-95-0156	314	Soil gas	600
Dichloroethene[<i>cis</i> -1,2-]	73-02062	0173-95-0156	23.8	Soil gas	600
Ethylbenzene	73-02062	0173-95-0156	68.8	Soil gas	600
Methylene Chloride	73-02062	0173-95-0156	18.1	Soil gas	600
Tetrachloroethene	73-02062	0173-95-0156	7.3	Soil gas	600
Toluene	73-02062	0173-95-0156	25.1	Soil gas	600
Trimethylbenzene[1,2,4-]	73-02062	0173-95-0156	57.1	Soil gas	600
Trimethylbenzene[1,3,5-]	73-02062	0173-95-0156	21.7	Soil gas	600
Vinyl Chloride	73-02062	0173-95-0156	9.9	Soil gas	600
Xylene[1,2-]	73-02062	0173-95-0156	24.2	Soil gas	600
Xylene[1,3-]	73-02062	0173-95-0156	136	Soil gas	600
Chlorodifluoromethane	73-02062	0173-95-0157	196	Soil gas	720
Chloromethane	73-02062	0173-95-0157	32.2	Soil gas	720
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02062	0173-95-0157	44.4	Soil gas	720
Dichlorodifluoromethane	73-02062	0173-95-0157	325	Soil gas	720
Ethylbenzene	73-02062	0173-95-0157	7	Soil gas	720
Methylene Chloride	73-02062	0173-95-0157	23.4	Soil gas	720
Tetrachloroethene	73-02062	0173-95-0157	15.1	Soil gas	720
Toluene	73-02062	0173-95-0157	6.8	Soil gas	720
Trimethylbenzene[1,2,4-]	73-02062	0173-95-0157	18.1	Soil gas	720
Vinyl Chloride	73-02062	0173-95-0157	8.1	Soil gas	720
Xylene[1,3-]+Xylene[1,4-]	73-02062	0173-95-0157	13.5	Soil gas	720
Chlorodifluoromethane	73-02062	0173-95-0158	127	Soil gas	840
Chloromethane	73-02062	0173-95-0158	27.1	Soil gas	840
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02062	0173-95-0158	40	Soil gas	840
Dichlorodifluoromethane	73-02062	0173-95-0158	288	Soil gas	840
Ethylbenzene	73-02062	0173-95-0158	11.9	Soil gas	840

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylene Chloride	73-02062	0173-95-0158	39.2	Soil gas	840
Tetrachloroethene	73-02062	0173-95-0158	17.4	Soil gas	840
Toluene	73-02062	0173-95-0158	5.6	Soil gas	840
Trimethylbenzene[1,2,4-]	73-02062	0173-95-0158	30.1	Soil gas	840
Trimethylbenzene[1,3,5-]	73-02062	0173-95-0158	8	Soil gas	840
Xylene[1,3-]	73-02062	0173-95-0158	22.2	Soil gas	840
Benzene	73-02065	0173-95-0159	195	Soil gas	120
Chlorobenzene	73-02065	0173-95-0159	24.4	Soil gas	120
Chlorodifluoromethane	73-02065	0173-95-0159	1600	Soil gas	120
Chloroethane	73-02065	0173-95-0159	60.3	Soil gas	120
Chloromethane	73-02065	0173-95-0159	64.6	Soil gas	120
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02065	0173-95-0159	105	Soil gas	120
Dichlorobenzene[1,2-]	73-02065	0173-95-0159	6.2	Soil gas	120
Dichlorobenzene[1,4-]	73-02065	0173-95-0159	391	Soil gas	120
Dichlorodifluoromethane	73-02065	0173-95-0159	543	Soil gas	120
Dichloroethene[1,1-]	73-02065	0173-95-0159	12.1	Soil gas	120
Dichloroethene[cis-1,2-]	73-02065	0173-95-0159	7550	Soil gas	120
Dichloroethene[trans-1,2-]	73-02065	0173-95-0159	34.1	Soil gas	120
Ethylbenzene	73-02065	0173-95-0159	1420	Soil gas	120
Methylene Chloride	73-02065	0173-95-0159	13	Soil gas	120
Styrene	73-02065	0173-95-0159	13.7	Soil gas	120
Toluene	73-02065	0173-95-0159	382	Soil gas	120
Trichloroethene	73-02065	0173-95-0159	29.7	Soil gas	120
Trimethylbenzene[1,2,4-]	73-02065	0173-95-0159	834	Soil gas	120
Trimethylbenzene[1,3,5-]	73-02065	0173-95-0159	377	Soil gas	120
Vinyl Chloride	73-02065	0173-95-0159	747	Soil gas	120
Xylene[1,2-]	73-02065	0173-95-0159	828	Soil gas	120
Xylene[1,3-]	73-02065	0173-95-0159	2690	Soil gas	120
Benzene	73-02065	0173-95-0160	124	Soil gas	204
Chlorobenzene	73-02065	0173-95-0160	19.6	Soil gas	204
Chlorodifluoromethane	73-02065	0173-95-0160	2080	Soil gas	204
Chloroethane	73-02065	0173-95-0160	41.6	Soil gas	204
Chloromethane	73-02065	0173-95-0160	27.3	Soil gas	204
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02065	0173-95-0160	59.3	Soil gas	204
Dichlorobenzene[1,4-]	73-02065	0173-95-0160	169	Soil gas	204
Dichlorodifluoromethane	73-02065	0173-95-0160	303	Soil gas	204
Dichloroethene[1,1-]	73-02065	0173-95-0160	7.1	Soil gas	204
Dichloroethene[cis-1,2-]	73-02065	0173-95-0160	2930	Soil gas	204
Dichloroethene[trans-1,2-]	73-02065	0173-95-0160	23.8	Soil gas	204
Ethylbenzene	73-02065	0173-95-0160	1460	Soil gas	204
Methylene Chloride	73-02065	0173-95-0160	12.1	Soil gas	204
Toluene	73-02065	0173-95-0160	80.9	Soil gas	204
Trichloroethene	73-02065	0173-95-0160	13.3	Soil gas	204
Trimethylbenzene[1,2,4-]	73-02065	0173-95-0160	484	Soil gas	204
Trimethylbenzene[1,3,5-]	73-02065	0173-95-0160	202	Soil gas	204
Vinyl Chloride	73-02065	0173-95-0160	575	Soil gas	204
Xylene[1,2-]	73-02065	0173-95-0160	157	Soil gas	204

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Xylene[1,3-]	73-02065	0173-95-0160	788	Soil gas	204
Benzene	73-02066	0173-95-0161	265	Soil gas	174
Chlorobenzene	73-02066	0173-95-0161	126	Soil gas	174
Chlorodifluoromethane	73-02066	0173-95-0161	3500	Soil gas	174
Chloroethane	73-02066	0173-95-0161	87.5	Soil gas	174
Chloromethane	73-02066	0173-95-0161	31.9	Soil gas	174
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02066	0173-95-0161	47	Soil gas	174
Dichlorobenzene[1,4-]	73-02066	0173-95-0161	190	Soil gas	174
Dichlorodifluoromethane	73-02066	0173-95-0161	362	Soil gas	174
Dichloroethene[1,1-]	73-02066	0173-95-0161	102	Soil gas	174
Dichloroethene[cis-1,2-]	73-02066	0173-95-0161	35400	Soil gas	174
Dichloroethene[trans-1,2-]	73-02066	0173-95-0161	259	Soil gas	174
Ethylbenzene	73-02066	0173-95-0161	1360	Soil gas	174
Methylene Chloride	73-02066	0173-95-0161	53.2	Soil gas	174
Styrene	73-02066	0173-95-0161	122	Soil gas	174
Tetrachloroethene	73-02066	0173-95-0161	341	Soil gas	174
Toluene	73-02066	0173-95-0161	2370	Soil gas	174
Trichloroethene	73-02066	0173-95-0161	303	Soil gas	174
Trimethylbenzene[1,2,4-]	73-02066	0173-95-0161	900	Soil gas	174
Trimethylbenzene[1,3,5-]	73-02066	0173-95-0161	487	Soil gas	174
Vinyl Chloride	73-02066	0173-95-0161	1700	Soil gas	174
Xylene[1,2-]	73-02066	0173-95-0161	1020	Soil gas	174
Xylene[1,3-]	73-02066	0173-95-0161	4100	Soil gas	174
Benzene	73-02067	0173-95-0162	86.7	Soil gas	312
Chlorodifluoromethane	73-02067	0173-95-0162	2980	Soil gas	312
Chloroethane	73-02067	0173-95-0162	122	Soil gas	312
Chloromethane	73-02067	0173-95-0162	33.4	Soil gas	312
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02067	0173-95-0162	85	Soil gas	312
Dichlorodifluoromethane	73-02067	0173-95-0162	567	Soil gas	312
Dichloroethane[1,1-]	73-02067	0173-95-0162	13.7	Soil gas	312
Dichloroethene[1,1-]	73-02067	0173-95-0162	43.1	Soil gas	312
Dichloroethene[cis-1,2-]	73-02067	0173-95-0162	2540	Soil gas	312
Dichloroethene[trans-1,2-]	73-02067	0173-95-0162	66.9	Soil gas	312
Ethylbenzene	73-02067	0173-95-0162	15.2	Soil gas	312
Methylene Chloride	73-02067	0173-95-0162	199	Soil gas	312
Tetrachloroethene	73-02067	0173-95-0162	66	Soil gas	312
Toluene	73-02067	0173-95-0162	39	Soil gas	312
Trichloroethene	73-02067	0173-95-0162	53.4	Soil gas	312
Vinyl Chloride	73-02067	0173-95-0162	666	Soil gas	312
Xylene[1,2-]	73-02067	0173-95-0162	10.5	Soil gas	312
Xylene[1,3-]+Xylene[1,4-]	73-02067	0173-95-0162	38.5	Soil gas	312
Benzene	73-02068	0173-95-0163	30.1	Soil gas	336
Chlorobenzene	73-02068	0173-95-0163	67.7	Soil gas	336
Chlorodifluoromethane	73-02068	0173-95-0163	1700	Soil gas	336
Chloroethane	73-02068	0173-95-0163	36.4	Soil gas	336
Chloromethane	73-02068	0173-95-0163	30.7	Soil gas	336

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Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02068	0173-95-0163	53.4	Soil gas	336
Dichlorobenzene[1,4-]	73-02068	0173-95-0163	15.1	Soil gas	336
Dichlorodifluoromethane	73-02068	0173-95-0163	544	Soil gas	336
Dichloroethene[1,1-]	73-02068	0173-95-0163	12.7	Soil gas	336
Dichloroethene[cis-1,2-]	73-02068	0173-95-0163	3750	Soil gas	336
Dichloroethene[trans-1,2-]	73-02068	0173-95-0163	55.8	Soil gas	336
Ethylbenzene	73-02068	0173-95-0163	207	Soil gas	336
Methylene Chloride	73-02068	0173-95-0163	123	Soil gas	336
Tetrachloroethene	73-02068	0173-95-0163	444	Soil gas	336
Toluene	73-02068	0173-95-0163	564	Soil gas	336
Trichloroethene	73-02068	0173-95-0163	179	Soil gas	336
Trimethylbenzene[1,2,4-]	73-02068	0173-95-0163	64.4	Soil gas	336
Trimethylbenzene[1,3,5-]	73-02068	0173-95-0163	44.3	Soil gas	336
Vinyl Chloride	73-02068	0173-95-0163	228	Soil gas	336
Xylene[1,2-]	73-02068	0173-95-0163	82.7	Soil gas	336
Xylene[1,3-]+Xylene[1,4-]	73-02068	0173-95-0163	559	Soil gas	336
Benzene	73-02069	0173-95-0164	11.3	Soil gas	312
Chlorodifluoromethane	73-02069	0173-95-0164	1310	Soil gas	312
Chloroethane	73-02069	0173-95-0164	24.2	Soil gas	312
Chloromethane	73-02069	0173-95-0164	26.5	Soil gas	312
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02069	0173-95-0164	63.1	Soil gas	312
Dichlorodifluoromethane	73-02069	0173-95-0164	426	Soil gas	312
Dichloroethene[cis-1,2-]	73-02069	0173-95-0164	71.3	Soil gas	312
Methylene Chloride	73-02069	0173-95-0164	18	Soil gas	312
Vinyl Chloride	73-02069	0173-95-0164	151	Soil gas	312
Chloromethane	73-02070	0173-95-0165	24.1	Soil gas	282
Benzene	73-02071	0173-95-0166	42.5	Soil gas	309.6
Chlorobenzene	73-02071	0173-95-0166	21.8	Soil gas	309.6
Chlorodifluoromethane	73-02071	0173-95-0166	42.6	Soil gas	309.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02071	0173-95-0166	29.5	Soil gas	309.6
Dichlorobenzene[1,2-]	73-02071	0173-95-0166	34.6	Soil gas	309.6
Dichlorobenzene[1,4-]	73-02071	0173-95-0166	759	Soil gas	309.6
Dichlorodifluoromethane	73-02071	0173-95-0166	130	Soil gas	309.6
Dichloroethene[cis-1,2-]	73-02071	0173-95-0166	15.4	Soil gas	309.6
Ethylbenzene	73-02071	0173-95-0166	867	Soil gas	309.6
Methylene Chloride	73-02071	0173-95-0166	34.6	Soil gas	309.6
Styrene	73-02071	0173-95-0166	83.6	Soil gas	309.6
Toluene	73-02071	0173-95-0166	6400	Soil gas	309.6
Trimethylbenzene[1,2,4-]	73-02071	0173-95-0166	744	Soil gas	309.6
Trimethylbenzene[1,3,5-]	73-02071	0173-95-0166	460	Soil gas	309.6
Vinyl Chloride	73-02071	0173-95-0166	15.7	Soil gas	309.6
Xylene[1,2-]	73-02071	0173-95-0166	1050	Soil gas	309.6
Xylene[1,3-]	73-02071	0173-95-0166	1920	Soil gas	309.6
Benzene	73-02071	0173-95-0167	41.5	Soil gas	309.6
Chlorobenzene	73-02071	0173-95-0167	23.4	Soil gas	309.6
Chlorodifluoromethane	73-02071	0173-95-0167	38.9	Soil gas	309.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dibromoethane[1,2-]	73-02071	0173-95-0167	69.6	Soil gas	309.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02071	0173-95-0167	31.6	Soil gas	309.6
Dichlorobenzene[1,2-]	73-02071	0173-95-0167	35.4	Soil gas	309.6
Dichlorobenzene[1,4-]	73-02071	0173-95-0167	687	Soil gas	309.6
Dichlorodifluoromethane	73-02071	0173-95-0167	143	Soil gas	309.6
Dichloroethane[1,1-]	73-02071	0173-95-0167	85	Soil gas	309.6
Dichloroethane[1,2-]	73-02071	0173-95-0167	86.7	Soil gas	309.6
Dichloroethene[<i>cis</i> -1,2-]	73-02071	0173-95-0167	114	Soil gas	309.6
Ethylbenzene	73-02071	0173-95-0167	1020	Soil gas	309.6
Methylene Chloride	73-02071	0173-95-0167	34.2	Soil gas	309.6
Styrene	73-02071	0173-95-0167	91.9	Soil gas	309.6
Tetrachloroethene	73-02071	0173-95-0167	80.3	Soil gas	309.6
Toluene	73-02071	0173-95-0167	6670	Soil gas	309.6
Trichloroethane[1,1,1-]	73-02071	0173-95-0167	106	Soil gas	309.6
Trimethylbenzene[1,2,4-]	73-02071	0173-95-0167	851	Soil gas	309.6
Trimethylbenzene[1,3,5-]	73-02071	0173-95-0167	457	Soil gas	309.6
Vinyl Chloride	73-02071	0173-95-0167	103	Soil gas	309.6
Xylene[1,2-]	73-02071	0173-95-0167	1160	Soil gas	309.6
Xylene[1,3-]+Xylene[1,4-]	73-02071	0173-95-0167	2220	Soil gas	309.6
Benzene	73-02071	0173-95-0168	12.6	Soil gas	12
Chlorodifluoromethane	73-02071	0173-95-0168	416	Soil gas	12
Chloromethane	73-02071	0173-95-0168	24.7	Soil gas	12
Dichlorobenzene[1,4-]	73-02071	0173-95-0168	54.3	Soil gas	12
Dichlorodifluoromethane	73-02071	0173-95-0168	30.4	Soil gas	12
Dichloroethene[<i>cis</i> -1,2-]	73-02071	0173-95-0168	134	Soil gas	12
Ethylbenzene	73-02071	0173-95-0168	520	Soil gas	12
Styrene	73-02071	0173-95-0168	16.8	Soil gas	12
Toluene	73-02071	0173-95-0168	156	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02071	0173-95-0168	233	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02071	0173-95-0168	158	Soil gas	12
Vinyl Chloride	73-02071	0173-95-0168	16.3	Soil gas	12
Xylene[1,2-]	73-02071	0173-95-0168	147	Soil gas	12
Xylene[1,3-]	73-02071	0173-95-0168	864	Soil gas	12
Chloromethane	73-02061	0173-95-0169	23.8	Soil gas	900
Benzene	73-02061	0173-95-0170	19.2	Soil gas	330
Chlorodifluoromethane	73-02061	0173-95-0170	8	Soil gas	330
Chloromethane	73-02061	0173-95-0170	34	Soil gas	330
Dichlorobenzene[1,4-]	73-02061	0173-95-0170	6.6	Soil gas	330
Dichlorodifluoromethane	73-02061	0173-95-0170	10	Soil gas	330
Ethylbenzene	73-02061	0173-95-0170	11.2	Soil gas	330
Methylene Chloride	73-02061	0173-95-0170	94.3	Soil gas	330
Styrene	73-02061	0173-95-0170	13.2	Soil gas	330
Toluene	73-02061	0173-95-0170	78	Soil gas	330
Trichloro-1,2,2-trifluoroethane[1,1,2-]	73-02061	0173-95-0170	42.4	Soil gas	330
Trimethylbenzene[1,2,4-]	73-02061	0173-95-0170	15.5	Soil gas	330
Trimethylbenzene[1,3,5-]	73-02061	0173-95-0170	7.4	Soil gas	330
Xylene[1,2-]	73-02061	0173-95-0170	5.4	Soil gas	330

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Isopentane	73-01003	0173-96-0015	33.3	Soil gas	1190.4
Isoprene	73-01003	0173-96-0015	18.6	Soil gas	1190.4
Methanol	73-01003	0173-96-0015	21	Soil gas	1190.4
Methyl-1-butene[3-]	73-01003	0173-96-0015	13.8	Soil gas	1190.4
Methyl-1-pentene[4-]	73-01003	0173-96-0015	51.7	Soil gas	1190.4
Methyl-2-butene[2-]	73-01003	0173-96-0015	12.5	Soil gas	1190.4
Methylcyclohexane	73-01003	0173-96-0015	37.6	Soil gas	1190.4
Methylcyclopentane	73-01003	0173-96-0015	116	Soil gas	1190.4
Methylene Chloride	73-01003	0173-96-0015	17.3	Soil gas	1190.4
Methylheptane[3-]	73-01003	0173-96-0015	17.4	Soil gas	1190.4
Methylhexane[3-]	73-01003	0173-96-0015	10.3	Soil gas	1190.4
Methylpentane[2-]	73-01003	0173-96-0015	47	Soil gas	1190.4
Methylpentane[3-]	73-01003	0173-96-0015	19.3	Soil gas	1190.4
Nonane[1-]	73-01003	0173-96-0015	42	Soil gas	1190.4
Octane[n-]	73-01003	0173-96-0015	29.6	Soil gas	1190.4
Pentane	73-01003	0173-96-0015	27.6	Soil gas	1190.4
Pinene[alpha-]	73-01003	0173-96-0015	13.6	Soil gas	1190.4
Propylene	73-01003	0173-96-0015	133	Soil gas	1190.4
Tetrachloroethene	73-01003	0173-96-0015	119	Soil gas	1190.4
Trichloroethene	73-01003	0173-96-0015	10.8	Soil gas	1190.4
Trichlorofluoromethane	73-01003	0173-96-0015	11.1	Soil gas	1190.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0015	25	Soil gas	1190.4
Trimethylbenzene[1,3,5-]	73-01003	0173-96-0015	11	Soil gas	1190.4
Vinyl Chloride	73-01003	0173-96-0015	27.3	Soil gas	1190.4
Acetone	73-01003	0173-96-0016	60.4	Soil gas	1094.4
Benzene	73-01003	0173-96-0016	15.4	Soil gas	1094.4
Butane[n-]	73-01003	0173-96-0016	48.6	Soil gas	1094.4
Chlorodifluoromethane	73-01003	0173-96-0016	455	Soil gas	1094.4
Cyclohexane	73-01003	0173-96-0016	39.8	Soil gas	1094.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0016	69.9	Soil gas	1094.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0016	38.2	Soil gas	1094.4
Dichlorodifluoromethane	73-01003	0173-96-0016	674	Soil gas	1094.4
Dichloroethene[<i>cis</i> -1,2-]	73-01003	0173-96-0016	951	Soil gas	1094.4
Dichloroethene[<i>trans</i> -1,2-]	73-01003	0173-96-0016	10.3	Soil gas	1094.4
Dimethylbutane[2,2-]	73-01003	0173-96-0016	24.1	Soil gas	1094.4
Heptane	73-01003	0173-96-0016	81.2	Soil gas	1094.4
Hexane	73-01003	0173-96-0016	38.4	Soil gas	1094.4
Isobutane	73-01003	0173-96-0016	384	Soil gas	1094.4
Isopentane	73-01003	0173-96-0016	23	Soil gas	1094.4
Methyl-1-butene[3-]	73-01003	0173-96-0016	16	Soil gas	1094.4
Methylcyclohexane	73-01003	0173-96-0016	63.4	Soil gas	1094.4
Methylcyclopentane	73-01003	0173-96-0016	27.7	Soil gas	1094.4
Methylheptane[2-]	73-01003	0173-96-0016	25	Soil gas	1094.4
Methylheptane[3-]	73-01003	0173-96-0016	31.1	Soil gas	1094.4
Methylhexane[3-]	73-01003	0173-96-0016	14.6	Soil gas	1094.4
Methylstyrene[alpha-]	73-01003	0173-96-0016	10.8	Soil gas	1094.4
Nonane[1-]	73-01003	0173-96-0016	64.5	Soil gas	1094.4
Octane[n-]	73-01003	0173-96-0016	56.3	Soil gas	1094.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pentane	73-01003	0173-96-0016	21.2	Soil gas	1094.4
Pinene[alpha-]	73-01003	0173-96-0016	10.4	Soil gas	1094.4
Pinene[beta-]	73-01003	0173-96-0016	11.5	Soil gas	1094.4
Propylene	73-01003	0173-96-0016	165	Soil gas	1094.4
Tetrachloroethene	73-01003	0173-96-0016	114	Soil gas	1094.4
Trichloroethene	73-01003	0173-96-0016	12.7	Soil gas	1094.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0016	34	Soil gas	1094.4
Trimethylbenzene[1,3,5-]	73-01003	0173-96-0016	13.6	Soil gas	1094.4
Trimethylpentane[2,3,4-]	73-01003	0173-96-0016	12.5	Soil gas	1094.4
Vinyl Chloride	73-01003	0173-96-0016	52.1	Soil gas	1094.4
Benzene	73-01003	0173-96-0017	69.4	Soil gas	470.4
Butane[n-]	73-01003	0173-96-0017	147	Soil gas	470.4
Butanol[1-]	73-01003	0173-96-0017	25.6	Soil gas	470.4
Butene[1-]	73-01003	0173-96-0017	131	Soil gas	470.4
Butene[cis-2-]	73-01003	0173-96-0017	14.8	Soil gas	470.4
Butene[trans-2-]	73-01003	0173-96-0017	159	Soil gas	470.4
Chlorobenzene	73-01003	0173-96-0017	35.7	Soil gas	470.4
Chlorodifluoromethane	73-01003	0173-96-0017	964	Soil gas	470.4
Chloroethane	73-01003	0173-96-0017	44.6	Soil gas	470.4
Cyclohexane	73-01003	0173-96-0017	175	Soil gas	470.4
Cyclopentane	73-01003	0173-96-0017	12.9	Soil gas	470.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0017	114	Soil gas	470.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0017	106	Soil gas	470.4
Dichlorodifluoromethane	73-01003	0173-96-0017	626	Soil gas	470.4
Dichloroethane[1,2-]	73-01003	0173-96-0017	13	Soil gas	470.4
Dichloroethane[1,1-]	73-01003	0173-96-0017	23.5	Soil gas	470.4
Dichloroethane[cis-1,2-]	73-01003	0173-96-0017	4980	Soil gas	470.4
Dichloroethane[trans-1,2-]	73-01003	0173-96-0017	99.2	Soil gas	470.4
Dichloropropane[1,2-]	73-01003	0173-96-0017	11.9	Soil gas	470.4
Diethyl Ether	73-01003	0173-96-0017	141	Soil gas	470.4
Dimethylbutane[2,2-]	73-01003	0173-96-0017	41	Soil gas	470.4
Dimethylbutane[2,3-]	73-01003	0173-96-0017	63.2	Soil gas	470.4
Dimethylpentane[2,3-]	73-01003	0173-96-0017	33.9	Soil gas	470.4
Heptane	73-01003	0173-96-0017	667	Soil gas	470.4
Hexane	73-01003	0173-96-0017	233	Soil gas	470.4
Isobutane	73-01003	0173-96-0017	684	Soil gas	470.4
Isooctane	73-01003	0173-96-0017	16.8	Soil gas	470.4
Isopentane	73-01003	0173-96-0017	110	Soil gas	470.4
Methanol	73-01003	0173-96-0017	105	Soil gas	470.4
Methyl-1-butene[3-]	73-01003	0173-96-0017	81.7	Soil gas	470.4
Methyl-2-butene[2-]	73-01003	0173-96-0017	31.9	Soil gas	470.4
Methylcyclohexane	73-01003	0173-96-0017	400	Soil gas	470.4
Methylcyclopentane	73-01003	0173-96-0017	155	Soil gas	470.4
Methylheptane[2-]	73-01003	0173-96-0017	192	Soil gas	470.4
Methylheptane[3-]	73-01003	0173-96-0017	271	Soil gas	470.4
Methylhexane[3-]	73-01003	0173-96-0017	90.7	Soil gas	470.4
Methylpentane[2-]	73-01003	0173-96-0017	140	Soil gas	470.4
Methylpentane[3-]	73-01003	0173-96-0017	125	Soil gas	470.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Nonane[1-]	73-01003	0173-96-0017	552	Soil gas	470.4
Octane[n-]	73-01003	0173-96-0017	541	Soil gas	470.4
Pentane	73-01003	0173-96-0017	75.4	Soil gas	470.4
Pentene[1-]	73-01003	0173-96-0017	45.3	Soil gas	470.4
Pentene[cis-2-]	73-01003	0173-96-0017	34.5	Soil gas	470.4
Pinene[alpha-]	73-01003	0173-96-0017	20.8	Soil gas	470.4
Pinene[beta-]	73-01003	0173-96-0017	42.8	Soil gas	470.4
Propylene	73-01003	0173-96-0017	592	Soil gas	470.4
Tetrachloroethene	73-01003	0173-96-0017	59.7	Soil gas	470.4
Trichloroethene	73-01003	0173-96-0017	42.9	Soil gas	470.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0017	119	Soil gas	470.4
Trimethylbenzene[1,3,5-]	73-01003	0173-96-0017	52	Soil gas	470.4
Trimethylpentane[2,3,4-]	73-01003	0173-96-0017	86.3	Soil gas	470.4
Vinyl Chloride	73-01003	0173-96-0017	475	Soil gas	470.4
Xylene[1,3-]+Xylene[1,4-]	73-01003	0173-96-0017	41.6	Soil gas	470.4
Acrylonitrile	73-01003	0173-96-0018	15.8	Soil gas	110.4
Benzene	73-01003	0173-96-0018	94.1	Soil gas	110.4
Butane[n-]	73-01003	0173-96-0018	1030	Soil gas	110.4
Butene[1-]	73-01003	0173-96-0018	231	Soil gas	110.4
Butene[cis-2-]	73-01003	0173-96-0018	27.5	Soil gas	110.4
Chlorobenzene	73-01003	0173-96-0018	15	Soil gas	110.4
Chlorodifluoromethane	73-01003	0173-96-0018	3390	Soil gas	110.4
Chloroethane	73-01003	0173-96-0018	56.7	Soil gas	110.4
Chloromethane	73-01003	0173-96-0018	75.2	Soil gas	110.4
Cyclohexane	73-01003	0173-96-0018	269	Soil gas	110.4
Cyclopentane	73-01003	0173-96-0018	27.8	Soil gas	110.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0018	158	Soil gas	110.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0018	28.5	Soil gas	110.4
Dichlorodifluoromethane	73-01003	0173-96-0018	675	Soil gas	110.4
Dichloroethane[1,2-]	73-01003	0173-96-0018	13.3	Soil gas	110.4
Dichloroethene[1,1-]	73-01003	0173-96-0018	59.7	Soil gas	110.4
Dichloroethene[cis-1,2-]	73-01003	0173-96-0018	6800	Soil gas	110.4
Dichloroethene[trans-1,2-]	73-01003	0173-96-0018	344	Soil gas	110.4
Diethyl Ether	73-01003	0173-96-0018	124	Soil gas	110.4
Dimethylbutane[2,2-]	73-01003	0173-96-0018	87.6	Soil gas	110.4
Dimethylbutane[2,3-]	73-01003	0173-96-0018	77.2	Soil gas	110.4
Ethyl Acrylate	73-01003	0173-96-0018	46.3	Soil gas	110.4
Heptane	73-01003	0173-96-0018	2050	Soil gas	110.4
Hexane	73-01003	0173-96-0018	749	Soil gas	110.4
Hexene[cis-3-]	73-01003	0173-96-0018	17.5	Soil gas	110.4
Isobutane	73-01003	0173-96-0018	1540	Soil gas	110.4
Isooctane	73-01003	0173-96-0018	30.1	Soil gas	110.4
Isopentane	73-01003	0173-96-0018	137	Soil gas	110.4
Methyl-1-butene[3-]	73-01003	0173-96-0018	115	Soil gas	110.4
Methyl-1-pentene[2-]	73-01003	0173-96-0018	21.9	Soil gas	110.4
Methyl-2-butene[2-]	73-01003	0173-96-0018	124	Soil gas	110.4
Methylcyclohexane	73-01003	0173-96-0018	786	Soil gas	110.4
Methylcyclopentane	73-01003	0173-96-0018	302	Soil gas	110.4

TABLE 2.3.4.3-26

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Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylheptane[2-]	73-01003	0173-96-0018	562	Soil gas	110.4
Methylheptane[3-]	73-01003	0173-96-0018	532	Soil gas	110.4
Methylhexane[2-]	73-01003	0173-96-0018	18.7	Soil gas	110.4
Methylhexane[3-]	73-01003	0173-96-0018	189	Soil gas	110.4
Methylpentane[2-]	73-01003	0173-96-0018	271	Soil gas	110.4
Methylpentane[3-]	73-01003	0173-96-0018	224	Soil gas	110.4
Nonane[1-]	73-01003	0173-96-0018	909	Soil gas	110.4
Octane[n-]	73-01003	0173-96-0018	955	Soil gas	110.4
Pentane	73-01003	0173-96-0018	384	Soil gas	110.4
Pentene[1-]	73-01003	0173-96-0018	51.9	Soil gas	110.4
Pentene[trans-2-]	73-01003	0173-96-0018	26.4	Soil gas	110.4
Pinone[beta-]	73-01003	0173-96-0018	81.4	Soil gas	110.4
Propylene	73-01003	0173-96-0018	1690	Soil gas	110.4
Trichloroethene	73-01003	0173-96-0018	60.9	Soil gas	110.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0018	54.5	Soil gas	110.4
Trimethylbenzene[1,3,5-]	73-01003	0173-96-0018	29.6	Soil gas	110.4
Trimethylpentane[2,3,4-]	73-01003	0173-96-0018	155	Soil gas	110.4
Vinyl Chloride	73-01003	0173-96-0018	890	Soil gas	110.4
Xylene[1,2-]	73-01003	0173-96-0018	14.7	Soil gas	110.4
Xylene[1,3-]+Xylene[1,4-]	73-01003	0173-96-0018	32.1	Soil gas	110.4
Acetone	73-02068	0173-96-0019	204	Soil gas	309.6
Benzene	73-02068	0173-96-0019	47.5	Soil gas	309.6
Butane[n-]	73-02068	0173-96-0019	241	Soil gas	309.6
Butanone[2-]	73-02068	0173-96-0019	444	Soil gas	309.6
Butene[1-]	73-02068	0173-96-0019	109	Soil gas	309.6
Butene[trans-2-]	73-02068	0173-96-0019	145	Soil gas	309.6
Chlorobenzene	73-02068	0173-96-0019	359	Soil gas	309.6
Chlorodifluoromethane	73-02068	0173-96-0019	1670	Soil gas	309.6
Chloroethane	73-02068	0173-96-0019	33.9	Soil gas	309.6
Cyclohexane	73-02068	0173-96-0019	112	Soil gas	309.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02068	0173-96-0019	102	Soil gas	309.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0019	442	Soil gas	309.6
Dichlorodifluoromethane	73-02068	0173-96-0019	618	Soil gas	309.6
Dichloroethene[1,1-]	73-02068	0173-96-0019	11.9	Soil gas	309.6
Dichloroethene[cis-1,2-]	73-02068	0173-96-0019	4020	Soil gas	309.6
Dichloroethene[trans-1,2-]	73-02068	0173-96-0019	50.8	Soil gas	309.6
Diethyl Ether	73-02068	0173-96-0019	175	Soil gas	309.6
Dimethylbutane[2,2-]	73-02068	0173-96-0019	16.9	Soil gas	309.6
Dimethylbutane[2,3-]	73-02068	0173-96-0019	27.4	Soil gas	309.6
Dimethylpentane[2,3-]	73-02068	0173-96-0019	20.2	Soil gas	309.6
Ethanol	73-02068	0173-96-0019	20.1	Soil gas	309.6
Ethylbenzene	73-02068	0173-96-0019	352	Soil gas	309.6
Heptane	73-02068	0173-96-0019	128	Soil gas	309.6
Hexane	73-02068	0173-96-0019	109	Soil gas	309.6
Isobutane	73-02068	0173-96-0019	1630	Soil gas	309.6
Isooctane	73-02068	0173-96-0019	15.7	Soil gas	309.6
Isopentane	73-02068	0173-96-0019	84.9	Soil gas	309.6
Isoprene	73-02068	0173-96-0019	11.5	Soil gas	309.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Isopropylbenzene	73-02068	0173-96-0019	42.5	Soil gas	309.6
Methyl-1-butene[3-]	73-02068	0173-96-0019	34.2	Soil gas	309.6
Methyl-2-butene[2-]	73-02068	0173-96-0019	30.3	Soil gas	309.6
Methyl-2-pentanone[4-]	73-02068	0173-96-0019	51.4	Soil gas	309.6
Methylcyclohexane	73-02068	0173-96-0019	161	Soil gas	309.6
Methylcyclopentane	73-02068	0173-96-0019	57.3	Soil gas	309.6
Methylene Chloride	73-02068	0173-96-0019	88.8	Soil gas	309.6
Methylheptane[2-]	73-02068	0173-96-0019	65.6	Soil gas	309.6
Methylheptane[3-]	73-02068	0173-96-0019	87.4	Soil gas	309.6
Methylhexane[3-]	73-02068	0173-96-0019	45.4	Soil gas	309.6
Methylpentane[2-]	73-02068	0173-96-0019	57.5	Soil gas	309.6
Methylpentane[3-]	73-02068	0173-96-0019	55.7	Soil gas	309.6
Nonane[1-]	73-02068	0173-96-0019	532	Soil gas	309.6
Octane[n-]	73-02068	0173-96-0019	173	Soil gas	309.6
Pentane	73-02068	0173-96-0019	92.6	Soil gas	309.6
Pentene[1-]	73-02068	0173-96-0019	65.7	Soil gas	309.6
Pinene[alpha-]	73-02068	0173-96-0019	357	Soil gas	309.6
Pinene[beta-]	73-02068	0173-96-0019	1310	Soil gas	309.6
Propanol[2-]	73-02068	0173-96-0019	14.7	Soil gas	309.6
Propylbenzene[1-]	73-02068	0173-96-0019	56.4	Soil gas	309.6
Propylene	73-02068	0173-96-0019	693	Soil gas	309.6
Styrene	73-02068	0173-96-0019	13.9	Soil gas	309.6
Tetrachloroethene	73-02068	0173-96-0019	354	Soil gas	309.6
Tetrahydrofuran	73-02068	0173-96-0019	98	Soil gas	309.6
Toluene	73-02068	0173-96-0019	593	Soil gas	309.6
Trichloroethene	73-02068	0173-96-0019	124	Soil gas	309.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0019	530	Soil gas	309.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0019	172	Soil gas	309.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0019	53	Soil gas	309.6
Vinyl Chloride	73-02068	0173-96-0019	168	Soil gas	309.6
Xylene[1,2-]	73-02068	0173-96-0019	161	Soil gas	309.6
Xylene[1,3-]+Xylene[1,4-]	73-02068	0173-96-0019	976	Soil gas	309.6
Acetonitrile	73-02068	0173-96-0020	34.5	Soil gas	15.6
Benzene	73-02068	0173-96-0020	198	Soil gas	15.6
Butadiene[1,3-]	73-02068	0173-96-0020	27.7	Soil gas	15.6
Butane[n-]	73-02068	0173-96-0020	640	Soil gas	15.6
Butene[1-]	73-02068	0173-96-0020	396	Soil gas	15.6
Butene[cis-2-]	73-02068	0173-96-0020	34.5	Soil gas	15.6
Chlorobenzene	73-02068	0173-96-0020	784	Soil gas	15.6
Chlorodifluoromethane	73-02068	0173-96-0020	2810	Soil gas	15.6
Chloroethane	73-02068	0173-96-0020	76.2	Soil gas	15.6
Cyclohexane	73-02068	0173-96-0020	260	Soil gas	15.6
Cyclohexanone	73-02068	0173-96-0020	950	Soil gas	15.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02068	0173-96-0020	146	Soil gas	15.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0020	961	Soil gas	15.6
Dichlorodifluoromethane	73-02068	0173-96-0020	956	Soil gas	15.6
Dichloroethene[1,1-]	73-02068	0173-96-0020	55.9	Soil gas	15.6
Dichloroethene[cis-1,2-]	73-02068	0173-96-0020	21800	Soil gas	15.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloroethene[trans-1,2-]	73-02068	0173-96-0020	355	Soil gas	15.6
Diethyl Ether	73-02068	0173-96-0020	449	Soil gas	15.6
Dimethylbutane[2,2-]	73-02068	0173-96-0020	36.5	Soil gas	15.6
Dimethylbutane[2,3-]	73-02068	0173-96-0020	94.3	Soil gas	15.6
Dimethylpentane[2,3-]	73-02068	0173-96-0020	56.6	Soil gas	15.6
Ethylbenzene	73-02068	0173-96-0020	1060	Soil gas	15.6
Heptane	73-02068	0173-96-0020	957	Soil gas	15.6
Hexane	73-02068	0173-96-0020	727	Soil gas	15.6
Hexene[cis-3-]	73-02068	0173-96-0020	20.2	Soil gas	15.6
Isobutane	73-02068	0173-96-0020	3680	Soil gas	15.6
Isooctane	73-02068	0173-96-0020	54.6	Soil gas	15.6
Isopentane	73-02068	0173-96-0020	67.8	Soil gas	15.6
Isoprene	73-02068	0173-96-0020	57.6	Soil gas	15.6
Isopropylbenzene	73-02068	0173-96-0020	91.2	Soil gas	15.6
Methyl-1-butene[3-]	73-02068	0173-96-0020	176	Soil gas	15.6
Methyl-1-pentene[2-]	73-02068	0173-96-0020	45.6	Soil gas	15.6
Methyl-2-butene[2-]	73-02068	0173-96-0020	120	Soil gas	15.6
Methylcyclohexane	73-02068	0173-96-0020	863	Soil gas	15.6
Methylcyclopentane	73-02068	0173-96-0020	282	Soil gas	15.6
Methylheptane[2-]	73-02068	0173-96-0020	748	Soil gas	15.6
Methylheptane[3-]	73-02068	0173-96-0020	864	Soil gas	15.6
Methylhexane[2-]	73-02068	0173-96-0020	12.2	Soil gas	15.6
Methylhexane[3-]	73-02068	0173-96-0020	156	Soil gas	15.6
Methylpentane[2-]	73-02068	0173-96-0020	181	Soil gas	15.6
Methylpentane[3-]	73-02068	0173-96-0020	187	Soil gas	15.6
Nonane[1-]	73-02068	0173-96-0020	3390	Soil gas	15.6
Octane[n-]	73-02068	0173-96-0020	1940	Soil gas	15.6
Pentane	73-02068	0173-96-0020	195	Soil gas	15.6
Pentene[1-]	73-02068	0173-96-0020	66.1	Soil gas	15.6
Pentene[cis-2-]	73-02068	0173-96-0020	128	Soil gas	15.6
Pentene[trans-2-]	73-02068	0173-96-0020	23.1	Soil gas	15.6
Pinene[alpha-]	73-02068	0173-96-0020	2050	Soil gas	15.6
Pinene[beta-]	73-02068	0173-96-0020	6180	Soil gas	15.6
Propylbenzene[1-]	73-02068	0173-96-0020	95.4	Soil gas	15.6
Propylene	73-02068	0173-96-0020	3600	Soil gas	15.6
Styrene	73-02068	0173-96-0020	47.2	Soil gas	15.6
Tetrachloroethene	73-02068	0173-96-0020	907	Soil gas	15.6
Tetrahydrofuran	73-02068	0173-96-0020	254	Soil gas	15.6
Toluene	73-02068	0173-96-0020	3800	Soil gas	15.6
Trichloroethene	73-02068	0173-96-0020	437	Soil gas	15.6
Trichlorofluoromethane	73-02068	0173-96-0020	45.4	Soil gas	15.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0020	421	Soil gas	15.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0020	244	Soil gas	15.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0020	303	Soil gas	15.6
Vinyl Chloride	73-02068	0173-96-0020	1320	Soil gas	15.6
Xylene[1,2-]	73-02068	0173-96-0020	935	Soil gas	15.6
Xylene[1,3-]+Xylene[1,4-]	73-02068	0173-96-0020	3200	Soil gas	15.6
Acetone	73-02071	0173-96-0021	12100	Soil gas	228
Benzene	73-02071	0173-96-0021	88.6	Soil gas	228

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Butadiene[1,3-]	73-02071	0173-96-0021	43	Soil gas	228
Butane[n-]	73-02071	0173-96-0021	99	Soil gas	228
Butanone[2-]	73-02071	0173-96-0021	38300	Soil gas	228
Butene[1-]	73-02071	0173-96-0021	671	Soil gas	228
Butene[cis-2-]	73-02071	0173-96-0021	17.2	Soil gas	228
Butene[trans-2-]	73-02071	0173-96-0021	888	Soil gas	228
Chlorobenzene	73-02071	0173-96-0021	57.6	Soil gas	228
Chlorodifluoromethane	73-02071	0173-96-0021	76.7	Soil gas	228
Cyclohexane	73-02071	0173-96-0021	325	Soil gas	228
Cyclopentane	73-02071	0173-96-0021	11.3	Soil gas	228
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02071	0173-96-0021	21.4	Soil gas	228
Dichlorobenzene[1,2-]	73-02071	0173-96-0021	65.7	Soil gas	228
Dichlorobenzene[1,4-]	73-02071	0173-96-0021	1460	Soil gas	228
Dichlorodifluoromethane	73-02071	0173-96-0021	87.6	Soil gas	228
Dichloroethene[cis-1,2-]	73-02071	0173-96-0021	32.9	Soil gas	228
Dimethyl Disulfide*	73-02071	0173-96-0021	0.73	Soil gas	228
Dimethyl Sulfide*	73-02071	0173-96-0021	3.2	Soil gas	228
Dimethylbutane[2,2-]	73-02071	0173-96-0021	128	Soil gas	228
Dimethylbutane[2,3-]	73-02071	0173-96-0021	13.4	Soil gas	228
Ethylbenzene	73-02071	0173-96-0021	2460	Soil gas	228
Heptane	73-02071	0173-96-0021	36.1	Soil gas	228
Hexane	73-02071	0173-96-0021	4070	Soil gas	228
Hexanone[2-]	73-02071	0173-96-0021	338	Soil gas	228
Isobutane	73-02071	0173-96-0021	279	Soil gas	228
Isoprene	73-02071	0173-96-0021	150	Soil gas	228
Isopropylbenzene	73-02071	0173-96-0021	356	Soil gas	228
Methyl-1-butene[3-]	73-02071	0173-96-0021	86.9	Soil gas	228
Methyl-1-pentene[2-]	73-02071	0173-96-0021	10.8	Soil gas	228
Methyl-2-butene[2-]	73-02071	0173-96-0021	101	Soil gas	228
Methyl-2-pentanone[4-]	73-02071	0173-96-0021	3880	Soil gas	228
Methylcyclopentane	73-02071	0173-96-0021	1950	Soil gas	228
Methylheptane[2-]	73-02071	0173-96-0021	96.5	Soil gas	228
Methylheptane[3-]	73-02071	0173-96-0021	11.4	Soil gas	228
Methylhexane[2-]	73-02071	0173-96-0021	24.4	Soil gas	228
Methylhexane[3-]	73-02071	0173-96-0021	17	Soil gas	228
Methylpentane[2-]	73-02071	0173-96-0021	913	Soil gas	228
Methylpentane[3-]	73-02071	0173-96-0021	1320	Soil gas	228
Methylstyrene(alpha-)	73-02071	0173-96-0021	14.6	Soil gas	228
Nonane[1-]	73-02071	0173-96-0021	1600	Soil gas	228
Octane[n-]	73-02071	0173-96-0021	41.6	Soil gas	228
Pentane	73-02071	0173-96-0021	25	Soil gas	228
Pentene[1-]	73-02071	0173-96-0021	219	Soil gas	228
Pentene[cis-2-]	73-02071	0173-96-0021	108	Soil gas	228
Pentene[trans-2-]	73-02071	0173-96-0021	11.4	Soil gas	228
Pinene(alpha-)	73-02071	0173-96-0021	700	Soil gas	228
Pinene(beta-)	73-02071	0173-96-0021	22300	Soil gas	228
Propylbenzene[1-]	73-02071	0173-96-0021	439	Soil gas	228
Propylene	73-02071	0173-96-0021	763	Soil gas	228

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Nonane[1-]	73-02071	0173-96-0022	6310	Soil gas	12
Octane[n-]	73-02071	0173-96-0022	836	Soil gas	12
Pentane	73-02071	0173-96-0022	72.9	Soil gas	12
Pentene[1-]	73-02071	0173-96-0022	419	Soil gas	12
Pentene[cis-2-]	73-02071	0173-96-0022	60.4	Soil gas	12
Pentene[trans-2-]	73-02071	0173-96-0022	28.9	Soil gas	12
Pinene[alpha-]	73-02071	0173-96-0022	446	Soil gas	12
Pinene[beta-]	73-02071	0173-96-0022	1970	Soil gas	12
Propylbenzene[1-]	73-02071	0173-96-0022	113	Soil gas	12
Propylene	73-02071	0173-96-0022	1350	Soil gas	12
Styrene	73-02071	0173-96-0022	32	Soil gas	12
Tetrachloroethene	73-02071	0173-96-0022	19.7	Soil gas	12
Tetrahydrofuran	73-02071	0173-96-0022	33.5	Soil gas	12
Toluene	73-02071	0173-96-0022	646	Soil gas	12
Trichloroethene	73-02071	0173-96-0022	21.8	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0022	730	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0022	452	Soil gas	12
Trimethylpentane[2,3,4-]	73-02071	0173-96-0022	88.2	Soil gas	12
Vinyl Chloride	73-02071	0173-96-0022	78	Soil gas	12
Xylene[1,2-]	73-02071	0173-96-0022	658	Soil gas	12
Xylene[1,3-]+Xylene[1,4-]	73-02071	0173-96-0022	3330	Soil gas	12
Benzene	73-02089	0173-96-0023	169	Soil gas	888
Butene[1-]	73-02089	0173-96-0023	323	Soil gas	888
Butene[trans-2-]	73-02089	0173-96-0023	396	Soil gas	888
Chlorobenzene	73-02089	0173-96-0023	43.2	Soil gas	888
Chlorodifluoromethane	73-02089	0173-96-0023	481	Soil gas	888
Chloroethane	73-02089	0173-96-0023	13.9	Soil gas	888
Cyclohexane	73-02089	0173-96-0023	151	Soil gas	888
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02089	0173-96-0023	35.7	Soil gas	888
Dichlorobenzene[1,4-]	73-02089	0173-96-0023	551	Soil gas	888
Dichlorodifluoromethane	73-02089	0173-96-0023	387	Soil gas	888
Dichloroethene[cis-1,2-]	73-02089	0173-96-0023	3890	Soil gas	888
Dichloroethene[trans-1,2-]	73-02089	0173-96-0023	16.7	Soil gas	888
Diethyl Ether	73-02089	0173-96-0023	529	Soil gas	888
Dimethylbutane[2,3-]	73-02089	0173-96-0023	24	Soil gas	888
Dimethylpentane[2,3-]	73-02089	0173-96-0023	16.4	Soil gas	888
Ethylbenzene	73-02089	0173-96-0023	569	Soil gas	888
Heptane	73-02089	0173-96-0023	91.8	Soil gas	888
Hexane	73-02089	0173-96-0023	73.5	Soil gas	888
Isobutane	73-02089	0173-96-0023	514	Soil gas	888
Isopentane	73-02089	0173-96-0023	21.2	Soil gas	888
Isoprene	73-02089	0173-96-0023	19.6	Soil gas	888
Isopropylbenzene	73-02089	0173-96-0023	45.5	Soil gas	888
Methyl-1-pentene[2-]	73-02089	0173-96-0023	10.1	Soil gas	888
Methyl-2-butene[2-]	73-02089	0173-96-0023	28.1	Soil gas	888
Methylcyclohexane	73-02089	0173-96-0023	92.7	Soil gas	888
Methylcyclopentane	73-02089	0173-96-0023	46.3	Soil gas	888
Methylheptane[2-]	73-02089	0173-96-0023	51.7	Soil gas	888

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylheptane[3-]	73-02089	0173-96-0023	56.7	Soil gas	888
Methylhexane[3-]	73-02089	0173-96-0023	45.3	Soil gas	888
Methylpentane[2-]	73-02089	0173-96-0023	20.8	Soil gas	888
Methylpentane[3-]	73-02089	0173-96-0023	23.7	Soil gas	888
Nonane[1-]	73-02089	0173-96-0023	590	Soil gas	888
Octane[n-]	73-02089	0173-96-0023	144	Soil gas	888
Pentane	73-02089	0173-96-0023	33.5	Soil gas	888
Pentene[1-]	73-02089	0173-96-0023	251	Soil gas	888
Pentene[cis-2-]	73-02089	0173-96-0023	10.8	Soil gas	888
Pentene[trans-2-]	73-02089	0173-96-0023	16.7	Soil gas	888
Pinene[alpha-]	73-02089	0173-96-0023	64.6	Soil gas	888
Pinene[beta-]	73-02089	0173-96-0023	38.1	Soil gas	888
Propylbenzene[1-]	73-02089	0173-96-0023	48	Soil gas	888
Propylene	73-02089	0173-96-0023	610	Soil gas	888
Tetrachloroethene	73-02089	0173-96-0023	44.2	Soil gas	888
Toluene	73-02089	0173-96-0023	56.8	Soil gas	888
Trichlorobenzene[1,2,4-]	73-02089	0173-96-0023	17.9	Soil gas	888
Trichloroethene	73-02089	0173-96-0023	12	Soil gas	888
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0023	688	Soil gas	888
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0023	149	Soil gas	888
Trimethylpentane[2,3,4-]	73-02089	0173-96-0023	27.8	Soil gas	888
Vinyl Chloride	73-02089	0173-96-0023	93.6	Soil gas	888
Xylene[1,2-]	73-02089	0173-96-0023	18.3	Soil gas	888
Xylene[1,3-]+Xylene[1,4-]	73-02089	0173-96-0023	290	Soil gas	888
Benzene	73-02089	0173-96-0024	986	Soil gas	360
Butadiene[1,3-]	73-02089	0173-96-0024	23.6	Soil gas	360
Butane[n-]	73-02089	0173-96-0024	255	Soil gas	360
Butanone[2-]	73-02089	0173-96-0024	49.8	Soil gas	360
Butene[1-]	73-02089	0173-96-0024	490	Soil gas	360
Butene[trans-2-]	73-02089	0173-96-0024	648	Soil gas	360
Chlorobenzene	73-02089	0173-96-0024	186	Soil gas	360
Chlorodifluoromethane	73-02089	0173-96-0024	2580	Soil gas	360
Chloroethane	73-02089	0173-96-0024	79.4	Soil gas	360
Cyclohexane	73-02089	0173-96-0024	679	Soil gas	360
Cyclopentane	73-02089	0173-96-0024	11.7	Soil gas	360
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02089	0173-96-0024	91.6	Soil gas	360
Dichlorobenzene[1,2-]	73-02089	0173-96-0024	15	Soil gas	360
Dichlorobenzene[1,4-]	73-02089	0173-96-0024	957	Soil gas	360
Dichlorodifluoromethane	73-02089	0173-96-0024	882	Soil gas	360
Dichloroethane[1,2-]	73-02089	0173-96-0024	10.9	Soil gas	360
Dichloroethene[1,1-]	73-02089	0173-96-0024	28.3	Soil gas	360
Dichloroethene[cis-1,2-]	73-02089	0173-96-0024	8350	Soil gas	360
Dichloroethene[trans-1,2-]	73-02089	0173-96-0024	69.9	Soil gas	360
Diethyl Ether	73-02089	0173-96-0024	273	Soil gas	360
Dimethylbutane[2,2-]	73-02089	0173-96-0024	23.9	Soil gas	360
Dimethylbutane[2,3-]	73-02089	0173-96-0024	125	Soil gas	360
Dimethylpentane[2,3-]	73-02089	0173-96-0024	76.4	Soil gas	360
Ethylbenzene	73-02089	0173-96-0024	3280	Soil gas	360

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Heptane	73-02089	0173-96-0024	94.9	Soil gas	360
Hexane	73-02089	0173-96-0024	426	Soil gas	360
Hexene[as-3-]	73-02089	0173-96-0024	20.3	Soil gas	360
Isobutane	73-02089	0173-96-0024	3440	Soil gas	360
Isocotane	73-02089	0173-96-0024	60.8	Soil gas	360
Isopentane	73-02089	0173-96-0024	63.9	Soil gas	360
Isoprene	73-02089	0173-96-0024	11.6	Soil gas	360
Isopropylbenzene	73-02089	0173-96-0024	276	Soil gas	360
Methyl-1-butene[3-]	73-02089	0173-96-0024	88.6	Soil gas	360
Methyl-1-pentene[2-]	73-02089	0173-96-0024	23.1	Soil gas	360
Methyl-2-butene[2-]	73-02089	0173-96-0024	89.2	Soil gas	360
Methylcyclohexane	73-02089	0173-96-0024	773	Soil gas	360
Methylcyclopentane	73-02089	0173-96-0024	180	Soil gas	360
Methylene Chloride	73-02089	0173-96-0024	127	Soil gas	360
Methylheptane[2-]	73-02089	0173-96-0024	567	Soil gas	360
Methylheptane[3-]	73-02089	0173-96-0024	596	Soil gas	360
Methylhexane[2-]	73-02089	0173-96-0024	13.4	Soil gas	360
Methylhexane[3-]	73-02089	0173-96-0024	205	Soil gas	360
Methylpentane[2-]	73-02089	0173-96-0024	109	Soil gas	360
Methylpentane[3-]	73-02089	0173-96-0024	108	Soil gas	360
Nonane[1-]	73-02089	0173-96-0024	8270	Soil gas	360
Octane[n-]	73-02089	0173-96-0024	1150	Soil gas	360
Pentane	73-02089	0173-96-0024	104	Soil gas	360
Pentene[1-]	73-02089	0173-96-0024	88.6	Soil gas	360
Pentene[cis-2-]	73-02089	0173-96-0024	98.6	Soil gas	360
Pentene[trans-2-]	73-02089	0173-96-0024	32	Soil gas	360
Pinene[alpha-]	73-02089	0173-96-0024	635	Soil gas	360
Pinene[beta-]	73-02089	0173-96-0024	968	Soil gas	360
Propylbenzene[1-]	73-02089	0173-96-0024	397	Soil gas	360
Propylene	73-02089	0173-96-0024	1040	Soil gas	360
Styrene	73-02089	0173-96-0024	22.1	Soil gas	360
Tetrachloroethene	73-02089	0173-96-0024	18.6	Soil gas	360
Toluene	73-02089	0173-96-0024	590	Soil gas	360
Trichloroethene	73-02089	0173-96-0024	53.5	Soil gas	360
Trichlorofluoromethane	73-02089	0173-96-0024	37.4	Soil gas	360
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0024	2870	Soil gas	360
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0024	973	Soil gas	360
Trimethylpentane[2,3,4-]	73-02089	0173-96-0024	261	Soil gas	360
Vinyl Chloride	73-02089	0173-96-0024	907	Soil gas	360
Xylene[1,2-]	73-02089	0173-96-0024	859	Soil gas	360
Xylene[1,3-]+Xylene[1,4-]	73-02089	0173-96-0024	2420	Soil gas	360
Butane[n-]	73-02089	0173-96-0025	11	Soil gas	14.4
Chlorodifluoromethane	73-02089	0173-96-0025	52.1	Soil gas	14.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02089	0173-96-0025	6.78	Soil gas	14.4
Dichlorobenzene[1,4-]	73-02089	0173-96-0025	8.34	Soil gas	14.4
Dichlorodifluoromethane	73-02089	0173-96-0025	10.4	Soil gas	14.4
Isobutane	73-02089	0173-96-0025	31.7	Soil gas	14.4
Isopentane	73-02089	0173-96-0025	3.7	Soil gas	14.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Nonane[1-]	73-02089	0173-96-0025	4.68	Soil gas	14.4
Pentane	73-02089	0173-96-0025	5.16	Soil gas	14.4
Propylene	73-02089	0173-96-0025	7.62	Soil gas	14.4
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0025	5.4	Soil gas	14.4
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0025	3.72	Soil gas	14.4
Trimethylpentane[2,3,4-]	73-02089	0173-96-0025	2.9	Soil gas	14.4
Acetone	73-01011	0173-96-0026	1420	Soil gas	2136
Benzene	73-01011	0173-96-0026	12.5	Soil gas	2136
Butane[n-]	73-01011	0173-96-0026	42.8	Soil gas	2136
Butanone[2-]	73-01011	0173-96-0026	24.1	Soil gas	2136
Carbon Tetrachloride	73-01011	0173-96-0026	12	Soil gas	2136
Chlorodifluoromethane	73-01011	0173-96-0026	348	Soil gas	2136
Chloroform	73-01011	0173-96-0026	68.8	Soil gas	2136
Dichlorodifluoromethane	73-01011	0173-96-0026	58.4	Soil gas	2136
Ethanol	73-01011	0173-96-0026	2640	Soil gas	2136
Heptane	73-01011	0173-96-0026	117	Soil gas	2136
Hexane	73-01011	0173-96-0026	617	Soil gas	2136
Isobutane	73-01011	0173-96-0026	72.3	Soil gas	2136
Isopentane	73-01011	0173-96-0026	115	Soil gas	2136
Methanol	73-01011	0173-96-0026	10900	Soil gas	2136
Methylene Chloride	73-01011	0173-96-0026	1820	Soil gas	2136
Methylpentane[3-]	73-01011	0173-96-0026	11.3	Soil gas	2136
Pentane	73-01011	0173-96-0026	11.5	Soil gas	2136
Pentene[1-]	73-01011	0173-96-0026	60.8	Soil gas	2136
Pinene[beta-]	73-01011	0173-96-0026	34.5	Soil gas	2136
Propanol[2-]	73-01011	0173-96-0026	1290	Soil gas	2136
Propylene	73-01011	0173-96-0026	205	Soil gas	2136
Toluene	73-01011	0173-96-0026	45.8	Soil gas	2136
Trichloro-1,2,2-trifluoroethane[1,1,2-]	73-01011	0173-96-0026	172	Soil gas	2136
Trichloroethane[1,1,1-]	73-01011	0173-96-0026	26.5	Soil gas	2136
Trichloroethene	73-01011	0173-96-0026	23	Soil gas	2136
Trichlorofluoromethane	73-01011	0173-96-0026	49.8	Soil gas	2136
Acetone	73-01011	0173-96-0027	1000	Soil gas	1500
Benzene	73-01011	0173-96-0027	21.4	Soil gas	1500
Butane[n-]	73-01011	0173-96-0027	179	Soil gas	1500
Chlorodifluoromethane	73-01011	0173-96-0027	1930	Soil gas	1500
Chloroethane	73-01011	0173-96-0027	13.7	Soil gas	1500
Chloromethane	73-01011	0173-96-0027	43.2	Soil gas	1500
Cyclohexane	73-01011	0173-96-0027	111	Soil gas	1500
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-96-0027	74.7	Soil gas	1500
Dichlorobenzene[1,4-]	73-01011	0173-96-0027	19.3	Soil gas	1500
Dichlorodifluoromethane	73-01011	0173-96-0027	708	Soil gas	1500
Dichloroethene[cis-1,2-]	73-01011	0173-96-0027	1650	Soil gas	1500
Dichloroethene[trans-1,2-]	73-01011	0173-96-0027	26.7	Soil gas	1500
Diethyl Ether	73-01011	0173-96-0027	13.3	Soil gas	1500
Dimethylbutane[2,2-]	73-01011	0173-96-0027	15.4	Soil gas	1500
Dimethylpentane[2,3-]	73-01011	0173-96-0027	13.3	Soil gas	1500

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Heptane	73-01011	0173-96-0027	41	Soil gas	1500
Hexane	73-01011	0173-96-0027	22.3	Soil gas	1500
Isobutane	73-01011	0173-96-0027	785	Soil gas	1500
Isopentane	73-01011	0173-96-0027	61.3	Soil gas	1500
Methyl-2-butene[2-]	73-01011	0173-96-0027	11.8	Soil gas	1500
Methylcyclohexane	73-01011	0173-96-0027	222	Soil gas	1500
Methylcyclopentane	73-01011	0173-96-0027	35.8	Soil gas	1500
Methylhexane[3-]	73-01011	0173-96-0027	20.3	Soil gas	1500
Methylpentane[2-]	73-01011	0173-96-0027	24.3	Soil gas	1500
Methylpentane[3-]	73-01011	0173-96-0027	26.6	Soil gas	1500
Nitropropane[2-]	73-01011	0173-96-0027	11.8	Soil gas	1500
Nonane[1-]	73-01011	0173-96-0027	13.6	Soil gas	1500
Octane[n-]	73-01011	0173-96-0027	10.9	Soil gas	1500
Pentane	73-01011	0173-96-0027	65.6	Soil gas	1500
Pentene[<i>cis</i> -2-]	73-01011	0173-96-0027	11.6	Soil gas	1500
Propylene	73-01011	0173-96-0027	296	Soil gas	1500
Tetrachloroethene	73-01011	0173-96-0027	191	Soil gas	1500
Trichlorobenzene[1,2,4-]	73-01011	0173-96-0027	20.4	Soil gas	1500
Trichlorofluoromethane	73-01011	0173-96-0027	28.6	Soil gas	1500
Trimethylpentane[2,3,4-]	73-01011	0173-96-0027	11.5	Soil gas	1500
Vinyl Chloride	73-01011	0173-96-0027	72.5	Soil gas	1500
Acetone	73-01011	0173-96-0028	358	Soil gas	1044
Benzene	73-01011	0173-96-0028	63	Soil gas	1044
Butane[n-]	73-01011	0173-96-0028	898	Soil gas	1044
Butene[1-]	73-01011	0173-96-0028	181	Soil gas	1044
Butene[<i>cis</i> -2-]	73-01011	0173-96-0028	17	Soil gas	1044
Chlorobenzene	73-01011	0173-96-0028	12	Soil gas	1044
Chlorodifluoromethane	73-01011	0173-96-0028	1930	Soil gas	1044
Chloroethane	73-01011	0173-96-0028	51.8	Soil gas	1044
Chloromethane	73-01011	0173-96-0028	63.5	Soil gas	1044
Cyclohexane	73-01011	0173-96-0028	321	Soil gas	1044
Cyclopentane	73-01011	0173-96-0028	18.5	Soil gas	1044
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-96-0028	105	Soil gas	1044
Dichlorobenzene[1,4-]	73-01011	0173-96-0028	101	Soil gas	1044
Dichlorodifluoromethane	73-01011	0173-96-0028	594	Soil gas	1044
Dichloroethane[1,1-]	73-01011	0173-96-0028	11.3	Soil gas	1044
Dichloroethene[1,1-]	73-01011	0173-96-0028	31.3	Soil gas	1044
Dichloroethene[<i>cis</i> -1,2-]	73-01011	0173-96-0028	6680	Soil gas	1044
Dichloroethene[<i>trans</i> -1,2-]	73-01011	0173-96-0028	85.5	Soil gas	1044
Diethyl Ether	73-01011	0173-96-0028	70.3	Soil gas	1044
Dimethylbutane[2,2-]	73-01011	0173-96-0028	46.1	Soil gas	1044
Dimethylbutane[2,3-]	73-01011	0173-96-0028	75.3	Soil gas	1044
Dimethylpentane[2,3-]	73-01011	0173-96-0028	82.3	Soil gas	1044
Ethyl Acrylate	73-01011	0173-96-0028	45.4	Soil gas	1044
Ethylbenzene	73-01011	0173-96-0028	10.6	Soil gas	1044
Heptane	73-01011	0173-96-0028	604	Soil gas	1044
Hexane	73-01011	0173-96-0028	160	Soil gas	1044
Isobutane	73-01011	0173-96-0028	1910	Soil gas	1044

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Isooctane	73-01011	0173-96-0028	85.5	Soil gas	1044
Isopentane	73-01011	0173-96-0028	92.2	Soil gas	1044
Methyl-1-butene[3-]	73-01011	0173-96-0028	54.4	Soil gas	1044
Methyl-1-pentene[2-]	73-01011	0173-96-0028	12.4	Soil gas	1044
Methyl-2-butene[2-]	73-01011	0173-96-0028	38.3	Soil gas	1044
Methylcyclohexane	73-01011	0173-96-0028	959	Soil gas	1044
Methylcyclopentane	73-01011	0173-96-0028	156	Soil gas	1044
Methylene Chloride	73-01011	0173-96-0028	63.4	Soil gas	1044
Methylheptane[2-]	73-01011	0173-96-0028	365	Soil gas	1044
Methylheptane[3-]	73-01011	0173-96-0028	324	Soil gas	1044
Methylhexane[2-]	73-01011	0173-96-0028	14.3	Soil gas	1044
Methylhexane[3-]	73-01011	0173-96-0028	166	Soil gas	1044
Methylpentane[2-]	73-01011	0173-96-0028	108	Soil gas	1044
Methylpentane[3-]	73-01011	0173-96-0028	95.2	Soil gas	1044
Methylstyrene[alpha-]	73-01011	0173-96-0028	16.2	Soil gas	1044
Nonane[1-]	73-01011	0173-96-0028	292	Soil gas	1044
Octane[n-]	73-01011	0173-96-0028	261	Soil gas	1044
Pentane	73-01011	0173-96-0028	143	Soil gas	1044
Pentene[1-]	73-01011	0173-96-0028	24.2	Soil gas	1044
Pinene[alpha-]	73-01011	0173-96-0028	57.6	Soil gas	1044
Pinene[beta-]	73-01011	0173-96-0028	35.8	Soil gas	1044
Propylene	73-01011	0173-96-0028	834	Soil gas	1044
Tetrachloroethene	73-01011	0173-96-0028	214	Soil gas	1044
Tetrahydrofuran	73-01011	0173-96-0028	10.8	Soil gas	1044
Trichlorobenzene[1,2,4-]	73-01011	0173-96-0028	124	Soil gas	1044
Trichloroethene	73-01011	0173-96-0028	57.2	Soil gas	1044
Trichlorofluoromethane	73-01011	0173-96-0028	18	Soil gas	1044
Trimethylbenzene[1,2,4-]	73-01011	0173-96-0028	17	Soil gas	1044
Trimethylpentane[2,3,4-]	73-01011	0173-96-0028	101	Soil gas	1044
Vinyl Chloride	73-01011	0173-96-0028	443	Soil gas	1044
Benzene	73-01011	0173-96-0029	223	Soil gas	348
Butadiene[1,3-]	73-01011	0173-96-0029	36.1	Soil gas	348
Butane[n-]	73-01011	0173-96-0029	2380	Soil gas	348
Butene[1-]	73-01011	0173-96-0029	451	Soil gas	348
Butene[cis-2-]	73-01011	0173-96-0029	53	Soil gas	348
Chlorobenzene	73-01011	0173-96-0029	32.4	Soil gas	348
Chlorodifluoromethane	73-01011	0173-96-0029	6460	Soil gas	348
Chloroethane	73-01011	0173-96-0029	104	Soil gas	348
Chloromethane	73-01011	0173-96-0029	82.5	Soil gas	348
Cyclohexane	73-01011	0173-96-0029	746	Soil gas	348
Cyclopentane	73-01011	0173-96-0029	37.1	Soil gas	348
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-96-0029	120	Soil gas	348
Dichlorobenzene[1,4-]	73-01011	0173-96-0029	197	Soil gas	348
Dichlorodifluoromethane	73-01011	0173-96-0029	553	Soil gas	348
Dichloroethane[1,2-]	73-01011	0173-96-0029	18	Soil gas	348
Dichloroethene[1,1-]	73-01011	0173-96-0029	82.5	Soil gas	348
Dichloroethene[cis-1,2-]	73-01011	0173-96-0029	21300	Soil gas	348
Dichloroethene[trans-1,2-]	73-01011	0173-96-0029	622	Soil gas	348

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Diethyl Ether	73-01011	0173-96-0029	157	Soil gas	348
Dimethylbutane[2,2-]	73-01011	0173-96-0029	95.5	Soil gas	348
Dimethylbutane[2,3-]	73-01011	0173-96-0029	271	Soil gas	348
Dimethylpentane[2,3-]	73-01011	0173-96-0029	278	Soil gas	348
Ethanol	73-01011	0173-96-0029	32.2	Soil gas	348
Heptane	73-01011	0173-96-0029	6610	Soil gas	348
Hexane	73-01011	0173-96-0029	759	Soil gas	348
Hexene[cis-3-]	73-01011	0173-96-0029	25.3	Soil gas	348
Isobutane	73-01011	0173-96-0029	2920	Soil gas	348
Isooctane	73-01011	0173-96-0029	322	Soil gas	348
Isopentane	73-01011	0173-96-0029	143	Soil gas	348
Methanol	73-01011	0173-96-0029	945	Soil gas	348
Methyl-1-butene[3-]	73-01011	0173-96-0029	131	Soil gas	348
Methyl-1-pentene[2-]	73-01011	0173-96-0029	37.1	Soil gas	348
Methyl-2-butene[2-]	73-01011	0173-96-0029	94.2	Soil gas	348
Methyl-2-pentanone[4-]	73-01011	0173-96-0029	18.4	Soil gas	348
Methylcyclohexane	73-01011	0173-96-0029	3060	Soil gas	348
Methylcyclopentane	73-01011	0173-96-0029	368	Soil gas	348
Methylene Chloride	73-01011	0173-96-0029	79.4	Soil gas	348
Methylheptane[2-]	73-01011	0173-96-0029	1510	Soil gas	348
Methylheptane[3-]	73-01011	0173-96-0029	1150	Soil gas	348
Methylhexane[2-]	73-01011	0173-96-0029	34.9	Soil gas	348
Methylhexane[3-]	73-01011	0173-96-0029	568	Soil gas	348
Methylpentane[2-]	73-01011	0173-96-0029	246	Soil gas	348
Methylpentane[3-]	73-01011	0173-96-0029	200	Soil gas	348
Nonane[1-]	73-01011	0173-96-0029	1900	Soil gas	348
Octane[n-]	73-01011	0173-96-0029	2310	Soil gas	348
Pentane	73-01011	0173-96-0029	511	Soil gas	348
Pentene[1-]	73-01011	0173-96-0029	145	Soil gas	348
Pentene[trans-2-]	73-01011	0173-96-0029	29.1	Soil gas	348
Pinene[alpha-]	73-01011	0173-96-0029	100	Soil gas	348
Tetrachloroethene	73-01011	0173-96-0029	79.4	Soil gas	348
Tetrahydrofuran	73-01011	0173-96-0029	267	Soil gas	348
Trichloroethene	73-01011	0173-96-0029	71.2	Soil gas	348
Trimethylbenzene[1,2,4-]	73-01011	0173-96-0029	34.4	Soil gas	348
Trimethylbenzene[1,3,5-]	73-01011	0173-96-0029	18.6	Soil gas	348
Trimethylpentane[2,3,4-]	73-01011	0173-96-0029	282	Soil gas	348
Vinyl Chloride	73-01011	0173-96-0029	1820	Soil gas	348
Acetone	73-01004	0173-96-0030	308	Soil gas	1192.8
Benzene	73-01004	0173-96-0030	30.2	Soil gas	1192.8
Butane[n-]	73-01004	0173-96-0030	137	Soil gas	1192.8
Butene[trans-2-]	73-01004	0173-96-0030	81.6	Soil gas	1192.8
Chlorodifluoromethane	73-01004	0173-96-0030	1080	Soil gas	1192.8
Chloroethane	73-01004	0173-96-0030	17.6	Soil gas	1192.8
Cyclohexane	73-01004	0173-96-0030	170	Soil gas	1192.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-96-0030	60	Soil gas	1192.8
Dichlorobenzene[1,4-]	73-01004	0173-96-0030	38.5	Soil gas	1192.8
Dichlorodifluoromethane	73-01004	0173-96-0030	611	Soil gas	1192.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloroethene[1,1-]	73-01004	0173-96-0030	17.6	Soil gas	1192.8
Dichloroethene[cis-1,2-]	73-01004	0173-96-0030	2210	Soil gas	1192.8
Dichloroethene[trans-1,2-]	73-01004	0173-96-0030	27.7	Soil gas	1192.8
Diethyl Ether	73-01004	0173-96-0030	27.9	Soil gas	1192.8
Dimethylbutane[2,2-]	73-01004	0173-96-0030	48.5	Soil gas	1192.8
Dimethylbutane[2,3-]	73-01004	0173-96-0030	28.2	Soil gas	1192.8
Dimethylpentane[2,3-]	73-01004	0173-96-0030	23.3	Soil gas	1192.8
Heptane	73-01004	0173-96-0030	135	Soil gas	1192.8
Isobutane	73-01004	0173-96-0030	652	Soil gas	1192.8
Isooctane	73-01004	0173-96-0030	12.8	Soil gas	1192.8
Methyl-2-butene[2-]	73-01004	0173-96-0030	15	Soil gas	1192.8
Methylcyclohexane	73-01004	0173-96-0030	260	Soil gas	1192.8
Methylcyclopentane	73-01004	0173-96-0030	58.1	Soil gas	1192.8
Methylheptane[2-]	73-01004	0173-96-0030	40.4	Soil gas	1192.8
Methylheptane[3-]	73-01004	0173-96-0030	53.3	Soil gas	1192.8
Methylhexane[3-]	73-01004	0173-96-0030	55.5	Soil gas	1192.8
Methylpentane[2-]	73-01004	0173-96-0030	48.2	Soil gas	1192.8
Methylpentane[3-]	73-01004	0173-96-0030	54.3	Soil gas	1192.8
Nonane[1-]	73-01004	0173-96-0030	148	Soil gas	1192.8
Octane[n-]	73-01004	0173-96-0030	55.9	Soil gas	1192.8
Pentane	73-01004	0173-96-0030	96.2	Soil gas	1192.8
Pentene[1-]	73-01004	0173-96-0030	17.7	Soil gas	1192.8
Pinene[alpha-]	73-01004	0173-96-0030	10.7	Soil gas	1192.8
Pinene[beta-]	73-01004	0173-96-0030	31.5	Soil gas	1192.8
Propylene	73-01004	0173-96-0030	512	Soil gas	1192.8
Tetrachloroethene	73-01004	0173-96-0030	127	Soil gas	1192.8
Trichloroethene	73-01004	0173-96-0030	26.1	Soil gas	1192.8
Trichlorofluoromethane	73-01004	0173-96-0030	15.3	Soil gas	1192.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0030	31.8	Soil gas	1192.8
Trimethylbenzene[1,3,5-]	73-01004	0173-96-0030	11.1	Soil gas	1192.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0030	18.2	Soil gas	1192.8
Vinyl Chloride	73-01004	0173-96-0030	158	Soil gas	1192.8
Acetone	73-01004	0173-96-0031	116	Soil gas	904.8
Benzene	73-01004	0173-96-0031	38.7	Soil gas	904.8
Bromodichloromethane	73-01004	0173-96-0031	10.4	Soil gas	904.8
Butane[n-]	73-01004	0173-96-0031	660	Soil gas	904.8
Butene[1-]	73-01004	0173-96-0031	119	Soil gas	904.8
Chlorodifluoromethane	73-01004	0173-96-0031	2150	Soil gas	904.8
Chloroethane	73-01004	0173-96-0031	18.1	Soil gas	904.8
Chloromethane	73-01004	0173-96-0031	47.3	Soil gas	904.8
Cyclohexane	73-01004	0173-96-0031	189	Soil gas	904.8
Cyclopentane	73-01004	0173-96-0031	10.7	Soil gas	904.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-96-0031	62.8	Soil gas	904.8
Dichlorobenzene[1,4-]	73-01004	0173-96-0031	24.9	Soil gas	904.8
Dichlorodifluoromethane	73-01004	0173-96-0031	389	Soil gas	904.8
Dichloroethene[1,1-]	73-01004	0173-96-0031	13	Soil gas	904.8
Dichloroethene[cis-1,2-]	73-01004	0173-96-0031	2510	Soil gas	904.8
Dichloroethene[trans-1,2-]	73-01004	0173-96-0031	50	Soil gas	904.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Diethyl Ether	73-01004	0173-96-0031	19.5	Soil gas	904.8
Dimethylbutane[2,2-]	73-01004	0173-96-0031	20	Soil gas	904.8
Dimethylbutane[2,3-]	73-01004	0173-96-0031	33.7	Soil gas	904.8
Dimethylpentane[2,3-]	73-01004	0173-96-0031	37.6	Soil gas	904.8
Heptane	73-01004	0173-96-0031	378	Soil gas	904.8
Hexane	73-01004	0173-96-0031	150	Soil gas	904.8
Isobutane	73-01004	0173-96-0031	1200	Soil gas	904.8
Isooctane	73-01004	0173-96-0031	11.4	Soil gas	904.8
Isopentane	73-01004	0173-96-0031	55.5	Soil gas	904.8
Methyl-1-butene[3-]	73-01004	0173-96-0031	22.3	Soil gas	904.8
Methyl-2-butene[2-]	73-01004	0173-96-0031	16.5	Soil gas	904.8
Methylcyclohexane	73-01004	0173-96-0031	355	Soil gas	904.8
Methylcyclopentane	73-01004	0173-96-0031	93.8	Soil gas	904.8
Methylene Chloride	73-01004	0173-96-0031	30.3	Soil gas	904.8
Methylheptane[2-]	73-01004	0173-96-0031	106	Soil gas	904.8
Methylheptane[3-]	73-01004	0173-96-0031	96.9	Soil gas	904.8
Methylhexane[3-]	73-01004	0173-96-0031	84.7	Soil gas	904.8
Methylpentane[2-]	73-01004	0173-96-0031	53.3	Soil gas	904.8
Methylpentane[3-]	73-01004	0173-96-0031	50.7	Soil gas	904.8
Nonane[1-]	73-01004	0173-96-0031	126	Soil gas	904.8
Octane[n-]	73-01004	0173-96-0031	99.3	Soil gas	904.8
Pentane	73-01004	0173-96-0031	171	Soil gas	904.8
Pentene[1-]	73-01004	0173-96-0031	32.6	Soil gas	904.8
Pentene[cis-2-]	73-01004	0173-96-0031	17.6	Soil gas	904.8
Pinene[alpha-]	73-01004	0173-96-0031	16.8	Soil gas	904.8
Pinene[beta-]	73-01004	0173-96-0031	25	Soil gas	904.8
Propylene	73-01004	0173-96-0031	938	Soil gas	904.8
Tetrachloroethene	73-01004	0173-96-0031	82.9	Soil gas	904.8
Trichloroethene	73-01004	0173-96-0031	13.7	Soil gas	904.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0031	13.1	Soil gas	904.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0031	21.6	Soil gas	904.8
Vinyl Chloride	73-01004	0173-96-0031	177	Soil gas	904.8
Acetone	73-01004	0173-96-0032	760	Soil gas	556.8
Benzene	73-01004	0173-96-0032	44.8	Soil gas	556.8
Butane[n-]	73-01004	0173-96-0032	289	Soil gas	556.8
Butene[1-]	73-01004	0173-96-0032	140	Soil gas	556.8
Butene[cis-2-]	73-01004	0173-96-0032	15.9	Soil gas	556.8
Butene[trans-2-]	73-01004	0173-96-0032	187	Soil gas	556.8
Chlorobenzene	73-01004	0173-96-0032	10.3	Soil gas	556.8
Chlorodifluoromethane	73-01004	0173-96-0032	2600	Soil gas	556.8
Chloroethane	73-01004	0173-96-0032	24.9	Soil gas	556.8
Cyclohexane	73-01004	0173-96-0032	390	Soil gas	556.8
Cyclopentane	73-01004	0173-96-0032	14.9	Soil gas	556.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-96-0032	89.6	Soil gas	556.8
Dichlorobenzene[1,4-]	73-01004	0173-96-0032	58	Soil gas	556.8
Dichlorodifluoromethane	73-01004	0173-96-0032	454	Soil gas	556.8
Dichloroethene[1,1-]	73-01004	0173-96-0032	23.2	Soil gas	556.8
Dichloroethene[cis-1,2-]	73-01004	0173-96-0032	2310	Soil gas	556.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloroethene[trans-1,2-]	73-01004	0173-96-0032	34.4	Soil gas	556.8
Diethyl Ether	73-01004	0173-96-0032	16	Soil gas	556.8
Dimethylbutane[2,2-]	73-01004	0173-96-0032	25.9	Soil gas	556.8
Dimethylbutane[2,3-]	73-01004	0173-96-0032	74.5	Soil gas	556.8
Dimethylpentane[2,3-]	73-01004	0173-96-0032	55.1	Soil gas	556.8
Ethanol	73-01004	0173-96-0032	90.1	Soil gas	556.8
Heptane	73-01004	0173-96-0032	417	Soil gas	556.8
Hexane	73-01004	0173-96-0032	148	Soil gas	556.8
Isobutane	73-01004	0173-96-0032	947	Soil gas	556.8
Isooctane	73-01004	0173-96-0032	21.9	Soil gas	556.8
Isopentane	73-01004	0173-96-0032	106	Soil gas	556.8
Methyl-1-butene[3-]	73-01004	0173-96-0032	46.2	Soil gas	556.8
Methyl-2-butene[2-]	73-01004	0173-96-0032	26.9	Soil gas	556.8
Methylcyclohexane	73-01004	0173-96-0032	620	Soil gas	556.8
Methylcyclopentane	73-01004	0173-96-0032	142	Soil gas	556.8
Methylheptane[2-]	73-01004	0173-96-0032	134	Soil gas	556.8
Methylheptane[3-]	73-01004	0173-96-0032	163	Soil gas	556.8
Methylhexane[3-]	73-01004	0173-96-0032	153	Soil gas	556.8
Methylpentane[2-]	73-01004	0173-96-0032	72.5	Soil gas	556.8
Methylpentane[3-]	73-01004	0173-96-0032	77.2	Soil gas	556.8
Nonane[1-]	73-01004	0173-96-0032	110	Soil gas	556.8
Octane[n-]	73-01004	0173-96-0032	124	Soil gas	556.8
Pentane	73-01004	0173-96-0032	182	Soil gas	556.8
Pentene[1-]	73-01004	0173-96-0032	20.1	Soil gas	556.8
Pentene[trans-2-]	73-01004	0173-96-0032	11.8	Soil gas	556.8
Pinene[alpha-]	73-01004	0173-96-0032	14	Soil gas	556.8
Pinene[beta-]	73-01004	0173-96-0032	52.8	Soil gas	556.8
Propylene	73-01004	0173-96-0032	1100	Soil gas	556.8
Tetrachloroethene	73-01004	0173-96-0032	45.8	Soil gas	556.8
Trichloroethene	73-01004	0173-96-0032	50.3	Soil gas	556.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0032	21	Soil gas	556.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0032	35.3	Soil gas	556.8
Vinyl Chloride	73-01004	0173-96-0032	308	Soil gas	556.8
Acetone	73-01004	0173-96-0033	281	Soil gas	160.8
Benzene	73-01004	0173-96-0033	45.4	Soil gas	160.8
Butane[n-]	73-01004	0173-96-0033	335	Soil gas	160.8
Butene[1-]	73-01004	0173-96-0033	221	Soil gas	160.8
Butene[cis-2-]	73-01004	0173-96-0033	22	Soil gas	160.8
Butene[trans-2-]	73-01004	0173-96-0033	268	Soil gas	160.8
Chlorobenzene	73-01004	0173-96-0033	10.3	Soil gas	160.8
Chlorodifluoromethane	73-01004	0173-96-0033	3620	Soil gas	160.8
Chloroethane	73-01004	0173-96-0033	22.7	Soil gas	160.8
Cyclohexane	73-01004	0173-96-0033	436	Soil gas	160.8
Cyclopentane	73-01004	0173-96-0033	15.8	Soil gas	160.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-96-0033	101	Soil gas	160.8
Dichlorobenzene[1,4-]	73-01004	0173-96-0033	67.9	Soil gas	160.8
Dichlorodifluoromethane	73-01004	0173-96-0033	294	Soil gas	160.8
Dichloroethene[1,1-]	73-01004	0173-96-0033	12.6	Soil gas	160.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichloroethene[cis-1,2-]	73-01004	0173-96-0033	833	Soil gas	160.8
Dichloroethene[trans-1,2-]	73-01004	0173-96-0033	15.9	Soil gas	160.8
Diethyl Ether	73-01004	0173-96-0033	14	Soil gas	160.8
Dimethylbutane[2,2-]	73-01004	0173-96-0033	27.4	Soil gas	160.8
Dimethylbutane[2,3-]	73-01004	0173-96-0033	88.4	Soil gas	160.8
Dimethylpentane[2,3-]	73-01004	0173-96-0033	70.5	Soil gas	160.8
Heptane	73-01004	0173-96-0033	323	Soil gas	160.8
Hexane	73-01004	0173-96-0033	121	Soil gas	160.8
Isobutane	73-01004	0173-96-0033	964	Soil gas	160.8
Isooctane	73-01004	0173-96-0033	27.7	Soil gas	160.8
Isopentane	73-01004	0173-96-0033	126	Soil gas	160.8
Methyl-1-butene[3-]	73-01004	0173-96-0033	68.6	Soil gas	160.8
Methyl-2-butene[2-]	73-01004	0173-96-0033	43.3	Soil gas	160.8
Methylcyclohexane	73-01004	0173-96-0033	737	Soil gas	160.8
Methylcyclopentane	73-01004	0173-96-0033	127	Soil gas	160.8
Methylheptane[2-]	73-01004	0173-96-0033	129	Soil gas	160.8
Methylheptane[3-]	73-01004	0173-96-0033	186	Soil gas	160.8
Methylhexane[2-]	73-01004	0173-96-0033	11.8	Soil gas	160.8
Methylhexane[3-]	73-01004	0173-96-0033	186	Soil gas	160.8
Methylpentane[2-]	73-01004	0173-96-0033	80.2	Soil gas	160.8
Methylpentane[3-]	73-01004	0173-96-0033	74.3	Soil gas	160.8
Nonane[1-]	73-01004	0173-96-0033	34.3	Soil gas	160.8
Octane[n-]	73-01004	0173-96-0033	78.9	Soil gas	160.8
Pentane	73-01004	0173-96-0033	243	Soil gas	160.8
Pentene[1-]	73-01004	0173-96-0033	34.6	Soil gas	160.8
Pentene[cis-2-]	73-01004	0173-96-0033	11.5	Soil gas	160.8
Pentene[trans-2-]	73-01004	0173-96-0033	20.3	Soil gas	160.8
Pinene[alpha-]	73-01004	0173-96-0033	18.1	Soil gas	160.8
Pinene[beta-]	73-01004	0173-96-0033	81.4	Soil gas	160.8
Propylene	73-01004	0173-96-0033	1340	Soil gas	160.8
Tetrachloroethene	73-01004	0173-96-0033	10.9	Soil gas	160.8
Trichloroethene	73-01004	0173-96-0033	10.7	Soil gas	160.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0033	26.9	Soil gas	160.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0033	42.6	Soil gas	160.8
Vinyl Chloride	73-01004	0173-96-0033	230	Soil gas	160.8
Butane[n-]	73-01005	0173-96-0034	3.46	Soil gas	402
Chlorodifluoromethane	73-01005	0173-96-0034	18.5	Soil gas	402
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01005	0173-96-0034	46.8	Soil gas	402
Dichlorodifluoromethane	73-01005	0173-96-0034	351	Soil gas	402
Propylene	73-01005	0173-96-0034	9.74	Soil gas	402
Tetrachloroethene	73-01005	0173-96-0034	160	Soil gas	402
Trichloroethane[1,1,1-]	73-01005	0173-96-0034	4.66	Soil gas	402
Trichlorofluoromethane	73-01005	0173-96-0034	42.1	Soil gas	402
Chlorodifluoromethane	73-01009	0173-96-0035	120	Soil gas	492
Chloroform	73-01009	0173-96-0035	6.56	Soil gas	492
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01009	0173-96-0035	32.5	Soil gas	492
Dichlorodifluoromethane	73-01009	0173-96-0035	179	Soil gas	492

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichloroethane[1,1-]	73-01009	0173-96-0035	4.8	Soil gas	492
Dichloroethene[1,1-]	73-01009	0173-96-0035	4.04	Soil gas	492
Dichloroethene[cis-1,2-]	73-01009	0173-96-0035	5.46	Soil gas	492
Dichloroethene[trans-1,2-]	73-01009	0173-96-0035	4.34	Soil gas	492
Pentane	73-01009	0173-96-0035	2.12	Soil gas	492
Propylene	73-01009	0173-96-0035	5.2	Soil gas	492
Tetrachloroethene	73-01009	0173-96-0035	245	Soil gas	492
Trichloroethane[1,1,1-]	73-01009	0173-96-0035	9.24	Soil gas	492
Trichloroethene	73-01009	0173-96-0035	43.4	Soil gas	492
Trichlorofluoromethane	73-01009	0173-96-0035	23	Soil gas	492
Chlorodifluoromethane	73-01009	0173-96-0036	17.5	Soil gas	134.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01009	0173-96-0036	16.3	Soil gas	134.4
Dichlorodifluoromethane	73-01009	0173-96-0036	148	Soil gas	134.4
Tetrachloroethene	73-01009	0173-96-0036	152	Soil gas	134.4
Trichloroethane[1,1,1-]	73-01009	0173-96-0036	2.24	Soil gas	134.4
Trichlorofluoromethane	73-01009	0173-96-0036	10.3	Soil gas	134.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01006	0173-96-0037	1.74	Soil gas	324
Dichlorodifluoromethane	73-01006	0173-96-0037	31.2	Soil gas	324
Tetrachloroethene	73-01006	0173-96-0037	26.5	Soil gas	324
Trichloroethene	73-01006	0173-96-0037	10.6	Soil gas	324
Trichlorofluoromethane	73-01006	0173-96-0037	5.94	Soil gas	324
Acetone	73-02067	0173-96-0038	12	Soil gas	280.8
Benzene	73-02067	0173-96-0038	313	Soil gas	280.8
Butane[n-]	73-02067	0173-96-0038	745	Soil gas	280.8
Butene[1-]	73-02067	0173-96-0038	461	Soil gas	280.8
Butene[cis-2-]	73-02067	0173-96-0038	62.1	Soil gas	280.8
Butene[trans-2-]	73-02067	0173-96-0038	55.7	Soil gas	280.8
Chlorodifluoromethane	73-02067	0173-96-0038	4610	Soil gas	280.8
Chloroethane	73-02067	0173-96-0038	212	Soil gas	280.8
Cyclohexane	73-02067	0173-96-0038	1490	Soil gas	280.8
Dichlorobenzene[1,4-]	73-02067	0173-96-0038	35.5	Soil gas	280.8
Dichlorodifluoromethane	73-02067	0173-96-0038	1010	Soil gas	280.8
Dichloroethane[1,1-]	73-02067	0173-96-0038	35.9	Soil gas	280.8
Dichloroethene[1,1-]	73-02067	0173-96-0038	98.4	Soil gas	280.8
Dichloroethene[cis-1,2-]	73-02067	0173-96-0038	5440	Soil gas	280.8
Dichloroethene[trans-1,2-]	73-02067	0173-96-0038	137	Soil gas	280.8
Dichloropropane[1,2-]	73-02067	0173-96-0038	11.4	Soil gas	280.8
Diethyl Ether	73-02067	0173-96-0038	176	Soil gas	280.8
Dimethylbutane[2,2-]	73-02067	0173-96-0038	130	Soil gas	280.8
Dimethylbutane[2,3-]	73-02067	0173-96-0038	550	Soil gas	280.8
Dimethylpentane[2,3-]	73-02067	0173-96-0038	395	Soil gas	280.8
Ethylbenzene	73-02067	0173-96-0038	486	Soil gas	280.8
Heptane	73-02067	0173-96-0038	3550	Soil gas	280.8
Hexane	73-02067	0173-96-0038	772	Soil gas	280.8
Hexanone[2-]	73-02067	0173-96-0038	237	Soil gas	280.8
Hexene[cis-3-]	73-02067	0173-96-0038	29.2	Soil gas	280.8
Hexene[trans-2-]	73-02067	0173-96-0038	12.7	Soil gas	280.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Isobutane	73-02067	0173-96-0038	3410	Soil gas	280.8
Isooctane	73-02067	0173-96-0038	394	Soil gas	280.8
Isopentane	73-02067	0173-96-0038	274	Soil gas	280.8
Isopropylbenzene	73-02067	0173-96-0038	35.4	Soil gas	280.8
Methyl-1-butene[3-]	73-02067	0173-96-0038	183	Soil gas	280.8
Methyl-1-pentene[2-]	73-02067	0173-96-0038	50.1	Soil gas	280.8
Methyl-1-pentene[4-]	73-02067	0173-96-0038	10.9	Soil gas	280.8
Methyl-2-butene[2-]	73-02067	0173-96-0038	88.1	Soil gas	280.8
Methylcyclohexane	73-02067	0173-96-0038	3820	Soil gas	280.8
Methylcyclopentane	73-02067	0173-96-0038	563	Soil gas	280.8
Methylheptane[2-]	73-02067	0173-96-0038	1780	Soil gas	280.8
Methylheptane[3-]	73-02067	0173-96-0038	1740	Soil gas	280.8
Methylhexane[2-]	73-02067	0173-96-0038	69.2	Soil gas	280.8
Methylhexane[3-]	73-02067	0173-96-0038	802	Soil gas	280.8
Methylpentane[2-]	73-02067	0173-96-0038	353	Soil gas	280.8
Methylpentane[3-]	73-02067	0173-96-0038	342	Soil gas	280.8
Nonane[1-]	73-02067	0173-96-0038	1180	Soil gas	280.8
Octane[n-]	73-02067	0173-96-0038	2300	Soil gas	280.8
Pentane	73-02067	0173-96-0038	522	Soil gas	280.8
Pentene[1-]	73-02067	0173-96-0038	161	Soil gas	280.8
Pentene[cis-2-]	73-02067	0173-96-0038	101	Soil gas	280.8
Pentene[trans-2-]	73-02067	0173-96-0038	42.1	Soil gas	280.8
Pinene[alpha-]	73-02067	0173-96-0038	466	Soil gas	280.8
Pinene[beta-]	73-02067	0173-96-0038	536	Soil gas	280.8
Propylbenzene[1-]	73-02067	0173-96-0038	26.7	Soil gas	280.8
Propylene	73-02067	0173-96-0038	2880	Soil gas	280.8
Tetrachloroethene	73-02067	0173-96-0038	297	Soil gas	280.8
Toluene	73-02067	0173-96-0038	734	Soil gas	280.8
Trichloroethene	73-02067	0173-96-0038	148	Soil gas	280.8
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0038	122	Soil gas	280.8
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0038	63.9	Soil gas	280.8
Trimethylpentane[2,3,4-]	73-02067	0173-96-0038	731	Soil gas	280.8
Xylene[1,2-]	73-02067	0173-96-0038	357	Soil gas	280.8
Xylene[1,3-]+Xylene[1,4-]	73-02067	0173-96-0038	1080	Soil gas	280.8
Benzene	73-02067	0173-96-0039	60.5	Soil gas	24
Butadiene[1,3-]	73-02067	0173-96-0039	16.5	Soil gas	24
Butane[n-]	73-02067	0173-96-0039	71.2	Soil gas	24
Butanone[2-]	73-02067	0173-96-0039	128	Soil gas	24
Butene[1-]	73-02067	0173-96-0039	282	Soil gas	24
Chlorodifluoromethane	73-02067	0173-96-0039	656	Soil gas	24
Chloroethane	73-02067	0173-96-0039	18.2	Soil gas	24
Cyclohexane	73-02067	0173-96-0039	90.4	Soil gas	24
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02067	0173-96-0039	49.2	Soil gas	24
Dichlorobenzene[1,4-]	73-02067	0173-96-0039	93.3	Soil gas	24
Dichlorodifluoromethane	73-02067	0173-96-0039	154	Soil gas	24
Dichloroethene[1,1-]	73-02067	0173-96-0039	14.6	Soil gas	24
Dichloroethene[cis-1,2-]	73-02067	0173-96-0039	1910	Soil gas	24
Dichloroethene[trans-1,2-]	73-02067	0173-96-0039	72.3	Soil gas	24

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dimethylbutane[2,2-]	73-02067	0173-96-0039	22.3	Soil gas	24
Dimethylbutane[2,3-]	73-02067	0173-96-0039	33.2	Soil gas	24
Dimethylpentane[2,3-]	73-02067	0173-96-0039	38.4	Soil gas	24
Ethylbenzene	73-02067	0173-96-0039	68.6	Soil gas	24
Heptane	73-02067	0173-96-0039	329	Soil gas	24
Hexane	73-02067	0173-96-0039	51.1	Soil gas	24
Isobutane	73-02067	0173-96-0039	471	Soil gas	24
Isooctane	73-02067	0173-96-0039	92.8	Soil gas	24
Isopentane	73-02067	0173-96-0039	20.5	Soil gas	24
Isopropylbenzene	73-02067	0173-96-0039	13.6	Soil gas	24
Methyl-2-pentanone[4-]	73-02067	0173-96-0039	18.9	Soil gas	24
Methylcyclohexane	73-02067	0173-96-0039	850	Soil gas	24
Methylcyclopentane	73-02067	0173-96-0039	31.6	Soil gas	24
Methylheptane[2-]	73-02067	0173-96-0039	302	Soil gas	24
Methylheptane[3-]	73-02067	0173-96-0039	377	Soil gas	24
Methylhexane[3-]	73-02067	0173-96-0039	62.4	Soil gas	24
Nonane[1-]	73-02067	0173-96-0039	303	Soil gas	24
Octane[n-]	73-02067	0173-96-0039	400	Soil gas	24
Pentane	73-02067	0173-96-0039	84.2	Soil gas	24
Pentene[1-]	73-02067	0173-96-0039	247	Soil gas	24
Pinene[alpha-]	73-02067	0173-96-0039	74.6	Soil gas	24
Pinene[beta-]	73-02067	0173-96-0039	1350	Soil gas	24
Propylbenzene[1-]	73-02067	0173-96-0039	17.9	Soil gas	24
Propylene	73-02067	0173-96-0039	829	Soil gas	24
Tetrachloroethene	73-02067	0173-96-0039	287	Soil gas	24
Toluene	73-02067	0173-96-0039	622	Soil gas	24
Trichloroethene	73-02067	0173-96-0039	151	Soil gas	24
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0039	123	Soil gas	24
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0039	65.2	Soil gas	24
Trimethylpentane[2,3,4-]	73-02067	0173-96-0039	208	Soil gas	24
Vinyl Chloride	73-02067	0173-96-0039	121	Soil gas	24
Xylene[1,2-]	73-02067	0173-96-0039	163	Soil gas	24
Xylene[1,3-]+Xylene[1,4-]	73-02067	0173-96-0039	241	Soil gas	24
Acrylonitrile	73-02069	0173-96-0040	13.3	Soil gas	211.2
Benzene	73-02069	0173-96-0040	23.9	Soil gas	211.2
Butane[n-]	73-02069	0173-96-0040	2260	Soil gas	211.2
Butene[1-]	73-02069	0173-96-0040	2680	Soil gas	211.2
Butene[cis-2-]	73-02069	0173-96-0040	72.9	Soil gas	211.2
Chlorodifluoromethane	73-02069	0173-96-0040	1930	Soil gas	211.2
Chloroethane	73-02069	0173-96-0040	38.7	Soil gas	211.2
Chloromethane	73-02069	0173-96-0040	196	Soil gas	211.2
Cyclohexane	73-02069	0173-96-0040	262	Soil gas	211.2
Cyclohexanone	73-02069	0173-96-0040	23.7	Soil gas	211.2
Cyclopentane	73-02069	0173-96-0040	38.9	Soil gas	211.2
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02069	0173-96-0040	153	Soil gas	211.2
Dichlorodifluoromethane	73-02069	0173-96-0040	547	Soil gas	211.2
Dichloroethene[1,1-]	73-02069	0173-96-0040	17.5	Soil gas	211.2
Dichloroethene[cis-1,2-]	73-02069	0173-96-0040	140	Soil gas	211.2

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloroethene[trans-1,2-]	73-02069	0173-96-0040	10.2	Soil gas	211.2
Dimethylbutane[2,2-]	73-02069	0173-96-0040	57.2	Soil gas	211.2
Dimethylbutane[2,3-]	73-02069	0173-96-0040	81.9	Soil gas	211.2
Dimethylpentane[2,3-]	73-02069	0173-96-0040	87	Soil gas	211.2
Ethanol	73-02069	0173-96-0040	33.6	Soil gas	211.2
Ethyl Acrylate	73-02069	0173-96-0040	28.7	Soil gas	211.2
Ethylbenzene	73-02069	0173-96-0040	36.5	Soil gas	211.2
Heptane	73-02069	0173-96-0040	177	Soil gas	211.2
Hexane	73-02069	0173-96-0040	178	Soil gas	211.2
Hexene[cis-3-]	73-02069	0173-96-0040	13.6	Soil gas	211.2
Isobutane	73-02069	0173-96-0040	16500	Soil gas	211.2
Isooctane	73-02069	0173-96-0040	47.7	Soil gas	211.2
Isopentane	73-02069	0173-96-0040	327	Soil gas	211.2
Methyl-1-butene[3-]	73-02069	0173-96-0040	97.2	Soil gas	211.2
Methyl-1-pentene[2-]	73-02069	0173-96-0040	26.5	Soil gas	211.2
Methyl-1-pentene[4-]	73-02069	0173-96-0040	12.8	Soil gas	211.2
Methyl-2-butene[2-]	73-02069	0173-96-0040	43.4	Soil gas	211.2
Methylcyclohexane	73-02069	0173-96-0040	467	Soil gas	211.2
Methylcyclopentane	73-02069	0173-96-0040	174	Soil gas	211.2
Methylene Chloride	73-02069	0173-96-0040	24.6	Soil gas	211.2
Methylheptane[2-]	73-02069	0173-96-0040	140	Soil gas	211.2
Methylheptane[3-]	73-02069	0173-96-0040	140	Soil gas	211.2
Methylhexane[2-]	73-02069	0173-96-0040	19.2	Soil gas	211.2
Methylhexane[3-]	73-02069	0173-96-0040	165	Soil gas	211.2
Methylpentane[2-]	73-02069	0173-96-0040	189	Soil gas	211.2
Methylpentane[3-]	73-02069	0173-96-0040	167	Soil gas	211.2
Nonane[1-]	73-02069	0173-96-0040	222	Soil gas	211.2
Octane[n-]	73-02069	0173-96-0040	50.7	Soil gas	211.2
Pentane	73-02069	0173-96-0040	401	Soil gas	211.2
Pentene[1-]	73-02069	0173-96-0040	50.4	Soil gas	211.2
Pentene[cis-2-]	73-02069	0173-96-0040	17.7	Soil gas	211.2
Pentene[trans-2-]	73-02069	0173-96-0040	29.2	Soil gas	211.2
Pinene[alpha-]	73-02069	0173-96-0040	102	Soil gas	211.2
Pinene[beta-]	73-02069	0173-96-0040	76.1	Soil gas	211.2
Trichloroethene	73-02069	0173-96-0040	23	Soil gas	211.2
Trimethylbenzene[1,2,4-]	73-02069	0173-96-0040	23.8	Soil gas	211.2
Trimethylbenzene[1,3,5-]	73-02069	0173-96-0040	13.9	Soil gas	211.2
Trimethylpentane[2,3,4-]	73-02069	0173-96-0040	59.5	Soil gas	211.2
Vinyl Chloride	73-02069	0173-96-0040	236	Soil gas	211.2
Xylene[1,3-]+Xylene[1,4-]	73-02069	0173-96-0040	70.9	Soil gas	211.2
Chloromethane	73-02069	0173-96-0041	6.4	Soil gas	12
Dichlorodifluoromethane	73-02069	0173-96-0041	2.42	Soil gas	12
Isobutane	73-02069	0173-96-0041	95.1	Soil gas	12
Acrylonitrile	73-02061	0173-96-0042	2.42	Soil gas	900
Benzene	73-02061	0173-96-0042	12.7	Soil gas	900
Butane[n-]	73-02061	0173-96-0042	111	Soil gas	900
Butene[1-]	73-02061	0173-96-0042	83.3	Soil gas	900
Butene[cis-2-]	73-02061	0173-96-0042	9.8	Soil gas	900
Chlorobenzene	73-02061	0173-96-0042	4.5	Soil gas	900

TABLE 23.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Chlorodifluoromethane	73-02061	0173-96-0042	23.7	Soil gas	900
Chloroethane	73-02061	0173-96-0042	3.64	Soil gas	900
Cyclopentene	73-02061	0173-96-0042	2.78	Soil gas	900
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02061	0173-96-0042	3.6	Soil gas	900
Dichlorobenzene[1,3-]	73-02061	0173-96-0042	2.92	Soil gas	900
Dichlorodifluoromethane	73-02061	0173-96-0042	31.1	Soil gas	900
Heptane	73-02061	0173-96-0042	38.1	Soil gas	900
Hexane	73-02061	0173-96-0042	50.7	Soil gas	900
Hexene[cis-3-]	73-02061	0173-96-0042	2.9	Soil gas	900
Isobutane	73-02061	0173-96-0042	37.1	Soil gas	900
Isopentane	73-02061	0173-96-0042	22.6	Soil gas	900
Isoprene	73-02061	0173-96-0042	3.84	Soil gas	900
Methyl-1-butene[3-]	73-02061	0173-96-0042	5	Soil gas	900
Methyl-1-pentene[2-]	73-02061	0173-96-0042	7.96	Soil gas	900
Methyl-1-pentene[4-]	73-02061	0173-96-0042	2.96	Soil gas	900
Methyl-2-butene[2-]	73-02061	0173-96-0042	6.94	Soil gas	900
Methylcyclohexane	73-02061	0173-96-0042	4.44	Soil gas	900
Methylcyclopentane	73-02061	0173-96-0042	2.6	Soil gas	900
Methylnheptane[2-]	73-02061	0173-96-0042	3.12	Soil gas	900
Methylnheptane[3-]	73-02061	0173-96-0042	2.9	Soil gas	900
Methylhexane[3-]	73-02061	0173-96-0042	5.84	Soil gas	900
Methylpentane[2-]	73-02061	0173-96-0042	8.44	Soil gas	900
Methylpentane[3-]	73-02061	0173-96-0042	7.08	Soil gas	900
Nitropropane[2-]	73-02061	0173-96-0042	5.94	Soil gas	900
Pentane	73-02061	0173-96-0042	172	Soil gas	900
Pentene[1-]	73-02061	0173-96-0042	13.3	Soil gas	900
Pentene[cis-2-]	73-02061	0173-96-0042	4.46	Soil gas	900
Pentene[trans-2-]	73-02061	0173-96-0042	6.56	Soil gas	900
Propylene	73-02061	0173-96-0042	199	Soil gas	900
Toluene	73-02061	0173-96-0042	3.86	Soil gas	900
Xylene[1,3-]+Xylene[1,4-]	73-02061	0173-96-0042	2.3	Soil gas	900
Acetone	73-02061	0173-96-0043	156	Soil gas	330
Acetophenone	73-02061	0173-96-0043	33.9	Soil gas	330
Benzene	73-02061	0173-96-0043	41.8	Soil gas	330
Benzonitrile	73-02061	0173-96-0043	45.9	Soil gas	330
Butane[n-]	73-02061	0173-96-0043	157	Soil gas	330
Butene[1-]	73-02061	0173-96-0043	108	Soil gas	330
Butene[cis-2-]	73-02061	0173-96-0043	15.1	Soil gas	330
Chlorodifluoromethane	73-02061	0173-96-0043	12.3	Soil gas	330
Chloromethane	73-02061	0173-96-0043	24.5	Soil gas	330
Cyclohexane	73-02061	0173-96-0043	17	Soil gas	330
Dichlorobenzene[1,4-]	73-02061	0173-96-0043	10.3	Soil gas	330
Dichloroethene[cis-1,2-]	73-02061	0173-96-0043	24	Soil gas	330
Dimethylbutane[2,2-]	73-02061	0173-96-0043	17.2	Soil gas	330
Dimethylbutane[2,3-]	73-02061	0173-96-0043	24.4	Soil gas	330
Ethanol	73-02061	0173-96-0043	32.8	Soil gas	330
Ethylbenzene	73-02061	0173-96-0043	11.9	Soil gas	330
Heptane	73-02061	0173-96-0043	38.7	Soil gas	330

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Hexane	73-02061	0173-96-0043	49.9	Soil gas	330
Isobutane	73-02061	0173-96-0043	197	Soil gas	330
Isopentane	73-02061	0173-96-0043	145	Soil gas	330
Methanol	73-02061	0173-96-0043	912	Soil gas	330
Methyl-1-butene[3-]	73-02061	0173-96-0043	31.2	Soil gas	330
Methyl-1-pentene[2-]	73-02061	0173-96-0043	10.1	Soil gas	330
Methyl-2-butene[2-]	73-02061	0173-96-0043	25.5	Soil gas	330
Methylcyclohexane	73-02061	0173-96-0043	23.9	Soil gas	330
Methylcyclopentane	73-02061	0173-96-0043	10.9	Soil gas	330
Methylene Chloride	73-02061	0173-96-0043	42.2	Soil gas	330
Methylheptane[2-]	73-02061	0173-96-0043	44.8	Soil gas	330
Methylheptane[3-]	73-02061	0173-96-0043	47.2	Soil gas	330
Methylpentane[2-]	73-02061	0173-96-0043	77.1	Soil gas	330
Methylpentane[3-]	73-02061	0173-96-0043	43.1	Soil gas	330
Nitrobenzene	73-02061	0173-96-0043	24.1	Soil gas	330
Nitropropane[2-]	73-02061	0173-96-0043	35.6	Soil gas	330
Nonane[1-]	73-02061	0173-96-0043	20.7	Soil gas	330
Octane[n-]	73-02061	0173-96-0043	17.3	Soil gas	330
Pentane	73-02061	0173-96-0043	58.6	Soil gas	330
Pentene[1-]	73-02061	0173-96-0043	11.8	Soil gas	330
Pinene[alpha-]	73-02061	0173-96-0043	2340	Soil gas	330
Pinene[beta-]	73-02061	0173-96-0043	1180	Soil gas	330
Propanol[2-]	73-02061	0173-96-0043	21.4	Soil gas	330
Styrene	73-02061	0173-96-0043	22.4	Soil gas	330
Toluene	73-02061	0173-96-0043	41.5	Soil gas	330
Trichloro-1,2,2-trifluoroethane[1,1,2-]	73-02061	0173-96-0043	45.4	Soil gas	330
Trimethylbenzene[1,2,4-]	73-02061	0173-96-0043	19.1	Soil gas	330
Benzene	73-01007	0173-96-0044	39.2	Soil gas	336
Butadiene[1,3-]	73-01007	0173-96-0044	10.5	Soil gas	336
Butane[n-]	73-01007	0173-96-0044	72.9	Soil gas	336
Butanone[2-]	73-01007	0173-96-0044	61.6	Soil gas	336
Butene[1-]	73-01007	0173-96-0044	218	Soil gas	336
Butene[trans-2-]	73-01007	0173-96-0044	265	Soil gas	336
Chlorobenzene	73-01007	0173-96-0044	16.5	Soil gas	336
Chlorodifluoromethane	73-01007	0173-96-0044	439	Soil gas	336
Chloroethane	73-01007	0173-96-0044	21.8	Soil gas	336
Cyclohexane	73-01007	0173-96-0044	245	Soil gas	336
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-96-0044	59.4	Soil gas	336
Dichlorobenzene[1,4-]	73-01007	0173-96-0044	274	Soil gas	336
Dichlorodifluoromethane	73-01007	0173-96-0044	455	Soil gas	336
Dichloroethene[1,1-]	73-01007	0173-96-0044	17.2	Soil gas	336
Dichloroethene[cis-1,2-]	73-01007	0173-96-0044	1620	Soil gas	336
Dichloroethene[trans-1,2-]	73-01007	0173-96-0044	25.6	Soil gas	336
Dichloropropane[1,2-]	73-01007	0173-96-0044	21.8	Soil gas	336
Diethyl Ether	73-01007	0173-96-0044	45.1	Soil gas	336
Dimethylbutane[2,2-]	73-01007	0173-96-0044	32.1	Soil gas	336
Dimethylbutane[2,3-]	73-01007	0173-96-0044	28.8	Soil gas	336

உதிர்ந்தவர்களுக்காக

உதிர்ந்தவர்களுக்காக

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Trichlorofluoromethane	73-01007	0173-96-0045	58.1	Soil gas	1200
Benzene	73-01007	0173-96-0046	143	Soil gas	192
Butadiene[1,3-]	73-01007	0173-96-0046	12.3	Soil gas	192
Butane[n-]	73-01007	0173-96-0046	664	Soil gas	192
Butene[1-]	73-01007	0173-96-0046	215	Soil gas	192
Butene[cis-2-]	73-01007	0173-96-0046	15.1	Soil gas	192
Chlorobenzene	73-01007	0173-96-0046	131	Soil gas	192
Chlorodifluoromethane	73-01007	0173-96-0046	767	Soil gas	192
Chloroethane	73-01007	0173-96-0046	50.6	Soil gas	192
Chloromethane	73-01007	0173-96-0046	67.8	Soil gas	192
Cyclohexane	73-01007	0173-96-0046	385	Soil gas	192
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-96-0046	85.8	Soil gas	192
Dichlorobenzene[1,4-]	73-01007	0173-96-0046	471	Soil gas	192
Dichlorodifluoromethane	73-01007	0173-96-0046	382	Soil gas	192
Dichloroethane[1,2-]	73-01007	0173-96-0046	15.9	Soil gas	192
Dichloroethene[1,1-]	73-01007	0173-96-0046	21.8	Soil gas	192
Dichloroethene[cis-1,2-]	73-01007	0173-96-0046	6080	Soil gas	192
Dichloropropane[1,2-]	73-01007	0173-96-0046	31.6	Soil gas	192
Diethyl Ether	73-01007	0173-96-0046	56.2	Soil gas	192
Dimethylbutane[2,2-]	73-01007	0173-96-0046	14.7	Soil gas	192
Dimethylbutane[2,3-]	73-01007	0173-96-0046	44.3	Soil gas	192
Dimethylpentane[2,3-]	73-01007	0173-96-0046	41.9	Soil gas	192
Ethyl Acrylate	73-01007	0173-96-0046	23	Soil gas	192
Ethylbenzene	73-01007	0173-96-0046	970	Soil gas	192
Heptane	73-01007	0173-96-0046	768	Soil gas	192
Hexane	73-01007	0173-96-0046	204	Soil gas	192
Isobutane	73-01007	0173-96-0046	2630	Soil gas	192
Isooctane	73-01007	0173-96-0046	32	Soil gas	192
Isopentane	73-01007	0173-96-0046	28.7	Soil gas	192
Isoprene	73-01007	0173-96-0046	18.5	Soil gas	192
Isopropylbenzene	73-01007	0173-96-0046	112	Soil gas	192
Methyl-1-butene[3-]	73-01007	0173-96-0046	64	Soil gas	192
Methyl-1-pentene[2-]	73-01007	0173-96-0046	21.6	Soil gas	192
Methyl-2-butene[2-]	73-01007	0173-96-0046	42.7	Soil gas	192
Methyl-2-pentanone[4-]	73-01007	0173-96-0046	14.4	Soil gas	192
Methylcyclohexane	73-01007	0173-96-0046	765	Soil gas	192
Methylcyclopentane	73-01007	0173-96-0046	107	Soil gas	192
Methylene Chloride	73-01007	0173-96-0046	45.4	Soil gas	192
Methylheptane[2-]	73-01007	0173-96-0046	757	Soil gas	192
Methylheptane[3-]	73-01007	0173-96-0046	603	Soil gas	192
Methylhexane[3-]	73-01007	0173-96-0046	102	Soil gas	192
Methylpentane[2-]	73-01007	0173-96-0046	63.5	Soil gas	192
Methylpentane[3-]	73-01007	0173-96-0046	70	Soil gas	192
Nitropropane[2-]	73-01007	0173-96-0046	37.3	Soil gas	192
Nonane[1-]	73-01007	0173-96-0046	2010	Soil gas	192
Octane[n-]	73-01007	0173-96-0046	892	Soil gas	192
Pentane	73-01007	0173-96-0046	59.2	Soil gas	192
Pentene[1-]	73-01007	0173-96-0046	75	Soil gas	192

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pinene[alpha-]	73-01007	0173-96-0046	474	Soil gas	192
Pinene[beta-]	73-01007	0173-96-0046	742	Soil gas	192
Propylbenzene[1-]	73-01007	0173-96-0046	110	Soil gas	192
Propylene	73-01007	0173-96-0046	617	Soil gas	192
Styrene	73-01007	0173-96-0046	12.4	Soil gas	192
Tetrachloroethene	73-01007	0173-96-0046	107	Soil gas	192
Tetrahydrofuran	73-01007	0173-96-0046	70.6	Soil gas	192
Toluene	73-01007	0173-96-0046	461	Soil gas	192
Trichlorobenzene[1,2,4-]	73-01007	0173-96-0046	66.3	Soil gas	192
Trichloroethene	73-01007	0173-96-0046	75.3	Soil gas	192
Trimethylbenzene[1,2,4-]	73-01007	0173-96-0046	901	Soil gas	192
Trimethylbenzene[1,3,5-]	73-01007	0173-96-0046	348	Soil gas	192
Trimethylpentane[2,3,4-]	73-01007	0173-96-0046	182	Soil gas	192
Vinyl Chloride	73-01007	0173-96-0046	360	Soil gas	192
Xylene[1,2-]	73-01007	0173-96-0046	244	Soil gas	192
Xylene[1,3-]+Xylene[1,4-]	73-01007	0173-96-0046	1630	Soil gas	192
Chlorodifluoromethane	73-01010	0173-96-0047	25.8	Soil gas	1368
Chloromethane	73-01010	0173-96-0047	6.72	Soil gas	1368
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-96-0047	13.5	Soil gas	1368
Dichlorodifluoromethane	73-01010	0173-96-0047	15.5	Soil gas	1368
Isobutane	73-01010	0173-96-0047	2.98	Soil gas	1368
Propylene	73-01010	0173-96-0047	5.54	Soil gas	1368
Tetrachloroethene	73-01010	0173-96-0047	58.3	Soil gas	1368
Trichlorofluoromethane	73-01010	0173-96-0047	7.16	Soil gas	1368
Butane[n-]	73-01010	0173-96-0048	2.42	Soil gas	1740
Dichlorodifluoromethane	73-01010	0173-96-0048	20.1	Soil gas	1740
Isobutane	73-01010	0173-96-0048	8.04	Soil gas	1740
Pinene[beta-]	73-01010	0173-96-0048	2.08	Soil gas	1740
Propylene	73-01010	0173-96-0048	15.1	Soil gas	1740
Tetrachloroethene	73-01010	0173-96-0048	88.2	Soil gas	1740
Trichloroethane[1,1,1-]	73-01010	0173-96-0048	2.04	Soil gas	1740
Trichlorofluoromethane	73-01010	0173-96-0048	13.6	Soil gas	1740
Chlorodifluoromethane	73-01010	0173-96-0049	7.7	Soil gas	732
Chloromethane	73-01010	0173-96-0049	4.98	Soil gas	732
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-96-0049	4.32	Soil gas	732
Dichlorodifluoromethane	73-01010	0173-96-0049	4.94	Soil gas	732
Acetone	73-01010	0173-96-0050	58.1	Soil gas	90
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-96-0050	14.6	Soil gas	90
Dichlorodifluoromethane	73-01010	0173-96-0050	100	Soil gas	90
Tetrachloroethene	73-01010	0173-96-0050	18.7	Soil gas	90
Chlorodifluoromethane	73-01010	0173-96-0051	19	Soil gas	264
Chloromethane	73-01010	0173-96-0051	7.78	Soil gas	264
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-96-0051	16.3	Soil gas	264
Dichlorodifluoromethane	73-01010	0173-96-0051	18.6	Soil gas	264
Isobutane	73-01010	0173-96-0051	16.2	Soil gas	264

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Propylene	73-01010	0173-96-0051	30	Soil gas	264
Tetrachloroethene	73-01010	0173-96-0051	17.8	Soil gas	264
Propylene	73-01008	0173-96-0052	5.96	Soil gas	1098
Tetrachloroethene	73-01008	0173-96-0052	2.98	Soil gas	1098
Chlorodifluoromethane	73-01008	0173-96-0053	4	Soil gas	522
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	0173-96-0053	3.58	Soil gas	522
Dichlorodifluoromethane	73-01008	0173-96-0053	4.66	Soil gas	522
Propylene	73-01008	0173-96-0053	8.06	Soil gas	522
Chloromethane	73-01008	0173-96-0054	5.32	Soil gas	186
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	0173-96-0054	2.84	Soil gas	186
Dichlorodifluoromethane	73-01008	0173-96-0054	3.24	Soil gas	186
Propylene	73-01008	0173-96-0054	5.84	Soil gas	186
Chloromethane	73-02061	0173-96-0055	5.26	Soil gas	30
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02061	0173-96-0055	3.4	Soil gas	30
Dichlorodifluoromethane	73-02061	0173-96-0055	20.6	Soil gas	30
Isobutane	73-02061	0173-96-0055	15.8	Soil gas	30
Benzene	73-02068	0173-96-0056	60.6	Soil gas	309.6
Butane[n-]	73-02068	0173-96-0056	243	Soil gas	309.6
Butanone[2-]	73-02068	0173-96-0056	298	Soil gas	309.6
Butene(cis-2-)	73-02068	0173-96-0056	10.2	Soil gas	309.6
Butene(trans-2-)	73-02068	0173-96-0056	134	Soil gas	309.6
Chlorobenzene	73-02068	0173-96-0056	386	Soil gas	309.6
Chlorodifluoromethane	73-02068	0173-96-0056	1640	Soil gas	309.6
Chloroethane	73-02068	0173-96-0056	30.8	Soil gas	309.6
Cyclohexane	73-02068	0173-96-0056	159	Soil gas	309.6
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02068	0173-96-0056	94.6	Soil gas	309.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0056	500	Soil gas	309.6
Dichlorodifluoromethane	73-02068	0173-96-0056	616	Soil gas	309.6
Dichloroethene[1,1-]	73-02068	0173-96-0056	14.9	Soil gas	309.6
Dichloroethene(cis-1,2-)	73-02068	0173-96-0056	3780	Soil gas	309.6
Dichloroethene(trans-1,2-)	73-02068	0173-96-0056	47.1	Soil gas	309.6
Diethyl Ether	73-02068	0173-96-0056	199	Soil gas	309.6
Dimethylbutane[2,2-]	73-02068	0173-96-0056	55.7	Soil gas	309.6
Dimethylbutane[2,3-]	73-02068	0173-96-0056	31.6	Soil gas	309.6
Dimethylpentane[2,3-]	73-02068	0173-96-0056	24.5	Soil gas	309.6
Ethylbenzene	73-02068	0173-96-0056	434	Soil gas	309.6
Heptane	73-02068	0173-96-0056	122	Soil gas	309.6
Hexane	73-02068	0173-96-0056	111	Soil gas	309.6
Isobutane	73-02068	0173-96-0056	897	Soil gas	309.6
Isooctane	73-02068	0173-96-0056	19.3	Soil gas	309.6
Isopentane	73-02068	0173-96-0056	107	Soil gas	309.6
Isoprene	73-02068	0173-96-0056	12.8	Soil gas	309.6
Isopropylbenzene	73-02068	0173-96-0056	45.1	Soil gas	309.6
Methyl-1-butene[3-]	73-02068	0173-96-0056	42.4	Soil gas	309.6
Methyl-2-pentanone[4-]	73-02068	0173-96-0056	67.3	Soil gas	309.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylcyclohexane	73-02068	0173-96-0056	201	Soil gas	309.6
Methylcyclopentane	73-02068	0173-96-0056	70.8	Soil gas	309.6
Methylheptane[2-]	73-02068	0173-96-0056	84.7	Soil gas	309.6
Methylheptane[3-]	73-02068	0173-96-0056	116	Soil gas	309.6
Methylhexane[2-]	73-02068	0173-96-0056	11.1	Soil gas	309.6
Methylhexane[3-]	73-02068	0173-96-0056	54.5	Soil gas	309.6
Methylpentane[2-]	73-02068	0173-96-0056	58.2	Soil gas	309.6
Nitropropane[2-]	73-02068	0173-96-0056	24.7	Soil gas	309.6
Nonane[1-]	73-02068	0173-96-0056	557	Soil gas	309.6
Octane[n-]	73-02068	0173-96-0056	207	Soil gas	309.6
Pentane	73-02068	0173-96-0056	112	Soil gas	309.6
Pentene[1-]	73-02068	0173-96-0056	72.5	Soil gas	309.6
Pinene[alpha-]	73-02068	0173-96-0056	369	Soil gas	309.6
Pinene[beta-]	73-02068	0173-96-0056	1760	Soil gas	309.6
Propylbenzene[1-]	73-02068	0173-96-0056	64.9	Soil gas	309.6
Propylene	73-02068	0173-96-0056	695	Soil gas	309.6
Styrene	73-02068	0173-96-0056	12.5	Soil gas	309.6
Tetrachloroethene	73-02068	0173-96-0056	363	Soil gas	309.6
Toluene	73-02068	0173-96-0056	721	Soil gas	309.6
Trichloroethene	73-02068	0173-96-0056	126	Soil gas	309.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0056	789	Soil gas	309.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0056	241	Soil gas	309.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0056	77.1	Soil gas	309.6
Vinyl Chloride	73-02068	0173-96-0056	154	Soil gas	309.6
Xylene[1,2-]	73-02068	0173-96-0056	159	Soil gas	309.6
Xylene[1,3-]-Xylene[1,4-]	73-02068	0173-96-0056	849	Soil gas	309.6
Benzene	73-01007	0173-96-0057	135	Soil gas	
Butadiene[1,3-]	73-01007	0173-96-0057	22.7	Soil gas	
Butane[n-]	73-01007	0173-96-0057	617	Soil gas	
Butene[1-]	73-01007	0173-96-0057	209	Soil gas	
Carbon Disulfide	73-01007	0173-96-0057	201	Soil gas	
Chlorobenzene	73-01007	0173-96-0057	122	Soil gas	
Chlorodifluoromethane	73-01007	0173-96-0057	1430	Soil gas	
Chloroethane	73-01007	0173-96-0057	49.8	Soil gas	
Chloromethane	73-01007	0173-96-0057	71.5	Soil gas	
Cyclohexane	73-01007	0173-96-0057	380	Soil gas	
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-96-0057	87.2	Soil gas	
Dichlorobenzene[1,4-]	73-01007	0173-96-0057	351	Soil gas	
Dichlorodifluoromethane	73-01007	0173-96-0057	434	Soil gas	
Dichloroethane[1,2-]	73-01007	0173-96-0057	13.4	Soil gas	
Dichloroethene[cis-1,2-]	73-01007	0173-96-0057	5870	Soil gas	
Dichloroethene[trans-1,2-]	73-01007	0173-96-0057	151	Soil gas	
Dichloropropane[1,2-]	73-01007	0173-96-0057	28.6	Soil gas	
Diethyl Ether	73-01007	0173-96-0057	75.2	Soil gas	
Dimethylbutane[2,2-]	73-01007	0173-96-0057	12.8	Soil gas	
Dimethylbutane[2,3-]	73-01007	0173-96-0057	42.5	Soil gas	
Dimethylpentane[2,3-]	73-01007	0173-96-0057	40.4	Soil gas	
Ethyl Acrylate	73-01007	0173-96-0057	24.3	Soil gas	

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Ethylbenzene	73-01007	0173-96-0057	888	Soil gas	
Heptane	73-01007	0173-96-0057	1230	Soil gas	
Hexane	73-01007	0173-96-0057	321	Soil gas	
Hexene[cis-3-]	73-01007	0173-96-0057	11.1	Soil gas	
Isobutane	73-01007	0173-96-0057	2450	Soil gas	
Isooctane	73-01007	0173-96-0057	30.1	Soil gas	
Isopropylbenzene	73-01007	0173-96-0057	105	Soil gas	
Methyl-1-pentene[2-]	73-01007	0173-96-0057	17.9	Soil gas	
Methyl-2-butene[2-]	73-01007	0173-96-0057	60.8	Soil gas	
Methylcyclohexane	73-01007	0173-96-0057	733	Soil gas	
Methylcyclopentane	73-01007	0173-96-0057	99.4	Soil gas	
Methylheptane[2-]	73-01007	0173-96-0057	717	Soil gas	
Methylheptane[3-]	73-01007	0173-96-0057	582	Soil gas	
Methylhexane[3-]	73-01007	0173-96-0057	96	Soil gas	
Methylpentane[2-]	73-01007	0173-96-0057	59.4	Soil gas	
Methylpentane[3-]	73-01007	0173-96-0057	68.6	Soil gas	
Nitropropane[2-]	73-01007	0173-96-0057	41.7	Soil gas	
Nonane[1-]	73-01007	0173-96-0057	2320	Soil gas	
Octane[n-]	73-01007	0173-96-0057	1340	Soil gas	
Pentane	73-01007	0173-96-0057	156	Soil gas	
Pinene[alpha-]	73-01007	0173-96-0057	313	Soil gas	
Pinene[beta-]	73-01007	0173-96-0057	661	Soil gas	
Propylbenzene[1-]	73-01007	0173-96-0057	109	Soil gas	
Propylene	73-01007	0173-96-0057	995	Soil gas	
Styrene	73-01007	0173-96-0057	25.3	Soil gas	
Tetrachloroethene	73-01007	0173-96-0057	91.6	Soil gas	
Tetrahydrofuran	73-01007	0173-96-0057	64.7	Soil gas	
Toluene	73-01007	0173-96-0057	453	Soil gas	
Trichlorobenzene[1,2,4-]	73-01007	0173-96-0057	22.9	Soil gas	
Trichloroethene	73-01007	0173-96-0057	72.9	Soil gas	
Trimethylbenzene[1,2,4-]	73-01007	0173-96-0057	698	Soil gas	
Trimethylbenzene[1,3,5-]	73-01007	0173-96-0057	287	Soil gas	
Trimethylpentane[2,3,4-]	73-01007	0173-96-0057	167	Soil gas	
Vinyl Chloride	73-01007	0173-96-0057	361	Soil gas	
Xylene[1,2-]	73-01007	0173-96-0057	270	Soil gas	
Xylene[1,3-]+Xylene[1,4-]	73-01007	0173-96-0057	1900	Soil gas	
Chlorodifluoromethane	73-02061	0173-96-0058	3.88	Soil gas	
Chloroform	73-02061	0173-96-0058	3.52	Soil gas	
Dichlorodifluoromethane	73-02061	0173-96-0058	53.4	Soil gas	
Isobutane	73-02061	0173-96-0058	22.1	Soil gas	
Isopentane	73-02061	0173-96-0058	6.42	Soil gas	
Propylene	73-02061	0173-96-0058	20.1	Soil gas	
Tetrachloroethene	73-02061	0173-96-0058	2.52	Soil gas	
Trichlorofluoromethane	73-02061	0173-96-0058	3.14	Soil gas	
Acetone	73-02089	0173-96-0141	279	Soil gas	888
Benzene	73-02089	0173-96-0141	70.3	Soil gas	888
Butane[n-]	73-02089	0173-96-0141	38.1	Soil gas	888
Butene[1-]	73-02089	0173-96-0141	199	Soil gas	888
Butene[cis-2-]	73-02089	0173-96-0141	13.3	Soil gas	888

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Chlorobenzene	73-02089	0173-96-0141	21.5	Soil gas	888
Chlorodifluoromethane	73-02089	0173-96-0141	364	Soil gas	888
Chloroethane	73-02089	0173-96-0141	6.9	Soil gas	888
Chloroform	73-02089	0173-96-0141	9.4	Soil gas	888
Chloromethane	73-02089	0173-96-0141	38.4	Soil gas	888
Cyclohexane	73-02089	0173-96-0141	56.1	Soil gas	888
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02089	0173-96-0141	21.3	Soil gas	888
Dichlorobenzene[1,4-]	73-02089	0173-96-0141	229	Soil gas	888
Dichlorodifluoromethane	73-02089	0173-96-0141	216	Soil gas	888
Dichloroethene[<i>cis</i> -1,2-]	73-02089	0173-96-0141	2760	Soil gas	888
Dichloroethene[<i>trans</i> -1,2-]	73-02089	0173-96-0141	8.3	Soil gas	888
Diethyl Ether	73-02089	0173-96-0141	177	Soil gas	888
Dimethylbutane[2,2-]	73-02089	0173-96-0141	5.9	Soil gas	888
Dimethylbutane[2,3-]	73-02089	0173-96-0141	12.5	Soil gas	888
Dimethylpentane[2,3-]	73-02089	0173-96-0141	7.4	Soil gas	888
Ethanol	73-02089	0173-96-0141	491	Soil gas	888
Ethylbenzene	73-02089	0173-96-0141	267	Soil gas	888
Heptane	73-02089	0173-96-0141	140	Soil gas	888
Hexane	73-02089	0173-96-0141	194	Soil gas	888
Isobutane	73-02089	0173-96-0141	313	Soil gas	888
Isooctane	73-02089	0173-96-0141	8.7	Soil gas	888
Isopentane	73-02089	0173-96-0141	17.5	Soil gas	888
Isoprene	73-02089	0173-96-0141	65.5	Soil gas	888
Isopropylbenzene	73-02089	0173-96-0141	22.1	Soil gas	888
Methanol	73-02089	0173-96-0141	987	Soil gas	888
Methyl-1-butene[3-]	73-02089	0173-96-0141	9.3	Soil gas	888
Methyl-2-butene[2-]	73-02089	0173-96-0141	7.3	Soil gas	888
Methylcyclohexane	73-02089	0173-96-0141	76.4	Soil gas	888
Methylcyclopentane	73-02089	0173-96-0141	20.5	Soil gas	888
Methylene Chloride	73-02089	0173-96-0141	599	Soil gas	888
Methylheptane[2-]	73-02089	0173-96-0141	29.8	Soil gas	888
Methylheptane[3-]	73-02089	0173-96-0141	33.6	Soil gas	888
Methylhexane[3-]	73-02089	0173-96-0141	20.8	Soil gas	888
Methylpentane[2-]	73-02089	0173-96-0141	14.1	Soil gas	888
Methylpentane[3-]	73-02089	0173-96-0141	15.2	Soil gas	888
Nonane[1-]	73-02089	0173-96-0141	254	Soil gas	888
Octane[n-]	73-02089	0173-96-0141	113	Soil gas	888
Pentane	73-02089	0173-96-0141	17.1	Soil gas	888
Pentene[1-]	73-02089	0173-96-0141	77	Soil gas	888
Pentene[<i>trans</i> -2-]	73-02089	0173-96-0141	5.7	Soil gas	888
Pinene[<i>alpha</i> -]	73-02089	0173-96-0141	32.1	Soil gas	888
Pinene[<i>beta</i> -]	73-02089	0173-96-0141	27.9	Soil gas	888
Propylbenzene[1-]	73-02089	0173-96-0141	22.3	Soil gas	888
Propylene	73-02089	0173-96-0141	453	Soil gas	888
Tetrachloroethene	73-02089	0173-96-0141	25.9	Soil gas	888
Toluene	73-02089	0173-96-0141	50.5	Soil gas	888
Trichloro-1,2,2- trifluoroethane[1,1,2-]	73-02089	0173-96-0141	11.7	Soil gas	888

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Trichlorobenzene[1,2,4-]	73-02089	0173-96-0141	6.2	Soil gas	888
Trichloroethene	73-02089	0173-96-0141	9.8	Soil gas	888
Trichlorofluoromethane	73-02089	0173-96-0141	9.8	Soil gas	888
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0141	274	Soil gas	888
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0141	69.7	Soil gas	888
Trimethylpentane[2,3,4-]	73-02089	0173-96-0141	15.1	Soil gas	888
Vinyl Chloride	73-02089	0173-96-0141	50.1	Soil gas	898
Xylene[1,2-]	73-02089	0173-96-0141	14.9	Soil gas	888
Xylene[1,3-]+Xylene[1,4-]	73-02089	0173-96-0141	172	Soil gas	888
Acetone	73-02089	0173-96-0142	114	Soil gas	360
Benzene	73-02089	0173-96-0142	522	Soil gas	360
Butane[n-]	73-02089	0173-96-0142	173	Soil gas	360
Butene[1-]	73-02089	0173-96-0142	384	Soil gas	360
Butene[<i>cis</i> -2-]	73-02089	0173-96-0142	20.4	Soil gas	360
Chlorobenzene	73-02089	0173-96-0142	101	Soil gas	360
Chlorodifluoromethane	73-02089	0173-96-0142	2110	Soil gas	360
Chloroethane	73-02089	0173-96-0142	35.6	Soil gas	360
Chloroform	73-02089	0173-96-0142	15.3	Soil gas	360
Chloromethane	73-02089	0173-96-0142	31.2	Soil gas	360
Cyclohexane	73-02089	0173-96-0142	426	Soil gas	360
Cyclopentane	73-02089	0173-96-0142	7.1	Soil gas	360
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02089	0173-96-0142	55.1	Soil gas	360
Dichlorobenzene[1,2-]	73-02089	0173-96-0142	7.8	Soil gas	360
Dichlorobenzene[1,4-]	73-02089	0173-96-0142	606	Soil gas	360
Dichlorodifluoromethane	73-02089	0173-96-0142	699	Soil gas	360
Dichloroethane[1,2-]	73-02089	0173-96-0142	5.1	Soil gas	360
Dichloroethene[1,1-]	73-02089	0173-96-0142	9.9	Soil gas	360
Dichloroethene[<i>cis</i> -1,2-]	73-02089	0173-96-0142	6860	Soil gas	360
Dichloroethene[<i>trans</i> -1,2-]	73-02089	0173-96-0142	40.4	Soil gas	360
Diethyl Ether	73-02089	0173-96-0142	115	Soil gas	360
Dimethylbutane[2,2-]	73-02089	0173-96-0142	22.3	Soil gas	360
Dimethylbutane[2,3-]	73-02089	0173-96-0142	65	Soil gas	360
Dimethylpentane[2,3-]	73-02089	0173-96-0142	40.5	Soil gas	360
Ethanol	73-02089	0173-96-0142	124	Soil gas	360
Ethylbenzene	73-02089	0173-96-0142	2760	Soil gas	360
Heptane	73-02089	0173-96-0142	870	Soil gas	360
Hexane	73-02089	0173-96-0142	331	Soil gas	360
Hexene[<i>cis</i> -3-]	73-02089	0173-96-0142	13.1	Soil gas	360
Isobutane	73-02089	0173-96-0142	3500	Soil gas	360
Isooctane	73-02089	0173-96-0142	38.2	Soil gas	360
Isopentane	73-02089	0173-96-0142	40.7	Soil gas	360
Isoprene	73-02089	0173-96-0142	49.4	Soil gas	360
Isopropylbenzene	73-02089	0173-96-0142	188	Soil gas	360
Methanol	73-02089	0173-96-0142	507	Soil gas	360
Methyl-1-butene[3-]	73-02089	0173-96-0142	48.4	Soil gas	360
Methyl-1-pentene[2-]	73-02089	0173-96-0142	12.4	Soil gas	360
Methyl-2-butene[2-]	73-02089	0173-96-0142	43.9	Soil gas	360
Methylcyclohexane	73-02089	0173-96-0142	519	Soil gas	360

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Butene[trans-2-]	73-02068	0173-96-0144	101	Soil gas	309.6
Chlorobenzene	73-02068	0173-96-0144	116	Soil gas	309.6
Chlorodifluoromethane	73-02068	0173-96-0144	1530	Soil gas	309.6
Chloroethane	73-02068	0173-96-0144	17.7	Soil gas	309.6
Chloroform	73-02068	0173-96-0144	8.1	Soil gas	309.6
Chloromethane	73-02068	0173-96-0144	25.6	Soil gas	309.6
Cyclohexane	73-02068	0173-96-0144	71.5	Soil gas	309.6
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02068	0173-96-0144	68	Soil gas	309.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0144	332	Soil gas	309.6
Dichlorodifluoromethane	73-02068	0173-96-0144	348	Soil gas	309.6
Dichloroethane[1,1-]	73-02068	0173-96-0144	5.2	Soil gas	309.6
Dichloroethene[1,1-]	73-02068	0173-96-0144	8.1	Soil gas	309.6
Dichloroethene[cis-1,2-]	73-02068	0173-96-0144	2900	Soil gas	309.6
Dichloroethene[trans-1,2-]	73-02068	0173-96-0144	55.9	Soil gas	309.6
Diethyl Ether	73-02068	0173-96-0144	94.1	Soil gas	309.6
Dimethylbutane[2,2-]	73-02068	0173-96-0144	37.5	Soil gas	309.6
Dimethylbutane[2,3-]	73-02068	0173-96-0144	17	Soil gas	309.6
Dimethylpentane[2,3-]	73-02068	0173-96-0144	12.4	Soil gas	309.6
Ethylbenzene	73-02068	0173-96-0144	277	Soil gas	309.6
Heptane	73-02068	0173-96-0144	124	Soil gas	309.6
Hexane	73-02068	0173-96-0144	77.4	Soil gas	309.6
Isobutane	73-02068	0173-96-0144	791	Soil gas	309.6
Isooctane	73-02068	0173-96-0144	14.4	Soil gas	309.6
Isopentane	73-02068	0173-96-0144	34.8	Soil gas	309.6
Isoprene	73-02068	0173-96-0144	10.6	Soil gas	309.6
Isopropylbenzene	73-02068	0173-96-0144	29.1	Soil gas	309.6
Methanol	73-02068	0173-96-0144	210	Soil gas	309.6
Methyl-1-butene[3-]	73-02068	0173-96-0144	24.8	Soil gas	309.6
Methyl-1-pentene[2-]	73-02068	0173-96-0144	8.6	Soil gas	309.6
Methyl-2-butene[2-]	73-02068	0173-96-0144	19.7	Soil gas	309.6
Methylcyclohexane	73-02068	0173-96-0144	117	Soil gas	309.6
Methylcyclopentane	73-02068	0173-96-0144	36	Soil gas	309.6
Methylene Chloride	73-02068	0173-96-0144	61.7	Soil gas	309.6
Methylheptane[2-]	73-02068	0173-96-0144	43.3	Soil gas	309.6
Methylheptane[3-]	73-02068	0173-96-0144	64.4	Soil gas	309.6
Methylhexane[2-]	73-02068	0173-96-0144	7	Soil gas	309.6
Methylhexane[3-]	73-02068	0173-96-0144	27.1	Soil gas	309.6
Methylpentane[2-]	73-02068	0173-96-0144	34.4	Soil gas	309.6
Methylpentane[3-]	73-02068	0173-96-0144	34.9	Soil gas	309.6
Nonane[1-]	73-02068	0173-96-0144	379	Soil gas	309.6
Octane[n-]	73-02068	0173-96-0144	161	Soil gas	309.6
Pentane	73-02068	0173-96-0144	44.3	Soil gas	309.6
Pentene[1-]	73-02068	0173-96-0144	51.9	Soil gas	309.6
Pinene[alpha-]	73-02068	0173-96-0144	220	Soil gas	309.6
Pinene[beta-]	73-02068	0173-96-0144	1170	Soil gas	309.6
Propylbenzene[1-]	73-02068	0173-96-0144	39.7	Soil gas	309.6
Propylene	73-02068	0173-96-0144	578	Soil gas	309.6
Styrene	73-02068	0173-96-0144	17.4	Soil gas	309.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Tetrachloroethene	73-02068	0173-96-0144	492	Soil gas	309.6
Toluene	73-02068	0173-96-0144	584	Soil gas	309.6
Trichloroethene	73-02068	0173-96-0144	127	Soil gas	309.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0144	357	Soil gas	309.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0144	134	Soil gas	309.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0144	37.6	Soil gas	309.6
Vinyl Chloride	73-02068	0173-96-0144	96.9	Soil gas	309.6
Xylene[1,2-]	73-02068	0173-96-0144	102	Soil gas	309.6
Xylene[1,3-]+Xylene[1,4-]	73-02068	0173-96-0144	824	Soil gas	309.6
Benzene	73-02068	0173-96-0145	156	Soil gas	15.6
Butane[n-]	73-02068	0173-96-0145	379	Soil gas	15.6
Butene[1-]	73-02068	0173-96-0145	313	Soil gas	15.6
Butene[cis-2-]	73-02068	0173-96-0145	19.4	Soil gas	15.6
Butene[trans-2-]	73-02068	0173-96-0145	379	Soil gas	15.6
Carbon Disulfide	73-02068	0173-96-0145	50	Soil gas	15.6
Chlorobenzene	73-02068	0173-96-0145	708	Soil gas	15.6
Chlorodifluoromethane	73-02068	0173-96-0145	2650	Soil gas	15.6
Chloroethane	73-02068	0173-96-0145	36.9	Soil gas	15.6
Chloromethane	73-02068	0173-96-0145	7.3	Soil gas	15.6
Cyclohexane	73-02068	0173-96-0145	203	Soil gas	15.6
Cyclopentane	73-02068	0173-96-0145	6.6	Soil gas	15.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02068	0173-96-0145	52.3	Soil gas	15.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0145	1260	Soil gas	15.6
Dichlorodifluoromethane	73-02068	0173-96-0145	180	Soil gas	15.6
Dichloroethene[1,1-]	73-02068	0173-96-0145	46.2	Soil gas	15.6
Dichloroethene[cis-1,2-]	73-02068	0173-96-0145	14200	Soil gas	15.6
Dichloroethene[trans-1,2-]	73-02068	0173-96-0145	277	Soil gas	15.6
Diethyl Ether	73-02068	0173-96-0145	349	Soil gas	15.6
Dimethylbutane[2,2-]	73-02068	0173-96-0145	34.1	Soil gas	15.6
Dimethylbutane[2,3-]	73-02068	0173-96-0145	67.7	Soil gas	15.6
Dimethylpentane[2,3-]	73-02068	0173-96-0145	42.5	Soil gas	15.6
Ethylbenzene	73-02068	0173-96-0145	1450	Soil gas	15.6
Heptane	73-02068	0173-96-0145	940	Soil gas	15.6
Hexane	73-02068	0173-96-0145	627	Soil gas	15.6
Hexene[cis-3-]	73-02068	0173-96-0145	12.9	Soil gas	15.6
Hexene[trans-2-]	73-02068	0173-96-0145	5.7	Soil gas	15.6
Isobutane	73-02068	0173-96-0145	1470	Soil gas	15.6
Isooctane	73-02068	0173-96-0145	46.7	Soil gas	15.6
Isopentane	73-02068	0173-96-0145	55.8	Soil gas	15.6
Isoprene	73-02068	0173-96-0145	24	Soil gas	15.6
Isopropylbenzene	73-02068	0173-96-0145	93.1	Soil gas	15.6
Methanol	73-02068	0173-96-0145	219	Soil gas	15.6
Methyl Methacrylate	73-02068	0173-96-0145	50	Soil gas	15.6
Methyl-1-butene[3-]	73-02068	0173-96-0145	120	Soil gas	15.6
Methyl-1-pentene[2-]	73-02068	0173-96-0145	35.6	Soil gas	15.6
Methyl-1-pentene[4-]	73-02068	0173-96-0145	5.5	Soil gas	15.6
Methyl-2-butene[2-]	73-02068	0173-96-0145	79.7	Soil gas	15.6
Methylcyclohexane	73-02068	0173-96-0145	688	Soil gas	15.6

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylcyclopentane	73-02068	0173-96-0145	232	Soil gas	15.6
Methylene Chloride	73-02068	0173-96-0145	43.6	Soil gas	15.6
Methylheptane[2-]	73-02068	0173-96-0145	593	Soil gas	15.6
Methylheptane[3-]	73-02068	0173-96-0145	648	Soil gas	15.6
Methylhexane[2-]	73-02068	0173-96-0145	11.5	Soil gas	15.6
Methylhexane[3-]	73-02068	0173-96-0145	120	Soil gas	15.6
Methylpentane[2-]	73-02068	0173-96-0145	156	Soil gas	15.6
Methylpentane[3-]	73-02068	0173-96-0145	143	Soil gas	15.6
Nitrobenzene	73-02068	0173-96-0145	50	Soil gas	15.6
Nitropropane[2-]	73-02068	0173-96-0145	61.8	Soil gas	15.6
Nonane[1-]	73-02068	0173-96-0145	3790	Soil gas	15.6
Octane[n-]	73-02068	0173-96-0145	2810	Soil gas	15.6
Pentane	73-02068	0173-96-0145	129	Soil gas	15.6
Pentene[1-]	73-02068	0173-96-0145	220	Soil gas	15.6
Pentene[<i>cis</i> -2-]	73-02068	0173-96-0145	89.9	Soil gas	15.6
Pentene[<i>trans</i> -2-]	73-02068	0173-96-0145	17.1	Soil gas	15.6
Pinene[α -]	73-02068	0173-96-0145	1900	Soil gas	15.6
Pinene[β -]	73-02068	0173-96-0145	9060	Soil gas	15.6
Propylbenzene[1-]	73-02068	0173-96-0145	101	Soil gas	15.6
Propylene	73-02068	0173-96-0145	2530	Soil gas	15.6
Styrene	73-02068	0173-96-0145	74.3	Soil gas	15.6
Tetrachloroethene	73-02068	0173-96-0145	809	Soil gas	15.6
Tetrahydrofuran	73-02068	0173-96-0145	464	Soil gas	15.6
Toluene	73-02068	0173-96-0145	4270	Soil gas	15.6
Trichloroethene	73-02068	0173-96-0145	312	Soil gas	15.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0145	450	Soil gas	15.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0145	246	Soil gas	15.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0145	237	Soil gas	15.6
Vinyl Acetate	73-02068	0173-96-0145	85.1	Soil gas	15.6
Vinyl Chloride	73-02068	0173-96-0145	597	Soil gas	15.6
Xylene[1,2-]	73-02068	0173-96-0145	1030	Soil gas	15.6
Xylene[1,3-]	73-02068	0173-96-0145	4380	Soil gas	15.6
Acetone	73-02071	0173-96-0146	10700	Soil gas	228
Benzene	73-02071	0173-96-0146	70.7	Soil gas	228
Benzonitrile	73-02071	0173-96-0146	113	Soil gas	228
Butane[n-]	73-02071	0173-96-0146	78.4	Soil gas	228
Butanone[2-]	73-02071	0173-96-0146	29700	Soil gas	228
Butene[1-]	73-02071	0173-96-0146	614	Soil gas	228
Butene[<i>cis</i> -2-]	73-02071	0173-96-0146	14.2	Soil gas	228
Butene[<i>trans</i> -2-]	73-02071	0173-96-0146	11.6	Soil gas	228
Chlorobenzene	73-02071	0173-96-0146	39.5	Soil gas	228
Chlorodifluoromethane	73-02071	0173-96-0146	46.5	Soil gas	228
Chloromethane	73-02071	0173-96-0146	26.9	Soil gas	228
Cyclohexane	73-02071	0173-96-0146	172	Soil gas	228
Cyclohexanone	73-02071	0173-96-0146	229	Soil gas	228
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02071	0173-96-0146	10.4	Soil gas	228
Dichlorobenzene[1,2-]	73-02071	0173-96-0146	41	Soil gas	228
Dichlorobenzene[1,4-]	73-02071	0173-96-0146	1100	Soil gas	228

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichlorodifluoromethane	73-02071	0173-96-0146	64.3	Soil gas	228
Dichloroethane[1,2-]	73-02071	0173-96-0146	5.7	Soil gas	228
Dichloroethene[cis-1,2-]	73-02071	0173-96-0146	28.2	Soil gas	228
Dimethylbutane[2,2-]	73-02071	0173-96-0146	30.7	Soil gas	228
Dimethylbutane[2,3-]	73-02071	0173-96-0146	11.4	Soil gas	228
Dimethylpentane[2,3-]	73-02071	0173-96-0146	5	Soil gas	228
Ethylbenzene	73-02071	0173-96-0146	2180	Soil gas	228
Heptane	73-02071	0173-96-0146	69.4	Soil gas	228
Hexane	73-02071	0173-96-0146	1860	Soil gas	228
Hexanone[2-]	73-02071	0173-96-0146	255	Soil gas	228
Isobutane	73-02071	0173-96-0146	173	Soil gas	228
Isooctane	73-02071	0173-96-0146	8.6	Soil gas	228
Isoprene	73-02071	0173-96-0146	95.9	Soil gas	228
Isopropylbenzene	73-02071	0173-96-0146	254	Soil gas	228
Methanol	73-02071	0173-96-0146	192	Soil gas	228
Methyl-1-butene[3-]	73-02071	0173-96-0146	68.9	Soil gas	228
Methyl-1-pentene[2-]	73-02071	0173-96-0146	10.2	Soil gas	228
Methyl-2-butene[2-]	73-02071	0173-96-0146	78.7	Soil gas	228
Methyl-2-pentanone[4-]	73-02071	0173-96-0146	2800	Soil gas	228
Methylcyclohexane	73-02071	0173-96-0146	82.1	Soil gas	228
Methylcyclopentane	73-02071	0173-96-0146	980	Soil gas	228
Methylene Chloride	73-02071	0173-96-0146	5.5	Soil gas	228
Methylheptane[2-]	73-02071	0173-96-0146	82.1	Soil gas	228
Methylheptane[3-]	73-02071	0173-96-0146	10.8	Soil gas	228
Methylhexane[2-]	73-02071	0173-96-0146	11.8	Soil gas	228
Methylhexane[3-]	73-02071	0173-96-0146	5.9	Soil gas	228
Methylpentane[2-]	73-02071	0173-96-0146	283	Soil gas	228
Methylpentane[3-]	73-02071	0173-96-0146	420	Soil gas	228
Methylstyrene[alpha-]	73-02071	0173-96-0146	15.2	Soil gas	228
Nonane[1-]	73-02071	0173-96-0146	1380	Soil gas	228
Octane[n-]	73-02071	0173-96-0146	49.1	Soil gas	228
Pentane	73-02071	0173-96-0146	24.4	Soil gas	228
Pentene[1-]	73-02071	0173-96-0146	238	Soil gas	228
Pentene[cis-2-]	73-02071	0173-96-0146	87.8	Soil gas	228
Pentene[trans-2-]	73-02071	0173-96-0146	8.3	Soil gas	228
Pinene[alpha-]	73-02071	0173-96-0146	576	Soil gas	228
Pinene[beta-]	73-02071	0173-96-0146	18000	Soil gas	228
Propanol[2-]	73-02071	0173-96-0146	1310	Soil gas	228
Propylbenzene[1-]	73-02071	0173-96-0146	343	Soil gas	228
Propylene	73-02071	0173-96-0146	639	Soil gas	228
Styrene	73-02071	0173-96-0146	157	Soil gas	228
Tetrachloroethene	73-02071	0173-96-0146	11.2	Soil gas	228
Tetrahydrofuran	73-02071	0173-96-0146	178	Soil gas	228
Toluene	73-02071	0173-96-0146	15700	Soil gas	228
Trichloroethene	73-02071	0173-96-0146	14	Soil gas	228
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0146	1750	Soil gas	228
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0146	644	Soil gas	228
Trimethylpentane[2,3,4-]	73-02071	0173-96-0146	9.1	Soil gas	228
Vinyl Acetate	73-02071	0173-96-0146	149	Soil gas	228

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Vinyl Chloride	73-02071	0173-96-0146	17.7	Soil gas	228
Xylene[1,2-]	73-02071	0173-96-0146	2550	Soil gas	228
Xylene[1,3-]	73-02071	0173-96-0146	4480	Soil gas	228
Acetone	73-02071	0173-96-0147	70	Soil gas	12
Benzene	73-02071	0173-96-0147	49.2	Soil gas	12
Butane[n-]	73-02071	0173-96-0147	149	Soil gas	12
Butanone[2-]	73-02071	0173-96-0147	179	Soil gas	12
Butene[1-]	73-02071	0173-96-0147	631	Soil gas	12
Butene[cis-2-]	73-02071	0173-96-0147	30.5	Soil gas	12
Butene[trans-2-]	73-02071	0173-96-0147	765	Soil gas	12
Chlorodifluoromethane	73-02071	0173-96-0147	770	Soil gas	12
Chloromethane	73-02071	0173-96-0147	21.6	Soil gas	12
Cyclohexane	73-02071	0173-96-0147	267	Soil gas	12
Cyclopentane	73-02071	0173-96-0147	6	Soil gas	12
Dichlorobenzene[1,4-]	73-02071	0173-96-0147	180	Soil gas	12
Dichlorodifluoromethane	73-02071	0173-96-0147	37.3	Soil gas	12
Dichloroethene[1,1-]	73-02071	0173-96-0147	7	Soil gas	12
Dichloroethene[cis-1,2-]	73-02071	0173-96-0147	336	Soil gas	12
Dichloroethene[trans-1,2-]	73-02071	0173-96-0147	5.7	Soil gas	12
Dimethylbutane[2,2-]	73-02071	0173-96-0147	88.4	Soil gas	12
Dimethylbutane[2,3-]	73-02071	0173-96-0147	106	Soil gas	12
Dimethylpentane[2,3-]	73-02071	0173-96-0147	74.4	Soil gas	12
Ethylbenzene	73-02071	0173-96-0147	1230	Soil gas	12
Heptane	73-02071	0173-96-0147	250	Soil gas	12
Hexane	73-02071	0173-96-0147	418	Soil gas	12
Hexene[cis-3-]	73-02071	0173-96-0147	13.7	Soil gas	12
Isobutane	73-02071	0173-96-0147	1200	Soil gas	12
Isooctane	73-02071	0173-96-0147	23.2	Soil gas	12
Isopentane	73-02071	0173-96-0147	21.3	Soil gas	12
Isopropylbenzene	73-02071	0173-96-0147	57.2	Soil gas	12
Methanol	73-02071	0173-96-0147	235	Soil gas	12
Methyl-1-butene[3-]	73-02071	0173-96-0147	38.8	Soil gas	12
Methyl-1-pentene[2-]	73-02071	0173-96-0147	16.2	Soil gas	12
Methyl-2-butene[2-]	73-02071	0173-96-0147	29.7	Soil gas	12
Methylcyclohexane	73-02071	0173-96-0147	106	Soil gas	12
Methylcyclopentane	73-02071	0173-96-0147	724	Soil gas	12
Methylene Chloride	73-02071	0173-96-0147	5.1	Soil gas	12
Methylheptane[2-]	73-02071	0173-96-0147	78.3	Soil gas	12
Methylheptane[3-]	73-02071	0173-96-0147	98.4	Soil gas	12
Methylhexane[2-]	73-02071	0173-96-0147	46.4	Soil gas	12
Methylhexane[3-]	73-02071	0173-96-0147	130	Soil gas	12
Methylpentane[2-]	73-02071	0173-96-0147	77.3	Soil gas	12
Methylpentane[3-]	73-02071	0173-96-0147	114	Soil gas	12
Nitropropane[2-]	73-02071	0173-96-0147	98.6	Soil gas	12
Nonane[1-]	73-02071	0173-96-0147	5740	Soil gas	12
Octane[n-]	73-02071	0173-96-0147	917	Soil gas	12
Pentane	73-02071	0173-96-0147	86.3	Soil gas	12
Pentene[1-]	73-02071	0173-96-0147	499	Soil gas	12
Pentene[cis-2-]	73-02071	0173-96-0147	11.6	Soil gas	12

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pinene[alpha-]	73-02071	0173-96-0147	284	Soil gas	12
Pinene[beta-]	73-02071	0173-96-0147	1660	Soil gas	12
Propylbenzene[1-]	73-02071	0173-96-0147	83.4	Soil gas	12
Propylene	73-02071	0173-96-0147	1470	Soil gas	12
Styrene	73-02071	0173-96-0147	33.5	Soil gas	12
Tetrachloroethane[1,1,2,2-]	73-02071	0173-96-0147	6.7	Soil gas	12
Tetrachloroethene	73-02071	0173-96-0147	7.1	Soil gas	12
Toluene	73-02071	0173-96-0147	486	Soil gas	12
Trichloroethene	73-02071	0173-96-0147	15.6	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0147	480	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0147	344	Soil gas	12
Trimethylpentane[2,3,4-]	73-02071	0173-96-0147	65.4	Soil gas	12
Vinyl Chloride	73-02071	0173-96-0147	36.7	Soil gas	12
Xylene[1,2-]	73-02071	0173-96-0147	479	Soil gas	12
Xylene[1,3-]	73-02071	0173-96-0147	2550	Soil gas	12
Benzene	73-02067	0173-96-0148	163	Soil gas	280.8
Butane[n-]	73-02067	0173-96-0148	574	Soil gas	280.8
Butene[1-]	73-02067	0173-96-0148	332	Soil gas	280.8
Butene[cis-2-]	73-02067	0173-96-0148	37	Soil gas	280.8
Butene[trans-2-]	73-02067	0173-96-0148	403	Soil gas	280.8
Chlorodifluoromethane	73-02067	0173-96-0148	4540	Soil gas	280.8
Chloroethane	73-02067	0173-96-0148	118	Soil gas	280.8
Chloromethane	73-02067	0173-96-0148	67.9	Soil gas	280.8
Cyclohexane	73-02067	0173-96-0148	625	Soil gas	280.8
Cyclopentane	73-02067	0173-96-0148	31.9	Soil gas	280.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02067	0173-96-0148	177	Soil gas	280.8
Dichlorobenzene[1,4-]	73-02067	0173-96-0148	14.2	Soil gas	280.8
Dichlorodifluoromethane	73-02067	0173-96-0148	803	Soil gas	280.8
Dichloroethane[1,1-]	73-02067	0173-96-0148	20.1	Soil gas	280.8
Dichloroethane[1,2-]	73-02067	0173-96-0148	5.7	Soil gas	280.8
Dichloroethene[1,1-]	73-02067	0173-96-0148	38.1	Soil gas	280.8
Dichloroethene[cis-1,2-]	73-02067	0173-96-0148	3490	Soil gas	280.8
Dichloroethene[trans-1,2-]	73-02067	0173-96-0148	99.2	Soil gas	280.8
Dichloropropane[1,2-]	73-02067	0173-96-0148	6.4	Soil gas	280.8
Diethyl Ether	73-02067	0173-96-0148	79.8	Soil gas	280.8
Dimethylbutane[2,2-]	73-02067	0173-96-0148	77.4	Soil gas	280.8
Dimethylbutane[2,3-]	73-02067	0173-96-0148	295	Soil gas	280.8
Dimethylpentane[2,3-]	73-02067	0173-96-0148	168	Soil gas	280.8
Ethylbenzene	73-02067	0173-96-0148	278	Soil gas	280.8
Heptane	73-02067	0173-96-0148	2950	Soil gas	280.8
Hexane	73-02067	0173-96-0148	593	Soil gas	280.8
Hexene[cis-3-]	73-02067	0173-96-0148	13.8	Soil gas	280.8
Hexene[trans-2-]	73-02067	0173-96-0148	5.6	Soil gas	280.8
Isobutane	73-02067	0173-96-0148	2880	Soil gas	280.8
Isooctane	73-02067	0173-96-0148	233	Soil gas	280.8
Isopentane	73-02067	0173-96-0148	172	Soil gas	280.8
Isopropylbenzene	73-02067	0173-96-0148	20.6	Soil gas	280.8
Methanol	73-02067	0173-96-0148	196	Soil gas	280.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methyl-1-butene[3-]	73-02067	0173-96-0148	98.5	Soil gas	280.8
Methyl-1-pentene[2-]	73-02067	0173-96-0148	24.7	Soil gas	280.8
Methyl-1-pentene[4-]	73-02067	0173-96-0148	8	Soil gas	280.8
Methyl-2-butene[2-]	73-02067	0173-96-0148	42.8	Soil gas	280.8
Methylcyclohexane	73-02067	0173-96-0148	2590	Soil gas	280.8
Methylcyclopentane	73-02067	0173-96-0148	305	Soil gas	280.8
Methylene Chloride	73-02067	0173-96-0148	232	Soil gas	280.8
Methylheptane[2-]	73-02067	0173-96-0148	1030	Soil gas	280.8
Methylheptane[3-]	73-02067	0173-96-0148	1070	Soil gas	280.8
Methylhexane[2-]	73-02067	0173-96-0148	37.9	Soil gas	280.8
Methylhexane[3-]	73-02067	0173-96-0148	434	Soil gas	280.8
Methylpentane[2-]	73-02067	0173-96-0148	215	Soil gas	280.8
Methylpentane[3-]	73-02067	0173-96-0148	176	Soil gas	280.8
Nitropropane[2-]	73-02067	0173-96-0148	283	Soil gas	280.8
Nonane[1-]	73-02067	0173-96-0148	1020	Soil gas	280.8
Octane[n-]	73-02067	0173-96-0148	2060	Soil gas	280.8
Pentane	73-02067	0173-96-0148	333	Soil gas	280.8
Pentene[1-]	73-02067	0173-96-0148	85.5	Soil gas	280.8
Pentene[cis-2-]	73-02067	0173-96-0148	10.8	Soil gas	280.8
Pentene[trans-2-]	73-02067	0173-96-0148	18.3	Soil gas	280.8
Pinene[alpha-]	73-02067	0173-96-0148	217	Soil gas	280.8
Pinene[beta-]	73-02067	0173-96-0148	279	Soil gas	280.8
Propylbenzene[1-]	73-02067	0173-96-0148	12.1	Soil gas	280.8
Propylene	73-02067	0173-96-0148	2580	Soil gas	280.8
Tetrachloroethene	73-02067	0173-96-0148	173	Soil gas	280.8
Toluene	73-02067	0173-96-0148	592	Soil gas	280.8
Trichloroethene	73-02067	0173-96-0148	97.1	Soil gas	280.8
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0148	37.4	Soil gas	280.8
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0148	27.1	Soil gas	280.8
Trimethylpentane[2,3,4-]	73-02067	0173-96-0148	315	Soil gas	280.8
Vinyl Chloride	73-02067	0173-96-0148	546	Soil gas	280.8
Xylene[1,2-]	73-02067	0173-96-0148	165	Soil gas	280.8
Xylene[1,3-]+Xylene[1,4-]	73-02067	0173-96-0148	794	Soil gas	280.8
Benzene	73-02067	0173-96-0149	63.9	Soil gas	24
Butane[n-]	73-02067	0173-96-0149	76.3	Soil gas	24
Butene[1-]	73-02067	0173-96-0149	441	Soil gas	24
Chlorodifluoromethane	73-02067	0173-96-0149	879	Soil gas	24
Chloroethane	73-02067	0173-96-0149	17.3	Soil gas	24
Chloromethane	73-02067	0173-96-0149	32.5	Soil gas	24
Cyclohexane	73-02067	0173-96-0149	152	Soil gas	24
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02067	0173-96-0149	45.3	Soil gas	24
Dichlorobenzene[1,4-]	73-02067	0173-96-0149	8.4	Soil gas	24
Dichlorodifluoromethane	73-02067	0173-96-0149	92.5	Soil gas	24
Dichloroethene[1,1-]	73-02067	0173-96-0149	9.9	Soil gas	24
Dichloroethene[cis-1,2-]	73-02067	0173-96-0149	2340	Soil gas	24
Dichloroethene[trans-1,2-]	73-02067	0173-96-0149	128	Soil gas	24
Dimethylbutane[2,2-]	73-02067	0173-96-0149	19.8	Soil gas	24
Dimethylbutane[2,3-]	73-02067	0173-96-0149	43.2	Soil gas	24

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dimethylpentane[2,3-]	73-02067	0173-96-0149	62	Soil gas	24
Ethylbenzene	73-02067	0173-96-0149	22.6	Soil gas	24
Heptane	73-02067	0173-96-0149	616	Soil gas	24
Hexane	73-02067	0173-96-0149	64.3	Soil gas	24
Isobutane	73-02067	0173-96-0149	456	Soil gas	24
Isooctane	73-02067	0173-96-0149	185	Soil gas	24
Isopentane	73-02067	0173-96-0149	29.1	Soil gas	24
Isopropylbenzene	73-02067	0173-96-0149	5	Soil gas	24
Methanol	73-02067	0173-96-0149	204	Soil gas	24
Methyl-2-butene[2-]	73-02067	0173-96-0149	10	Soil gas	24
Methylcyclohexane	73-02067	0173-96-0149	1510	Soil gas	24
Methylcyclopentane	73-02067	0173-96-0149	40	Soil gas	24
Methylene Chloride	73-02067	0173-96-0149	34.5	Soil gas	24
Methylheptane[2-]	73-02067	0173-96-0149	356	Soil gas	24
Methylheptane[3-]	73-02067	0173-96-0149	348	Soil gas	24
Methylhexane[2-]	73-02067	0173-96-0149	10.9	Soil gas	24
Methylhexane[3-]	73-02067	0173-96-0149	96.5	Soil gas	24
Methylpentane[2-]	73-02067	0173-96-0149	29.9	Soil gas	24
Methylpentane[3-]	73-02067	0173-96-0149	28.8	Soil gas	24
Nonane[1-]	73-02067	0173-96-0149	319	Soil gas	24
Octane[n-]	73-02067	0173-96-0149	724	Soil gas	24
Pentane	73-02067	0173-96-0149	115	Soil gas	24
Pentene[1-]	73-02067	0173-96-0149	238	Soil gas	24
Pentene[cis-2-]	73-02067	0173-96-0149	5.2	Soil gas	24
Pentene[trans-2-]	73-02067	0173-96-0149	7.1	Soil gas	24
Pinene[alpha-]	73-02067	0173-96-0149	67.6	Soil gas	24
Pinene[beta-]	73-02067	0173-96-0149	440	Soil gas	24
Propylbenzene[1-]	73-02067	0173-96-0149	5	Soil gas	24
Propylene	73-02067	0173-96-0149	1580	Soil gas	24
Tetrachloroethene	73-02067	0173-96-0149	455	Soil gas	24
Toluene	73-02067	0173-96-0149	226	Soil gas	24
Trichloroethene	73-02067	0173-96-0149	207	Soil gas	24
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0149	23.4	Soil gas	24
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0149	29.3	Soil gas	24
Trimethylpentane[2,3,4-]	73-02067	0173-96-0149	369	Soil gas	24
Vinyl Chloride	73-02067	0173-96-0149	94.2	Soil gas	24
Xylene[1,2-]	73-02067	0173-96-0149	97.3	Soil gas	24
Xylene[1,3-]+Xylene[1,4-]	73-02067	0173-96-0149	112	Soil gas	24
Benzene	73-02069	0173-96-0150	31.4	Soil gas	211.2
Butane[n-]	73-02069	0173-96-0150	790	Soil gas	211.2
Butene[1-]	73-02069	0173-96-0150	564	Soil gas	211.2
Butene[cis-2-]	73-02069	0173-96-0150	55	Soil gas	211.2
Butene[trans-2-]	73-02069	0173-96-0150	50.5	Soil gas	211.2
Chlorodifluoromethane	73-02069	0173-96-0150	1750	Soil gas	211.2
Chloroethane	73-02069	0173-96-0150	22.2	Soil gas	211.2
Cyclohexane	73-02069	0173-96-0150	191	Soil gas	211.2
Cyclopentane	73-02069	0173-96-0150	20.7	Soil gas	211.2
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02069	0173-96-0150	105	Soil gas	211.2

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichlorodifluoromethane	73-02069	0173-96-0150	362	Soil gas	211.2
Dichloroethene[1,1-]	73-02069	0173-96-0150	9.9	Soil gas	211.2
Dichloroethene[cis-1,2-]	73-02069	0173-96-0150	126	Soil gas	211.2
Dichloroethene[trans-1,2-]	73-02069	0173-96-0150	11.1	Soil gas	211.2
Dimethylbutane[2,2-]	73-02069	0173-96-0150	43	Soil gas	211.2
Dimethylbutane[2,3-]	73-02069	0173-96-0150	74.9	Soil gas	211.2
Dimethylpentane[2,3-]	73-02069	0173-96-0150	49.5	Soil gas	211.2
Ethylbenzene	73-02069	0173-96-0150	12.5	Soil gas	211.2
Heptane	73-02069	0173-96-0150	312	Soil gas	211.2
Hexane	73-02069	0173-96-0150	204	Soil gas	211.2
Hexene[cis-3-]	73-02069	0173-96-0150	10.8	Soil gas	211.2
Isobutane	73-02069	0173-96-0150	10000	Soil gas	211.2
Isooctane	73-02069	0173-96-0150	34.5	Soil gas	211.2
Isopentane	73-02069	0173-96-0150	162	Soil gas	211.2
Methanol	73-02069	0173-96-0150	194	Soil gas	211.2
Methyl-1-butene[3-]	73-02069	0173-96-0150	68.1	Soil gas	211.2
Methyl-1-pentene[2-]	73-02069	0173-96-0150	20	Soil gas	211.2
Methyl-1-pentene[4-]	73-02069	0173-96-0150	8.8	Soil gas	211.2
Methyl-2-butene[2-]	73-02069	0173-96-0150	34.2	Soil gas	211.2
Methylcyclohexane	73-02069	0173-96-0150	379	Soil gas	211.2
Methylcyclopentane	73-02069	0173-96-0150	113	Soil gas	211.2
Methylene Chloride	73-02069	0173-96-0150	10	Soil gas	211.2
Methylheptane[2-]	73-02069	0173-96-0150	73.8	Soil gas	211.2
Methylheptane[3-]	73-02069	0173-96-0150	91	Soil gas	211.2
Methylhexane[2-]	73-02069	0173-96-0150	14.2	Soil gas	211.2
Methylhexane[3-]	73-02069	0173-96-0150	114	Soil gas	211.2
Methylpentane[2-]	73-02069	0173-96-0150	125	Soil gas	211.2
Methylpentane[3-]	73-02069	0173-96-0150	108	Soil gas	211.2
Nitropropane[2-]	73-02069	0173-96-0150	73.1	Soil gas	211.2
Nonane[1-]	73-02069	0173-96-0150	224	Soil gas	211.2
Octane[n-]	73-02069	0173-96-0150	88.6	Soil gas	211.2
Pentane	73-02069	0173-96-0150	285	Soil gas	211.2
Pentene[1-]	73-02069	0173-96-0150	40.8	Soil gas	211.2
Pentene[cis-2-]	73-02069	0173-96-0150	13.1	Soil gas	211.2
Pentene[trans-2-]	73-02069	0173-96-0150	24.2	Soil gas	211.2
Pinene[alpha-]	73-02069	0173-96-0150	41	Soil gas	211.2
Pinene[beta-]	73-02069	0173-96-0150	44.1	Soil gas	211.2
Propylene	73-02069	0173-96-0150	1480	Soil gas	211.2
Toluene	73-02069	0173-96-0150	9.4	Soil gas	211.2
Trichloroethene	73-02069	0173-96-0150	17.8	Soil gas	211.2
Trimethylbenzene[1,2,4-]	73-02069	0173-96-0150	11	Soil gas	211.2
Trimethylbenzene[1,3,5-]	73-02069	0173-96-0150	6.1	Soil gas	211.2
Trimethylpentane[2,3,4-]	73-02069	0173-96-0150	44.8	Soil gas	211.2
Vinyl Acetate	73-02069	0173-96-0150	96.2	Soil gas	211.2
Vinyl Chloride	73-02069	0173-96-0150	173	Soil gas	211.2
Xylene[1,2-]	73-02069	0173-96-0150	5.9	Soil gas	211.2
Xylene[1,3-]+Xylene[1,4-]	73-02069	0173-96-0150	24.4	Soil gas	211.2
Benzene	73-02069	0173-96-0151	1.32	Soil gas	12
Butane[n-]	73-02069	0173-96-0151	10.6	Soil gas	12

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Butene[1-]	73-02069	0173-96-0151	6.06	Soil gas	12
Butene[cis-2-]	73-02069	0173-96-0151	1.28	Soil gas	12
Butene[trans-2-]	73-02069	0173-96-0151	1.52	Soil gas	12
Chloromethane	73-02069	0173-96-0151	5.2	Soil gas	12
Dichlorodifluoromethane	73-02069	0173-96-0151	3.04	Soil gas	12
Heptane	73-02069	0173-96-0151	1.96	Soil gas	12
Hexane	73-02069	0173-96-0151	2.58	Soil gas	12
Isobutane	73-02069	0173-96-0151	4.72	Soil gas	12
Isopentane	73-02069	0173-96-0151	2.12	Soil gas	12
Pentane	73-02069	0173-96-0151	4.9	Soil gas	12
Pentene[1-]	73-02069	0173-96-0151	1.08	Soil gas	12
Pinene[beta-]	73-02069	0173-96-0151	1.08	Soil gas	12
Propylene	73-02069	0173-96-0151	17	Soil gas	12
Tetrachloroethene	73-02069	0173-96-0151	1.52	Soil gas	12
Acetone	73-02061	0173-96-0152	94.6	Soil gas	900
Benzene	73-02061	0173-96-0152	34.1	Soil gas	900
Butane[n-]	73-02061	0173-96-0152	35.8	Soil gas	900
Butene[1-]	73-02061	0173-96-0152	75.7	Soil gas	900
Butene[cis-2-]	73-02061	0173-96-0152	9.6	Soil gas	900
Butene[trans-2-]	73-02061	0173-96-0152	12.2	Soil gas	900
Chlorodifluoromethane	73-02061	0173-96-0152	7.1	Soil gas	900
Cyclohexane	73-02061	0173-96-0152	16	Soil gas	900
Dichlorobenzene[1,4-]	73-02061	0173-96-0152	6.7	Soil gas	900
Dichlorodifluoromethane	73-02061	0173-96-0152	6.3	Soil gas	900
Dimethylbutane[2,2-]	73-02061	0173-96-0152	47	Soil gas	900
Dimethylbutane[2,3-]	73-02061	0173-96-0152	22.7	Soil gas	900
Dimethylpentane[2,3-]	73-02061	0173-96-0152	17.9	Soil gas	900
Ethylbenzene	73-02061	0173-96-0152	6.9	Soil gas	900
Heptane	73-02061	0173-96-0152	41.8	Soil gas	900
Hexane	73-02061	0173-96-0152	30.9	Soil gas	900
Isobutane	73-02061	0173-96-0152	112	Soil gas	900
Isooctane	73-02061	0173-96-0152	5.9	Soil gas	900
Isopentane	73-02061	0173-96-0152	69.5	Soil gas	900
Methanol	73-02061	0173-96-0152	697	Soil gas	900
Methyl-1-butene[3-]	73-02061	0173-96-0152	18.9	Soil gas	900
Methyl-1-pentene[2-]	73-02061	0173-96-0152	5.5	Soil gas	900
Methyl-1-pentene[4-]	73-02061	0173-96-0152	10.1	Soil gas	900
Methyl-2-butene[2-]	73-02061	0173-96-0152	11.2	Soil gas	900
Methylcyclohexane	73-02061	0173-96-0152	23.7	Soil gas	900
Methylcyclopentane	73-02061	0173-96-0152	8.1	Soil gas	900
Methylheptane[2-]	73-02061	0173-96-0152	14.9	Soil gas	900
Methylheptane[3-]	73-02061	0173-96-0152	18.1	Soil gas	900
Methylhexane[2-]	73-02061	0173-96-0152	7.2	Soil gas	900
Methylhexane[3-]	73-02061	0173-96-0152	35.8	Soil gas	900
Methylpentane[2-]	73-02061	0173-96-0152	47.3	Soil gas	900
Methylpentane[3-]	73-02061	0173-96-0152	30.5	Soil gas	900
Methylstyrene[alpha-]	73-02061	0173-96-0152	7.9	Soil gas	900
Nonane[1-]	73-02061	0173-96-0152	7.2	Soil gas	900
Octane[n-]	73-02061	0173-96-0152	12	Soil gas	900

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pentane	73-02061	0173-96-0152	32.2	Soil gas	900
Pentene[1-]	73-02061	0173-96-0152	5.4	Soil gas	900
Pinene[alpha-]	73-02061	0173-96-0152	1410	Soil gas	900
Pinene[beta-]	73-02061	0173-96-0152	665	Soil gas	900
Propylene	73-02061	0173-96-0152	138	Soil gas	900
Styrene	73-02061	0173-96-0152	15.5	Soil gas	900
Tetrachloroethene	73-02061	0173-96-0152	5.4	Soil gas	900
Toluene	73-02061	0173-96-0152	19.7	Soil gas	900
Trimethylbenzene[1,2,4-]	73-02061	0173-96-0152	11	Soil gas	900
Xylene[1,3-]+Xylene[1,4-]	73-02061	0173-96-0152	7.8	Soil gas	900
Chlorodifluoromethane	73-02061	0173-96-0153	3.12	Soil gas	330
Chloroform	73-02061	0173-96-0153	1.62	Soil gas	330
Dichlorobenzene[1,4-]	73-02061	0173-96-0153	3.62	Soil gas	330
Dichlorodifluoromethane	73-02061	0173-96-0153	1.92	Soil gas	330
Isobutane	73-02061	0173-96-0153	2.7	Soil gas	330
Chlorodifluoromethane	73-02056	0173-96-0154	2.26	Soil gas	517.2
Chloromethane	73-02056	0173-96-0154	4.6	Soil gas	517.2
Dichlorodifluoromethane	73-02056	0173-96-0154	20.3	Soil gas	517.2
Isobutane	73-02056	0173-96-0154	8.68	Soil gas	517.2
Norane[1-]	73-02056	0173-96-0154	1.16	Soil gas	517.2
Pinene[beta-]	73-02056	0173-96-0154	4.04	Soil gas	517.2
Propylene	73-02056	0173-96-0154	1.18	Soil gas	517.2
Tetrachloroethene	73-02056	0173-96-0154	12.1	Soil gas	517.2
Trichloroethane[1,1,1-]	73-02056	0173-96-0154	1.66	Soil gas	517.2
Trichlorofluoromethane	73-02056	0173-96-0154	27.1	Soil gas	517.2
Chlorodifluoromethane	73-02061	0173-96-0155	2.62	Soil gas	30
Chloroform	73-02061	0173-96-0155	3.4	Soil gas	30
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02061	0173-96-0155	25.6	Soil gas	30
Dichlorodifluoromethane	73-02061	0173-96-0155	28	Soil gas	30
Isopentane	73-02061	0173-96-0155	3.72	Soil gas	30
Methanol	73-02061	0173-96-0155	16.2	Soil gas	30
Propylene	73-02061	0173-96-0155	21.8	Soil gas	30
Tetrachloroethene	73-02061	0173-96-0155	2.74	Soil gas	30
Trichlorofluoromethane	73-02061	0173-96-0155	2.44	Soil gas	30
Acetone	73-02068	0173-96-0156	305	Soil gas	309.6
Benzene	73-02068	0173-96-0156	36.8	Soil gas	309.6
Butane[n-]	73-02068	0173-96-0156	108	Soil gas	309.6
Butanone[2-]	73-02068	0173-96-0156	295	Soil gas	309.6
Butene[1-]	73-02068	0173-96-0156	86.8	Soil gas	309.6
Chlorobenzene	73-02068	0173-96-0156	111	Soil gas	309.6
Chlorodifluoromethane	73-02068	0173-96-0156	1330	Soil gas	309.6
Chloroethane	73-02068	0173-96-0156	18.8	Soil gas	309.6
Chloroform	73-02068	0173-96-0156	32.9	Soil gas	309.6
Cyclohexane	73-02068	0173-96-0156	81.6	Soil gas	309.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02068	0173-96-0156	62.3	Soil gas	309.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0156	279	Soil gas	309.6
Dichlorodifluoromethane	73-02068	0173-96-0156	330	Soil gas	309.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloroethane[1,1-]	73-02068	0173-96-0156	5.3	Soil gas	309.6
Dichloroethene[1,1-]	73-02068	0173-96-0156	8.5	Soil gas	309.6
Dichloroethene[cis-1,2-]	73-02068	0173-96-0156	3020	Soil gas	309.6
Dichloroethene[trans-1,2-]	73-02068	0173-96-0156	55.1	Soil gas	309.6
Diethyl Ether	73-02068	0173-96-0156	104	Soil gas	309.6
Dimethylbutane[2,2-]	73-02068	0173-96-0156	41.3	Soil gas	309.6
Dimethylbutane[2,3-]	73-02068	0173-96-0156	17.2	Soil gas	309.6
Dimethylpentane[2,3-]	73-02068	0173-96-0156	14	Soil gas	309.6
Ethylbenzene	73-02068	0173-96-0156	255	Soil gas	309.6
Heptane	73-02068	0173-96-0156	138	Soil gas	309.6
Hexane	73-02068	0173-96-0156	97.9	Soil gas	309.6
Isobutane	73-02068	0173-96-0156	749	Soil gas	309.6
Isooctane	73-02068	0173-96-0156	14.4	Soil gas	309.6
Isopentane	73-02068	0173-96-0156	47.2	Soil gas	309.6
Isoprene	73-02068	0173-96-0156	13.3	Soil gas	309.6
Isopropylbenzene	73-02068	0173-96-0156	23.2	Soil gas	309.6
Methanol	73-02068	0173-96-0156	514	Soil gas	309.6
Methyl-1-butene[3-]	73-02068	0173-96-0156	30	Soil gas	309.6
Methyl-1-pentene[2-]	73-02068	0173-96-0156	9.4	Soil gas	309.6
Methylcyclohexane	73-02068	0173-96-0156	125	Soil gas	309.6
Methylcyclopentane	73-02068	0173-96-0156	38.7	Soil gas	309.6
Methylone Chloride	73-02068	0173-96-0156	131	Soil gas	309.6
Methylheptane[2-]	73-02068	0173-96-0156	40.5	Soil gas	309.6
Methylheptane[3-]	73-02068	0173-96-0156	61.6	Soil gas	309.6
Methylhexane[2-]	73-02068	0173-96-0156	6.3	Soil gas	309.6
Methylhexane[3-]	73-02068	0173-96-0156	30.6	Soil gas	309.6
Nonane[1-]	73-02068	0173-96-0156	285	Soil gas	309.6
Octane[n-]	73-02068	0173-96-0156	157	Soil gas	309.6
Pentane	73-02068	0173-96-0156	46.8	Soil gas	309.6
Pentene[1-]	73-02068	0173-96-0156	48.2	Soil gas	309.6
Pinene[alpha-]	73-02068	0173-96-0156	196	Soil gas	309.6
Pinene[beta-]	73-02068	0173-96-0156	1080	Soil gas	309.6
Propylbenzene[1-]	73-02068	0173-96-0156	33.3	Soil gas	309.6
Propylene	73-02068	0173-96-0156	629	Soil gas	309.6
Styrene	73-02068	0173-96-0156	16.3	Soil gas	309.6
Tetrachloroethene	73-02068	0173-96-0156	442	Soil gas	309.6
Toluene	73-02068	0173-96-0156	567	Soil gas	309.6
Trichloro-1,2,2-trifluoroethane[1,1,2-]	73-02068	0173-96-0156	17.5	Soil gas	309.6
Trichloroethene	73-02068	0173-96-0156	131	Soil gas	309.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0156	285	Soil gas	309.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0156	107	Soil gas	309.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0156	38.3	Soil gas	309.6
Vinyl Chloride	73-02068	0173-96-0156	90.9	Soil gas	309.6
Xylene[1,2-]	73-02068	0173-96-0156	90.8	Soil gas	309.6
Xylene[1,3-]+Xylene[1,4-]	73-02068	0173-96-0156	754	Soil gas	309.6
Acetone	73-02071	0173-96-0157	102	Soil gas	12
Benzene	73-02071	0173-96-0157	49.9	Soil gas	12
Butane[n-]	73-02071	0173-96-0157	151	Soil gas	12

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Butanone[2-]	73-02071	0173-96-0157	167	Soil gas	12
Butene[1-]	73-02071	0173-96-0157	664	Soil gas	12
Butene[cis-2-]	73-02071	0173-96-0157	30.3	Soil gas	12
Butene[trans-2-]	73-02071	0173-96-0157	766	Soil gas	12
Chlorobenzene	73-02071	0173-96-0157	14.3	Soil gas	12
Chlorodifluoromethane	73-02071	0173-96-0157	695	Soil gas	12
Cyclohexane	73-02071	0173-96-0157	262	Soil gas	12
Dichlorobenzene[1,4-]	73-02071	0173-96-0157	150	Soil gas	12
Dichlorodifluoromethane	73-02071	0173-96-0157	33	Soil gas	12
Dichloroethene[1,1-]	73-02071	0173-96-0157	5.2	Soil gas	12
Dichloroethene[cis-1,2-]	73-02071	0173-96-0157	362	Soil gas	12
Dichloroethene[trans-1,2-]	73-02071	0173-96-0157	5.5	Soil gas	12
Dimethylbutane[2,2-]	73-02071	0173-96-0157	83.3	Soil gas	12
Dimethylbutane[2,3-]	73-02071	0173-96-0157	97.8	Soil gas	12
Dimethylpentane[2,3-]	73-02071	0173-96-0157	71.8	Soil gas	12
Ethylbenzene	73-02071	0173-96-0157	1240	Soil gas	12
Heptane	73-02071	0173-96-0157	245	Soil gas	12
Hexane	73-02071	0173-96-0157	449	Soil gas	12
Hexene[cis-3-]	73-02071	0173-96-0157	13.1	Soil gas	12
Isobutane	73-02071	0173-96-0157	974	Soil gas	12
Isooctane	73-02071	0173-96-0157	22	Soil gas	12
Isopentane	73-02071	0173-96-0157	22.3	Soil gas	12
Isopropylbenzene	73-02071	0173-96-0157	58.7	Soil gas	12
Methanol	73-02071	0173-96-0157	188	Soil gas	12
Methyl-1-butene[3-]	73-02071	0173-96-0157	38.4	Soil gas	12
Methyl-1-pentene[2-]	73-02071	0173-96-0157	16.7	Soil gas	12
Methyl-2-butene[2-]	73-02071	0173-96-0157	28.4	Soil gas	12
Methylcyclohexane	73-02071	0173-96-0157	91.3	Soil gas	12
Methylcyclopentane	73-02071	0173-96-0157	753	Soil gas	12
Methylheptane[2-]	73-02071	0173-96-0157	74.2	Soil gas	12
Methylheptane[3-]	73-02071	0173-96-0157	85.4	Soil gas	12
Methylhexane[2-]	73-02071	0173-96-0157	44.1	Soil gas	12
Methylhexane[3-]	73-02071	0173-96-0157	129	Soil gas	12
Methylpentane[2-]	73-02071	0173-96-0157	82.9	Soil gas	12
Methylpentane[3-]	73-02071	0173-96-0157	123	Soil gas	12
Nitropropane[2-]	73-02071	0173-96-0157	99.1	Soil gas	12
Nonane[1-]	73-02071	0173-96-0157	5450	Soil gas	12
Octane[n-]	73-02071	0173-96-0157	875	Soil gas	12
Pentane	73-02071	0173-96-0157	73.4	Soil gas	12
Pentene[1-]	73-02071	0173-96-0157	441	Soil gas	12
Pentene[cis-2-]	73-02071	0173-96-0157	10.6	Soil gas	12
Pinene[alpha-]	73-02071	0173-96-0157	315	Soil gas	12
Pinene[beta-]	73-02071	0173-96-0157	1520	Soil gas	12
Propylbenzene[1-]	73-02071	0173-96-0157	84.6	Soil gas	12
Propylene	73-02071	0173-96-0157	1450	Soil gas	12
Styrene	73-02071	0173-96-0157	30.9	Soil gas	12
Tetrachloroethane[1,1,2,2-]	73-02071	0173-96-0157	5.6	Soil gas	12
Tetrachloroethene	73-02071	0173-96-0157	6.4	Soil gas	12
Toluene	73-02071	0173-96-0157	449	Soil gas	12

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trichloroethene	73-02071	0173-96-0157	17.5	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0157	470	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0157	352	Soil gas	12
Trimethylpentane[2,3,4-]	73-02071	0173-96-0157	64.3	Soil gas	12
Vinyl Chloride	73-02071	0173-96-0157	35.8	Soil gas	12
Xylene[1,2-]	73-02071	0173-96-0157	417	Soil gas	12
Xylene[1,3-]	73-02071	0173-96-0157	2700	Soil gas	12
Acetone	73-02067	0173-96-0158	214	Soil gas	24
Benzene	73-02067	0173-96-0158	68.4	Soil gas	24
Butane[n-]	73-02067	0173-96-0158	82.8	Soil gas	24
Butene[1-]	73-02067	0173-96-0158	442	Soil gas	24
Butene[cis-2-]	73-02067	0173-96-0158	23.7	Soil gas	24
Chlorodifluoromethane	73-02067	0173-96-0158	902	Soil gas	24
Chloroethane	73-02067	0173-96-0158	17.4	Soil gas	24
Chloroform	73-02067	0173-96-0158	30.6	Soil gas	24
Chloromethane	73-02067	0173-96-0158	35	Soil gas	24
Cyclohexane	73-02067	0173-96-0158	152	Soil gas	24
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02067	0173-96-0158	46.3	Soil gas	24
Dichlorobenzene[1,4-]	73-02067	0173-96-0158	8.5	Soil gas	24
Dichlorodifluoromethane	73-02067	0173-96-0158	99.3	Soil gas	24
Dichloroethene[1,1-]	73-02067	0173-96-0158	10.4	Soil gas	24
Dichloroethene[cis-1,2-]	73-02067	0173-96-0158	2630	Soil gas	24
Dichloroethene[trans-1,2-]	73-02067	0173-96-0158	128	Soil gas	24
Dimethylbutane[2,2-]	73-02067	0173-96-0158	19.9	Soil gas	24
Dimethylbutane[2,3-]	73-02067	0173-96-0158	45	Soil gas	24
Dimethylpentane[2,3-]	73-02067	0173-96-0158	63.8	Soil gas	24
Ethanol	73-02067	0173-96-0158	198	Soil gas	24
Ethylbenzene	73-02067	0173-96-0158	29.4	Soil gas	24
Heptane	73-02067	0173-96-0158	694	Soil gas	24
Hexane	73-02067	0173-96-0158	223	Soil gas	24
Isobutane	73-02067	0173-96-0158	470	Soil gas	24
Isooctane	73-02067	0173-96-0158	194	Soil gas	24
Isopentane	73-02067	0173-96-0158	28.5	Soil gas	24
Isopropylbenzene	73-02067	0173-96-0158	5	Soil gas	24
Methanol	73-02067	0173-96-0158	544	Soil gas	24
Methyl-1-butene[3-]	73-02067	0173-96-0158	24.4	Soil gas	24
Methyl-2-butene[2-]	73-02067	0173-96-0158	10.8	Soil gas	24
Methylcyclohexane	73-02067	0173-96-0158	1700	Soil gas	24
Methylcyclopentane	73-02067	0173-96-0158	46.1	Soil gas	24
Methylene Chloride	73-02067	0173-96-0158	247	Soil gas	24
Methylheptane[2-]	73-02067	0173-96-0158	383	Soil gas	24
Methylheptane[3-]	73-02067	0173-96-0158	529	Soil gas	24
Methylhexane[2-]	73-02067	0173-96-0158	10.8	Soil gas	24
Methylhexane[3-]	73-02067	0173-96-0158	101	Soil gas	24
Methylpentane[2-]	73-02067	0173-96-0158	30.5	Soil gas	24
Methylpentane[3-]	73-02067	0173-96-0158	32.1	Soil gas	24
Nonane[1-]	73-02067	0173-96-0158	352	Soil gas	24
Octane[n-]	73-02067	0173-96-0158	752	Soil gas	24

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pentane	73-02067	0173-96-0158	120	Soil gas	24
Pentene[1-]	73-02067	0173-96-0158	237	Soil gas	24
Pinene[alpha-]	73-02067	0173-96-0158	71.5	Soil gas	24
Pinene[beta-]	73-02067	0173-96-0158	422	Soil gas	24
Propylbenzene[1-]	73-02067	0173-96-0158	5.5	Soil gas	24
Propylene	73-02067	0173-96-0158	1770	Soil gas	24
Tetrachloroethene	73-02067	0173-96-0158	437	Soil gas	24
Toluene	73-02067	0173-96-0158	267	Soil gas	24
Trichloro-1,2,2- trifluoroethane[1,1,2-]	73-02067	0173-96-0158	7.3	Soil gas	24
Trichloroethene	73-02067	0173-96-0158	214	Soil gas	24
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0158	29.6	Soil gas	24
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0158	35.7	Soil gas	24
Trimethylpentane[2,3,4-]	73-02067	0173-96-0158	382	Soil gas	24
Vinyl Chloride	73-02067	0173-96-0158	95.4	Soil gas	24
Xylene[1,2-]	73-02067	0173-96-0158	98.7	Soil gas	24
Xylene[1,3-]+Xylene[1,4-]	73-02067	0173-96-0158	137	Soil gas	24
Benzene	73-02089	0173-96-0171	139	Soil gas	888
Butadiene[1,3-]	73-02089	0173-96-0171	21.2	Soil gas	888
Butane[n-]	73-02089	0173-96-0171	57.2	Soil gas	888
Butene[1-]	73-02089	0173-96-0171	388	Soil gas	888
Butene[cis-2-]	73-02089	0173-96-0171	32.2	Soil gas	888
Butene[trans-2-]	73-02089	0173-96-0171	27.7	Soil gas	888
Chlorobenzene	73-02089	0173-96-0171	41.1	Soil gas	888
Chlorodifluoromethane	73-02089	0173-96-0171	469	Soil gas	888
Chloroethane	73-02089	0173-96-0171	19.2	Soil gas	888
Cyclohexane	73-02089	0173-96-0171	127	Soil gas	888
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02089	0173-96-0171	51.7	Soil gas	888
Dichlorobenzene[1,2-]	73-02089	0173-96-0171	2.24	Soil gas	888
Dichlorobenzene[1,3-]	73-02089	0173-96-0171	1.12	Soil gas	888
Dichlorobenzene[1,4-]	73-02089	0173-96-0171	182	Soil gas	888
Dichlorodifluoromethane	73-02089	0173-96-0171	401	Soil gas	888
Dichloroethane[1,1-]	73-02089	0173-96-0171	1.32	Soil gas	888
Dichloroethane[1,2-]	73-02089	0173-96-0171	6.6	Soil gas	888
Dichloroethene[1,1-]	73-02089	0173-96-0171	6.16	Soil gas	888
Dichloroethene[cis-1,2-]	73-02089	0173-96-0171	2830	Soil gas	888
Dichloroethene[trans-1,2-]	73-02089	0173-96-0171	13.8	Soil gas	888
Dichloropropane[1,2-]	73-02089	0173-96-0171	5.22	Soil gas	888
Diethyl Ether	73-02089	0173-96-0171	176	Soil gas	888
Dimethylbutane[2,2-]	73-02089	0173-96-0171	6	Soil gas	888
Dimethylbutane[2,3-]	73-02089	0173-96-0171	21.9	Soil gas	888
Dimethylpentane[2,3-]	73-02089	0173-96-0171	15.5	Soil gas	888
Ethylbenzene	73-02089	0173-96-0171	436	Soil gas	888
Heptane	73-02089	0173-96-0171	192	Soil gas	888
Hexane	73-02089	0173-96-0171	80.9	Soil gas	888
Hexene[cis-3-]	73-02089	0173-96-0171	9.38	Soil gas	888
Isobutane	73-02089	0173-96-0171	578	Soil gas	888
Isooctane	73-02089	0173-96-0171	12.1	Soil gas	888

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichlorobenzene[1,2-]	73-02089	0173-96-0172	7.3	Soil gas	360
Dichlorobenzene[1,4-]	73-02089	0173-96-0172	521	Soil gas	360
Dichlorodifluoromethane	73-02089	0173-96-0172	870	Soil gas	360
Dichloroethane[1,2-]	73-02089	0173-96-0172	5.3	Soil gas	360
Dichloroethene[1,1-]	73-02089	0173-96-0172	10.1	Soil gas	360
Dichloroethene[cis-1,2-]	73-02089	0173-96-0172	6220	Soil gas	360
Dichloroethene[trans-1,2-]	73-02089	0173-96-0172	32.5	Soil gas	360
Diethyl Ether	73-02089	0173-96-0172	113	Soil gas	360
Dimethylbutane[2,2-]	73-02089	0173-96-0172	31.3	Soil gas	360
Dimethylbutane[2,3-]	73-02089	0173-96-0172	52.8	Soil gas	360
Dimethylpentane[2,3-]	73-02089	0173-96-0172	33.6	Soil gas	360
Ethylbenzene	73-02089	0173-96-0172	4000	Soil gas	360
Heptane	73-02089	0173-96-0172	631	Soil gas	360
Hexane	73-02089	0173-96-0172	418	Soil gas	360
Hexene[cis-3-]	73-02089	0173-96-0172	16.2	Soil gas	360
Isobutane	73-02089	0173-96-0172	4050	Soil gas	360
Isooctane	73-02089	0173-96-0172	31.9	Soil gas	360
Isopropylbenzene	73-02089	0173-96-0172	208	Soil gas	360
Methyl-1-butene[3-]	73-02089	0173-96-0172	59.5	Soil gas	360
Methyl-1-pentene[2-]	73-02089	0173-96-0172	12.3	Soil gas	360
Methyl-2-butene[2-]	73-02089	0173-96-0172	61.3	Soil gas	360
Methylcyclohexane	73-02089	0173-96-0172	535	Soil gas	360
Methylcyclopentane	73-02089	0173-96-0172	196	Soil gas	360
Methylene Chloride	73-02089	0173-96-0172	73.3	Soil gas	360
Methylheptane[2-]	73-02089	0173-96-0172	444	Soil gas	360
Methylheptane[3-]	73-02089	0173-96-0172	523	Soil gas	360
Methylhexane[2-]	73-02089	0173-96-0172	9.9	Soil gas	360
Methylhexane[3-]	73-02089	0173-96-0172	95.5	Soil gas	360
Methylpentane[2-]	73-02089	0173-96-0172	131	Soil gas	360
Methylpentane[3-]	73-02089	0173-96-0172	150	Soil gas	360
Nonane[1-]	73-02089	0173-96-0172	9580	Soil gas	360
Octane[n-]	73-02089	0173-96-0172	1650	Soil gas	360
Pentane	73-02089	0173-96-0172	66.6	Soil gas	360
Pentene[1-]	73-02089	0173-96-0172	51.8	Soil gas	360
Pentene[cis-2-]	73-02089	0173-96-0172	65.5	Soil gas	360
Pinene[alpha-]	73-02089	0173-96-0172	812	Soil gas	360
Pinene[beta-]	73-02089	0173-96-0172	994	Soil gas	360
Propylbenzene[1-]	73-02089	0173-96-0172	385	Soil gas	360
Propylene	73-02089	0173-96-0172	729	Soil gas	360
Styrene	73-02089	0173-96-0172	14.9	Soil gas	360
Tetrachloroethane	73-02089	0173-96-0172	24.1	Soil gas	360
Toluene	73-02089	0173-96-0172	1140	Soil gas	360
Trichlorobenzene[1,2,4-]	73-02089	0173-96-0172	7.9	Soil gas	360
Trichloroethene	73-02089	0173-96-0172	33.5	Soil gas	360
Trichlorofluoromethane	73-02089	0173-96-0172	207	Soil gas	360
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0172	809	Soil gas	360
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0172	479	Soil gas	360
Trimethylpentane[2,3,4-]	73-02089	0173-96-0172	219	Soil gas	360
Vinyl Chloride	73-02089	0173-96-0172	733	Soil gas	360

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Xylene[1,2-]	73-02089	0173-96-0172	1500	Soil gas	360
Xylene[1,3-]	73-02089	0173-96-0172	3460	Soil gas	360
Acetone	73-02089	0173-96-0173	75.4	Soil gas	360
Benzene	73-02089	0173-96-0173	525	Soil gas	360
Butadiene[1,3-]	73-02089	0173-96-0173	20.2	Soil gas	360
Butane[n-]	73-02089	0173-96-0173	197	Soil gas	360
Butene[1-]	73-02089	0173-96-0173	498	Soil gas	360
Butene[cis-2-]	73-02089	0173-96-0173	23.7	Soil gas	360
Butene[trans-2-]	73-02089	0173-96-0173	18.6	Soil gas	360
Chlorobenzene	73-02089	0173-96-0173	94	Soil gas	360
Chlorodifluoromethane	73-02089	0173-96-0173	1920	Soil gas	360
Chloroethane	73-02089	0173-96-0173	55.8	Soil gas	360
Cyclohexane	73-02089	0173-96-0173	550	Soil gas	360
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02089	0173-96-0173	72.3	Soil gas	360
Dichlorobenzene[1,2-]	73-02089	0173-96-0173	7.9	Soil gas	360
Dichlorobenzene[1,4-]	73-02089	0173-96-0173	514	Soil gas	360
Dichlorodifluoromethane	73-02089	0173-96-0173	947	Soil gas	360
Dichloroethene[1,1-]	73-02089	0173-96-0173	10.5	Soil gas	360
Dichloroethene[cis-1,2-]	73-02089	0173-96-0173	4990	Soil gas	360
Dichloroethene[trans-1,2-]	73-02089	0173-96-0173	32.3	Soil gas	360
Diethyl Ether	73-02089	0173-96-0173	112	Soil gas	360
Dimethylbutane[2,2-]	73-02089	0173-96-0173	32	Soil gas	360
Dimethylbutane[2,3-]	73-02089	0173-96-0173	60.4	Soil gas	360
Dimethylpentane[2,3-]	73-02089	0173-96-0173	36	Soil gas	360
Ethylbenzene	73-02089	0173-96-0173	2980	Soil gas	360
Heptane	73-02089	0173-96-0173	743	Soil gas	360
Hexane	73-02089	0173-96-0173	417	Soil gas	360
Hexene[cis-3-]	73-02089	0173-96-0173	18.8	Soil gas	360
Isobutane	73-02089	0173-96-0173	3600	Soil gas	360
Isooctane	73-02089	0173-96-0173	38.6	Soil gas	360
Isopropylbenzene	73-02089	0173-96-0173	318	Soil gas	360
Methyl-1-butene[3-]	73-02089	0173-96-0173	66.6	Soil gas	360
Methyl-1-pentene[2-]	73-02089	0173-96-0173	12.6	Soil gas	360
Methyl-2-butene[2-]	73-02089	0173-96-0173	67.4	Soil gas	360
Methylcyclohexane	73-02089	0173-96-0173	685	Soil gas	360
Methylcyclopentane	73-02089	0173-96-0173	209	Soil gas	360
Methylene Chloride	73-02089	0173-96-0173	77.4	Soil gas	360
Methylheptane[2-]	73-02089	0173-96-0173	481	Soil gas	360
Methylheptane[3-]	73-02089	0173-96-0173	563	Soil gas	360
Methylhexane[2-]	73-02089	0173-96-0173	10.7	Soil gas	360
Methylhexane[3-]	73-02089	0173-96-0173	103	Soil gas	360
Methylpentane[2-]	73-02089	0173-96-0173	155	Soil gas	360
Methylpentane[3-]	73-02089	0173-96-0173	161	Soil gas	360
Nonane[1-]	73-02089	0173-96-0173	13300	Soil gas	360
Octane[n-]	73-02089	0173-96-0173	1150	Soil gas	360
Pentane	73-02089	0173-96-0173	68	Soil gas	360
Pentene[1-]	73-02089	0173-96-0173	53.7	Soil gas	360
Pentene[cis-2-]	73-02089	0173-96-0173	70.4	Soil gas	360

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pinene[alpha-]	73-02089	0173-96-0173	1190	Soil gas	360
Pinene[beta-]	73-02089	0173-96-0173	1250	Soil gas	360
Propylbenzene[1-]	73-02089	0173-96-0173	636	Soil gas	360
Propylene	73-02089	0173-96-0173	781	Soil gas	360
Styrene	73-02089	0173-96-0173	14.8	Soil gas	360
Tetrachloroethene	73-02089	0173-96-0173	23.6	Soil gas	360
Toluene	73-02089	0173-96-0173	957	Soil gas	360
Trichloroethene	73-02089	0173-96-0173	35.7	Soil gas	360
Trichlorofluoromethane	73-02089	0173-96-0173	210	Soil gas	360
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0173	1080	Soil gas	360
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0173	543	Soil gas	360
Trimethylpentane[2,3,4-]	73-02089	0173-96-0173	232	Soil gas	360
Vinyl Chloride	73-02089	0173-96-0173	745	Soil gas	360
Xylene[1,2-]	73-02089	0173-96-0173	1090	Soil gas	360
Xylene[1,3-]	73-02089	0173-96-0173	265	Soil gas	360
Butene[1-]	73-02089	0173-96-0174	6.54	Soil gas	14.4
Chloroform	73-02089	0173-96-0174	1.64	Soil gas	14.4
Cyclohexane	73-02089	0173-96-0174	1.38	Soil gas	14.4
Dichlorobenzene[1,4-]	73-02089	0173-96-0174	4.24	Soil gas	14.4
Dichlorodifluoromethane	73-02089	0173-96-0174	1.06	Soil gas	14.4
Ethylbenzene	73-02089	0173-96-0174	1.08	Soil gas	14.4
Heptane	73-02089	0173-96-0174	1.24	Soil gas	14.4
Hexane	73-02089	0173-96-0174	1.04	Soil gas	14.4
Methylheptane[2-]	73-02089	0173-96-0174	1.36	Soil gas	14.4
Methylheptane[3-]	73-02089	0173-96-0174	1.9	Soil gas	14.4
Nonane[1-]	73-02089	0173-96-0174	38.9	Soil gas	14.4
Octane[n-]	73-02089	0173-96-0174	3.5	Soil gas	14.4
Pinene[alpha-]	73-02089	0173-96-0174	1.32	Soil gas	14.4
Pinene[beta-]	73-02089	0173-96-0174	1.72	Soil gas	14.4
Propylene	73-02089	0173-96-0174	6.2	Soil gas	14.4
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0174	1.7	Soil gas	14.4
Vinyl Chloride	73-02089	0173-96-0174	1.66	Soil gas	14.4
Xylene[1,3-]	73-02089	0173-96-0174	1.08	Soil gas	14.4
Benzene	73-02068	0173-96-0175	39	Soil gas	309.6
Butadiene[1,3-]	73-02068	0173-96-0175	7.1	Soil gas	309.6
Butane[n-]	73-02068	0173-96-0175	200	Soil gas	309.6
Butanone[2-]	73-02068	0173-96-0175	140	Soil gas	309.6
Butene[1-]	73-02068	0173-96-0175	125	Soil gas	309.6
Butene[cis-2-]	73-02068	0173-96-0175	5.5	Soil gas	309.6
Butene[trans-2-]	73-02068	0173-96-0175	134	Soil gas	309.6
Chlorobenzene	73-02068	0173-96-0175	74.6	Soil gas	309.6
Chlorodifluoromethane	73-02068	0173-96-0175	1530	Soil gas	309.6
Chloroethane	73-02068	0173-96-0175	39	Soil gas	309.6
Chloroform	73-02068	0173-96-0175	6	Soil gas	309.6
Cyclohexane	73-02068	0173-96-0175	137	Soil gas	309.6
Dibromoethane[1,2-]	73-02068	0173-96-0175	31.5	Soil gas	309.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02068	0173-96-0175	107	Soil gas	309.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0175	216	Soil gas	309.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichlorodifluoromethane	73-02068	0173-96-0175	649	Soil gas	309.6
Dichloroethane[1,1-]	73-02068	0173-96-0175	13.8	Soil gas	309.6
Dichloroethane[1,2-]	73-02068	0173-96-0175	13.6	Soil gas	309.6
Dichloroethene[1,1-]	73-02068	0173-96-0175	16.6	Soil gas	309.6
Dichloroethene[cis-1,2-]	73-02068	0173-96-0175	3890	Soil gas	309.6
Dichloroethene[trans-1,2-]	73-02068	0173-96-0175	58.7	Soil gas	309.6
Diethyl Ether	73-02068	0173-96-0175	72	Soil gas	309.6
Dimethylbutane[2,2-]	73-02068	0173-96-0175	54.9	Soil gas	309.6
Dimethylbutane[2,3-]	73-02068	0173-96-0175	28.1	Soil gas	309.6
Dimethylpentane[2,3-]	73-02068	0173-96-0175	19.7	Soil gas	309.6
Ethylbenzene	73-02068	0173-96-0175	396	Soil gas	309.6
Heptane	73-02068	0173-96-0175	173	Soil gas	309.6
Hexane	73-02068	0173-96-0175	110	Soil gas	309.6
Isobutane	73-02068	0173-96-0175	1090	Soil gas	309.6
Isooctane	73-02068	0173-96-0175	19	Soil gas	309.6
Isopropylbenzene	73-02068	0173-96-0175	34.8	Soil gas	309.6
Methyl-1-butene[3-]	73-02068	0173-96-0175	45.5	Soil gas	309.6
Methyl-1-pentene[2-]	73-02068	0173-96-0175	12.4	Soil gas	309.6
Methylcyclohexane	73-02068	0173-96-0175	201	Soil gas	309.6
Methylcyclopentane	73-02068	0173-96-0175	59.2	Soil gas	309.6
Methylene Chloride	73-02068	0173-96-0175	96.1	Soil gas	309.6
Methylheptane[2-]	73-02068	0173-96-0175	95.9	Soil gas	309.6
Methylheptane[3-]	73-02068	0173-96-0175	119	Soil gas	309.6
Methylhexane[2-]	73-02068	0173-96-0175	6.7	Soil gas	309.6
Methylhexane[3-]	73-02068	0173-96-0175	45.9	Soil gas	309.6
Methylpentane[2-]	73-02068	0173-96-0175	46.5	Soil gas	309.6
Methylpentane[3-]	73-02068	0173-96-0175	48.7	Soil gas	309.6
Nonane[1-]	73-02068	0173-96-0175	679	Soil gas	309.6
Octane[n-]	73-02068	0173-96-0175	264	Soil gas	309.6
Pentane	73-02068	0173-96-0175	50.8	Soil gas	309.6
Pentene[1-]	73-02068	0173-96-0175	83.1	Soil gas	309.6
Pinene[alpha-]	73-02068	0173-96-0175	282	Soil gas	309.6
Pinene[beta-]	73-02068	0173-96-0175	2140	Soil gas	309.6
Propylbenzene[1-]	73-02068	0173-96-0175	46.2	Soil gas	309.6
Propylene	73-02068	0173-96-0175	1630	Soil gas	309.6
Styrene	73-02068	0173-96-0175	9.1	Soil gas	309.6
Tetrachloroethene	73-02068	0173-96-0175	542	Soil gas	309.6
Tetrahydrofuran	73-02068	0173-96-0175	251	Soil gas	309.6
Toluene	73-02068	0173-96-0175	948	Soil gas	309.6
Trichloroethane[1,1,1-]	73-02068	0173-96-0175	8.1	Soil gas	309.6
Trichloroethene	73-02068	0173-96-0175	141	Soil gas	309.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0175	167	Soil gas	309.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0175	63	Soil gas	309.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0175	65.9	Soil gas	309.6
Vinyl Chloride	73-02068	0173-96-0175	271	Soil gas	309.6
Xylene[1,2-]	73-02068	0173-96-0175	152	Soil gas	309.6
Xylene[1,3-]	73-02068	0173-96-0175	1090	Soil gas	309.6
Benzene	73-02068	0173-96-0176	11.8	Soil gas	15.6
Butane[n-]	73-02068	0173-96-0176	44	Soil gas	15.6

TABLE 2.3.43-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Butene[1-]	73-02068	0173-96-0176	59.3	Soil gas	15.6
Butene[cis-2-]	73-02068	0173-96-0176	2.22	Soil gas	15.6
Butene[trans-2-]	73-02068	0173-96-0176	2.08	Soil gas	15.6
Chlorobenzene	73-02068	0173-96-0176	56.9	Soil gas	15.6
Chlorodifluoromethane	73-02068	0173-96-0176	205	Soil gas	15.6
Chloroethane	73-02068	0173-96-0176	5.36	Soil gas	15.6
Cyclohexane	73-02068	0173-96-0176	24	Soil gas	15.6
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02068	0173-96-0176	7.92	Soil gas	15.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0176	152	Soil gas	15.6
Dichlorodifluoromethane	73-02068	0173-96-0176	25.2	Soil gas	15.6
Dichloroethene[1,1-]	73-02068	0173-96-0176	6.28	Soil gas	15.6
Dichloroethene[cis-1,2-]	73-02068	0173-96-0176	1250	Soil gas	15.6
Dichloroethene[trans-1,2-]	73-02068	0173-96-0176	24.2	Soil gas	15.6
Diethyl Ether	73-02068	0173-96-0176	29.6	Soil gas	15.6
Dimethylbutane[2,2-]	73-02068	0173-96-0176	19.2	Soil gas	15.6
Dimethylbutane[2,3-]	73-02068	0173-96-0176	7.7	Soil gas	15.6
Dimethylpentane[2,3-]	73-02068	0173-96-0176	4.72	Soil gas	15.6
Ethylbenzene	73-02068	0173-96-0176	155	Soil gas	15.6
Heptane	73-02068	0173-96-0176	93.1	Soil gas	15.6
Hexane	73-02068	0173-96-0176	59.6	Soil gas	15.6
Hexene[cis-3-]	73-02068	0173-96-0176	1.76	Soil gas	15.6
Isobutane	73-02068	0173-96-0176	262	Soil gas	15.6
Isooctane	73-02068	0173-96-0176	5.38	Soil gas	15.6
Isopropylbenzene	73-02068	0173-96-0176	12	Soil gas	15.6
Methyl-1-butene[3-]	73-02068	0173-96-0176	13.7	Soil gas	15.6
Methyl-1-pentene[2-]	73-02068	0173-96-0176	4.36	Soil gas	15.6
Methyl-2-butene[2-]	73-02068	0173-96-0176	8.26	Soil gas	15.6
Methylcyclohexane	73-02068	0173-96-0176	91.6	Soil gas	15.6
Methylcyclopentane	73-02068	0173-96-0176	26.2	Soil gas	15.6
Methylene Chloride	73-02068	0173-96-0176	17.8	Soil gas	15.6
Methylheptane[2-]	73-02068	0173-96-0176	76	Soil gas	15.6
Methylheptane[3-]	73-02068	0173-96-0176	112	Soil gas	15.6
Methylhexane[2-]	73-02068	0173-96-0176	1.14	Soil gas	15.6
Methylhexane[3-]	73-02068	0173-96-0176	16.4	Soil gas	15.6
Methylpentane[2-]	73-02068	0173-96-0176	15.8	Soil gas	15.6
Methylpentane[3-]	73-02068	0173-96-0176	18.2	Soil gas	15.6
Nonane[1-]	73-02068	0173-96-0176	524	Soil gas	15.6
Octane[n-]	73-02068	0173-96-0176	25.4	Soil gas	15.6
Pentane	73-02068	0173-96-0176	12.9	Soil gas	15.6
Pentene[1-]	73-02068	0173-96-0176	20.3	Soil gas	15.6
Pinene[alpha-]	73-02068	0173-96-0176	401	Soil gas	15.6
Pinene[beta-]	73-02068	0173-96-0176	731	Soil gas	15.6
Propylbenzene[1-]	73-02068	0173-96-0176	10.5	Soil gas	15.6
Propylene	73-02068	0173-96-0176	315	Soil gas	15.6
Styrene	73-02068	0173-96-0176	1.7	Soil gas	15.6
Tetrachloroethene	73-02068	0173-96-0176	62.9	Soil gas	15.6
Toluene	73-02068	0173-96-0176	314	Soil gas	15.6
Trichloroethene	73-02068	0173-96-0176	23.3	Soil gas	15.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0176	18.5	Soil gas	15.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0176	14.6	Soil gas	15.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0176	38.9	Soil gas	15.6
Vinyl Chloride	73-02068	0173-96-0176	102	Soil gas	15.6
Xylene[1,2-]	73-02068	0173-96-0176	130	Soil gas	15.6
Xylene[1,3-]	73-02068	0173-96-0176	443	Soil gas	15.6
Acetone	73-02071	0173-96-0177	7740	Soil gas	228
Benzene	73-02071	0173-96-0177	60	Soil gas	228
Butane[n-]	73-02071	0173-96-0177	94.9	Soil gas	228
Butanone[2-]	73-02071	0173-96-0177	23500	Soil gas	228
Butene[1-]	73-02071	0173-96-0177	704	Soil gas	228
Butene[cis-2-]	73-02071	0173-96-0177	16.2	Soil gas	228
Butene[trans-2-]	73-02071	0173-96-0177	18.1	Soil gas	228
Chlorobenzene	73-02071	0173-96-0177	34.6	Soil gas	228
Chlorodifluoromethane	73-02071	0173-96-0177	111	Soil gas	228
Cyclohexane	73-02071	0173-96-0177	74.1	Soil gas	228
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02071	0173-96-0177	18.2	Soil gas	228
Dichlorobenzene[1,2-]	73-02071	0173-96-0177	27.7	Soil gas	228
Dichlorobenzene[1,4-]	73-02071	0173-96-0177	670	Soil gas	228
Dichlorodifluoromethane	73-02071	0173-96-0177	83.8	Soil gas	228
Dichloroethene[cis-1,2-]	73-02071	0173-96-0177	38.7	Soil gas	228
Dimethylbutane[2,2-]	73-02071	0173-96-0177	66.1	Soil gas	228
Ethylbenzene	73-02071	0173-96-0177	1750	Soil gas	228
Heptane	73-02071	0173-96-0177	41.1	Soil gas	228
Hexane	73-02071	0173-96-0177	305	Soil gas	228
Hexanone[2-]	73-02071	0173-96-0177	200	Soil gas	228
Isobutane	73-02071	0173-96-0177	240	Soil gas	228
Isooctane	73-02071	0173-96-0177	5.5	Soil gas	228
Isoprene	73-02071	0173-96-0177	109	Soil gas	228
Isopropylbenzene	73-02071	0173-96-0177	263	Soil gas	228
Methyl-1-butene[3-]	73-02071	0173-96-0177	74.6	Soil gas	228
Methyl-2-butene[2-]	73-02071	0173-96-0177	81.2	Soil gas	228
Methyl-2-pentanone[4-]	73-02071	0173-96-0177	2130	Soil gas	228
Methylcyclohexane	73-02071	0173-96-0177	97.1	Soil gas	228
Methylcyclopentane	73-02071	0173-96-0177	248	Soil gas	228
Methylheptane[2-]	73-02071	0173-96-0177	80.5	Soil gas	228
Methylheptane[3-]	73-02071	0173-96-0177	10.5	Soil gas	228
Methylhexane[2-]	73-02071	0173-96-0177	6	Soil gas	228
Methylhexane[3-]	73-02071	0173-96-0177	17	Soil gas	228
Methylpentane[2-]	73-02071	0173-96-0177	59.6	Soil gas	228
Methylpentane[3-]	73-02071	0173-96-0177	88.2	Soil gas	228
Nonane[1-]	73-02071	0173-96-0177	1650	Soil gas	228
Octane[n-]	73-02071	0173-96-0177	35.6	Soil gas	228
Pentane	73-02071	0173-96-0177	29.4	Soil gas	228
Pentene[1-]	73-02071	0173-96-0177	187	Soil gas	228
Pentene[cis-2-]	73-02071	0173-96-0177	84.9	Soil gas	228
Pinene[alpha-]	73-02071	0173-96-0177	821	Soil gas	228
Pinene[beta-]	73-02071	0173-96-0177	17000	Soil gas	228

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Propanol[2-]	73-02071	0173-96-0177	873	Soil gas	228
Propylbenzene[1-]	73-02071	0173-96-0177	391	Soil gas	228
Propylene	73-02071	0173-96-0177	690	Soil gas	228
Styrene	73-02071	0173-96-0177	49.2	Soil gas	228
Tetrachloroethene	73-02071	0173-96-0177	9.4	Soil gas	228
Tetrahydrofuran	73-02071	0173-96-0177	611	Soil gas	228
Toluene	73-02071	0173-96-0177	10800	Soil gas	228
Trichloroethene	73-02071	0173-96-0177	12.8	Soil gas	228
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0177	743	Soil gas	228
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0177	252	Soil gas	228
Vinyl Chloride	73-02071	0173-96-0177	31.5	Soil gas	228
Xylenes[1,2-]	73-02071	0173-96-0177	1670	Soil gas	228
Xylenes[1,3-]	73-02071	0173-96-0177	3100	Soil gas	228
Acetone	73-02071	0173-96-0178	77.9	Soil gas	12
Benzene	73-02071	0173-96-0178	49.5	Soil gas	12
Butane[n-]	73-02071	0173-96-0178	139	Soil gas	12
Butanone[2-]	73-02071	0173-96-0178	148	Soil gas	12
Butene[1-]	73-02071	0173-96-0178	589	Soil gas	12
Butene[cis-2-]	73-02071	0173-96-0178	26.3	Soil gas	12
Butene[trans-2-]	73-02071	0173-96-0178	34.3	Soil gas	12
Chlorobenzene	73-02071	0173-96-0178	22.1	Soil gas	12
Chlorodifluoromethane	73-02071	0173-96-0178	306	Soil gas	12
Chloroethane	73-02071	0173-96-0178	15.7	Soil gas	12
Cyclohexane	73-02071	0173-96-0178	322	Soil gas	12
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02071	0173-96-0178	15.1	Soil gas	12
Dichlorobenzene[1,4-]	73-02071	0173-96-0178	231	Soil gas	12
Dichlorodifluoromethane	73-02071	0173-96-0178	20.5	Soil gas	12
Dichloroethene[cis-1,2-]	73-02071	0173-96-0178	383	Soil gas	12
Dimethylbutane[2,2-]	73-02071	0173-96-0178	55.9	Soil gas	12
Dimethylbutane[2,3-]	73-02071	0173-96-0178	108	Soil gas	12
Dimethylpentane[2,3-]	73-02071	0173-96-0178	79.3	Soil gas	12
Ethanol	73-02071	0173-96-0178	119	Soil gas	12
Ethylbenzene	73-02071	0173-96-0178	1900	Soil gas	12
Heptane	73-02071	0173-96-0178	230	Soil gas	12
Hexane	73-02071	0173-96-0178	233	Soil gas	12
Hexene[cis-3-]	73-02071	0173-96-0178	16.8	Soil gas	12
Isobutane	73-02071	0173-96-0178	958	Soil gas	12
Isopentane	73-02071	0173-96-0178	31.3	Soil gas	12
Isoprene	73-02071	0173-96-0178	7.6	Soil gas	12
Isopropylbenzene	73-02071	0173-96-0178	134	Soil gas	12
Methanol	73-02071	0173-96-0178	226	Soil gas	12
Methyl-1-butene[3-]	73-02071	0173-96-0178	41.7	Soil gas	12
Methyl-1-pentene[2-]	73-02071	0173-96-0178	21.2	Soil gas	12
Methyl-2-butene[2-]	73-02071	0173-96-0178	34.6	Soil gas	12
Methylcyclohexane	73-02071	0173-96-0178	143	Soil gas	12
Methylcyclopentane	73-02071	0173-96-0178	662	Soil gas	12
Methylene Chloride	73-02071	0173-96-0178	57.1	Soil gas	12
Methylheptane[2-]	73-02071	0173-96-0178	104	Soil gas	12

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylheptane[3-]	73-02071	0173-96-0178	138	Soil gas	12
Methylhexane[2-]	73-02071	0173-96-0178	30.9	Soil gas	12
Methylhexane[3-]	73-02071	0173-96-0178	150	Soil gas	12
Methylpentane[2-]	73-02071	0173-96-0178	52	Soil gas	12
Methylpentane[3-]	73-02071	0173-96-0178	69.6	Soil gas	12
Nonane[1-]	73-02071	0173-96-0178	7740	Soil gas	12
Octane[n-]	73-02071	0173-96-0178	804	Soil gas	12
Pentane	73-02071	0173-96-0178	89.6	Soil gas	12
Pentene[1-]	73-02071	0173-96-0178	348	Soil gas	12
Pentene[cis-2-]	73-02071	0173-96-0178	13	Soil gas	12
Pentene[trans-2-]	73-02071	0173-96-0178	26.2	Soil gas	12
Pinene[alpha-]	73-02071	0173-96-0178	492	Soil gas	12
Pinene[beta-]	73-02071	0173-96-0178	3270	Soil gas	12
Propylbenzene[1-]	73-02071	0173-96-0178	223	Soil gas	12
Propylene	73-02071	0173-96-0178	784	Soil gas	12
Styrene	73-02071	0173-96-0178	20	Soil gas	12
Tetrachloroethene	73-02071	0173-96-0178	6.1	Soil gas	12
Tetrahydrofuran	73-02071	0173-96-0178	250	Soil gas	12
Toluene	73-02071	0173-96-0178	520	Soil gas	12
Trichloroethene	73-02071	0173-96-0178	13.7	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0178	596	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0178	350	Soil gas	12
Trimethylpentane[2,3,4-]	73-02071	0173-96-0178	74.7	Soil gas	12
Vinyl Chloride	73-02071	0173-96-0178	54.4	Soil gas	12
Xylene[1,2-]	73-02071	0173-96-0178	708	Soil gas	12
Xylene[1,3-]	73-02071	0173-96-0178	3570	Soil gas	12
Acetone	73-02071	0173-96-0179	107	Soil gas	12
Benzene	73-02071	0173-96-0179	54.1	Soil gas	12
Butane[n-]	73-02071	0173-96-0179	161	Soil gas	12
Butanone[2-]	73-02071	0173-96-0179	268	Soil gas	12
Butene[1-]	73-02071	0173-96-0179	662	Soil gas	12
Butene[cis-2-]	73-02071	0173-96-0179	30.7	Soil gas	12
Butene[trans-2-]	73-02071	0173-96-0179	39.6	Soil gas	12
Chlorobenzene	73-02071	0173-96-0179	25.3	Soil gas	12
Chlorodifluoromethane	73-02071	0173-96-0179	345	Soil gas	12
Chloroethane	73-02071	0173-96-0179	17.2	Soil gas	12
Cyclohexane	73-02071	0173-96-0179	369	Soil gas	12
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02071	0173-96-0179	17.2	Soil gas	12
Dichlorobenzene[1,4-]	73-02071	0173-96-0179	403	Soil gas	12
Dichlorodifluoromethane	73-02071	0173-96-0179	23.4	Soil gas	12
Dichloroethene[cis-1,2-]	73-02071	0173-96-0179	422	Soil gas	12
Dimethylbutane[2,2-]	73-02071	0173-96-0179	76.3	Soil gas	12
Dimethylbutane[2,3-]	73-02071	0173-96-0179	123	Soil gas	12
Dimethylpentane[2,3-]	73-02071	0173-96-0179	89.6	Soil gas	12
Ethanol	73-02071	0173-96-0179	104	Soil gas	12
Ethylbenzene	73-02071	0173-96-0179	2270	Soil gas	12
Heptane	73-02071	0173-96-0179	259	Soil gas	12
Hexano	73-02071	0173-96-0179	258	Soil gas	12

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Isobutane	73-02071	0173-96-0179	1030	Soil gas	12
Isopentane	73-02071	0173-96-0179	37.3	Soil gas	12
Isoprene	73-02071	0173-96-0179	8.5	Soil gas	12
Isopropylbenzene	73-02071	0173-96-0179	236	Soil gas	12
Methyl-1-butene[3-]	73-02071	0173-96-0179	47.4	Soil gas	12
Methyl-1-pentene[2-]	73-02071	0173-96-0179	25.3	Soil gas	12
Methyl-2-butene[2-]	73-02071	0173-96-0179	40.7	Soil gas	12
Methylcyclohexane	73-02071	0173-96-0179	165	Soil gas	12
Methylcyclopentane	73-02071	0173-96-0179	753	Soil gas	12
Methylheptane[2-]	73-02071	0173-96-0179	113	Soil gas	12
Methylheptane[3-]	73-02071	0173-96-0179	149	Soil gas	12
Methylhexane[2-]	73-02071	0173-96-0179	34.8	Soil gas	12
Methylhexane[3-]	73-02071	0173-96-0179	173	Soil gas	12
Methylpentane[2-]	73-02071	0173-96-0179	58.9	Soil gas	12
Methylpentane[3-]	73-02071	0173-96-0179	76.9	Soil gas	12
Nonane[1-]	73-02071	0173-96-0179	9150	Soil gas	12
Octane[n-]	73-02071	0173-96-0179	858	Soil gas	12
Pentane	73-02071	0173-96-0179	103	Soil gas	12
Pentene[1-]	73-02071	0173-96-0179	401	Soil gas	12
Pentene[cis-2-]	73-02071	0173-96-0179	14.7	Soil gas	12
Pentene[trans-2-]	73-02071	0173-96-0179	29.9	Soil gas	12
Pinene[alpha-]	73-02071	0173-96-0179	866	Soil gas	12
Pinene[beta-]	73-02071	0173-96-0179	2680	Soil gas	12
Propylbenzene[1-]	73-02071	0173-96-0179	394	Soil gas	12
Propylene	73-02071	0173-96-0179	894	Soil gas	12
Styrene	73-02071	0173-96-0179	23.3	Soil gas	12
Tetrachloroethene	73-02071	0173-96-0179	6.1	Soil gas	12
Tetrahydrofuran	73-02071	0173-96-0179	296	Soil gas	12
Toluene	73-02071	0173-96-0179	612	Soil gas	12
Trichloroethene	73-02071	0173-96-0179	14.7	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0179	1040	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0179	613	Soil gas	12
Trimethylpentane[2,3,4-]	73-02071	0173-96-0179	79.9	Soil gas	12
Vinyl Chloride	73-02071	0173-96-0179	60.8	Soil gas	12
Xylene[1,2-]	73-02071	0173-96-0179	794	Soil gas	12
Xylene[1,3-]	73-02071	0173-96-0179	4330	Soil gas	12
Benzene	73-02061	0173-96-0180	1.42	Soil gas	900
Butane[n-]	73-02061	0173-96-0180	19.4	Soil gas	900
Butene[1-]	73-02061	0173-96-0180	9.46	Soil gas	900
Butene[cis-2-]	73-02061	0173-96-0180	2.06	Soil gas	900
Butene[trans-2-]	73-02061	0173-96-0180	2.5	Soil gas	900
Dichlorodifluoromethane	73-02061	0173-96-0180	10.3	Soil gas	900
Ethylbenzene	73-02061	0173-96-0180	1.12	Soil gas	900
Heptane	73-02061	0173-96-0180	3.04	Soil gas	900
Hexane	73-02061	0173-96-0180	5.44	Soil gas	900
Isobutane	73-02061	0173-96-0180	7.56	Soil gas	900
Isopentane	73-02061	0173-96-0180	6.14	Soil gas	900
Isoprene	73-02061	0173-96-0180	1.72	Soil gas	900
Methyl-2-butene[2-]	73-02061	0173-96-0180	1.38	Soil gas	900

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Toluene	73-02061	0173-96-0181	33.1	Soil gas	330
Trichlorobenzene[1,2,4-]	73-02061	0173-96-0181	8.2	Soil gas	330
Trichloroethane[1,1,1-]	73-02061	0173-96-0181	5.7	Soil gas	330
Trimethylbenzene[1,2,4-]	73-02061	0173-96-0181	13.8	Soil gas	330
Trimethylbenzene[1,3,5-]	73-02061	0173-96-0181	5.6	Soil gas	330
Xylene[1,2-]	73-02061	0173-96-0181	9.8	Soil gas	330
Xylene[1,3-]	73-02061	0173-96-0181	37	Soil gas	330
Butene[1-]	73-02061	0173-96-0182	4.44	Soil gas	30
Chloroform	73-02061	0173-96-0182	1.76	Soil gas	30
Cyclohexane	73-02061	0173-96-0182	1.04	Soil gas	30
Dichlorodifluoromethane	73-02061	0173-96-0182	43.9	Soil gas	30
Dimethylbutane[2,2-]	73-02061	0173-96-0182	1.6	Soil gas	30
Isobutane	73-02061	0173-96-0182	29	Soil gas	30
Isopentane	73-02061	0173-96-0182	7.56	Soil gas	30
Methylpentane[2-]	73-02061	0173-96-0182	2.82	Soil gas	30
Methylpentane[3-]	73-02061	0173-96-0182	2.74	Soil gas	30
Pinene[beta-]	73-02061	0173-96-0182	1.06	Soil gas	30
Propylene	73-02061	0173-96-0182	28.7	Soil gas	30
Tetrachloroethene	73-02061	0173-96-0182	2.84	Soil gas	30
Trichlorofluoromethane	73-02061	0173-96-0182	5.9	Soil gas	30
Benzene	73-02067	0173-96-0183	183	Soil gas	280.8
Butadiene[1,3-]	73-02067	0173-96-0183	24.3	Soil gas	280.8
Butane[n-]	73-02067	0173-96-0183	533	Soil gas	280.8
Butanol[1-]	73-02067	0173-96-0183	115	Soil gas	280.8
Butanone[2-]	73-02067	0173-96-0183	53.6	Soil gas	280.8
Butene[1-]	73-02067	0173-96-0183	563	Soil gas	280.8
Butene[cis-2-]	73-02067	0173-96-0183	47	Soil gas	280.8
Butene[trans-2-]	73-02067	0173-96-0183	603	Soil gas	280.8
Chlorobenzene	73-02067	0173-96-0183	12.4	Soil gas	280.8
Chlorodifluoromethane	73-02067	0173-96-0183	4380	Soil gas	280.8
Chloroethane	73-02067	0173-96-0183	146	Soil gas	280.8
Cyclohexane	73-02067	0173-96-0183	644	Soil gas	280.8
Dibromoethane[1,2-]	73-02067	0173-96-0183	55.4	Soil gas	280.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02067	0173-96-0183	282	Soil gas	280.8
Dichlorobenzene[1,4-]	73-02067	0173-96-0183	13.5	Soil gas	280.8
Dichlorodifluoromethane	73-02067	0173-96-0183	1420	Soil gas	280.8
Dichloroethane[1,1-]	73-02067	0173-96-0183	32.2	Soil gas	280.8
Dichloroethane[1,2-]	73-02067	0173-96-0183	29.1	Soil gas	280.8
Dichloroethene[1,1-]	73-02067	0173-96-0183	60.1	Soil gas	280.8
Dichloroethene[cis-1,2-]	73-02067	0173-96-0183	3680	Soil gas	280.8
Dichloroethene[trans-1,2-]	73-02067	0173-96-0183	86.3	Soil gas	280.8
Dichloropropane[1,2-]	73-02067	0173-96-0183	6.6	Soil gas	280.8
Diethyl Ether	73-02067	0173-96-0183	81.3	Soil gas	280.8
Dimethylbutane[2,2-]	73-02067	0173-96-0183	84.8	Soil gas	280.8
Dimethylbutane[2,3-]	73-02067	0173-96-0183	312	Soil gas	280.8
Dimethylpentane[2,3-]	73-02067	0173-96-0183	190	Soil gas	280.8
Ethanol	73-02067	0173-96-0183	397	Soil gas	280.8
Ethylbenzene	73-02067	0173-96-0183	575	Soil gas	280.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Heptane	73-02067	0173-96-0183	3100	Soil gas	280.8
Hexane	73-02067	0173-96-0183	472	Soil gas	280.8
Hexene(cis-3-)	73-02067	0173-96-0183	16.1	Soil gas	280.8
Isobutane	73-02067	0173-96-0183	4040	Soil gas	280.8
Isooctane	73-02067	0173-96-0183	284	Soil gas	280.8
Isopentane	73-02067	0173-96-0183	160	Soil gas	280.8
Isoprene	73-02067	0173-96-0183	8.4	Soil gas	280.8
Isopropylbenzene	73-02067	0173-96-0183	31.5	Soil gas	280.8
Methyl-1-butene[3-]	73-02067	0173-96-0183	101	Soil gas	280.8
Methyl-1-pentene[2-]	73-02067	0173-96-0183	31.2	Soil gas	280.8
Methyl-2-butene[2-]	73-02067	0173-96-0183	58.2	Soil gas	280.8
Methylcyclohexane	73-02067	0173-96-0183	3220	Soil gas	280.8
Methylcyclopentane	73-02067	0173-96-0183	316	Soil gas	280.8
Methylene Chloride	73-02067	0173-96-0183	263	Soil gas	280.8
Methylheptane[2-]	73-02067	0173-96-0183	1600	Soil gas	280.8
Methylheptane[3-]	73-02067	0173-96-0183	1670	Soil gas	280.8
Methylhexane[2-]	73-02067	0173-96-0183	39.6	Soil gas	280.8
Methylhexane[3-]	73-02067	0173-96-0183	484	Soil gas	280.8
Methylpentane[2-]	73-02067	0173-96-0183	214	Soil gas	280.8
Methylpentane[3-]	73-02067	0173-96-0183	186	Soil gas	280.8
Nonane[1-]	73-02067	0173-96-0183	1480	Soil gas	280.8
Octane[n-]	73-02067	0173-96-0183	2550	Soil gas	280.8
Pentane	73-02067	0173-96-0183	293	Soil gas	280.8
Pentene[1-]	73-02067	0173-96-0183	175	Soil gas	280.8
Pentene(cis-2-)	73-02067	0173-96-0183	62.2	Soil gas	280.8
Pentene(trans-2-)	73-02067	0173-96-0183	25.3	Soil gas	280.8
Pinene(alpha-)	73-02067	0173-96-0183	280	Soil gas	280.8
Pinene(beta-)	73-02067	0173-96-0183	314	Soil gas	280.8
Propylbenzene[1-]	73-02067	0173-96-0183	24.7	Soil gas	280.8
Propylene	73-02067	0173-96-0183	3030	Soil gas	280.8
Tetrachloroethene	73-02067	0173-96-0183	289	Soil gas	280.8
Toluene	73-02067	0173-96-0183	1330	Soil gas	280.8
Trichloroethane[1,1,1-]	73-02067	0173-96-0183	18.8	Soil gas	280.8
Trichloroethene	73-02067	0173-96-0183	123	Soil gas	280.8
Trichlorofluoromethane	73-02067	0173-96-0183	9.5	Soil gas	280.8
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0183	49.2	Soil gas	280.8
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0183	27.5	Soil gas	280.8
Trimethylpentane[2,3,4-]	73-02067	0173-96-0183	463	Soil gas	280.8
Vinyl Chloride	73-02067	0173-96-0183	1090	Soil gas	280.8
Xylene[1,2-]	73-02067	0173-96-0183	346	Soil gas	280.8
Xylene[1,3-]	73-02067	0173-96-0183	1520	Soil gas	280.8
Benzene	73-02067	0173-96-0184	68.2	Soil gas	24
Butadiene[1,3-]	73-02067	0173-96-0184	10.3	Soil gas	24
Butane[n-]	73-02067	0173-96-0184	76.9	Soil gas	24
Butene[1-]	73-02067	0173-96-0184	234	Soil gas	24
Butene(cis-2-)	73-02067	0173-96-0184	17.3	Soil gas	24
Butene(trans-2-)	73-02067	0173-96-0184	251	Soil gas	24
Chlorodifluoromethane	73-02067	0173-96-0184	735	Soil gas	24
Chloroethane	73-02067	0173-96-0184	24.2	Soil gas	24

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Cyclohexane	73-02067	0173-96-0184	168	Soil gas	24
Dibromoethane[1,2-]	73-02067	0173-96-0184	13.5	Soil gas	24
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02067	0173-96-0184	40.1	Soil gas	24
Dichlorobenzene[1,4-]	73-02067	0173-96-0184	7.5	Soil gas	24
Dichloroethane[1,2-]	73-02067	0173-96-0184	6	Soil gas	24
Dichloroethene[1,1-]	73-02067	0173-96-0184	18.3	Soil gas	24
Dichloroethene[cis-1,2-]	73-02067	0173-96-0184	2980	Soil gas	24
Dichloroethene[trans-1,2-]	73-02067	0173-96-0184	116	Soil gas	24
Dimethylbutane[2,2-]	73-02067	0173-96-0184	19.8	Soil gas	24
Dimethylbutane[2,3-]	73-02067	0173-96-0184	55.3	Soil gas	24
Dimethylpentane[2,3-]	73-02067	0173-96-0184	73	Soil gas	24
Ethylbenzene	73-02067	0173-96-0184	46.7	Soil gas	24
Heptane	73-02067	0173-96-0184	586	Soil gas	24
Hexane	73-02067	0173-96-0184	65.6	Soil gas	24
Isobutane	73-02067	0173-96-0184	566	Soil gas	24
Isooctane	73-02067	0173-96-0184	201	Soil gas	24
Isopentane	73-02067	0173-96-0184	32.3	Soil gas	24
Isoprene	73-02067	0173-96-0184	6.3	Soil gas	24
Isopropylbenzene	73-02067	0173-96-0184	6.7	Soil gas	24
Methyl-1-butene[3-]	73-02067	0173-96-0184	26.4	Soil gas	24
Methyl-1-pentene[2-]	73-02067	0173-96-0184	11.7	Soil gas	24
Methyl-2-butene[2-]	73-02067	0173-96-0184	13.7	Soil gas	24
Methylcyclohexane	73-02067	0173-96-0184	1700	Soil gas	24
Methylcyclopentane	73-02067	0173-96-0184	51.4	Soil gas	24
Methylheptane[2-]	73-02067	0173-96-0184	474	Soil gas	24
Methylheptane[3-]	73-02067	0173-96-0184	655	Soil gas	24
Methylhexane[2-]	73-02067	0173-96-0184	10	Soil gas	24
Methylhexane[3-]	73-02067	0173-96-0184	127	Soil gas	24
Methylpentane[2-]	73-02067	0173-96-0184	41	Soil gas	24
Methylpentane[3-]	73-02067	0173-96-0184	34.6	Soil gas	24
Nonane[1-]	73-02067	0173-96-0184	493	Soil gas	24
Octane[n-]	73-02067	0173-96-0184	700	Soil gas	24
Pentane	73-02067	0173-96-0184	75.1	Soil gas	24
Pentene[1-]	73-02067	0173-96-0184	133	Soil gas	24
Pentene[cis-2-]	73-02067	0173-96-0184	5.2	Soil gas	24
Pentene[trans-2-]	73-02067	0173-96-0184	8	Soil gas	24
Pinene[alpha-]	73-02067	0173-96-0184	115	Soil gas	24
Pinene[beta-]	73-02067	0173-96-0184	613	Soil gas	24
Propylbenzene[1-]	73-02067	0173-96-0184	7.8	Soil gas	24
Tetrachloroethene	73-02067	0173-96-0184	534	Soil gas	24
Toluene	73-02067	0173-96-0184	403	Soil gas	24
Trichloroethene	73-02067	0173-96-0184	224	Soil gas	24
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0184	23	Soil gas	24
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0184	22.8	Soil gas	24
Trimethylpentane[2,3,4-]	73-02067	0173-96-0184	421	Soil gas	24
Vinyl Chloride	73-02067	0173-96-0184	168	Soil gas	24
Xylene[1,2-]	73-02067	0173-96-0184	111	Soil gas	24
Xylene[1,3-]	73-02067	0173-96-0184	174	Soil gas	24

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Butene[trans-2-]	73-02056	0173-96-0187	1.58	Soil gas	517.2
Dichlorodifluoromethane	73-02056	0173-96-0187	39.7	Soil gas	517.2
Isobutane	73-02056	0173-96-0187	7.56	Soil gas	517.2
Propylene	73-02056	0173-96-0187	1.06	Soil gas	517.2
Tetrachloroethene	73-02056	0173-96-0187	11.2	Soil gas	517.2
Trichloroethane[1,1,1-]	73-02056	0173-96-0187	1.74	Soil gas	517.2
Trichlorofluoromethane	73-02056	0173-96-0187	55	Soil gas	517.2
Chloroform	73-02069	0173-96-0188	6.14	Soil gas	12
Dichlorodifluoromethane	73-02069	0173-96-0188	1.56	Soil gas	12
Hexane	73-02069	0173-96-0188	2.54	Soil gas	12
Methylene Chloride	73-02069	0173-96-0188	26.8	Soil gas	12
Propylene	73-02069	0173-96-0188	1.64	Soil gas	12
Benzene	73-02069	0173-96-0189	41.2	Soil gas	211.2
Butadiene[1,3-]	73-02069	0173-96-0189	31.3	Soil gas	211.2
Butane[n-]	73-02069	0173-96-0189	629	Soil gas	211.2
Butene[1-]	73-02069	0173-96-0189	827	Soil gas	211.2
Butene[cis-2-]	73-02069	0173-96-0189	44.7	Soil gas	211.2
Butene[trans-2-]	73-02069	0173-96-0189	887	Soil gas	211.2
Chlorodifluoromethane	73-02069	0173-96-0189	1390	Soil gas	211.2
Chloroethane	73-02069	0173-96-0189	21.6	Soil gas	211.2
Cyclohexane	73-02069	0173-96-0189	164	Soil gas	211.2
Dibromoethane[1,2-]	73-02069	0173-96-0189	15.5	Soil gas	211.2
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02069	0173-96-0189	164	Soil gas	211.2
Dichlorobenzene[1,4-]	73-02069	0173-96-0189	5.4	Soil gas	211.2
Dichlorodifluoromethane	73-02069	0173-96-0189	406	Soil gas	211.2
Dichloroethane[1,2-]	73-02069	0173-96-0189	5.6	Soil gas	211.2
Dichloroethene[1,1-]	73-02069	0173-96-0189	9.8	Soil gas	211.2
Dichloroethene[cis-1,2-]	73-02069	0173-96-0189	219	Soil gas	211.2
Dichloroethene[trans-1,2-]	73-02069	0173-96-0189	9.5	Soil gas	211.2
Dimethylbutane[2,2-]	73-02069	0173-96-0189	37.8	Soil gas	211.2
Dimethylbutane[2,3-]	73-02069	0173-96-0189	67.3	Soil gas	211.2
Dimethylpentane[2,3-]	73-02069	0173-96-0189	39.2	Soil gas	211.2
Ethylbenzene	73-02069	0173-96-0189	104	Soil gas	211.2
Heptane	73-02069	0173-96-0189	397	Soil gas	211.2
Hexane	73-02069	0173-96-0189	183	Soil gas	211.2
Hexene[cis-3-]	73-02069	0173-96-0189	19.6	Soil gas	211.2
Isobutane	73-02069	0173-96-0189	6360	Soil gas	211.2
Isooctane	73-02069	0173-96-0189	21.7	Soil gas	211.2
Isopentane	73-02069	0173-96-0189	101	Soil gas	211.2
Isopropylbenzene	73-02069	0173-96-0189	13.9	Soil gas	211.2
Methyl-1-butene[3-]	73-02069	0173-96-0189	75.8	Soil gas	211.2
Methyl-1-pentene[2-]	73-02069	0173-96-0189	26	Soil gas	211.2
Methyl-2-butene[2-]	73-02069	0173-96-0189	58.5	Soil gas	211.2
Methylcyclohexane	73-02069	0173-96-0189	404	Soil gas	211.2
Methylcyclopentane	73-02069	0173-96-0189	101	Soil gas	211.2
Methylheptane[2-]	73-02069	0173-96-0189	105	Soil gas	211.2
Methylheptane[3-]	73-02069	0173-96-0189	108	Soil gas	211.2
Methylhexane[2-]	73-02069	0173-96-0189	12.2	Soil gas	211.2

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Methylhexane[3-]	73-02069	0173-96-0189	104	Soil gas	211.2
Methylpentane[2-]	73-02069	0173-96-0189	106	Soil gas	211.2
Methylpentane[3-]	73-02069	0173-96-0189	97.2	Soil gas	211.2
Nonane[1-]	73-02069	0173-96-0189	1020	Soil gas	211.2
Octane[n-]	73-02069	0173-96-0189	180	Soil gas	211.2
Pentane	73-02069	0173-96-0189	166	Soil gas	211.2
Pentene[1-]	73-02069	0173-96-0189	67.8	Soil gas	211.2
Pentene[cis-2-]	73-02069	0173-96-0189	16.5	Soil gas	211.2
Pinene[alpha-]	73-02069	0173-96-0189	110	Soil gas	211.2
Pinene[beta-]	73-02069	0173-96-0189	106	Soil gas	211.2
Propylbenzene[1-]	73-02069	0173-96-0189	8.4	Soil gas	211.2
Propylene	73-02069	0173-96-0189	1270	Soil gas	211.2
Tetrachloroethene	73-02069	0173-96-0189	19.7	Soil gas	211.2
Toluene	73-02069	0173-96-0189	29.7	Soil gas	211.2
Trichloroethene	73-02069	0173-96-0189	17.6	Soil gas	211.2
Trimethylbenzene[1,2,4-]	73-02069	0173-96-0189	26.5	Soil gas	211.2
Trimethylbenzene[1,3,5-]	73-02069	0173-96-0189	20.2	Soil gas	211.2
Trimethylpentane[2,3,4-]	73-02069	0173-96-0189	44	Soil gas	211.2
Vinyl Chloride	73-02069	0173-96-0189	407	Soil gas	211.2
Xylene[1,2-]	73-02069	0173-96-0189	28.6	Soil gas	211.2
Xylene[1,3-]	73-02069	0173-96-0189	168	Soil gas	211.2
Acetone	73-02069	0173-96-0190	152	Soil gas	211.2
Benzene	73-02069	0173-96-0190	44.8	Soil gas	211.2
Butane[n-]	73-02069	0173-96-0190	666	Soil gas	211.2
Butene[1-]	73-02069	0173-96-0190	878	Soil gas	211.2
Butene[cis-2-]	73-02069	0173-96-0190	47.2	Soil gas	211.2
Butene[trans-2-]	73-02069	0173-96-0190	50.3	Soil gas	211.2
Chlorodifluoromethane	73-02069	0173-96-0190	1390	Soil gas	211.2
Chloroethane	73-02069	0173-96-0190	20.4	Soil gas	211.2
Chloromethane	73-02069	0173-96-0190	29	Soil gas	211.2
Cyclohexane	73-02069	0173-96-0190	179	Soil gas	211.2
Dibromoethane[1,2-]	73-02069	0173-96-0190	20.8	Soil gas	211.2
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02069	0173-96-0190	174	Soil gas	211.2
Dichlorodifluoromethane	73-02069	0173-96-0190	426	Soil gas	211.2
Dichloroethane[1,2-]	73-02069	0173-96-0190	6.3	Soil gas	211.2
Dichloroethene[1,1-]	73-02069	0173-96-0190	9.1	Soil gas	211.2
Dichloroethene[cis-1,2-]	73-02069	0173-96-0190	244	Soil gas	211.2
Dichloroethene[trans-1,2-]	73-02069	0173-96-0190	9.7	Soil gas	211.2
Dimethylbutane[2,2-]	73-02069	0173-96-0190	41.6	Soil gas	211.2
Dimethylbutane[2,3-]	73-02069	0173-96-0190	73.9	Soil gas	211.2
Dimethylpentane[2,3-]	73-02069	0173-96-0190	43.7	Soil gas	211.2
Ethylbenzene	73-02069	0173-96-0190	108	Soil gas	211.2
Heptane	73-02069	0173-96-0190	429	Soil gas	211.2
Hexane	73-02069	0173-96-0190	200	Soil gas	211.2
Hexene[cis-3-]	73-02069	0173-96-0190	20.1	Soil gas	211.2
Isobutane	73-02069	0173-96-0190	6420	Soil gas	211.2
Isooctane	73-02069	0173-96-0190	23.1	Soil gas	211.2
Isopentane	73-02069	0173-96-0190	97.8	Soil gas	211.2

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Isopropylbenzene	73-02069	0173-96-0190	14.7	Soil gas	211.2
Methyl-1-butene[3-]	73-02069	0173-96-0190	77	Soil gas	211.2
Methyl-1-pentene[2-]	73-02069	0173-96-0190	28.4	Soil gas	211.2
Methyl-2-butene[2-]	73-02069	0173-96-0190	56.1	Soil gas	211.2
Methylcyclohexane	73-02069	0173-96-0190	410	Soil gas	211.2
Methylcyclopentane	73-02069	0173-96-0190	112	Soil gas	211.2
Methylheptane[2-]	73-02069	0173-96-0190	113	Soil gas	211.2
Methylheptane[3-]	73-02069	0173-96-0190	118	Soil gas	211.2
Methylhexane[2-]	73-02069	0173-96-0190	13.1	Soil gas	211.2
Methylhexane[3-]	73-02069	0173-96-0190	115	Soil gas	211.2
Methylpentane[2-]	73-02069	0173-96-0190	113	Soil gas	211.2
Methylpentane[3-]	73-02069	0173-96-0190	107	Soil gas	211.2
Nonane[1-]	73-02069	0173-96-0190	1050	Soil gas	211.2
Octane[n-]	73-02069	0173-96-0190	193	Soil gas	211.2
Pentane	73-02069	0173-96-0190	167	Soil gas	211.2
Pentene[1-]	73-02069	0173-96-0190	67.9	Soil gas	211.2
Pentene[cis-2-]	73-02069	0173-96-0190	16.3	Soil gas	211.2
Pentene[trans-2-]	73-02069	0173-96-0190	31.9	Soil gas	211.2
Pinene[alpha-]	73-02069	0173-96-0190	108	Soil gas	211.2
Pinene[beta-]	73-02069	0173-96-0190	66.1	Soil gas	211.2
Propylbenzene[1-]	73-02069	0173-96-0190	9	Soil gas	211.2
Propylene	73-02069	0173-96-0190	1320	Soil gas	211.2
Tetrachloroethene	73-02069	0173-96-0190	23.5	Soil gas	211.2
Toluene	73-02069	0173-96-0190	48.5	Soil gas	211.2
Trichloroethene	73-02069	0173-96-0190	19.3	Soil gas	211.2
Trimethylbenzene[1,2,4-]	73-02069	0173-96-0190	28.3	Soil gas	211.2
Trimethylbenzene[1,3,5-]	73-02069	0173-96-0190	21.2	Soil gas	211.2
Trimethylpentane[2,3,4-]	73-02069	0173-96-0190	44	Soil gas	211.2
Vinyl Chloride	73-02069	0173-96-0190	431	Soil gas	211.2
Xylene[1,2-]	73-02069	0173-96-0190	30.1	Soil gas	211.2
Xylene[1,3-]	73-02069	0173-96-0190	177	Soil gas	211.2
Butene[1-]	73-02056	0173-96-0531	3.58	Soil gas	517.2
Chlorodifluoromethane	73-02056	0173-96-0531	19.5	Soil gas	517.2
Dichlorodifluoromethane	73-02056	0173-96-0531	39.7	Soil gas	517.2
Isobutane	73-02056	0173-96-0531	7.86	Soil gas	517.2
Tetrachloroethene	73-02056	0173-96-0531	7.54	Soil gas	517.2
Trichloroethane[1,1,1-]	73-02056	0173-96-0531	1.18	Soil gas	517.2
Trichlorofluoromethane	73-02056	0173-96-0531	52.8	Soil gas	517.2
Dichlorodifluoromethane	73-01001	0173-96-0532	1.28	Soil gas	482.4
Butene[1-]	73-01001	0173-96-0533	3.88	Soil gas	122.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01002	0173-96-0534	5.48	Soil gas	432
Dichlorodifluoromethane	73-01002	0173-96-0534	81.4	Soil gas	432
Tetrachloroethene	73-01002	0173-96-0534	21.5	Soil gas	432
Trichlorofluoromethane	73-01002	0173-96-0534	2.36	Soil gas	432
Benzene	73-01003	0173-96-0535	9.5	Soil gas	1190.4
Butane[n-]	73-01003	0173-96-0535	29.4	Soil gas	1190.4
Chlorodifluoromethane	73-01003	0173-96-0535	386	Soil gas	1190.4
Chloroethane	73-01003	0173-96-0535	5.8	Soil gas	1190.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Cyclohexane	73-01003	0173-96-0535	27.8	Soil gas	1190.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0535	54.1	Soil gas	1190.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0535	9.1	Soil gas	1190.4
Dichlorodifluoromethane	73-01003	0173-96-0535	532	Soil gas	1190.4
Dichloroethene(cis-1,2-)	73-01003	0173-96-0535	473	Soil gas	1190.4
Dichloroethene(trans-1,2-)	73-01003	0173-96-0535	5.6	Soil gas	1190.4
Dimethylbutane[2,2-]	73-01003	0173-96-0535	7	Soil gas	1190.4
Heptane	73-01003	0173-96-0535	30.5	Soil gas	1190.4
Hexane	73-01003	0173-96-0535	15.2	Soil gas	1190.4
Isobutane	73-01003	0173-96-0535	305	Soil gas	1190.4
Isopentane	73-01003	0173-96-0535	9.3	Soil gas	1190.4
Methyl-1-butene[3-]	73-01003	0173-96-0535	8	Soil gas	1190.4
Methyl-2-butene[2-]	73-01003	0173-96-0535	5.6	Soil gas	1190.4
Methylcyclohexane	73-01003	0173-96-0535	31	Soil gas	1190.4
Methylcyclopentane	73-01003	0173-96-0535	18.3	Soil gas	1190.4
Methylheptane[2-]	73-01003	0173-96-0535	10.1	Soil gas	1190.4
Methylheptane[3-]	73-01003	0173-96-0535	11.2	Soil gas	1190.4
Methylhexane[3-]	73-01003	0173-96-0535	6.7	Soil gas	1190.4
Methylpentane[2-]	73-01003	0173-96-0535	15.4	Soil gas	1190.4
Methylpentane[3-]	73-01003	0173-96-0535	16.1	Soil gas	1190.4
Nonane[1-]	73-01003	0173-96-0535	27.5	Soil gas	1190.4
Octane[n-]	73-01003	0173-96-0535	18.7	Soil gas	1190.4
Pentane	73-01003	0173-96-0535	15.5	Soil gas	1190.4
Pinene[alpha-]	73-01003	0173-96-0535	7.3	Soil gas	1190.4
Propylene	73-01003	0173-96-0535	111	Soil gas	1190.4
Tetrachloroethene	73-01003	0173-96-0535	60.5	Soil gas	1190.4
Trichloroethene	73-01003	0173-96-0535	9.1	Soil gas	1190.4
Trichlorofluoromethane	73-01003	0173-96-0535	9.5	Soil gas	1190.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0535	6.2	Soil gas	1190.4
Vinyl Chloride	73-01003	0173-96-0535	30.3	Soil gas	1190.4
Xylene[1,3-]+Xylene[1,4-]	73-01003	0173-96-0535	7.6	Soil gas	1190.4
Benzene	73-01003	0173-96-0536	14.1	Soil gas	1094.4
Butane[n-]	73-01003	0173-96-0536	47.2	Soil gas	1094.4
Chlorobenzene	73-01003	0173-96-0536	5.9	Soil gas	1094.4
Chlorodifluoromethane	73-01003	0173-96-0536	513	Soil gas	1094.4
Chloroethane	73-01003	0173-96-0536	8.8	Soil gas	1094.4
Cyclohexane	73-01003	0173-96-0536	42.1	Soil gas	1094.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0536	68.4	Soil gas	1094.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0536	13	Soil gas	1094.4
Dichlorodifluoromethane	73-01003	0173-96-0536	649	Soil gas	1094.4
Dichloroethene(cis-1,2-)	73-01003	0173-96-0536	861	Soil gas	1094.4
Dichloroethene(trans-1,2-)	73-01003	0173-96-0536	12.9	Soil gas	1094.4
Dimethylbutane[2,2-]	73-01003	0173-96-0536	11.6	Soil gas	1094.4
Dimethylbutane[2,3-]	73-01003	0173-96-0536	7.7	Soil gas	1094.4
Dimethylpentane[2,3-]	73-01003	0173-96-0536	6.3	Soil gas	1094.4
Heptane	73-01003	0173-96-0536	90.8	Soil gas	1094.4
Hexane	73-01003	0173-96-0536	40.4	Soil gas	1094.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Isobutane	73-01003	0173-96-0536	407	Soil gas	1094.4
Isopentane	73-01003	0173-96-0536	9.3	Soil gas	1094.4
Methanol	73-01003	0173-96-0536	233	Soil gas	1094.4
Methyl-1-butene[3-]	73-01003	0173-96-0536	17.2	Soil gas	1094.4
Methyl-2-butene[2-]	73-01003	0173-96-0536	10.2	Soil gas	1094.4
Methylcyclohexane	73-01003	0173-96-0536	70.8	Soil gas	1094.4
Methylcyclopentane	73-01003	0173-96-0536	32.3	Soil gas	1094.4
Methylheptane[2-]	73-01003	0173-96-0536	26.5	Soil gas	1094.4
Methylheptane[3-]	73-01003	0173-96-0536	33.2	Soil gas	1094.4
Methylhexane[3-]	73-01003	0173-96-0536	15.3	Soil gas	1094.4
Methylpentane[2-]	73-01003	0173-96-0536	31.2	Soil gas	1094.4
Methylpentane[3-]	73-01003	0173-96-0536	27.9	Soil gas	1094.4
Methylstyrene[alpha-]	73-01003	0173-96-0536	5.7	Soil gas	1094.4
Nonane[1-]	73-01003	0173-96-0536	64.1	Soil gas	1094.4
Octane[n-]	73-01003	0173-96-0536	54.1	Soil gas	1094.4
Pentane	73-01003	0173-96-0536	25.8	Soil gas	1094.4
Pinene[alpha-]	73-01003	0173-96-0536	10.4	Soil gas	1094.4
Pinene[beta-]	73-01003	0173-96-0536	7.1	Soil gas	1094.4
Propylene	73-01003	0173-96-0536	182	Soil gas	1094.4
Tetrachloroethene	73-01003	0173-96-0536	63.3	Soil gas	1094.4
Trichloroethene	73-01003	0173-96-0536	11.6	Soil gas	1094.4
Trichlorofluoromethane	73-01003	0173-96-0536	9.1	Soil gas	1094.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0536	10.3	Soil gas	1094.4
Trimethylpentane[2,3,4-]	73-01003	0173-96-0536	12.9	Soil gas	1094.4
Vinyl Chloride	73-01003	0173-96-0536	77.5	Soil gas	1094.4
Xylene[1,3-]+Xylene[1,4-]	73-01003	0173-96-0536	8	Soil gas	1094.4
Benzene	73-01003	0173-96-0537	48.3	Soil gas	470.4
Butane[n-]	73-01003	0173-96-0537	117	Soil gas	470.4
Butene[1-]	73-01003	0173-96-0537	125	Soil gas	470.4
Butene[cis-2-]	73-01003	0173-96-0537	13.5	Soil gas	470.4
Butene[trans-2-]	73-01003	0173-96-0537	11.6	Soil gas	470.4
Chlorobenzene	73-01003	0173-96-0537	16.1	Soil gas	470.4
Chlorodifluoromethane	73-01003	0173-96-0537	1160	Soil gas	470.4
Chloroethane	73-01003	0173-96-0537	36.7	Soil gas	470.4
Cyclohexane	73-01003	0173-96-0537	167	Soil gas	470.4
Cyclopentane	73-01003	0173-96-0537	12.1	Soil gas	470.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0537	112	Soil gas	470.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0537	33.7	Soil gas	470.4
Dichlorodifluoromethane	73-01003	0173-96-0537	751	Soil gas	470.4
Dichloroethane[1,1-]	73-01003	0173-96-0537	5.4	Soil gas	470.4
Dichloroethane[1,2-]	73-01003	0173-96-0537	12	Soil gas	470.4
Dichloroethene[1,1-]	73-01003	0173-96-0537	22	Soil gas	470.4
Dichloroethene[cis-1,2-]	73-01003	0173-96-0537	4290	Soil gas	470.4
Dichloroethene[trans-1,2-]	73-01003	0173-96-0537	94.9	Soil gas	470.4
Dichloropropane[1,2-]	73-01003	0173-96-0537	10.4	Soil gas	470.4
Diethyl Ether	73-01003	0173-96-0537	132	Soil gas	470.4
Dimethylbutane[2,2-]	73-01003	0173-96-0537	46.2	Soil gas	470.4
Dimethylbutane[2,2-]	73-01003	0173-96-0537	46.2	Soil gas	470.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dimethylbutane[2,3-]	73-01003	0173-96-0537	55.3	Soil gas	470.4
Dimethylpentane[2,3-]	73-01003	0173-96-0537	35.6	Soil gas	470.4
Heptane	73-01003	0173-96-0537	750	Soil gas	470.4
Hexane	73-01003	0173-96-0537	242	Soil gas	470.4
Hexene[<i>cis</i> -3-]	73-01003	0173-96-0537	7.9	Soil gas	470.4
Isobutane	73-01003	0173-96-0537	787	Soil gas	470.4
Isooctane	73-01003	0173-96-0537	18.6	Soil gas	470.4
Isopentane	73-01003	0173-96-0537	36.6	Soil gas	470.4
Isopropylbenzene	73-01003	0173-96-0537	6.1	Soil gas	470.4
Methyl-1-butene[3-]	73-01003	0173-96-0537	72.5	Soil gas	470.4
Methyl-1-pentene[2-]	73-01003	0173-96-0537	10.1	Soil gas	470.4
Methylcyclohexane	73-01003	0173-96-0537	398	Soil gas	470.4
Methylcyclopentane	73-01003	0173-96-0537	150	Soil gas	470.4
Methylheptane[2-]	73-01003	0173-96-0537	213	Soil gas	470.4
Methylheptane[3-]	73-01003	0173-96-0537	264	Soil gas	470.4
Methylhexane[2-]	73-01003	0173-96-0537	10.5	Soil gas	470.4
Methylhexane[3-]	73-01003	0173-96-0537	102	Soil gas	470.4
Methylpentane[2-]	73-01003	0173-96-0537	143	Soil gas	470.4
Methylpentane[3-]	73-01003	0173-96-0537	128	Soil gas	470.4
Nonane[1-]	73-01003	0173-96-0537	6.1	Soil gas	470.4
Octane[n-]	73-01003	0173-96-0537	430	Soil gas	470.4
Pentane	73-01003	0173-96-0537	91.5	Soil gas	470.4
Pentene[1-]	73-01003	0173-96-0537	40.6	Soil gas	470.4
Pinene[<i>alpha</i> -]	73-01003	0173-96-0537	17.2	Soil gas	470.4
Propylene	73-01003	0173-96-0537	592	Soil gas	470.4
Tetrachloroethene	73-01003	0173-96-0537	37.4	Soil gas	470.4
Toluene	73-01003	0173-96-0537	6	Soil gas	470.4
Trichloroethene	73-01003	0173-96-0537	31.3	Soil gas	470.4
Trichlorofluoromethane	73-01003	0173-96-0537	11.3	Soil gas	470.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0537	31.4	Soil gas	470.4
Trimethylbenzene[1,3,5-]	73-01003	0173-96-0537	15	Soil gas	470.4
Trimethylpentane[2,3,4-]	73-01003	0173-96-0537	96.9	Soil gas	470.4
Vinyl Chloride	73-01003	0173-96-0537	522	Soil gas	470.4
Xylene[1,2-]	73-01003	0173-96-0537	6.4	Soil gas	470.4
Xylene[1,3-]	73-01003	0173-96-0537	21.9	Soil gas	470.4
Benzene	73-01003	0173-96-0538	79.6	Soil gas	110.4
Butane[n-]	73-01003	0173-96-0538	151	Soil gas	110.4
Butene[1-]	73-01003	0173-96-0538	170	Soil gas	110.4
Butene[<i>cis</i> -2-]	73-01003	0173-96-0538	19.4	Soil gas	110.4
Butene[<i>trans</i> -2-]	73-01003	0173-96-0538	16.7	Soil gas	110.4
Chlorobenzene	73-01003	0173-96-0538	17.4	Soil gas	110.4
Chlorodifluoromethane	73-01003	0173-96-0538	1680	Soil gas	110.4
Chloroethane	73-01003	0173-96-0538	48.8	Soil gas	110.4
Cyclohexane	73-01003	0173-96-0538	255	Soil gas	110.4
Cyclopentane	73-01003	0173-96-0538	14.8	Soil gas	110.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0538	112	Soil gas	110.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0538	21.7	Soil gas	110.4
Dichlorodifluoromethane	73-01003	0173-96-0538	640	Soil gas	110.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-96-0539	64.6	Soil gas	2136
Dichlorodifluoromethane	73-01011	0173-96-0539	871	Soil gas	2136
Dichloroethene[<i>cis</i> -1,2-]	73-01011	0173-96-0539	63.5	Soil gas	2136
Dimethylbutane[2,2-]	73-01011	0173-96-0539	5.6	Soil gas	2136
Isobutane	73-01011	0173-96-0539	295	Soil gas	2136
Methylcyclohexane	73-01011	0173-96-0539	21.8	Soil gas	2136
Nonane[1-]	73-01011	0173-96-0539	5.1	Soil gas	2136
Propylene	73-01011	0173-96-0539	350	Soil gas	2136
Tetrachloroethene	73-01011	0173-96-0539	171	Soil gas	2136
Trichloroethene	73-01011	0173-96-0539	8.4	Soil gas	2136
Trichlorofluoromethane	73-01011	0173-96-0539	46.8	Soil gas	2136
Acetone	73-01011	0173-96-0540	941	Soil gas	1500
Benzene	73-01011	0173-96-0540	18.8	Soil gas	1500
Butane[n-]	73-01011	0173-96-0540	47.3	Soil gas	1500
Butene[1-]	73-01011	0173-96-0540	43.8	Soil gas	1500
Chlorodifluoromethane	73-01011	0173-96-0540	1040	Soil gas	1500
Chloroethane	73-01011	0173-96-0540	14.5	Soil gas	1500
Cyclohexane	73-01011	0173-96-0540	122	Soil gas	1500
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-96-0540	73.5	Soil gas	1500
Dichlorobenzene[1,4-]	73-01011	0173-96-0540	10.7	Soil gas	1500
Dichlorodifluoromethane	73-01011	0173-96-0540	789	Soil gas	1500
Dichloroethene[1,1-]	73-01011	0173-96-0540	6.1	Soil gas	1500
Dichloroethene[<i>cis</i> -1,2-]	73-01011	0173-96-0540	1340	Soil gas	1500
Dichloroethene[<i>trans</i> -1,2-]	73-01011	0173-96-0540	15	Soil gas	1500
Dimethylbutane[2,2-]	73-01011	0173-96-0540	14.1	Soil gas	1500
Dimethylbutane[2,3-]	73-01011	0173-96-0540	8.3	Soil gas	1500
Dimethylpentane[2,3-]	73-01011	0173-96-0540	15.6	Soil gas	1500
Heptane	73-01011	0173-96-0540	27	Soil gas	1500
Hexane	73-01011	0173-96-0540	27.2	Soil gas	1500
Isobutane	73-01011	0173-96-0540	667	Soil gas	1500
Isooctane	73-01011	0173-96-0540	13.6	Soil gas	1500
Isopentane	73-01011	0173-96-0540	31.5	Soil gas	1500
Methyl-1-butene[3-]	73-01011	0173-96-0540	13.4	Soil gas	1500
Methyl-2-butene[2-]	73-01011	0173-96-0540	7.8	Soil gas	1500
Methylcyclohexane	73-01011	0173-96-0540	232	Soil gas	1500
Methylcyclopentane	73-01011	0173-96-0540	32	Soil gas	1500
Methylheptane[2-]	73-01011	0173-96-0540	7.4	Soil gas	1500
Methylheptane[3-]	73-01011	0173-96-0540	7.2	Soil gas	1500
Methylhexane[3-]	73-01011	0173-96-0540	26.6	Soil gas	1500
Methylpentane[2-]	73-01011	0173-96-0540	22.6	Soil gas	1500
Methylpentane[3-]	73-01011	0173-96-0540	25.2	Soil gas	1500
Nonane[1-]	73-01011	0173-96-0540	7.3	Soil gas	1500
Octane[n-]	73-01011	0173-96-0540	9.1	Soil gas	1500
Pentane	73-01011	0173-96-0540	23.1	Soil gas	1500
Pinene[alpha-]	73-01011	0173-96-0540	6.7	Soil gas	1500
Propylene	73-01011	0173-96-0540	226	Soil gas	1500
Tetrachloroethene	73-01011	0173-96-0540	134	Soil gas	1500

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Trichlorobenzene[1,2,4-]	73-01011	0173-96-0540	17.8	Soil gas	1500
Trichloroethene	73-01011	0173-96-0540	19.7	Soil gas	1500
Trichlorofluoromethane	73-01011	0173-96-0540	24.8	Soil gas	1500
Trimethylpentane[2,3,4-]	73-01011	0173-96-0540	15.9	Soil gas	1500
Vinyl Chloride	73-01011	0173-96-0540	96.9	Soil gas	1500
Acetone	73-01011	0173-96-0541	825	Soil gas	1044
Benzene	73-01011	0173-96-0541	50.6	Soil gas	1044
Butadiene[1,3-]	73-01011	0173-96-0541	8.4	Soil gas	1044
Butane[n-]	73-01011	0173-96-0541	212	Soil gas	1044
Butene[1-]	73-01011	0173-96-0541	116	Soil gas	1044
Butene[cis-2-]	73-01011	0173-96-0541	16.1	Soil gas	1044
Butene[trans-2-]	73-01011	0173-96-0541	12.8	Soil gas	1044
Chlorobenzene	73-01011	0173-96-0541	9.1	Soil gas	1044
Chlorodifluoromethane	73-01011	0173-96-0541	1780	Soil gas	1044
Chloroethane	73-01011	0173-96-0541	45.9	Soil gas	1044
Cyclohexane	73-01011	0173-96-0541	266	Soil gas	1044
Cyclopentane	73-01011	0173-96-0541	12.5	Soil gas	1044
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	0173-96-0541	94.8	Soil gas	1044
Dichlorobenzene[1,4-]	73-01011	0173-96-0541	48.5	Soil gas	1044
Dichlorodifluoromethane	73-01011	0173-96-0541	732	Soil gas	1044
Dichloroethane[1,1-]	73-01011	0173-96-0541	6.5	Soil gas	1044
Dichloroethane[1,2-]	73-01011	0173-96-0541	5.1	Soil gas	1044
Dichloroethene[1,1-]	73-01011	0173-96-0541	22.1	Soil gas	1044
Dichloroethene[cis-1,2-]	73-01011	0173-96-0541	4930	Soil gas	1044
Dichloroethene[trans-1,2-]	73-01011	0173-96-0541	58.1	Soil gas	1044
Dichloropropane[1,2-]	73-01011	0173-96-0541	5	Soil gas	1044
Dimethylbutane[2,2-]	73-01011	0173-96-0541	30.2	Soil gas	1044
Dimethylbutane[2,3-]	73-01011	0173-96-0541	71.7	Soil gas	1044
Dimethylpentane[2,3-]	73-01011	0173-96-0541	55.4	Soil gas	1044
Ethylbenzene	73-01011	0173-96-0541	8.6	Soil gas	1044
Heptane	73-01011	0173-96-0541	522	Soil gas	1044
Hexane	73-01011	0173-96-0541	136	Soil gas	1044
Isooctane	73-01011	0173-96-0541	66.7	Soil gas	1044
Isopentane	73-01011	0173-96-0541	49.1	Soil gas	1044
Methyl-1-butene[3-]	73-01011	0173-96-0541	62.1	Soil gas	1044
Methyl-1-pentene[2-]	73-01011	0173-96-0541	9	Soil gas	1044
Methyl-2-butene[2-]	73-01011	0173-96-0541	23.7	Soil gas	1044
Methylcyclohexane	73-01011	0173-96-0541	809	Soil gas	1044
Methylcyclopentane	73-01011	0173-96-0541	107	Soil gas	1044
Methylene Chloride	73-01011	0173-96-0541	80.5	Soil gas	1044
Methylheptane[2-]	73-01011	0173-96-0541	168	Soil gas	1044
Methylheptane[3-]	73-01011	0173-96-0541	218	Soil gas	1044
Methylhexane[2-]	73-01011	0173-96-0541	11	Soil gas	1044
Methylhexane[3-]	73-01011	0173-96-0541	130	Soil gas	1044
Methylpentane[2-]	73-01011	0173-96-0541	73.7	Soil gas	1044
Methylpentane[3-]	73-01011	0173-96-0541	71.3	Soil gas	1044
Nonane[1-]	73-01011	0173-96-0541	182	Soil gas	1044
Octane[n-]	73-01011	0173-96-0541	197	Soil gas	1044

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pentane	73-01011	0173-96-0541	126	Soil gas	1044
Pentane[1-]	73-01011	0173-96-0541	30.8	Soil gas	1044
Pentene[trans-2-]	73-01011	0173-96-0541	8	Soil gas	1044
Pinene[alpha-]	73-01011	0173-96-0541	37.4	Soil gas	1044
Propylene	73-01011	0173-96-0541	821	Soil gas	1044
Tetrachloroethene	73-01011	0173-96-0541	109	Soil gas	1044
Toluene	73-01011	0173-96-0541	10.3	Soil gas	1044
Trichlorobenzene[1,2,4-]	73-01011	0173-96-0541	58	Soil gas	1044
Trichloroethene	73-01011	0173-96-0541	35.3	Soil gas	1044
Trichlorofluoromethane	73-01011	0173-96-0541	12.5	Soil gas	1044
Trimethylbenzene[1,2,4-]	73-01011	0173-96-0541	14	Soil gas	1044
Trimethylbenzene[1,3,5-]	73-01011	0173-96-0541	6.7	Soil gas	1044
Trimethylpentane[2,3,4-]	73-01011	0173-96-0541	81	Soil gas	1044
Vinyl Chloride	73-01011	0173-96-0541	458	Soil gas	1044
Xylene[1,3-]+Xylene[1,4-]	73-01011	0173-96-0541	13.9	Soil gas	1044
Acetone	73-01011	0173-96-0542	641	Soil gas	348
Acetonitrile	73-01011	0173-96-0542	225	Soil gas	348
Benzene	73-01011	0173-96-0542	119	Soil gas	348
Butadiene[1,3-]	73-01011	0173-96-0542	5	Soil gas	348
Butane[n-]	73-01011	0173-96-0542	295	Soil gas	348
Butene[1-]	73-01011	0173-96-0542	200	Soil gas	348
Butene[cis-2-]	73-01011	0173-96-0542	27.5	Soil gas	348
Butene[trans-2-]	73-01011	0173-96-0542	19.8	Soil gas	348
Carbon Disulfide	73-01011	0173-96-0542	58.2	Soil gas	348
Chlorobenzene	73-01011	0173-96-0542	18.7	Soil gas	348
Chlorodifluoromethane	73-01011	0173-96-0542	3480	Soil gas	348
Chloroethane	73-01011	0173-96-0542	61.4	Soil gas	348
Chloroform	73-01011	0173-96-0542	246	Soil gas	348
Cyclohexane	73-01011	0173-96-0542	535	Soil gas	348
Cyclopentane	73-01011	0173-96-0542	18.1	Soil gas	348
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-96-0542	82.5	Soil gas	348
Dichlorobenzene[1,4-]	73-01011	0173-96-0542	90.4	Soil gas	348
Dichlorodifluoromethane	73-01011	0173-96-0542	441	Soil gas	348
Dichloroethane[1,2-]	73-01011	0173-96-0542	7	Soil gas	348
Dichloroethene[1,1-]	73-01011	0173-96-0542	41.4	Soil gas	348
Dichloroethene[cis-1,2-]	73-01011	0173-96-0542	17500	Soil gas	348
Dichloroethene[trans-1,2-]	73-01011	0173-96-0542	178	Soil gas	348
Dichloropropane[1,2-]	73-01011	0173-96-0542	5.5	Soil gas	348
Diethyl Ether	73-01011	0173-96-0542	97.7	Soil gas	348
Dimethylbutane[2,2-]	73-01011	0173-96-0542	46.9	Soil gas	348
Dimethylbutane[2,3-]	73-01011	0173-96-0542	206	Soil gas	348
Dimethylpentane[2,3-]	73-01011	0173-96-0542	138	Soil gas	348
Ethanol	73-01011	0173-96-0542	62.6	Soil gas	348
Ethylbenzene	73-01011	0173-96-0542	6.7	Soil gas	348
Heptane	73-01011	0173-96-0542	3170	Soil gas	348
Hexane	73-01011	0173-96-0542	1520	Soil gas	348
Hexene[cis-3-]	73-01011	0173-96-0542	9.5	Soil gas	348
Isobutane	73-01011	0173-96-0542	2340	Soil gas	348

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Isooctane	73-01011	0173-96-0542	193	Soil gas	348
Isopentane	73-01011	0173-96-0542	58.9	Soil gas	348
Methanol	73-01011	0173-96-0542	804	Soil gas	348
Methyl-1-butene[3-]	73-01011	0173-96-0542	97.6	Soil gas	348
Methyl-1-pentene[2-]	73-01011	0173-96-0542	17.1	Soil gas	348
Methyl-1-pentene[4-]	73-01011	0173-96-0542	6.2	Soil gas	348
Methyl-2-butene[2-]	73-01011	0173-96-0542	43	Soil gas	348
Methylcyclohexane	73-01011	0173-96-0542	2560	Soil gas	348
Methylcyclopentane	73-01011	0173-96-0542	214	Soil gas	348
Methylene Chloride	73-01011	0173-96-0542	1300	Soil gas	348
Methylheptane[2-]	73-01011	0173-96-0542	482	Soil gas	348
Methylheptane[3-]	73-01011	0173-96-0542	481	Soil gas	348
Methylhexane[2-]	73-01011	0173-96-0542	23	Soil gas	348
Methylhexane[3-]	73-01011	0173-96-0542	341	Soil gas	348
Methylpentane[2-]	73-01011	0173-96-0542	134	Soil gas	348
Methylpentane[3-]	73-01011	0173-96-0542	142	Soil gas	348
Nonane[1-]	73-01011	0173-96-0542	1480	Soil gas	348
Octane[n-]	73-01011	0173-96-0542	846	Soil gas	348
Pentene[1-]	73-01011	0173-96-0542	71.5	Soil gas	348
Pentene[cis-2-]	73-01011	0173-96-0542	10.6	Soil gas	348
Pentene[trans-2-]	73-01011	0173-96-0542	17.4	Soil gas	348
Pinene[alpha-]	73-01011	0173-96-0542	29.7	Soil gas	348
Propylene	73-01011	0173-96-0542	1970	Soil gas	348
Tetrachloroethene	73-01011	0173-96-0542	40.1	Soil gas	348
Tetrahydrofuran	73-01011	0173-96-0542	812	Soil gas	348
Toluene	73-01011	0173-96-0542	46.4	Soil gas	348
Trichloro-1,2,2- trifluoroethane[1,1,2-]	73-01011	0173-96-0542	32.8	Soil gas	348
Trichloroethane[1,1,1-]	73-01011	0173-96-0542	18.8	Soil gas	348
Trichloroethene	73-01011	0173-96-0542	37.2	Soil gas	348
Trichlorofluoromethane	73-01011	0173-96-0542	15.1	Soil gas	348
Trimethylbenzene[1,2,4-]	73-01011	0173-96-0542	20.1	Soil gas	348
Trimethylbenzene[1,3,5-]	73-01011	0173-96-0542	8.2	Soil gas	348
Trimethylpentane[2,3,4-]	73-01011	0173-96-0542	139	Soil gas	348
Vinyl Chloride	73-01011	0173-96-0542	1890	Soil gas	348
Xylene[1,2-]	73-01011	0173-96-0542	9.4	Soil gas	348
Xylene[1,3-]+Xylene[1,4-]	73-01011	0173-96-0542	24.3	Soil gas	348
Benzene	73-01004	0173-96-0543	21.8	Soil gas	1192.8
Butane[n-]	73-01004	0173-96-0543	119	Soil gas	1192.8
Butene[cis-2-]	73-01004	0173-96-0543	8	Soil gas	1192.8
Butene[trans-2-]	73-01004	0173-96-0543	9.4	Soil gas	1192.8
Chlorodifluoromethane	73-01004	0173-96-0543	981	Soil gas	1192.8
Chloroethane	73-01004	0173-96-0543	15.5	Soil gas	1192.8
Cyclohexane	73-01004	0173-96-0543	168	Soil gas	1192.8
Cyclopentane	73-01004	0173-96-0543	5.2	Soil gas	1192.8
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01004	0173-96-0543	50.6	Soil gas	1192.8
Dichlorobenzene[1,4-]	73-01004	0173-96-0543	9.4	Soil gas	1192.8
Dichlorodifluoromethane	73-01004	0173-96-0543	498	Soil gas	1192.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichloroethene[1,1-]	73-01004	0173-96-0543	7.9	Soil gas	1192.8
Dichloroethene[cis-1,2-]	73-01004	0173-96-0543	1650	Soil gas	1192.8
Dichloroethene[trans-1,2-]	73-01004	0173-96-0543	19.1	Soil gas	1192.8
Dimethylbutane[2,2-]	73-01004	0173-96-0543	10.6	Soil gas	1192.8
Dimethylbutane[2,3-]	73-01004	0173-96-0543	29.8	Soil gas	1192.8
Dimethylpentane[2,3-]	73-01004	0173-96-0543	25.5	Soil gas	1192.8
Heptane	73-01004	0173-96-0543	153	Soil gas	1192.8
Hexane	73-01004	0173-96-0543	59.2	Soil gas	1192.8
Isobutane	73-01004	0173-96-0543	649	Soil gas	1192.8
Isooctane	73-01004	0173-96-0543	13.1	Soil gas	1192.8
Isopentane	73-01004	0173-96-0543	19.1	Soil gas	1192.8
Methyl-1-butene[3-]	73-01004	0173-96-0543	18.3	Soil gas	1192.8
Methyl-2-butene[2-]	73-01004	0173-96-0543	10.6	Soil gas	1192.8
Methylcyclohexane	73-01004	0173-96-0543	256	Soil gas	1192.8
Methylcyclopentane	73-01004	0173-96-0543	54	Soil gas	1192.8
Methylheptane[2-]	73-01004	0173-96-0543	44	Soil gas	1192.8
Methylheptane[3-]	73-01004	0173-96-0543	59.3	Soil gas	1192.8
Methylhexane[2-]	73-01004	0173-96-0543	5.6	Soil gas	1192.8
Methylhexane[3-]	73-01004	0173-96-0543	60.2	Soil gas	1192.8
Methylpentane[2-]	73-01004	0173-96-0543	29.4	Soil gas	1192.8
Methylpentane[3-]	73-01004	0173-96-0543	32	Soil gas	1192.8
Methylstyrene[alpha-]	73-01004	0173-96-0543	26.7	Soil gas	1192.8
Nonane[1-]	73-01004	0173-96-0543	97.8	Soil gas	1192.8
Octane[n-]	73-01004	0173-96-0543	48.8	Soil gas	1192.8
Pentane	73-01004	0173-96-0543	63.6	Soil gas	1192.8
Pentene[1-]	73-01004	0173-96-0543	11	Soil gas	1192.8
Pinene[alpha-]	73-01004	0173-96-0543	7	Soil gas	1192.8
Propylene	73-01004	0173-96-0543	507	Soil gas	1192.8
Tetrachloroethene	73-01004	0173-96-0543	71.5	Soil gas	1192.8
Tetrahydrofuran	73-01004	0173-96-0543	65	Soil gas	1192.8
Trichloroethene	73-01004	0173-96-0543	10.7	Soil gas	1192.8
Trichlorofluoromethane	73-01004	0173-96-0543	12.3	Soil gas	1192.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0543	5.6	Soil gas	1192.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0543	17.2	Soil gas	1192.8
Vinyl Chloride	73-01004	0173-96-0543	151	Soil gas	1192.8
Xylene[1,3-]+Xylene[1,4-]	73-01004	0173-96-0543	9.6	Soil gas	1192.8
Benzene	73-01004	0173-96-0544	28	Soil gas	904.8
Butane[n-]	73-01004	0173-96-0544	137	Soil gas	904.8
Butene[cis-2-]	73-01004	0173-96-0544	8.1	Soil gas	904.8
Butene[trans-2-]	73-01004	0173-96-0544	8	Soil gas	904.8
Chlorobenzene	73-01004	0173-96-0544	5.4	Soil gas	904.8
Chlorodifluoromethane	73-01004	0173-96-0544	1340	Soil gas	904.8
Chloroethane	73-01004	0173-96-0544	16.7	Soil gas	904.8
Cyclohexane	73-01004	0173-96-0544	209	Soil gas	904.8
Cyclopentane	73-01004	0173-96-0544	7.4	Soil gas	904.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-96-0544	53.5	Soil gas	904.8
Dichlorobenzene[1,4-]	73-01004	0173-96-0544	12.1	Soil gas	904.8
Dichlorodifluoromethane	73-01004	0173-96-0544	409	Soil gas	904.8

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichlorodifluoromethane	73-01004	0173-96-0545	289	Soil gas	556.8
Dichloroethene[1,1-]	73-01004	0173-96-0545	9.2	Soil gas	556.8
Dichloroethene[<i>cis</i> -1,2-]	73-01004	0173-96-0545	1830	Soil gas	556.8
Dichloroethene[<i>trans</i> -1,2-]	73-01004	0173-96-0545	27.8	Soil gas	556.8
Dimethylbutane[2,2-]	73-01004	0173-96-0545	17.6	Soil gas	556.8
Dimethylbutane[2,3-]	73-01004	0173-96-0545	57.5	Soil gas	556.8
Dimethylpentane[2,3-]	73-01004	0173-96-0545	48	Soil gas	556.8
Heptane	73-01004	0173-96-0545	336	Soil gas	556.8
Hexane	73-01004	0173-96-0545	98.8	Soil gas	556.8
Isobutane	73-01004	0173-96-0545	884	Soil gas	556.8
Isooctane	73-01004	0173-96-0545	20.5	Soil gas	556.8
Isopentane	73-01004	0173-96-0545	52.9	Soil gas	556.8
Methanol	73-01004	0173-96-0545	339	Soil gas	556.8
Methyl-1-butene[3-]	73-01004	0173-96-0545	33.9	Soil gas	556.8
Methyl-1-pentene[2-]	73-01004	0173-96-0545	5	Soil gas	556.8
Methyl-2-butene[2-]	73-01004	0173-96-0545	19.1	Soil gas	556.8
Methylcyclohexane	73-01004	0173-96-0545	548	Soil gas	556.8
Methylcyclopentane	73-01004	0173-96-0545	91.2	Soil gas	556.8
Methylheptane[2-]	73-01004	0173-96-0545	102	Soil gas	556.8
Methylheptane[3-]	73-01004	0173-96-0545	131	Soil gas	556.8
Methylhexane[2-]	73-01004	0173-96-0545	8.3	Soil gas	556.8
Methylhexane[3-]	73-01004	0173-96-0545	123	Soil gas	556.8
Methylpentane[2-]	73-01004	0173-96-0545	50.4	Soil gas	556.8
Methylpentane[3-]	73-01004	0173-96-0545	51	Soil gas	556.8
Nonane[1-]	73-01004	0173-96-0545	89.9	Soil gas	556.8
Octane[n-]	73-01004	0173-96-0545	85	Soil gas	556.8
Pentane	73-01004	0173-96-0545	109	Soil gas	556.8
Pentene[1-]	73-01004	0173-96-0545	11.4	Soil gas	556.8
Pentene[<i>trans</i> -2-]	73-01004	0173-96-0545	8.2	Soil gas	556.8
Pinene[<i>alpha</i> -]	73-01004	0173-96-0545	11.1	Soil gas	556.8
Pinene[<i>beta</i> -]	73-01004	0173-96-0545	16.3	Soil gas	556.8
Propylene	73-01004	0173-96-0545	738	Soil gas	556.8
Tetrachloroethene	73-01004	0173-96-0545	27.5	Soil gas	556.8
Trichloroethene	73-01004	0173-96-0545	12	Soil gas	556.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0545	6.6	Soil gas	556.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0545	26.6	Soil gas	556.8
Vinyl Chloride	73-01004	0173-96-0545	245	Soil gas	556.8
Xylene[1,3-]	73-01004	0173-96-0545	9.4	Soil gas	556.8
Acetone	73-01004	0173-96-0546	106	Soil gas	160.8
Benzene	73-01004	0173-96-0546	62	Soil gas	160.8
Butane[n-]	73-01004	0173-96-0546	258	Soil gas	160.8
Butene[1-]	73-01004	0173-96-0546	210	Soil gas	160.8
Butene[<i>cis</i> -2-]	73-01004	0173-96-0546	22.5	Soil gas	160.8
Butene[<i>trans</i> -2-]	73-01004	0173-96-0546	21.1	Soil gas	160.8
Chlorodifluoromethane	73-01004	0173-96-0546	3040	Soil gas	160.8
Chloroethane	73-01004	0173-96-0546	28	Soil gas	160.8
Chloroform	73-01004	0173-96-0546	5.5	Soil gas	160.8
Chloromethane	73-01004	0173-96-0546	33.3	Soil gas	160.8
Cyclohexane	73-01004	0173-96-0546	416	Soil gas	160.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Cyclopentane	73-01004	0173-96-0546	15.8	Soil gas	160.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-96-0546	87.9	Soil gas	160.8
Dichlorobenzene[1,4-]	73-01004	0173-96-0546	57.6	Soil gas	160.8
Dichlorodifluoromethane	73-01004	0173-96-0546	201	Soil gas	160.8
Dichloroethene[1,1-]	73-01004	0173-96-0546	6.9	Soil gas	160.8
Dichloroethene[cis-1,2-]	73-01004	0173-96-0546	1100	Soil gas	160.8
Dichloroethene[trans-1,2-]	73-01004	0173-96-0546	25.1	Soil gas	160.8
Dimethylbutane[2,2-]	73-01004	0173-96-0546	26.3	Soil gas	160.8
Dimethylbutane[2,3-]	73-01004	0173-96-0546	83.9	Soil gas	160.8
Dimethylpentane[2,3-]	73-01004	0173-96-0546	72.4	Soil gas	160.8
Heptane	73-01004	0173-96-0546	461	Soil gas	160.8
Hexane	73-01004	0173-96-0546	217	Soil gas	160.8
Hexene[cis-3-]	73-01004	0173-96-0546	7.1	Soil gas	160.8
Isobutane	73-01004	0173-96-0546	1220	Soil gas	160.8
Isooctane	73-01004	0173-96-0546	24.5	Soil gas	160.8
Isopentane	73-01004	0173-96-0546	36.8	Soil gas	160.8
Isopropylbenzene	73-01004	0173-96-0546	5	Soil gas	160.8
Methanol	73-01004	0173-96-0546	105	Soil gas	160.8
Methyl-1-butene[3-]	73-01004	0173-96-0546	71.9	Soil gas	160.8
Methyl-1-pentene[2-]	73-01004	0173-96-0546	11.2	Soil gas	160.8
Methyl-2-butene[2-]	73-01004	0173-96-0546	37	Soil gas	160.8
Methylcyclohexane	73-01004	0173-96-0546	787	Soil gas	160.8
Methylcyclopentane	73-01004	0173-96-0546	126	Soil gas	160.8
Methylene Chloride	73-01004	0173-96-0546	113	Soil gas	160.8
Methylheptane[2-]	73-01004	0173-96-0546	167	Soil gas	160.8
Methylheptane[3-]	73-01004	0173-96-0546	159	Soil gas	160.8
Methylhexane[2-]	73-01004	0173-96-0546	12.1	Soil gas	160.8
Methylhexane[3-]	73-01004	0173-96-0546	203	Soil gas	160.8
Methylpentane[2-]	73-01004	0173-96-0546	82.2	Soil gas	160.8
Methylpentane[3-]	73-01004	0173-96-0546	74.6	Soil gas	160.8
Nonane[1-]	73-01004	0173-96-0546	65.2	Soil gas	160.8
Octane[n-]	73-01004	0173-96-0546	102	Soil gas	160.8
Pentane	73-01004	0173-96-0546	195	Soil gas	160.8
Pentene[1-]	73-01004	0173-96-0546	27.4	Soil gas	160.8
Pentene[cis-2-]	73-01004	0173-96-0546	10	Soil gas	160.8
Pentene[trans-2-]	73-01004	0173-96-0546	20	Soil gas	160.8
Pinene[alpha-]	73-01004	0173-96-0546	26.2	Soil gas	160.8
Pinene[beta-]	73-01004	0173-96-0546	130	Soil gas	160.8
Propylene	73-01004	0173-96-0546	1040	Soil gas	160.8
Tetrachloroethene	73-01004	0173-96-0546	6	Soil gas	160.8
Toluene	73-01004	0173-96-0546	7.2	Soil gas	160.8
Trichloroethene	73-01004	0173-96-0546	9.9	Soil gas	160.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0546	19.5	Soil gas	160.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0546	45.6	Soil gas	160.8
Vinyl Chloride	73-01004	0173-96-0546	303	Soil gas	160.8
Xylene[1,3-]+Xylene[1,4-]	73-01004	0173-96-0546	21.8	Soil gas	160.8
Benzene	73-01005	0173-96-0547	8.3	Soil gas	402

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01005	0173-96-0547	33.9	Soil gas	402
Dichlorodifluoromethane	73-01005	0173-96-0547	467	Soil gas	402
Methylene Chloride	73-01005	0173-96-0547	39.3	Soil gas	402
Tetrachloroethene	73-01005	0173-96-0547	132	Soil gas	402
Trichlorofluoromethane	73-01005	0173-96-0547	28.1	Soil gas	402
Butene[1-]	73-01009	0173-96-0548	20.1	Soil gas	492
Chlorodifluoromethane	73-01009	0173-96-0548	33.5	Soil gas	492
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01009	0173-96-0548	46.4	Soil gas	492
Dichlorodifluoromethane	73-01009	0173-96-0548	280	Soil gas	492
Methylene Chloride	73-01009	0173-96-0548	5.2	Soil gas	492
Tetrachloroethene	73-01009	0173-96-0548	174	Soil gas	492
Trichloroethene	73-01009	0173-96-0548	14.5	Soil gas	492
Trichlorofluoromethane	73-01009	0173-96-0548	14	Soil gas	492
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01009	0173-96-0549	17.3	Soil gas	134.4
Dichlorodifluoromethane	73-01009	0173-96-0549	128	Soil gas	134.4
Tetrachloroethene	73-01009	0173-96-0549	126	Soil gas	134.4
Trichlorofluoromethane	73-01009	0173-96-0549	7.2	Soil gas	134.4
Butene[1-]	73-01007	0173-96-0550	19.1	Soil gas	1200
Chlorodifluoromethane	73-01007	0173-96-0550	5.2	Soil gas	1200
Dichlorodifluoromethane	73-01007	0173-96-0550	288	Soil gas	1200
Isobutane	73-01007	0173-96-0550	88.6	Soil gas	1200
Methanol	73-01007	0173-96-0550	154	Soil gas	1200
Propylene	73-01007	0173-96-0550	109	Soil gas	1200
Tetrachloroethene	73-01007	0173-96-0550	31.2	Soil gas	1200
Trichlorofluoromethane	73-01007	0173-96-0550	5	Soil gas	1200
Benzene	73-01007	0173-96-0551	127	Soil gas	336
Butane[n-]	73-01007	0173-96-0551	154	Soil gas	336
Butene[1-]	73-01007	0173-96-0551	246	Soil gas	336
Butene[cs-2-]	73-01007	0173-96-0551	16.5	Soil gas	336
Butene[trans-2-]	73-01007	0173-96-0551	10.2	Soil gas	336
Chlorobenzene	73-01007	0173-96-0551	51.4	Soil gas	336
Chlorodifluoromethane	73-01007	0173-96-0551	1100	Soil gas	336
Chloroethane	73-01007	0173-96-0551	39.8	Soil gas	336
Cyclohexane	73-01007	0173-96-0551	311	Soil gas	336
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-96-0551	122	Soil gas	336
Dichlorobenzene[1,4-]	73-01007	0173-96-0551	150	Soil gas	336
Dichlorodifluoromethane	73-01007	0173-96-0551	800	Soil gas	336
Dichloroethane[1,2-]	73-01007	0173-96-0551	12.5	Soil gas	336
Dichloroethane[1,1-]	73-01007	0173-96-0551	21.5	Soil gas	336
Dichloroethane[cs-1,2-]	73-01007	0173-96-0551	5420	Soil gas	336
Dichloroethane[trans-1,2-]	73-01007	0173-96-0551	59.2	Soil gas	336
Dichloropropane[1,2-]	73-01007	0173-96-0551	23	Soil gas	336
Dimethylbutane[2,2-]	73-01007	0173-96-0551	18.7	Soil gas	336
Dimethylbutane[2,3-]	73-01007	0173-96-0551	45	Soil gas	336
Dimethylpentane[2,3-]	73-01007	0173-96-0551	29.6	Soil gas	336

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Ethylbenzene	73-01007	0173-96-0551	767	Soil gas	336
Heptane	73-01007	0173-96-0551	588	Soil gas	336
Hexane	73-01007	0173-96-0551	375	Soil gas	336
Hexene(cis-3-)	73-01007	0173-96-0551	8.6	Soil gas	336
Isobutane	73-01007	0173-96-0551	1760	Soil gas	336
Isooctane	73-01007	0173-96-0551	27	Soil gas	336
Isoprene	73-01007	0173-96-0551	14.3	Soil gas	336
Isopropylbenzene	73-01007	0173-96-0551	57.6	Soil gas	336
Methyl-1-butene[3-]	73-01007	0173-96-0551	92.7	Soil gas	336
Methyl-1-pentene[2-]	73-01007	0173-96-0551	15.8	Soil gas	336
Methyl-2-butene[2-]	73-01007	0173-96-0551	40.9	Soil gas	336
Methylcyclohexane	73-01007	0173-96-0551	476	Soil gas	336
Methylcyclopentane	73-01007	0173-96-0551	132	Soil gas	336
Methylene Chloride	73-01007	0173-96-0551	73	Soil gas	336
Methylheptane[2-]	73-01007	0173-96-0551	297	Soil gas	336
Methylheptane[3-]	73-01007	0173-96-0551	330	Soil gas	336
Methylhexane[2-]	73-01007	0173-96-0551	7.1	Soil gas	336
Methylhexane[3-]	73-01007	0173-96-0551	77	Soil gas	336
Methylpentane[2-]	73-01007	0173-96-0551	114	Soil gas	336
Methylpentane[3-]	73-01007	0173-96-0551	164	Soil gas	336
Nonane[1-]	73-01007	0173-96-0551	1630	Soil gas	336
Octane[n-]	73-01007	0173-96-0551	721	Soil gas	336
Pentane	73-01007	0173-96-0551	36.9	Soil gas	336
Pentene[1-]	73-01007	0173-96-0551	85.6	Soil gas	336
Pentene(cis-2-)	73-01007	0173-96-0551	5.1	Soil gas	336
Pentene(trans-2-)	73-01007	0173-96-0551	10.1	Soil gas	336
Pinene(alpha-)	73-01007	0173-96-0551	376	Soil gas	336
Pinene(beta-)	73-01007	0173-96-0551	911	Soil gas	336
Propylbenzene[1-]	73-01007	0173-96-0551	58.7	Soil gas	336
Propylene	73-01007	0173-96-0551	663	Soil gas	336
Styrene	73-01007	0173-96-0551	10.3	Soil gas	336
Tetrachloroethene	73-01007	0173-96-0551	77.5	Soil gas	336
Toluene	73-01007	0173-96-0551	1040	Soil gas	336
Trichlorobenzene[1,2,4-]	73-01007	0173-96-0551	8.3	Soil gas	336
Trichloroethene	73-01007	0173-96-0551	75.9	Soil gas	336
Trimethylbenzene[1,2,4-]	73-01007	0173-96-0551	191	Soil gas	336
Trimethylbenzene[1,3,5-]	73-01007	0173-96-0551	69.7	Soil gas	336
Trimethylpentane[2,3,4-]	73-01007	0173-96-0551	135	Soil gas	336
Vinyl Chloride	73-01007	0173-96-0551	492	Soil gas	336
Xylene[1,2-]	73-01007	0173-96-0551	277	Soil gas	336
Xylene[1,3-]	73-01007	0173-96-0551	1580	Soil gas	336
Acetophenone	73-01007	0173-96-0552	288	Soil gas	192
Benzene	73-01007	0173-96-0552	253	Soil gas	192
Benzonitrile	73-01007	0173-96-0552	64.2	Soil gas	192
Butane[n-]	73-01007	0173-96-0552	259	Soil gas	192
Butene[1-]	73-01007	0173-96-0552	356	Soil gas	192
Butene(cis-2-)	73-01007	0173-96-0552	18.1	Soil gas	192
Butene(trans-2-)	73-01007	0173-96-0552	12.9	Soil gas	192
Chlorobenzene	73-01007	0173-96-0552	184	Soil gas	192

TABLE 2.3.4.3-26

Analyte	Location ID	Sample ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Chlorodifluoromethane	73-01007	0173-96-0552	1930	Soil gas	192
Chloroethane	73-01007	0173-96-0552	87.7	Soil gas	192
Cyclohexane	73-01007	0173-96-0552	574	Soil gas	192
Cyclopentane	73-01007	0173-96-0552	6.7	Soil gas	192
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-96-0552	135	Soil gas	192
Dichlorobenzene[1,4-]	73-01007	0173-96-0552	298	Soil gas	192
Dichlorodifluoromethane	73-01007	0173-96-0552	831	Soil gas	192
Dichloroethane[1,2-]	73-01007	0173-96-0552	13.8	Soil gas	192
Dichloroethene[1,1-]	73-01007	0173-96-0552	29.7	Soil gas	192
Dichloroethene[cis-1,2-]	73-01007	0173-96-0552	10700	Soil gas	192
Dichloroethene[trans-1,2-]	73-01007	0173-96-0552	102	Soil gas	192
Dichloropropane[1,2-]	73-01007	0173-96-0552	35.7	Soil gas	192
Dimethylbutane[2,2-]	73-01007	0173-96-0552	39.9	Soil gas	192
Dimethylbutane[2,3-]	73-01007	0173-96-0552	80	Soil gas	192
Dimethylpentane[2,3-]	73-01007	0173-96-0552	46.8	Soil gas	192
Ethylbenzene	73-01007	0173-96-0552	1510	Soil gas	192
Heptane	73-01007	0173-96-0552	1130	Soil gas	192
Hexane	73-01007	0173-96-0552	854	Soil gas	192
Hexene[cis-3-]	73-01007	0173-96-0552	14.5	Soil gas	192
Isobutane	73-01007	0173-96-0552	3460	Soil gas	192
Isooctane	73-01007	0173-96-0552	42.2	Soil gas	192
Isopentane	73-01007	0173-96-0552	14.2	Soil gas	192
Isoprene	73-01007	0173-96-0552	9.6	Soil gas	192
Isopropylbenzene	73-01007	0173-96-0552	91.2	Soil gas	192
Methyl-1-butene[3-]	73-01007	0173-96-0552	148	Soil gas	192
Methyl-1-pentene[2-]	73-01007	0173-96-0552	21.7	Soil gas	192
Methyl-2-butene[2-]	73-01007	0173-96-0552	70.8	Soil gas	192
Methylcyclohexane	73-01007	0173-96-0552	1040	Soil gas	192
Methylcyclopentane	73-01007	0173-96-0552	301	Soil gas	192
Methylene Chloride	73-01007	0173-96-0552	99.9	Soil gas	192
Methylheptane[2-]	73-01007	0173-96-0552	691	Soil gas	192
Methylheptane[3-]	73-01007	0173-96-0552	710	Soil gas	192
Methylhexane[2-]	73-01007	0173-96-0552	11.9	Soil gas	192
Methylhexane[3-]	73-01007	0173-96-0552	140	Soil gas	192
Methylpentane[2-]	73-01007	0173-96-0552	236	Soil gas	192
Methylpentane[3-]	73-01007	0173-96-0552	352	Soil gas	192
Nonane[1-]	73-01007	0173-96-0552	3240	Soil gas	192
Octane[n-]	73-01007	0173-96-0552	1500	Soil gas	192
Pentane	73-01007	0173-96-0552	71.6	Soil gas	192
Pentane[1-]	73-01007	0173-96-0552	120	Soil gas	192
Pentene[cis-2-]	73-01007	0173-96-0552	70.8	Soil gas	192
Pentene[trans-2-]	73-01007	0173-96-0552	17.1	Soil gas	192
Pinene[alpha-]	73-01007	0173-96-0552	731	Soil gas	192
Pinene[beta-]	73-01007	0173-96-0552	551	Soil gas	192
Propylbenzene[1-]	73-01007	0173-96-0552	102	Soil gas	192
Propylene	73-01007	0173-96-0552	1350	Soil gas	192
Styrene	73-01007	0173-96-0552	9.7	Soil gas	192
Tetrachloroethane[1,1,2,2-]	73-01007	0173-96-0552	7.3	Soil gas	192

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Tetrachloroethene	73-01007	0173-96-0552	102	Soil gas	192
Tetrahydrofuran	73-01007	0173-96-0552	231	Soil gas	192
Toluene	73-01007	0173-96-0552	737	Soil gas	192
Trichlorobenzene[1,2,4-]	73-01007	0173-96-0552	20.5	Soil gas	192
Trichloroethene	73-01007	0173-96-0552	111	Soil gas	192
Trimethylbenzene[1,2,4-]	73-01007	0173-96-0552	516	Soil gas	192
Trimethylbenzene[1,3,5-]	73-01007	0173-96-0552	179	Soil gas	192
Trimethylpentane[2,3,4-]	73-01007	0173-96-0552	244	Soil gas	192
Vinyl Chloride	73-01007	0173-96-0552	857	Soil gas	192
Xylene[1,2-]	73-01007	0173-96-0552	226	Soil gas	192
Xylene[1,3-]	73-01007	0173-96-0552	2130	Soil gas	192
Benzene	73-02061	0173-96-0553	5.98	Soil gas	900
Butane[n-]	73-02061	0173-96-0553	52	Soil gas	900
Butene[1-]	73-02061	0173-96-0553	31.8	Soil gas	900
Butene[cis-2-]	73-02061	0173-96-0553	5.1	Soil gas	900
Butene[trans-2-]	73-02061	0173-96-0553	5.22	Soil gas	900
Chlorobenzene	73-02061	0173-96-0553	2.02	Soil gas	900
Chlorodifluoromethane	73-02061	0173-96-0553	2.58	Soil gas	900
Chloroethane	73-02061	0173-96-0553	2.2	Soil gas	900
Cyclopentene	73-02061	0173-96-0553	1.3	Soil gas	900
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02061	0173-96-0553	1.08	Soil gas	900
Dichlorodifluoromethane	73-02061	0173-96-0553	14.2	Soil gas	900
Dimethylbutane[2,3-]	73-02061	0173-96-0553	1.36	Soil gas	900
Heptane	73-02061	0173-96-0553	8.46	Soil gas	900
Hexane	73-02061	0173-96-0553	11	Soil gas	900
Hexene[cis-3-]	73-02061	0173-96-0553	1.36	Soil gas	900
Isobutane	73-02061	0173-96-0553	15.6	Soil gas	900
Isopentane	73-02061	0173-96-0553	5.66	Soil gas	900
Methyl-1-butene[3-]	73-02061	0173-96-0553	3.24	Soil gas	900
Methyl-1-pentene[2-]	73-02061	0173-96-0553	3.92	Soil gas	900
Methyl-1-pentene[4-]	73-02061	0173-96-0553	1.3	Soil gas	900
Methyl-2-butene[2-]	73-02061	0173-96-0553	2.9	Soil gas	900
Methylcyclohexane	73-02061	0173-96-0553	1.02	Soil gas	900
Methylheptane[2-]	73-02061	0173-96-0553	1.12	Soil gas	900
Methylheptane[3-]	73-02061	0173-96-0553	1.38	Soil gas	900
Methylhexane[3-]	73-02061	0173-96-0553	2.16	Soil gas	900
Methylpentane[2-]	73-02061	0173-96-0553	3.66	Soil gas	900
Methylpentane[3-]	73-02061	0173-96-0553	3.1	Soil gas	900
Octane[n-]	73-02061	0173-96-0553	1.36	Soil gas	900
Pentane	73-02061	0173-96-0553	23.4	Soil gas	900
Pentene[1-]	73-02061	0173-96-0553	6.48	Soil gas	900
Pentene[cis-2-]	73-02061	0173-96-0553	1.6	Soil gas	900
Pentene[trans-2-]	73-02061	0173-96-0553	2.64	Soil gas	900
Propylene	73-02061	0173-96-0553	76.6	Soil gas	900
Tetrachloroethene	73-02061	0173-96-0553	2.14	Soil gas	900
Toluene	73-02061	0173-96-0553	1.98	Soil gas	900
Xylene[1,3-]	73-02061	0173-96-0553	1.18	Soil gas	900
Acetone	73-02061	0173-96-0554	98	Soil gas	330

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Benzene	73-02061	0173-96-0554	39.8	Soil gas	330
Butane[n-]	73-02061	0173-96-0554	43.9	Soil gas	330
Butene[cis-2-]	73-02061	0173-96-0554	7.9	Soil gas	330
Butene[trans-2-]	73-02061	0173-96-0554	12.6	Soil gas	330
Chlorobenzene	73-02061	0173-96-0554	5	Soil gas	330
Chlorodifluoromethane	73-02061	0173-96-0554	10.1	Soil gas	330
Cyclohexane	73-02061	0173-96-0554	13.7	Soil gas	330
Dichlorobenzene[1,4-]	73-02061	0173-96-0554	6	Soil gas	330
Dichlorodifluoromethane	73-02061	0173-96-0554	13.9	Soil gas	330
Dimethylbutane[2,2-]	73-02061	0173-96-0554	11.1	Soil gas	330
Dimethylbutane[2,3-]	73-02061	0173-96-0554	24.3	Soil gas	330
Dimethylpentane[2,3-]	73-02061	0173-96-0554	15.5	Soil gas	330
Ethylbenzene	73-02061	0173-96-0554	8.3	Soil gas	330
Heptane	73-02061	0173-96-0554	25.6	Soil gas	330
Hexane	73-02061	0173-96-0554	23.1	Soil gas	330
Isobutane	73-02061	0173-96-0554	111	Soil gas	330
Isopentane	73-02061	0173-96-0554	43.2	Soil gas	330
Methanol	73-02061	0173-96-0554	114	Soil gas	330
Methyl-1-butene[3-]	73-02061	0173-96-0554	28.6	Soil gas	330
Methyl-1-pentene[2-]	73-02061	0173-96-0554	5.2	Soil gas	330
Methyl-1-pentene[4-]	73-02061	0173-96-0554	8.7	Soil gas	330
Methyl-2-butene[2-]	73-02061	0173-96-0554	16.6	Soil gas	330
Methylcyclohexane	73-02061	0173-96-0554	16.2	Soil gas	330
Methylcyclopentane	73-02061	0173-96-0554	5.9	Soil gas	330
Methylheptane[2-]	73-02061	0173-96-0554	16.6	Soil gas	330
Methylheptane[3-]	73-02061	0173-96-0554	30.7	Soil gas	330
Methylhexane[3-]	73-02061	0173-96-0554	37.1	Soil gas	330
Methylpentane[2-]	73-02061	0173-96-0554	38.8	Soil gas	330
Methylpentane[3-]	73-02061	0173-96-0554	29.1	Soil gas	330
Nonane[1-]	73-02061	0173-96-0554	8.7	Soil gas	330
Octane[n-]	73-02061	0173-96-0554	7.5	Soil gas	330
Pentane	73-02061	0173-96-0554	30.4	Soil gas	330
Pentene[1-]	73-02061	0173-96-0554	5.5	Soil gas	330
Pinene[alpha-]	73-02061	0173-96-0554	1720	Soil gas	330
Pinene[beta-]	73-02061	0173-96-0554	479	Soil gas	330
Propylene	73-02061	0173-96-0554	90.8	Soil gas	330
Styrene	73-02061	0173-96-0554	5.2	Soil gas	330
Tetrachloroethene	73-02061	0173-96-0554	5.5	Soil gas	330
Toluene	73-02061	0173-96-0554	16.7	Soil gas	330
Trichlorobenzene[1,2,4-]	73-02061	0173-96-0554	6.2	Soil gas	330
Xylene[1,3-]	73-02061	0173-96-0554	9.1	Soil gas	330
Chlorodifluoromethane	73-02061	0173-96-0555	5.7	Soil gas	30
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02061	0173-96-0555	5.5	Soil gas	30
Dichlorodifluoromethane	73-02061	0173-96-0555	45.1	Soil gas	30
Isobutane	73-02061	0173-96-0555	45.9	Soil gas	30
Isopentane	73-02061	0173-96-0555	6.4	Soil gas	30
Nonane[1-]	73-02061	0173-96-0555	9.9	Soil gas	30
Pinene[alpha-]	73-02061	0173-96-0555	15.4	Soil gas	30

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Propylene	73-02061	0173-96-0555	11.4	Soil gas	30
Trichlorofluoromethane	73-02061	0173-96-0555	6	Soil gas	30
Benzene	73-02067	0173-96-0556	322	Soil gas	280.8
Butane[n-]	73-02067	0173-96-0556	578	Soil gas	280.8
Butanol[1-]	73-02067	0173-96-0556	479	Soil gas	280.8
Butanone[2-]	73-02067	0173-96-0556	56.8	Soil gas	280.8
Butene[1-]	73-02067	0173-96-0556	555	Soil gas	280.8
Butene[cis-2-]	73-02067	0173-96-0556	56.3	Soil gas	280.8
Butene[trans-2-]	73-02067	0173-96-0556	47.1	Soil gas	280.8
Chlorobenzene	73-02067	0173-96-0556	28.6	Soil gas	280.8
Chlorodifluoromethane	73-02067	0173-96-0556	4940	Soil gas	280.8
Chloroethane	73-02067	0173-96-0556	184	Soil gas	280.8
Cyclohexane	73-02067	0173-96-0556	983	Soil gas	280.8
Cyclohexanone	73-02067	0173-96-0556	154	Soil gas	280.8
Cyclopentane	73-02067	0173-96-0556	40.6	Soil gas	280.8
Cyclopentene	73-02067	0173-96-0556	6.9	Soil gas	280.8
Dibromoethane[1,2-]	73-02067	0173-96-0556	6.1	Soil gas	280.8
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02067	0173-96-0556	200	Soil gas	280.8
Dichlorobenzene[1,2-]	73-02067	0173-96-0556	5.3	Soil gas	280.8
Dichlorobenzene[1,3-]	73-02067	0173-96-0556	6.6	Soil gas	280.8
Dichlorobenzene[1,4-]	73-02067	0173-96-0556	24.6	Soil gas	280.8
Dichlorodifluoromethane	73-02067	0173-96-0556	3130	Soil gas	280.8
Dichloroethane[1,1-]	73-02067	0173-96-0556	19.1	Soil gas	280.8
Dichloroethane[1,2-]	73-02067	0173-96-0556	8.8	Soil gas	280.8
Dichloroethene[1,1-]	73-02067	0173-96-0556	69.5	Soil gas	280.8
Dichloroethene[cis-1,2-]	73-02067	0173-96-0556	5570	Soil gas	280.8
Dichloroethene[trans-1,2-]	73-02067	0173-96-0556	122	Soil gas	280.8
Dichloropropane[1,2-]	73-02067	0173-96-0556	9.8	Soil gas	280.8
Dichloropropene[trans-1,3-]	73-02067	0173-96-0556	5.1	Soil gas	280.8
Diethyl Ether	73-02067	0173-96-0556	139	Soil gas	280.8
Dimethylbutane[2,2-]	73-02067	0173-96-0556	102	Soil gas	280.8
Dimethylbutane[2,3-]	73-02067	0173-96-0556	453	Soil gas	280.8
Dimethylpentane[2,3-]	73-02067	0173-96-0556	276	Soil gas	280.8
Ethanol	73-02067	0173-96-0556	941	Soil gas	280.8
Ethylbenzene	73-02067	0173-96-0556	1430	Soil gas	280.8
Heptane	73-02067	0173-96-0556	4530	Soil gas	280.8
Hexane	73-02067	0173-96-0556	611	Soil gas	280.8
Hexene[cis-3-]	73-02067	0173-96-0556	27.5	Soil gas	280.8
Hexene[trans-2-]	73-02067	0173-96-0556	11.5	Soil gas	280.8
Isobutane	73-02067	0173-96-0556	4700	Soil gas	280.8
Isooctane	73-02067	0173-96-0556	450	Soil gas	280.8
Isopentane	73-02067	0173-96-0556	76.8	Soil gas	280.8
Isoprene	73-02067	0173-96-0556	6.9	Soil gas	280.8
Isopropylbenzene	73-02067	0173-96-0556	65.5	Soil gas	280.8
Methanol	73-02067	0173-96-0556	134	Soil gas	280.8
Methyl-1-butene[3-]	73-02067	0173-96-0556	195	Soil gas	280.8
Methyl-1-pentene[2-]	73-02067	0173-96-0556	47.7	Soil gas	280.8
Methyl-1-pentene[4-]	73-02067	0173-96-0556	8.3	Soil gas	280.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methyl-2-butene[2-]	73-02067	0173-96-0556	93.4	Soil gas	280.8
Methyl-2-pentanone[4-]	73-02067	0173-96-0556	66.7	Soil gas	280.8
Methylcyclohexane	73-02067	0173-96-0556	4690	Soil gas	280.8
Methylcyclopentane	73-02067	0173-96-0556	414	Soil gas	280.8
Methylene Chloride	73-02067	0173-96-0556	411	Soil gas	280.8
Methylheptane[2-]	73-02067	0173-96-0556	2460	Soil gas	280.8
Methylheptane[3-]	73-02067	0173-96-0556	2530	Soil gas	280.8
Methylhexane[2-]	73-02067	0173-96-0556	53.8	Soil gas	280.8
Methylhexane[3-]	73-02067	0173-96-0556	717	Soil gas	280.8
Methylpentane[2-]	73-02067	0173-96-0556	259	Soil gas	280.8
Methylpentane[3-]	73-02067	0173-96-0556	233	Soil gas	280.8
Nonane[1-]	73-02067	0173-96-0556	2800	Soil gas	280.8
Octane[n-]	73-02067	0173-96-0556	3860	Soil gas	280.8
Pentane	73-02067	0173-96-0556	329	Soil gas	280.8
Pentene[1-]	73-02067	0173-96-0556	196	Soil gas	280.8
Pentene[cis-2-]	73-02067	0173-96-0556	93.4	Soil gas	280.8
Pentene[trans-2-]	73-02067	0173-96-0556	39.9	Soil gas	280.8
Pinene[alpha-]	73-02067	0173-96-0556	427	Soil gas	280.8
Pinene[beta-]	73-02067	0173-96-0556	621	Soil gas	280.8
Propanol[2-]	73-02067	0173-96-0556	78.1	Soil gas	280.8
Propylbenzene[1-]	73-02067	0173-96-0556	53.2	Soil gas	280.8
Propylene	73-02067	0173-96-0556	3070	Soil gas	280.8
Styrene	73-02067	0173-96-0556	7.5	Soil gas	280.8
Tetrachloroethane[1,1,2,2-]	73-02067	0173-96-0556	6.8	Soil gas	280.8
Tetrachloroethene	73-02067	0173-96-0556	450	Soil gas	280.8
Toluene	73-02067	0173-96-0556	2640	Soil gas	280.8
Trichlorobenzene[1,2,4-]	73-02067	0173-96-0556	36.4	Soil gas	280.8
Trichloroethene	73-02067	0173-96-0556	239	Soil gas	280.8
Trichlorofluoromethane	73-02067	0173-96-0556	13.3	Soil gas	280.8
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0556	102	Soil gas	280.8
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0556	64.4	Soil gas	280.8
Trimethylpentane[2,3,4-]	73-02067	0173-96-0556	588	Soil gas	280.8
Vinyl Chloride	73-02067	0173-96-0556	1400	Soil gas	280.8
Xylene[1,2-]	73-02067	0173-96-0556	941	Soil gas	280.8
Xylene[1,3-]	73-02067	0173-96-0556	3820	Soil gas	280.8
Acetone	73-02067	0173-96-0557	118	Soil gas	24
Benzene	73-02067	0173-96-0557	264	Soil gas	24
Benzyl Chloride	73-02067	0173-96-0557	5.6	Soil gas	24
Butane[n-]	73-02067	0173-96-0557	216	Soil gas	24
Butene[1-]	73-02067	0173-96-0557	322	Soil gas	24
Butene[cis-2-]	73-02067	0173-96-0557	40.7	Soil gas	24
Butene[trans-2-]	73-02067	0173-96-0557	26.6	Soil gas	24
Chlorodifluoromethane	73-02067	0173-96-0557	1650	Soil gas	24
Chloroethane	73-02067	0173-96-0557	66.3	Soil gas	24
Cyclohexane	73-02067	0173-96-0557	678	Soil gas	24
Cyclopentane	73-02067	0173-96-0557	22.7	Soil gas	24
Cyclopentone	73-02067	0173-96-0557	5	Soil gas	24
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02067	0173-96-0557	64.7	Soil gas	24

TABLE 23.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichlorobenzene[1,4-]	73-02067	0173-96-0557	13	Soil gas	24
Dichlorodifluoromethane	73-02067	0173-96-0557	204	Soil gas	24
Dichloroethene[1,1-]	73-02067	0173-96-0557	50.5	Soil gas	24
Dichloroethene[cis-1,2-]	73-02067	0173-96-0557	10000	Soil gas	24
Dichloroethene[trans-1,2-]	73-02067	0173-96-0557	282	Soil gas	24
Diethyl Ether	73-02067	0173-96-0557	69	Soil gas	24
Dimethylbutane[2,2-]	73-02067	0173-96-0557	62.1	Soil gas	24
Dimethylbutane[2,3-]	73-02067	0173-96-0557	281	Soil gas	24
Dimethylpentane[2,3-]	73-02067	0173-96-0557	280	Soil gas	24
Ethylbenzene	73-02067	0173-96-0557	361	Soil gas	24
Heptane	73-02067	0173-96-0557	2530	Soil gas	24
Hexane	73-02067	0173-96-0557	322	Soil gas	24
Hexene[cis-3-]	73-02067	0173-96-0557	21.4	Soil gas	24
Hexene[trans-2-]	73-02067	0173-96-0557	7.8	Soil gas	24
Isobutane	73-02067	0173-96-0557	1750	Soil gas	24
Isooctane	73-02067	0173-96-0557	710	Soil gas	24
Isopentane	73-02067	0173-96-0557	38.3	Soil gas	24
Isoprene	73-02067	0173-96-0557	10.3	Soil gas	24
Isopropylbenzene	73-02067	0173-96-0557	25.7	Soil gas	24
Methanol	73-02067	0173-96-0557	57.6	Soil gas	24
Methyl-1-butene[3-]	73-02067	0173-96-0557	148	Soil gas	24
Methyl-1-pentene[2-]	73-02067	0173-96-0557	28.3	Soil gas	24
Methyl-1-pentene[4-]	73-02067	0173-96-0557	6.8	Soil gas	24
Methyl-2-butene[2-]	73-02067	0173-96-0557	63.4	Soil gas	24
Methyl-2-pentanone[4-]	73-02067	0173-96-0557	63.7	Soil gas	24
Methylcyclohexane	73-02067	0173-96-0557	5710	Soil gas	24
Methylcyclopentane	73-02067	0173-96-0557	210	Soil gas	24
Methylene Chloride	73-02067	0173-96-0557	145	Soil gas	24
Methylheptane[2-]	73-02067	0173-96-0557	1910	Soil gas	24
Methylheptane[3-]	73-02067	0173-96-0557	2280	Soil gas	24
Methylhexane[2-]	73-02067	0173-96-0557	35.3	Soil gas	24
Methylhexane[3-]	73-02067	0173-96-0557	555	Soil gas	24
Methylpentane[2-]	73-02067	0173-96-0557	159	Soil gas	24
Methylpentane[3-]	73-02067	0173-96-0557	146	Soil gas	24
Nonane[1-]	73-02067	0173-96-0557	1600	Soil gas	24
Octane[n-]	73-02067	0173-96-0557	2310	Soil gas	24
Pentane	73-02067	0173-96-0557	150	Soil gas	24
Pentene[1-]	73-02067	0173-96-0557	131	Soil gas	24
Pentene[cis-2-]	73-02067	0173-96-0557	63.4	Soil gas	24
Pentene[trans-2-]	73-02067	0173-96-0557	25.8	Soil gas	24
Pinene[alpha-]	73-02067	0173-96-0557	279	Soil gas	24
Pinene[beta-]	73-02067	0173-96-0557	2080	Soil gas	24
Propylbenzene[1-]	73-02067	0173-96-0557	31.4	Soil gas	24
Propylene	73-02067	0173-96-0557	1360	Soil gas	24
Tetrachloroethene	73-02067	0173-96-0557	787	Soil gas	24
Toluene	73-02067	0173-96-0557	2750	Soil gas	24
Trichloroethene	73-02067	0173-96-0557	512	Soil gas	24
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0557	122	Soil gas	24
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0557	87.1	Soil gas	24

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Trimethylpentane[2,3,4-]	73-02067	0173-96-0557	1060	Soil gas	24
Vinyl Chloride	73-02067	0173-96-0557	671	Soil gas	24
Xylene[1,2-]	73-02067	0173-96-0557	361	Soil gas	24
Xylene[1,3-]	73-02067	0173-96-0557	1110	Soil gas	24
Benzene	73-02069	0173-96-0558	52	Soil gas	211.2
Butane[n-]	73-02069	0173-96-0558	450	Soil gas	211.2
Butene[1-]	73-02069	0173-96-0558	588	Soil gas	211.2
Butene[cis-2-]	73-02069	0173-96-0558	44.4	Soil gas	211.2
Butene[trans-2-]	73-02069	0173-96-0558	45.5	Soil gas	211.2
Chlorodifluoromethane	73-02069	0173-96-0558	1270	Soil gas	211.2
Chloroethane	73-02069	0173-96-0558	20.2	Soil gas	211.2
Cyclohexane	73-02069	0173-96-0558	210	Soil gas	211.2
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02069	0173-96-0558	411	Soil gas	211.2
Dichlorodifluoromethane	73-02069	0173-96-0558	561	Soil gas	211.2
Dichloroethene[1,1-]	73-02069	0173-96-0558	8.5	Soil gas	211.2
Dichloroethene[cis-1,2-]	73-02069	0173-96-0558	511	Soil gas	211.2
Dichloroethene[trans-1,2-]	73-02069	0173-96-0558	11.4	Soil gas	211.2
Dimethylbutane[2,2-]	73-02069	0173-96-0558	46.7	Soil gas	211.2
Dimethylbutane[2,3-]	73-02069	0173-96-0558	92.8	Soil gas	211.2
Dimethylpentane[2,3-]	73-02069	0173-96-0558	49.7	Soil gas	211.2
Ethylbenzene	73-02069	0173-96-0558	47.8	Soil gas	211.2
Heptane	73-02069	0173-96-0558	507	Soil gas	211.2
Hexane	73-02069	0173-96-0558	299	Soil gas	211.2
Hexene[cis-3-]	73-02069	0173-96-0558	15.5	Soil gas	211.2
Hexene[trans-2-]	73-02069	0173-96-0558	6.4	Soil gas	211.2
Isobutane	73-02069	0173-96-0558	1770	Soil gas	211.2
Isooctane	73-02069	0173-96-0558	23.6	Soil gas	211.2
Isopentane	73-02069	0173-96-0558	49.6	Soil gas	211.2
Isopropylbenzene	73-02069	0173-96-0558	15.8	Soil gas	211.2
Methanol	73-02069	0173-96-0558	342	Soil gas	211.2
Methyl-1-butene[3-]	73-02069	0173-96-0558	111	Soil gas	211.2
Methyl-1-pentene[2-]	73-02069	0173-96-0558	26.1	Soil gas	211.2
Methyl-1-pentene[4-]	73-02069	0173-96-0558	6.9	Soil gas	211.2
Methyl-2-butene[2-]	73-02069	0173-96-0558	66.5	Soil gas	211.2
Methylcyclohexane	73-02069	0173-96-0558	476	Soil gas	211.2
Methylcyclopentane	73-02069	0173-96-0558	157	Soil gas	211.2
Methylheptane[2-]	73-02069	0173-96-0558	116	Soil gas	211.2
Methylheptane[3-]	73-02069	0173-96-0558	120	Soil gas	211.2
Methylhexane[2-]	73-02069	0173-96-0558	15.7	Soil gas	211.2
Methylhexane[3-]	73-02069	0173-96-0558	132	Soil gas	211.2
Methylpentane[2-]	73-02069	0173-96-0558	180	Soil gas	211.2
Methylpentane[3-]	73-02069	0173-96-0558	161	Soil gas	211.2
Nonane[1-]	73-02069	0173-96-0558	1370	Soil gas	211.2
Octane[n-]	73-02069	0173-96-0558	215	Soil gas	211.2
Pentane	73-02069	0173-96-0558	181	Soil gas	211.2
Pentene[1-]	73-02069	0173-96-0558	66	Soil gas	211.2
Pentene[cis-2-]	73-02069	0173-96-0558	66.5	Soil gas	211.2
Pentene[trans-2-]	73-02069	0173-96-0558	33.6	Soil gas	211.2

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pinene[alpha-]	73-02069	0173-96-0558	141	Soil gas	211.2
Propylene	73-02069	0173-96-0558	1270	Soil gas	211.2
Toluene	73-02069	0173-96-0558	29	Soil gas	211.2
Trichloroethene	73-02069	0173-96-0558	23.7	Soil gas	211.2
Trimethylbenzene[1,2,4-]	73-02069	0173-96-0558	110	Soil gas	211.2
Trimethylbenzene[1,3,5-]	73-02069	0173-96-0558	58.3	Soil gas	211.2
Trimethylpentane[2,3,4-]	73-02069	0173-96-0558	45.4	Soil gas	211.2
Vinyl Chloride	73-02069	0173-96-0558	425	Soil gas	211.2
Xylene[1,2-]	73-02069	0173-96-0558	55.5	Soil gas	211.2
Xylene[1,3-]	73-02069	0173-96-0558	466	Soil gas	211.2
Benzene	73-02069	0173-96-0559	2.68	Soil gas	12
Butane[n-]	73-02069	0173-96-0559	8.24	Soil gas	12
Butene[1-]	73-02069	0173-96-0559	18	Soil gas	12
Chlorodifluoromethane	73-02069	0173-96-0559	38.9	Soil gas	12
Cyclohexane	73-02069	0173-96-0559	6.76	Soil gas	12
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02069	0173-96-0559	19.1	Soil gas	12
Dichlorobenzene[1,4-]	73-02069	0173-96-0559	8.26	Soil gas	12
Dichlorodifluoromethane	73-02069	0173-96-0559	16.4	Soil gas	12
Dichloroethene[cis-1,2-]	73-02069	0173-96-0559	80.4	Soil gas	12
Dichloroethene[trans-1,2-]	73-02069	0173-96-0559	1	Soil gas	12
Dimethylbutane[2,2-]	73-02069	0173-96-0559	1.12	Soil gas	12
Dimethylbutane[2,3-]	73-02069	0173-96-0559	2.28	Soil gas	12
Dimethylpentane[2,3-]	73-02069	0173-96-0559	1.08	Soil gas	12
Ethylbenzene	73-02069	0173-96-0559	20	Soil gas	12
Heptane	73-02069	0173-96-0559	19.8	Soil gas	12
Hexane	73-02069	0173-96-0559	6.92	Soil gas	12
Isobutane	73-02069	0173-96-0559	32.7	Soil gas	12
Isopentane	73-02069	0173-96-0559	1.62	Soil gas	12
Isopropylbenzene	73-02069	0173-96-0559	1.02	Soil gas	12
Methyl-1-butene[3-]	73-02069	0173-96-0559	3.34	Soil gas	12
Methyl-2-butene[2-]	73-02069	0173-96-0559	2.64	Soil gas	12
Methylcyclohexane	73-02069	0173-96-0559	6.38	Soil gas	12
Methylcyclopentane	73-02069	0173-96-0559	3.3	Soil gas	12
Methylheptane[2-]	73-02069	0173-96-0559	3	Soil gas	12
Methylheptane[3-]	73-02069	0173-96-0559	3.02	Soil gas	12
Methylhexane[3-]	73-02069	0173-96-0559	3.08	Soil gas	12
Methylpentane[2-]	73-02069	0173-96-0559	2.8	Soil gas	12
Methylpentane[3-]	73-02069	0173-96-0559	2.66	Soil gas	12
Nonane[1-]	73-02069	0173-96-0559	82.2	Soil gas	12
Octane[n-]	73-02069	0173-96-0559	8.88	Soil gas	12
Pentane	73-02069	0173-96-0559	3.36	Soil gas	12
Pinone[alpha-]	73-02069	0173-96-0559	11.3	Soil gas	12
Propylene	73-02069	0173-96-0559	23.8	Soil gas	12
Toluene	73-02069	0173-96-0559	2.56	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02069	0173-96-0559	10.5	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02069	0173-96-0559	24.1	Soil gas	12
Trimethylpentane[2,3,4-]	73-02069	0173-96-0559	1.02	Soil gas	12
Vinyl Chloride	73-02069	0173-96-0559	15.2	Soil gas	12

TABLE 23.43-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Xylene[1,2-]	73-02069	0173-96-0559	13.6	Soil gas	12
Xylene[1,3-]	73-02069	0173-96-0559	71.6	Soil gas	12
Acetone	73-02071	0173-96-0561	7800	Soil gas	228
Acetonitrile	73-02071	0173-96-0561	54.3	Soil gas	228
Benzene	73-02071	0173-96-0561	52.6	Soil gas	228
Butane[n-]	73-02071	0173-96-0561	117	Soil gas	228
Butanone[2-]	73-02071	0173-96-0561	16600	Soil gas	228
Butene[1-]	73-02071	0173-96-0561	578	Soil gas	228
Butene[cis-2-]	73-02071	0173-96-0561	13.8	Soil gas	228
Butene[trans-2-]	73-02071	0173-96-0561	11.8	Soil gas	228
Chlorobenzene	73-02071	0173-96-0561	34.7	Soil gas	228
Chlorodifluoromethane	73-02071	0173-96-0561	64.8	Soil gas	228
Chloromethane	73-02071	0173-96-0561	27.9	Soil gas	228
Cyclohexane	73-02071	0173-96-0561	10.3	Soil gas	228
Dichlorobenzene[1,2-]	73-02071	0173-96-0561	41.2	Soil gas	228
Dichlorobenzene[1,4-]	73-02071	0173-96-0561	951	Soil gas	228
Dichlorodifluoromethane	73-02071	0173-96-0561	105	Soil gas	228
Dichloroethene[cis-1,2-]	73-02071	0173-96-0561	23.1	Soil gas	228
Dimethylbutane[2,3-]	73-02071	0173-96-0561	10.6	Soil gas	228
Ethylbenzene	73-02071	0173-96-0561	2120	Soil gas	228
Heptane	73-02071	0173-96-0561	34.4	Soil gas	228
Hexane	73-02071	0173-96-0561	39.9	Soil gas	228
Hexanone[2-]	73-02071	0173-96-0561	149	Soil gas	228
Isobutane	73-02071	0173-96-0561	571	Soil gas	228
Isoprene	73-02071	0173-96-0561	50.1	Soil gas	228
Isopropylbenzene	73-02071	0173-96-0561	159	Soil gas	228
Methyl-1-butene[3-]	73-02071	0173-96-0561	101	Soil gas	228
Methyl-2-butene[2-]	73-02071	0173-96-0561	93.3	Soil gas	228
Methyl-2-pentanone[4-]	73-02071	0173-96-0561	2770	Soil gas	228
Methylcyclopentane	73-02071	0173-96-0561	28	Soil gas	228
Methylene Chloride	73-02071	0173-96-0561	20.7	Soil gas	228
Methylheptane[2-]	73-02071	0173-96-0561	80.7	Soil gas	228
Methylheptane[3-]	73-02071	0173-96-0561	10.1	Soil gas	228
Methylhexane[3-]	73-02071	0173-96-0561	22.5	Soil gas	228
Methylpentane[2-]	73-02071	0173-96-0561	9.9	Soil gas	228
Methylpentane[3-]	73-02071	0173-96-0561	12.3	Soil gas	228
Methylstyrene[alpha-]	73-02071	0173-96-0561	11.3	Soil gas	228
Nonane[1-]	73-02071	0173-96-0561	1430	Soil gas	228
Octane[n-]	73-02071	0173-96-0561	30.6	Soil gas	228
Pentane	73-02071	0173-96-0561	18.5	Soil gas	228
Pentene[1-]	73-02071	0173-96-0561	185	Soil gas	228
Pentene[cis-2-]	73-02071	0173-96-0561	93.3	Soil gas	228
Pinene[alpha-]	73-02071	0173-96-0561	474	Soil gas	228
Pinene[beta-]	73-02071	0173-96-0561	18300	Soil gas	228
Propanol[2-]	73-02071	0173-96-0561	410	Soil gas	228
Propylbenzene[1-]	73-02071	0173-96-0561	268	Soil gas	228
Propylene	73-02071	0173-96-0561	615	Soil gas	228
Styrene	73-02071	0173-96-0561	50	Soil gas	228
Tetrachloroethene	73-02071	0173-96-0561	7.1	Soil gas	228

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Tetrahydrofuran	73-02071	0173-96-0561	671	Soil gas	228
Toluene	73-02071	0173-96-0561	5720	Soil gas	228
Trichlorobenzene[1,2,4-]	73-02071	0173-96-0561	9.4	Soil gas	228
Trichloroethene	73-02071	0173-96-0561	12.3	Soil gas	228
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0561	989	Soil gas	228
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0561	306	Soil gas	228
Vinyl Chloride	73-02071	0173-96-0561	43.9	Soil gas	228
Xylene[1,2-]	73-02071	0173-96-0561	2070	Soil gas	228
Xylene[1,3-]	73-02071	0173-96-0561	3590	Soil gas	228
Benzene	73-02071	0173-96-0562	77.3	Soil gas	12
Butane[n-]	73-02071	0173-96-0562	185	Soil gas	12
Butanone[2-]	73-02071	0173-96-0562	99.1	Soil gas	12
Butene[1-]	73-02071	0173-96-0562	603	Soil gas	12
Butene[cis-2-]	73-02071	0173-96-0562	11.4	Soil gas	12
Butene[trans-2-]	73-02071	0173-96-0562	17.1	Soil gas	12
Chlorobenzene	73-02071	0173-96-0562	29.4	Soil gas	12
Chlorodifluoromethane	73-02071	0173-96-0562	963	Soil gas	12
Chloroethane	73-02071	0173-96-0562	38.1	Soil gas	12
Cyclohexane	73-02071	0173-96-0562	513	Soil gas	12
Dichlorobenzene[1,4-]	73-02071	0173-96-0562	201	Soil gas	12
Dichlorodifluoromethane	73-02071	0173-96-0562	54.4	Soil gas	12
Dichloroethene[1,1-]	73-02071	0173-96-0562	10.5	Soil gas	12
Dichloroethene[cis-1,2-]	73-02071	0173-96-0562	453	Soil gas	12
Dichloroethene[trans-1,2-]	73-02071	0173-96-0562	5	Soil gas	12
Dimethylbutane[2,2-]	73-02071	0173-96-0562	7.6	Soil gas	12
Dimethylbutane[2,3-]	73-02071	0173-96-0562	197	Soil gas	12
Dimethylpentane[2,3-]	73-02071	0173-96-0562	109	Soil gas	12
Ethylbenzene	73-02071	0173-96-0562	3580	Soil gas	12
Heptane	73-02071	0173-96-0562	478	Soil gas	12
Hexane	73-02071	0173-96-0562	245	Soil gas	12
Hexene[cis-3-]	73-02071	0173-96-0562	28.3	Soil gas	12
Isobutane	73-02071	0173-96-0562	2490	Soil gas	12
Isopropylbenzene	73-02071	0173-96-0562	96.7	Soil gas	12
Methyl-1-butene[3-]	73-02071	0173-96-0562	98	Soil gas	12
Methyl-1-pentene[2-]	73-02071	0173-96-0562	15.5	Soil gas	12
Methyl-2-butene[2-]	73-02071	0173-96-0562	72.6	Soil gas	12
Methylcyclohexane	73-02071	0173-96-0562	244	Soil gas	12
Methylcyclopentane	73-02071	0173-96-0562	747	Soil gas	12
Methylene Chloride	73-02071	0173-96-0562	5.8	Soil gas	12
Methylheptane[2-]	73-02071	0173-96-0562	153	Soil gas	12
Methylheptane[3-]	73-02071	0173-96-0562	127	Soil gas	12
Methylhexane[2-]	73-02071	0173-96-0562	25.7	Soil gas	12
Methylhexane[3-]	73-02071	0173-96-0562	274	Soil gas	12
Methylpentane[2-]	73-02071	0173-96-0562	38.8	Soil gas	12
Methylpentane[3-]	73-02071	0173-96-0562	54.9	Soil gas	12
Nonane[1-]	73-02071	0173-96-0562	15500	Soil gas	12
Octane[n-]	73-02071	0173-96-0562	844	Soil gas	12
Pentane	73-02071	0173-96-0562	41.5	Soil gas	12
Pentene[1-]	73-02071	0173-96-0562	115	Soil gas	12

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pentene(cis-2-)	73-02071	0173-96-0562	72.6	Soil gas	12
Pentene(trans-2-)	73-02071	0173-96-0562	24.5	Soil gas	12
Pinene(alpha-)	73-02071	0173-96-0562	365	Soil gas	12
Pinene(beta-)	73-02071	0173-96-0562	1960	Soil gas	12
Propylbenzene[1-]	73-02071	0173-96-0562	190	Soil gas	12
Propylene	73-02071	0173-96-0562	974	Soil gas	12
Styrene	73-02071	0173-96-0562	19.7	Soil gas	12
Tetrachloroethane[1,1,2,2-]	73-02071	0173-96-0562	11	Soil gas	12
Tetrahydrofuran	73-02071	0173-96-0562	373	Soil gas	12
Toluene	73-02071	0173-96-0562	355	Soil gas	12
Trichloroethene	73-02071	0173-96-0562	10.1	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0562	505	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0562	245	Soil gas	12
Trimethylpentane[2,3,4-]	73-02071	0173-96-0562	65.7	Soil gas	12
Vinyl Chloride	73-02071	0173-96-0562	125	Soil gas	12
Xylene[1,2-]	73-02071	0173-96-0562	723	Soil gas	12
Xylene[1,3-]	73-02071	0173-96-0562	5030	Soil gas	12
Acetone	73-02068	0173-96-0563	100	Soil gas	309.6
Acetonitrile	73-02068	0173-96-0563	58.4	Soil gas	309.6
Acetophenone	73-02068	0173-96-0563	300	Soil gas	309.6
Benzene	73-02068	0173-96-0563	53.2	Soil gas	309.6
Butane(n-)	73-02068	0173-96-0563	502	Soil gas	309.6
Butanone[2-]	73-02068	0173-96-0563	185	Soil gas	309.6
Butene[1-]	73-02068	0173-96-0563	166	Soil gas	309.6
Butene(cis-2-)	73-02068	0173-96-0563	9.3	Soil gas	309.6
Butene(trans-2-)	73-02068	0173-96-0563	14.3	Soil gas	309.6
Chlorobenzene	73-02068	0173-96-0563	112	Soil gas	309.6
Chlorodifluoromethane	73-02068	0173-96-0563	2500	Soil gas	309.6
Chloroethane	73-02068	0173-96-0563	52.7	Soil gas	309.6
Cyclohexane	73-02068	0173-96-0563	191	Soil gas	309.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02068	0173-96-0563	148	Soil gas	309.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0563	383	Soil gas	309.6
Dichlorodifluoromethane	73-02068	0173-96-0563	2940	Soil gas	309.6
Dichloroethane[1,1-]	73-02068	0173-96-0563	6.7	Soil gas	309.6
Dichloroethene[1,1-]	73-02068	0173-96-0563	18.1	Soil gas	309.6
Dichloroethene(cis-1,2-)	73-02068	0173-96-0563	5370	Soil gas	309.6
Dichloroethene(trans-1,2-)	73-02068	0173-96-0563	71	Soil gas	309.6
Diethyl Ether	73-02068	0173-96-0563	105	Soil gas	309.6
Dimethylbutane[2,2-]	73-02068	0173-96-0563	20.4	Soil gas	309.6
Dimethylbutane[2,3-]	73-02068	0173-96-0563	41.2	Soil gas	309.6
Dimethylpentane[2,3-]	73-02068	0173-96-0563	27.7	Soil gas	309.6
Ethylbenzene	73-02068	0173-96-0563	568	Soil gas	309.6
Heptane	73-02068	0173-96-0563	206	Soil gas	309.6
Hexane	73-02068	0173-96-0563	163	Soil gas	309.6
Hexene(cis-3-)	73-02068	0173-96-0563	8.6	Soil gas	309.6
Isobutane	73-02068	0173-96-0563	2860	Soil gas	309.6
Isooctane	73-02068	0173-96-0563	23.6	Soil gas	309.6
Isopentane	73-02068	0173-96-0563	32.7	Soil gas	309.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Isoprene	73-02068	0173-96-0563	6.9	Soil gas	309.6
Isopropylbenzene	73-02068	0173-96-0563	49.8	Soil gas	309.6
Methyl-1-butene[3-]	73-02068	0173-96-0563	86.4	Soil gas	309.6
Methyl-1-pentene[2-]	73-02068	0173-96-0563	17.6	Soil gas	309.6
Methyl-2-butene[2-]	73-02068	0173-96-0563	48.5	Soil gas	309.6
Methylcyclohexane	73-02068	0173-96-0563	255	Soil gas	309.6
Methylcyclopentane	73-02068	0173-96-0563	80.5	Soil gas	309.6
Methylene Chloride	73-02068	0173-96-0563	136	Soil gas	309.6
Methylheptane[2-]	73-02068	0173-96-0563	112	Soil gas	309.6
Methylheptane[3-]	73-02068	0173-96-0563	143	Soil gas	309.6
Methylhexane[2-]	73-02068	0173-96-0563	7.7	Soil gas	309.6
Methylhexane[3-]	73-02068	0173-96-0563	65.2	Soil gas	309.6
Methylpentane[2-]	73-02068	0173-96-0563	65.3	Soil gas	309.6
Methylpentane[3-]	73-02068	0173-96-0563	67.3	Soil gas	309.6
Nonane[1-]	73-02068	0173-96-0563	1060	Soil gas	309.6
Octane[n-]	73-02068	0173-96-0563	295	Soil gas	309.6
Pentane	73-02068	0173-96-0563	83.7	Soil gas	309.6
Pentene[1-]	73-02068	0173-96-0563	109	Soil gas	309.6
Pentene[trans-2-]	73-02068	0173-96-0563	9.4	Soil gas	309.6
Pinene[alpha-]	73-02068	0173-96-0563	494	Soil gas	309.6
Pinene[beta-]	73-02068	0173-96-0563	3160	Soil gas	309.6
Propylbenzene[1-]	73-02068	0173-96-0563	74.3	Soil gas	309.6
Propylene	73-02068	0173-96-0563	2920	Soil gas	309.6
Styrene	73-02068	0173-96-0563	12.1	Soil gas	309.6
Tetrachloroethene	73-02068	0173-96-0563	426	Soil gas	309.6
Tetrahydrofuran	73-02068	0173-96-0563	374	Soil gas	309.6
Toluene	73-02068	0173-96-0563	826	Soil gas	309.6
Trichlorobenzene[1,2,4-]	73-02068	0173-96-0563	5.1	Soil gas	309.6
Trichloroethene	73-02068	0173-96-0563	166	Soil gas	309.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0563	405	Soil gas	309.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0563	137	Soil gas	309.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0563	83.7	Soil gas	309.6
Vinyl Chloride	73-02068	0173-96-0563	405	Soil gas	309.6
Xylene[1,2-]	73-02068	0173-96-0563	181	Soil gas	309.6
Xylene[1,3-]	73-02068	0173-96-0563	1520	Soil gas	309.6
Benzene	73-02068	0173-96-0564	19.1	Soil gas	15.6
Butane[n-]	73-02068	0173-96-0564	57.5	Soil gas	15.6
Chlorobenzene	73-02068	0173-96-0564	64.8	Soil gas	15.6
Chlorodifluoromethane	73-02068	0173-96-0564	429	Soil gas	15.6
Chloroethane	73-02068	0173-96-0564	8.9	Soil gas	15.6
Cyclohexane	73-02068	0173-96-0564	25	Soil gas	15.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02068	0173-96-0564	96.1	Soil gas	15.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0564	228	Soil gas	15.6
Dichlorodifluoromethane	73-02068	0173-96-0564	321	Soil gas	15.6
Dichloroethene[1,1-]	73-02068	0173-96-0564	7.2	Soil gas	15.6
Dichloroethene[<i>cis</i> -1,2-]	73-02068	0173-96-0564	2030	Soil gas	15.6
Dichloroethene[<i>trans</i> -1,2-]	73-02068	0173-96-0564	30.2	Soil gas	15.6
Diethyl Ether	73-02068	0173-96-0564	61.6	Soil gas	15.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dimethylbutane[2,3-]	73-02068	0173-96-0564	13.2	Soil gas	15.6
Dimethylpentane[2,3-]	73-02068	0173-96-0564	6.3	Soil gas	15.6
Ethylbenzene	73-02068	0173-96-0564	198	Soil gas	15.6
Heptane	73-02068	0173-96-0564	129	Soil gas	15.6
Hexane	73-02068	0173-96-0564	74.1	Soil gas	15.6
Isobutane	73-02068	0173-96-0564	478	Soil gas	15.6
Isooctane	73-02068	0173-96-0564	6.1	Soil gas	15.6
Isopropylbenzene	73-02068	0173-96-0564	12.9	Soil gas	15.6
Methyl-1-butene[3-]	73-02068	0173-96-0564	25.1	Soil gas	15.6
Methyl-2-butene[2-]	73-02068	0173-96-0564	15.6	Soil gas	15.6
Methylcyclohexane	73-02068	0173-96-0564	98.9	Soil gas	15.6
Methylcyclopentane	73-02068	0173-96-0564	30.5	Soil gas	15.6
Methylheptane[2-]	73-02068	0173-96-0564	101	Soil gas	15.6
Methylheptane[3-]	73-02068	0173-96-0564	108	Soil gas	15.6
Methylhexane[3-]	73-02068	0173-96-0564	22.1	Soil gas	15.6
Methylpentane[2-]	73-02068	0173-96-0564	19.6	Soil gas	15.6
Methylpentane[3-]	73-02068	0173-96-0564	19	Soil gas	15.6
Nonane[1-]	73-02068	0173-96-0564	618	Soil gas	15.6
Octane[n-]	73-02068	0173-96-0564	329	Soil gas	15.6
Pentane	73-02068	0173-96-0564	21.5	Soil gas	15.6
Pentene[1-]	73-02068	0173-96-0564	28.9	Soil gas	15.6
Pinene[alpha-]	73-02068	0173-96-0564	254	Soil gas	15.6
Pinene[beta-]	73-02068	0173-96-0564	795	Soil gas	15.6
Propylbenzene[1-]	73-02068	0173-96-0564	11.5	Soil gas	15.6
Propylene	73-02068	0173-96-0564	1030	Soil gas	15.6
Tetrachloroethene	73-02068	0173-96-0564	32.8	Soil gas	15.6
Toluene	73-02068	0173-96-0564	448	Soil gas	15.6
Trichlorobenzene[1,2,4-]	73-02068	0173-96-0564	8.3	Soil gas	15.6
Trichloroethene	73-02068	0173-96-0564	27.5	Soil gas	15.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0564	23.9	Soil gas	15.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0564	16.6	Soil gas	15.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0564	35.9	Soil gas	15.6
Vinyl Acetate	73-02068	0173-96-0564	78.7	Soil gas	15.6
Vinyl Chloride	73-02068	0173-96-0564	164	Soil gas	15.6
Xylene[1,2-]	73-02068	0173-96-0564	103	Soil gas	15.6
Xylene[1,3-]	73-02068	0173-96-0564	506	Soil gas	15.6
Benzene	73-02089	0173-96-0565	144	Soil gas	888
Butane[n-]	73-02089	0173-96-0565	71.7	Soil gas	888
Butene[1-]	73-02089	0173-96-0565	280	Soil gas	888
Butene[cis-2-]	73-02089	0173-96-0565	20.9	Soil gas	888
Butene[trans-2-]	73-02089	0173-96-0565	14.3	Soil gas	888
Chlorobenzene	73-02089	0173-96-0565	36.3	Soil gas	888
Chlorodifluoromethane	73-02089	0173-96-0565	728	Soil gas	888
Chloroethane	73-02089	0173-96-0565	19.3	Soil gas	888
Cyclohexane	73-02089	0173-96-0565	167	Soil gas	888
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02089	0173-96-0565	41.3	Soil gas	888
Dichlorobenzene[1,2-]	73-02089	0173-96-0565	6	Soil gas	888
Dichlorobenzene[1,3-]	73-02089	0173-96-0565	6.7	Soil gas	888

TABLE 23.43-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichlorobenzene[1,4-]	73-02089	0173-96-0565	316	Soil gas	888
Dichlorodifluoromethane	73-02089	0173-96-0565	729	Soil gas	888
Dichloroethane[1,2-]	73-02089	0173-96-0565	5.8	Soil gas	888
Dichloroethene[cis-1,2-]	73-02089	0173-96-0565	3770	Soil gas	888
Dichloroethene[trans-1,2-]	73-02089	0173-96-0565	15.8	Soil gas	888
Diethyl Ether	73-02089	0173-96-0565	196	Soil gas	888
Dimethylbutane[2,2-]	73-02089	0173-96-0565	7.5	Soil gas	888
Dimethylbutane[2,3-]	73-02089	0173-96-0565	31.7	Soil gas	888
Dimethylpentane[2,3-]	73-02089	0173-96-0565	21.1	Soil gas	888
Ethylbenzene	73-02089	0173-96-0565	640	Soil gas	888
Heptane	73-02089	0173-96-0565	283	Soil gas	888
Hexane	73-02089	0173-96-0565	98.9	Soil gas	888
Hexene[cis-3-]	73-02089	0173-96-0565	7.9	Soil gas	888
Isobutane	73-02089	0173-96-0565	1010	Soil gas	888
Isooctane	73-02089	0173-96-0565	16.9	Soil gas	888
Isopentane	73-02089	0173-96-0565	6.9	Soil gas	888
Isopropylbenzene	73-02089	0173-96-0565	43.9	Soil gas	888
Methyl-1-butene[3-]	73-02089	0173-96-0565	32.8	Soil gas	888
Methyl-1-pentene[2-]	73-02089	0173-96-0565	11.2	Soil gas	888
Methyl-2-butene[2-]	73-02089	0173-96-0565	20.5	Soil gas	888
Methylcyclohexane	73-02089	0173-96-0565	241	Soil gas	888
Methylcyclopentane	73-02089	0173-96-0565	53.3	Soil gas	888
Methylene Chloride	73-02089	0173-96-0565	18.8	Soil gas	888
Methylheptane[2-]	73-02089	0173-96-0565	108	Soil gas	888
Methylheptane[3-]	73-02089	0173-96-0565	125	Soil gas	888
Methylhexane[3-]	73-02089	0173-96-0565	55.7	Soil gas	888
Methylpentane[2-]	73-02089	0173-96-0565	33.5	Soil gas	888
Methylpentane[3-]	73-02089	0173-96-0565	35.4	Soil gas	888
Nonane[1-]	73-02089	0173-96-0565	957	Soil gas	888
Octane[n-]	73-02089	0173-96-0565	266	Soil gas	888
Pentane	73-02089	0173-96-0565	25.2	Soil gas	888
Pentene[1-]	73-02089	0173-96-0565	115	Soil gas	888
Pentene[cis-2-]	73-02089	0173-96-0565	5.7	Soil gas	888
Pentene[trans-2-]	73-02089	0173-96-0565	9.2	Soil gas	888
Pinene[alpha-]	73-02089	0173-96-0565	102	Soil gas	888
Pinene[beta-]	73-02089	0173-96-0565	43.5	Soil gas	888
Propylbenzene[1-]	73-02089	0173-96-0565	44.3	Soil gas	888
Propylene	73-02089	0173-96-0565	535	Soil gas	888
Tetrachloroethene	73-02089	0173-96-0565	21.5	Soil gas	888
Toluene	73-02089	0173-96-0565	71.2	Soil gas	888
Trichlorobenzene[1,2,4-]	73-02089	0173-96-0565	28.5	Soil gas	888
Trichloroethene	73-02089	0173-96-0565	22.7	Soil gas	888
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0565	348	Soil gas	888
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0565	94.7	Soil gas	888
Trimethylpentane[2,3,4-]	73-02089	0173-96-0565	56.1	Soil gas	888
Vinyl Chloride	73-02089	0173-96-0565	243	Soil gas	888
Xylene[1,2-]	73-02089	0173-96-0565	27.4	Soil gas	888
Xylene[1,3-]	73-02089	0173-96-0565	301	Soil gas	888
Acetone	73-02089	0173-96-0566	105	Soil gas	360

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Acetonitrile	73-02089	0173-96-0566	114	Soil gas	360
Acetophenone	73-02089	0173-96-0566	832	Soil gas	360
Acrolein	73-02089	0173-96-0566	94.6	Soil gas	360
Benzene	73-02089	0173-96-0566	639	Soil gas	360
Butane[n-]	73-02089	0173-96-0566	260	Soil gas	360
Butene[1-]	73-02089	0173-96-0566	534	Soil gas	360
Butene[cis-2-]	73-02089	0173-96-0566	29.7	Soil gas	360
Butene[trans-2-]	73-02089	0173-96-0566	19.8	Soil gas	360
Chlorobenzene	73-02089	0173-96-0566	123	Soil gas	360
Chlorodifluoromethane	73-02089	0173-96-0566	3100	Soil gas	360
Chloroethane	73-02089	0173-96-0566	59.5	Soil gas	360
Cyclohexane	73-02089	0173-96-0566	650	Soil gas	360
Cyclohexanone	73-02089	0173-96-0566	279	Soil gas	360
Cyclopentane	73-02089	0173-96-0566	6	Soil gas	360
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02089	0173-96-0566	103	Soil gas	360
Dichlorobenzene[1,2-]	73-02089	0173-96-0566	13.2	Soil gas	360
Dichlorobenzene[1,4-]	73-02089	0173-96-0566	1010	Soil gas	360
Dichlorodifluoromethane	73-02089	0173-96-0566	2250	Soil gas	360
Dichloroethene[1,1-]	73-02089	0173-96-0566	9.9	Soil gas	360
Dichloroethene[cis-1,2-]	73-02089	0173-96-0566	6470	Soil gas	360
Dichloroethene[trans-1,2-]	73-02089	0173-96-0566	33.6	Soil gas	360
Diethyl Ether	73-02089	0173-96-0566	145	Soil gas	360
Dimethylbutane[2,3-]	73-02089	0173-96-0566	91.8	Soil gas	360
Dimethylpentane[2,3-]	73-02089	0173-96-0566	51	Soil gas	360
Ethanol	73-02089	0173-96-0566	139	Soil gas	360
Ethylbenzene	73-02089	0173-96-0566	5280	Soil gas	360
Heptane	73-02089	0173-96-0566	872	Soil gas	360
Hexane	73-02089	0173-96-0566	341	Soil gas	360
Hexene[cis-3-]	73-02089	0173-96-0566	20.9	Soil gas	360
Hexene[trans-2-]	73-02089	0173-96-0566	5	Soil gas	360
Isobutane	73-02089	0173-96-0566	9190	Soil gas	360
Isooctane	73-02089	0173-96-0566	44.8	Soil gas	360
Isopentane	73-02089	0173-96-0566	20.4	Soil gas	360
Isopropylbenzene	73-02089	0173-96-0566	203	Soil gas	360
Methanol	73-02089	0173-96-0566	579	Soil gas	360
Methyl-1-butene[3-]	73-02089	0173-96-0566	79.8	Soil gas	360
Methyl-1-pentene[2-]	73-02089	0173-96-0566	17.9	Soil gas	360
Methyl-2-butene[2-]	73-02089	0173-96-0566	75	Soil gas	360
Methylcyclohexane	73-02089	0173-96-0566	793	Soil gas	360
Methylcyclopentane	73-02089	0173-96-0566	183	Soil gas	360
Methylene Chloride	73-02089	0173-96-0566	103	Soil gas	360
Methylheptane[2-]	73-02089	0173-96-0566	501	Soil gas	360
Methylheptane[3-]	73-02089	0173-96-0566	583	Soil gas	360
Methylhexane[2-]	73-02089	0173-96-0566	11.5	Soil gas	360
Methylhexane[3-]	73-02089	0173-96-0566	149	Soil gas	360
Methylpentane[2-]	73-02089	0173-96-0566	103	Soil gas	360
Methylpentane[3-]	73-02089	0173-96-0566	111	Soil gas	360
Nonane[1-]	73-02089	0173-96-0566	14500	Soil gas	360

TABLE 23.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Octane[n-]	73-02089	0173-96-0566	1460	Soil gas	360
Pentane	73-02089	0173-96-0566	81	Soil gas	360
Pentene[1-]	73-02089	0173-96-0566	61.7	Soil gas	360
Pentene[cis-2-]	73-02089	0173-96-0566	75	Soil gas	360
Pentene[trans-2-]	73-02089	0173-96-0566	24.2	Soil gas	360
Pinene[alpha-]	73-02089	0173-96-0566	908	Soil gas	360
Pinene[beta-]	73-02089	0173-96-0566	434	Soil gas	360
Propylbenzene[1-]	73-02089	0173-96-0566	475	Soil gas	360
Propylene	73-02089	0173-96-0566	955	Soil gas	360
Styrene	73-02089	0173-96-0566	14.7	Soil gas	360
Tetrachloroethane[1,1,2,2-]	73-02089	0173-96-0566	12.6	Soil gas	360
Tetrachloroethene	73-02089	0173-96-0566	21.4	Soil gas	360
Toluene	73-02089	0173-96-0566	952	Soil gas	360
Trichloro-1,2,2- trifluoroethane[1,1,2-]	73-02089	0173-96-0566	5.4	Soil gas	360
Trichlorobenzene[1,2,4-]	73-02089	0173-96-0566	5.7	Soil gas	360
Trichloroethene	73-02089	0173-96-0566	56.7	Soil gas	360
Trichlorofluoromethane	73-02089	0173-96-0566	158	Soil gas	360
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0566	2900	Soil gas	360
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0566	839	Soil gas	360
Trimethylpentane[2,3,4-]	73-02089	0173-96-0566	243	Soil gas	360
Vinyl Chloride	73-02089	0173-96-0566	1680	Soil gas	360
Xylene[1,2-]	73-02089	0173-96-0566	1770	Soil gas	360
Xylene[1,3-]	73-02089	0173-96-0566	4650	Soil gas	360
Dichlorodifluoromethane	73-01006	0173-96-0567	34.5	Soil gas	324
Isobutane	73-01006	0173-96-0567	5.6	Soil gas	324
Pinene[alpha-]	73-01006	0173-96-0567	10.1	Soil gas	324
Pinene[beta-]	73-01006	0173-96-0567	9.9	Soil gas	324
Propylene	73-01006	0173-96-0567	5.5	Soil gas	324
Tetrachloroethene	73-01006	0173-96-0567	20.4	Soil gas	324
Trichloroethene	73-01006	0173-96-0567	7.4	Soil gas	324
Trichlorofluoromethane	73-01006	0173-96-0567	5.8	Soil gas	324
Butane[n-]	73-02089	0173-96-0568	8.16	Soil gas	14.4
Chlorodifluoromethane	73-02089	0173-96-0568	1.9	Soil gas	14.4
Dichlorobenzene[1,4-]	73-02089	0173-96-0568	1.18	Soil gas	14.4
Dichlorodifluoromethane	73-02089	0173-96-0568	5.94	Soil gas	14.4
Hexane	73-02089	0173-96-0568	1.76	Soil gas	14.4
Isobutane	73-02089	0173-96-0568	10.9	Soil gas	14.4
Isopentane	73-02089	0173-96-0568	1.48	Soil gas	14.4
Methyl-1-butene[3-]	73-02089	0173-96-0568	1.56	Soil gas	14.4
Pentane	73-02089	0173-96-0568	3.88	Soil gas	14.4
Propylene	73-02089	0173-96-0568	10	Soil gas	14.4
Trichlorobenzene[1,2,4-]	73-02089	0173-96-0568	4.06	Soil gas	14.4
Chlorodifluoromethane	73-01010	0173-96-0569	28.6	Soil gas	1740
Chloroform	73-01010	0173-96-0569	2.02	Soil gas	1740
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-96-0569	15.9	Soil gas	1740
Dichlorodifluoromethane	73-01010	0173-96-0569	204	Soil gas	1740
Isobutane	73-01010	0173-96-0569	6.42	Soil gas	1740

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Tetrachloroethene	73-01010	0173-96-0569	59.3	Soil gas	1740
Trichloroethane[1,1,1-]	73-01010	0173-96-0569	1.62	Soil gas	1740
Trichloroethene	73-01010	0173-96-0569	3.9	Soil gas	1740
Trichlorofluoromethane	73-01010	0173-96-0569	12.1	Soil gas	1740
Chlorodifluoromethane	73-01010	0173-96-0570	12.1	Soil gas	1368
Chloroform	73-01010	0173-96-0570	1.84	Soil gas	1368
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-96-0570	22	Soil gas	1368
Dichlorodifluoromethane	73-01010	0173-96-0570	244	Soil gas	1368
Isobutane	73-01010	0173-96-0570	4.16	Soil gas	1368
Tetrachloroethene	73-01010	0173-96-0570	48.8	Soil gas	1368
Trichloroethane[1,1,1-]	73-01010	0173-96-0570	1.14	Soil gas	1368
Trichlorofluoromethane	73-01010	0173-96-0570	7.5	Soil gas	1368
Chlorodifluoromethane	73-01010	0173-96-0571	5.28	Soil gas	732
Chloroform	73-01010	0173-96-0571	2.56	Soil gas	732
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-96-0571	18.1	Soil gas	732
Dichlorodifluoromethane	73-01010	0173-96-0571	179	Soil gas	732
Isobutane	73-01010	0173-96-0571	4.28	Soil gas	732
Tetrachloroethene	73-01010	0173-96-0571	21	Soil gas	732
Trichlorofluoromethane	73-01010	0173-96-0571	3.34	Soil gas	732
Acetone	73-01010	0173-96-0572	91.1	Soil gas	264
Butane[n-]	73-01010	0173-96-0572	51.1	Soil gas	264
Butene[1-]	73-01010	0173-96-0572	40.3	Soil gas	264
Chlorodifluoromethane	73-01010	0173-96-0572	172	Soil gas	264
Chloroform	73-01010	0173-96-0572	40.1	Soil gas	264
Cyclohexane	73-01010	0173-96-0572	13.5	Soil gas	264
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-96-0572	73.1	Soil gas	264
Dichlorobenzene[1,4-]	73-01010	0173-96-0572	6.2	Soil gas	264
Dichlorodifluoromethane	73-01010	0173-96-0572	501	Soil gas	264
Dichloroethene[<i>cis</i> -1,2-]	73-01010	0173-96-0572	58.7	Soil gas	264
Heptane	73-01010	0173-96-0572	7.4	Soil gas	264
Hexane	73-01010	0173-96-0572	104.7	Soil gas	264
Isobutane	73-01010	0173-96-0572	396	Soil gas	264
Isopentane	73-01010	0173-96-0572	6.4	Soil gas	264
Methanol	73-01010	0173-96-0572	184	Soil gas	264
Methyl-1-butene[3-]	73-01010	0173-96-0572	7.4	Soil gas	264
Methylcyclohexane	73-01010	0173-96-0572	20.4	Soil gas	264
Methylcyclopentane	73-01010	0173-96-0572	10.4	Soil gas	264
Methylene Chloride	73-01010	0173-96-0572	10.4	Soil gas	264
Methylpentane[2-]	73-01010	0173-96-0572	11.1	Soil gas	264
Methylpentane[3-]	73-01010	0173-96-0572	11.3	Soil gas	264
Nonane[1-]	73-01010	0173-96-0572	18.5	Soil gas	264
Octane[n-]	73-01010	0173-96-0572	7.6	Soil gas	264
Pentane	73-01010	0173-96-0572	13.4	Soil gas	264
Pinene[alpha-]	73-01010	0173-96-0572	8.2	Soil gas	264
Propylene	73-01010	0173-96-0572	413	Soil gas	264
Tetrachloroethene	73-01010	0173-96-0572	46.7	Soil gas	264

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Toluene	73-01010	0173-96-0572	19.5	Soil gas	264
Trichloroethene	73-01010	0173-96-0572	8.7	Soil gas	264
Trimethylpentane[2,3,4-]	73-01010	0173-96-0572	5	Soil gas	264
Vinyl Chloride	73-01010	0173-96-0572	12.4	Soil gas	264
Xylene[1,3-]	73-01010	0173-96-0572	6.4	Soil gas	264
Butene[1-]	73-01010	0173-96-0573	18.5	Soil gas	90
Chlorodifluoromethane	73-01010	0173-96-0573	21.9	Soil gas	90
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-96-0573	40.6	Soil gas	90
Dichlorodifluoromethane	73-01010	0173-96-0573	285	Soil gas	90
Isobutane	73-01010	0173-96-0573	23.2	Soil gas	90
Methanol	73-01010	0173-96-0573	63.7	Soil gas	90
Methylene Chloride	73-01010	0173-96-0573	10.4	Soil gas	90
Propylene	73-01010	0173-96-0573	5.4	Soil gas	90
Tetrachloroethene	73-01010	0173-96-0573	23.2	Soil gas	90
Toluene	73-01010	0173-96-0573	8	Soil gas	90
Chlorodifluoromethane	73-01008	0173-96-0574	9.82	Soil gas	1098
Chloroform	73-01008	0173-96-0574	1.04	Soil gas	1098
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	0173-96-0574	11	Soil gas	1098
Dichlorodifluoromethane	73-01008	0173-96-0574	128	Soil gas	1098
Ethanol	73-01008	0173-96-0574	73.3	Soil gas	1098
Tetrachloroethene	73-01008	0173-96-0574	16.5	Soil gas	1098
Trichlorofluoromethane	73-01008	0173-96-0574	3.28	Soil gas	1098
Chlorodifluoromethane	73-01008	0173-96-0575	6.52	Soil gas	522
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	0173-96-0575	36.4	Soil gas	522
Dichlorodifluoromethane	73-01008	0173-96-0575	164	Soil gas	522
Methanol	73-01008	0173-96-0575	31.1	Soil gas	522
Tetrachloroethene	73-01008	0173-96-0575	11.3	Soil gas	522
Trichlorofluoromethane	73-01008	0173-96-0575	1.76	Soil gas	522
Butane[n-]	73-01008	0173-96-0576	2.76	Soil gas	186
Chlorodifluoromethane	73-01008	0173-96-0576	15	Soil gas	186
Chloroform	73-01008	0173-96-0576	2.36	Soil gas	186
Cyclohexane	73-01008	0173-96-0576	1.1	Soil gas	186
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	0173-96-0576	74	Soil gas	186
Dichlorodifluoromethane	73-01008	0173-96-0576	213	Soil gas	186
Isobutane	73-01008	0173-96-0576	54.6	Soil gas	186
Isopentane	73-01008	0173-96-0576	1.1	Soil gas	186
Methanol	73-01008	0173-96-0576	61	Soil gas	186
Propylene	73-01008	0173-96-0576	18.8	Soil gas	186
Tetrachloroethene	73-01008	0173-96-0576	14	Soil gas	186
Benzene	73-01003	0173-96-0581	73.4	Soil gas	110.4
Butane[n-]	73-01003	0173-96-0581	144	Soil gas	110.4
Butene[1-]	73-01003	0173-96-0581	162	Soil gas	110.4
Butene[cis-2-]	73-01003	0173-96-0581	18.7	Soil gas	110.4
Butene[trans-2-]	73-01003	0173-96-0581	16.5	Soil gas	110.4
Chlorobenzene	73-01003	0173-96-0581	16.3	Soil gas	110.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Chlorodifluoromethane	73-01003	0173-96-0581	1630	Soil gas	110.4
Chloroethane	73-01003	0173-96-0581	48.3	Soil gas	110.4
Cyclohexane	73-01003	0173-96-0581	204	Soil gas	110.4
Cyclopentane	73-01003	0173-96-0581	14.7	Soil gas	110.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	0173-96-0581	107	Soil gas	110.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0581	23.7	Soil gas	110.4
Dichlorodifluoromethane	73-01003	0173-96-0581	589	Soil gas	110.4
Dichloroethane[1,2-]	73-01003	0173-96-0581	9.6	Soil gas	110.4
Dichloroethene[1,1-]	73-01003	0173-96-0581	33.8	Soil gas	110.4
Dichloroethene[cis-1,2-]	73-01003	0173-96-0581	6670	Soil gas	110.4
Dichloroethene[trans-1,2-]	73-01003	0173-96-0581	171	Soil gas	110.4
Dichloropropane[1,2-]	73-01003	0173-96-0581	9.2	Soil gas	110.4
Diethyl Ether	73-01003	0173-96-0581	87.4	Soil gas	110.4
Dimethylbutane[2,2-]	73-01003	0173-96-0581	53.5	Soil gas	110.4
Dimethylbutane[2,3-]	73-01003	0173-96-0581	65.8	Soil gas	110.4
Dimethylpentane[2,3-]	73-01003	0173-96-0581	39.3	Soil gas	110.4
Ethylbenzene	73-01003	0173-96-0581	9.5	Soil gas	110.4
Heptane	73-01003	0173-96-0581	956	Soil gas	110.4
Hexane	73-01003	0173-96-0581	312	Soil gas	110.4
Hexene[cis-3-]	73-01003	0173-96-0581	10.8	Soil gas	110.4
Isobutane	73-01003	0173-96-0581	871	Soil gas	110.4
Isooctane	73-01003	0173-96-0581	21.2	Soil gas	110.4
Isopentane	73-01003	0173-96-0581	36.9	Soil gas	110.4
Isopropylbenzene	73-01003	0173-96-0581	8.7	Soil gas	110.4
Methyl-1-butene[3-]	73-01003	0173-96-0581	103	Soil gas	110.4
Methyl-1-pentene[2-]	73-01003	0173-96-0581	12.2	Soil gas	110.4
Methyl-2-butene[2-]	73-01003	0173-96-0581	54.5	Soil gas	110.4
Methylcyclohexane	73-01003	0173-96-0581	542	Soil gas	110.4
Methylcyclopentane	73-01003	0173-96-0581	190	Soil gas	110.4
Methylene Chloride	73-01003	0173-96-0581	19.9	Soil gas	110.4
Methylheptane[2-]	73-01003	0173-96-0581	249	Soil gas	110.4
Methylheptane[3-]	73-01003	0173-96-0581	333	Soil gas	110.4
Methylhexane[2-]	73-01003	0173-96-0581	12.4	Soil gas	110.4
Methylhexane[3-]	73-01003	0173-96-0581	123	Soil gas	110.4
Methylpentane[2-]	73-01003	0173-96-0581	164	Soil gas	110.4
Methylpentane[3-]	73-01003	0173-96-0581	152	Soil gas	110.4
Nonane[1-]	73-01003	0173-96-0581	711	Soil gas	110.4
Octane[n-]	73-01003	0173-96-0581	605	Soil gas	110.4
Pentane	73-01003	0173-96-0581	102	Soil gas	110.4
Pentene[1-]	73-01003	0173-96-0581	58.3	Soil gas	110.4
Pentene[cis-2-]	73-01003	0173-96-0581	8.7	Soil gas	110.4
Pentene[trans-2-]	73-01003	0173-96-0581	14	Soil gas	110.4
Pinene[alpha-]	73-01003	0173-96-0581	27.6	Soil gas	110.4
Propylene	73-01003	0173-96-0581	772	Soil gas	110.4
Tetrachloroethene	73-01003	0173-96-0581	15.5	Soil gas	110.4
Toluene	73-01003	0173-96-0581	10.1	Soil gas	110.4
Trichlorobenzene[1,2,4-]	73-01003	0173-96-0581	6.2	Soil gas	110.4
Trichloroethene	73-01003	0173-96-0581	73.1	Soil gas	110.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0581	32.4	Soil gas	110.4
Trimethylbenzene[1,3,5-]	73-01003	0173-96-0581	15.9	Soil gas	110.4
Trimethylpentane[2,3,4-]	73-01003	0173-96-0581	117	Soil gas	110.4
Vinyl Chloride	73-01003	0173-96-0581	796	Soil gas	110.4
Xylene[1,2-]	73-01003	0173-96-0581	12.3	Soil gas	110.4
Xylene[1,3-]	73-01003	0173-96-0581	30.2	Soil gas	110.4
Butane[n-]	73-01008	0173-96-0582	2.3	Soil gas	186
Chlorodifluoromethane	73-01008	0173-96-0582	14	Soil gas	186
Chloroform	73-01008	0173-96-0582	2.18	Soil gas	186
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01008	0173-96-0582	69.2	Soil gas	186
Dichlorodifluoromethane	73-01008	0173-96-0582	201	Soil gas	186
Isobutane	73-01008	0173-96-0582	49.1	Soil gas	186
Methanol	73-01008	0173-96-0582	63.1	Soil gas	186
Propylene	73-01008	0173-96-0582	17.6	Soil gas	186
Tetrachloroethene	73-01008	0173-96-0582	12.7	Soil gas	186
Xylene[1,2-]	73-01008	0173-96-0582	1.24	Soil gas	186
Dichlorodifluoromethane	73-01001	0173-96-0601	1.04	Soil gas	482.4
Isobutane	73-01001	0173-96-0601	1	Soil gas	482.4
Acetone	73-01001	0173-96-0602	18.6	Soil gas	122.4
Dichlorodifluoromethane	73-01001	0173-96-0602	1.02	Soil gas	122.4
Isobutane	73-01001	0173-96-0602	4.34	Soil gas	122.4
Acetone	73-01002	0173-96-0603	13.3	Soil gas	432
Dichlorodifluoromethane	73-01002	0173-96-0603	91.4	Soil gas	432
Isobutane	73-01002	0173-96-0603	1.86	Soil gas	432
Isopentane	73-01002	0173-96-0603	1.3	Soil gas	432
Tetrachloroethene	73-01002	0173-96-0603	30	Soil gas	432
Trichlorofluoromethane	73-01002	0173-96-0603	2.46	Soil gas	432
Benzene	73-01003	0173-96-0604	7.5	Soil gas	1190.4
Butane[n-]	73-01003	0173-96-0604	29.7	Soil gas	1190.4
Butene[1-]	73-01003	0173-96-0604	23.6	Soil gas	1190.4
Chlorodifluoromethane	73-01003	0173-96-0604	44.7	Soil gas	1190.4
Cyclohexane	73-01003	0173-96-0604	18.6	Soil gas	1190.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0604	58.8	Soil gas	1190.4
Dichlorodifluoromethane	73-01003	0173-96-0604	604	Soil gas	1190.4
Dichloroethene[cis-1,2-]	73-01003	0173-96-0604	407	Soil gas	1190.4
Dimethylbutane[2,2-]	73-01003	0173-96-0604	5.1	Soil gas	1190.4
Heptane	73-01003	0173-96-0604	32.4	Soil gas	1190.4
Hexane	73-01003	0173-96-0604	20.4	Soil gas	1190.4
Isobutane	73-01003	0173-96-0604	296	Soil gas	1190.4
Isopentane	73-01003	0173-96-0604	8.3	Soil gas	1190.4
Methanol	73-01003	0173-96-0604	143	Soil gas	1190.4
Methyl-1-butene[3-]	73-01003	0173-96-0604	9.9	Soil gas	1190.4
Methyl-2-butene[2-]	73-01003	0173-96-0604	7.1	Soil gas	1190.4
Methylcyclohexane	73-01003	0173-96-0604	26.8	Soil gas	1190.4
Methylcyclopentane	73-01003	0173-96-0604	15.1	Soil gas	1190.4
Methylheptane[2-]	73-01003	0173-96-0604	9	Soil gas	1190.4
Methylheptane[3-]	73-01003	0173-96-0604	11.3	Soil gas	1190.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylhexane[3-]	73-01003	0173-96-0604	5.4	Soil gas	1190.4
Methylpentane[2-]	73-01003	0173-96-0604	14.1	Soil gas	1190.4
Methylpentane[3-]	73-01003	0173-96-0604	13.9	Soil gas	1190.4
Nonane[1-]	73-01003	0173-96-0604	35.4	Soil gas	1190.4
Octane[n-]	73-01003	0173-96-0604	21.6	Soil gas	1190.4
Pentane	73-01003	0173-96-0604	16.4	Soil gas	1190.4
Pinene[alpha-]	73-01003	0173-96-0604	8	Soil gas	1190.4
Pinene[beta-]	73-01003	0173-96-0604	11.6	Soil gas	1190.4
Propylene	73-01003	0173-96-0604	123	Soil gas	1190.4
Tetrachloroethene	73-01003	0173-96-0604	70.9	Soil gas	1190.4
Toluene	73-01003	0173-96-0604	15.2	Soil gas	1190.4
Trichloroethene	73-01003	0173-96-0604	9.9	Soil gas	1190.4
Trichlorofluoromethane	73-01003	0173-96-0604	8.6	Soil gas	1190.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0604	14	Soil gas	1190.4
Trimethylbenzene[1,3,5-]	73-01003	0173-96-0604	5.1	Soil gas	1190.4
Vinyl Chloride	73-01003	0173-96-0604	28.6	Soil gas	1190.4
Xylene[1,3-]	73-01003	0173-96-0604	8	Soil gas	1190.4
Benzene	73-01003	0173-96-0605	10.89	Soil gas	1094.4
Butane[n-]	73-01003	0173-96-0605	31.5	Soil gas	1094.4
Butene[1-]	73-01003	0173-96-0605	26.8	Soil gas	1094.4
Chlorodifluoromethane	73-01003	0173-96-0605	51.4	Soil gas	1094.4
Cyclohexane	73-01003	0173-96-0605	23.2	Soil gas	1094.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0605	55.8	Soil gas	1094.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0605	35.4	Soil gas	1094.4
Dichlorodifluoromethane	73-01003	0173-96-0605	548	Soil gas	1094.4
Dichloroethene[cis-1,2-]	73-01003	0173-96-0605	653	Soil gas	1094.4
Dichloroethene[trans-1,2-]	73-01003	0173-96-0605	7	Soil gas	1094.4
Dimethylbutane[2,2-]	73-01003	0173-96-0605	6.1	Soil gas	1094.4
Ethylbenzene	73-01003	0173-96-0605	12	Soil gas	1094.4
Heptane	73-01003	0173-96-0605	56.3	Soil gas	1094.4
Hexane	73-01003	0173-96-0605	28.8	Soil gas	1094.4
Isobutane	73-01003	0173-96-0605	279	Soil gas	1094.4
Isopentane	73-01003	0173-96-0605	9	Soil gas	1094.4
Methyl-1-butene[3-]	73-01003	0173-96-0605	12.9	Soil gas	1094.4
Methyl-2-butene[2-]	73-01003	0173-96-0605	9.9	Soil gas	1094.4
Methylcyclohexane	73-01003	0173-96-0605	40.4	Soil gas	1094.4
Methylcyclopentane	73-01003	0173-96-0605	19.6	Soil gas	1094.4
Methylene Chloride	73-01003	0173-96-0605	6.1	Soil gas	1094.4
Methylheptane[2-]	73-01003	0173-96-0605	16.9	Soil gas	1094.4
Methylheptane[3-]	73-01003	0173-96-0605	21.9	Soil gas	1094.4
Methylhexane[3-]	73-01003	0173-96-0605	8.4	Soil gas	1094.4
Methylpentane[2-]	73-01003	0173-96-0605	16.9	Soil gas	1094.4
Methylpentane[3-]	73-01003	0173-96-0605	17	Soil gas	1094.4
Nonane[1-]	73-01003	0173-96-0605	83.7	Soil gas	1094.4
Octane[n-]	73-01003	0173-96-0605	42.8	Soil gas	1094.4
Pentane	73-01003	0173-96-0605	19.3	Soil gas	1094.4
Pinene[alpha-]	73-01003	0173-96-0605	23.8	Soil gas	1094.4
Pinene[beta-]	73-01003	0173-96-0605	9.3	Soil gas	1094.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Propylene	73-01003	0173-96-0605	137	Soil gas	1094.4
Tetrachloroethene	73-01003	0173-96-0605	65.6	Soil gas	1094.4
Trichloroethene	73-01003	0173-96-0605	10.4	Soil gas	1094.4
Trichlorofluoromethane	73-01003	0173-96-0605	7.7	Soil gas	1094.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0605	30.3	Soil gas	1094.4
Trimethylbenzene[1,3,5-]	73-01003	0173-96-0605	11.4	Soil gas	1094.4
Trimethylpentane[2,3,4-]	73-01003	0173-96-0605	7.3	Soil gas	1094.4
Vinyl Chloride	73-01003	0173-96-0605	48.1	Soil gas	1094.4
Xylene[1,3-]	73-01003	0173-96-0605	15.9	Soil gas	1094.4
Acetone	73-01003	0173-96-0606	50.3	Soil gas	470.4
Benzene	73-01003	0173-96-0606	51.3	Soil gas	470.4
Butane[n-]	73-01003	0173-96-0606	109	Soil gas	470.4
Butene[1-]	73-01003	0173-96-0606	118	Soil gas	470.4
Butene[cis-2-]	73-01003	0173-96-0606	13.3	Soil gas	470.4
Butene[trans-2-]	73-01003	0173-96-0606	10.4	Soil gas	470.4
Chlorobenzene	73-01003	0173-96-0606	18.3	Soil gas	470.4
Chlorodifluoromethane	73-01003	0173-96-0606	138	Soil gas	470.4
Chloroethane	73-01003	0173-96-0606	34.5	Soil gas	470.4
Chloromethane	73-01003	0173-96-0606	25.4	Soil gas	470.4
Cyclohexane	73-01003	0173-96-0606	143	Soil gas	470.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0606	106	Soil gas	470.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0606	58.3	Soil gas	470.4
Dichlorodifluoromethane	73-01003	0173-96-0606	664	Soil gas	470.4
Dichloroethane[1,2-]	73-01003	0173-96-0606	10.2	Soil gas	470.4
Dichloroethene[1,1-]	73-01003	0173-96-0606	19.6	Soil gas	470.4
Dichloroethene[cis-1,2-]	73-01003	0173-96-0606	4750	Soil gas	470.4
Dichloroethene[trans-1,2-]	73-01003	0173-96-0606	98.1	Soil gas	470.4
Dichloropropane[1,2-]	73-01003	0173-96-0606	8.4	Soil gas	470.4
Diethyl Ether	73-01003	0173-96-0606	127	Soil gas	470.4
Dimethylbutane[2,2-]	73-01003	0173-96-0606	41.4	Soil gas	470.4
Dimethylbutane[2,3-]	73-01003	0173-96-0606	45.7	Soil gas	470.4
Dimethylpentane[2,3-]	73-01003	0173-96-0606	29.1	Soil gas	470.4
Heptane	73-01003	0173-96-0606	659	Soil gas	470.4
Hexane	73-01003	0173-96-0606	244	Soil gas	470.4
Hexene[cis-3-]	73-01003	0173-96-0606	7	Soil gas	470.4
Isobutane	73-01003	0173-96-0606	800	Soil gas	470.4
Isooctane	73-01003	0173-96-0606	14.7	Soil gas	470.4
Isopentane	73-01003	0173-96-0606	39.6	Soil gas	470.4
Isopropylbenzene	73-01003	0173-96-0606	7.1	Soil gas	470.4
Methyl-1-butene[3-]	73-01003	0173-96-0606	76.2	Soil gas	470.4
Methyl-1-pentene[2-]	73-01003	0173-96-0606	7.2	Soil gas	470.4
Methyl-2-butene[2-]	73-01003	0173-96-0606	49.1	Soil gas	470.4
Methylcyclohexane	73-01003	0173-96-0606	353	Soil gas	470.4
Methylcyclopentane	73-01003	0173-96-0606	144	Soil gas	470.4
Methylene Chloride	73-01003	0173-96-0606	15	Soil gas	470.4
Methylheptane[2-]	73-01003	0173-96-0606	198	Soil gas	470.4
Methylheptane[3-]	73-01003	0173-96-0606	255	Soil gas	470.4
Methylhexane[2-]	73-01003	0173-96-0606	7.9	Soil gas	470.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylhexane[3-]	73-01003	0173-96-0606	85.1	Soil gas	470.4
Methylpentane[2-]	73-01003	0173-96-0606	139	Soil gas	470.4
Methylpentane[3-]	73-01003	0173-96-0606	125	Soil gas	470.4
Nonane[1-]	73-01003	0173-96-0606	443	Soil gas	470.4
Octane[n-]	73-01003	0173-96-0606	464	Soil gas	470.4
Pentane	73-01003	0173-96-0606	81.5	Soil gas	470.4
Pentene[1-]	73-01003	0173-96-0606	48.7	Soil gas	470.4
Pentene[cis-2-]	73-01003	0173-96-0606	7	Soil gas	470.4
Pentene[trans-2-]	73-01003	0173-96-0606	11.9	Soil gas	470.4
Pinene[alpha-]	73-01003	0173-96-0606	20.4	Soil gas	470.4
Propylene	73-01003	0173-96-0606	503	Soil gas	470.4
Tetrachloroethene	73-01003	0173-96-0606	38	Soil gas	470.4
Toluene	73-01003	0173-96-0606	6.1	Soil gas	470.4
Trichloroethene	73-01003	0173-96-0606	34.3	Soil gas	470.4
Trichlorofluoromethane	73-01003	0173-96-0606	8.9	Soil gas	470.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0606	44	Soil gas	470.4
Trimethylbenzene[1,3,5-]	73-01003	0173-96-0606	21.2	Soil gas	470.4
Trimethylpentane[2,3,4-]	73-01003	0173-96-0606	86.6	Soil gas	470.4
Vinyl Chloride	73-01003	0173-96-0606	511	Soil gas	470.4
Xylene[1,3-]	73-01003	0173-96-0606	18.8	Soil gas	470.4
Acetone	73-01003	0173-96-0607	54.4	Soil gas	110.4
Benzene	73-01003	0173-96-0607	72.8	Soil gas	110.4
Butane[n-]	73-01003	0173-96-0607	158	Soil gas	110.4
Butene[1-]	73-01003	0173-96-0607	195	Soil gas	110.4
Butene[cis-2-]	73-01003	0173-96-0607	21.9	Soil gas	110.4
Butene[trans-2-]	73-01003	0173-96-0607	15.3	Soil gas	110.4
Chlorobenzene	73-01003	0173-96-0607	16.6	Soil gas	110.4
Chlorodifluoromethane	73-01003	0173-96-0607	233	Soil gas	110.4
Chloroethane	73-01003	0173-96-0607	48.8	Soil gas	110.4
Chloromethane	73-01003	0173-96-0607	27.2	Soil gas	110.4
Cyclohexane	73-01003	0173-96-0607	211	Soil gas	110.4
Cyclohexanone	73-01003	0173-96-0607	60.6	Soil gas	110.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01003	0173-96-0607	128	Soil gas	110.4
Dichlorobenzene[1,4-]	73-01003	0173-96-0607	38.1	Soil gas	110.4
Dichlorodifluoromethane	73-01003	0173-96-0607	777	Soil gas	110.4
Dichloroethane[1,2-]	73-01003	0173-96-0607	7.1	Soil gas	110.4
Dichloroethene[1,1-]	73-01003	0173-96-0607	37.9	Soil gas	110.4
Dichloroethene[cis-1,2-]	73-01003	0173-96-0607	6190	Soil gas	110.4
Dichloroethene[trans-1,2-]	73-01003	0173-96-0607	176	Soil gas	110.4
Dichloropropane[1,2-]	73-01003	0173-96-0607	7.3	Soil gas	110.4
Diethyl Ether	73-01003	0173-96-0607	75.8	Soil gas	110.4
Dimethylbutane[2,2-]	73-01003	0173-96-0607	61.4	Soil gas	110.4
Dimethylbutane[2,3-]	73-01003	0173-96-0607	67.9	Soil gas	110.4
Dimethylpentane[2,3-]	73-01003	0173-96-0607	42.2	Soil gas	110.4
Ethylbenzene	73-01003	0173-96-0607	5.1	Soil gas	110.4
Heptane	73-01003	0173-96-0607	1080	Soil gas	110.4
Hexane	73-01003	0173-96-0607	401	Soil gas	110.4
Hexene[cis-3-]	73-01003	0173-96-0607	11.1	Soil gas	110.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Isobutane	73-01003	0173-96-0607	1370	Soil gas	110.4
Isooctane	73-01003	0173-96-0607	21.3	Soil gas	110.4
Isopentane	73-01003	0173-96-0607	61.6	Soil gas	110.4
Isopropylbenzene	73-01003	0173-96-0607	7.9	Soil gas	110.4
Methyl-1-butene[3-]	73-01003	0173-96-0607	129	Soil gas	110.4
Methyl-1-pentene[2-]	73-01003	0173-96-0607	12.6	Soil gas	110.4
Methyl-2-butene[2-]	73-01003	0173-96-0607	81	Soil gas	110.4
Methylcyclohexane	73-01003	0173-96-0607	546	Soil gas	110.4
Methylcyclopentane	73-01003	0173-96-0607	226	Soil gas	110.4
Methylene Chloride	73-01003	0173-96-0607	16.5	Soil gas	110.4
Methylheptane[2-]	73-01003	0173-96-0607	278	Soil gas	110.4
Methylheptane[3-]	73-01003	0173-96-0607	380	Soil gas	110.4
Methylhexane[2-]	73-01003	0173-96-0607	12.7	Soil gas	110.4
Methylhexane[3-]	73-01003	0173-96-0607	127	Soil gas	110.4
Methylpentane[2-]	73-01003	0173-96-0607	204	Soil gas	110.4
Methylpentane[3-]	73-01003	0173-96-0607	184	Soil gas	110.4
Nonane[1-]	73-01003	0173-96-0607	627	Soil gas	110.4
Octane[n-]	73-01003	0173-96-0607	703	Soil gas	110.4
Pentane	73-01003	0173-96-0607	137	Soil gas	110.4
Pentene[1-]	73-01003	0173-96-0607	78.5	Soil gas	110.4
Pentene[cis-2-]	73-01003	0173-96-0607	81	Soil gas	110.4
Pentene[trans-2-]	73-01003	0173-96-0607	20.7	Soil gas	110.4
Pinene[alpha-]	73-01003	0173-96-0607	28.5	Soil gas	110.4
Propylene	73-01003	0173-96-0607	764	Soil gas	110.4
Tetrachloroethene	73-01003	0173-96-0607	17.3	Soil gas	110.4
Toluene	73-01003	0173-96-0607	11.6	Soil gas	110.4
Trichloroethene	73-01003	0173-96-0607	51.3	Soil gas	110.4
Trichlorofluoromethane	73-01003	0173-96-0607	6.9	Soil gas	110.4
Trimethylbenzene[1,2,4-]	73-01003	0173-96-0607	45.1	Soil gas	110.4
Trimethylbenzene[1,3,5-]	73-01003	0173-96-0607	23.5	Soil gas	110.4
Trimethylpentane[2,3,4-]	73-01003	0173-96-0607	135	Soil gas	110.4
Vinyl Chloride	73-01003	0173-96-0607	897	Soil gas	110.4
Xylene[1,2-]	73-01003	0173-96-0607	9.5	Soil gas	110.4
Xylene[1,3-]	73-01003	0173-96-0607	22	Soil gas	110.4
Benzene	73-01004	0173-96-0608	20.5	Soil gas	1192.8
Butane[n-]	73-01004	0173-96-0608	79.8	Soil gas	1192.8
Butene[1-]	73-01004	0173-96-0608	46.6	Soil gas	1192.8
Butene[cis-2-]	73-01004	0173-96-0608	5.8	Soil gas	1192.8
Chlorodifluoromethane	73-01004	0173-96-0608	101	Soil gas	1192.8
Chloroethane	73-01004	0173-96-0608	9.8	Soil gas	1192.8
Chloromethane	73-01004	0173-96-0608	27.4	Soil gas	1192.8
Cyclohexane	73-01004	0173-96-0608	105	Soil gas	1192.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-96-0608	42.6	Soil gas	1192.8
Dichlorodifluoromethane	73-01004	0173-96-0608	458	Soil gas	1192.8
Dichloroethene[1,1-]	73-01004	0173-96-0608	6.4	Soil gas	1192.8
Dichloroethene[cis-1,2-]	73-01004	0173-96-0608	1680	Soil gas	1192.8
Dichloroethene[trans-1,2-]	73-01004	0173-96-0608	16	Soil gas	1192.8
Dimethylbutane[2,2-]	73-01004	0173-96-0608	7	Soil gas	1192.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dimethylbutane[2,3-]	73-01004	0173-96-0608	15.6	Soil gas	1192.8
Dimethylpentane[2,3-]	73-01004	0173-96-0608	13.8	Soil gas	1192.8
Heptane	73-01004	0173-96-0608	101	Soil gas	1192.8
Hexane	73-01004	0173-96-0608	45.6	Soil gas	1192.8
Isobutane	73-01004	0173-96-0608	473	Soil gas	1192.8
Isooctane	73-01004	0173-96-0608	7.5	Soil gas	1192.8
Isopentane	73-01004	0173-96-0608	13.6	Soil gas	1192.8
Methanol	73-01004	0173-96-0608	61.1	Soil gas	1192.8
Methyl-1-butene[3-]	73-01004	0173-96-0608	12.9	Soil gas	1192.8
Methyl-2-butene[2-]	73-01004	0173-96-0608	8.6	Soil gas	1192.8
Methylcyclohexane	73-01004	0173-96-0608	157	Soil gas	1192.8
Methylcyclopentane	73-01004	0173-96-0608	37.6	Soil gas	1192.8
Methylene Chloride	73-01004	0173-96-0608	22	Soil gas	1192.8
Methylheptane[2-]	73-01004	0173-96-0608	27.2	Soil gas	1192.8
Methylheptane[3-]	73-01004	0173-96-0608	38	Soil gas	1192.8
Methylhexane[3-]	73-01004	0173-96-0608	35.4	Soil gas	1192.8
Methylpentane[2-]	73-01004	0173-96-0608	20.8	Soil gas	1192.8
Methylpentane[3-]	73-01004	0173-96-0608	22	Soil gas	1192.8
Nonane[1-]	73-01004	0173-96-0608	79	Soil gas	1192.8
Octane[n-]	73-01004	0173-96-0608	40.5	Soil gas	1192.8
Pentane	73-01004	0173-96-0608	49.8	Soil gas	1192.8
Pentene[1-]	73-01004	0173-96-0608	9.5	Soil gas	1192.8
Pinene[alpha-]	73-01004	0173-96-0608	7.9	Soil gas	1192.8
Pinene[beta-]	73-01004	0173-96-0608	11.5	Soil gas	1192.8
Propylene	73-01004	0173-96-0608	366	Soil gas	1192.8
Tetrachloroethene	73-01004	0173-96-0608	68.7	Soil gas	1192.8
Trichloroethene	73-01004	0173-96-0608	17.5	Soil gas	1192.8
Trichlorofluoromethane	73-01004	0173-96-0608	9.7	Soil gas	1192.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0608	6.7	Soil gas	1192.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0608	11.8	Soil gas	1192.8
Vinyl Chloride	73-01004	0173-96-0608	137	Soil gas	1192.8
Xylene[1,3-]	73-01004	0173-96-0608	5.9	Soil gas	1192.8
Acetone	73-01004	0173-96-0609	71.1	Soil gas	904.8
Benzene	73-01004	0173-96-0609	24.4	Soil gas	904.8
Butane[n-]	73-01004	0173-96-0609	115	Soil gas	904.8
Butene[1-]	73-01004	0173-96-0609	59	Soil gas	904.8
Butene[cis-2-]	73-01004	0173-96-0609	7.2	Soil gas	904.8
Butene[trans-2-]	73-01004	0173-96-0609	6.3	Soil gas	904.8
Chlorodifluoromethane	73-01004	0173-96-0609	124	Soil gas	904.8
Chloroethane	73-01004	0173-96-0609	11.6	Soil gas	904.8
Chloromethane	73-01004	0173-96-0609	25.8	Soil gas	904.8
Cyclohexane	73-01004	0173-96-0609	146	Soil gas	904.8
Dibromoethane[1,2-]	73-01004	0173-96-0609	20.3	Soil gas	904.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-96-0609	44.6	Soil gas	904.8
Dichlorodifluoromethane	73-01004	0173-96-0609	335	Soil gas	904.8
Dichloroethane[1,1-]	73-01004	0173-96-0609	6.1	Soil gas	904.8
Dichloroethane[1,2-]	73-01004	0173-96-0609	8.4	Soil gas	904.8
Dichloroethene[1,1-]	73-01004	0173-96-0609	10.8	Soil gas	904.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloroethene[cis-1,2-]	73-01004	0173-96-0609	1810	Soil gas	904.8
Dichloroethene[trans-1,2-]	73-01004	0173-96-0609	19.9	Soil gas	904.8
Dimethylbutane[2,2-]	73-01004	0173-96-0609	10.2	Soil gas	904.8
Dimethylbutane[2,3-]	73-01004	0173-96-0609	26.3	Soil gas	904.8
Dimethylpentane[2,3-]	73-01004	0173-96-0609	19.6	Soil gas	904.8
Heptane	73-01004	0173-96-0609	147	Soil gas	904.8
Hexane	73-01004	0173-96-0609	59.1	Soil gas	904.8
Isobutane	73-01004	0173-96-0609	605	Soil gas	904.8
Isooctane	73-01004	0173-96-0609	9.3	Soil gas	904.8
Isopentane	73-01004	0173-96-0609	20.3	Soil gas	904.8
Methyl-1-butene[3-]	73-01004	0173-96-0609	19.8	Soil gas	904.8
Methyl-2-butene[2-]	73-01004	0173-96-0609	12.8	Soil gas	904.8
Methylcyclohexane	73-01004	0173-96-0609	241	Soil gas	904.8
Methylcyclopentane	73-01004	0173-96-0609	54.9	Soil gas	904.8
Methylene Chloride	73-01004	0173-96-0609	17.4	Soil gas	904.8
Methylheptane[2-]	73-01004	0173-96-0609	46.6	Soil gas	904.8
Methylheptane[3-]	73-01004	0173-96-0609	56.2	Soil gas	904.8
Methylhexane[3-]	73-01004	0173-96-0609	55.5	Soil gas	904.8
Methylpentane[2-]	73-01004	0173-96-0609	28.6	Soil gas	904.8
Methylpentane[3-]	73-01004	0173-96-0609	31	Soil gas	904.8
Nonane[1-]	73-01004	0173-96-0609	81.8	Soil gas	904.8
Octane[n-]	73-01004	0173-96-0609	49	Soil gas	904.8
Pentane	73-01004	0173-96-0609	61.5	Soil gas	904.8
Pentene[1-]	73-01004	0173-96-0609	8	Soil gas	904.8
Pinene[alpha-]	73-01004	0173-96-0609	10.5	Soil gas	904.8
Propylene	73-01004	0173-96-0609	457	Soil gas	904.8
Tetrachloroethene	73-01004	0173-96-0609	69.4	Soil gas	904.8
Toluene	73-01004	0173-96-0609	6	Soil gas	904.8
Trichloroethane[1,1,1-]	73-01004	0173-96-0609	6	Soil gas	904.8
Trichloroethene	73-01004	0173-96-0609	12.3	Soil gas	904.8
Trichlorofluoromethane	73-01004	0173-96-0609	5.1	Soil gas	904.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0609	9.3	Soil gas	904.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0609	15.2	Soil gas	904.8
Vinyl Chloride	73-01004	0173-96-0609	166	Soil gas	904.8
Xylene[1,3-]	73-01004	0173-96-0609	10	Soil gas	904.8
Acetone	73-01004	0173-96-0610	265	Soil gas	556.8
Benzene	73-01004	0173-96-0610	37.1	Soil gas	556.8
Butane[n-]	73-01004	0173-96-0610	167	Soil gas	556.8
Butene[1-]	73-01004	0173-96-0610	113	Soil gas	556.8
Butene[cis-2-]	73-01004	0173-96-0610	11.2	Soil gas	556.8
Butene[trans-2-]	73-01004	0173-96-0610	10.9	Soil gas	556.8
Chlorobenzene	73-01004	0173-96-0610	7.9	Soil gas	556.8
Chlorodifluoromethane	73-01004	0173-96-0610	210	Soil gas	556.8
Chloroethane	73-01004	0173-96-0610	13.8	Soil gas	556.8
Chloromethane	73-01004	0173-96-0610	26.5	Soil gas	556.8
Cyclohexane	73-01004	0173-96-0610	242	Soil gas	556.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-96-0610	57.5	Soil gas	556.8
Dichlorobenzene[1,4-]	73-01004	0173-96-0610	43.3	Soil gas	556.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichlorodifluoromethane	73-01004	0173-96-0610	243	Soil gas	556.8
Dichloroethene[1,1-]	73-01004	0173-96-0610	7.2	Soil gas	556.8
Dichloroethene[cis-1,2-]	73-01004	0173-96-0610	1760	Soil gas	556.8
Dichloroethene[trans-1,2-]	73-01004	0173-96-0610	24.9	Soil gas	556.8
Dimethylbutane[2,2-]	73-01004	0173-96-0610	16.2	Soil gas	556.8
Dimethylbutane[2,3-]	73-01004	0173-96-0610	47.3	Soil gas	556.8
Dimethylpentane[2,3-]	73-01004	0173-96-0610	34.9	Soil gas	556.8
Heptane	73-01004	0173-96-0610	317	Soil gas	556.8
Hexane	73-01004	0173-96-0610	99.4	Soil gas	556.8
Isobutane	73-01004	0173-96-0610	868	Soil gas	556.8
Isooctane	73-01004	0173-96-0610	14.1	Soil gas	556.8
Isopentane	73-01004	0173-96-0610	34.3	Soil gas	556.8
Methyl-1-butene[3-]	73-01004	0173-96-0610	34.2	Soil gas	556.8
Methyl-2-butene[2-]	73-01004	0173-96-0610	22.7	Soil gas	556.8
Methylcyclohexane	73-01004	0173-96-0610	452	Soil gas	556.8
Methylcyclopentane	73-01004	0173-96-0610	85.4	Soil gas	556.8
Methylene Chloride	73-01004	0173-96-0610	14.7	Soil gas	556.8
Methylheptane[2-]	73-01004	0173-96-0610	94.3	Soil gas	556.8
Methylheptane[3-]	73-01004	0173-96-0610	117	Soil gas	556.8
Methylhexane[2-]	73-01004	0173-96-0610	6.2	Soil gas	556.8
Methylhexane[3-]	73-01004	0173-96-0610	101	Soil gas	556.8
Methylpentane[2-]	73-01004	0173-96-0610	45.3	Soil gas	556.8
Methylpentane[3-]	73-01004	0173-96-0610	48.2	Soil gas	556.8
Nonane[1-]	73-01004	0173-96-0610	94.7	Soil gas	556.8
Octane[n-]	73-01004	0173-96-0610	95.4	Soil gas	556.8
Pentane	73-01004	0173-96-0610	97.9	Soil gas	556.8
Pentene[1-]	73-01004	0173-96-0610	8.7	Soil gas	556.8
Pentene[trans-2-]	73-01004	0173-96-0610	10.1	Soil gas	556.8
Pinene[alpha-]	73-01004	0173-96-0610	13.9	Soil gas	556.8
Propylene	73-01004	0173-96-0610	616	Soil gas	556.8
Tetrachloroethene	73-01004	0173-96-0610	25	Soil gas	556.8
Trichloroethene	73-01004	0173-96-0610	16.6	Soil gas	556.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0610	11.6	Soil gas	556.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0610	23.9	Soil gas	556.8
Vinyl Chloride	73-01004	0173-96-0610	234	Soil gas	556.8
Xylene[1,3-]	73-01004	0173-96-0610	8.9	Soil gas	556.8
Benzene	73-01004	0173-96-0611	42.7	Soil gas	160.8
Butane[n-]	73-01004	0173-96-0611	202	Soil gas	160.8
Butene[1-]	73-01004	0173-96-0611	190	Soil gas	160.8
Butene[cis-2-]	73-01004	0173-96-0611	16.7	Soil gas	160.8
Butene[trans-2-]	73-01004	0173-96-0611	17.1	Soil gas	160.8
Chlorodifluoromethane	73-01004	0173-96-0611	311	Soil gas	160.8
Chloroethane	73-01004	0173-96-0611	16.5	Soil gas	160.8
Chloromethane	73-01004	0173-96-0611	27.5	Soil gas	160.8
Cyclohexane	73-01004	0173-96-0611	306	Soil gas	160.8
Cyclohexanone	73-01004	0173-96-0611	69	Soil gas	160.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-96-0611	80.3	Soil gas	160.8
Dichlorobenzene[1,4-]	73-01004	0173-96-0611	54.4	Soil gas	160.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichlorodifluoromethane	73-01004	0173-96-0611	199	Soil gas	160.8
Dichloroethene[<i>cis</i> -1,2-]	73-01004	0173-96-0611	893	Soil gas	160.8
Dichloroethene[<i>trans</i> -1,2-]	73-01004	0173-96-0611	18	Soil gas	160.8
Dimethylbutane[2,2-]	73-01004	0173-96-0611	19.3	Soil gas	160.8
Dimethylbutane[2,3-]	73-01004	0173-96-0611	63.9	Soil gas	160.8
Dimethylpentane[2,3-]	73-01004	0173-96-0611	48.7	Soil gas	160.8
Heptane	73-01004	0173-96-0611	431	Soil gas	160.8
Hexane	73-01004	0173-96-0611	124	Soil gas	160.8
Isobutane	73-01004	0173-96-0611	1030	Soil gas	160.8
Isooctane	73-01004	0173-96-0611	17	Soil gas	160.8
Isopentane	73-01004	0173-96-0611	35.1	Soil gas	160.8
Methanol	73-01004	0173-96-0611	87.4	Soil gas	160.8
Methyl-1-butene[3-]	73-01004	0173-96-0611	53.6	Soil gas	160.8
Methyl-1-pentene[2-]	73-01004	0173-96-0611	6	Soil gas	160.8
Methyl-2-butene[2-]	73-01004	0173-96-0611	37.1	Soil gas	160.8
Methylcyclohexane	73-01004	0173-96-0611	578	Soil gas	160.8
Methylcyclopentane	73-01004	0173-96-0611	97	Soil gas	160.8
Methylene Chloride	73-01004	0173-96-0611	10.6	Soil gas	160.8
Methylheptane[2-]	73-01004	0173-96-0611	147	Soil gas	160.8
Methylheptane[3-]	73-01004	0173-96-0611	182	Soil gas	160.8
Methylhexane[2-]	73-01004	0173-96-0611	7.6	Soil gas	160.8
Methylhexane[3-]	73-01004	0173-96-0611	141	Soil gas	160.8
Methylpentane[2-]	73-01004	0173-96-0611	56.4	Soil gas	160.8
Methylpentane[3-]	73-01004	0173-96-0611	53.7	Soil gas	160.8
Nonane[1-]	73-01004	0173-96-0611	63.2	Soil gas	160.8
Octane[n-]	73-01004	0173-96-0611	108	Soil gas	160.8
Pentane	73-01004	0173-96-0611	154	Soil gas	160.8
Pentene[1-]	73-01004	0173-96-0611	23.2	Soil gas	160.8
Pentene[<i>cis</i> -2-]	73-01004	0173-96-0611	8.4	Soil gas	160.8
Pentene[<i>trans</i> -2-]	73-01004	0173-96-0611	20	Soil gas	160.8
Pinene[alpha-]	73-01004	0173-96-0611	21.9	Soil gas	160.8
Propylene	73-01004	0173-96-0611	809	Soil gas	160.8
Tetrachloroethene	73-01004	0173-96-0611	5.2	Soil gas	160.8
Trichloroethene	73-01004	0173-96-0611	17.7	Soil gas	160.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0611	121	Soil gas	160.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0611	32.5	Soil gas	160.8
Vinyl Chloride	73-01004	0173-96-0611	246	Soil gas	160.8
Xylene[1,3-]	73-01004	0173-96-0611	13.7	Soil gas	160.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01005	0173-96-0612	35.5	Soil gas	402
Dichlorodifluoromethane	73-01005	0173-96-0612	386	Soil gas	402
Methanol	73-01005	0173-96-0612	32.3	Soil gas	402
Nonane[1-]	73-01005	0173-96-0612	1.28	Soil gas	402
Tetrachloroethene	73-01005	0173-96-0612	165	Soil gas	402
Trichloroethane[1,1,1-]	73-01005	0173-96-0612	2.78	Soil gas	402
Trichlorofluoromethane	73-01005	0173-96-0612	26.1	Soil gas	402
Chlorodifluoromethane	73-01009	0173-96-0613	3.98	Soil gas	492
Chloroform	73-01009	0173-96-0613	3.74	Soil gas	492

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01009	0173-96-0613	36	Soil gas	492
Dichlorodifluoromethane	73-01009	0173-96-0613	259	Soil gas	492
Dichloroethane[1,1-]	73-01009	0173-96-0613	2.94	Soil gas	492
Methanol	73-01009	0173-96-0613	31.1	Soil gas	492
Tetrachloroethene	73-01009	0173-96-0613	209	Soil gas	492
Trichloroethane[1,1,1-]	73-01009	0173-96-0613	4.42	Soil gas	492
Trichloroethene	73-01009	0173-96-0613	20.4	Soil gas	492
Trichlorofluoromethane	73-01009	0173-96-0613	13.7	Soil gas	492
Benzene	73-01011	0173-96-0614	1.26	Soil gas	2136
Butane[n-]	73-01011	0173-96-0614	4.14	Soil gas	2136
Chlorodifluoromethane	73-01011	0173-96-0614	99.6	Soil gas	2136
Chloroform	73-01011	0173-96-0614	4.86	Soil gas	2136
Chloromethane	73-01011	0173-96-0614	21.9	Soil gas	2136
Cyclohexane	73-01011	0173-96-0614	33.1	Soil gas	2136
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-96-0614	86.7	Soil gas	2136
Dichlorobenzene[1,4-]	73-01011	0173-96-0614	3.06	Soil gas	2136
Dichlorodifluoromethane	73-01011	0173-96-0614	833	Soil gas	2136
Dichloroethane[1,1-]	73-01011	0173-96-0614	4.1	Soil gas	2136
Dichloroethene[cis-1,2-]	73-01011	0173-96-0614	80.8	Soil gas	2136
Dichloroethene[trans-1,2-]	73-01011	0173-96-0614	1.52	Soil gas	2136
Dimethylbutane[2,2-]	73-01011	0173-96-0614	6.34	Soil gas	2136
Dimethylpentane[2,3-]	73-01011	0173-96-0614	1.64	Soil gas	2136
Isobutane	73-01011	0173-96-0614	281	Soil gas	2136
Isooctane	73-01011	0173-96-0614	1.02	Soil gas	2136
Isopentane	73-01011	0173-96-0614	4.78	Soil gas	2136
Methanol	73-01011	0173-96-0614	76.8	Soil gas	2136
Methylcyclohexane	73-01011	0173-96-0614	23.5	Soil gas	2136
Methylcyclopentane	73-01011	0173-96-0614	3.94	Soil gas	2136
Methylpentane[2-]	73-01011	0173-96-0614	2.16	Soil gas	2136
Methylpentane[3-]	73-01011	0173-96-0614	4.24	Soil gas	2136
Propylene	73-01011	0173-96-0614	37.8	Soil gas	2136
Tetrachloroethene	73-01011	0173-96-0614	194	Soil gas	2136
Trichloro-1,2,2-trifluoroethane[1,1,2-]	73-01011	0173-96-0614	2.78	Soil gas	2136
Trichlorobenzene[1,2,4-]	73-01011	0173-96-0614	7.3	Soil gas	2136
Trichloroethane[1,1,1-]	73-01011	0173-96-0614	5.38	Soil gas	2136
Trichloroethene	73-01011	0173-96-0614	11.1	Soil gas	2136
Trichlorofluoromethane	73-01011	0173-96-0614	51.7	Soil gas	2136
Vinyl Chloride	73-01011	0173-96-0614	1.08	Soil gas	2136
Acetone	73-01011	0173-96-0615	1130	Soil gas	1500
Benzene	73-01011	0173-96-0615	15	Soil gas	1500
Butane[n-]	73-01011	0173-96-0615	38.8	Soil gas	1500
Butene[1-]	73-01011	0173-96-0615	24.6	Soil gas	1500
Chlorodifluoromethane	73-01011	0173-96-0615	111	Soil gas	1500
Chloroethane	73-01011	0173-96-0615	8.5	Soil gas	1500
Chloromethane	73-01011	0173-96-0615	28	Soil gas	1500
Cyclohexane	73-01011	0173-96-0615	79.3	Soil gas	1500

1946-1947-1948-1949-1950-1951-1952-1953-1954-1955-1956-1957-1958-1959-1960-1961-1962-1963-1964-1965-1966-1967-1968-1969-1970-1971-1972-1973-1974-1975-1976-1977-1978-1979-1980-1981-1982-1983-1984-1985-1986-1987-1988-1989-1990-1991-1992-1993-1994-1995-1996-1997-1998-1999-2000-2001-2002-2003-2004-2005-2006-2007-2008-2009-2010-2011-2012-2013-2014-2015-2016-2017-2018-2019-2020-2021-2022-2023-2024-2025-2026-2027-2028-2029-2030-2031-2032-2033-2034-2035-2036-2037-2038-2039-2040-2041-2042-2043-2044-2045-2046-2047-2048-2049-2050-2051-2052-2053-2054-2055-2056-2057-2058-2059-2060-2061-2062-2063-2064-2065-2066-2067-2068-2069-2070-2071-2072-2073-2074-2075-2076-2077-2078-2079-2080-2081-2082-2083-2084-2085-2086-2087-2088-2089-2090-2091-2092-2093-2094-2095-2096-2097-2098-2099-2100-2101-2102-2103-2104-2105-2106-2107-2108-2109-2110-2111-2112-2113-2114-2115-2116-2117-2118-2119-2120-2121-2122-2123-2124-2125-2126-2127-2128-2129-2130-2131-2132-2133-2134-2135-2136-2137-2138-2139-2140-2141-2142-2143-2144-2145-2146-2147-2148-2149-2150-2151-2152-2153-2154-2155-2156-2157-2158-2159-2160-2161-2162-2163-2164-2165-2166-2167-2168-2169-2170-2171-2172-2173-2174-2175-2176-2177-2178-2179-2180-2181-2182-2183-2184-2185-2186-2187-2188-2189-2190-2191-2192-2193-2194-2195-2196-2197-2198-2199-2200-2201-2202-2203-2204-2205-2206-2207-2208-2209-2210-2211-2212-2213-2214-2215-2216-2217-2218-2219-2220-2221-2222-2223-2224-2225-2226-2227-2228-2229-2230-2231-2232-2233-2234-2235-2236-2237-2238-2239-2240-2241-2242-2243-2244-2245-2246-2247-2248-2249-2250-2251-2252-2253-2254-2255-2256-2257-2258-2259-2260-2261-2262-2263-2264-2265-2266-2267-2268-2269-2270-2271-2272-2273-2274-2275-2276-2277-2278-2279-2280-2281-2282-2283-2284-2285-2286-2287-2288-2289-2290-2291-2292-2293-2294-2295-2296-2297-2298-2299-2300-2301-2302-2303-2304-2305-2306-2307-2308-2309-2310-2311-2312-2313-2314-2315-2316-2317-2318-2319-2320-2321-2322-2323-2324-2325-2326-2327-2328-2329-2330-2331-2332-2333-2334-2335-2336-2337-2338-2339-2340-2341-2342-2343-2344-2345-2346-2347-2348-2349-2350-2351-2352-2353-2354-2355-2356-2357-2358-2359-2360-2361-2362-2363-2364-2365-2366-2367-2368-2369-2370-2371-2372-2373-2374-2375-2376-2377-2378-2379-2380-2381-2382-2383-2384-2385-2386-2387-2388-2389-2390-2391-2392-2393-2394-2395-2396-2397-2398-2399-2400-2401-2402-2403-2404-2405-2406-2407-2408-2409-2410-2411-2412-2413-2414-2415-2416-2417-2418-2419-2420-2421-2422-2423-2424-2425-2426-2427-2428-2429-2430-2431-2432-2433-2434-2435-2436-2437-2438-2439-2440-2441-2442-2443-2444-2445-2446-2447-2448-2449-2450-2451-2452-2453-2454-2455-2456-2457-2458-2459-2460-2461-2462-2463-2464-2465-2466-2467-2468-2469-2470-2471-2472-2473-2474-2475-2476-2477-2478-2479-2480-2481-2482-2483-2484-2485-2486-2487-2488-2489-2490-2491-2492-2493-2494-2495-2496-2497-2498-2499-2500-2501-2502-2503-2504-2505-2506-2507-2508-2509-2510-2511-2512-2513-2514-2515-2516-2517-2518-2519-2520-2521-2522-2523-2524-2525-2526-2527-2528-2529-2530-2531-2532-2533-2534-2535-2536-2537-2538-2539-2540-2541-2542-2543-2544-2545-2546-2547-2548-2549-2550-2551-2552-2553-2554-2555-2556-2557-2558-2559-2560-2561-2562-2563-2564-2565-2566-2567-2568-2569-2570-2571-2572-2573-2574-2575-2576-2577-2578-2579-2580-2581-2582-2583-2584-2585-2586-2587-2588-2589-2590-2591-2592-2593-2594-2595-2596-2597-2598-2599-2600-2601-2602-2603-2604-2605-2606-2607-2608-2609-2610-2611-2612-2613-2614-2615-2616-2617-2618-2619-2620-2621-2622-2623-2624-2625-2626-2627-2628-2629-2630-2631-2632-2633-2634-2635-2636-2637-2638-2639-2640-2641-2642-2643-2644-2645-2646-2647-2648-2649-2650-2651-2652-2653-2654-2655-2656-2657-2658-2659-2660-2661-2662-2663-2664-2665-2666-2667-2668-2669-2670-2671-2672-2673-2674-2675-2676-2677-2678-2679-2680-2681-2682-2683-2684-2685-2686-2687-2688-2689-2690-2691-2692-2693-2694-2695-2696-2697-2698-2699-2700-2701-2702-2703-2704-2705-2706-2707-2708-2709-2710-2711-2712-2713-2714-2715-2716-2717-2718-2719-2720-2721-2722-2723-2724-2725-2726-2727-2728-2729-2730-2731-2732-2733-2734-2735-2736-2737-2738-2739-2740-2741-2742-2743-2744-2745-2746-2747-2748-2749-2750-2751-2752-2753-2754-2755-2756-2757-2758-2759-2760-2761-2762-2763-2764

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichlorodifluoromethane	73-01011	0173-96-0616	669	Soil gas	1044
Dichloroethane[1,1-]	73-01011	0173-96-0616	5	Soil gas	1044
Dichloroethene[1,1-]	73-01011	0173-96-0616	17.3	Soil gas	1044
Dichloroethene[cis-1,2-]	73-01011	0173-96-0616	4800	Soil gas	1044
Dichloroethene[trans-1,2-]	73-01011	0173-96-0616	54.5	Soil gas	1044
Dimethylbutane[2,2-]	73-01011	0173-96-0616	25.4	Soil gas	1044
Dimethylbutane[2,3-]	73-01011	0173-96-0616	61.3	Soil gas	1044
Dimethylpentane[2,3-]	73-01011	0173-96-0616	46.2	Soil gas	1044
Ethylbenzene	73-01011	0173-96-0616	8	Soil gas	1044
Heptane	73-01011	0173-96-0616	544	Soil gas	1044
Hexane	73-01011	0173-96-0616	123	Soil gas	1044
Isobutane	73-01011	0173-96-0616	1110	Soil gas	1044
Isooctane	73-01011	0173-96-0616	54.9	Soil gas	1044
Isopentane	73-01011	0173-96-0616	41.9	Soil gas	1044
Methyl-1-butene[3-]	73-01011	0173-96-0616	55.2	Soil gas	1044
Methyl-1-pentene[2-]	73-01011	0173-96-0616	5.5	Soil gas	1044
Methyl-2-butene[2-]	73-01011	0173-96-0616	28	Soil gas	1044
Methylcyclohexane	73-01011	0173-96-0616	677	Soil gas	1044
Methylcyclopentane	73-01011	0173-96-0616	92.2	Soil gas	1044
Methylene Chloride	73-01011	0173-96-0616	36.1	Soil gas	1044
Methylheptane[2-]	73-01011	0173-96-0616	170	Soil gas	1044
Methylheptane[3-]	73-01011	0173-96-0616	206	Soil gas	1044
Methylhexane[2-]	73-01011	0173-96-0616	8.7	Soil gas	1044
Methylhexane[3-]	73-01011	0173-96-0616	109	Soil gas	1044
Methylpentane[2-]	73-01011	0173-96-0616	66.8	Soil gas	1044
Methylpentane[3-]	73-01011	0173-96-0616	62	Soil gas	1044
Nonane[1-]	73-01011	0173-96-0616	229	Soil gas	1044
Octane[n-]	73-01011	0173-96-0616	245	Soil gas	1044
Pentane	73-01011	0173-96-0616	99	Soil gas	1044
Pentene[1-]	73-01011	0173-96-0616	35.5	Soil gas	1044
Pentene[trans-2-]	73-01011	0173-96-0616	8.2	Soil gas	1044
Pinene[alpha-]	73-01011	0173-96-0616	36.8	Soil gas	1044
Propylene	73-01011	0173-96-0616	359	Soil gas	1044
Styrene	73-01011	0173-96-0616	10.9	Soil gas	1044
Tetrachloroethene	73-01011	0173-96-0616	105	Soil gas	1044
Toluene	73-01011	0173-96-0616	7.6	Soil gas	1044
Trichlorobenzene[1,2,4-]	73-01011	0173-96-0616	22.3	Soil gas	1044
Trichloroethene	73-01011	0173-96-0616	45	Soil gas	1044
Trichlorofluoromethane	73-01011	0173-96-0616	11.2	Soil gas	1044
Trimethylbenzene[1,2,4-]	73-01011	0173-96-0616	12.1	Soil gas	1044
Trimethylbenzene[1,3,5-]	73-01011	0173-96-0616	6.9	Soil gas	1044
Trimethylpentane[2,3,4-]	73-01011	0173-96-0616	68.5	Soil gas	1044
Vinyl Chloride	73-01011	0173-96-0616	414	Soil gas	1044
Benzene	73-01011	0173-96-0617	156	Soil gas	348
Butane[n-]	73-01011	0173-96-0617	330	Soil gas	348
Butene[1-]	73-01011	0173-96-0617	270	Soil gas	348
Butene[cis-2-]	73-01011	0173-96-0617	35.3	Soil gas	348
Butene[trans-2-]	73-01011	0173-96-0617	27.6	Soil gas	348
Chlorobenzene	73-01011	0173-96-0617	27.2	Soil gas	348

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Chlorodifluoromethane	73-01011	0173-96-0617	363	Soil gas	348
Chloroethane	73-01011	0173-96-0617	66.5	Soil gas	348
Cyclohexane	73-01011	0173-96-0617	630	Soil gas	348
Cyclohexanone	73-01011	0173-96-0617	74.8	Soil gas	348
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-96-0617	106	Soil gas	348
Dichlorobenzene[1,4-]	73-01011	0173-96-0617	144	Soil gas	348
Dichlorodifluoromethane	73-01011	0173-96-0617	568	Soil gas	348
Dichloroethane[1,2-]	73-01011	0173-96-0617	8.4	Soil gas	348
Dichloroethene[1,1-]	73-01011	0173-96-0617	46.2	Soil gas	348
Dichloroethene[cis-1,2-]	73-01011	0173-96-0617	18200	Soil gas	348
Dichloroethene[trans-1,2-]	73-01011	0173-96-0617	256	Soil gas	348
Dichloropropane[1,2-]	73-01011	0173-96-0617	5.1	Soil gas	348
Dimethylbutane[2,2-]	73-01011	0173-96-0617	54.1	Soil gas	348
Dimethylbutane[2,3-]	73-01011	0173-96-0617	251	Soil gas	348
Dimethylpentane[2,3-]	73-01011	0173-96-0617	169	Soil gas	348
Ethylbenzene	73-01011	0173-96-0617	6.9	Soil gas	348
Heptane	73-01011	0173-96-0617	2960	Soil gas	348
Hexane	73-01011	0173-96-0617	325	Soil gas	348
Hexene[cis-3-]	73-01011	0173-96-0617	15.3	Soil gas	348
Isobutane	73-01011	0173-96-0617	2280	Soil gas	348
Isooctane	73-01011	0173-96-0617	227	Soil gas	348
Isopentane	73-01011	0173-96-0617	55.8	Soil gas	348
Isopropylbenzene	73-01011	0173-96-0617	5.5	Soil gas	348
Methyl-1-butene[3-]	73-01011	0173-96-0617	131	Soil gas	348
Methyl-1-pentene[2-]	73-01011	0173-96-0617	21.1	Soil gas	348
Methyl-2-butene[2-]	73-01011	0173-96-0617	75.8	Soil gas	348
Methylcyclohexane	73-01011	0173-96-0617	2280	Soil gas	348
Methylcyclopentane	73-01011	0173-96-0617	233	Soil gas	348
Methylene Chloride	73-01011	0173-96-0617	45.4	Soil gas	348
Methylheptane[2-]	73-01011	0173-96-0617	680	Soil gas	348
Methylheptane[3-]	73-01011	0173-96-0617	709	Soil gas	348
Methylhexane[2-]	73-01011	0173-96-0617	23.7	Soil gas	348
Methylhexane[3-]	73-01011	0173-96-0617	413	Soil gas	348
Methylpentane[2-]	73-01011	0173-96-0617	151	Soil gas	348
Methylpentane[3-]	73-01011	0173-96-0617	133	Soil gas	348
Methylstyrene[alpha-]	73-01011	0173-96-0617	14.7	Soil gas	348
Nonane[1-]	73-01011	0173-96-0617	1550	Soil gas	348
Octane[n-]	73-01011	0173-96-0617	1140	Soil gas	348
Pentane	73-01011	0173-96-0617	199	Soil gas	348
Pentene[1-]	73-01011	0173-96-0617	99.3	Soil gas	348
Pentene[cis-2-]	73-01011	0173-96-0617	75.8	Soil gas	348
Pentene[trans-2-]	73-01011	0173-96-0617	28.4	Soil gas	348
Pinene[alpha-]	73-01011	0173-96-0617	52.7	Soil gas	348
Pinene[beta-]	73-01011	0173-96-0617	93.9	Soil gas	348
Propylene	73-01011	0173-96-0617	1500	Soil gas	348
Tetrachloroethene	73-01011	0173-96-0617	49.5	Soil gas	348
Tetrahydrofuran	73-01011	0173-96-0617	877	Soil gas	348
Toluene	73-01011	0173-96-0617	18.9	Soil gas	348

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Trichloroethene	73-01011	0173-96-0617	42.3	Soil gas	348
Trimethylbenzene[1,2,4-]	73-01011	0173-96-0617	18.8	Soil gas	348
Trimethylbenzene[1,3,5-]	73-01011	0173-96-0617	8.6	Soil gas	348
Trimethylpentane[2,3,4-]	73-01011	0173-96-0617	194	Soil gas	348
Vinyl Chloride	73-01011	0173-96-0617	1710	Soil gas	348
Xylene[1,2-]	73-01011	0173-96-0617	9.9	Soil gas	348
Xylene[1,3-]	73-01011	0173-96-0617	22.6	Soil gas	348
Chlorodifluoromethane	73-01009	0173-96-0618	1.02	Soil gas	134.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01009	0173-96-0618	22.7	Soil gas	134.4
Dichlorodifluoromethane	73-01009	0173-96-0618	173	Soil gas	134.4
Isobutane	73-01009	0173-96-0618	3.04	Soil gas	134.4
Methanol	73-01009	0173-96-0618	18.2	Soil gas	134.4
Tetrachloroethene	73-01009	0173-96-0618	157	Soil gas	134.4
Trichloroethane[1,1,1-]	73-01009	0173-96-0618	1.18	Soil gas	134.4
Trichloroethene	73-01009	0173-96-0618	5.18	Soil gas	134.4
Trichlorofluoromethane	73-01009	0173-96-0618	8.56	Soil gas	134.4
Chloroform	73-01006	0173-96-0619	1.12	Soil gas	324
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01006	0173-96-0619	1.4	Soil gas	324
Dichlorodifluoromethane	73-01006	0173-96-0619	32	Soil gas	324
Propylene	73-01006	0173-96-0619	1.78	Soil gas	324
Tetrachloroethene	73-01006	0173-96-0619	22.9	Soil gas	324
Trichloroethane[1,1,1-]	73-01006	0173-96-0619	1.28	Soil gas	324
Trichloroethene	73-01006	0173-96-0619	8.28	Soil gas	324
Trichlorofluoromethane	73-01006	0173-96-0619	5.92	Soil gas	324
Benzene	73-01007	0173-96-0620	1.4	Soil gas	1200
Bromodichloromethane	73-01007	0173-96-0620	1	Soil gas	1200
Carbon Tetrachloride	73-01007	0173-96-0620	1.02	Soil gas	1200
Chloroform	73-01007	0173-96-0620	1.88	Soil gas	1200
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-96-0620	14.8	Soil gas	1200
Dichlorodifluoromethane	73-01007	0173-96-0620	188	Soil gas	1200
Dichloroethane[1,1-]	73-01007	0173-96-0620	1.12	Soil gas	1200
Dichloroethene[1,1-]	73-01007	0173-96-0620	1	Soil gas	1200
Dichloroethene[cis-1,2-]	73-01007	0173-96-0620	1	Soil gas	1200
Dichloropropane[1,2-]	73-01007	0173-96-0620	1	Soil gas	1200
Dichloropropene[cis-1,3-]	73-01007	0173-96-0620	1.02	Soil gas	1200
Heptane	73-01007	0173-96-0620	1.5	Soil gas	1200
Isobutane	73-01007	0173-96-0620	38	Soil gas	1200
Methylene Chloride	73-01007	0173-96-0620	1.5	Soil gas	1200
Octane[n-]	73-01007	0173-96-0620	1	Soil gas	1200
Pentane	73-01007	0173-96-0620	1.2	Soil gas	1200
Propylene	73-01007	0173-96-0620	37.9	Soil gas	1200
Tetrachloroethene	73-01007	0173-96-0620	21	Soil gas	1200
Toluene	73-01007	0173-96-0620	1.32	Soil gas	1200
Trichloro-1,2,2-trifluoroethane[1,1,2-]	73-01007	0173-96-0620	1.08	Soil gas	1200
Trichloroethane[1,1,1-]	73-01007	0173-96-0620	1.24	Soil gas	1200

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trichloroethene	73-01007	0173-96-0620	1.62	Soil gas	1200
Trichlorofluoromethane	73-01007	0173-96-0620	4.28	Soil gas	1200
Xylene[1,3-]	73-01007	0173-96-0620	2.36	Soil gas	1200
Benzene	73-01007	0173-96-0621	61.1	Soil gas	336
Butane[n-]	73-01007	0173-96-0621	58.6	Soil gas	336
Butene[1-]	73-01007	0173-96-0621	125	Soil gas	336
Butene[cis-2-]	73-01007	0173-96-0621	45.8	Soil gas	336
Chlorobenzene	73-01007	0173-96-0621	25.7	Soil gas	336
Chlorodifluoromethane	73-01007	0173-96-0621	74.8	Soil gas	336
Chloroethane	73-01007	0173-96-0621	12.1	Soil gas	336
Chloromethane	73-01007	0173-96-0621	29.8	Soil gas	336
Cyclohexane	73-01007	0173-96-0621	124	Soil gas	336
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-96-0621	59.1	Soil gas	336
Dichlorobenzene[1,4-]	73-01007	0173-96-0621	233	Soil gas	336
Dichlorodifluoromethane	73-01007	0173-96-0621	605	Soil gas	336
Dichloroethane[1,2-]	73-01007	0173-96-0621	6.8	Soil gas	336
Dichloroethene[1,1-]	73-01007	0173-96-0621	7.4	Soil gas	336
Dichloroethene[cis-1,2-]	73-01007	0173-96-0621	2730	Soil gas	336
Dichloroethene[trans-1,2-]	73-01007	0173-96-0621	22.5	Soil gas	336
Dichloropropane[1,2-]	73-01007	0173-96-0621	13.9	Soil gas	336
Dimethylbutane[2,2-]	73-01007	0173-96-0621	6.5	Soil gas	336
Dimethylbutane[2,3-]	73-01007	0173-96-0621	13.2	Soil gas	336
Dimethylpentane[2,3-]	73-01007	0173-96-0621	11.2	Soil gas	336
Ethylbenzene	73-01007	0173-96-0621	322	Soil gas	336
Heptane	73-01007	0173-96-0621	185	Soil gas	336
Hexane	73-01007	0173-96-0621	92.6	Soil gas	336
Isobutane	73-01007	0173-96-0621	959	Soil gas	336
Isooctane	73-01007	0173-96-0621	10.9	Soil gas	336
Isoprene	73-01007	0173-96-0621	10.3	Soil gas	336
Isopropylbenzene	73-01007	0173-96-0621	41.5	Soil gas	336
Methanol	73-01007	0173-96-0621	84.1	Soil gas	336
Methyl-1-butene[3-]	73-01007	0173-96-0621	38.7	Soil gas	336
Methyl-1-pentene[2-]	73-01007	0173-96-0621	5	Soil gas	336
Methyl-2-butene[2-]	73-01007	0173-96-0621	22.1	Soil gas	336
Methyl-2-pentanone[4-]	73-01007	0173-96-0621	68.9	Soil gas	336
Methylcyclohexane	73-01007	0173-96-0621	177	Soil gas	336
Methylcyclopentane	73-01007	0173-96-0621	43.6	Soil gas	336
Methylene Chloride	73-01007	0173-96-0621	35.6	Soil gas	336
Methylheptane[2-]	73-01007	0173-96-0621	90.9	Soil gas	336
Methylheptane[3-]	73-01007	0173-96-0621	105	Soil gas	336
Methylhexane[3-]	73-01007	0173-96-0621	28.2	Soil gas	336
Methylpentane[2-]	73-01007	0173-96-0621	26.9	Soil gas	336
Methylpentane[3-]	73-01007	0173-96-0621	35.3	Soil gas	336
Nonane[1-]	73-01007	0173-96-0621	743	Soil gas	336
Octane[n-]	73-01007	0173-96-0621	224	Soil gas	336
Pentane	73-01007	0173-96-0621	21.4	Soil gas	336
Pentene[1-]	73-01007	0173-96-0621	45.8	Soil gas	336
Pinene[alpha-]	73-01007	0173-96-0621	169	Soil gas	336

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pinene[beta-]	73-01007	0173-96-0621	483	Soil gas	336
Propylbenzene[1-]	73-01007	0173-96-0621	40.3	Soil gas	336
Propylene	73-01007	0173-96-0621	197	Soil gas	336
Styrene	73-01007	0173-96-0621	5.8	Soil gas	336
Tetrachloroethene	73-01007	0173-96-0621	56.6	Soil gas	336
Tetrahydrofuran	73-01007	0173-96-0621	179	Soil gas	336
Toluene	73-01007	0173-96-0621	453	Soil gas	336
Trichloroethene	73-01007	0173-96-0621	50.6	Soil gas	336
Trimethylbenzene[1,2,4-]	73-01007	0173-96-0621	229	Soil gas	336
Trimethylbenzene[1,3,5-]	73-01007	0173-96-0621	87.8	Soil gas	336
Trimethylpentane[2,3,4-]	73-01007	0173-96-0621	54.5	Soil gas	336
Vinyl Chloride	73-01007	0173-96-0621	236	Soil gas	336
Xylene[1,2-]	73-01007	0173-96-0621	101	Soil gas	336
Xylene[1,3-]	73-01007	0173-96-0621	527	Soil gas	336
Benzene	73-01007	0173-96-0622	131	Soil gas	192
Butane[n-]	73-01007	0173-96-0622	107	Soil gas	192
Butene[1-]	73-01007	0173-96-0622	159	Soil gas	192
Butene[cis-2-]	73-01007	0173-96-0622	7.8	Soil gas	192
Butene[trans-2-]	73-01007	0173-96-0622	6.2	Soil gas	192
Chlorobenzene	73-01007	0173-96-0622	101	Soil gas	192
Chlorodifluoromethane	73-01007	0173-96-0622	97	Soil gas	192
Chloromethane	73-01007	0173-96-0622	28.6	Soil gas	192
Cyclohexane	73-01007	0173-96-0622	235	Soil gas	192
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-96-0622	67.6	Soil gas	192
Dichlorobenzene[1,4-]	73-01007	0173-96-0622	308	Soil gas	192
Dichlorodifluoromethane	73-01007	0173-96-0622	670	Soil gas	192
Dichloroethane[1,2-]	73-01007	0173-96-0622	6.6	Soil gas	192
Dichloroethene[1,1-]	73-01007	0173-96-0622	12.1	Soil gas	192
Dichloroethene[cis-1,2-]	73-01007	0173-96-0622	5370	Soil gas	192
Dichloroethene[trans-1,2-]	73-01007	0173-96-0622	45.5	Soil gas	192
Dichloropropane[1,2-]	73-01007	0173-96-0622	18.7	Soil gas	192
Dimethylbutane[2,2-]	73-01007	0173-96-0622	10	Soil gas	192
Dimethylbutane[2,3-]	73-01007	0173-96-0622	89.6	Soil gas	192
Dimethylpentane[2,3-]	73-01007	0173-96-0622	17.6	Soil gas	192
Ethylbenzene	73-01007	0173-96-0622	807	Soil gas	192
Heptane	73-01007	0173-96-0622	479	Soil gas	192
Hexane	73-01007	0173-96-0622	221	Soil gas	192
Isobutane	73-01007	0173-96-0622	1570	Soil gas	192
Isooctane	73-01007	0173-96-0622	16.9	Soil gas	192
Isopentane	73-01007	0173-96-0622	7.5	Soil gas	192
Isoprene	73-01007	0173-96-0622	9.6	Soil gas	192
Isopropylbenzene	73-01007	0173-96-0622	81.9	Soil gas	192
Methanol	73-01007	0173-96-0622	55.7	Soil gas	192
Methyl-1-butene[3-]	73-01007	0173-96-0622	65.7	Soil gas	192
Methyl-1-pentene[2-]	73-01007	0173-96-0622	8.5	Soil gas	192
Methyl-2-butene[2-]	73-01007	0173-96-0622	37.2	Soil gas	192
Methylcyclohexane	73-01007	0173-96-0622	382	Soil gas	192
Methylcyclopentane	73-01007	0173-96-0622	89.6	Soil gas	192

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylene Chloride	73-01007	0173-96-0622	45.7	Soil gas	192
Methylheptane[2-]	73-01007	0173-96-0622	285	Soil gas	192
Methylheptane[3-]	73-01007	0173-96-0622	306	Soil gas	192
Methylhexane[3-]	73-01007	0173-96-0622	53.7	Soil gas	192
Methylpentane[2-]	73-01007	0173-96-0622	47.2	Soil gas	192
Methylpentane[3-]	73-01007	0173-96-0622	68.3	Soil gas	192
Nonane[1-]	73-01007	0173-96-0622	1700	Soil gas	192
Octane[n-]	73-01007	0173-96-0622	676	Soil gas	192
Pentane	73-01007	0173-96-0622	30.1	Soil gas	192
Pentene[1-]	73-01007	0173-96-0622	67.6	Soil gas	192
Pentene[trans-2-]	73-01007	0173-96-0622	7.4	Soil gas	192
Pinene[alpha-]	73-01007	0173-96-0622	339	Soil gas	192
Pinene[beta-]	73-01007	0173-96-0622	247	Soil gas	192
Propylbenzene[1-]	73-01007	0173-96-0622	90.5	Soil gas	192
Propylene	73-01007	0173-96-0622	510	Soil gas	192
Styrene	73-01007	0173-96-0622	7.1	Soil gas	192
Tetrachloroethene	73-01007	0173-96-0622	69.7	Soil gas	192
Tetrahydrofuran	73-01007	0173-96-0622	151	Soil gas	192
Toluene	73-01007	0173-96-0622	524	Soil gas	192
Trichloroethene	73-01007	0173-96-0622	57.9	Soil gas	192
Trimethylbenzene[1,2,4-]	73-01007	0173-96-0622	396	Soil gas	192
Trimethylbenzene[1,3,5-]	73-01007	0173-96-0622	157	Soil gas	192
Trimethylpentane[2,3,4-]	73-01007	0173-96-0622	103	Soil gas	192
Vinyl Chloride	73-01007	0173-96-0622	372	Soil gas	192
Xylene[1,2-]	73-01007	0173-96-0622	180	Soil gas	192
Xylene[1,3-]	73-01007	0173-96-0622	1010	Soil gas	192
Benzene	73-02089	0173-96-0623	89.6	Soil gas	888
Butane[n-]	73-02089	0173-96-0623	45.3	Soil gas	888
Butene[1-]	73-02089	0173-96-0623	169	Soil gas	888
Butene[cis-2-]	73-02089	0173-96-0623	10.8	Soil gas	888
Butene[trans-2-]	73-02089	0173-96-0623	7.9	Soil gas	888
Chlorobenzene	73-02089	0173-96-0623	20.9	Soil gas	888
Chlorodifluoromethane	73-02089	0173-96-0623	60.4	Soil gas	888
Chloroethane	73-02089	0173-96-0623	9.4	Soil gas	888
Chloromethane	73-02089	0173-96-0623	26.5	Soil gas	888
Cyclohexane	73-02089	0173-96-0623	81.3	Soil gas	888
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02089	0173-96-0623	32.2	Soil gas	888
Dichlorobenzene[1,4-]	73-02089	0173-96-0623	231	Soil gas	888
Dichlorodifluoromethane	73-02089	0173-96-0623	449	Soil gas	888
Dichloroethene[cis-1,2-]	73-02089	0173-96-0623	2790	Soil gas	888
Dichloroethene[trans-1,2-]	73-02089	0173-96-0623	8.6	Soil gas	888
Diethyl Ether	73-02089	0173-96-0623	163	Soil gas	888
Dimethylbutane[2,3-]	73-02089	0173-96-0623	12.6	Soil gas	888
Dimethylpentane[2,3-]	73-02089	0173-96-0623	8.7	Soil gas	888
Ethylbenzene	73-02089	0173-96-0623	379	Soil gas	888
Heptane	73-02089	0173-96-0623	139	Soil gas	888
Hexane	73-02089	0173-96-0623	49.3	Soil gas	888
Isobutane	73-02089	0173-96-0623	648	Soil gas	888

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Isooctane	73-02089	0173-96-0623	7.1	Soil gas	888
Isopentane	73-02089	0173-96-0623	5.4	Soil gas	888
Isopropylbenzene	73-02089	0173-96-0623	34.7	Soil gas	888
Methyl-1-butene[3-]	73-02089	0173-96-0623	20.7	Soil gas	888
Methyl-2-butene[2-]	73-02089	0173-96-0623	14.8	Soil gas	888
Methylcyclohexane	73-02089	0173-96-0623	125	Soil gas	888
Methylcyclopentane	73-02089	0173-96-0623	26.2	Soil gas	888
Methylene Chloride	73-02089	0173-96-0623	6.5	Soil gas	888
Methylheptane[2-]	73-02089	0173-96-0623	61.4	Soil gas	888
Methylheptane[3-]	73-02089	0173-96-0623	65.9	Soil gas	888
Methylhexane[3-]	73-02089	0173-96-0623	25.8	Soil gas	888
Methylpentane[2-]	73-02089	0173-96-0623	12.8	Soil gas	888
Methylpentane[3-]	73-02089	0173-96-0623	16	Soil gas	888
Nonane[1-]	73-02089	0173-96-0623	653	Soil gas	888
Octane[n-]	73-02089	0173-96-0623	160	Soil gas	888
Pentane	73-02089	0173-96-0623	14.8	Soil gas	888
Pentene[1-]	73-02089	0173-96-0623	60.4	Soil gas	888
Pentene[trans-2-]	73-02089	0173-96-0623	5.7	Soil gas	888
Pinene[alpha-]	73-02089	0173-96-0623	71.7	Soil gas	888
Pinene[beta-]	73-02089	0173-96-0623	13.3	Soil gas	888
Propylbenzene[1-]	73-02089	0173-96-0623	35.7	Soil gas	888
Propylene	73-02089	0173-96-0623	281	Soil gas	888
Tetrachloroethene	73-02089	0173-96-0623	25.6	Soil gas	888
Toluene	73-02089	0173-96-0623	48.3	Soil gas	888
Trichloroethene	73-02089	0173-96-0623	20.4	Soil gas	888
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0623	228	Soil gas	888
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0623	65.3	Soil gas	888
Trimethylpentane[2,3,4-]	73-02089	0173-96-0623	28	Soil gas	888
Vinyl Chloride	73-02089	0173-96-0623	186	Soil gas	888
Xylene[1,2-]	73-02089	0173-96-0623	14.3	Soil gas	888
Xylene[1,3-]	73-02089	0173-96-0623	174	Soil gas	888
Benzene	73-02089	0173-96-0624	522	Soil gas	360
Benzyl Chloride	73-02089	0173-96-0624	18.1	Soil gas	360
Butane[n-]	73-02089	0173-96-0624	205	Soil gas	360
Butene[1-]	73-02089	0173-96-0624	436	Soil gas	360
Butene[cis-2-]	73-02089	0173-96-0624	22.4	Soil gas	360
Butene[trans-2-]	73-02089	0173-96-0624	15.9	Soil gas	360
Chlorobenzene	73-02089	0173-96-0624	117	Soil gas	360
Chlorodifluoromethane	73-02089	0173-96-0624	306	Soil gas	360
Chloroethane	73-02089	0173-96-0624	55.3	Soil gas	360
Chloromethane	73-02089	0173-96-0624	33.5	Soil gas	360
Cyclohexane	73-02089	0173-96-0624	454	Soil gas	360
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02089	0173-96-0624	92.1	Soil gas	360
Dichlorobenzene[1,4-]	73-02089	0173-96-0624	1050	Soil gas	360
Dichlorodifluoromethane	73-02089	0173-96-0624	1340	Soil gas	360
Dichloroethene[1,1-]	73-02089	0173-96-0624	11	Soil gas	360
Dichloroethene[cis-1,2-]	73-02089	0173-96-0624	5970	Soil gas	360
Dichloroethene[trans-1,2-]	73-02089	0173-96-0624	34.6	Soil gas	360

TABLE 2.3.4.3-26

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Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Diethyl Ether	73-02089	0173-96-0624	140	Soil gas	360
Dimethylbutane[2,2-]	73-02089	0173-96-0624	16.7	Soil gas	360
Dimethylbutane[2,3-]	73-02089	0173-96-0624	68.9	Soil gas	360
Dimethylpentane[2,3-]	73-02089	0173-96-0624	43.6	Soil gas	360
Ethylbenzene	73-02089	0173-96-0624	3560	Soil gas	360
Heptane	73-02089	0173-96-0624	737	Soil gas	360
Hexane	73-02089	0173-96-0624	287	Soil gas	360
Hexene[cis-3-]	73-02089	0173-96-0624	14.1	Soil gas	360
Isobutane	73-02089	0173-96-0624	3960	Soil gas	360
Isooctane	73-02089	0173-96-0624	38.7	Soil gas	360
Isopentane	73-02089	0173-96-0624	19.3	Soil gas	360
Isopropylbenzene	73-02089	0173-96-0624	365	Soil gas	360
Methyl-1-butene[3-]	73-02089	0173-96-0624	94.5	Soil gas	360
Methyl-1-pentene[2-]	73-02089	0173-96-0624	14.2	Soil gas	360
Methyl-2-butene[2-]	73-02089	0173-96-0624	77.2	Soil gas	360
Methylcyclohexane	73-02089	0173-96-0624	630	Soil gas	360
Methylcyclopentane	73-02089	0173-96-0624	135	Soil gas	360
Methylene Chloride	73-02089	0173-96-0624	57.6	Soil gas	360
Methylheptane[2-]	73-02089	0173-96-0624	366	Soil gas	360
Methylheptane[3-]	73-02089	0173-96-0624	406	Soil gas	360
Methylhexane[2-]	73-02089	0173-96-0624	8.1	Soil gas	360
Methylhexane[3-]	73-02089	0173-96-0624	123	Soil gas	360
Methylpentane[2-]	73-02089	0173-96-0624	71	Soil gas	360
Methylpentane[3-]	73-02089	0173-96-0624	76.6	Soil gas	360
Nonane[1-]	73-02089	0173-96-0624	9820	Soil gas	360
Octane[n-]	73-02089	0173-96-0624	1220	Soil gas	360
Pentane	73-02089	0173-96-0624	75.4	Soil gas	360
Pentene[1-]	73-02089	0173-96-0624	58	Soil gas	360
Pentene[cis-2-]	73-02089	0173-96-0624	77.2	Soil gas	360
Pentene[trans-2-]	73-02089	0173-96-0624	24	Soil gas	360
Pinene[alpha-]	73-02089	0173-96-0624	951	Soil gas	360
Propylbenzene[1-]	73-02089	0173-96-0624	587	Soil gas	360
Propylene	73-02089	0173-96-0624	985	Soil gas	360
Styrene	73-02089	0173-96-0624	5.4	Soil gas	360
Tetrachloroethene	73-02089	0173-96-0624	13.7	Soil gas	360
Toluene	73-02089	0173-96-0624	750	Soil gas	360
Trichloroethene	73-02089	0173-96-0624	42.1	Soil gas	360
Trichlorofluoromethane	73-02089	0173-96-0624	73.2	Soil gas	360
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0624	2170	Soil gas	360
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0624	864	Soil gas	360
Trimethylpentane[2,3,4-]	73-02089	0173-96-0624	187	Soil gas	360
Vinyl Chloride	73-02089	0173-96-0624	1260	Soil gas	360
Xylene[1,2-]	73-02089	0173-96-0624	1060	Soil gas	360
Xylene[1,3-]	73-02089	0173-96-0624	3320	Soil gas	360
Butane[n-]	73-02089	0173-96-0625	26.5	Soil gas	14.4
Butene[1-]	73-02089	0173-96-0625	23.3	Soil gas	14.4
Chlorodifluoromethane	73-02089	0173-96-0625	1.2	Soil gas	14.4
Cyclohexane	73-02089	0173-96-0625	2.62	Soil gas	14.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02089	0173-96-0625	2.86	Soil gas	14.4
Dichlorobenzene[1,4-]	73-02089	0173-96-0625	3.98	Soil gas	14.4
Dichlorodifluoromethane	73-02089	0173-96-0625	8.22	Soil gas	14.4
Ethylbenzene	73-02089	0173-96-0625	3.36	Soil gas	14.4
Heptane	73-02089	0173-96-0625	1.1	Soil gas	14.4
Hexane	73-02089	0173-96-0625	3.7	Soil gas	14.4
Isobutane	73-02089	0173-96-0625	15.9	Soil gas	14.4
Isopentane	73-02089	0173-96-0625	2.26	Soil gas	14.4
Methyl-1-butene[3-]	73-02089	0173-96-0625	3.2	Soil gas	14.4
Methyl-2-butene[2-]	73-02089	0173-96-0625	1.64	Soil gas	14.4
Methylcyclohexane	73-02089	0173-96-0625	1.7	Soil gas	14.4
Methylheptane[3-]	73-02089	0173-96-0625	1.94	Soil gas	14.4
Nonane[1-]	73-02089	0173-96-0625	21.3	Soil gas	14.4
Octane[n-]	73-02089	0173-96-0625	1.64	Soil gas	14.4
Pentane	73-02089	0173-96-0625	8.44	Soil gas	14.4
Pinene[alpha-]	73-02089	0173-96-0625	1.92	Soil gas	14.4
Pinene[beta-]	73-02089	0173-96-0625	1.14	Soil gas	14.4
Propylbenzene[1-]	73-02089	0173-96-0625	1.28	Soil gas	14.4
Propylene	73-02089	0173-96-0625	16	Soil gas	14.4
Trimethylbenzene[1,2,4-]	73-02089	0173-96-0625	7.1	Soil gas	14.4
Trimethylbenzene[1,3,5-]	73-02089	0173-96-0625	2.08	Soil gas	14.4
Trimethylpentane[2,3,4-]	73-02089	0173-96-0625	3.78	Soil gas	14.4
Xylene[1,2-]	73-02089	0173-96-0625	1.16	Soil gas	14.4
Xylene[1,3-]	73-02089	0173-96-0625	3.52	Soil gas	14.4
Acetone	73-02068	0173-96-0626	119	Soil gas	309.6
Benzene	73-02068	0173-96-0626	31.9	Soil gas	309.6
Butane[n-]	73-02068	0173-96-0626	205	Soil gas	309.6
Butanone[2-]	73-02068	0173-96-0626	153	Soil gas	309.6
Butene[1-]	73-02068	0173-96-0626	107	Soil gas	309.6
Butene[cis-2-]	73-02068	0173-96-0626	9.4	Soil gas	309.6
Butene[trans-2-]	73-02068	0173-96-0626	9.5	Soil gas	309.6
Chlorobenzene	73-02068	0173-96-0626	301	Soil gas	309.6
Chlorodifluoromethane	73-02068	0173-96-0626	187	Soil gas	309.6
Chloroethane	73-02068	0173-96-0626	23	Soil gas	309.6
Chloroform	73-02068	0173-96-0626	6.5	Soil gas	309.6
Chloromethane	73-02068	0173-96-0626	30.2	Soil gas	309.6
Cyclohexane	73-02068	0173-96-0626	78.5	Soil gas	309.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02068	0173-96-0626	106	Soil gas	309.6
Dichlorobenzene[1,4-]	73-02068	0173-96-0626	270	Soil gas	309.6
Dichlorodifluoromethane	73-02068	0173-96-0626	1160	Soil gas	309.6
Dichloroethene[1,1-]	73-02068	0173-96-0626	7.5	Soil gas	309.6
Dichloroethene[cis-1,2-]	73-02068	0173-96-0626	2930	Soil gas	309.6
Dichloroethene[trans-1,2-]	73-02068	0173-96-0626	37.4	Soil gas	309.6
Diethyl Ether	73-02068	0173-96-0626	106	Soil gas	309.6
Dimethylbutane[2,2-]	73-02068	0173-96-0626	12.3	Soil gas	309.6
Dimethylbutane[2,3-]	73-02068	0173-96-0626	18.4	Soil gas	309.6
Dimethylpentane[2,3-]	73-02068	0173-96-0626	14.1	Soil gas	309.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Ethylbenzene	73-02068	0173-96-0626	232	Soil gas	309.6
Heptane	73-02068	0173-96-0626	93.9	Soil gas	309.6
Hexane	73-02068	0173-96-0626	83.4	Soil gas	309.6
Isobutane	73-02068	0173-96-0626	1360	Soil gas	309.6
Isooctane	73-02068	0173-96-0626	11.2	Soil gas	309.6
Isopentane	73-02068	0173-96-0626	61.4	Soil gas	309.6
Isopropylbenzene	73-02068	0173-96-0626	28.9	Soil gas	309.6
Methyl-1-butene[3-]	73-02068	0173-96-0626	47.7	Soil gas	309.6
Methyl-1-pentene[2-]	73-02068	0173-96-0626	6.8	Soil gas	309.6
Methyl-2-butene[2-]	73-02068	0173-96-0626	32.5	Soil gas	309.6
Methylcyclohexane	73-02068	0173-96-0626	121	Soil gas	309.6
Methylcyclopentane	73-02068	0173-96-0626	45	Soil gas	309.6
Methylene Chloride	73-02068	0173-96-0626	72.3	Soil gas	309.6
Methylheptane[2-]	73-02068	0173-96-0626	49.7	Soil gas	309.6
Methylheptane[3-]	73-02068	0173-96-0626	62.1	Soil gas	309.6
Methylhexane[3-]	73-02068	0173-96-0626	34.9	Soil gas	309.6
Methylpentane[2-]	73-02068	0173-96-0626	40	Soil gas	309.6
Methylpentane[3-]	73-02068	0173-96-0626	41.5	Soil gas	309.6
Nonane[1-]	73-02068	0173-96-0626	376	Soil gas	309.6
Octane[n-]	73-02068	0173-96-0626	128	Soil gas	309.6
Pentane	73-02068	0173-96-0626	75.5	Soil gas	309.6
Pentene[1-]	73-02068	0173-96-0626	61.4	Soil gas	309.6
Pentene[trans-2-]	73-02068	0173-96-0626	7.2	Soil gas	309.6
Pinene[alpha-]	73-02068	0173-96-0626	318	Soil gas	309.6
Pinene[beta-]	73-02068	0173-96-0626	1020	Soil gas	309.6
Propylbenzene[1-]	73-02068	0173-96-0626	35.3	Soil gas	309.6
Propylene	73-02068	0173-96-0626	1520	Soil gas	309.6
Tetrachloroethene	73-02068	0173-96-0626	209	Soil gas	309.6
Tetrahydrofuran	73-02068	0173-96-0626	316	Soil gas	309.6
Toluene	73-02068	0173-96-0626	294	Soil gas	309.6
Trichloroethene	73-02068	0173-96-0626	96.8	Soil gas	309.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0626	236	Soil gas	309.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0626	90	Soil gas	309.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0626	37.7	Soil gas	309.6
Vinyl Chloride	73-02068	0173-96-0626	181	Soil gas	309.6
Xylene[1,2-]	73-02068	0173-96-0626	42.7	Soil gas	309.6
Xylene[1,3-]	73-02068	0173-96-0626	461	Soil gas	309.6
Acetone	73-02068	0173-96-0627	291	Soil gas	15.6
Benzene	73-02068	0173-96-0627	84.5	Soil gas	15.6
Butane[n-]	73-02068	0173-96-0627	393	Soil gas	15.6
Butene[1-]	73-02068	0173-96-0627	319	Soil gas	15.6
Butene[cis-2-]	73-02068	0173-96-0627	24.3	Soil gas	15.6
Butene[trans-2-]	73-02068	0173-96-0627	21.4	Soil gas	15.6
Chlorobenzene	73-02068	0173-96-0627	230	Soil gas	15.6
Chlorodifluoromethane	73-02068	0173-96-0627	198	Soil gas	15.6
Chloroethane	73-02068	0173-96-0627	40.1	Soil gas	15.6
Cyclohexane	73-02068	0173-96-0627	152	Soil gas	15.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02068	0173-96-0627	105	Soil gas	15.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichlorobenzene[1,4-]	73-02068	0173-96-0627	679	Soil gas	15.6
Dichlorodifluoromethane	73-02068	0173-96-0627	448	Soil gas	15.6
Dichloroethene[1,1-]	73-02068	0173-96-0627	29.8	Soil gas	15.6
Dichloroethene[cis-1,2-]	73-02068	0173-96-0627	9820	Soil gas	15.6
Dichloroethene[trans-1,2-]	73-02068	0173-96-0627	182	Soil gas	15.6
Dimethylbutane[2,2-]	73-02068	0173-96-0627	21.8	Soil gas	15.6
Dimethylbutane[2,3-]	73-02068	0173-96-0627	55.4	Soil gas	15.6
Dimethylpentane[2,3-]	73-02068	0173-96-0627	32.6	Soil gas	15.6
Ethylbenzene	73-02068	0173-96-0627	542	Soil gas	15.6
Heptane	73-02068	0173-96-0627	492	Soil gas	15.6
Hexane	73-02068	0173-96-0627	369	Soil gas	15.6
Hexene[cis-3-]	73-02068	0173-96-0627	11.7	Soil gas	15.6
Isobutane	73-02068	0173-96-0627	4490	Soil gas	15.6
Isooctane	73-02068	0173-96-0627	33.1	Soil gas	15.6
Isopentane	73-02068	0173-96-0627	34.8	Soil gas	15.6
Isoprene	73-02068	0173-96-0627	20.7	Soil gas	15.6
Isopropylbenzene	73-02068	0173-96-0627	28.9	Soil gas	15.6
Methyl-1-butene[3-]	73-02068	0173-96-0627	166	Soil gas	15.6
Methyl-1-pentene[2-]	73-02068	0173-96-0627	34.5	Soil gas	15.6
Methyl-2-butene[2-]	73-02068	0173-96-0627	115	Soil gas	15.6
Methylcyclohexane	73-02068	0173-96-0627	507	Soil gas	15.6
Methylcyclopentane	73-02068	0173-96-0627	183	Soil gas	15.6
Methylene Chloride	73-02068	0173-96-0627	48.5	Soil gas	15.6
Methylheptane[2-]	73-02068	0173-96-0627	420	Soil gas	15.6
Methylheptane[3-]	73-02068	0173-96-0627	494	Soil gas	15.6
Methylhexane[2-]	73-02068	0173-96-0627	6.6	Soil gas	15.6
Methylhexane[3-]	73-02068	0173-96-0627	99.9	Soil gas	15.6
Methylpentane[2-]	73-02068	0173-96-0627	116	Soil gas	15.6
Methylpentane[3-]	73-02068	0173-96-0627	117	Soil gas	15.6
Nonane[1-]	73-02068	0173-96-0627	2180	Soil gas	15.6
Octane[n-]	73-02068	0173-96-0627	1310	Soil gas	15.6
Pentane	73-02068	0173-96-0627	109	Soil gas	15.6
Pentene[1-]	73-02068	0173-96-0627	63.7	Soil gas	15.6
Pentene[cis-2-]	73-02068	0173-96-0627	115	Soil gas	15.6
Pentene[trans-2-]	73-02068	0173-96-0627	25	Soil gas	15.6
Pinene[alpha-]	73-02068	0173-96-0627	1480	Soil gas	15.6
Pinene[beta-]	73-02068	0173-96-0627	1500	Soil gas	15.6
Propylbenzene[1-]	73-02068	0173-96-0627	24.8	Soil gas	15.6
Propylene	73-02068	0173-96-0627	2390	Soil gas	15.6
Tetrachloroethene	73-02068	0173-96-0627	237	Soil gas	15.6
Tetrahydrofuran	73-02068	0173-96-0627	391	Soil gas	15.6
Toluene	73-02068	0173-96-0627	1740	Soil gas	15.6
Trichloroethene	73-02068	0173-96-0627	148	Soil gas	15.6
Trimethylbenzene[1,2,4-]	73-02068	0173-96-0627	53.8	Soil gas	15.6
Trimethylbenzene[1,3,5-]	73-02068	0173-96-0627	58.7	Soil gas	15.6
Trimethylpentane[2,3,4-]	73-02068	0173-96-0627	191	Soil gas	15.6
Vinyl Chloride	73-02068	0173-96-0627	842	Soil gas	15.6
Xylene[1,2-]	73-02068	0173-96-0627	365	Soil gas	15.6
Xylene[1,3-]	73-02068	0173-96-0627	1300	Soil gas	15.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Acetone	73-02071	0173-96-0628	5110	Soil gas	228
Benzene	73-02071	0173-96-0628	44	Soil gas	228
Butane[n-]	73-02071	0173-96-0628	77.7	Soil gas	228
Butanone[2-]	73-02071	0173-96-0628	11800	Soil gas	228
Butene[1-]	73-02071	0173-96-0628	602	Soil gas	228
Butene[cis-2-]	73-02071	0173-96-0628	10.5	Soil gas	228
Butene[trans-2-]	73-02071	0173-96-0628	8.7	Soil gas	228
Chlorobenzene	73-02071	0173-96-0628	26.8	Soil gas	228
Cyclohexane	73-02071	0173-96-0628	5.9	Soil gas	228
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02071	0173-96-0628	12.9	Soil gas	228
Dichlorobenzene[1,2-]	73-02071	0173-96-0628	41.6	Soil gas	228
Dichlorobenzene[1,4-]	73-02071	0173-96-0628	994	Soil gas	228
Dichlorodifluoromethane	73-02071	0173-96-0628	60	Soil gas	228
Dichloroethene[cis-1,2-]	73-02071	0173-96-0628	18.6	Soil gas	228
Ethylbenzene	73-02071	0173-96-0628	1740	Soil gas	228
Heptane	73-02071	0173-96-0628	23.9	Soil gas	228
Hexane	73-02071	0173-96-0628	21.1	Soil gas	228
Hexanone[2-]	73-02071	0173-96-0628	108	Soil gas	228
Isobutane	73-02071	0173-96-0628	355	Soil gas	228
Isoprene	73-02071	0173-96-0628	57.2	Soil gas	228
Isopropylbenzene	73-02071	0173-96-0628	222	Soil gas	228
Methanol	73-02071	0173-96-0628	81.7	Soil gas	228
Methyl-1-butene[3-]	73-02071	0173-96-0628	94.8	Soil gas	228
Methyl-2-butene[2-]	73-02071	0173-96-0628	102	Soil gas	228
Methyl-2-pentanone[4-]	73-02071	0173-96-0628	2280	Soil gas	228
Methylcyclopentane	73-02071	0173-96-0628	14.5	Soil gas	228
Methylheptane[2-]	73-02071	0173-96-0628	73.1	Soil gas	228
Methylheptane[3-]	73-02071	0173-96-0628	5.4	Soil gas	228
Methylhexane[3-]	73-02071	0173-96-0628	17.1	Soil gas	228
Methylpentane[2-]	73-02071	0173-96-0628	5.3	Soil gas	228
Methylpentane[3-]	73-02071	0173-96-0628	8.3	Soil gas	228
Methylstyrene[alpha-]	73-02071	0173-96-0628	11	Soil gas	228
Nonane[1-]	73-02071	0173-96-0628	1210	Soil gas	228
Octane[n-]	73-02071	0173-96-0628	23.1	Soil gas	228
Pentane	73-02071	0173-96-0628	16.3	Soil gas	228
Pentene[1-]	73-02071	0173-96-0628	173	Soil gas	228
Pentene[cis-2-]	73-02071	0173-96-0628	102	Soil gas	228
Pinene[alpha-]	73-02071	0173-96-0628	629	Soil gas	228
Pinene[beta-]	73-02071	0173-96-0628	20800	Soil gas	228
Propanol[2-]	73-02071	0173-96-0628	120	Soil gas	228
Propylbenzene[1-]	73-02071	0173-96-0628	300	Soil gas	228
Propylene	73-02071	0173-96-0628	463	Soil gas	228
Styrene	73-02071	0173-96-0628	29.7	Soil gas	228
Tetrachloroethene	73-02071	0173-96-0628	5.9	Soil gas	228
Tetrahydrofuran	73-02071	0173-96-0628	520	Soil gas	228
Toluene	73-02071	0173-96-0628	4090	Soil gas	228
Trichlorobenzene[1,2,4-]	73-02071	0173-96-0628	5.1	Soil gas	228
Trichloroethene	73-02071	0173-96-0628	7.8	Soil gas	228

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0628	920	Soil gas	228
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0628	363	Soil gas	228
Vinyl Chloride	73-02071	0173-96-0628	22.3	Soil gas	228
Xylene[1,2-]	73-02071	0173-96-0628	1620	Soil gas	228
Xylene[1,3-]	73-02071	0173-96-0628	2930	Soil gas	228
Acetone	73-02071	0173-96-0629	154	Soil gas	12
Benzene	73-02071	0173-96-0629	44.8	Soil gas	12
Benzonitrile	73-02071	0173-96-0629	68.9	Soil gas	12
Butane[n-]	73-02071	0173-96-0629	176	Soil gas	12
Butanone[2-]	73-02071	0173-96-0629	183	Soil gas	12
Butene[1-]	73-02071	0173-96-0629	601	Soil gas	12
Butene[cis-2-]	73-02071	0173-96-0629	11.6	Soil gas	12
Butene[trans-2-]	73-02071	0173-96-0629	15.7	Soil gas	12
Chlorobenzene	73-02071	0173-96-0629	10	Soil gas	12
Chlorodifluoromethane	73-02071	0173-96-0629	602	Soil gas	12
Chloroethane	73-02071	0173-96-0629	24.7	Soil gas	12
Chloromethane	73-02071	0173-96-0629	27.7	Soil gas	12
Cyclohexane	73-02071	0173-96-0629	302	Soil gas	12
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02071	0173-96-0629	63.8	Soil gas	12
Dichlorobenzene[1,4-]	73-02071	0173-96-0629	147	Soil gas	12
Dichlorodifluoromethane	73-02071	0173-96-0629	40.3	Soil gas	12
Dichloroethene[cis-1,2-]	73-02071	0173-96-0629	261	Soil gas	12
Dimethylbutane[2,2-]	73-02071	0173-96-0629	6.1	Soil gas	12
Dimethylbutane[2,3-]	73-02071	0173-96-0629	114	Soil gas	12
Dimethylpentane[2,3-]	73-02071	0173-96-0629	65.5	Soil gas	12
Ethylbenzene	73-02071	0173-96-0629	1200	Soil gas	12
Heptane	73-02071	0173-96-0629	297	Soil gas	12
Hexane	73-02071	0173-96-0629	130	Soil gas	12
Hexane[cis-3-]	73-02071	0173-96-0629	17.1	Soil gas	12
Isobutane	73-02071	0173-96-0629	3440	Soil gas	12
Isopropylbenzene	73-02071	0173-96-0629	73.9	Soil gas	12
Methyl-1-butene[3-]	73-02071	0173-96-0629	91.9	Soil gas	12
Methyl-1-pentene[2-]	73-02071	0173-96-0629	11.5	Soil gas	12
Methyl-2-butene[2-]	73-02071	0173-96-0629	82.1	Soil gas	12
Methylcyclohexane	73-02071	0173-96-0629	175	Soil gas	12
Methylcyclopentane	73-02071	0173-96-0629	376	Soil gas	12
Methylheptane[2-]	73-02071	0173-96-0629	66.5	Soil gas	12
Methylheptane[3-]	73-02071	0173-96-0629	75.5	Soil gas	12
Methylhexane[2-]	73-02071	0173-96-0629	13.9	Soil gas	12
Methylhexane[3-]	73-02071	0173-96-0629	166	Soil gas	12
Methylpentane[2-]	73-02071	0173-96-0629	22.5	Soil gas	12
Methylpentane[3-]	73-02071	0173-96-0629	31.5	Soil gas	12
Nonane[1-]	73-02071	0173-96-0629	4370	Soil gas	12
Octane[n-]	73-02071	0173-96-0629	416	Soil gas	12
Pentane	73-02071	0173-96-0629	38	Soil gas	12
Pentene[1-]	73-02071	0173-96-0629	120	Soil gas	12
Pentene[cis-2-]	73-02071	0173-96-0629	82.1	Soil gas	12
Pinene[alpha-]	73-02071	0173-96-0629	271	Soil gas	12

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Pinene[beta-]	73-02071	0173-96-0629	1250	Soil gas	12
Propylbenzene[1-]	73-02071	0173-96-0629	103	Soil gas	12
Propylene	73-02071	0173-96-0629	1690	Soil gas	12
Styrene	73-02071	0173-96-0629	5.1	Soil gas	12
Toluene	73-02071	0173-96-0629	192	Soil gas	12
Trichloroethene	73-02071	0173-96-0629	10.3	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02071	0173-96-0629	400	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02071	0173-96-0629	225	Soil gas	12
Trimethylpentane[2,3,4-]	73-02071	0173-96-0629	41	Soil gas	12
Vinyl Chloride	73-02071	0173-96-0629	95.5	Soil gas	12
Xylene[1,2-]	73-02071	0173-96-0629	296	Soil gas	12
Xylene[1,3-]	73-02071	0173-96-0629	2110	Soil gas	12
Acetone	73-02061	0173-96-0630	16.8	Soil gas	900
Benzene	73-02061	0173-96-0630	2.74	Soil gas	900
Butane[n-]	73-02061	0173-96-0630	14.1	Soil gas	900
Butene[1-]	73-02061	0173-96-0630	8.6	Soil gas	900
Butene[cis-2-]	73-02061	0173-96-0630	1.76	Soil gas	900
Butene[trans-2-]	73-02061	0173-96-0630	1.76	Soil gas	900
Dichlorobenzene[1,4-]	73-02061	0173-96-0630	1.84	Soil gas	900
Dichlorodifluoromethane	73-02061	0173-96-0630	14.3	Soil gas	900
Ethylbenzene	73-02061	0173-96-0630	1.26	Soil gas	900
Heptane	73-02061	0173-96-0630	1.2	Soil gas	900
Hexane	73-02061	0173-96-0630	2.74	Soil gas	900
Isobutane	73-02061	0173-96-0630	10	Soil gas	900
Isopentane	73-02061	0173-96-0630	2.16	Soil gas	900
Methanol	73-02061	0173-96-0630	18.5	Soil gas	900
Methyl-1-butene[3-]	73-02061	0173-96-0630	1.1	Soil gas	900
Methyl-2-butene[2-]	73-02061	0173-96-0630	1.24	Soil gas	900
Methylene Chloride	73-02061	0173-96-0630	1.1	Soil gas	900
Nonane[1-]	73-02061	0173-96-0630	7.66	Soil gas	900
Pentane	73-02061	0173-96-0630	5.84	Soil gas	900
Pentene[1-]	73-02061	0173-96-0630	2.42	Soil gas	900
Pentene[trans-2-]	73-02061	0173-96-0630	1.12	Soil gas	900
Pinene[beta-]	73-02061	0173-96-0630	28.1	Soil gas	900
Propylene	73-02061	0173-96-0630	22.7	Soil gas	900
Tetrachloroethene	73-02061	0173-96-0630	2.48	Soil gas	900
Toluene	73-02061	0173-96-0630	1.04	Soil gas	900
Trimethylbenzene[1,2,4-]	73-02061	0173-96-0630	2.42	Soil gas	900
Xylene[1,3-]	73-02061	0173-96-0630	2.88	Soil gas	900
Acetone	73-02061	0173-96-0631	244	Soil gas	330
Benzene	73-02061	0173-96-0631	32.8	Soil gas	330
Butane[n-]	73-02061	0173-96-0631	42.4	Soil gas	330
Butene[1-]	73-02061	0173-96-0631	81.7	Soil gas	330
Butene[cis-2-]	73-02061	0173-96-0631	10.3	Soil gas	330
Butene[trans-2-]	73-02061	0173-96-0631	13.3	Soil gas	330
Chlorobenzene	73-02061	0173-96-0631	5.5	Soil gas	330
Cyclohexane	73-02061	0173-96-0631	13.4	Soil gas	330
Dichlorodifluoromethane	73-02061	0173-96-0631	12.6	Soil gas	330
Dimethylbutane[2,2-]	73-02061	0173-96-0631	10.3	Soil gas	330

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dimethylbutane[2,3-]	73-02061	0173-96-0631	21.7	Soil gas	330
Dimethylpentane[2,3-]	73-02061	0173-96-0631	14.5	Soil gas	330
Ethylbenzene	73-02061	0173-96-0631	7.8	Soil gas	330
Heptane	73-02061	0173-96-0631	24.7	Soil gas	330
Hexane	73-02061	0173-96-0631	20.3	Soil gas	330
Isobutane	73-02061	0173-96-0631	142	Soil gas	330
Isopentane	73-02061	0173-96-0631	71.1	Soil gas	330
Methanol	73-02061	0173-96-0631	320	Soil gas	330
Methyl-1-butene[3-]	73-02061	0173-96-0631	34.9	Soil gas	330
Methyl-2-butene[2-]	73-02061	0173-96-0631	19.9	Soil gas	330
Methylcyclohexane	73-02061	0173-96-0631	16.1	Soil gas	330
Methylcyclopentane	73-02061	0173-96-0631	5.9	Soil gas	330
Methylheptane[2-]	73-02061	0173-96-0631	17.4	Soil gas	330
Methylheptane[3-]	73-02061	0173-96-0631	31.6	Soil gas	330
Methylhexane[3-]	73-02061	0173-96-0631	36.1	Soil gas	330
Methylpentane[2-]	73-02061	0173-96-0631	45.7	Soil gas	330
Methylpentane[3-]	73-02061	0173-96-0631	32.4	Soil gas	330
Methylstyrene[alpha-]	73-02061	0173-96-0631	6.8	Soil gas	330
Nonane[1-]	73-02061	0173-96-0631	7.9	Soil gas	330
Octane[n-]	73-02061	0173-96-0631	6.9	Soil gas	330
Pentane	73-02061	0173-96-0631	31.5	Soil gas	330
Pentene[1-]	73-02061	0173-96-0631	6.5	Soil gas	330
Pinene[alpha-]	73-02061	0173-96-0631	2140	Soil gas	330
Pinene[beta-]	73-02061	0173-96-0631	516	Soil gas	330
Propylene	73-02061	0173-96-0631	116	Soil gas	330
Toluene	73-02061	0173-96-0631	19.2	Soil gas	330
Trimethylbenzene[1,2,4-]	73-02061	0173-96-0631	11.1	Soil gas	330
Xylene[1,3-]	73-02061	0173-96-0631	7.2	Soil gas	330
Acetone	73-02061	0173-96-0632	11.5	Soil gas	30
Butane[n-]	73-02061	0173-96-0632	3.74	Soil gas	30
Butene[1-]	73-02061	0173-96-0632	1.16	Soil gas	30
Dichlorodifluoromethane	73-02061	0173-96-0632	57.2	Soil gas	30
Dimethylbutane[2,2-]	73-02061	0173-96-0632	1.32	Soil gas	30
Isobutane	73-02061	0173-96-0632	37.2	Soil gas	30
Isopentane	73-02061	0173-96-0632	8.18	Soil gas	30
Methanol	73-02061	0173-96-0632	35.9	Soil gas	30
Methylpentane[2-]	73-02061	0173-96-0632	2.34	Soil gas	30
Methylpentane[3-]	73-02061	0173-96-0632	2.26	Soil gas	30
Pentane	73-02061	0173-96-0632	2.86	Soil gas	30
Pinene[alpha-]	73-02061	0173-96-0632	2.56	Soil gas	30
Pinene[beta-]	73-02061	0173-96-0632	7.08	Soil gas	30
Propylene	73-02061	0173-96-0632	37.5	Soil gas	30
Tetrachloroethene	73-02061	0173-96-0632	1.98	Soil gas	30
Trichlorofluoromethane	73-02061	0173-96-0632	6.24	Soil gas	30
Acetone	73-02067	0173-96-0633	79	Soil gas	280.8
Benzene	73-02067	0173-96-0633	214	Soil gas	280.8
Butane[n-]	73-02067	0173-96-0633	533	Soil gas	280.8
Butanol[T-]	73-02067	0173-96-0633	72.3	Soil gas	280.8
Butanone[2-]	73-02067	0173-96-0633	94.7	Soil gas	280.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Butene[1-]	73-02067	0173-96-0633	422	Soil gas	280.8
Butene[cis-2-]	73-02067	0173-96-0633	39.1	Soil gas	280.8
Butene[trans-2-]	73-02067	0173-96-0633	34.9	Soil gas	280.8
Chlorodifluoromethane	73-02067	0173-96-0633	608	Soil gas	280.8
Chloroethane	73-02067	0173-96-0633	137	Soil gas	280.8
Cyclohexane	73-02067	0173-96-0633	721	Soil gas	280.8
Cyclohexanone	73-02067	0173-96-0633	79.2	Soil gas	280.8
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02067	0173-96-0633	180	Soil gas	280.8
Dichlorobenzene[1,4-]	73-02067	0173-96-0633	20.9	Soil gas	280.8
Dichlorodifluoromethane	73-02067	0173-96-0633	7950	Soil gas	280.8
Dichloroethane[1,1-]	73-02067	0173-96-0633	15.4	Soil gas	280.8
Dichloroethene[1,1-]	73-02067	0173-96-0633	41.4	Soil gas	280.8
Dichloroethene[cis-1,2-]	73-02067	0173-96-0633	4050	Soil gas	280.8
Dichloroethene[trans-1,2-]	73-02067	0173-96-0633	82.9	Soil gas	280.8
Dichloropropane[1,2-]	73-02067	0173-96-0633	5.1	Soil gas	280.8
Dimethylbutane[2,2-]	73-02067	0173-96-0633	76.7	Soil gas	280.8
Dimethylbutane[2,3-]	73-02067	0173-96-0633	341	Soil gas	280.8
Dimethylpentane[2,3-]	73-02067	0173-96-0633	207	Soil gas	280.8
Ethanol	73-02067	0173-96-0633	110	Soil gas	280.8
Ethylbenzene	73-02067	0173-96-0633	970	Soil gas	280.8
Heptane	73-02067	0173-96-0633	2940	Soil gas	280.8
Hexane	73-02067	0173-96-0633	458	Soil gas	280.8
Hexene[cis-3-]	73-02067	0173-96-0633	14	Soil gas	280.8
Isobutane	73-02067	0173-96-0633	3450	Soil gas	280.8
Isooctane	73-02067	0173-96-0633	295	Soil gas	280.8
Isopentane	73-02067	0173-96-0633	104	Soil gas	280.8
Isopropylbenzene	73-02067	0173-96-0633	56.3	Soil gas	280.8
Methanol	73-02067	0173-96-0633	82.7	Soil gas	280.8
Methyl-1-butene[3-]	73-02067	0173-96-0633	168	Soil gas	280.8
Methyl-1-pentene[2-]	73-02067	0173-96-0633	29.3	Soil gas	280.8
Methyl-2-butene[2-]	73-02067	0173-96-0633	84.1	Soil gas	280.8
Methylcyclohexane	73-02067	0173-96-0633	3430	Soil gas	280.8
Methylcyclopentane	73-02067	0173-96-0633	320	Soil gas	280.8
Methylene Chloride	73-02067	0173-96-0633	247	Soil gas	280.8
Methylheptane[2-]	73-02067	0173-96-0633	2220	Soil gas	280.8
Methylheptane[3-]	73-02067	0173-96-0633	1650	Soil gas	280.8
Methylhexane[2-]	73-02067	0173-96-0633	38.1	Soil gas	280.8
Methylhexane[3-]	73-02067	0173-96-0633	517	Soil gas	280.8
Methylpentane[2-]	73-02067	0173-96-0633	208	Soil gas	280.8
Methylpentane[3-]	73-02067	0173-96-0633	189	Soil gas	280.8
Nonane[1-]	73-02067	0173-96-0633	1480	Soil gas	280.8
Octane[n-]	73-02067	0173-96-0633	2140	Soil gas	280.8
Pentane	73-02067	0173-96-0633	270	Soil gas	280.8
Pentene[1-]	73-02067	0173-96-0633	121	Soil gas	280.8
Pentene[cis-2-]	73-02067	0173-96-0633	84.1	Soil gas	280.8
Pentene[trans-2-]	73-02067	0173-96-0633	35.3	Soil gas	280.8
Pinene[alpha-]	73-02067	0173-96-0633	353	Soil gas	280.8
Pinene[beta-]	73-02067	0173-96-0633	368	Soil gas	280.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Propylbenzene[1-]	73-02067	0173-96-0633	37.5	Soil gas	280.8
Propylene	73-02067	0173-96-0633	2260	Soil gas	280.8
Tetrachloroethene	73-02067	0173-96-0633	290	Soil gas	280.8
Toluene	73-02067	0173-96-0633	1250	Soil gas	280.8
Trichloroethene	73-02067	0173-96-0633	135	Soil gas	280.8
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0633	73.3	Soil gas	280.8
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0633	54	Soil gas	280.8
Trimethylpentane[2,3,4-]	73-02067	0173-96-0633	476	Soil gas	280.8
Vinyl Chloride	73-02067	0173-96-0633	1010	Soil gas	280.8
Xylene[1,2-]	73-02067	0173-96-0633	610	Soil gas	280.8
Xylene[1,3-]	73-02067	0173-96-0633	2710	Soil gas	280.8
Acetone	73-02067	0173-96-0634	425	Soil gas	24
Benzene	73-02067	0173-96-0634	164	Soil gas	24
Butane[n-]	73-02067	0173-96-0634	206	Soil gas	24
Butene[1-]	73-02067	0173-96-0634	710	Soil gas	24
Butene[cis-2-]	73-02067	0173-96-0634	44.6	Soil gas	24
Butene[trans-2-]	73-02067	0173-96-0634	36.8	Soil gas	24
Chlorodifluoromethane	73-02067	0173-96-0634	270	Soil gas	24
Chloroethane	73-02067	0173-96-0634	47.5	Soil gas	24
Cyclohexane	73-02067	0173-96-0634	392	Soil gas	24
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02067	0173-96-0634	89.4	Soil gas	24
Dichlorobenzene[1,4-]	73-02067	0173-96-0634	16.3	Soil gas	24
Dichlorodifluoromethane	73-02067	0173-96-0634	520	Soil gas	24
Dichloroethene[1,1-]	73-02067	0173-96-0634	36.8	Soil gas	24
Dichloroethene[cis-1,2-]	73-02067	0173-96-0634	5960	Soil gas	24
Dichloroethene[trans-1,2-]	73-02067	0173-96-0634	176	Soil gas	24
Dimethylbutane[2,2-]	73-02067	0173-96-0634	41.8	Soil gas	24
Dimethylbutane[2,3-]	73-02067	0173-96-0634	131	Soil gas	24
Dimethylpentane[2,3-]	73-02067	0173-96-0634	148	Soil gas	24
Ethylbenzene	73-02067	0173-96-0634	100	Soil gas	24
Heptane	73-02067	0173-96-0634	1150	Soil gas	24
Hexane	73-02067	0173-96-0634	181	Soil gas	24
Hexene[cis-3-]	73-02067	0173-96-0634	8.3	Soil gas	24
Isobutane	73-02067	0173-96-0634	1710	Soil gas	24
Isooctane	73-02067	0173-96-0634	337	Soil gas	24
Isopentane	73-02067	0173-96-0634	49.1	Soil gas	24
Isoprene	73-02067	0173-96-0634	6.4	Soil gas	24
Isopropylbenzene	73-02067	0173-96-0634	12.5	Soil gas	24
Methanol	73-02067	0173-96-0634	124	Soil gas	24
Methyl-1-butene[3-]	73-02067	0173-96-0634	111	Soil gas	24
Methyl-1-pentene[2-]	73-02067	0173-96-0634	25.1	Soil gas	24
Methyl-2-butene[2-]	73-02067	0173-96-0634	57.4	Soil gas	24
Methylcyclohexane	73-02067	0173-96-0634	3560	Soil gas	24
Methylcyclopentane	73-02067	0173-96-0634	141	Soil gas	24
Methylene Chloride	73-02067	0173-96-0634	65	Soil gas	24
Methylheptane[2-]	73-02067	0173-96-0634	1020	Soil gas	24
Methylheptane[3-]	73-02067	0173-96-0634	1250	Soil gas	24
Methylhexane[2-]	73-02067	0173-96-0634	18.7	Soil gas	24

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylhexane[3-]	73-02067	0173-96-0634	272	Soil gas	24
Methylpentane[2-]	73-02067	0173-96-0634	109	Soil gas	24
Methylpentane[3-]	73-02067	0173-96-0634	99.3	Soil gas	24
Nonane[1-]	73-02067	0173-96-0634	722	Soil gas	24
Octane[n-]	73-02067	0173-96-0634	1150	Soil gas	24
Pentane	73-02067	0173-96-0634	116	Soil gas	24
Pentene[1-]	73-02067	0173-96-0634	582	Soil gas	24
Pentene[cis-2-]	73-02067	0173-96-0634	57.4	Soil gas	24
Pentene[trans-2-]	73-02067	0173-96-0634	25.9	Soil gas	24
Pinene[alpha-]	73-02067	0173-96-0634	149	Soil gas	24
Pinene[beta-]	73-02067	0173-96-0634	895	Soil gas	24
Propylbenzene[1-]	73-02067	0173-96-0634	11.3	Soil gas	24
Propylene	73-02067	0173-96-0634	1880	Soil gas	24
Tetrachloroethene	73-02067	0173-96-0634	541	Soil gas	24
Toluene	73-02067	0173-96-0634	1100	Soil gas	24
Trichloroethane[1,1,1-]	73-02067	0173-96-0634	10.6	Soil gas	24
Trichloroethene	73-02067	0173-96-0634	330	Soil gas	24
Trimethylbenzene[1,2,4-]	73-02067	0173-96-0634	43.3	Soil gas	24
Trimethylbenzene[1,3,5-]	73-02067	0173-96-0634	47.8	Soil gas	24
Trimethylpentane[2,3,4-]	73-02067	0173-96-0634	647	Soil gas	24
Vinyl Chloride	73-02067	0173-96-0634	540	Soil gas	24
Xylene[1,2-]	73-02067	0173-96-0634	203	Soil gas	24
Xylene[1,3-]	73-02067	0173-96-0634	432	Soil gas	24
Benzene	73-02069	0173-96-0635	32.2	Soil gas	211.2
Butane[n-]	73-02069	0173-96-0635	619	Soil gas	211.2
Butene[1-]	73-02069	0173-96-0635	452	Soil gas	211.2
Butene[cis-2-]	73-02069	0173-96-0635	45	Soil gas	211.2
Butene[trans-2-]	73-02069	0173-96-0635	43.9	Soil gas	211.2
Chlorodifluoromethane	73-02069	0173-96-0635	203	Soil gas	211.2
Chloroethane	73-02069	0173-96-0635	22.6	Soil gas	211.2
Chloromethane	73-02069	0173-96-0635	28.2	Soil gas	211.2
Cyclohexane	73-02069	0173-96-0635	182	Soil gas	211.2
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02069	0173-96-0635	140	Soil gas	211.2
Dichlorodifluoromethane	73-02069	0173-96-0635	709	Soil gas	211.2
Dichloroethene[1,1-]	73-02069	0173-96-0635	8.4	Soil gas	211.2
Dichloroethene[cis-1,2-]	73-02069	0173-96-0635	361	Soil gas	211.2
Dichloroethene[trans-1,2-]	73-02069	0173-96-0635	7.8	Soil gas	211.2
Dimethylbutane[2,2-]	73-02069	0173-96-0635	36.4	Soil gas	211.2
Dimethylbutane[2,3-]	73-02069	0173-96-0635	65.2	Soil gas	211.2
Dimethylpentane[2,3-]	73-02069	0173-96-0635	43.6	Soil gas	211.2
Ethylbenzene	73-02069	0173-96-0635	11.3	Soil gas	211.2
Heptane	73-02069	0173-96-0635	249	Soil gas	211.2
Hexane	73-02069	0173-96-0635	182	Soil gas	211.2
Hexene[cis-3-]	73-02069	0173-96-0635	8	Soil gas	211.2
Isobutane	73-02069	0173-96-0635	2050	Soil gas	211.2
Isooctane	73-02069	0173-96-0635	27.1	Soil gas	211.2
Isopentane	73-02069	0173-96-0635	112	Soil gas	211.2
Isopropylbenzene	73-02069	0173-96-0635	11.3	Soil gas	211.2

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methyl-1-butene[3-]	73-02069	0173-96-0635	95.7	Soil gas	211.2
Methyl-1-pentene[2-]	73-02069	0173-96-0635	14.5	Soil gas	211.2
Methyl-2-butene[2-]	73-02069	0173-96-0635	50.3	Soil gas	211.2
Methylcyclohexane	73-02069	0173-96-0635	362	Soil gas	211.2
Methylcyclopentane	73-02069	0173-96-0635	115	Soil gas	211.2
Methylene Chloride	73-02069	0173-96-0635	10.9	Soil gas	211.2
Methylheptane[2-]	73-02069	0173-96-0635	82	Soil gas	211.2
Methylheptane[3-]	73-02069	0173-96-0635	95	Soil gas	211.2
Methylhexane[2-]	73-02069	0173-96-0635	10.9	Soil gas	211.2
Methylhexane[3-]	73-02069	0173-96-0635	104	Soil gas	211.2
Methylpentane[2-]	73-02069	0173-96-0635	131	Soil gas	211.2
Methylpentane[3-]	73-02069	0173-96-0635	124	Soil gas	211.2
Nonane[1-]	73-02069	0173-96-0635	670	Soil gas	211.2
Octane[n-]	73-02069	0173-96-0635	97.1	Soil gas	211.2
Pentane	73-02069	0173-96-0635	255	Soil gas	211.2
Pentene[1-]	73-02069	0173-96-0635	43.5	Soil gas	211.2
Pentene[<i>cis</i> -2-]	73-02069	0173-96-0635	14.8	Soil gas	211.2
Pentene[<i>trans</i> -2-]	73-02069	0173-96-0635	28.6	Soil gas	211.2
Pinene[<i>alpha</i> -]	73-02069	0173-96-0635	83.9	Soil gas	211.2
Pinene[<i>beta</i> -]	73-02069	0173-96-0635	48.8	Soil gas	211.2
Propylene	73-02069	0173-96-0635	1420	Soil gas	211.2
Toluene	73-02069	0173-96-0635	15.3	Soil gas	211.2
Trichloroethene	73-02069	0173-96-0635	20.6	Soil gas	211.2
Trimethylbenzene[1,2,4-]	73-02069	0173-96-0635	138	Soil gas	211.2
Trimethylbenzene[1,3,5-]	73-02069	0173-96-0635	47.6	Soil gas	211.2
Trimethylpentane[2,3,4-]	73-02069	0173-96-0635	39.7	Soil gas	211.2
Vinyl Chloride	73-02069	0173-96-0635	304	Soil gas	211.2
Xylene[1,2-]	73-02069	0173-96-0635	22.5	Soil gas	211.2
Xylene[1,3-]	73-02069	0173-96-0635	131	Soil gas	211.2
Acetone	73-02069	0173-96-0636	48.8	Soil gas	12
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02069	0173-96-0636	1.86	Soil gas	12
Dichlorodifluoromethane	73-02069	0173-96-0636	5.22	Soil gas	12
Isobutane	73-02069	0173-96-0636	5.5	Soil gas	12
Methanol	73-02069	0173-96-0636	21.3	Soil gas	12
Nonane[1-]	73-02069	0173-96-0636	2	Soil gas	12
Pinene[<i>beta</i> -]	73-02069	0173-96-0636	5.7	Soil gas	12
Dichlorodifluoromethane	73-02056	0173-96-0637	33.3	Soil gas	517.2
Isobutane	73-02056	0173-96-0637	5.78	Soil gas	517.2
Propylene	73-02056	0173-96-0637	1.94	Soil gas	517.2
Tetrachloroethene	73-02056	0173-96-0637	9.3	Soil gas	517.2
Trichloroethane[1,1,1-]	73-02056	0173-96-0637	1.1	Soil gas	517.2
Trichlorofluoromethane	73-02056	0173-96-0637	52.6	Soil gas	517.2
Acetone	73-01010	0173-96-0638	51.8	Soil gas	1740
Chloromethane	73-01010	0173-96-0638	26	Soil gas	1740
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01010	0173-96-0638	14	Soil gas	1740
Dichlorodifluoromethane	73-01010	0173-96-0638	226	Soil gas	1740
Propylene	73-01010	0173-96-0638	7.7	Soil gas	1740

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methanol	73-01008	0173-96-0644	16.4	Soil gas	522
Propylene	73-01008	0173-96-0644	1.88	Soil gas	522
Tetrachloroethene	73-01008	0173-96-0644	11.5	Soil gas	522
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	0173-96-0645	11.3	Soil gas	186
Dichlorodifluoromethane	73-01008	0173-96-0645	50.2	Soil gas	186
Tetrachloroethene	73-01008	0173-96-0645	4.56	Soil gas	186
Acetone	73-01004	0173-96-0646	53.2	Soil gas	1192.8
Benzene	73-01004	0173-96-0646	44	Soil gas	1192.8
Butane[n-]	73-01004	0173-96-0646	206	Soil gas	1192.8
Butene[1-]	73-01004	0173-96-0646	202	Soil gas	1192.8
Butene[cis-2-]	73-01004	0173-96-0646	19.1	Soil gas	1192.8
Butene[trans-2-]	73-01004	0173-96-0646	17	Soil gas	1192.8
Chlorobenzene	73-01004	0173-96-0646	10	Soil gas	1192.8
Chlorodifluoromethane	73-01004	0173-96-0646	335	Soil gas	1192.8
Chloroethane	73-01004	0173-96-0646	16	Soil gas	1192.8
Chloromethane	73-01004	0173-96-0646	26.7	Soil gas	1192.8
Cyclohexane	73-01004	0173-96-0646	322	Soil gas	1192.8
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01004	0173-96-0646	85.2	Soil gas	1192.8
Dichlorobenzene[1,4-]	73-01004	0173-96-0646	56.3	Soil gas	1192.8
Dichlorodifluoromethane	73-01004	0173-96-0646	201	Soil gas	1192.8
Dichloroethene[cis-1,2-]	73-01004	0173-96-0646	929	Soil gas	1192.8
Dichloroethene[trans-1,2-]	73-01004	0173-96-0646	19.8	Soil gas	1192.8
Dimethylbutane[2,2-]	73-01004	0173-96-0646	20.7	Soil gas	1192.8
Dimethylbutane[2,3-]	73-01004	0173-96-0646	67.8	Soil gas	1192.8
Dimethylpentane[2,3-]	73-01004	0173-96-0646	50.9	Soil gas	1192.8
Heptane	73-01004	0173-96-0646	439	Soil gas	1192.8
Hexane	73-01004	0173-96-0646	131	Soil gas	1192.8
Hexene[cis-3-]	73-01004	0173-96-0646	5.5	Soil gas	1192.8
Isobutane	73-01004	0173-96-0646	1200	Soil gas	1192.8
Isooctane	73-01004	0173-96-0646	18.4	Soil gas	1192.8
Isopentane	73-01004	0173-96-0646	39.4	Soil gas	1192.8
Methyl-1-butene[3-]	73-01004	0173-96-0646	58.1	Soil gas	1192.8
Methyl-1-pentene[2-]	73-01004	0173-96-0646	6.6	Soil gas	1192.8
Methyl-2-butene[2-]	73-01004	0173-96-0646	39	Soil gas	1192.8
Methylcyclohexane	73-01004	0173-96-0646	611	Soil gas	1192.8
Methylcyclopentane	73-01004	0173-96-0646	103	Soil gas	1192.8
Methylene Chloride	73-01004	0173-96-0646	10.9	Soil gas	1192.8
Methylheptane[2-]	73-01004	0173-96-0646	154	Soil gas	1192.8
Methylheptane[3-]	73-01004	0173-96-0646	196	Soil gas	1192.8
Methylhexane[2-]	73-01004	0173-96-0646	8.3	Soil gas	1192.8
Methylhexane[3-]	73-01004	0173-96-0646	152	Soil gas	1192.8
Methylpentane[2-]	73-01004	0173-96-0646	60.8	Soil gas	1192.8
Methylpentane[3-]	73-01004	0173-96-0646	57	Soil gas	1192.8
Nonane[1-]	73-01004	0173-96-0646	65.6	Soil gas	1192.8
Octane[n-]	73-01004	0173-96-0646	114	Soil gas	1192.8
Pentane	73-01004	0173-96-0646	167	Soil gas	1192.8
Pentene[1-]	73-01004	0173-96-0646	25.4	Soil gas	1192.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pentene[cis-2-]	73-01004	0173-96-0646	8.8	Soil gas	1192.8
Pentene[trans-2-]	73-01004	0173-96-0646	21.5	Soil gas	1192.8
Pinene[alpha-]	73-01004	0173-96-0646	19.2	Soil gas	1192.8
Propylene	73-01004	0173-96-0646	868	Soil gas	1192.8
Tetrachloroethene	73-01004	0173-96-0646	5.1	Soil gas	1192.8
Trichloroethene	73-01004	0173-96-0646	14.1	Soil gas	1192.8
Trimethylbenzene[1,2,4-]	73-01004	0173-96-0646	14.5	Soil gas	1192.8
Trimethylpentane[2,3,4-]	73-01004	0173-96-0646	35.7	Soil gas	1192.8
Vinyl Chloride	73-01004	0173-96-0646	254	Soil gas	1192.8
Chlorodifluoromethane	73-01007	0173-96-0647	1.46	Soil gas	1200
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	0173-96-0647	29.2	Soil gas	1200
Dichlorobenzene[1,4-]	73-01007	0173-96-0647	1.48	Soil gas	1200
Dichlorodifluoromethane	73-01007	0173-96-0647	295	Soil gas	1200
Isobutane	73-01007	0173-96-0647	98.2	Soil gas	1200
Methanol	73-01007	0173-96-0647	15.4	Soil gas	1200
Nonane[1-]	73-01007	0173-96-0647	3.28	Soil gas	1200
Pinene[beta-]	73-01007	0173-96-0647	1.42	Soil gas	1200
Propylene	73-01007	0173-96-0647	93.8	Soil gas	1200
Tetrachloroethene	73-01007	0173-96-0647	50.5	Soil gas	1200
Trichlorofluoromethane	73-01007	0173-96-0647	6.2	Soil gas	1200
Trimethylbenzene[1,2,4-]	73-01007	0173-96-0647	1.6	Soil gas	1200
Dichlorodifluoromethane	73-02056	0173-96-0648	34.2	Soil gas	517.2
Isobutane	73-02056	0173-96-0648	6.06	Soil gas	517.2
Propylene	73-02056	0173-96-0648	2.06	Soil gas	517.2
Tetrachloroethene	73-02056	0173-96-0648	9.18	Soil gas	517.2
Trichloroethane[1,1,1-]	73-02056	0173-96-0648	1.08	Soil gas	517.2
Trichlorofluoromethane	73-02056	0173-96-0648	53.8	Soil gas	517.2
Acetone	73-02421	0173-97-0096	69.2	Soil gas	336
Butane[n-]	73-02421	0173-97-0096	49.7	Soil gas	336
Chlorodifluoromethane	73-02421	0173-97-0096	21.3	Soil gas	336
Cyclohexane	73-02421	0173-97-0096	34.7	Soil gas	336
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02421	0173-97-0096	7.1	Soil gas	336
Dichlorobenzene[1,4-]	73-02421	0173-97-0096	54.5	Soil gas	336
Dichlorodifluoromethane	73-02421	0173-97-0096	22.6	Soil gas	336
Dimethylbutane[2,2-]	73-02421	0173-97-0096	8.2	Soil gas	336
Dimethylpentane[2,3-]	73-02421	0173-97-0096	9.4	Soil gas	336
Isobutane	73-02421	0173-97-0096	379	Soil gas	336
Isooctane	73-02421	0173-97-0096	11.6	Soil gas	336
Isopentane	73-02421	0173-97-0096	46.2	Soil gas	336
Methanol	73-02421	0173-97-0096	129	Soil gas	336
Methyl-1-butene[3-]	73-02421	0173-97-0096	9.2	Soil gas	336
Methyl-2-butene[2-]	73-02421	0173-97-0096	5.2	Soil gas	336
Methylcyclohexane	73-02421	0173-97-0096	49.6	Soil gas	336
Methylcyclopentane	73-02421	0173-97-0096	18.6	Soil gas	336
Methylhexane[3-]	73-02421	0173-97-0096	11.4	Soil gas	336
Methylpentane[2-]	73-02421	0173-97-0096	22	Soil gas	336
Methylpentane[3-]	73-02421	0173-97-0096	23.5	Soil gas	336

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pinene[alpha-]	73-02421	0173-97-0096	34.6	Soil gas	336
Pinene[beta-]	73-02421	0173-97-0096	34.6	Soil gas	336
Propylene	73-02421	0173-97-0096	49.8	Soil gas	336
Tetrachloroethene	73-02421	0173-97-0096	12.2	Soil gas	336
Trimethylbenzene[1,2,4-]	73-02421	0173-97-0096	14.9	Soil gas	336
Trimethylpentane[2,3,4-]	73-02421	0173-97-0096	19.7	Soil gas	336
Acetone	73-02424	0173-97-0097	227	Soil gas	288
Benzene	73-02424	0173-97-0097	38	Soil gas	288
Butane[n-]	73-02424	0173-97-0097	72.2	Soil gas	288
Butanone[2-]	73-02424	0173-97-0097	71.3	Soil gas	288
Butene[1-]	73-02424	0173-97-0097	63.6	Soil gas	288
Butene[cis-2-]	73-02424	0173-97-0097	6.8	Soil gas	288
Butene[trans-2-]	73-02424	0173-97-0097	8.7	Soil gas	288
Chlorodifluoromethane	73-02424	0173-97-0097	48.2	Soil gas	288
Chloroethane	73-02424	0173-97-0097	11.9	Soil gas	288
Cyclohexane	73-02424	0173-97-0097	35.8	Soil gas	288
Dichlorodifluoromethane	73-02424	0173-97-0097	338	Soil gas	288
Dimethylbutane[2,2-]	73-02424	0173-97-0097	5.8	Soil gas	288
Dimethylbutane[2,3-]	73-02424	0173-97-0097	73.5	Soil gas	288
Dimethylpentane[2,3-]	73-02424	0173-97-0097	37.3	Soil gas	288
Ethylbenzene	73-02424	0173-97-0097	287	Soil gas	288
Heptane	73-02424	0173-97-0097	158	Soil gas	288
Hexane	73-02424	0173-97-0097	39.9	Soil gas	288
Isobutane	73-02424	0173-97-0097	33.9	Soil gas	288
Isooctane	73-02424	0173-97-0097	14.7	Soil gas	288
Isopentane	73-02424	0173-97-0097	30.8	Soil gas	288
Isopropylbenzene	73-02424	0173-97-0097	30.2	Soil gas	288
Methanol	73-02424	0173-97-0097	313	Soil gas	288
Methyl-1-butene[3-]	73-02424	0173-97-0097	14.1	Soil gas	288
Methyl-2-butene[2-]	73-02424	0173-97-0097	24.8	Soil gas	288
Methylcyclohexane	73-02424	0173-97-0097	125	Soil gas	288
Methylcyclopentane	73-02424	0173-97-0097	30	Soil gas	288
Methylene Chloride	73-02424	0173-97-0097	7.6	Soil gas	288
Methylheptane[2-]	73-02424	0173-97-0097	47	Soil gas	288
Methylheptane[3-]	73-02424	0173-97-0097	54.9	Soil gas	288
Methylhexane[2-]	73-02424	0173-97-0097	5.9	Soil gas	288
Methylhexane[3-]	73-02424	0173-97-0097	110	Soil gas	288
Methylpentane[2-]	73-02424	0173-97-0097	16.3	Soil gas	288
Methylpentane[3-]	73-02424	0173-97-0097	19.3	Soil gas	288
Methylstyrene[alpha-]	73-02424	0173-97-0097	25.5	Soil gas	288
Nonane[1-]	73-02424	0173-97-0097	192	Soil gas	288
Octane[n-]	73-02424	0173-97-0097	61	Soil gas	288
Pentane	73-02424	0173-97-0097	26.2	Soil gas	288
Pentene[1-]	73-02424	0173-97-0097	12	Soil gas	288
Pentene[trans-2-]	73-02424	0173-97-0097	8.5	Soil gas	288
Pinene[alpha-]	73-02424	0173-97-0097	2620	Soil gas	288
Pinene[beta-]	73-02424	0173-97-0097	4780	Soil gas	288
Propylbenzene[1-]	73-02424	0173-97-0097	11	Soil gas	288
Propylene	73-02424	0173-97-0097	244	Soil gas	288

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Styrene	73-02424	0173-97-0097	16.9	Soil gas	288
Tetrachloroethene	73-02424	0173-97-0097	6.4	Soil gas	288
Tetrahydrofuran	73-02424	0173-97-0097	1220	Soil gas	288
Toluene	73-02424	0173-97-0097	134	Soil gas	288
Trichlorofluoromethane	73-02424	0173-97-0097	25	Soil gas	288
Trimethylbenzene[1,2,4-]	73-02424	0173-97-0097	25.8	Soil gas	288
Trimethylbenzene[1,3,5-]	73-02424	0173-97-0097	10.7	Soil gas	288
Trimethylpentane[2,3,4-]	73-02424	0173-97-0097	11.7	Soil gas	288
Xylene[1,2-]	73-02424	0173-97-0097	108	Soil gas	288
Xylene[1,3-]	73-02424	0173-97-0097	107	Soil gas	288
Benzene	73-02430	0173-97-0098	5.8	Soil gas	720
Butane[n-]	73-02430	0173-97-0098	61.6	Soil gas	720
Butene[1-]	73-02430	0173-97-0098	63.6	Soil gas	720
Butene[cis-2-]	73-02430	0173-97-0098	6.2	Soil gas	720
Butene[trans-2-]	73-02430	0173-97-0098	6.1	Soil gas	720
Chlorodifluoromethane	73-02430	0173-97-0098	10.9	Soil gas	720
Cyclohexane	73-02430	0173-97-0098	17.4	Soil gas	720
Dibromoethane[1,2-]	73-02430	0173-97-0098	10.6	Soil gas	720
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02430	0173-97-0098	18.1	Soil gas	720
Dichlorodifluoromethane	73-02430	0173-97-0098	139	Soil gas	720
Dimethylbutane[2,2-]	73-02430	0173-97-0098	6.4	Soil gas	720
Dimethylpentane[2,3-]	73-02430	0173-97-0098	5.8	Soil gas	720
Isobutane	73-02430	0173-97-0098	207	Soil gas	720
Isopentane	73-02430	0173-97-0098	55.4	Soil gas	720
Methyl-1-butene[3-]	73-02430	0173-97-0098	11.9	Soil gas	720
Methyl-1-pentene[2-]	73-02430	0173-97-0098	15.1	Soil gas	720
Methyl-1-pentene[4-]	73-02430	0173-97-0098	6.6	Soil gas	720
Methyl-2-butene[2-]	73-02430	0173-97-0098	5.3	Soil gas	720
Methylcyclohexane	73-02430	0173-97-0098	23.8	Soil gas	720
Methylcyclopentane	73-02430	0173-97-0098	10.8	Soil gas	720
Methylhexane[3-]	73-02430	0173-97-0098	14.8	Soil gas	720
Methylpentane[2-]	73-02430	0173-97-0098	23.5	Soil gas	720
Methylpentane[3-]	73-02430	0173-97-0098	23.6	Soil gas	720
Pentane	73-02430	0173-97-0098	28.2	Soil gas	720
Pentene[1-]	73-02430	0173-97-0098	33.2	Soil gas	720
Pinene[alpha-]	73-02430	0173-97-0098	22	Soil gas	720
Pinene[beta-]	73-02430	0173-97-0098	23.1	Soil gas	720
Propylene	73-02430	0173-97-0098	81.2	Soil gas	720
Tetrachloroethene	73-02430	0173-97-0098	25.8	Soil gas	720
Trichlorobenzene[1,2,4-]	73-02430	0173-97-0098	11.1	Soil gas	720
Trimethylbenzene[1,2,4-]	73-02430	0173-97-0098	22.6	Soil gas	720
Xylene[1,3-]	73-02430	0173-97-0098	5.1	Soil gas	720
Nonane[1-]	73-02430	0173-97-0099	72.6	Soil gas	300
Octane[n-]	73-02430	0173-97-0099	19.6	Soil gas	300
Pentane	73-02430	0173-97-0099	98.2	Soil gas	300
Pentene[1-]	73-02430	0173-97-0099	42.3	Soil gas	300
Pentene[cis-2-]	73-02430	0173-97-0099	11.2	Soil gas	300
Pentene[trans-2-]	73-02430	0173-97-0099	19.1	Soil gas	300

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pinene[alpha-]	73-02430	0173-97-0099	236	Soil gas	300
Pinene[beta-]	73-02430	0173-97-0099	607	Soil gas	300
Propylbenzene[1-]	73-02430	0173-97-0099	16	Soil gas	300
Propylene	73-02430	0173-97-0099	373	Soil gas	300
Tetrachloroethene	73-02430	0173-97-0099	10800	Soil gas	300
Toluene	73-02430	0173-97-0099	107	Soil gas	300
Trichloroethane[1,1,1-]	73-02430	0173-97-0099	10300	Soil gas	300
Trimethylbenzene[1,2,4-]	73-02430	0173-97-0099	81.8	Soil gas	300
Trimethylbenzene[1,3,5-]	73-02430	0173-97-0099	18.2	Soil gas	300
Vinyl Chloride	73-02430	0173-97-0099	12100	Soil gas	300
Xylene[1,2-]	73-02430	0173-97-0099	26.2	Soil gas	300
Xylene[1,3-]	73-02430	0173-97-0099	66.7	Soil gas	300
Butane[n-]	73-02430	0173-97-0241	46.4	Soil gas	720
Cyclohexane	73-02430	0173-97-0241	16.6	Soil gas	720
Dichlorodifluoromethane	73-02430	0173-97-0241	101	Soil gas	720
Isobutane	73-02430	0173-97-0241	259	Soil gas	720
Isopentane	73-02430	0173-97-0241	74.4	Soil gas	720
Methyl-1-butene[3-]	73-02430	0173-97-0241	15	Soil gas	720
Methylcyclohexane	73-02430	0173-97-0241	17.4	Soil gas	720
Methylpentane[2-]	73-02430	0173-97-0241	17	Soil gas	720
Methylpentane[3-]	73-02430	0173-97-0241	18.2	Soil gas	720
Pentene[1-]	73-02430	0173-97-0241	16.6	Soil gas	720
Pinene[alpha-]	73-02430	0173-97-0241	20.8	Soil gas	720
Propylene	73-02430	0173-97-0241	93.2	Soil gas	720
Tetrachloroethene	73-02430	0173-97-0241	10.4	Soil gas	720
Trichlorobenzene[1,2,4-]	73-02430	0173-97-0241	10.4	Soil gas	720
Benzene	73-02430	0173-97-0242	85	Soil gas	300
Butane[n-]	73-02430	0173-97-0242	90.6	Soil gas	300
Butene[1-]	73-02430	0173-97-0242	66.8	Soil gas	300
Butene[cis-2-]	73-02430	0173-97-0242	24.6	Soil gas	300
Butene[trans-2-]	73-02430	0173-97-0242	28.8	Soil gas	300
Chlorobenzene	73-02430	0173-97-0242	54	Soil gas	300
Cyclohexane	73-02430	0173-97-0242	27.2	Soil gas	300
Cyclopentane	73-02430	0173-97-0242	12.2	Soil gas	300
Dichlorobenzene[1,2-]	73-02430	0173-97-0242	13.2	Soil gas	300
Dichlorobenzene[1,3-]	73-02430	0173-97-0242	20	Soil gas	300
Dichlorobenzene[1,4-]	73-02430	0173-97-0242	150	Soil gas	300
Dimethylbutane[2,2-]	73-02430	0173-97-0242	25.2	Soil gas	300
Dimethylbutane[2,3-]	73-02430	0173-97-0242	56.4	Soil gas	300
Dimethylpentane[2,3-]	73-02430	0173-97-0242	28.4	Soil gas	300
Ethylbenzene	73-02430	0173-97-0242	61.6	Soil gas	300
Hexane	73-02430	0173-97-0242	48.2	Soil gas	300
Hexene[cis-3-]	73-02430	0173-97-0242	13.6	Soil gas	300
Isobutane	73-02430	0173-97-0242	112	Soil gas	300
Isopentane	73-02430	0173-97-0242	116	Soil gas	300
Isopropylbenzene	73-02430	0173-97-0242	20.2	Soil gas	300
Methyl-1-butene[3-]	73-02430	0173-97-0242	24.4	Soil gas	300
Methyl-1-pentene[2-]	73-02430	0173-97-0242	19.4	Soil gas	300
Methyl-1-pentene[4-]	73-02430	0173-97-0242	24.4	Soil gas	300

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Methyl-2-butene[2-]	73-02430	0173-97-0242	18.6	Soil gas	300
Methylcyclohexane	73-02430	0173-97-0242	33	Soil gas	300
Methylcyclopentane	73-02430	0173-97-0242	23.8	Soil gas	300
Methylheptane[2-]	73-02430	0173-97-0242	29.6	Soil gas	300
Methylheptane[3-]	73-02430	0173-97-0242	37.4	Soil gas	300
Methylhexane[3-]	73-02430	0173-97-0242	84	Soil gas	300
Methylpentane[2-]	73-02430	0173-97-0242	98.8	Soil gas	300
Methylpentane[3-]	73-02430	0173-97-0242	90	Soil gas	300
Nitrobenzene	73-02430	0173-97-0242	100	Soil gas	300
Nitropropane[2-]	73-02430	0173-97-0242	352	Soil gas	300
Nonane[1-]	73-02430	0173-97-0242	33.2	Soil gas	300
Octane[n-]	73-02430	0173-97-0242	14	Soil gas	300
Pentane	73-02430	0173-97-0242	38.6	Soil gas	300
Pentene[1-]	73-02430	0173-97-0242	19.2	Soil gas	300
Pinene[alpha-]	73-02430	0173-97-0242	298	Soil gas	300
Pinene[beta-]	73-02430	0173-97-0242	728	Soil gas	300
Propylbenzene[1-]	73-02430	0173-97-0242	19.8	Soil gas	300
Propylene	73-02430	0173-97-0242	147	Soil gas	300
Toluene	73-02430	0173-97-0242	99.2	Soil gas	300
Trichlorobenzene[1,2,4-]	73-02430	0173-97-0242	13.2	Soil gas	300
Trimethylbenzene[1,2,4-]	73-02430	0173-97-0242	77	Soil gas	300
Trimethylbenzene[1,3,5-]	73-02430	0173-97-0242	13.8	Soil gas	300
Vinyl Acetate	73-02430	0173-97-0242	115	Soil gas	300
Xylene[1,2-]	73-02430	0173-97-0242	24.8	Soil gas	300
Xylene[1,3-]	73-02430	0173-97-0242	56.2	Soil gas	300
Butane[n-]	73-02421	0173-97-0243	69	Soil gas	336
Cyclohexane	73-02421	0173-97-0243	32.6	Soil gas	336
Dichlorodifluoromethane	73-02421	0173-97-0243	20.2	Soil gas	336
Isobutane	73-02421	0173-97-0243	678	Soil gas	336
Isooctane	73-02421	0173-97-0243	11	Soil gas	336
Isopentane	73-02421	0173-97-0243	70.4	Soil gas	336
Methyl-1-butene[3-]	73-02421	0173-97-0243	13.2	Soil gas	336
Methylcyclohexane	73-02421	0173-97-0243	39	Soil gas	336
Methylcyclopentane	73-02421	0173-97-0243	15.2	Soil gas	336
Methylhexane[3-]	73-02421	0173-97-0243	11.4	Soil gas	336
Methylpentane[2-]	73-02421	0173-97-0243	21.6	Soil gas	336
Methylpentane[3-]	73-02421	0173-97-0243	21.4	Soil gas	336
Pinene[alpha-]	73-02421	0173-97-0243	27.8	Soil gas	336
Propylene	73-02421	0173-97-0243	253	Soil gas	336
Tetrachloroethene	73-02421	0173-97-0243	13.8	Soil gas	336
Trimethylpentane[2,3,4-]	73-02421	0173-97-0243	25	Soil gas	336
Benzene	73-02424	0173-97-0244	42	Soil gas	288
Butane[n-]	73-02424	0173-97-0244	90	Soil gas	288
Butene[1-]	73-02424	0173-97-0244	72	Soil gas	288
Butene[cis-2-]	73-02424	0173-97-0244	11.2	Soil gas	288
Butene[trans-2-]	73-02424	0173-97-0244	13.6	Soil gas	288
Chlorodifluoromethane	73-02424	0173-97-0244	42.2	Soil gas	288
Chloroethane	73-02424	0173-97-0244	16.2	Soil gas	288
Cyclohexane	73-02424	0173-97-0244	45.4	Soil gas	288

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichlorodifluoromethane	73-02424	0173-97-0244	399	Soil gas	288
Dimethylbutane[2,3-]	73-02424	0173-97-0244	89.6	Soil gas	288
Dimethylpentane[2,3-]	73-02424	0173-97-0244	47.2	Soil gas	288
Ethylbenzene	73-02424	0173-97-0244	304	Soil gas	288
Heptane	73-02424	0173-97-0244	188	Soil gas	288
Isooctane	73-02424	0173-97-0244	19.4	Soil gas	288
Isopentane	73-02424	0173-97-0244	28.2	Soil gas	288
Isopropylbenzene	73-02424	0173-97-0244	56.8	Soil gas	288
Methyl-1-butene[3-]	73-02424	0173-97-0244	15.8	Soil gas	288
Methyl-2-butene[2-]	73-02424	0173-97-0244	28.8	Soil gas	288
Methylcyclohexane	73-02424	0173-97-0244	152	Soil gas	288
Methylcyclopentane	73-02424	0173-97-0244	38.2	Soil gas	288
Methylheptane[2-]	73-02424	0173-97-0244	60.8	Soil gas	288
Methylheptane[3-]	73-02424	0173-97-0244	79.6	Soil gas	288
Methylhexane[3-]	73-02424	0173-97-0244	135	Soil gas	288
Methylpentane[2-]	73-02424	0173-97-0244	18.8	Soil gas	288
Methylpentane[3-]	73-02424	0173-97-0244	22.4	Soil gas	288
Methylstyrene[alpha-]	73-02424	0173-97-0244	33.2	Soil gas	288
Nonane[1-]	73-02424	0173-97-0244	201	Soil gas	288
Octane[n-]	73-02424	0173-97-0244	73.6	Soil gas	288
Pentane	73-02424	0173-97-0244	26.6	Soil gas	288
Pentene[1-]	73-02424	0173-97-0244	12.4	Soil gas	288
Pentene[trans-2-]	73-02424	0173-97-0244	10.2	Soil gas	288
Pinene[alpha-]	73-02424	0173-97-0244	1600	Soil gas	288
Propylbenzene[1-]	73-02424	0173-97-0244	13	Soil gas	288
Propylene	73-02424	0173-97-0244	247	Soil gas	288
Styrene	73-02424	0173-97-0244	20.6	Soil gas	288
Tetrahydrofuran	73-02424	0173-97-0244	1590	Soil gas	288
Toluene	73-02424	0173-97-0244	142	Soil gas	288
Trichlorofluoromethane	73-02424	0173-97-0244	56	Soil gas	288
Trimethylbenzene[1,2,4-]	73-02424	0173-97-0244	28.6	Soil gas	288
Trimethylbenzene[1,3,5-]	73-02424	0173-97-0244	11.8	Soil gas	288
Trimethylpentane[2,3,4-]	73-02424	0173-97-0244	21.2	Soil gas	288
Xylene[1,2-]	73-02424	0173-97-0244	111	Soil gas	288
Xylene[1,3-]	73-02424	0173-97-0244	107	Soil gas	288
Butanol[1-]	73-02104	0173-97-0245	17.8	Soil gas	517.2
Butene[trans-2-]	73-02104	0173-97-0245	1.3	Soil gas	517.2
Chlorodifluoromethane	73-02104	0173-97-0245	1.32	Soil gas	517.2
Dichlorodifluoromethane	73-02104	0173-97-0245	28.4	Soil gas	517.2
Isobutane	73-02104	0173-97-0245	6.1	Soil gas	517.2
Isopentane	73-02104	0173-97-0245	3.58	Soil gas	517.2
Pinene[alpha-]	73-02104	0173-97-0245	1.24	Soil gas	517.2
Propylene	73-02104	0173-97-0245	1.48	Soil gas	517.2
Tetrachloroethene	73-02104	0173-97-0245	89.2	Soil gas	517.2
Trichlorofluoromethane	73-02104	0173-97-0245	38.9	Soil gas	517.2
Isobutane	73-01001	0173-97-0246	1.1	Soil gas	482.4
Tetrachloroethene	73-01001	0173-97-0246	1.7	Soil gas	482.4
Butene[1-]	73-01001	0173-97-0247	1	Soil gas	122.4
Butene[trans-2-]	73-01001	0173-97-0247	1	Soil gas	122.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Isobutane	73-01001	0173-97-0247	3.7	Soil gas	122.4
Isopentane	73-01001	0173-97-0247	6.16	Soil gas	122.4
Propylene	73-01001	0173-97-0247	1.06	Soil gas	122.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01002	0173-97-0248	4.46	Soil gas	432
Dichlorodifluoromethane	73-01002	0173-97-0248	53.1	Soil gas	432
Tetrachloroethene	73-01002	0173-97-0248	17.5	Soil gas	432
Trichlorofluoromethane	73-01002	0173-97-0248	1.9	Soil gas	432
Butane[n-]	73-01003	0173-97-0249	50.6	Soil gas	1190.4
Chlorodifluoromethane	73-01003	0173-97-0249	53.4	Soil gas	1190.4
Cyclohexane	73-01003	0173-97-0249	31.4	Soil gas	1190.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	0173-97-0249	59.2	Soil gas	1190.4
Dichlorodifluoromethane	73-01003	0173-97-0249	452	Soil gas	1190.4
Dichloroethene[cis-1,2-]	73-01003	0173-97-0249	594	Soil gas	1190.4
Hexane	73-01003	0173-97-0249	27	Soil gas	1190.4
Isobutane	73-01003	0173-97-0249	564	Soil gas	1190.4
Isopentane	73-01003	0173-97-0249	30.2	Soil gas	1190.4
Methyl-1-butene[3-]	73-01003	0173-97-0249	13.2	Soil gas	1190.4
Methyl-2-butene[2-]	73-01003	0173-97-0249	10.2	Soil gas	1190.4
Methylcyclohexane	73-01003	0173-97-0249	36	Soil gas	1190.4
Methylcyclopentane	73-01003	0173-97-0249	25.6	Soil gas	1190.4
Methylheptane[2-]	73-01003	0173-97-0249	12.8	Soil gas	1190.4
Methylheptane[3-]	73-01003	0173-97-0249	21.4	Soil gas	1190.4
Methylpentane[2-]	73-01003	0173-97-0249	26.4	Soil gas	1190.4
Methylpentane[3-]	73-01003	0173-97-0249	24.4	Soil gas	1190.4
Nonane[1-]	73-01003	0173-97-0249	33.4	Soil gas	1190.4
Propylene	73-01003	0173-97-0249	123	Soil gas	1190.4
Tetrachloroethene	73-01003	0173-97-0249	79.8	Soil gas	1190.4
Vinyl Chloride	73-01003	0173-97-0249	44.8	Soil gas	1190.4
Benzene	73-01003	0173-97-0251	14.6	Soil gas	1094.4
Butane[n-]	73-01003	0173-97-0251	61.8	Soil gas	1094.4
Butene[1-]	73-01003	0173-97-0251	72	Soil gas	1094.4
Chlorodifluoromethane	73-01003	0173-97-0251	67.2	Soil gas	1094.4
Chloroethane	73-01003	0173-97-0251	10.8	Soil gas	1094.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	0173-97-0251	71.6	Soil gas	1094.4
Dichlorodifluoromethane	73-01003	0173-97-0251	538	Soil gas	1094.4
Dichloroethene[cis-1,2-]	73-01003	0173-97-0251	1020	Soil gas	1094.4
Dichloroethene[trans-1,2-]	73-01003	0173-97-0251	16.2	Soil gas	1094.4
Dimethylbutane[2,2-]	73-01003	0173-97-0251	14.2	Soil gas	1094.4
Heptane	73-01003	0173-97-0251	103	Soil gas	1094.4
Hexane	73-01003	0173-97-0251	63	Soil gas	1094.4
Isobutane	73-01003	0173-97-0251	744	Soil gas	1094.4
Isopentane	73-01003	0173-97-0251	42	Soil gas	1094.4
Methyl-1-butene[3-]	73-01003	0173-97-0251	23.4	Soil gas	1094.4
Methyl-2-butene[2-]	73-01003	0173-97-0251	16.6	Soil gas	1094.4
Methylcyclohexane	73-01003	0173-97-0251	69.4	Soil gas	1094.4
Methylcyclopentane	73-01003	0173-97-0251	44.6	Soil gas	1094.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Methylheptane[2-]	73-01003	0173-97-0251	36.2	Soil gas	1094.4
Methylheptane[3-]	73-01003	0173-97-0251	50	Soil gas	1094.4
Methylhexane[3-]	73-01003	0173-97-0251	17.8	Soil gas	1094.4
Methylpentane[2-]	73-01003	0173-97-0251	45.6	Soil gas	1094.4
Methylpentane[3-]	73-01003	0173-97-0251	42	Soil gas	1094.4
Nonane[1-]	73-01003	0173-97-0251	71	Soil gas	1094.4
Octane[n-]	73-01003	0173-97-0251	74.2	Soil gas	1094.4
Pentane	73-01003	0173-97-0251	31.2	Soil gas	1094.4
Pentene[1-]	73-01003	0173-97-0251	10.6	Soil gas	1094.4
Pinene[alpha-]	73-01003	0173-97-0251	11.6	Soil gas	1094.4
Propylene	73-01003	0173-97-0251	190	Soil gas	1094.4
Tetrachloroethene	73-01003	0173-97-0251	84.8	Soil gas	1094.4
Trichloroethene	73-01003	0173-97-0251	10.8	Soil gas	1094.4
Trimethylbenzene[1,2,4-]	73-01003	0173-97-0251	14.2	Soil gas	1094.4
Trimethylpentane[2,3,4-]	73-01003	0173-97-0251	18.4	Soil gas	1094.4
Vinyl Chloride	73-01003	0173-97-0251	93.8	Soil gas	1094.4
Benzene	73-01003	0173-97-0252	71.6	Soil gas	110.4
Butane[n-]	73-01003	0173-97-0252	104	Soil gas	110.4
Butene[1-]	73-01003	0173-97-0252	125	Soil gas	110.4
Butene[cis-2-]	73-01003	0173-97-0252	20.6	Soil gas	110.4
Butene[trans-2-]	73-01003	0173-97-0252	10.2	Soil gas	110.4
Chlorodifluoromethane	73-01003	0173-97-0252	114	Soil gas	110.4
Chloroethane	73-01003	0173-97-0252	27.6	Soil gas	110.4
Cyclohexane	73-01003	0173-97-0252	254	Soil gas	110.4
Cyclopentane	73-01003	0173-97-0252	22.6	Soil gas	110.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	0173-97-0252	63.2	Soil gas	110.4
Dichlorodifluoromethane	73-01003	0173-97-0252	315	Soil gas	110.4
Dichloroethane[1,2-]	73-01003	0173-97-0252	10.2	Soil gas	110.4
Dichloroethene[1,1-]	73-01003	0173-97-0252	21.6	Soil gas	110.4
Dichloroethene[cis-1,2-]	73-01003	0173-97-0252	5780	Soil gas	110.4
Dichloroethene[trans-1,2-]	73-01003	0173-97-0252	187	Soil gas	110.4
Dichloropropane[1,2-]	73-01003	0173-97-0252	10.4	Soil gas	110.4
Dimethylbutane[2,2-]	73-01003	0173-97-0252	79.2	Soil gas	110.4
Dimethylbutane[2,3-]	73-01003	0173-97-0252	78.8	Soil gas	110.4
Dimethylpentane[2,3-]	73-01003	0173-97-0252	51.8	Soil gas	110.4
Heptane	73-01003	0173-97-0252	944	Soil gas	110.4
Hexane	73-01003	0173-97-0252	393	Soil gas	110.4
Hexene[cis-3-]	73-01003	0173-97-0252	13.2	Soil gas	110.4
Isobutane	73-01003	0173-97-0252	792	Soil gas	110.4
Isooctane	73-01003	0173-97-0252	27.2	Soil gas	110.4
Isopentane	73-01003	0173-97-0252	61.8	Soil gas	110.4
Isopropylbenzene	73-01003	0173-97-0252	14.6	Soil gas	110.4
Methyl-1-butene[3-]	73-01003	0173-97-0252	51.2	Soil gas	110.4
Methyl-1-pentene[2-]	73-01003	0173-97-0252	18	Soil gas	110.4
Methylcyclohexane	73-01003	0173-97-0252	653	Soil gas	110.4
Methylcyclopentane	73-01003	0173-97-0252	292	Soil gas	110.4
Methylene Chloride	73-01003	0173-97-0252	11.4	Soil gas	110.4
Methylheptane[2-]	73-01003	0173-97-0252	357	Soil gas	110.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylheptane[3-]	73-01003	0173-97-0252	518	Soil gas	110.4
Methylhexane[2-]	73-01003	0173-97-0252	16.8	Soil gas	110.4
Methylhexane[3-]	73-01003	0173-97-0252	152	Soil gas	110.4
Methylpentane[2-]	73-01003	0173-97-0252	272	Soil gas	110.4
Methylpentane[3-]	73-01003	0173-97-0252	253	Soil gas	110.4
Nonane[1-]	73-01003	0173-97-0252	731	Soil gas	110.4
Octane[n-]	73-01003	0173-97-0252	610	Soil gas	110.4
Pentane	73-01003	0173-97-0252	64.6	Soil gas	110.4
Pentene[1-]	73-01003	0173-97-0252	79.6	Soil gas	110.4
Pinene[alpha-]	73-01003	0173-97-0252	46.4	Soil gas	110.4
Propylene	73-01003	0173-97-0252	465	Soil gas	110.4
Trichloroethene	73-01003	0173-97-0252	50	Soil gas	110.4
Trimethylbenzene[1,2,4-]	73-01003	0173-97-0252	53	Soil gas	110.4
Trimethylbenzene[1,3,5-]	73-01003	0173-97-0252	25	Soil gas	110.4
Trimethylpentane[2,3,4-]	73-01003	0173-97-0252	176	Soil gas	110.4
Vinyl Acetate	73-01003	0173-97-0252	306	Soil gas	110.4
Vinyl Chloride	73-01003	0173-97-0252	423	Soil gas	110.4
Xylene[1,3-]	73-01003	0173-97-0252	21.2	Soil gas	110.4
Benzene	73-01004	0173-97-0253	26.8	Soil gas	1192.8
Butane[n-]	73-01004	0173-97-0253	160	Soil gas	1192.8
Butene[1-]	73-01004	0173-97-0253	133	Soil gas	1192.8
Butene[cis-2-]	73-01004	0173-97-0253	14.2	Soil gas	1192.8
Butene[trans-2-]	73-01004	0173-97-0253	10.8	Soil gas	1192.8
Chlorodifluoromethane	73-01004	0173-97-0253	127	Soil gas	1192.8
Chloroethane	73-01004	0173-97-0253	20.2	Soil gas	1192.8
Cyclohexane	73-01004	0173-97-0253	157	Soil gas	1192.8
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01004	0173-97-0253	55	Soil gas	1192.8
Dichlorodifluoromethane	73-01004	0173-97-0253	439	Soil gas	1192.8
Dichloroethene[1,1-]	73-01004	0173-97-0253	12.4	Soil gas	1192.8
Dichloroethene[cis-1,2-]	73-01004	0173-97-0253	2190	Soil gas	1192.8
Dichloroethene[trans-1,2-]	73-01004	0173-97-0253	25.2	Soil gas	1192.8
Dimethylbutane[2,2-]	73-01004	0173-97-0253	13.6	Soil gas	1192.8
Dimethylbutane[2,3-]	73-01004	0173-97-0253	33.4	Soil gas	1192.8
Dimethylpentane[2,3-]	73-01004	0173-97-0253	23.4	Soil gas	1192.8
Heptane	73-01004	0173-97-0253	147	Soil gas	1192.8
Hexane	73-01004	0173-97-0253	66	Soil gas	1192.8
Isobutane	73-01004	0173-97-0253	1190	Soil gas	1192.8
Isooctane	73-01004	0173-97-0253	12.8	Soil gas	1192.8
Isopentane	73-01004	0173-97-0253	63.4	Soil gas	1192.8
Methyl-1-butene[3-]	73-01004	0173-97-0253	25	Soil gas	1192.8
Methyl-2-butene[2-]	73-01004	0173-97-0253	14	Soil gas	1192.8
Methylcyclohexane	73-01004	0173-97-0253	228	Soil gas	1192.8
Methylcyclopentane	73-01004	0173-97-0253	60.4	Soil gas	1192.8
Methylene Chloride	73-01004	0173-97-0253	24.8	Soil gas	1192.8
Methylheptane[2-]	73-01004	0173-97-0253	53.8	Soil gas	1192.8
Methylheptane[3-]	73-01004	0173-97-0253	75.4	Soil gas	1192.8
Methylhexane[3-]	73-01004	0173-97-0253	59.8	Soil gas	1192.8
Methylpentane[2-]	73-01004	0173-97-0253	38.8	Soil gas	1192.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylpentane[3-]	73-01004	0173-97-0253	37.2	Soil gas	1192.8
Nonane[1-]	73-01004	0173-97-0253	119	Soil gas	1192.8
Octane[n-]	73-01004	0173-97-0253	59.2	Soil gas	1192.8
Pentane	73-01004	0173-97-0253	76	Soil gas	1192.8
Pentene[1-]	73-01004	0173-97-0253	32.6	Soil gas	1192.8
Propylene	73-01004	0173-97-0253	442	Soil gas	1192.8
Tetrachloroethene	73-01004	0173-97-0253	14500	Soil gas	1192.8
Trichloroethane[1,1,1-]	73-01004	0173-97-0253	98.6	Soil gas	1192.8
Trichloroethene	73-01004	0173-97-0253	10.2	Soil gas	1192.8
Trichlorofluoromethane	73-01004	0173-97-0253	10.8	Soil gas	1192.8
Trimethylbenzene[1,2,4-]	73-01004	0173-97-0253	14	Soil gas	1192.8
Trimethylpentane[2,3,4-]	73-01004	0173-97-0253	26.4	Soil gas	1192.8
Vinyl Chloride	73-01004	0173-97-0253	180	Soil gas	1192.8
Xylene[1,3-]	73-01004	0173-97-0253	12.6	Soil gas	1192.8
Benzene	73-01004	0173-97-0254	35	Soil gas	904.8
Butane[n-]	73-01004	0173-97-0254	219	Soil gas	904.8
Butene[1-]	73-01004	0173-97-0254	169	Soil gas	904.8
Butene[cis-2-]	73-01004	0173-97-0254	13	Soil gas	904.8
Butene[trans-2-]	73-01004	0173-97-0254	16.4	Soil gas	904.8
Chlorodifluoromethane	73-01004	0173-97-0254	178	Soil gas	904.8
Chloroethane	73-01004	0173-97-0254	24.8	Soil gas	904.8
Cyclohexane	73-01004	0173-97-0254	215	Soil gas	904.8
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01004	0173-97-0254	68	Soil gas	904.8
Dichlorodifluoromethane	73-01004	0173-97-0254	413	Soil gas	904.8
Dichloroethene[1,1-]	73-01004	0173-97-0254	11.4	Soil gas	904.8
Dichloroethene[cis-1,2-]	73-01004	0173-97-0254	1530	Soil gas	904.8
Dichloroethene[trans-1,2-]	73-01004	0173-97-0254	33.2	Soil gas	904.8
Dimethylbutane[2,2-]	73-01004	0173-97-0254	17.6	Soil gas	904.8
Dimethylbutane[2,3-]	73-01004	0173-97-0254	45.8	Soil gas	904.8
Dimethylpentane[2,3-]	73-01004	0173-97-0254	31.8	Soil gas	904.8
Heptane	73-01004	0173-97-0254	221	Soil gas	904.8
Hexane	73-01004	0173-97-0254	93	Soil gas	904.8
Isobutane	73-01004	0173-97-0254	1520	Soil gas	904.8
Isooctane	73-01004	0173-97-0254	15.6	Soil gas	904.8
Isopentane	73-01004	0173-97-0254	85.6	Soil gas	904.8
Methyl-1-butene[3-]	73-01004	0173-97-0254	35.4	Soil gas	904.8
Methyl-2-butene[2-]	73-01004	0173-97-0254	22.2	Soil gas	904.8
Methylcyclohexane	73-01004	0173-97-0254	339	Soil gas	904.8
Methylcyclopentane	73-01004	0173-97-0254	83.4	Soil gas	904.8
Methylene Chloride	73-01004	0173-97-0254	29	Soil gas	904.8
Methylheptane[2-]	73-01004	0173-97-0254	77	Soil gas	904.8
Methylheptane[3-]	73-01004	0173-97-0254	108	Soil gas	904.8
Methylhexane[3-]	73-01004	0173-97-0254	84.6	Soil gas	904.8
Methylpentane[2-]	73-01004	0173-97-0254	50	Soil gas	904.8
Methylpentane[3-]	73-01004	0173-97-0254	50.8	Soil gas	904.8
Nonane[1-]	73-01004	0173-97-0254	111	Soil gas	904.8
Octane[n-]	73-01004	0173-97-0254	77.6	Soil gas	904.8
Pentane	73-01004	0173-97-0254	101	Soil gas	904.8

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Tetrachloroethene	73-01004	0173-97-0255	50.6	Soil gas	556.8
Trichloroethene	73-01004	0173-97-0255	15.4	Soil gas	556.8
Trimethylbenzene[1,2,4-]	73-01004	0173-97-0255	18.8	Soil gas	556.8
Trimethylpentane[2,3,4-]	73-01004	0173-97-0255	57.2	Soil gas	556.8
Vinyl Acetate	73-01004	0173-97-0255	118	Soil gas	556.8
Vinyl Chloride	73-01004	0173-97-0255	201	Soil gas	556.8
Xylene[1,3-]	73-01004	0173-97-0255	15	Soil gas	556.8
Benzene	73-01004	0173-97-0256	53	Soil gas	160.8
Bromodichloromethane	73-01004	0173-97-0256	18.2	Soil gas	160.8
Butane[n-]	73-01004	0173-97-0256	202	Soil gas	160.8
Butene[1-]	73-01004	0173-97-0256	282	Soil gas	160.8
Butene[cis-2-]	73-01004	0173-97-0256	24.2	Soil gas	160.8
Butene[trans-2-]	73-01004	0173-97-0256	19	Soil gas	160.8
Chlorodifluoromethane	73-01004	0173-97-0256	211	Soil gas	160.8
Chloroethane	73-01004	0173-97-0256	18.2	Soil gas	160.8
Cyclohexane	73-01004	0173-97-0256	319	Soil gas	160.8
Cyclopentane	73-01004	0173-97-0256	15.8	Soil gas	160.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	0173-97-0256	58.6	Soil gas	160.8
Dichlorodifluoromethane	73-01004	0173-97-0256	136	Soil gas	160.8
Dichloroethene[cis-1,2-]	73-01004	0173-97-0256	1140	Soil gas	160.8
Dichloroethene[trans-1,2-]	73-01004	0173-97-0256	25.6	Soil gas	160.8
Dimethylbutane[2,2-]	73-01004	0173-97-0256	27.4	Soil gas	160.8
Dimethylbutane[2,3-]	73-01004	0173-97-0256	92.8	Soil gas	160.8
Dimethylpentane[2,3-]	73-01004	0173-97-0256	66.4	Soil gas	160.8
Heptane	73-01004	0173-97-0256	501	Soil gas	160.8
Hexane	73-01004	0173-97-0256	149	Soil gas	160.8
Isobutane	73-01004	0173-97-0256	1430	Soil gas	160.8
Isooctane	73-01004	0173-97-0256	22.2	Soil gas	160.8
Isopentane	73-01004	0173-97-0256	81.8	Soil gas	160.8
Methyl-1-butene[3-]	73-01004	0173-97-0256	50.4	Soil gas	160.8
Methyl-1-pentene[2-]	73-01004	0173-97-0256	10.4	Soil gas	160.8
Methyl-2-butene[2-]	73-01004	0173-97-0256	33.9	Soil gas	160.8
Methylcyclohexane	73-01004	0173-97-0256	547	Soil gas	160.8
Methylcyclopentane	73-01004	0173-97-0256	109	Soil gas	160.8
Methylheptane[2-]	73-01004	0173-97-0256	236	Soil gas	160.8
Methylheptane[3-]	73-01004	0173-97-0256	312	Soil gas	160.8
Methylhexane[2-]	73-01004	0173-97-0256	12.6	Soil gas	160.8
Methylhexane[3-]	73-01004	0173-97-0256	171	Soil gas	160.8
Methylpentane[2-]	73-01004	0173-97-0256	77.2	Soil gas	160.8
Methylpentane[3-]	73-01004	0173-97-0256	71	Soil gas	160.8
Nonane[1-]	73-01004	0173-97-0256	120	Soil gas	160.8
Octane[n-]	73-01004	0173-97-0256	174	Soil gas	160.8
Pentane	73-01004	0173-97-0256	122	Soil gas	160.8
Pentene[1-]	73-01004	0173-97-0256	17.6	Soil gas	160.8
Pentene[trans-2-]	73-01004	0173-97-0256	19.4	Soil gas	160.8
Pinene[alpha-]	73-01004	0173-97-0256	23.6	Soil gas	160.8
Propylene	73-01004	0173-97-0256	408	Soil gas	160.8
Tetrachloroethene	73-01004	0173-97-0256	14500	Soil gas	160.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trichloroethane[1,1,1-]	73-01004	0173-97-0256	119	Soil gas	160.8
Trichloroethene	73-01004	0173-97-0256	10.2	Soil gas	160.8
Trimethylbenzene[1,2,4-]	73-01004	0173-97-0256	14.2	Soil gas	160.8
Trimethylpentane[2,3,4-]	73-01004	0173-97-0256	64	Soil gas	160.8
Vinyl Chloride	73-01004	0173-97-0256	197	Soil gas	160.8
Xylene[1,3-]	73-01004	0173-97-0256	11.6	Soil gas	160.8
Butane[n-]	73-01011	0173-97-0257	13.6	Soil gas	2136
Chlorodifluoromethane	73-01011	0173-97-0257	105	Soil gas	2136
Cyclohexane	73-01011	0173-97-0257	39.8	Soil gas	2136
Dichlorodifluoromethane	73-01011	0173-97-0257	984	Soil gas	2136
Dichloroethene[cis-1,2-]	73-01011	0173-97-0257	93	Soil gas	2136
Isobutane	73-01011	0173-97-0257	701	Soil gas	2136
Isopentane	73-01011	0173-97-0257	17.6	Soil gas	2136
Methylcyclohexane	73-01011	0173-97-0257	26.6	Soil gas	2136
Propylene	73-01011	0173-97-0257	253	Soil gas	2136
Tetrachloroethene	73-01011	0173-97-0257	292	Soil gas	2136
Trichloroethene	73-01011	0173-97-0257	10.8	Soil gas	2136
Trichlorofluoromethane	73-01011	0173-97-0257	48.6	Soil gas	2136
Acetone	73-01011	0173-97-0258	2000	Soil gas	1500
Benzene	73-01011	0173-97-0258	18.4	Soil gas	1500
Butane[n-]	73-01011	0173-97-0258	65.2	Soil gas	1500
Chlorodifluoromethane	73-01011	0173-97-0258	122	Soil gas	1500
Chloroethane	73-01011	0173-97-0258	14.8	Soil gas	1500
Cyclohexane	73-01011	0173-97-0258	112	Soil gas	1500
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	0173-97-0258	70.8	Soil gas	1500
Dichlorodifluoromethane	73-01011	0173-97-0258	617	Soil gas	1500
Dichloroethene[cis-1,2-]	73-01011	0173-97-0258	1610	Soil gas	1500
Dichloroethene[trans-1,2-]	73-01011	0173-97-0258	16.6	Soil gas	1500
Dimethylbutane[2,2-]	73-01011	0173-97-0258	15.8	Soil gas	1500
Dimethylbutane[2,3-]	73-01011	0173-97-0258	10.2	Soil gas	1500
Dimethylpentane[2,3-]	73-01011	0173-97-0258	15.4	Soil gas	1500
Hexane	73-01011	0173-97-0258	22.4	Soil gas	1500
Isobutane	73-01011	0173-97-0258	1090	Soil gas	1500
Isooctane	73-01011	0173-97-0258	13.6	Soil gas	1500
Isopentane	73-01011	0173-97-0258	90	Soil gas	1500
Methyl-1-butene[3-]	73-01011	0173-97-0258	16	Soil gas	1500
Methyl-2-butene[2-]	73-01011	0173-97-0258	10.6	Soil gas	1500
Methylcyclohexane	73-01011	0173-97-0258	198	Soil gas	1500
Methylcyclopentane	73-01011	0173-97-0258	35	Soil gas	1500
Methylene Chloride	73-01011	0173-97-0258	15.4	Soil gas	1500
Methylheptane[2-]	73-01011	0173-97-0258	16.4	Soil gas	1500
Methylheptane[3-]	73-01011	0173-97-0258	14.6	Soil gas	1500
Methylhexane[3-]	73-01011	0173-97-0258	23.8	Soil gas	1500
Methylpentane[2-]	73-01011	0173-97-0258	29.8	Soil gas	1500
Methylpentane[3-]	73-01011	0173-97-0258	29.4	Soil gas	1500
Nonane[1-]	73-01011	0173-97-0258	10.2	Soil gas	1500
Octane[n-]	73-01011	0173-97-0258	17.2	Soil gas	1500
Pentane	73-01011	0173-97-0258	22.8	Soil gas	1500

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Propylene	73-01011	0173-97-0256	209	Soil gas	1500
Tetrachloroethene	73-01011	0173-97-0258	155	Soil gas	1500
Trichlorobenzene[1,2,4-]	73-01011	0173-97-0258	19	Soil gas	1500
Trichloroethene	73-01011	0173-97-0258	17.8	Soil gas	1500
Trichlorofluoromethane	73-01011	0173-97-0258	21	Soil gas	1500
Trimethylpentane[2,3,4-]	73-01011	0173-97-0258	20.4	Soil gas	1500
Vinyl Chloride	73-01011	0173-97-0258	101	Soil gas	1500
Acetone	73-01011	0173-97-0259	143	Soil gas	1044
Benzene	73-01011	0173-97-0259	56.2	Soil gas	1044
Butane[n-]	73-01011	0173-97-0259	131	Soil gas	1044
Butene[1-]	73-01011	0173-97-0259	79.6	Soil gas	1044
Butene[cis-2-]	73-01011	0173-97-0259	17.4	Soil gas	1044
Butene[trans-2-]	73-01011	0173-97-0259	10.4	Soil gas	1044
Chlorobenzene	73-01011	0173-97-0259	10.6	Soil gas	1044
Chlorodifluoromethane	73-01011	0173-97-0259	129	Soil gas	1044
Chloroethane	73-01011	0173-97-0259	22.2	Soil gas	1044
Cyclohexane	73-01011	0173-97-0259	314	Soil gas	1044
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01011	0173-97-0259	53.2	Soil gas	1044
Dichlorodifluoromethane	73-01011	0173-97-0259	448	Soil gas	1044
Dichloroethane[1,1-]	73-01011	0173-97-0259	10	Soil gas	1044
Dichloroethene[1,1-]	73-01011	0173-97-0259	12	Soil gas	1044
Dichloroethene[cis-1,2-]	73-01011	0173-97-0259	3600	Soil gas	1044
Dichloroethene[trans-1,2-]	73-01011	0173-97-0259	66.4	Soil gas	1044
Dimethylbutane[2,2-]	73-01011	0173-97-0259	39.8	Soil gas	1044
Dimethylbutane[2,3-]	73-01011	0173-97-0259	97	Soil gas	1044
Dimethylpentane[2,3-]	73-01011	0173-97-0259	67	Soil gas	1044
Ethylbenzene	73-01011	0173-97-0259	12.6	Soil gas	1044
Heptane	73-01011	0173-97-0259	740	Soil gas	1044
Hexane	73-01011	0173-97-0259	157	Soil gas	1044
Isobutane	73-01011	0173-97-0259	882	Soil gas	1044
Isooctane	73-01011	0173-97-0259	79.8	Soil gas	1044
Methyl-1-butene[3-]	73-01011	0173-97-0259	26.2	Soil gas	1044
Methyl-1-pentene[2-]	73-01011	0173-97-0259	11.2	Soil gas	1044
Methylcyclohexane	73-01011	0173-97-0259	968	Soil gas	1044
Methylcyclopentane	73-01011	0173-97-0259	140	Soil gas	1044
Methylene Chloride	73-01011	0173-97-0259	25	Soil gas	1044
Methylheptane[2-]	73-01011	0173-97-0259	309	Soil gas	1044
Methylheptane[3-]	73-01011	0173-97-0259	357	Soil gas	1044
Methylhexane[2-]	73-01011	0173-97-0259	13.6	Soil gas	1044
Methylhexane[3-]	73-01011	0173-97-0259	158	Soil gas	1044
Methylpentane[2-]	73-01011	0173-97-0259	102	Soil gas	1044
Methylpentane[3-]	73-01011	0173-97-0259	96.4	Soil gas	1044
Nonane[1-]	73-01011	0173-97-0259	397	Soil gas	1044
Octane[n-]	73-01011	0173-97-0259	335	Soil gas	1044
Pentane	73-01011	0173-97-0259	65	Soil gas	1044
Pentene[1-]	73-01011	0173-97-0259	44	Soil gas	1044
Pinene[alpha-]	73-01011	0173-97-0259	56.2	Soil gas	1044
Propylene	73-01011	0173-97-0259	412	Soil gas	1044

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trichlorobenzene[1,2,4-]	73-01011	0173-97-0259	25.6	Soil gas	1044
Trichloroethene	73-01011	0173-97-0259	36.2	Soil gas	1044
Trimethylbenzene[1,2,4-]	73-01011	0173-97-0259	18.8	Soil gas	1044
Trimethylbenzene[1,3,5-]	73-01011	0173-97-0259	10.2	Soil gas	1044
Trimethylpentane[2,3,4-]	73-01011	0173-97-0259	107	Soil gas	1044
Vinyl Acetate	73-01011	0173-97-0259	113	Soil gas	1044
Vinyl Chloride	73-01011	0173-97-0259	246	Soil gas	1044
Xylene[1,3-]	73-01011	0173-97-0259	15	Soil gas	1044
Benzene	73-01011	0173-97-0260	166	Soil gas	348
Bromodichloromethane	73-01011	0173-97-0260	37	Soil gas	348
Butane[n-]	73-01011	0173-97-0260	267	Soil gas	348
Butene[1-]	73-01011	0173-97-0260	208	Soil gas	348
Butene[cis-2-]	73-01011	0173-97-0260	46	Soil gas	348
Butene[trans-2-]	73-01011	0173-97-0260	24.4	Soil gas	348
Chlorobenzene	73-01011	0173-97-0260	28.8	Soil gas	348
Chlorodifluoromethane	73-01011	0173-97-0260	278	Soil gas	348
Chloroethane	73-01011	0173-97-0260	54.6	Soil gas	348
Cyclohexane	73-01011	0173-97-0260	805	Soil gas	348
Cyclopentane	73-01011	0173-97-0260	32.8	Soil gas	348
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	0173-97-0260	76.2	Soil gas	348
Dichlorobenzene[1,4-]	73-01011	0173-97-0260	150	Soil gas	348
Dichlorodifluoromethane	73-01011	0173-97-0260	485	Soil gas	348
Dichloroethane[1,2-]	73-01011	0173-97-0260	12.4	Soil gas	348
Dichloroethene[1,1-]	73-01011	0173-97-0260	36.6	Soil gas	348
Dichloroethene[cis-1,2-]	73-01011	0173-97-0260	16600	Soil gas	348
Dichloroethene[trans-1,2-]	73-01011	0173-97-0260	307	Soil gas	348
Dimethylbutane[2,2-]	73-01011	0173-97-0260	83.6	Soil gas	348
Dimethylbutane[2,3-]	73-01011	0173-97-0260	333	Soil gas	348
Dimethylpentane[2,3-]	73-01011	0173-97-0260	217	Soil gas	348
Heptane	73-01011	0173-97-0260	2810	Soil gas	348
Hexane	73-01011	0173-97-0260	395	Soil gas	348
Hexene[cis-3-]	73-01011	0173-97-0260	20.4	Soil gas	348
Isobutane	73-01011	0173-97-0260	1750	Soil gas	348
Isooctane	73-01011	0173-97-0260	279	Soil gas	348
Isopentane	73-01011	0173-97-0260	74.8	Soil gas	348
Isopropylbenzene	73-01011	0173-97-0260	10.2	Soil gas	348
Methyl-1-butene[3-]	73-01011	0173-97-0260	68.8	Soil gas	348
Methyl-1-pentene[2-]	73-01011	0173-97-0260	34.8	Soil gas	348
Methyl-2-butene[2-]	73-01011	0173-97-0260	40.4	Soil gas	348
Methylcyclohexane	73-01011	0173-97-0260	2400	Soil gas	348
Methylcyclopentane	73-01011	0173-97-0260	338	Soil gas	348
Methylene Chloride	73-01011	0173-97-0260	35	Soil gas	348
Methylheptane[2-]	73-01011	0173-97-0260	928	Soil gas	348
Methylheptane[3-]	73-01011	0173-97-0260	979	Soil gas	348
Methylhexane[2-]	73-01011	0173-97-0260	34.6	Soil gas	348
Methylhexane[3-]	73-01011	0173-97-0260	537	Soil gas	348
Methylpentane[2-]	73-01011	0173-97-0260	232	Soil gas	348
Methylpentane[3-]	73-01011	0173-97-0260	205	Soil gas	348

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Nonane[1-]	73-01011	0173-97-0250	1890	Soil gas	348
Octane[n-]	73-01011	0173-97-0260	1250	Soil gas	348
Pentane	73-01011	0173-97-0260	148	Soil gas	348
Pentene[1-]	73-01011	0173-97-0260	105	Soil gas	348
Pentene[trans-2-]	73-01011	0173-97-0260	16	Soil gas	348
Pinene[alpha-]	73-01011	0173-97-0260	80.8	Soil gas	348
Propylene	73-01011	0173-97-0260	935	Soil gas	348
Tetrahydrofuran	73-01011	0173-97-0260	1210	Soil gas	348
Trichloroethene	73-01011	0173-97-0260	51	Soil gas	348
Trimethylbenzene[1,2,4-]	73-01011	0173-97-0260	20.6	Soil gas	348
Trimethylpentane[2,3,4-]	73-01011	0173-97-0260	252	Soil gas	348
Vinyl Acetate	73-01011	0173-97-0260	267	Soil gas	348
Vinyl Chloride	73-01011	0173-97-0260	1050	Soil gas	348
Xylene[1,3-]	73-01011	0173-97-0260	13.2	Soil gas	348
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01005	0173-97-0261	32.2	Soil gas	402
Dichlorodifluoromethane	73-01005	0173-97-0261	351	Soil gas	402
Tetrachloroethene	73-01005	0173-97-0261	282	Soil gas	402
Trichlorofluoromethane	73-01005	0173-97-0261	22.6	Soil gas	402
Butane[n-]	73-01010	0173-97-0262	1.12	Soil gas	1740
Butene[1-]	73-01010	0173-97-0262	1.18	Soil gas	1740
Chlorodifluoromethane	73-01010	0173-97-0262	2.88	Soil gas	1740
Chloroform	73-01010	0173-97-0262	1.76	Soil gas	1740
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-97-0262	12.1	Soil gas	1740
Dichlorodifluoromethane	73-01010	0173-97-0262	167	Soil gas	1740
Isobutane	73-01010	0173-97-0262	13.3	Soil gas	1740
Propylene	73-01010	0173-97-0262	1.1	Soil gas	1740
Tetrachloroethene	73-01010	0173-97-0262	48.8	Soil gas	1740
Trichloroethene	73-01010	0173-97-0262	2.9	Soil gas	1740
Trichlorofluoromethane	73-01010	0173-97-0262	8.94	Soil gas	1740
Vinyl Acetate	73-01010	0173-97-0262	12.7	Soil gas	1740
Chlorodifluoromethane	73-01010	0173-97-0263	1.38	Soil gas	1368
Chloroform	73-01010	0173-97-0263	1.02	Soil gas	1368
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-97-0263	14.6	Soil gas	1368
Dichlorodifluoromethane	73-01010	0173-97-0263	173	Soil gas	1368
Isobutane	73-01010	0173-97-0263	3.98	Soil gas	1368
Tetrachloroethene	73-01010	0173-97-0263	29.8	Soil gas	1368
Trichlorofluoromethane	73-01010	0173-97-0263	4.82	Soil gas	1368
Bromomethane	73-01010	0173-97-0264	1	Soil gas	732
Butene[1-]	73-01010	0173-97-0264	1	Soil gas	732
Chloroform	73-01010	0173-97-0264	1.12	Soil gas	732
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01010	0173-97-0264	11.6	Soil gas	732
Dichlorodifluoromethane	73-01010	0173-97-0264	125	Soil gas	732
Isobutane	73-01010	0173-97-0264	3.48	Soil gas	732
Tetrachloroethene	73-01010	0173-97-0264	13.8	Soil gas	732
Trichlorofluoromethane	73-01010	0173-97-0264	2.02	Soil gas	732

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01008	0173-97-0268	17.9	Soil gas	522
Dichlorodifluoromethane	73-01008	0173-97-0268	129	Soil gas	522
Isobutane	73-01008	0173-97-0268	4.68	Soil gas	522
Tetrachloroethene	73-01008	0173-97-0268	8.76	Soil gas	522
Trichlorodifluoromethane	73-01008	0173-97-0268	1.06	Soil gas	522
Butane(n-)	73-01008	0173-97-0269	2.12	Soil gas	186
Butene[1-]	73-01008	0173-97-0269	1.08	Soil gas	186
Chlorodifluoromethane	73-01008	0173-97-0269	1	Soil gas	186
Chloroform	73-01008	0173-97-0269	1.94	Soil gas	186
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01008	0173-97-0269	27	Soil gas	186
Dichlorodifluoromethane	73-01008	0173-97-0269	176	Soil gas	186
Isobutane	73-01008	0173-97-0269	52.6	Soil gas	186
Propylene	73-01008	0173-97-0269	24.6	Soil gas	186
Tetrachloroethene	73-01008	0173-97-0269	10.2	Soil gas	186
Benzene	73-02071	0173-97-0271	52.8	Soil gas	12
Bromodichloromethane	73-02071	0173-97-0271	15.8	Soil gas	12
Butane(n-)	73-02071	0173-97-0271	75.4	Soil gas	12
Butene[1-]	73-02071	0173-97-0271	352	Soil gas	12
Butene[trans-2-]	73-02071	0173-97-0271	11.2	Soil gas	12
Chlorodifluoromethane	73-02071	0173-97-0271	44.8	Soil gas	12
Chloroethane	73-02071	0173-97-0271	22	Soil gas	12
Cyclohexane	73-02071	0173-97-0271	124	Soil gas	12
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02071	0173-97-0271	28.2	Soil gas	12
Dichlorobenzene[1,4-]	73-02071	0173-97-0271	209	Soil gas	12
Dichloroethene[<i>cis</i> -1,2-]	73-02071	0173-97-0271	271	Soil gas	12
Dimethylpentane[2,3-]	73-02071	0173-97-0271	26.8	Soil gas	12
Ethylbenzene	73-02071	0173-97-0271	368	Soil gas	12
Heptane	73-02071	0173-97-0271	245	Soil gas	12
Hexane	73-02071	0173-97-0271	70	Soil gas	12
Hexene[<i>cis</i> -3-]	73-02071	0173-97-0271	20.8	Soil gas	12
Isobutane	73-02071	0173-97-0271	513	Soil gas	12
Isooctane	73-02071	0173-97-0271	15.2	Soil gas	12
Isopropylbenzene	73-02071	0173-97-0271	15	Soil gas	12
Methyl-1-butene[3-]	73-02071	0173-97-0271	29.4	Soil gas	12
Methyl-1-pentene[2-]	73-02071	0173-97-0271	11.6	Soil gas	12
Methylcyclohexane	73-02071	0173-97-0271	253	Soil gas	12
Methylcyclopentane	73-02071	0173-97-0271	95.8	Soil gas	12
Methylheptane[2-]	73-02071	0173-97-0271	112	Soil gas	12
Methylheptane[3-]	73-02071	0173-97-0271	136	Soil gas	12
Methylhexane[3-]	73-02071	0173-97-0271	85.6	Soil gas	12
Methylpentane[2-]	73-02071	0173-97-0271	19.8	Soil gas	12
Methylpentane[3-]	73-02071	0173-97-0271	23	Soil gas	12
Nonane[1-]	73-02071	0173-97-0271	6940	Soil gas	12
Octane(n-)	73-02071	0173-97-0271	532	Soil gas	12
Pentene[1-]	73-02071	0173-97-0271	92	Soil gas	12
Pinene[alpha-]	73-02071	0173-97-0271	513	Soil gas	12

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pinene[beta-]	73-02071	0173-97-0271	1390	Soil gas	12
Propylene	73-02071	0173-97-0271	262	Soil gas	12
Toluene	73-02071	0173-97-0271	136	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02071	0173-97-0271	630	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02071	0173-97-0271	317	Soil gas	12
Trimethylpentane[2,3,4-]	73-02071	0173-97-0271	58.6	Soil gas	12
Vinyl Chloride	73-02071	0173-97-0271	39.6	Soil gas	12
Xylene[1,2-]	73-02071	0173-97-0271	234	Soil gas	12
Xylene[1,3-]	73-02071	0173-97-0271	2360	Soil gas	12
Benzene	73-02061	0173-97-0273	1.38	Soil gas	900
Butane[n-]	73-02061	0173-97-0273	19.2	Soil gas	900
Butene[1-]	73-02061	0173-97-0273	11.9	Soil gas	900
Butene[cis-2-]	73-02061	0173-97-0273	2.2	Soil gas	900
Butene[trans-2-]	73-02061	0173-97-0273	2.06	Soil gas	900
Dichlorodifluoromethane	73-02061	0173-97-0273	10.5	Soil gas	900
Hexane	73-02061	0173-97-0273	3.04	Soil gas	900
Isobutane	73-02061	0173-97-0273	7.4	Soil gas	900
Isopentane	73-02061	0173-97-0273	4.42	Soil gas	900
Methyl-1-butene[3-]	73-02061	0173-97-0273	1.06	Soil gas	900
Methyl-1-pentene[2-]	73-02061	0173-97-0273	1.34	Soil gas	900
Methyl-2-butene[2-]	73-02061	0173-97-0273	1.14	Soil gas	900
Methylhexane[3-]	73-02061	0173-97-0273	1.34	Soil gas	900
Methylpentane[2-]	73-02061	0173-97-0273	1.78	Soil gas	900
Methylpentane[3-]	73-02061	0173-97-0273	1.62	Soil gas	900
Pentane	73-02061	0173-97-0273	6.32	Soil gas	900
Pentene[1-]	73-02061	0173-97-0273	4.38	Soil gas	900
Pentene[trans-2-]	73-02061	0173-97-0273	1.24	Soil gas	900
Propylene	73-02061	0173-97-0273	20.5	Soil gas	900
Tetrachloroethene	73-02061	0173-97-0273	3.78	Soil gas	900
Butane[n-]	73-02061	0173-97-0274	14.4	Soil gas	900
Butene[1-]	73-02061	0173-97-0274	8.44	Soil gas	900
Butene[cis-2-]	73-02061	0173-97-0274	1.96	Soil gas	900
Butene[trans-2-]	73-02061	0173-97-0274	2.22	Soil gas	900
Dichlorodifluoromethane	73-02061	0173-97-0274	10.2	Soil gas	900
Heptane	73-02061	0173-97-0274	1.36	Soil gas	900
Hexane	73-02061	0173-97-0274	2.12	Soil gas	900
Isobutane	73-02061	0173-97-0274	6.42	Soil gas	900
Isopentane	73-02061	0173-97-0274	3.46	Soil gas	900
Methyl-1-pentene[2-]	73-02061	0173-97-0274	1.04	Soil gas	900
Methylhexane[3-]	73-02061	0173-97-0274	1.06	Soil gas	900
Methylpentane[2-]	73-02061	0173-97-0274	1.3	Soil gas	900
Methylpentane[3-]	73-02061	0173-97-0274	1.26	Soil gas	900
Pentene[1-]	73-02061	0173-97-0274	2.92	Soil gas	900
Pentene[trans-2-]	73-02061	0173-97-0274	1.08	Soil gas	900
Propylene	73-02061	0173-97-0274	16.1	Soil gas	900
Tetrachloroethene	73-02061	0173-97-0274	3.52	Soil gas	900
Acetone	73-02061	0173-97-0275	106	Soil gas	330
Benzene	73-02061	0173-97-0275	40.6	Soil gas	330
Butane[n-]	73-02061	0173-97-0275	53	Soil gas	330

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Butene[1-]	73-02061	0173-97-0275	126	Soil gas	330
Butene[cis-2-]	73-02061	0173-97-0275	20.4	Soil gas	330
Butene[trans-2-]	73-02061	0173-97-0275	25	Soil gas	330
Cyclohexane	73-02061	0173-97-0275	14	Soil gas	330
Dichlorodifluoromethane	73-02061	0173-97-0275	12.2	Soil gas	330
Dimethylbutane[2,2-]	73-02061	0173-97-0275	11.8	Soil gas	330
Dimethylbutane[2,3-]	73-02061	0173-97-0275	29.6	Soil gas	330
Dimethylpentane[2,3-]	73-02061	0173-97-0275	16.2	Soil gas	330
Heptane	73-02061	0173-97-0275	30.2	Soil gas	330
Hexane	73-02061	0173-97-0275	22.8	Soil gas	330
Isobutane	73-02061	0173-97-0275	197	Soil gas	330
Isopentane	73-02061	0173-97-0275	157	Soil gas	330
Methyl-1-butene[3-]	73-02061	0173-97-0275	31.4	Soil gas	330
Methyl-2-butene[2-]	73-02061	0173-97-0275	22	Soil gas	330
Methylcyclohexane	73-02061	0173-97-0275	13.8	Soil gas	330
Methylheptane[2-]	73-02061	0173-97-0275	22.4	Soil gas	330
Methylheptane[3-]	73-02061	0173-97-0275	42	Soil gas	330
Methylhexane[3-]	73-02061	0173-97-0275	40.2	Soil gas	330
Methylpentane[2-]	73-02061	0173-97-0275	50	Soil gas	330
Methylpentane[3-]	73-02061	0173-97-0275	34.4	Soil gas	330
Pentene[1-]	73-02061	0173-97-0275	12.6	Soil gas	330
Pinene[alpha-]	73-02061	0173-97-0275	1630	Soil gas	330
Pinene[beta-]	73-02061	0173-97-0275	262	Soil gas	330
Propylene	73-02061	0173-97-0275	91.8	Soil gas	330
Tetrachloroethene	73-02061	0173-97-0275	191	Soil gas	330
Butane[n-]	73-02061	0173-97-0276	3.3	Soil gas	30
Butene[1-]	73-02061	0173-97-0276	14.8	Soil gas	30
Butene[cis-2-]	73-02061	0173-97-0276	1.04	Soil gas	30
Butene[trans-2-]	73-02061	0173-97-0276	1.86	Soil gas	30
Cyclohexane	73-02061	0173-97-0276	1.02	Soil gas	30
Dichlorodifluoromethane	73-02061	0173-97-0276	22.2	Soil gas	30
Dimethylbutane[2,2-]	73-02061	0173-97-0276	1.32	Soil gas	30
Isobutane	73-02061	0173-97-0276	29.38	Soil gas	30
Isopentane	73-02061	0173-97-0276	10	Soil gas	30
Methyl-1-butene[3-]	73-02061	0173-97-0276	1.28	Soil gas	30
Methyl-2-butene[2-]	73-02061	0173-97-0276	1.02	Soil gas	30
Methylpentane[2-]	73-02061	0173-97-0276	3.32	Soil gas	30
Methylpentane[3-]	73-02061	0173-97-0276	2.94	Soil gas	30
Pentane	73-02061	0173-97-0276	1.08	Soil gas	30
Pinene[alpha-]	73-02061	0173-97-0276	2.94	Soil gas	30
Propylene	73-02061	0173-97-0276	13.8	Soil gas	30
Tetrachloroethene	73-02061	0173-97-0276	2.22	Soil gas	30
Trichlorofluoromethane	73-02061	0173-97-0276	2.44	Soil gas	30
Acetone	73-02087	0173-97-0277	233	Soil gas	312
Benzene	73-02087	0173-97-0277	54.6	Soil gas	312
Butane[n-]	73-02087	0173-97-0277	424	Soil gas	312
Butanone[2-]	73-02087	0173-97-0277	570	Soil gas	312
Butene[1-]	73-02087	0173-97-0277	273	Soil gas	312
Butene[cis-2-]	73-02087	0173-97-0277	25.4	Soil gas	312

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Butene[trans-2-]	73-02087	0173-97-0277	21.4	Soil gas	312
Chlorobenzene	73-02087	0173-97-0277	132	Soil gas	312
Chlorodifluoromethane	73-02087	0173-97-0277	423	Soil gas	312
Chloroethane	73-02087	0173-97-0277	63.6	Soil gas	312
Cyclohexane	73-02087	0173-97-0277	251	Soil gas	312
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02087	0173-97-0277	161	Soil gas	312
Dichlorobenzene[1,4-]	73-02087	0173-97-0277	439	Soil gas	312
Dichlorodifluoromethane	73-02087	0173-97-0277	1590	Soil gas	312
Dichloroethene[1,1-]	73-02087	0173-97-0277	22.2	Soil gas	312
Dichloroethene[cis-1,2-]	73-02087	0173-97-0277	4350	Soil gas	312
Dichloroethene[trans-1,2-]	73-02087	0173-97-0277	84	Soil gas	312
Diethyl Ether	73-02087	0173-97-0277	178	Soil gas	312
Dimethylbutane[2,2-]	73-02087	0173-97-0277	28.4	Soil gas	312
Dimethylbutane[2,3-]	73-02087	0173-97-0277	60.8	Soil gas	312
Dimethylpentane[2,3-]	73-02087	0173-97-0277	34.2	Soil gas	312
Ethylbenzene	73-02087	0173-97-0277	590	Soil gas	312
Heptane	73-02087	0173-97-0277	282	Soil gas	312
Hexane	73-02087	0173-97-0277	248	Soil gas	312
Hexene[cis-3-]	73-02087	0173-97-0277	11.4	Soil gas	312
Isobutane	73-02087	0173-97-0277	8390	Soil gas	312
Isooctane	73-02087	0173-97-0277	32.6	Soil gas	312
Isopentane	73-02087	0173-97-0277	103	Soil gas	312
Isopropylbenzene	73-02087	0173-97-0277	94.2	Soil gas	312
Methyl-1-butene[3-]	73-02087	0173-97-0277	87.2	Soil gas	312
Methyl-1-pentene[2-]	73-02087	0173-97-0277	28.4	Soil gas	312
Methylcyclohexane	73-02087	0173-97-0277	376	Soil gas	312
Methylcyclopentane	73-02087	0173-97-0277	118	Soil gas	312
Methylene Chloride	73-02087	0173-97-0277	152	Soil gas	312
Methylheptane[2-]	73-02087	0173-97-0277	207	Soil gas	312
Methylheptane[3-]	73-02087	0173-97-0277	273	Soil gas	312
Methylhexane[2-]	73-02087	0173-97-0277	11	Soil gas	312
Methylhexane[3-]	73-02087	0173-97-0277	89.6	Soil gas	312
Methylpentane[2-]	73-02087	0173-97-0277	106	Soil gas	312
Methylpentane[3-]	73-02087	0173-97-0277	100	Soil gas	312
Nonane[1-]	73-02087	0173-97-0277	1150	Soil gas	312
Octane[n-]	73-02087	0173-97-0277	383	Soil gas	312
Pentane	73-02087	0173-97-0277	97.8	Soil gas	312
Pentene[1-]	73-02087	0173-97-0277	318	Soil gas	312
Pinene[alpha-]	73-02087	0173-97-0277	887	Soil gas	312
Pinene[beta-]	73-02087	0173-97-0277	6300	Soil gas	312
Propylbenzene[1-]	73-02087	0173-97-0277	119	Soil gas	312
Propylene	73-02087	0173-97-0277	1890	Soil gas	312
Styrene	73-02087	0173-97-0277	15.4	Soil gas	312
Tetrachloroethene	73-02087	0173-97-0277	459	Soil gas	312
Tetrahydroturan	73-02087	0173-97-0277	527	Soil gas	312
Toluene	73-02087	0173-97-0277	922	Soil gas	312
Trichloroethene	73-02087	0173-97-0277	198	Soil gas	312
Trimethylbenzene[1,2,4-]	73-02087	0173-97-0277	419	Soil gas	312

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TABLE 23.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trimethylbenzene[1,3,5-]	73-02087	0173-97-0277	146	Soil gas	312
Trimethylpentane[2,3,4-]	73-02087	0173-97-0277	138	Soil gas	312
Vinyl Acetate	73-02087	0173-97-0277	111	Soil gas	312
Vinyl Chloride	73-02087	0173-97-0277	489	Soil gas	312
Xylene[1,2-]	73-02087	0173-97-0277	166	Soil gas	312
Xylene[1,3-]	73-02087	0173-97-0277	1470	Soil gas	312
Acetone	73-02087	0173-97-0278	160	Soil gas	312
Benzene	73-02087	0173-97-0278	62.6	Soil gas	312
Butane[n-]	73-02087	0173-97-0278	289	Soil gas	312
Butanone[2-]	73-02087	0173-97-0278	603	Soil gas	312
Butene[1-]	73-02087	0173-97-0278	185	Soil gas	312
Butene[cis-2-]	73-02087	0173-97-0278	13.6	Soil gas	312
Butene[trans-2-]	73-02087	0173-97-0278	12.6	Soil gas	312
Chlorobenzene	73-02087	0173-97-0278	148	Soil gas	312
Chlorodifluoromethane	73-02087	0173-97-0278	293	Soil gas	312
Chloroethane	73-02087	0173-97-0278	43.2	Soil gas	312
Cyclohexane	73-02087	0173-97-0278	272	Soil gas	312
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02087	0173-97-0278	110	Soil gas	312
Dichlorobenzene[1,4-]	73-02087	0173-97-0278	511	Soil gas	312
Dichlorodifluoromethane	73-02087	0173-97-0278	1070	Soil gas	312
Dichloroethene[1,1-]	73-02087	0173-97-0278	15.4	Soil gas	312
Dichloroethene[cis-1,2-]	73-02087	0173-97-0278	4220	Soil gas	312
Dichloroethene[trans-1,2-]	73-02087	0173-97-0278	92.2	Soil gas	312
Diethyl Ether	73-02087	0173-97-0278	131	Soil gas	312
Dimethylbutane[2,2-]	73-02087	0173-97-0278	32.4	Soil gas	312
Dimethylbutane[2,3-]	73-02087	0173-97-0278	67.6	Soil gas	312
Dimethylpentane[2,3-]	73-02087	0173-97-0278	41.2	Soil gas	312
Ethylbenzene	73-02087	0173-97-0278	675	Soil gas	312
Heptane	73-02087	0173-97-0278	315	Soil gas	312
Hexane	73-02087	0173-97-0278	278	Soil gas	312
Isobutane	73-02087	0173-97-0278	7310	Soil gas	312
Isooctane	73-02087	0173-97-0278	36.4	Soil gas	312
Isopentane	73-02087	0173-97-0278	68.8	Soil gas	312
Isopropylbenzene	73-02087	0173-97-0278	112	Soil gas	312
Methyl-1-butene[3-]	73-02087	0173-97-0278	59.6	Soil gas	312
Methyl-1-pentene[2-]	73-02087	0173-97-0278	32	Soil gas	312
Methylcyclohexane	73-02087	0173-97-0278	417	Soil gas	312
Methylcyclopentane	73-02087	0173-97-0278	131	Soil gas	312
Methylene Chloride	73-02087	0173-97-0278	106	Soil gas	312
Methylheptane[2-]	73-02087	0173-97-0278	237	Soil gas	312
Methylheptane[3-]	73-02087	0173-97-0278	300	Soil gas	312
Methylhexane[2-]	73-02087	0173-97-0278	12	Soil gas	312
Methylhexane[3-]	73-02087	0173-97-0278	102	Soil gas	312
Methylpentane[2-]	73-02087	0173-97-0278	117	Soil gas	312
Methylpentane[3-]	73-02087	0173-97-0278	111	Soil gas	312
Nonane[1-]	73-02087	0173-97-0278	1290	Soil gas	312
Octane[n-]	73-02087	0173-97-0278	435	Soil gas	312
Pentane	73-02087	0173-97-0278	70	Soil gas	312

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Pentene[1-]	73-02087	0173-97-0278	222	Soil gas	312
Pinene[alpha-]	73-02087	0173-97-0278	1040	Soil gas	312
Pinene[beta-]	73-02087	0173-97-0278	5030	Soil gas	312
Propylbenzene[1-]	73-02087	0173-97-0278	148	Soil gas	312
Propylene	73-02087	0173-97-0278	1260	Soil gas	312
Styrene	73-02087	0173-97-0278	16.8	Soil gas	312
Tetrachloroethene	73-02087	0173-97-0278	528	Soil gas	312
Tetrahydrofuran	73-02087	0173-97-0278	589	Soil gas	312
Toluene	73-02087	0173-97-0278	1040	Soil gas	312
Trichloroethene	73-02087	0173-97-0278	224	Soil gas	312
Trimethylbenzene[1,2,4-]	73-02087	0173-97-0278	489	Soil gas	312
Trimethylbenzene[1,3,5-]	73-02087	0173-97-0278	161	Soil gas	312
Trimethylpentane[2,3,4-]	73-02087	0173-97-0278	146	Soil gas	312
Vinyl Acetate	73-02087	0173-97-0278	138	Soil gas	312
Vinyl Chloride	73-02087	0173-97-0278	336	Soil gas	312
Xylene[1,2-]	73-02087	0173-97-0278	187	Soil gas	312
Xylene[1,3-]	73-02087	0173-97-0278	1750	Soil gas	312
Acetone	73-02087	0173-97-0279	2410	Soil gas	15.6
Benzene	73-02087	0173-97-0279	154	Soil gas	15.6
Butane[n-]	73-02087	0173-97-0279	427	Soil gas	15.6
Butanone[2-]	73-02087	0173-97-0279	428	Soil gas	15.6
Butene[1-]	73-02087	0173-97-0279	829	Soil gas	15.6
Butene[cis-2-]	73-02087	0173-97-0279	42.8	Soil gas	15.6
Butene[trans-2-]	73-02087	0173-97-0279	29.4	Soil gas	15.6
Chlorobenzene	73-02087	0173-97-0279	1180	Soil gas	15.6
Chlorodifluoromethane	73-02087	0173-97-0279	382	Soil gas	15.6
Chloroethane	73-02087	0173-97-0279	77.6	Soil gas	15.6
Cyclohexane	73-02087	0173-97-0279	196	Soil gas	15.6
Cyclohexanone	73-02087	0173-97-0279	2500	Soil gas	15.6
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02087	0173-97-0279	170	Soil gas	15.6
Dichlorobenzene[1,4-]	73-02087	0173-97-0279	6150	Soil gas	15.6
Dichlorodifluoromethane	73-02087	0173-97-0279	319	Soil gas	15.6
Dichloroethene[1,1-]	73-02087	0173-97-0279	40.6	Soil gas	15.6
Dichloroethene[cis-1,2-]	73-02087	0173-97-0279	13200	Soil gas	15.6
Dichloroethene[trans-1,2-]	73-02087	0173-97-0279	172	Soil gas	15.6
Diethyl Ether	73-02087	0173-97-0279	587	Soil gas	15.6
Dimethylbutane[2,2-]	73-02087	0173-97-0279	28.8	Soil gas	15.6
Dimethylbutane[2,3-]	73-02087	0173-97-0279	90.8	Soil gas	15.6
Dimethylpentane[2,3-]	73-02087	0173-97-0279	42.8	Soil gas	15.6
Ethylbenzene	73-02087	0173-97-0279	1940	Soil gas	15.6
Heptane	73-02087	0173-97-0279	754	Soil gas	15.6
Hexane	73-02087	0173-97-0279	450	Soil gas	15.6
Hexene[cis-3-]	73-02087	0173-97-0279	21.8	Soil gas	15.6
Isobutane	73-02087	0173-97-0279	5530	Soil gas	15.6
Isooctane	73-02087	0173-97-0279	41	Soil gas	15.6
Isopentane	73-02087	0173-97-0279	112	Soil gas	15.6
Isoprene	73-02087	0173-97-0279	26	Soil gas	15.6
Isopropylbenzene	73-02087	0173-97-0279	279	Soil gas	15.6

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methyl-1-butene[3-]	73-02087	0173-97-0279	118	Soil gas	15.6
Methyl-1-pentene[2-]	73-02087	0173-97-0279	47.8	Soil gas	15.6
Methyl-2-butene[2-]	73-02087	0173-97-0279	93.6	Soil gas	15.6
Methylcyclohexane	73-02087	0173-97-0279	699	Soil gas	15.6
Methylcyclopentane	73-02087	0173-97-0279	244	Soil gas	15.6
Methylene Chloride	73-02087	0173-97-0279	32.8	Soil gas	15.6
Methylheptane[2-]	73-02087	0173-97-0279	825	Soil gas	15.6
Methylheptane[3-]	73-02087	0173-97-0279	917	Soil gas	15.6
Methylhexane[3-]	73-02087	0173-97-0279	145	Soil gas	15.6
Methylpentane[2-]	73-02087	0173-97-0279	153	Soil gas	15.6
Methylpentane[3-]	73-02087	0173-97-0279	154	Soil gas	15.6
Nonane[1-]	73-02087	0173-97-0279	5470	Soil gas	15.6
Octane[n-]	73-02087	0173-97-0279	1960	Soil gas	15.6
Pentane	73-02087	0173-97-0279	131	Soil gas	15.6
Pentene[1-]	73-02087	0173-97-0279	168	Soil gas	15.6
Pentene[cis-2-]	73-02087	0173-97-0279	101	Soil gas	15.6
Pentene[trans-2-]	73-02087	0173-97-0279	22.8	Soil gas	15.6
Pinene[alpha-]	73-02087	0173-97-0279	3300	Soil gas	15.6
Pinene[beta-]	73-02087	0173-97-0279	15700	Soil gas	15.6
Propanol[2-]	73-02087	0173-97-0279	116	Soil gas	15.6
Propylbenzene[1-]	73-02087	0173-97-0279	327	Soil gas	15.6
Propylene	73-02087	0173-97-0279	3530	Soil gas	15.6
Styrene	73-02087	0173-97-0279	32.2	Soil gas	15.6
Tetrachloroethane[1,1,2,2-]	73-02087	0173-97-0279	10	Soil gas	15.6
Toluene	73-02087	0173-97-0279	3250	Soil gas	15.6
Trichloroethene	73-02087	0173-97-0279	103	Soil gas	15.6
Trimethylbenzene[1,2,4-]	73-02087	0173-97-0279	738	Soil gas	15.6
Trimethylbenzene[1,3,5-]	73-02087	0173-97-0279	314	Soil gas	15.6
Trimethylpentane[2,3,4-]	73-02087	0173-97-0279	267	Soil gas	15.6
Vinyl Acetate	73-02087	0173-97-0279	168	Soil gas	15.6
Vinyl Chloride	73-02087	0173-97-0279	977	Soil gas	15.6
Xylene[1,2-]	73-02087	0173-97-0279	1070	Soil gas	15.6
Xylene[1,3-]	73-02087	0173-97-0279	4270	Soil gas	15.6
Benzene	73-02069	0173-97-0280	91.6	Soil gas	211.2
Butane[n-]	73-02069	0173-97-0280	481	Soil gas	211.2
Butene[1-]	73-02069	0173-97-0280	1450	Soil gas	211.2
Butene[cis-2-]	73-02069	0173-97-0280	83.8	Soil gas	211.2
Butene[trans-2-]	73-02069	0173-97-0280	55	Soil gas	211.2
Chlorobenzene	73-02069	0173-97-0280	14.6	Soil gas	211.2
Chlorodifluoromethane	73-02069	0173-97-0280	173	Soil gas	211.2
Chloroethane	73-02069	0173-97-0280	36.2	Soil gas	211.2
Cyclohexane	73-02069	0173-97-0280	322	Soil gas	211.2
Cyclopentane	73-02069	0173-97-0280	14.4	Soil gas	211.2
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02069	0173-97-0280	493	Soil gas	211.2
Dichlorodifluoromethane	73-02069	0173-97-0280	693	Soil gas	211.2
Dichloroethene[1,1-]	73-02069	0173-97-0280	10	Soil gas	211.2
Dichloroethene[cis-1,2-]	73-02069	0173-97-0280	1180	Soil gas	211.2
Dichloroethene[trans-1,2-]	73-02069	0173-97-0280	20.6	Soil gas	211.2

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Ethylbenzene	73-02069	0173-97-0281	8	Soil gas	12
Hexane	73-02069	0173-97-0281	1.5	Soil gas	12
Isobutane	73-02069	0173-97-0281	20.6	Soil gas	12
Isopentane	73-02069	0173-97-0281	1.9	Soil gas	12
Isopropylbenzene	73-02069	0173-97-0281	1.42	Soil gas	12
Methylcyclohexane	73-02069	0173-97-0281	1.76	Soil gas	12
Methylcyclopentane	73-02069	0173-97-0281	1.14	Soil gas	12
Methylhexane[3-]	73-02069	0173-97-0281	1.18	Soil gas	12
Nonane[1-]	73-02069	0173-97-0281	25.9	Soil gas	12
Octane[n-]	73-02069	0173-97-0281	1.94	Soil gas	12
Pinene[alpha-]	73-02069	0173-97-0281	3.16	Soil gas	12
Propylbenzene[1-]	73-02069	0173-97-0281	1.46	Soil gas	12
Propylene	73-02069	0173-97-0281	8.96	Soil gas	12
Trimethylbenzene[1,2,4-]	73-02069	0173-97-0281	3.84	Soil gas	12
Trimethylbenzene[1,3,5-]	73-02069	0173-97-0281	3.3	Soil gas	12
Vinyl Chloride	73-02069	0173-97-0281	3.3	Soil gas	12
Xylene[1,2-]	73-02069	0173-97-0281	1.1	Soil gas	12
Xylene[1,3-]	73-02069	0173-97-0281	3.98	Soil gas	12
Benzene	73-02067	0173-97-0282	278	Soil gas	280.8
Butane[n-]	73-02067	0173-97-0282	376	Soil gas	280.8
Butene[1-]	73-02067	0173-97-0282	388	Soil gas	280.8
Butene[cis-2-]	73-02067	0173-97-0282	51.4	Soil gas	280.8
Butene[trans-2-]	73-02067	0173-97-0282	29	Soil gas	280.8
Chlorodifluoromethane	73-02067	0173-97-0282	351	Soil gas	280.8
Chloroethane	73-02067	0173-97-0282	88	Soil gas	280.8
Cyclohexane	73-02067	0173-97-0282	914	Soil gas	280.8
Cyclopentane	73-02067	0173-97-0282	49.4	Soil gas	280.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02067	0173-97-0282	209	Soil gas	280.8
Dichlorodifluoromethane	73-02067	0173-97-0282	1030	Soil gas	280.8
Dichloroethane[1,1-]	73-02067	0173-97-0282	18.2	Soil gas	280.8
Dichloroethene[1,1-]	73-02067	0173-97-0282	34.8	Soil gas	280.8
Dichloroethene[cis-1,2-]	73-02067	0173-97-0282	4640	Soil gas	280.8
Dichloroethene[trans-1,2-]	73-02067	0173-97-0282	124	Soil gas	280.8
Diethyl Ether	73-02067	0173-97-0282	110	Soil gas	280.8
Dimethylbutane[2,2-]	73-02067	0173-97-0282	119	Soil gas	280.8
Dimethylbutane[2,3-]	73-02067	0173-97-0282	463	Soil gas	280.8
Dimethylpentane[2,3-]	73-02067	0173-97-0282	282	Soil gas	280.8
Ethylbenzene	73-02067	0173-97-0282	1380	Soil gas	280.8
Heptane	73-02067	0173-97-0282	4200	Soil gas	280.8
Hexane	73-02067	0173-97-0282	700	Soil gas	280.8
Hexene[cis-3-]	73-02067	0173-97-0282	31.6	Soil gas	280.8
Hexene[trans-2-]	73-02067	0173-97-0282	12.6	Soil gas	280.8
Isobutane	73-02067	0173-97-0282	10600	Soil gas	280.8
Isooctane	73-02067	0173-97-0282	417	Soil gas	280.8
Isopentane	73-02067	0173-97-0282	112	Soil gas	280.8
Isoprene	73-02067	0173-97-0282	13	Soil gas	280.8
Isopropylbenzene	73-02067	0173-97-0282	136	Soil gas	280.8
Methyl-1-butene[3-]	73-02067	0173-97-0282	81	Soil gas	280.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Methyl-1-pentene[2-]	73-02067	0173-97-0282	52.8	Soil gas	280.8
Methyl-1-pentene[4-]	73-02067	0173-97-0282	10.4	Soil gas	280.8
Methyl-2-butene[2-]	73-02067	0173-97-0282	50.8	Soil gas	280.8
Methylcyclohexane	73-02067	0173-97-0282	4670	Soil gas	280.8
Methylcyclopentane	73-02067	0173-97-0282	462	Soil gas	280.8
Methylene Chloride	73-02067	0173-97-0282	206	Soil gas	280.8
Methylheptane[2-]	73-02067	0173-97-0282	2380	Soil gas	280.8
Methylheptane[3-]	73-02067	0173-97-0282	2560	Soil gas	280.8
Methylhexane[2-]	73-02067	0173-97-0282	54.8	Soil gas	280.8
Methylhexane[3-]	73-02067	0173-97-0282	710	Soil gas	280.8
Methylpentane[2-]	73-02067	0173-97-0282	306	Soil gas	280.8
Methylpentane[3-]	73-02067	0173-97-0282	288	Soil gas	280.8
Nonane[1-]	73-02067	0173-97-0282	3390	Soil gas	280.8
Octane[n-]	73-02067	0173-97-0282	4160	Soil gas	280.8
Pentane	73-02067	0173-97-0282	155	Soil gas	280.8
Pentene[1-]	73-02067	0173-97-0282	150	Soil gas	280.8
Pentene[cis-2-]	73-02067	0173-97-0282	54.6	Soil gas	280.8
Pentene[trans-2-]	73-02067	0173-97-0282	22.4	Soil gas	280.8
Pinene[alpha-]	73-02067	0173-97-0282	763	Soil gas	280.8
Pinene[beta-]	73-02067	0173-97-0282	695	Soil gas	280.8
Propylbenzene[1-]	73-02067	0173-97-0282	91.8	Soil gas	280.8
Propylene	73-02067	0173-97-0282	1380	Soil gas	280.8
Tetrachloroethene	73-02067	0173-97-0282	403	Soil gas	280.8
Toluene	73-02067	0173-97-0282	1980	Soil gas	280.8
Trichloroethene	73-02067	0173-97-0282	195	Soil gas	280.8
Trimethylbenzene[1,2,4-]	73-02067	0173-97-0282	92.6	Soil gas	280.8
Trimethylbenzene[1,3,5-]	73-02067	0173-97-0282	74.8	Soil gas	280.8
Trimethylpentane[2,3,4-]	73-02067	0173-97-0282	835	Soil gas	280.8
Vinyl Acetate	73-02067	0173-97-0282	331	Soil gas	280.8
Vinyl Chloride	73-02067	0173-97-0282	642	Soil gas	280.8
Xylene[1,2-]	73-02067	0173-97-0282	665	Soil gas	280.8
Xylene[1,3-]	73-02067	0173-97-0282	3330	Soil gas	280.8
Benzene	73-02067	0173-97-0283	247	Soil gas	280.8
Bromodichloromethane	73-02067	0173-97-0283	45.2	Soil gas	280.8
Butane[n-]	73-02067	0173-97-0283	407	Soil gas	280.8
Butene[1-]	73-02067	0173-97-0283	339	Soil gas	280.8
Butene[cis-2-]	73-02067	0173-97-0283	46	Soil gas	280.8
Butene[trans-2-]	73-02067	0173-97-0283	39.4	Soil gas	280.8
Chlorodifluoromethane	73-02067	0173-97-0283	307	Soil gas	280.8
Chloroethane	73-02067	0173-97-0283	74.6	Soil gas	280.8
Cyclohexane	73-02067	0173-97-0283	818	Soil gas	280.8
Cyclopentane	73-02067	0173-97-0283	42.4	Soil gas	280.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02067	0173-97-0283	185	Soil gas	280.8
Dichlorodifluoromethane	73-02067	0173-97-0283	899	Soil gas	280.8
Dichloroethane[1,1-]	73-02067	0173-97-0283	18	Soil gas	280.8
Dichloroethene[1,1-]	73-02067	0173-97-0283	30	Soil gas	280.8
Dichloroethene[cis-1,2-]	73-02067	0173-97-0283	4990	Soil gas	280.8
Dichloroethene[trans-1,2-]	73-02067	0173-97-0283	109	Soil gas	280.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dimethylbutane[2,2-]	73-02067	0173-97-0283	106	Soil gas	280.8
Dimethylbutane[2,3-]	73-02067	0173-97-0283	417	Soil gas	280.8
Dimethylpentane[2,3-]	73-02067	0173-97-0283	248	Soil gas	280.8
Ethylbenzene	73-02067	0173-97-0283	1230	Soil gas	280.8
Heptane	73-02067	0173-97-0283	4310	Soil gas	280.8
Hexane	73-02067	0173-97-0283	623	Soil gas	280.8
Hexene[cis-3-]	73-02067	0173-97-0283	26.4	Soil gas	280.8
Hexene[trans-2-]	73-02067	0173-97-0283	11	Soil gas	280.8
Isobutane	73-02067	0173-97-0283	11200	Soil gas	280.8
Isooctane	73-02067	0173-97-0283	369	Soil gas	280.8
Isopentane	73-02067	0173-97-0283	96.6	Soil gas	280.8
Isoprene	73-02067	0173-97-0283	11.6	Soil gas	280.8
Isopropylbenzene	73-02067	0173-97-0283	116	Soil gas	280.8
Methyl-1-butene[3-]	73-02067	0173-97-0283	71	Soil gas	280.8
Methyl-1-pentene[2-]	73-02067	0173-97-0283	48.8	Soil gas	280.8
Methyl-1-pentene[4-]	73-02067	0173-97-0283	11	Soil gas	280.8
Methyl-2-butene[2-]	73-02067	0173-97-0283	43.6	Soil gas	280.8
Methylcyclohexane	73-02067	0173-97-0283	4830	Soil gas	280.8
Methylcyclopentane	73-02067	0173-97-0283	405	Soil gas	280.8
Methylene Chloride	73-02067	0173-97-0283	180	Soil gas	280.8
Methylheptane[2-]	73-02067	0173-97-0283	2600	Soil gas	280.8
Methylheptane[3-]	73-02067	0173-97-0283	2730	Soil gas	280.8
Methylhexane[2-]	73-02067	0173-97-0283	50	Soil gas	280.8
Methylhexane[3-]	73-02067	0173-97-0283	631	Soil gas	280.8
Methylpentane[2-]	73-02067	0173-97-0283	268	Soil gas	280.8
Methylpentane[3-]	73-02067	0173-97-0283	255	Soil gas	280.8
Nonane[1-]	73-02067	0173-97-0283	4140	Soil gas	280.8
Octane[n-]	73-02067	0173-97-0283	4550	Soil gas	280.8
Pentane	73-02067	0173-97-0283	139	Soil gas	280.8
Pentene[1-]	73-02067	0173-97-0283	129	Soil gas	280.8
Pentene[cis-2-]	73-02067	0173-97-0283	47	Soil gas	280.8
Pentene[trans-2-]	73-02067	0173-97-0283	18	Soil gas	280.8
Pinene[alpha-]	73-02067	0173-97-0283	615	Soil gas	280.8
Pinene[beta-]	73-02067	0173-97-0283	449	Soil gas	280.8
Propylbenzene[1-]	73-02067	0173-97-0283	74.2	Soil gas	280.8
Propylene	73-02067	0173-97-0283	1200	Soil gas	280.8
Tetrachloroethene	73-02067	0173-97-0283	367	Soil gas	280.8
Toluene	73-02067	0173-97-0283	1780	Soil gas	280.8
Trichloroethene	73-02067	0173-97-0283	176	Soil gas	280.8
Trimethylbenzene[1,2,4-]	73-02067	0173-97-0283	73.4	Soil gas	280.8
Trimethylbenzene[1,3,5-]	73-02067	0173-97-0283	58	Soil gas	280.8
Trimethylpentane[2,3,4-]	73-02067	0173-97-0283	748	Soil gas	280.8
Vinyl Acetate	73-02067	0173-97-0283	294	Soil gas	280.8
Vinyl Chloride	73-02067	0173-97-0283	568	Soil gas	280.8
Xylene[1,2-]	73-02067	0173-97-0283	577	Soil gas	280.8
Xylene[1,3-]	73-02067	0173-97-0283	2920	Soil gas	280.8
Acetone	73-02067	0173-97-0284	206	Soil gas	24
Benzene	73-02067	0173-97-0284	403	Soil gas	24
Bromodichloromethane	73-02067	0173-97-0284	65.6	Soil gas	24

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Butane[n-]	73-02067	0173-97-0284	300	Soil gas	24
Butanone[2-]	73-02067	0173-97-0284	106	Soil gas	24
Butene[1-]	73-02067	0173-97-0284	270	Soil gas	24
Butene[cis-2-]	73-02067	0173-97-0284	40	Soil gas	24
Butene[trans-2-]	73-02067	0173-97-0284	27.4	Soil gas	24
Chlorodifluoromethane	73-02067	0173-97-0284	215	Soil gas	24
Chloroethane	73-02067	0173-97-0284	46	Soil gas	24
Cyclohexane	73-02067	0173-97-0284	884	Soil gas	24
Cyclopentane	73-02067	0173-97-0284	36	Soil gas	24
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-02067	0173-97-0284	31.4	Soil gas	24
Dichloroethene[1,1-]	73-02067	0173-97-0284	58	Soil gas	24
Dichloroethene[cis-1,2-]	73-02067	0173-97-0284	12400	Soil gas	24
Dichloroethene[trans-1,2-]	73-02067	0173-97-0284	426	Soil gas	24
Dimethylbutane[2,2-]	73-02067	0173-97-0284	95.4	Soil gas	24
Dimethylbutane[2,3-]	73-02067	0173-97-0284	408	Soil gas	24
Dimethylpentane[2,3-]	73-02067	0173-97-0284	355	Soil gas	24
Ethylbenzene	73-02067	0173-97-0284	738	Soil gas	24
Heptane	73-02067	0173-97-0284	4120	Soil gas	24
Hexane	73-02067	0173-97-0284	506	Soil gas	24
Hexene[cis-3-]	73-02067	0173-97-0284	26.8	Soil gas	24
Hexene[trans-2-]	73-02067	0173-97-0284	14	Soil gas	24
Isobutane	73-02067	0173-97-0284	8300	Soil gas	24
Isooctane	73-02067	0173-97-0284	766	Soil gas	24
Isopentane	73-02067	0173-97-0284	69	Soil gas	24
Isoprene	73-02067	0173-97-0284	21.6	Soil gas	24
Isopropylbenzene	73-02067	0173-97-0284	83.2	Soil gas	24
Methyl-1-butene[3-]	73-02067	0173-97-0284	73.2	Soil gas	24
Methyl-1-pentene[2-]	73-02067	0173-97-0284	45.6	Soil gas	24
Methyl-1-pentene[4-]	73-02067	0173-97-0284	10.6	Soil gas	24
Methyl-2-butene[2-]	73-02067	0173-97-0284	48.2	Soil gas	24
Methylcyclohexane	73-02067	0173-97-0284	8310	Soil gas	24
Methylcyclopentane	73-02067	0173-97-0284	390	Soil gas	24
Methylene Chloride	73-02067	0173-97-0284	46.4	Soil gas	24
Methylheptane[2-]	73-02067	0173-97-0284	3710	Soil gas	24
Methylheptane[3-]	73-02067	0173-97-0284	4130	Soil gas	24
Methylhexane[2-]	73-02067	0173-97-0284	44.2	Soil gas	24
Methylhexane[3-]	73-02067	0173-97-0284	714	Soil gas	24
Methylpentane[2-]	73-02067	0173-97-0284	264	Soil gas	24
Methylpentane[3-]	73-02067	0173-97-0284	254	Soil gas	24
Nonane[1-]	73-02067	0173-97-0284	4910	Soil gas	24
Octane[n-]	73-02067	0173-97-0284	5280	Soil gas	24
Pentane	73-02067	0173-97-0284	102	Soil gas	24
Pentene[1-]	73-02067	0173-97-0284	118	Soil gas	24
Pentene[cis-2-]	73-02067	0173-97-0284	51.8	Soil gas	24
Pentene[trans-2-]	73-02067	0173-97-0284	20.4	Soil gas	24
Pinene[alpha-]	73-02067	0173-97-0284	703	Soil gas	24
Pinene[beta-]	73-02067	0173-97-0284	9310	Soil gas	24
Propylbenzene[1-]	73-02067	0173-97-0284	92.8	Soil gas	24

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Propylene	73-02067	0173-97-0284	991	Soil gas	24
Styrene	73-02067	0173-97-0284	10.6	Soil gas	24
Tetrachloroethene	73-02067	0173-97-0284	570	Soil gas	24
Toluene	73-02067	0173-97-0284	5330	Soil gas	24
Trichloroethane[1,1,2-]	73-02067	0173-97-0284	12.4	Soil gas	24
Trichloroethene	73-02067	0173-97-0284	343	Soil gas	24
Trimethylbenzene[1,2,4-]	73-02067	0173-97-0284	277	Soil gas	24
Trimethylbenzene[1,3,5-]	73-02067	0173-97-0284	178	Soil gas	24
Trimethylpentane[2,3,4-]	73-02067	0173-97-0284	1720	Soil gas	24
Vinyl Acetate	73-02067	0173-97-0284	304	Soil gas	24
Vinyl Chloride	73-02067	0173-97-0284	570	Soil gas	24
Xylene[1,2-]	73-02067	0173-97-0284	554	Soil gas	24
Xylene[1,3-]	73-02067	0173-97-0284	2210	Soil gas	24
Benzene	73-02089	0173-97-0285	111	Soil gas	888
Butane[n-]	73-02089	0173-97-0285	83	Soil gas	888
Butene[1-]	73-02089	0173-97-0285	555	Soil gas	888
Butene[<i>cis</i> -2-]	73-02089	0173-97-0285	39	Soil gas	888
Butene[<i>trans</i> -2-]	73-02089	0173-97-0285	21.4	Soil gas	888
Chlorobenzene	73-02089	0173-97-0285	29.2	Soil gas	888
Chlorodifluoromethane	73-02089	0173-97-0285	67.4	Soil gas	888
Chloroethane	73-02089	0173-97-0285	18.6	Soil gas	888
Cyclohexane	73-02089	0173-97-0285	127	Soil gas	888
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02089	0173-97-0285	41.4	Soil gas	888
Dichlorobenzene[1,4-]	73-02089	0173-97-0285	293	Soil gas	888
Dichlorodifluoromethane	73-02089	0173-97-0285	301	Soil gas	888
Dichloroethene[<i>cis</i> -1,2-]	73-02089	0173-97-0285	2420	Soil gas	888
Dichloroethene[<i>trans</i> -1,2-]	73-02089	0173-97-0285	13.8	Soil gas	888
Diethyl Ether	73-02089	0173-97-0285	258	Soil gas	888
Dimethylbutane[2,3-]	73-02089	0173-97-0285	24.8	Soil gas	888
Dimethylpentane[2,3-]	73-02089	0173-97-0285	14.8	Soil gas	888
Ethylbenzene	73-02089	0173-97-0285	435	Soil gas	888
Heptane	73-02089	0173-97-0285	210	Soil gas	888
Hexane	73-02089	0173-97-0285	77.2	Soil gas	888
Isobutane	73-02089	0173-97-0285	1620	Soil gas	888
Isooctane	73-02089	0173-97-0285	13.4	Soil gas	888
Isopentane	73-02089	0173-97-0285	22.4	Soil gas	888
Isopropylbenzene	73-02089	0173-97-0285	46.6	Soil gas	888
Methyl-1-butene[3-]	73-02089	0173-97-0285	38.2	Soil gas	888
Methyl-1-pentene[2-]	73-02089	0173-97-0285	12.4	Soil gas	888
Methyl-2-butene[2-]	73-02089	0173-97-0285	25.4	Soil gas	888
Methylcyclohexane	73-02089	0173-97-0285	181	Soil gas	888
Methylcyclopentane	73-02089	0173-97-0285	41	Soil gas	888
Methylene Chloride	73-02089	0173-97-0285	11.2	Soil gas	888
Methylheptane[2-]	73-02089	0173-97-0285	114	Soil gas	888
Methylheptane[3-]	73-02089	0173-97-0285	136	Soil gas	888
Methylhexane[3-]	73-02089	0173-97-0285	40	Soil gas	888
Methylpentane[2-]	73-02089	0173-97-0285	24.2	Soil gas	888
Methylpentane[3-]	73-02089	0173-97-0285	24.4	Soil gas	888

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Nonane[1-]	73-02089	0173-97-0285	963	Soil gas	888
Octane[n-]	73-02089	0173-97-0285	245	Soil gas	888
Pentene[1-]	73-02089	0173-97-0285	304	Soil gas	888
Pentene[cis-2-]	73-02089	0173-97-0285	10.4	Soil gas	888
Pentene[trans-2-]	73-02089	0173-97-0285	16.4	Soil gas	888
Pinene[alpha-]	73-02089	0173-97-0285	125	Soil gas	888
Pinene[beta-]	73-02089	0173-97-0285	31.4	Soil gas	888
Propylbenzene[1-]	73-02089	0173-97-0285	42	Soil gas	888
Propylene	73-02089	0173-97-0285	683	Soil gas	888
Tetrachloroethene	73-02089	0173-97-0285	25.8	Soil gas	888
Trichloroethene	73-02089	0173-97-0285	15.2	Soil gas	888
Trimethylbenzene[1,2,4-]	73-02089	0173-97-0285	311	Soil gas	888
Trimethylbenzene[1,3,5-]	73-02089	0173-97-0285	91.2	Soil gas	888
Trimethylpentane[2,3,4-]	73-02089	0173-97-0285	69.6	Soil gas	888
Vinyl Chloride	73-02089	0173-97-0285	170	Soil gas	888
Xylene[1,2-]	73-02089	0173-97-0285	22.2	Soil gas	888
Xylene[1,3-]	73-02089	0173-97-0285	229	Soil gas	888
Benzene	73-02089	0173-97-0286	328	Soil gas	360
Benzonitrile	73-02089	0173-97-0286	112	Soil gas	360
Butadiene[1,3-]	73-02089	0173-97-0286	15.8	Soil gas	360
Butane[n-]	73-02089	0173-97-0286	471	Soil gas	360
Butene[1-]	73-02089	0173-97-0286	708	Soil gas	360
Butene[cis-2-]	73-02089	0173-97-0286	26.8	Soil gas	360
Butene[trans-2-]	73-02089	0173-97-0286	32.4	Soil gas	360
Chlorobenzene	73-02089	0173-97-0286	94.8	Soil gas	360
Chlorodifluoromethane	73-02089	0173-97-0286	152	Soil gas	360
Chloroethane	73-02089	0173-97-0286	31.4	Soil gas	360
Cyclohexane	73-02089	0173-97-0286	573	Soil gas	360
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-02089	0173-97-0286	34.8	Soil gas	360
Dichlorobenzene[1,2-]	73-02089	0173-97-0286	14.2	Soil gas	360
Dichlorobenzene[1,4-]	73-02089	0173-97-0286	813	Soil gas	360
Dichlorodifluoromethane	73-02089	0173-97-0286	429	Soil gas	360
Dichloroethene[cis-1,2-]	73-02089	0173-97-0286	3140	Soil gas	360
Dichloroethene[trans-1,2-]	73-02089	0173-97-0286	26.4	Soil gas	360
Dimethylbutane[2,2-]	73-02089	0173-97-0286	24.2	Soil gas	360
Dimethylbutane[2,3-]	73-02089	0173-97-0286	63.8	Soil gas	360
Dimethylpentane[2,3-]	73-02089	0173-97-0286	38.4	Soil gas	360
Ethylbenzene	73-02089	0173-97-0286	2460	Soil gas	360
Heptane	73-02089	0173-97-0286	539	Soil gas	360
Hexane	73-02089	0173-97-0286	271	Soil gas	360
Hexene[cis-3-]	73-02089	0173-97-0286	25	Soil gas	360
Isobutane	73-02089	0173-97-0286	36300	Soil gas	360
Isooctane	73-02089	0173-97-0286	35	Soil gas	360
Isopentane	73-02089	0173-97-0286	39.8	Soil gas	360
Isopropylbenzene	73-02089	0173-97-0286	577	Soil gas	360
Methyl-1-butene[3-]	73-02089	0173-97-0286	79.2	Soil gas	360
Methyl-1-pentene[2-]	73-02089	0173-97-0286	18	Soil gas	360
Methyl-2-butene[2-]	73-02089	0173-97-0286	76.2	Soil gas	360

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Methylcyclohexane	73-02089	0173-97-0286	643	Soil gas	360
Methylcyclopentane	73-02089	0173-97-0286	175	Soil gas	360
Methylone Chloride	73-02089	0173-97-0286	45.6	Soil gas	360
Methylheptane[2-]	73-02089	0173-97-0286	590	Soil gas	360
Methylheptane[3-]	73-02089	0173-97-0286	718	Soil gas	360
Methylhexane[3-]	73-02089	0173-97-0286	106	Soil gas	360
Methylpentane[2-]	73-02089	0173-97-0286	92	Soil gas	360
Methylpentane[3-]	73-02089	0173-97-0286	109	Soil gas	360
Nonane[1-]	73-02089	0173-97-0286	18600	Soil gas	360
Octane[n-]	73-02089	0173-97-0286	1400	Soil gas	360
Pentane	73-02089	0173-97-0286	39.8	Soil gas	360
Pentene[1-]	73-02089	0173-97-0286	59.4	Soil gas	360
Pentene[cis-2-]	73-02089	0173-97-0286	12.6	Soil gas	360
Pentene[trans-2-]	73-02089	0173-97-0286	25.2	Soil gas	360
Pinene[alpha-]	73-02089	0173-97-0286	1250	Soil gas	360
Pinene[beta-]	73-02089	0173-97-0286	993	Soil gas	360
Propylbenzene[1-]	73-02089	0173-97-0286	906	Soil gas	360
Propylene	73-02089	0173-97-0286	478	Soil gas	360
Styrene	73-02089	0173-97-0286	10	Soil gas	360
Tetrachloroethane[1,1,2,2-]	73-02089	0173-97-0286	23.8	Soil gas	360
Toluene	73-02089	0173-97-0286	801	Soil gas	360
Trichloroethene	73-02089	0173-97-0286	31.8	Soil gas	360
Trimethylbenzene[1,2,4-]	73-02089	0173-97-0286	1800	Soil gas	360
Trimethylbenzene[1,3,5-]	73-02089	0173-97-0286	969	Soil gas	360
Trimethylpentane[2,3,4-]	73-02089	0173-97-0286	296	Soil gas	360
Vinyl Chloride	73-02089	0173-97-0286	343	Soil gas	360
Xylene[1,2-]	73-02089	0173-97-0286	1080	Soil gas	360
Xylene[1,3-]	73-02089	0173-97-0286	2840	Soil gas	360
Butane[n-]	73-02089	0173-97-0287	1.26	Soil gas	14.4
Butene[1-]	73-02089	0173-97-0287	1.4	Soil gas	14.4
Dichloroethene[1,1-]	73-02089	0173-97-0287	5.94	Soil gas	14.4
Dichloroethene[trans-1,2-]	73-02089	0173-97-0287	1	Soil gas	14.4
Ethylbenzene	73-02089	0173-97-0287	1.3	Soil gas	14.4
Isobutane	73-02089	0173-97-0287	2.64	Soil gas	14.4
Methylcyclopentane	73-02089	0173-97-0287	1.06	Soil gas	14.4
Nonane[1-]	73-02089	0173-97-0287	14.1	Soil gas	14.4
Tetrachloroethene	73-02089	0173-97-0287	3200	Soil gas	14.4
Trichloroethane[1,1,1-]	73-02089	0173-97-0287	21	Soil gas	14.4
Trimethylbenzene[1,2,4-]	73-02089	0173-97-0287	3.58	Soil gas	14.4
Trimethylbenzene[1,3,5-]	73-02089	0173-97-0287	1.04	Soil gas	14.4
Xylene[1,3-]	73-02089	0173-97-0287	1.92	Soil gas	14.4
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-97-0288	22.8	Soil gas	1200
Dichlorodifluoromethane	73-01007	0173-97-0288	220	Soil gas	1200
Isobutane	73-01007	0173-97-0288	101	Soil gas	1200
Tetrachloroethene	73-01007	0173-97-0288	39.6	Soil gas	1200
Benzene	73-01007	0173-97-0289	151	Soil gas	336
Butane[n-]	73-01007	0173-97-0289	225	Soil gas	336
Butene[1-]	73-01007	0173-97-0289	767	Soil gas	336

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Butene[cis-2-]	73-01007	0173-97-0289	24.8	Soil gas	336
Butene[trans-2-]	73-01007	0173-97-0289	16.8	Soil gas	336
Chlorobenzene	73-01007	0173-97-0289	76	Soil gas	336
Chlorodifluoromethane	73-01007	0173-97-0289	151	Soil gas	336
Chloroethane	73-01007	0173-97-0289	54	Soil gas	336
Cyclohexane	73-01007	0173-97-0289	379	Soil gas	336
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01007	0173-97-0289	171	Soil gas	336
Dichlorobenzene[1,4-]	73-01007	0173-97-0289	405	Soil gas	336
Dichlorodifluoromethane	73-01007	0173-97-0289	577	Soil gas	336
Dichloroethane[1,2-]	73-01007	0173-97-0289	14	Soil gas	336
Dichloroethene[1,1-]	73-01007	0173-97-0289	51.4	Soil gas	336
Dichloroethene[cis-1,2-]	73-01007	0173-97-0289	3720	Soil gas	336
Dichloroethene[trans-1,2-]	73-01007	0173-97-0289	79.6	Soil gas	336
Dichloropropane[1,2-]	73-01007	0173-97-0289	32.4	Soil gas	336
Dimethylbutane[2,2-]	73-01007	0173-97-0289	23.2	Soil gas	336
Dimethylbutane[2,3-]	73-01007	0173-97-0289	66.4	Soil gas	336
Dimethylpentane[2,3-]	73-01007	0173-97-0289	40	Soil gas	336
Ethylbenzene	73-01007	0173-97-0289	997	Soil gas	336
Heptane	73-01007	0173-97-0289	694	Soil gas	336
Hexane	73-01007	0173-97-0289	254	Soil gas	336
Hexene[cis-3-]	73-01007	0173-97-0289	10.4	Soil gas	336
Isobutane	73-01007	0173-97-0289	5410	Soil gas	336
Isooctane	73-01007	0173-97-0289	36	Soil gas	336
Isopentane	73-01007	0173-97-0289	49.6	Soil gas	336
Isoprene	73-01007	0173-97-0289	65.2	Soil gas	336
Isopropylbenzene	73-01007	0173-97-0289	131	Soil gas	336
Methyl-1-butene[3-]	73-01007	0173-97-0289	156	Soil gas	336
Methyl-1-pentene[2-]	73-01007	0173-97-0289	27.4	Soil gas	336
Methyl-2-butene[2-]	73-01007	0173-97-0289	89.2	Soil gas	336
Methyl-2-pentanone[4-]	73-01007	0173-97-0289	137	Soil gas	336
Methylcyclohexane	73-01007	0173-97-0289	576	Soil gas	336
Methylcyclopentane	73-01007	0173-97-0289	126	Soil gas	336
Methylene Chloride	73-01007	0173-97-0289	85.8	Soil gas	336
Methylheptane[2-]	73-01007	0173-97-0289	495	Soil gas	336
Methylheptane[3-]	73-01007	0173-97-0289	595	Soil gas	336
Methylhexane[3-]	73-01007	0173-97-0289	105	Soil gas	336
Methylpentane[2-]	73-01007	0173-97-0289	95	Soil gas	336
Methylpentane[3-]	73-01007	0173-97-0289	97.6	Soil gas	336
Nonane[1-]	73-01007	0173-97-0289	2080	Soil gas	336
Octane[n-]	73-01007	0173-97-0289	1000	Soil gas	336
Pentane	73-01007	0173-97-0289	66.4	Soil gas	336
Pentene[1-]	73-01007	0173-97-0289	190	Soil gas	336
Pentene[cis-2-]	73-01007	0173-97-0289	13.6	Soil gas	336
Pentene[trans-2-]	73-01007	0173-97-0289	26.4	Soil gas	336
Pinene[alpha-]	73-01007	0173-97-0289	553	Soil gas	336
Pinene[beta-]	73-01007	0173-97-0289	1480	Soil gas	336
Propylbenzene[1-]	73-01007	0173-97-0289	109	Soil gas	336
Propylene	73-01007	0173-97-0289	1230	Soil gas	336

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Styrene	73-01007	0173-97-0289	17.6	Soil gas	336
Tetrachloroethene	73-01007	0173-97-0289	7470	Soil gas	336
Toluene	73-01007	0173-97-0289	1240	Soil gas	336
Trichlorobenzene[1,2,4-]	73-01007	0173-97-0289	19.6	Soil gas	336
Trichloroethane[1,1,1-]	73-01007	0173-97-0289	23	Soil gas	336
Trichloroethene	73-01007	0173-97-0289	134	Soil gas	336
Trimethylbenzene[1,2,4-]	73-01007	0173-97-0289	578	Soil gas	336
Trimethylbenzene[1,3,5-]	73-01007	0173-97-0289	227	Soil gas	336
Trimethylpentane[2,3,4-]	73-01007	0173-97-0289	236	Soil gas	336
Vinyl Acetate	73-01007	0173-97-0289	150	Soil gas	336
Vinyl Chloride	73-01007	0173-97-0289	557	Soil gas	336
Xylene[1,2-]	73-01007	0173-97-0289	260	Soil gas	336
Xylene[1,3-]	73-01007	0173-97-0289	1830	Soil gas	336
Benzene	73-01007	0173-97-0290	161	Soil gas	192
Butane[n-]	73-01007	0173-97-0290	117	Soil gas	192
Butene[1-]	73-01007	0173-97-0290	250	Soil gas	192
Butene[cis-2-]	73-01007	0173-97-0290	24	Soil gas	192
Butene[trans-2-]	73-01007	0173-97-0290	12.8	Soil gas	192
Chlorobenzene	73-01007	0173-97-0290	143	Soil gas	192
Chlorodifluoromethane	73-01007	0173-97-0290	89	Soil gas	192
Chloroethane	73-01007	0173-97-0290	30.2	Soil gas	192
Cyclohexane	73-01007	0173-97-0290	460	Soil gas	192
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	0173-97-0290	67.6	Soil gas	192
Dichlorobenzene[1,4-]	73-01007	0173-97-0290	338	Soil gas	192
Dichlorodifluoromethane	73-01007	0173-97-0290	270	Soil gas	192
Dichloroethene[1,1-]	73-01007	0173-97-0290	13.4	Soil gas	192
Dichloroethene[cis-1,2-]	73-01007	0173-97-0290	6080	Soil gas	192
Dichloroethene[trans-1,2-]	73-01007	0173-97-0290	86	Soil gas	192
Dichloropropane[1,2-]	73-01007	0173-97-0290	24.4	Soil gas	192
Dimethylbutane[2,2-]	73-01007	0173-97-0290	28.4	Soil gas	192
Dimethylbutane[2,3-]	73-01007	0173-97-0290	79.6	Soil gas	192
Dimethylpentane[2,3-]	73-01007	0173-97-0290	45.6	Soil gas	192
Ethylbenzene	73-01007	0173-97-0290	1050	Soil gas	192
Heptane	73-01007	0173-97-0290	800	Soil gas	192
Hexane	73-01007	0173-97-0290	337	Soil gas	192
Hexene[cis-3-]	73-01007	0173-97-0290	14.4	Soil gas	192
Isobutane	73-01007	0173-97-0290	1420	Soil gas	192
Isooctane	73-01007	0173-97-0290	39.8	Soil gas	192
Isopropylbenzene	73-01007	0173-97-0290	215	Soil gas	192
Methyl-1-butene[3-]	73-01007	0173-97-0290	56.2	Soil gas	192
Methyl-1-pentene[2-]	73-01007	0173-97-0290	29	Soil gas	192
Methylcyclohexane	73-01007	0173-97-0290	883	Soil gas	192
Methylcyclopentane	73-01007	0173-97-0290	200	Soil gas	192
Methylene Chloride	73-01007	0173-97-0290	24.8	Soil gas	192
Methylheptane[2-]	73-01007	0173-97-0290	778	Soil gas	192
Methylheptane[3-]	73-01007	0173-97-0290	875	Soil gas	192
Methylhexane[2-]	73-01007	0173-97-0290	10.4	Soil gas	192
Methylhexane[3-]	73-01007	0173-97-0290	134	Soil gas	192

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trichloroethene	73-01009	0173-97-0293	5.46	Soil gas	134.4
Trichlorofluoromethane	73-01009	0173-97-0293	5.26	Soil gas	134.4
Trimethylbenzene[1,2,4-]	73-01009	0173-97-0293	1.26	Soil gas	134.4
Butene[1-]	73-01006	0173-97-0294	1.04	Soil gas	324
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01006	0173-97-0294	2.08	Soil gas	324
Dichlorodifluoromethane	73-01006	0173-97-0294	24.8	Soil gas	324
Isobutane	73-01006	0173-97-0294	1.02	Soil gas	324
Tetrachloroethene	73-01006	0173-97-0294	21	Soil gas	324
Trichloroethene	73-01006	0173-97-0294	5.7	Soil gas	324
Trichlorofluoromethane	73-01006	0173-97-0294	4.64	Soil gas	324
Acetone	73-02071	0173-97-0296	1510	Soil gas	228
Benzene	73-02071	0173-97-0296	59	Soil gas	228
Benzonitrile	73-02071	0173-97-0296	201	Soil gas	228
Butane[n-]	73-02071	0173-97-0296	72.4	Soil gas	228
Butanone[2-]	73-02071	0173-97-0296	6800	Soil gas	228
Butene[1-]	73-02071	0173-97-0296	569	Soil gas	228
Butene[cis-2-]	73-02071	0173-97-0296	15.6	Soil gas	228
Butene[trans-2-]	73-02071	0173-97-0296	14.6	Soil gas	228
Chlorobenzene	73-02071	0173-97-0296	36	Soil gas	228
Dibromoethane[1,2-]	73-02071	0173-97-0296	25.2	Soil gas	228
Dichlorobenzene[1,2-]	73-02071	0173-97-0296	46.4	Soil gas	228
Dichlorobenzene[1,4-]	73-02071	0173-97-0296	1070	Soil gas	228
Dichloroethene[cis-1,2-]	73-02071	0173-97-0296	14	Soil gas	228
Ethylbenzene	73-02071	0173-97-0296	1930	Soil gas	228
Hexanone[2-]	73-02071	0173-97-0296	130	Soil gas	228
Hexene[cis-3-]	73-02071	0173-97-0296	12.6	Soil gas	228
Isobutane	73-02071	0173-97-0296	584	Soil gas	228
Isoprene	73-02071	0173-97-0296	80.2	Soil gas	228
Isopropylbenzene	73-02071	0173-97-0296	466	Soil gas	228
Methyl-1-butene[3-]	73-02071	0173-97-0296	43.6	Soil gas	228
Methyl-2-butene[2-]	73-02071	0173-97-0296	61.6	Soil gas	228
Methyl-2-pentanone[4-]	73-02071	0173-97-0296	3460	Soil gas	228
Methylheptane[2-]	73-02071	0173-97-0296	89.8	Soil gas	228
Methylhexane[3-]	73-02071	0173-97-0296	15.6	Soil gas	228
Methylstyrene[alpha-]	73-02071	0173-97-0296	27.4	Soil gas	228
Nitrobenzene	73-02071	0173-97-0296	153	Soil gas	228
Nitropropane[2-]	73-02071	0173-97-0296	3940	Soil gas	228
Nonane[1-]	73-02071	0173-97-0296	1690	Soil gas	228
Octane[n-]	73-02071	0173-97-0296	13.4	Soil gas	228
Pentene[1-]	73-02071	0173-97-0296	185	Soil gas	228
Pentene[cis-2-]	73-02071	0173-97-0296	66	Soil gas	228
Pinene[alpha-]	73-02071	0173-97-0296	1360	Soil gas	228
Pinene[beta-]	73-02071	0173-97-0296	14000	Soil gas	228
Propylbenzene[1-]	73-02071	0173-97-0296	528	Soil gas	228
Propylene	73-02071	0173-97-0296	259	Soil gas	228
Styrene	73-02071	0173-97-0296	22.6	Soil gas	228
Tetrahydrofuran	73-02071	0173-97-0296	656	Soil gas	228
Toluene	73-02071	0173-97-0296	5430	Soil gas	228

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Trimethylbenzene[1,2,4-]	73-02071	0173-97-0296	1370	Soil gas	228
Trimethylbenzene[1,3,5-]	73-02071	0173-97-0296	523	Soil gas	228
Xylene[1,2-]	73-02071	0173-97-0296	1720	Soil gas	228
Xylene[1,3-]	73-02071	0173-97-0296	3250	Soil gas	228
Chlorodifluoromethane	73-01005	AAC3233	15.2	Soil gas	0
Dibromoethane[1,2-]	73-01005	AAC3233	7.3	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01005	AAC3233	61.8	Soil gas	0
Dichlorodifluoromethane	73-01005	AAC3233	735	Soil gas	0
Dichloroethene[cis-1,2-]	73-01005	AAC3233	5.3	Soil gas	0
Methylene Chloride	73-01005	AAC3233	10.4	Soil gas	0
Tetrachloroethene	73-01005	AAC3233	284	Soil gas	0
Trichloroethane[1,1,1-]	73-01005	AAC3233	6.8	Soil gas	0
Trichlorofluoromethane	73-01005	AAC3233	66.4	Soil gas	0
Xylene (Total)	73-01005	AAC3233	8.7	Soil gas	0
Chloromethane	73-01001	AAC3234	4.02	Soil gas	0
Dichlorodifluoromethane	73-01001	AAC3234	1.48	Soil gas	0
Tetrachloroethene	73-01001	AAC3234	1.18	Soil gas	0
Chloromethane	73-01001	AAC3235	4.3	Soil gas	0
Dichlorodifluoromethane	73-01001	AAC3235	1.32	Soil gas	0
Carbon Tetrachloride	73-01002	AAC3236	1.14	Soil gas	0
Chloromethane	73-01002	AAC3236	3.52	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01002	AAC3236	4.64	Soil gas	0
Dichlorodifluoromethane	73-01002	AAC3236	105	Soil gas	0
Dichloroethene[cis-1,2-]	73-01002	AAC3236	1.52	Soil gas	0
Tetrachloroethene	73-01002	AAC3236	47.4	Soil gas	0
Trichlorofluoromethane	73-01002	AAC3236	3.62	Soil gas	0
Benzene	73-01003	AAC3237	10.6	Soil gas	0
Chlorodifluoromethane	73-01003	AAC3237	310	Soil gas	0
Dibromoethane[1,2-]	73-01003	AAC3237	5	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	AAC3237	87.9	Soil gas	0
Dichlorobenzene[1,4-]	73-01003	AAC3237	21.9	Soil gas	0
Dichlorodifluoromethane	73-01003	AAC3237	710	Soil gas	0
Dichloroethane[1,2-]	73-01003	AAC3237	5.2	Soil gas	0
Dichloroethene[1,1-]	73-01003	AAC3237	7.4	Soil gas	0
Dichloroethene[cis-1,2-]	73-01003	AAC3237	464	Soil gas	0
Dichloroethene[trans-1,2-]	73-01003	AAC3237	5.2	Soil gas	0
Methylene Chloride	73-01003	AAC3237	15	Soil gas	0
Tetrachloroethene	73-01003	AAC3237	121	Soil gas	0
Trichloroethene	73-01003	AAC3237	11.6	Soil gas	0
Trichlorofluoromethane	73-01003	AAC3237	15.9	Soil gas	0
Trimethylbenzene[1,2,4-]	73-01003	AAC3237	17.2	Soil gas	0
Trimethylbenzene[1,3,5-]	73-01003	AAC3237	6.9	Soil gas	0
Vinyl Chloride	73-01003	AAC3237	29.9	Soil gas	0
Xylene (Total)	73-01003	AAC3237	12.3	Soil gas	0
Benzene	73-01003	AAC3238	114	Soil gas	0
Chlorodifluoromethane	73-01003	AAC3238	1210	Soil gas	0

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Chloroethane	73-01003	AAC3238	88	Soil gas	0
Chloromethane	73-01003	AAC3238	213	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	AAC3238	80	Soil gas	0
Dichlorobenzene[1,4-]	73-01003	AAC3238	90	Soil gas	0
Dichlorodifluoromethane	73-01003	AAC3238	989	Soil gas	0
Dichloroethene[<i>cis</i> -1,2-]	73-01003	AAC3238	7340	Soil gas	0
Dichloroethene[<i>trans</i> -1,2-]	73-01003	AAC3238	218	Soil gas	0
Methylene Chloride	73-01003	AAC3238	87	Soil gas	0
Tetrachloroethene	73-01003	AAC3238	75	Soil gas	0
Trimethylbenzene[1,2,4-]	73-01003	AAC3238	91	Soil gas	0
Trimethylbenzene[1,3,5-]	73-01003	AAC3238	50	Soil gas	0
Vinyl Chloride	73-01003	AAC3238	730	Soil gas	0
Benzene	73-01003	AAC3239	77	Soil gas	0
Chlorodifluoromethane	73-01003	AAC3239	8970	Soil gas	0
Chloromethane	73-01003	AAC3239	974	Soil gas	0
Dichlorobenzene[1,4-]	73-01003	AAC3239	55	Soil gas	0
Dichlorodifluoromethane	73-01003	AAC3239	523	Soil gas	0
Dichloroethene[<i>cis</i> -1,2-]	73-01003	AAC3239	1370	Soil gas	0
Methylene Chloride	73-01003	AAC3239	83	Soil gas	0
Vinyl Chloride	73-01003	AAC3239	355	Soil gas	0
Benzene	73-01003	AAC3240	112	Soil gas	0
Chlorodifluoromethane	73-01003	AAC3240	1920	Soil gas	0
Chloromethane	73-01003	AAC3240	273	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	AAC3240	244	Soil gas	0
Dichlorodifluoromethane	73-01003	AAC3240	1210	Soil gas	0
Dichloroethene[1,1-]	73-01003	AAC3240	91	Soil gas	0
Dichloroethene[<i>cis</i> -1,2-]	73-01003	AAC3240	8650	Soil gas	0
Dichloroethene[<i>trans</i> -1,2-]	73-01003	AAC3240	270	Soil gas	0
Methylene Chloride	73-01003	AAC3240	71	Soil gas	0
Trimethylbenzene[1,2,4-]	73-01003	AAC3240	61	Soil gas	0
Vinyl Chloride	73-01003	AAC3240	1280	Soil gas	0
Chlorodifluoromethane	73-01011	AAC3241	533	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	AAC3241	92.3	Soil gas	0
Dichlorodifluoromethane	73-01011	AAC3241	1020	Soil gas	0
Dichloroethane[1,1-]	73-01011	AAC3241	7	Soil gas	0
Dichloroethene[<i>cis</i> -1,2-]	73-01011	AAC3241	92.5	Soil gas	0
Methylene Chloride	73-01011	AAC3241	10	Soil gas	0
Tetrachloroethene	73-01011	AAC3241	340	Soil gas	0
Trichloro-1,2,2- trifluoroethane[1,1,2-]	73-01011	AAC3241	6.8	Soil gas	0
Trichlorobenzene[1,2,4-]	73-01011	AAC3241	5.3	Soil gas	0
Trichloroethane[1,1,1-]	73-01011	AAC3241	8.5	Soil gas	0
Trichloroethene	73-01011	AAC3241	14.1	Soil gas	0
Xylene (Total)	73-01011	AAC3241	7.2	Soil gas	0
Chlorodifluoromethane	73-01011	AAC3242	992	Soil gas	0
Chloroethane	73-01011	AAC3242	57	Soil gas	0

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Chloromethane	73-01011	AAC3242	224	Soil gas	0
Dichlorodifluoromethane	73-01011	AAC3242	824	Soil gas	0
Dichloroethene[cis-1,2-]	73-01011	AAC3242	3180	Soil gas	0
Methylene Chloride	73-01011	AAC3242	84	Soil gas	0
Tetrachloroethene	73-01011	AAC3242	156	Soil gas	0
Vinyl Chloride	73-01011	AAC3242	229	Soil gas	0
Chlorodifluoromethane	73-01011	AAC3243	18	Soil gas	0
Chloromethane	73-01011	AAC3243	234	Soil gas	0
Dichlorodifluoromethane	73-01011	AAC3243	127	Soil gas	0
Dichloroethene[cis-1,2-]	73-01011	AAC3243	813	Soil gas	0
Methylene Chloride	73-01011	AAC3243	50	Soil gas	0
Vinyl Chloride	73-01011	AAC3243	73	Soil gas	0
Benzene	73-01011	AAC3244	216	Soil gas	0
Chlorobenzene	73-01011	AAC3244	27.5	Soil gas	0
Chlorodifluoromethane	73-01011	AAC3244	2640	Soil gas	0
Chloroethane	73-01011	AAC3244	150	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	AAC3244	140	Soil gas	0
Dichlorobenzene[1,4-]	73-01011	AAC3244	181	Soil gas	0
Dichlorodifluoromethane	73-01011	AAC3244	869	Soil gas	0
Dichloroethene[1,1-]	73-01011	AAC3244	106	Soil gas	0
Dichloroethene[cis-1,2-]	73-01011	AAC3244	32700	Soil gas	0
Dichloroethene[trans-1,2-]	73-01011	AAC3244	349	Soil gas	0
Methylene Chloride	73-01011	AAC3244	140	Soil gas	0
Tetrachloroethene	73-01011	AAC3244	81	Soil gas	0
Toluene	73-01011	AAC3244	137	Soil gas	0
Trichloroethene	73-01011	AAC3244	66.5	Soil gas	0
Trimethylbenzene[1,2,4-]	73-01011	AAC3244	34.5	Soil gas	0
Vinyl Chloride	73-01011	AAC3244	1990	Soil gas	0
Benzene	73-01011	AAC3245	214	Soil gas	0
Chlorobenzene	73-01011	AAC3245	28	Soil gas	0
Chlorodifluoromethane	73-01011	AAC3245	2330	Soil gas	0
Chloroethane	73-01011	AAC3245	160	Soil gas	0
Chloromethane	73-01011	AAC3245	129	Soil gas	0
Dibromoethane[1,2-]	73-01011	AAC3245	65.5	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	AAC3245	138	Soil gas	0
Dichlorobenzene[1,4-]	73-01011	AAC3245	154	Soil gas	0
Dichlorodifluoromethane	73-01011	AAC3245	841	Soil gas	0
Dichloroethane[1,1-]	73-01011	AAC3245	101	Soil gas	0
Dichloroethane[1,2-]	73-01011	AAC3245	110	Soil gas	0
Dichloroethene[1,1-]	73-01011	AAC3245	199	Soil gas	0
Dichloroethene[cis-1,2-]	73-01011	AAC3245	36000	Soil gas	0
Dichloroethene[trans-1,2-]	73-01011	AAC3245	338	Soil gas	0
Methylene Chloride	73-01011	AAC3245	133	Soil gas	0
Tetrachloroethene	73-01011	AAC3245	151	Soil gas	0
Toluene	73-01011	AAC3245	155	Soil gas	0
Trichloroethane[1,1,1-]	73-01011	AAC3245	90.5	Soil gas	0
Trichloroethene	73-01011	AAC3245	64.5	Soil gas	0

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Trimethylbenzene[1,2,4-]	73-01011	AAC3245	29.5	Soil gas	0
Vinyl Chloride	73-01011	AAC3245	1990	Soil gas	0
Chlorodifluoromethane	73-01004	AAC3246	400	Soil gas	0
Chloromethane	73-01004	AAC3246	189	Soil gas	0
Dichlorodifluoromethane	73-01004	AAC3246	830	Soil gas	0
Dichloroethene[cis-1,2-]	73-01004	AAC3246	1010	Soil gas	0
Methylene Chloride	73-01004	AAC3246	56	Soil gas	0
Tetrachloroethene	73-01004	AAC3246	129	Soil gas	0
Vinyl Chloride	73-01004	AAC3246	74	Soil gas	0
Benzene	73-01004	AAC3247	60	Soil gas	0
Chlorodifluoromethane	73-01004	AAC3247	1490	Soil gas	0
Chloromethane	73-01004	AAC3247	268	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01004	AAC3247	119	Soil gas	0
Dichlorodifluoromethane	73-01004	AAC3247	828	Soil gas	0
Dichloroethene[cis-1,2-]	73-01004	AAC3247	3880	Soil gas	0
Dichloroethene[trans-1,2-]	73-01004	AAC3247	52	Soil gas	0
Methylene Chloride	73-01004	AAC3247	87	Soil gas	0
Tetrachloroethene	73-01004	AAC3247	145	Soil gas	0
Vinyl Chloride	73-01004	AAC3247	325	Soil gas	0
Benzene	73-01004	AAC3248	78	Soil gas	0
Chlorodifluoromethane	73-01004	AAC3248	2680	Soil gas	0
Chloromethane	73-01004	AAC3248	343	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01004	AAC3248	156	Soil gas	0
Dichlorobenzene[1,4-]	73-01004	AAC3248	58	Soil gas	0
Dichlorodifluoromethane	73-01004	AAC3248	683	Soil gas	0
Dichloroethene[cis-1,2-]	73-01004	AAC3248	3660	Soil gas	0
Dichloroethene[trans-1,2-]	73-01004	AAC3248	60	Soil gas	0
Methylene Chloride	73-01004	AAC3248	81	Soil gas	0
Tetrachloroethene	73-01004	AAC3248	68	Soil gas	0
Vinyl Chloride	73-01004	AAC3248	456	Soil gas	0
Benzene	73-01004	AAC3249	83	Soil gas	0
Chlorodifluoromethane	73-01004	AAC3249	8530	Soil gas	0
Dichloroethene[cis-1,2-]	73-01004	AAC3249	1670	Soil gas	0
Methylene Chloride	73-01004	AAC3249	62	Soil gas	0
Vinyl Chloride	73-01004	AAC3249	369	Soil gas	0
Benzene	73-01004	AAC3250	84	Soil gas	0
Chlorodifluoromethane	73-01004	AAC3250	7840	Soil gas	0
Dichloroethene[cis-1,2-]	73-01004	AAC3250	1380	Soil gas	0
Methylene Chloride	73-01004	AAC3250	81	Soil gas	0
Vinyl Chloride	73-01004	AAC3250	290	Soil gas	0
Chlorodifluoromethane	73-01009	AAC3251	52.1	Soil gas	0
Chloromethane	73-01009	AAC3251	28.1	Soil gas	0
Dibromoethane[1,2-]	73-01009	AAC3251	7.6	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01009	AAC3251	44.6	Soil gas	0
Dichlorodifluoromethane	73-01009	AAC3251	463	Soil gas	0
Dichloroethane[1,1-]	73-01009	AAC3251	9.6	Soil gas	0

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloroethane[1,2-]	73-01009	AAC3251	5.3	Soil gas	0
Dichloroethene[cis-1,2-]	73-01009	AAC3251	15.9	Soil gas	0
Methylene Chloride	73-01009	AAC3251	19.9	Soil gas	0
Tetrachloroethene	73-01009	AAC3251	419	Soil gas	0
Trichloroethane[1,1,1-]	73-01009	AAC3251	12.7	Soil gas	0
Trichloroethene	73-01009	AAC3251	33.4	Soil gas	0
Trichlorofluoromethane	73-01009	AAC3251	32.7	Soil gas	0
Xylene (Total)	73-01009	AAC3251	8.3	Soil gas	0
Chlorodifluoromethane	73-01009	AAC3252	8.7	Soil gas	0
Chloromethane	73-01009	AAC3252	5.36	Soil gas	0
Dibromoethane[1,2-]	73-01009	AAC3252	1.1	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01009	AAC3252	7.74	Soil gas	0
Dichlorodifluoromethane	73-01009	AAC3252	152	Soil gas	0
Dichloroethene[cis-1,2-]	73-01009	AAC3252	1.4	Soil gas	0
Tetrachloroethene	73-01009	AAC3252	155	Soil gas	0
Trichloroethane[1,1,1-]	73-01009	AAC3252	2.88	Soil gas	0
Trichloroethene	73-01009	AAC3252	5.36	Soil gas	0
Trichlorofluoromethane	73-01009	AAC3252	11.7	Soil gas	0
Chlorodifluoromethane	73-01006	AAC3253	2.34	Soil gas	0
Chloroform	73-01006	AAC3253	1.96	Soil gas	0
Chloromethane	73-01006	AAC3253	3.58	Soil gas	0
Dichlorodifluoromethane	73-01006	AAC3253	39.4	Soil gas	0
Dichloroethene[cis-1,2-]	73-01006	AAC3253	2.26	Soil gas	0
Tetrachloroethene	73-01006	AAC3253	30	Soil gas	0
Trichloroethane[1,1,1-]	73-01006	AAC3253	3.16	Soil gas	0
Trichloroethene	73-01006	AAC3253	15.2	Soil gas	0
Trichlorofluoromethane	73-01006	AAC3253	9.76	Soil gas	0
Chlorodifluoromethane	73-01007	AAC3254	25.7	Soil gas	0
Chloromethane	73-01007	AAC3254	31.5	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	AAC3254	36.6	Soil gas	0
Dichlorodifluoromethane	73-01007	AAC3254	459	Soil gas	0
Dichloroethene[cis-1,2-]	73-01007	AAC3254	6.6	Soil gas	0
Methylene Chloride	73-01007	AAC3254	9.6	Soil gas	0
Tetrachloroethene	73-01007	AAC3254	64.2	Soil gas	0
Trichlorofluoromethane	73-01007	AAC3254	8.2	Soil gas	0
Xylene (Total)	73-01007	AAC3254	7.9	Soil gas	0
Benzene	73-01007	AAC3255	74	Soil gas	0
Chlorodifluoromethane	73-01007	AAC3255	59.9	Soil gas	0
Chloromethane	73-01007	AAC3255	230	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	AAC3255	142	Soil gas	0
Dichlorobenzene[1,4-]	73-01007	AAC3255	239	Soil gas	0
Dichlorodifluoromethane	73-01007	AAC3255	1300	Soil gas	0
Dichloroethene[cis-1,2-]	73-01007	AAC3255	4830	Soil gas	0
Dichloroethene[trans-1,2-]	73-01007	AAC3255	50	Soil gas	0
Ethylbenzene	73-01007	AAC3255	245	Soil gas	0
Methylene Chloride	73-01007	AAC3255	112	Soil gas	0

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Tetrachloroethene	73-01007	AAC3255	132	Soil gas	0
Toluene	73-01007	AAC3255	501	Soil gas	0
Trichloroethene	73-01007	AAC3255	94	Soil gas	0
Trimethylbenzene[1,2,4-]	73-01007	AAC3255	256	Soil gas	0
Trimethylbenzene[1,3,5-]	73-01007	AAC3255	104	Soil gas	0
Vinyl Chloride	73-01007	AAC3255	251	Soil gas	0
Xylene (Total)	73-01007	AAC3255	737	Soil gas	0
Benzene	73-01007	AAC3256	333	Soil gas	0
Chlorobenzene	73-01007	AAC3256	164	Soil gas	0
Chlorodifluoromethane	73-01007	AAC3256	1410	Soil gas	0
Chloromethane	73-01007	AAC3256	216	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	AAC3256	135	Soil gas	0
Dichlorobenzene[1,4-]	73-01007	AAC3256	352	Soil gas	0
Dichlorodifluoromethane	73-01007	AAC3256	1260	Soil gas	0
Dichloroethene[1,1-]	73-01007	AAC3256	59	Soil gas	0
Dichloroethene[cis-1,2-]	73-01007	AAC3256	11100	Soil gas	0
Dichloroethene[trans-1,2-]	73-01007	AAC3256	140	Soil gas	0
Ethylbenzene	73-01007	AAC3256	1210	Soil gas	0
Methylene Chloride	73-01007	AAC3256	156	Soil gas	0
Tetrachloroethene	73-01007	AAC3256	130	Soil gas	0
Toluene	73-01007	AAC3256	848	Soil gas	0
Trichloroethene	73-01007	AAC3256	108	Soil gas	0
Trimethylbenzene[1,2,4-]	73-01007	AAC3256	750	Soil gas	0
Trimethylbenzene[1,3,5-]	73-01007	AAC3256	447	Soil gas	0
Vinyl Chloride	73-01007	AAC3256	803	Soil gas	0
Xylene (Total)	73-01007	AAC3256	2329	Soil gas	0
Benzene	73-01007	AAC3257	296	Soil gas	0
Chlorodifluoromethane	73-01007	AAC3257	120	Soil gas	0
Chloroethane	73-01007	AAC3257	135	Soil gas	0
Chloromethane	73-01007	AAC3257	308	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	AAC3257	143	Soil gas	0
Dichlorobenzene[1,4-]	73-01007	AAC3257	301	Soil gas	0
Dichlorodifluoromethane	73-01007	AAC3257	1160	Soil gas	0
Dichloroethene[cis-1,2-]	73-01007	AAC3257	10700	Soil gas	0
Dichloroethene[trans-1,2-]	73-01007	AAC3257	110	Soil gas	0
Ethylbenzene	73-01007	AAC3257	1120	Soil gas	0
Methylene Chloride	73-01007	AAC3257	160	Soil gas	0
Tetrachloroethene	73-01007	AAC3257	101	Soil gas	0
Toluene	73-01007	AAC3257	680	Soil gas	0
Trichloroethene	73-01007	AAC3257	91.3	Soil gas	0
Trimethylbenzene[1,2,4-]	73-01007	AAC3257	675	Soil gas	0
Trimethylbenzene[1,3,5-]	73-01007	AAC3257	379	Soil gas	0
Vinyl Chloride	73-01007	AAC3257	754	Soil gas	0
Xylene (Total)	73-01007	AAC3257	2131	Soil gas	0
Chlorodifluoromethane	73-01010	AAC3258	43.8	Soil gas	0
Chloroform	73-01010	AAC3258	2.95	Soil gas	0
Chloromethane	73-01010	AAC3258	12	Soil gas	0

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichlorodifluoromethane	73-01008	AAC3263	12.3	Soil gas	0
Tetrachloroethene	73-01008	AAC3263	3.6	Soil gas	0
Trichlorofluoromethane	73-01008	AAC3263	1.18	Soil gas	0
Chlorodifluoromethane	73-01008	AAC3264	1.92	Soil gas	0
Chloromethane	73-01008	AAC3264	3.92	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	AAC3264	3.9	Soil gas	0
Dichlorodifluoromethane	73-01008	AAC3264	32.9	Soil gas	0
Dichloroethene[<i>cis</i> -1,2-]	73-01008	AAC3264	2.22	Soil gas	0
Methylene Chloride	73-01008	AAC3264	2.28	Soil gas	0
Tetrachloroethene	73-01008	AAC3264	10.7	Soil gas	0
Toluene	73-01008	AAC3264	1.72	Soil gas	0
Trichloroethane[1,1,1-]	73-01008	AAC3264	19.3	Soil gas	0
Trichlorofluoromethane	73-01008	AAC3264	1.46	Soil gas	0
Chloromethane	73-01008	AAC3265	3.66	Soil gas	0
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01008	AAC3265	1.28	Soil gas	0
Dichlorodifluoromethane	73-01008	AAC3265	21.1	Soil gas	0
Tetrachloroethene	73-01008	AAC3265	4.88	Soil gas	0
Chloromethane	73-01001	AAC4125	4.18	Soil gas	482.4
Dichlorodifluoromethane	73-01001	AAC4125	1.16	Soil gas	482.4
Chloromethane	73-01001	AAC4126	4.6	Soil gas	432
Dichlorodifluoromethane	73-01001	AAC4126	1.06	Soil gas	432
Carbon Tetrachloride	73-01002	AAC4127	1.08	Soil gas	432
Chloromethane	73-01002	AAC4127	4.28	Soil gas	432
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01002	AAC4127	6.8	Soil gas	432
Dichlorodifluoromethane	73-01002	AAC4127	136	Soil gas	432
Benzene	73-01003	AAC4128	13.2	Soil gas	1190.4
Benzyl Chloride	73-01003	AAC4128	16	Soil gas	1190.4
Chlorobenzene	73-01003	AAC4128	4.6	Soil gas	1190.4
Chlorodifluoromethane	73-01003	AAC4128	405	Soil gas	1190.4
Chloroethane	73-01003	AAC4128	6.5	Soil gas	1190.4
Chloroform	73-01003	AAC4128	1.52	Soil gas	1190.4
Chloromethane	73-01003	AAC4128	5.6	Soil gas	1190.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	AAC4128	72.2	Soil gas	1190.4
Dichlorobenzene[1,4-]	73-01003	AAC4128	23	Soil gas	1190.4
Dichlorodifluoromethane	73-01003	AAC4128	495	Soil gas	1190.4
Dichloroethane[1,1-]	73-01003	AAC4128	4.28	Soil gas	1190.4
Dichloroethane[1,2-]	73-01003	AAC4128	2.74	Soil gas	1190.4
Dichloroethene[1,1-]	73-01003	AAC4128	3.34	Soil gas	1190.4
Dichloroethene[<i>cis</i> -1,2-]	73-01003	AAC4128	290	Soil gas	1190.4
Dichloroethene[<i>trans</i> -1,2-]	73-01003	AAC4128	6.68	Soil gas	1190.4
Dichloropropane[1,2-]	73-01003	AAC4128	3.34	Soil gas	1190.4
Ethylbenzene	73-01003	AAC4128	4.66	Soil gas	1190.4
Methylene Chloride	73-01003	AAC4128	2.12	Soil gas	1190.4
Tetrachloroethene	73-01003	AAC4128	133	Soil gas	1190.4
Toluene	73-01003	AAC4128	2.04	Soil gas	1190.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Trichloroethene	73-01003	AAC4128	13.6	Soil gas	1190.4
Trichlorofluoromethane	73-01003	AAC4128	12	Soil gas	1190.4
Trimethylbenzene[1,2,4-]	73-01003	AAC4128	6.08	Soil gas	1190.4
Vinyl Chloride	73-01003	AAC4128	30.9	Soil gas	1190.4
Xylene (Total)	73-01003	AAC4128	2.82	Soil gas	1190.4
Benzene	73-01003	AAC4129	10.3	Soil gas	1094.4
Chlorodifluoromethane	73-01003	AAC4129	438	Soil gas	1094.4
Chloroethane	73-01003	AAC4129	5.7	Soil gas	1094.4
Chloromethane	73-01003	AAC4129	20.7	Soil gas	1094.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	AAC4129	54.9	Soil gas	1094.4
Dichlorobenzene[1,4-]	73-01003	AAC4129	10.1	Soil gas	1094.4
Dichlorodifluoromethane	73-01003	AAC4129	541	Soil gas	1094.4
Dichloroethene[cis-1,2-]	73-01003	AAC4129	650	Soil gas	1094.4
Dichloroethene[trans-1,2-]	73-01003	AAC4129	8.9	Soil gas	1094.4
Tetrachloroethene	73-01003	AAC4129	52.8	Soil gas	1094.4
Trichloroethene	73-01003	AAC4129	7.3	Soil gas	1094.4
Trichlorofluoromethane	73-01003	AAC4129	6	Soil gas	1094.4
Vinyl Chloride	73-01003	AAC4129	46.3	Soil gas	1094.4
Benzene	73-01003	AAC4130	84.6	Soil gas	470.4
Chlorobenzene	73-01003	AAC4130	34.2	Soil gas	470.4
Chlorodifluoromethane	73-01003	AAC4130	1880	Soil gas	470.4
Chloroethane	73-01003	AAC4130	49.2	Soil gas	470.4
Chloromethane	73-01003	AAC4130	35.8	Soil gas	470.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	AAC4130	169	Soil gas	470.4
Dichlorobenzene[1,4-]	73-01003	AAC4130	71.8	Soil gas	470.4
Dichlorodifluoromethane	73-01003	AAC4130	994	Soil gas	470.4
Dichloroethane[1,2-]	73-01003	AAC4130	17.4	Soil gas	470.4
Dichloroethene[1,1-]	73-01003	AAC4130	37.2	Soil gas	470.4
Dichloroethene[cis-1,2-]	73-01003	AAC4130	6760	Soil gas	470.4
Dichloroethene[trans-1,2-]	73-01003	AAC4130	159	Soil gas	470.4
Dichloropropane[1,2-]	73-01003	AAC4130	15.4	Soil gas	470.4
Methylene Chloride	73-01003	AAC4130	46	Soil gas	470.4
Tetrachloroethene	73-01003	AAC4130	65.2	Soil gas	470.4
Toluene	73-01003	AAC4130	10.8	Soil gas	470.4
Trichloroethene	73-01003	AAC4130	52	Soil gas	470.4
Trimethylbenzene[1,2,4-]	73-01003	AAC4130	80.4	Soil gas	470.4
Trimethylbenzene[1,3,5-]	73-01003	AAC4130	38.8	Soil gas	470.4
Vinyl Chloride	73-01003	AAC4130	659	Soil gas	470.4
Xylene (Total)	73-01003	AAC4130	49.6	Soil gas	470.4
Benzene	73-01003	AAC4131	93.2	Soil gas	110.4
Chlorobenzene	73-01003	AAC4131	12.6	Soil gas	110.4
Chlorodifluoromethane	73-01003	AAC4131	1170	Soil gas	110.4
Chloroethane	73-01003	AAC4131	66.6	Soil gas	110.4
Chloromethane	73-01003	AAC4131	79	Soil gas	110.4
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01003	AAC4131	189	Soil gas	110.4
Dichlorobenzene[1,4-]	73-01003	AAC4131	26	Soil gas	110.4

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichlorodifluoromethane	73-01003	AAC4131	585	Soil gas	110.4
Dichloroethene[1,1-]	73-01003	AAC4131	56.4	Soil gas	110.4
Dichloroethene[cis-1,2-]	73-01003	AAC4131	7490	Soil gas	110.4
Dichloroethene[trans-1,2-]	73-01003	AAC4131	298	Soil gas	110.4
Dichloropropane[1,2-]	73-01003	AAC4131	12.6	Soil gas	110.4
Methylene Chloride	73-01003	AAC4131	39	Soil gas	110.4
Tetrachloroethene	73-01003	AAC4131	27.6	Soil gas	110.4
Toluene	73-01003	AAC4131	10.2	Soil gas	110.4
Trichloroethene	73-01003	AAC4131	58.6	Soil gas	110.4
Trimethylbenzene[1,2,4-]	73-01003	AAC4131	46	Soil gas	110.4
Trimethylbenzene[1,3,5-]	73-01003	AAC4131	24	Soil gas	110.4
Vinyl Chloride	73-01003	AAC4131	784	Soil gas	110.4
Xylene (Total)	73-01003	AAC4131	51	Soil gas	110.4
Benzene	73-01004	AAC4132	31.8	Soil gas	1192.2
Chlorodifluoromethane	73-01004	AAC4132	2300	Soil gas	1192.2
Chloroethane	73-01004	AAC4132	18	Soil gas	1192.2
Chloromethane	73-01004	AAC4132	104	Soil gas	1192.2
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01004	AAC4132	68.8	Soil gas	1192.2
Dichlorobenzene[1,4-]	73-01004	AAC4132	22	Soil gas	1192.2
Dichlorodifluoromethane	73-01004	AAC4132	761	Soil gas	1192.2
Dichloroethene[1,1-]	73-01004	AAC4132	11.8	Soil gas	1192.2
Dichloroethene[cis-1,2-]	73-01004	AAC4132	2820	Soil gas	1192.2
Dichloroethene[trans-1,2-]	73-01004	AAC4132	25.8	Soil gas	1192.2
Methylene Chloride	73-01004	AAC4132	35.2	Soil gas	1192.2
Tetrachloroethene	73-01004	AAC4132	129	Soil gas	1192.2
Toluene	73-01004	AAC4132	30.4	Soil gas	1192.2
Trichloroethene	73-01004	AAC4132	13	Soil gas	1192.2
Trichlorofluoromethane	73-01004	AAC4132	18.4	Soil gas	1192.2
Vinyl Chloride	73-01004	AAC4132	170	Soil gas	1192.2
Xylene (Total)	73-01004	AAC4132	27.2	Soil gas	1192.2
Benzene	73-01004	AAC4133	42.8	Soil gas	904.2
Chlorodifluoromethane	73-01004	AAC4133	5400	Soil gas	904.2
Chloroethane	73-01004	AAC4133	22.2	Soil gas	904.2
Chloromethane	73-01004	AAC4133	273	Soil gas	904.2
Dichlorobenzene[1,4-]	73-01004	AAC4133	29.2	Soil gas	904.2
Dichlorodifluoromethane	73-01004	AAC4133	449	Soil gas	904.2
Dichloroethene[1,1-]	73-01004	AAC4133	15.4	Soil gas	904.2
Dichloroethene[cis-1,2-]	73-01004	AAC4133	3350	Soil gas	904.2
Dichloroethene[trans-1,2-]	73-01004	AAC4133	57.8	Soil gas	904.2
Methylene Chloride	73-01004	AAC4133	41.8	Soil gas	904.2
Tetrachloroethene	73-01004	AAC4133	102	Soil gas	904.2
Toluene	73-01004	AAC4133	11.6	Soil gas	904.2
Trichloroethene	73-01004	AAC4133	15.4	Soil gas	904.2
Trichlorofluoromethane	73-01004	AAC4133	12.6	Soil gas	904.2
Trimethylbenzene[1,2,4-]	73-01004	AAC4133	18.6	Soil gas	904.2
Vinyl Chloride	73-01004	AAC4133	206	Soil gas	904.2
Xylene (Total)	73-01004	AAC4133	34.4	Soil gas	904.2
Benzene	73-01004	AAC4134	40.8	Soil gas	556.2

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Chlorodifluoromethane	73-01004	AAC4134	1580	Soil gas	556.2
Chloroethane	73-01004	AAC4134	21.8	Soil gas	556.2
Chloromethane	73-01004	AAC4134	96.6	Soil gas	556.2
Dichlorobenzene[1,4-]	73-01004	AAC4134	36.4	Soil gas	556.2
Dichlorodifluoromethane	73-01004	AAC4134	277	Soil gas	556.2
Dichloroethene[1,1-]	73-01004	AAC4134	15.2	Soil gas	556.2
Dichloroethene[cis-1,2-]	73-01004	AAC4134	1670	Soil gas	556.2
Dichloroethene[trans-1,2-]	73-01004	AAC4134	35.4	Soil gas	556.2
Methylene Chloride	73-01004	AAC4134	72	Soil gas	556.2
Tetrachloroethene	73-01004	AAC4134	38.6	Soil gas	556.2
Toluene	73-01004	AAC4134	63.2	Soil gas	556.2
Trichloroethene	73-01004	AAC4134	11.8	Soil gas	556.2
Trimethylbenzene[1,2,4-]	73-01004	AAC4134	16.6	Soil gas	556.2
Vinyl Chloride	73-01004	AAC4134	191	Soil gas	556.2
Xylene (Total)	73-01004	AAC4134	24.6	Soil gas	556.2
Benzene	73-01004	AAC4135	65.6	Soil gas	160.2
Chlorobenzene	73-01004	AAC4135	10.2	Soil gas	160.2
Chlorodifluoromethane	73-01004	AAC4135	4690	Soil gas	160.2
Chloroethane	73-01004	AAC4135	25.8	Soil gas	160.2
Chloromethane	73-01004	AAC4135	173	Soil gas	160.2
Dichlorobenzene[1,4-]	73-01004	AAC4135	48.4	Soil gas	160.2
Dichlorodifluoromethane	73-01004	AAC4135	295	Soil gas	160.2
Dichloroethene[1,1-]	73-01004	AAC4135	11.6	Soil gas	160.2
Dichloroethene[cis-1,2-]	73-01004	AAC4135	1110	Soil gas	160.2
Dichloroethene[trans-1,2-]	73-01004	AAC4135	53.6	Soil gas	160.2
Ethylbenzene	73-01004	AAC4135	13.6	Soil gas	160.2
Methylene Chloride	73-01004	AAC4135	28.6	Soil gas	160.2
Tetrachloroethene	73-01004	AAC4135	14.8	Soil gas	160.2
Toluene	73-01004	AAC4135	19.4	Soil gas	160.2
Trichloroethene	73-01004	AAC4135	13.8	Soil gas	160.2
Trimethylbenzene[1,2,4-]	73-01004	AAC4135	25.6	Soil gas	160.2
Vinyl Chloride	73-01004	AAC4135	277	Soil gas	160.2
Xylene (Total)	73-01004	AAC4135	52	Soil gas	160.2
Chlorodifluoromethane	73-01005	AAC4136	13.2	Soil gas	402
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01005	AAC4136	49.1	Soil gas	402
Dichlorodifluoromethane	73-01005	AAC4136	492	Soil gas	402
Tetrachloroethene	73-01005	AAC4136	96.3	Soil gas	402
Trichloroethane[1,1,1-]	73-01005	AAC4136	5.22	Soil gas	402
Trichloroethene	73-01005	AAC4136	1.78	Soil gas	402
Trichlorofluoromethane	73-01005	AAC4136	50.5	Soil gas	402
Chlorodifluoromethane	73-01006	AAC4137	2.68	Soil gas	324
Chloroform	73-01006	AAC4137	1.46	Soil gas	324
Chloromethane	73-01006	AAC4137	4.24	Soil gas	324
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01006	AAC4137	2.16	Soil gas	324
Dichlorodifluoromethane	73-01006	AAC4137	45.8	Soil gas	324
Methylene Chloride	73-01006	AAC4137	1.06	Soil gas	324
Tetrachloroethene	73-01006	AAC4137	32.8	Soil gas	324

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TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Toluene	73-01006	AAC4137	4.04	Soil gas	324
Trichloroethane[1,1,1-]	73-01006	AAC4137	2.86	Soil gas	324
Trichloroethene	73-01006	AAC4137	14.3	Soil gas	324
Trichlorofluoromethane	73-01006	AAC4137	8.2	Soil gas	324
Chlorodifluoromethane	73-01007	AAC4138	22.3	Soil gas	1200
Chloromethane	73-01007	AAC4138	3.94	Soil gas	1200
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	AAC4138	31.8	Soil gas	1200
Dichlorodifluoromethane	73-01007	AAC4138	307	Soil gas	1200
Dichloroethene[<i>cis</i> -1,2-]	73-01007	AAC4138	1.44	Soil gas	1200
Dichloropropane[1,2-]	73-01007	AAC4138	1.32	Soil gas	1200
Tetrachloroethene	73-01007	AAC4138	73.3	Soil gas	1200
Trichloroethene	73-01007	AAC4138	2.26	Soil gas	1200
Trichlorofluoromethane	73-01007	AAC4138	7.1	Soil gas	1200
Benzene	73-01007	AAC4139	101	Soil gas	336
Chlorobenzene	73-01007	AAC4139	28.2	Soil gas	336
Chlorodifluoromethane	73-01007	AAC4139	612	Soil gas	336
Chloroethane	73-01007	AAC4139	31.2	Soil gas	336
Chloromethane	73-01007	AAC4139	69	Soil gas	336
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	AAC4139	71.6	Soil gas	336
Dichlorobenzene[1,4-]	73-01007	AAC4139	187	Soil gas	336
Dichlorodifluoromethane	73-01007	AAC4139	481	Soil gas	336
Dichloroethane[1,2-]	73-01007	AAC4139	16.6	Soil gas	336
Dichloroethene[1,1-]	73-01007	AAC4139	25.2	Soil gas	336
Dichloroethene[<i>cis</i> -1,2-]	73-01007	AAC4139	4470	Soil gas	336
Dichloroethene[<i>trans</i> -1,2-]	73-01007	AAC4139	51.6	Soil gas	336
Dichloropropane[1,2-]	73-01007	AAC4139	25.8	Soil gas	336
Ethylbenzene	73-01007	AAC4139	302	Soil gas	336
Methylene Chloride	73-01007	AAC4139	79	Soil gas	336
Styrene	73-01007	AAC4139	14.2	Soil gas	336
Tetrachloroethene	73-01007	AAC4139	119	Soil gas	336
Toluene	73-01007	AAC4139	695	Soil gas	336
Trichloroethene	73-01007	AAC4139	101	Soil gas	336
Trimethylbenzene[1,2,4-]	73-01007	AAC4139	201	Soil gas	336
Trimethylbenzene[1,3,5-]	73-01007	AAC4139	82.2	Soil gas	336
Vinyl Chloride	73-01007	AAC4139	246	Soil gas	336
Xylene (Total)	73-01007	AAC4139	855	Soil gas	336
Benzene	73-01007	AAC4140	229	Soil gas	192
Benzyl Chloride	73-01007	AAC4140	50.4	Soil gas	192
Chlorobenzene	73-01007	AAC4140	117	Soil gas	192
Chlorodifluoromethane	73-01007	AAC4140	900	Soil gas	192
Chloroethane	73-01007	AAC4140	75.4	Soil gas	192
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01007	AAC4140	92.2	Soil gas	192
Dichlorobenzene[1,4-]	73-01007	AAC4140	238	Soil gas	192
Dichlorodifluoromethane	73-01007	AAC4140	474	Soil gas	192
Dichloroethane[1,2-]	73-01007	AAC4140	20.4	Soil gas	192
Dichloroethene[1,1-]	73-01007	AAC4140	35.8	Soil gas	192

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Dichloroethene[<i>cis</i> -1,2-]	73-01007	AAC4140	9080	Soil gas	192
Dichloroethene[<i>trans</i> -1,2-]	73-01007	AAC4140	111	Soil gas	192
Dichloropropane[1,2-]	73-01007	AAC4140	32.6	Soil gas	192
Ethylbenzene	73-01007	AAC4140	826	Soil gas	192
Methylene Chloride	73-01007	AAC4140	135	Soil gas	192
Styrene	73-01007	AAC4140	15.8	Soil gas	192
Tetrachloroethene	73-01007	AAC4140	105	Soil gas	192
Toluene	73-01007	AAC4140	711	Soil gas	192
Trichlorobenzene[1,2,4-]	73-01007	AAC4140	10.6	Soil gas	192
Trichloroethene	73-01007	AAC4140	88.4	Soil gas	192
Trichlorofluoromethane	73-01007	AAC4140	47.4	Soil gas	192
Trimethylbenzene[1,2,4-]	73-01007	AAC4140	467	Soil gas	192
Trimethylbenzene[1,3,5-]	73-01007	AAC4140	193	Soil gas	192
Vinyl Chloride	73-01007	AAC4140	559	Soil gas	192
Xylene (Total)	73-01007	AAC4140	1745	Soil gas	192
Chlorodifluoromethane	73-01008	AAC4141	1.78	Soil gas	1098
Chloromethane	73-01008	AAC4141	3.74	Soil gas	1098
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01008	AAC4141	1.12	Soil gas	1098
Dichlorodifluoromethane	73-01008	AAC4141	15.4	Soil gas	1098
Methylene Chloride	73-01008	AAC4141	1.36	Soil gas	1098
Tetrachloroethene	73-01008	AAC4141	4	Soil gas	1098
Chloromethane	73-01008	AAC4142	3.62	Soil gas	522
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01008	AAC4142	3.28	Soil gas	522
Dichlorodifluoromethane	73-01008	AAC4142	24	Soil gas	522
Tetrachloroethene	73-01008	AAC4142	7.92	Soil gas	522
Chlorodifluoromethane	73-01008	AAC4143	4.36	Soil gas	186
Chloromethane	73-01008	AAC4143	3.62	Soil gas	186
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01008	AAC4143	7.96	Soil gas	186
Dichlorodifluoromethane	73-01008	AAC4143	29.7	Soil gas	186
Tetrachloroethene	73-01008	AAC4143	5.76	Soil gas	186
Chlorodifluoromethane	73-01009	AAC4144	58	Soil gas	492
Chloroform	73-01009	AAC4144	4.46	Soil gas	492
Chloromethane	73-01009	AAC4144	4.28	Soil gas	492
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01009	AAC4144	38	Soil gas	492
Dichlorodifluoromethane	73-01009	AAC4144	287	Soil gas	492
Dichloroethane[1,1-]	73-01009	AAC4144	6.2	Soil gas	492
Dichloroethene[<i>cis</i> -1,2-]	73-01009	AAC4144	1.06	Soil gas	492
Tetrachloroethene	73-01009	AAC4144	157	Soil gas	492
Trichloroethane[1,1,1-]	73-01009	AAC4144	9.68	Soil gas	492
Trichloroethene	73-01009	AAC4144	34.5	Soil gas	492
Trichlorofluoromethane	73-01009	AAC4144	25.2	Soil gas	492
Chlorodifluoromethane	73-01009	AAC4145	13.2	Soil gas	133.8
Chloromethane	73-01009	AAC4145	4.34	Soil gas	133.8
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01009	AAC4145	21.4	Soil gas	133.8

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Dichlorodifluoromethane	73-01009	AAC4145	193	Soil gas	133.8
Tetrachloroethene	73-01009	AAC4145	180	Soil gas	133.8
Trichloroethane(1,1,1-)	73-01009	AAC4145	2.12	Soil gas	133.8
Trichloroethene	73-01009	AAC4145	5.4	Soil gas	133.8
Trichlorofluoromethane	73-01009	AAC4145	10.6	Soil gas	133.8
Chlorodifluoromethane	73-01010	AAC4146	51.2	Soil gas	1740
Chloroform	73-01010	AAC4146	2.94	Soil gas	1740
Chloromethane	73-01010	AAC4146	3.8	Soil gas	1740
Dichloro-1,1,2,2- tetrafluoroethane(1,2-)	73-01010	AAC4146	20.6	Soil gas	1740
Dichlorodifluoromethane	73-01010	AAC4146	221	Soil gas	1740
Dichloroethane(1,1-)	73-01010	AAC4146	1.48	Soil gas	1740
Tetrachloroethene	73-01010	AAC4146	119	Soil gas	1740
Trichloro-1,2,2- trifluoroethane(1,1,2-)	73-01010	AAC4146	1.3	Soil gas	1740
Trichloroethane(1,1,1-)	73-01010	AAC4146	3.14	Soil gas	1740
Trichloroethene	73-01010	AAC4146	7.82	Soil gas	1740
Trichlorofluoromethane	73-01010	AAC4146	18.7	Soil gas	1740
Chlorodifluoromethane	73-01010	AAC4147	13.1	Soil gas	1740
Chloroform	73-01010	AAC4147	3.24	Soil gas	1740
Chloromethane	73-01010	AAC4147	3.74	Soil gas	1740
Dichloro-1,1,2,2- tetrafluoroethane(1,2-)	73-01010	AAC4147	16.7	Soil gas	1740
Dichlorodifluoromethane	73-01010	AAC4147	197	Soil gas	1740
Tetrachloroethene	73-01010	AAC4147	71.6	Soil gas	1740
Trichloroethane(1,1,1-)	73-01010	AAC4147	1.66	Soil gas	1740
Trichlorofluoromethane	73-01010	AAC4147	9.54	Soil gas	1740
Chlorodifluoromethane	73-01010	AAC4148	2.54	Soil gas	732
Chloromethane	73-01010	AAC4148	3.62	Soil gas	732
Dichloro-1,1,2,2- tetrafluoroethane(1,2-)	73-01010	AAC4148	5.48	Soil gas	732
Dichlorodifluoromethane	73-01010	AAC4148	55.1	Soil gas	732
Tetrachloroethene	73-01010	AAC4148	14.3	Soil gas	732
Trichlorofluoromethane	73-01010	AAC4148	1.66	Soil gas	732
Chloromethane	73-01010	AAC4149	50	Soil gas	264
Dichloro-1,1,2,2- tetrafluoroethane(1,2-)	73-01010	AAC4149	95	Soil gas	264
Dichlorodifluoromethane	73-01010	AAC4149	173	Soil gas	264
Methylene Chloride	73-01010	AAC4149	34.4	Soil gas	264
Tetrachloroethene	73-01010	AAC4149	26	Soil gas	264
Xylene (Total)	73-01010	AAC4149	11.6	Soil gas	264
Chlorodifluoromethane	73-01010	AAC4150	9.9	Soil gas	90
Chloromethane	73-01010	AAC4150	19.4	Soil gas	90
Dichloro-1,1,2,2- tetrafluoroethane(1,2-)	73-01010	AAC4150	84.6	Soil gas	90
Dichlorodifluoromethane	73-01010	AAC4150	197	Soil gas	90
Dichloroethene(cis-1,2-)	73-01010	AAC4150	15.2	Soil gas	90
Methylene Chloride	73-01010	AAC4150	7.5	Soil gas	90
Tetrachloroethene	73-01010	AAC4150	20.5	Soil gas	90

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (In)
Xylene (Total)	73-01010	AAC4150	12.3	Soil gas	90
Benzene	73-01011	AAC4151	1.9	Soil gas	2136
Carbon Tetrachloride	73-01011	AAC4151	1.06	Soil gas	2136
Chloroform	73-01011	AAC4151	4.36	Soil gas	2136
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	AAC4151	77.2	Soil gas	2136
Dichlorobenzene[1,4-]	73-01011	AAC4151	2.94	Soil gas	2136
Dichlorodifluoromethane	73-01011	AAC4151	124	Soil gas	2136
Dichloroethane[1,1-]	73-01011	AAC4151	6.1	Soil gas	2136
Dichloroethene[cis-1,2-]	73-01011	AAC4151	107	Soil gas	2136
Dichloroethene[trans-1,2-]	73-01011	AAC4151	2.44	Soil gas	2136
Methylene Chloride	73-01011	AAC4151	1.06	Soil gas	2136
Tetrachloroethene	73-01011	AAC4151	93.5	Soil gas	2136
Toluene	73-01011	AAC4151	15.2	Soil gas	2136
Trichloro-1,1,2,2- trifluoroethane[1,1,2-]	73-01011	AAC4151	4.52	Soil gas	2136
Trichlorobenzene[1,2,4-]	73-01011	AAC4151	22.1	Soil gas	2136
Trichloroethane[1,1,1-]	73-01011	AAC4151	8.38	Soil gas	2136
Trichloroethene	73-01011	AAC4151	15.4	Soil gas	2136
Trichlorofluoromethane	73-01011	AAC4151	68.3	Soil gas	2136
Benzene	73-01011	AAC4152	23.2	Soil gas	1500
Chlorodifluoromethane	73-01011	AAC4152	33100	Soil gas	1500
Chloroethane	73-01011	AAC4152	14.2	Soil gas	1500
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	AAC4152	104	Soil gas	1500
Dichlorobenzene[1,4-]	73-01011	AAC4152	19	Soil gas	1500
Dichlorodifluoromethane	73-01011	AAC4152	1120	Soil gas	1500
Dichloroethene[cis-1,2-]	73-01011	AAC4152	1940	Soil gas	1500
Dichloroethene[trans-1,2-]	73-01011	AAC4152	17.8	Soil gas	1500
Methylene Chloride	73-01011	AAC4152	21	Soil gas	1500
Tetrachloroethene	73-01011	AAC4152	237	Soil gas	1500
Toluene	73-01011	AAC4152	49.8	Soil gas	1500
Trichloroethene	73-01011	AAC4152	27.8	Soil gas	1500
Trichlorofluoromethane	73-01011	AAC4152	37	Soil gas	1500
Vinyl Chloride	73-01011	AAC4152	75.2	Soil gas	1500
Xylene (Total)	73-01011	AAC4152	13.8	Soil gas	1500
Benzene	73-01011	AAC4154	200	Soil gas	348
Chlorobenzene	73-01011	AAC4154	38.2	Soil gas	348
Chlorodifluoromethane	73-01011	AAC4154	5230	Soil gas	348
Chloroethane	73-01011	AAC4154	109	Soil gas	348
Chloromethane	73-01011	AAC4154	102	Soil gas	348
Dichloro-1,1,2,2- tetrafluoroethane[1,2-]	73-01011	AAC4154	125	Soil gas	348
Dichlorobenzene[1,4-]	73-01011	AAC4154	158	Soil gas	348
Dichlorodifluoromethane	73-01011	AAC4154	769	Soil gas	348
Dichloroethane[1,2-]	73-01011	AAC4154	13.6	Soil gas	348
Dichloroethene[1,1-]	73-01011	AAC4154	83	Soil gas	348
Dichloroethene[cis-1,2-]	73-01011	AAC4154	23600	Soil gas	348
Dichloroethene[trans-1,2-]	73-01011	AAC4154	351	Soil gas	348

TABLE 2.3.4.3-26

Analyte	Location_ID	Sample_ID	Sample Concentration (PPBV unless otherwise indicated)	Media	Depth (in)
Ethylbenzene	73-01011	AAC4154	21.2	Soil gas	348
Methylene Chloride	73-01011	AAC4154	80.8	Soil gas	348
Tetrachloroethene	73-01011	AAC4154	73.2	Soil gas	348
Toluene	73-01011	AAC4154	98.6	Soil gas	348
Trichloroethene	73-01011	AAC4154	69	Soil gas	348
Trimethylbenzene[1,2,4-]	73-01011	AAC4154	41.4	Soil gas	348
Vinyl Chloride	73-01011	AAC4154	1750	Soil gas	348
Xylene (Total)	73-01011	AAC4154	63.8	Soil gas	348
Chlorodifluoromethane	73-01010	AAC4168	10	Soil gas	264
Chloromethane	73-01010	AAC4168	37.4	Soil gas	264
Dichloro-1,1,2,2-tetrafluoroethane[1,2-]	73-01010	AAC4168	88.2	Soil gas	264
Dichlorodifluoromethane	73-01010	AAC4168	214	Soil gas	264
Dichloroethene[cis-1,2-]	73-01010	AAC4168	32.8	Soil gas	264
Tetrachloroethene	73-01010	AAC4168	24.4	Soil gas	264
Xylene (Total)	73-01010	AAC4168	17.2	Soil gas	264
Benzene	73-01004	AAC4171	38.8	Soil gas	556.2
Chlorodifluoromethane	73-01004	AAC4171	1520	Soil gas	556.2
Chloroethane	73-01004	AAC4171	20.2	Soil gas	556.2
Chloromethane	73-01004	AAC4171	58.8	Soil gas	556.2
Dichlorobenzene[1,4-]	73-01004	AAC4171	34.2	Soil gas	556.2
Dichlorodifluoromethane	73-01004	AAC4171	263	Soil gas	556.2
Dichloroethene[1,1-]	73-01004	AAC4171	14.2	Soil gas	556.2
Dichloroethene[cis-1,2-]	73-01004	AAC4171	1620	Soil gas	556.2
Dichloroethene[trans-1,2-]	73-01004	AAC4171	33.4	Soil gas	556.2
Methylene Chloride	73-01004	AAC4171	31.6	Soil gas	556.2
Tetrachloroethene	73-01004	AAC4171	40	Soil gas	556.2
Toluene	73-01004	AAC4171	48.8	Soil gas	556.2
Trichloroethene	73-01004	AAC4171	12.2	Soil gas	556.2
Trimethylbenzene[1,2,4-]	73-01004	AAC4171	15	Soil gas	556.2
Vinyl Chloride	73-01004	AAC4171	182	Soil gas	556.2
Xylene (Total)	73-01004	AAC4171	28.6	Soil gas	556.2

a Units are in PPM

11/20/98 • 10:00 AM • 1000

ATTACHMENT 2: LANL ER-AP 4.5

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LANL-ER-AP-4.5
Part A

1. PRS Number: 73-001(a)

2. Date (M/D/Y): 11/17/97

Time (am/pm): 11:45:00 AM

3. ER Point of Contact Carl Newton

4. FIMU/Responsible Party Contact Ed Hoth

5. HSWA Yes

6. Site Ranking System (SRS) #46

Per the approved OU 1071 RFI work plan, DOE, and more recently Los Alamos County, operated a burning area/landfill (also known as the city dump) situated north of the airport runway. Laboratory use of the disposal area probably began in 1943, and Los Alamos County probably assumed operations for municipal waste disposal in 1965. The county operated the landfill from 1965 until June 30, 1973. Garbage was burned on the edge of a deep canyon located adjacent to the municipal airport. Intentional burning at the landfill ceased in 1965.

No current operations. The area is the site of a field that serves as a safety zone north of the airport runway.

9. Action/Status to Date (check all that apply)

☐ None	Date Completed or Anticipated
☒ Field Investigation ☒ Phase I ☐ Phase II	<input type="text"/> 09/15/98
☐ Interim Measures ☐ IM ☐ BMP	IM: <input type="text"/>
	BMPs: <input type="text"/>
☐ VCA ☐ VCM	<input type="text"/>
☒ Other ☒ Monitoring ☐ CMS	09/15/98
☐ Report Status ☐ SAP ☐ RFI Report SAP: <input type="text"/>	RFI RPTs: <input type="text"/>
SAP INFO: <input type="text"/>	<input type="text"/>
<hr/>	
☐ NFA/DOU If checked, supply HH NFA criteria number and date:	<input type="text"/> <input type="text"/>

10. Have surface/sediment (depth less than 12 inches) samples been collected that reflect current site conditions?

If yes: 1) Attach data

2) Include analyte name, value, units, location ID, sample ID, SAL, depth, and media (soil, tuff, etc.)

3) Please attach existing map, showing where samples were taken, if available.

☐ Yes ☒ No 11. Have surface water samples been collected that reflect current site conditions?

If yes: 1) Attach data

2) Include analyte name, value, units, location ID, filtered/non-filtered, & flow data, if available.

3) Please attach existing map, showing where samples were taken, if available.

☐ Yes ☒ No 12. Are data pending?

If yes: 1) List date data are anticipated:

2) Provide list of COPCs identified in RFI Work Plan as an attachment.

13. Signature of ER Representative

2.1 M-1

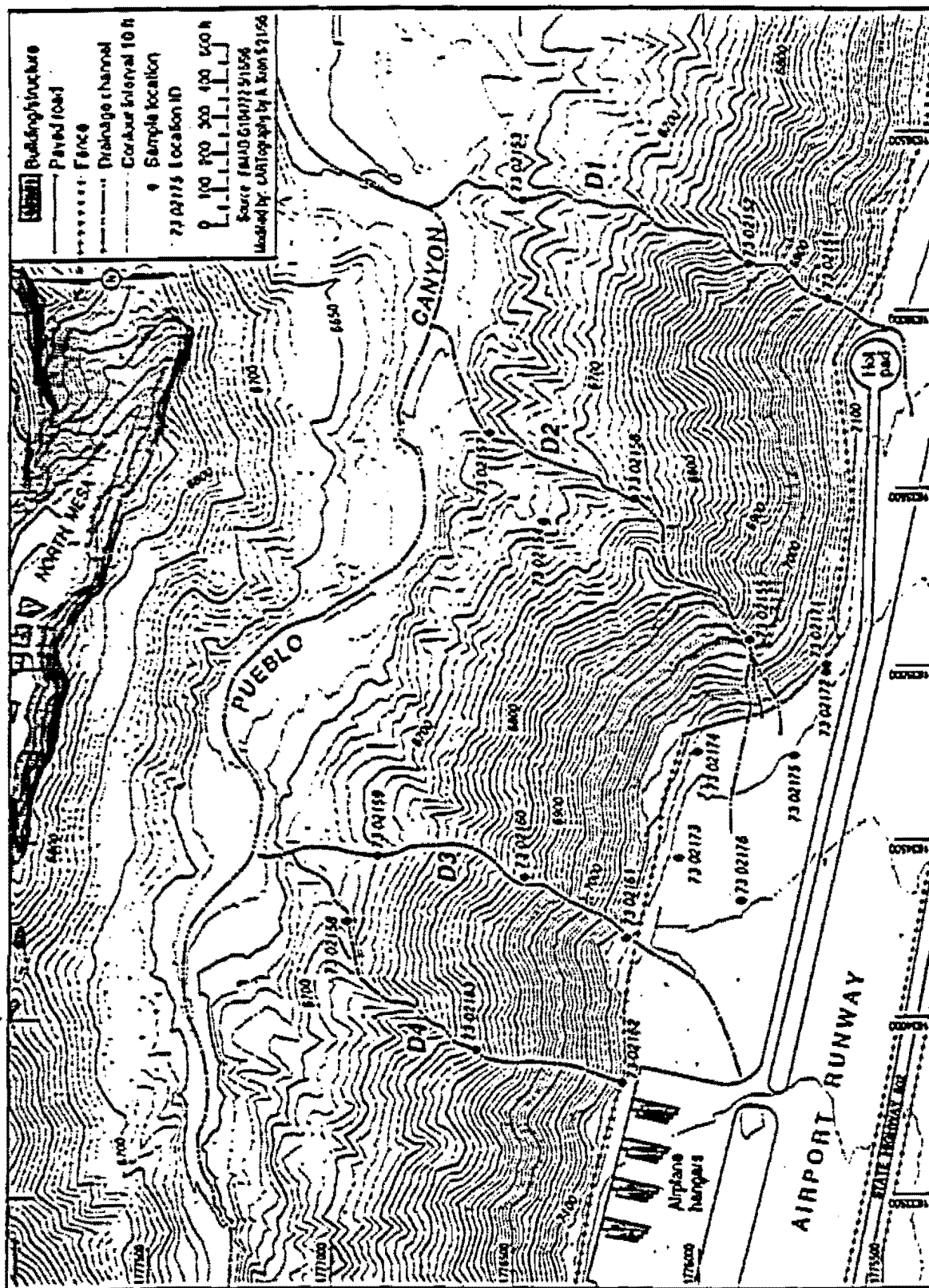


Figure 1. SWMU 73-001(e) Phase I RFI surface soil and channel sediment sampling locations and main drainage channels.

FRB	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Aroclor-1260	55		UQ/KG			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Actinium-228	0.957	0.93	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Annihilation Radiation	0.052	0.0305	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Bismuth-211	2.28	0.186	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Bismuth-212	1.42	0.45	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Bismuth-214	0.677	0.065	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Cadmium-109	1.72	0.471	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Cobalt-60	0.0063	0.0208	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Cesium-137	0.0027	0.017	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Neptunium-237	0.5	0.137	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Protactinium-231	1.07	0.377	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Protactinium-234M	5.55	2.89	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Lead-212	0.998	0.0577	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Lead-214	0.783	0.054	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Plutonium-238	0.052	0.0075	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Plutonium-239	0.004	0.0015	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Plutonium-239 + -240	0.0608	0.008	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Radium-224	2.82	0.477	PC/G			
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Radium-226	2.05	0.495	PC/G			

ITG	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Radon-219	0.0228	0.144	PCUG			
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Selenium-75	0.016	0.0127	PCUG			
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Strontium-90	0.0204	0.153	PCUG			
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Thallium-208	0.347	0.0325	PCUG			
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Yttrium-88	0.049	0.0175	PCUG			
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Zinc-65	0.0499	0.0425	PCUG			
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Aluminum	2630		MG/KG		38700	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Aluminum	3060		MG/KG		38700	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Arsenic	1.1		MG/KG	B	7.82	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Arsenic	1.6		MG/KG	B	7.82	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Barium	32.1		MG/KG	B	315	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Barium	42.4		MG/KG	B	315	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Beryllium	0.37		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Beryllium	0.45		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Calcium	1570		MG/KG		6120	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Calcium	2040		MG/KG		6120	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Cadmium	6.6		MG/KG		2.6	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Cobalt	1.6		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Cobalt	1.8		MG/KG	B	19.2	MG/KG

FFS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Chromium, Total	3.1		MG/KG		19.3	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Chromium, Total	3.6		MG/KG		19.3	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Copper	4.8		MG/KG	B	15.5	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Copper	5.9		MG/KG		15.5	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Iron	4100		MG/KG		21300	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Iron	4680		MG/KG		21300	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Potassium	520		MG/KG	B	3410	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Potassium-40	24.2	1.14	PCIB		28.6	PCIB
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Magnesium	649		MG/KG	B	4610	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Magnesium	781		MG/KG	B	4610	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Manganese	167		MG/KG		714	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Sodium	66.9		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Sodium	73.9		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Lead	13.8		MG/KG		23.3	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Uranium	1.75	0.12	UG/G		1.87	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Uranium	1.82	0.125	UG/G		1.87	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Vanadium	5.8		MG/KG	B	41.9	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Vanadium	6.9		MG/KG	B	41.9	MG/KG
73-001(a)	0173-96-0101	73-02151	0	8	SOIL	Zinc	27.2		MG/KG		50.8	MG/KG

FFS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-98-0101	73-02151	0	8	SOIL	Zinc	31.8		MG/KG		50.8	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Actinium-228	1.66	0.105	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Americium-241	0.0946	0.0675	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Annihilation Radiation	0.0933	0.0355	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Barium-140	0.0565	0.0879	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Bismuth-211	3.81	0.242	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Bismuth-212	0.114	0.575	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Bismuth-214	1.39	0.0859	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Cadmium-109	1.73	0.585	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Cerium-139	0.0124	0.0105	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Cerium-144	0.103	0.0735	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Cobalt-60	0.0112	0.0226	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Cesium-137	0.0146	0.0185	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Sodium-22	0.0445	0.0195	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Neptunium-237	0.503	0.17	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Protactinium-231	1.74	0.439	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Protactinium-234M	8.56	4.21	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Lead-211	0.522	0.386	PCIG			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Lead-212	1.45	0.0745	PCIG			

FFS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Lead-214	1.42	0.0742	PC10			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Radium-224	4.13	0.521	PC10			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Radium-226	2.24	0.621	PC10			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Thallium-208	0.52	0.042	PC10			
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Aluminum	1340		MG/KG		38700	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Arsenic	0.95		MG/KG	D	7.82	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Barium	11.5		MG/KG	D	315	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Beryllium	0.45		MG/KG	D	1.95	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Calcium	942		MG/KG	D	6120	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Copper	2.5		MG/KG	D	15.5	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Iron	4040		MG/KG		21300	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Potassium-40	28.4	1.22	PC10		28.6	PC10
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Magnesium	254		MG/KG	D	4610	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Manganese	227		MG/KG		714	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Sodium	138		MG/KG	D	915	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Uranium	4.67	0.31	U10		1.87	MG/KG
73-001(a)	0173-96-0102	73-02152	0	10	SOIL	Zinc	27.7		MG/KG		60.8	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Actinium-228	1.03	0.0829	PC10			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Annihilation Radiation	0.288	0.0253	PC10			

FFB	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Bismuth-211	3.14	0.183	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Bismuth-214	0.863	0.0579	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Cadmium-109	1.84	0.321	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Cobalt-57	0.0025	0.0072	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Cesium-137	0.0154	0.0138	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Europium-152	0.0347	0.0325	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Mercury-203	0.0079	0.013	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Protactinium-231	1.5	0.376	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Protactinium-233	0.016	0.0205	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Protactinium-234M	1.92	2.44	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Lead-210	1.14	1.45	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Lead-211	0.442	0.308	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Lead-212	1.13	0.0553	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Lead-214	1.05	0.0552	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Plutonium-239	0.027	0.005	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Radium-223	0.151	0.214	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Radium-224	3.09	0.4375	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Radium-226	2.09	0.394	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Radon-219	0.0258	0.144	PCUG			

FFB	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Ruthenium-106	0.104	0.114	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Thorium-234	0.058	0.402	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Thallium-208	0.393	0.0305	PCUG			
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Aluminum	1720		MG/KG		38700	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Arsenic	0.87		MG/KG	B	7.82	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Barium	20.6		MG/KG	B	315	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Beryllium	0.37		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Calcium	868		MG/KG	B	6120	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Chromium, Total	1.4		MG/KG	B	19.3	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Copper	2.7		MG/KG	B	15.5	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Iron	3400		MG/KG		21300	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Potassium-40	25.8	1.06	PCUG		28.6	PCUG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Magnesium	386		MG/KG	B	4610	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Manganese	144		MG/KG		714	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Sodium	83.9		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Uranium	2.12	0.145	UG/G		1.87	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Vanadium	2.5		MG/KG	B	41.9	MG/KG
73-001(a)	0173-96-0103	73-02153	0	8	SOIL	Zinc	20.3		MG/KG		50.8	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Fluoranthene	43		UG/KG	J		

FFB	Sample ID	Location ID	Depth Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Actinium-228	1.71	0.106	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Annihilation Radiation	0.341	0.0298	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Barium-140	0.119	0.0875	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Bismuth-211	4.51	0.247	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Bismuth-212	0.204	0.635	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Bismuth-214	1.39	0.0815	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Cadmium-109	1.76	0.366	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Cerium-144	0.062	0.0735	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Cobalt-60	0.0178	0.0209	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Cesium-134	0.0209	0.0139	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Cesium-137	0.0793	0.0322	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Mercury-203	0.0178	0.0143	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Manganese-54	0.013	0.0175	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Sodium-22	0.024	0.0185	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Neptunium-237	0.724	0.163	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Protactinium-231	2.14	0.469	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Protactinium-233	0.0016	0.0222	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Protactinium-234M	1.8	3.12	PCVG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Lead-210	1.3	1.27	PCVG			

IFS	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Lead-212	1.81	0.0805	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Lead-214	1.54	0.0745	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Plutonium-239	0.011	0.003	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Radium-223	0.0281	0.241	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Radium-224	3.73	0.474	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Radium-226	4.1	0.52	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Radon-219	0.183	0.177	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Ruthenium-106	0.0211	0.131	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Selenium-75	0.0104	0.0156	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Tin-113	0.0109	0.017	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Thallium-208	0.548	0.0379	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Yttrium-88	0.038	0.0175	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Zinc-65	0.0362	0.0391	PCIG			
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Aluminum	3480		MG/KG		38700	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Arsenic	0.99		MG/KG	B	7.82	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Barium	29.5		MG/KG	B	315	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Beryllium	0.72		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Calcium	1120		MG/KG	B	6120	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Chromium, Total	2.3		MG/KG		19.3	MG/KG

FRS	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Copper	4.1		MG/KG	B	15.5	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Iron	5750		MG/KG		21300	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Potassium	723		MG/KG	B	3410	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Potassium-40	29.8	1.25	PC/KG		28.6	PC/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Magnesium	868		MG/KG	B	4610	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Manganese	203		MG/KG		714	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Sodium	108		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Uranium	4.1	0.275	UG/KG		1.87	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Vanadium	4.8		MG/KG	B	41.9	MG/KG
73-001(a)	0173-96-0104	73-02154	0	10	SOIL	Zinc	33.6		MG/KG		50.8	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Anthracene	94		UG/KG	J		
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Pyrene	460		UG/KG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Benzo(g,h,i)perylene	260		UG/KG	J		
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Indeno(1,2,3-cd)pyrene	210		UG/KG	J		
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Benzo(b)fluoranthene	230		UG/KG	J		
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Fluoranthene	570		UG/KG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Benzo(k)fluoranthene	250		UG/KG	J		
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Chrysene	310		UG/KG	J		
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	DDT[4,4'-I	9.3		UG/KG			

RTS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Benzo(a)pyrene	310		UGKO	J		
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Benzo(a)anthracene	260		UGKO	J		
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Acenaphthene	43		UGKO	J		
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Phenanthrene	380		UGKO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Fluorene	47		UGKO	J		
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Actinium-228	1.72	0.0871	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Annihilation Radiation	0.0663	0.0255	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Barium-140	0.0297	0.0585	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Bismuth-211	4.26	0.2	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Bismuth-212	1.12	0.398	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Bismuth-214	1.38	0.0672	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Cadmium-109	1.92	0.341	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Cesium-134	0.0023	0.0112	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Cesium-137	0.099	0.0195	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Manganese-54	0.001	0.0116	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Sodium-22	0.0291	0.0116	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Neptunium-237	0.557	0.0991	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Protactinium-231	2.05	0.34	PCIO			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Protactinium-233	0.0123	0.0165	PCIO			

FRS	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Protactinium-234M	1.81	2.4	PCVG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Lead-210	0.705	0.059	PCVG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Lead-212	1.75	0.0705	PCVG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Lead-214	1.52	0.0645	PCVG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Plutonium-239	0.043	0.007	PCVG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Radium-223	0.173	0.176	PCVG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Radium-224	5.12	0.426	PCVG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Radium-226	2.87	0.409	PCVG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Radon-219	0.13	0.111	PCVG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Thallium-208	0.549	0.0322	PCVG			
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Aluminum	4550		MG/KG		38700	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Arsenic	2.3		MG/KG	B	7.82	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Barium	52		MG/KG		315	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Beryllium	0.63		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Calcium	2210		MG/KG		6120	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Cobalt	2.6		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Chromium, Total	4.1		MG/KG		19.3	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Copper	8.5		MG/KG	B	15.5	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Iron	7860		MG/KG		21300	MG/KG

IFS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Mercury	0.06		MG/KG	B	0.1	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Potassium	587		MG/KG	B	3410	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Potassium-40	31	1.13	PC/KG		28.6	PC/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Magnesium	820		MG/KG	B	4610	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Manganese	298		MG/KG	*	714	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Sodium	123		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Nickel	4		MG/KG	B	15.2	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Uranium	3.62	0.245	UG/G		1.87	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Vanadium	6.1		MG/KG	B	41.9	MG/KG
73-001(a)	0173-96-0107	73-02156	0	10	SOIL	Zinc	53.7		MG/KG		50.6	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Anthracene	89		UG/KG	J		
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Pyrene	560		UG/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Benzo(g,h,i)perylene	250		UG/KG	J		
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Indeno(1,2,3-cd)pyrene	210		UG/KG	J		
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Benzo(b)fluoranthene	310		UG/KG	J		
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Fluoranthene	580		UG/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Benzo(k)fluoranthene	280		UG/KG	J		
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Chrysene	340		UG/KG	J		
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	OPIT(4,4')	19		UG/KG			

FFB	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Benzo(a)pyrene	370		UG/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Dibenz(a,h)anthracene	100		UG/KG	J		
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Benzo(a)anthracene	300		UG/KG	J		
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	DDE[4,4']	9.6		UG/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Acenaphthene	44		UG/KG	J		
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Phenanthrene	350		UG/KG	J		
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Actinium-228	0.897	0.0845	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Actinium-228	1.23	0.0868	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Annihilation Radiation	0.0628	0.0273	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Bismuth-211	2.24	0.179	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Bismuth-211	2.25	0.175	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Bismuth-212	0.862	0.541	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Bismuth-212	1.19	0.588	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Bismuth-214	0.694	0.062	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Bismuth-214	0.855	0.0611	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Cadmium-109	1.58	0.313	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Cadmium-109	1.66	0.32	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Cobalt-57	0.0079	0.0075	PC/KG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Cobalt-60	0.0017	0.0195	PC/KG			

FIS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Cesium-137	0.0059	0.0149	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Cesium-137	0.0308	0.0155	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Europium-152	0.004	0.0314	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Mercury-203	0.001	0.0109	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Mercury-203	0.0032	0.011	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Lanthanum-140	0.277	1.95	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Manganese-54	0.0038	0.0143	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Sodium-22	0.0042	0.018	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Protactinium-231	0.882	0.33	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Protactinium-231	1.16	0.341	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Protactinium-233	0.0146	0.018	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Protactinium-234M	3.91	2.53	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Protactinium-234M	4.01	2.61	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Lead-211	0.254	0.293	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Lead-211	0.613	0.314	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Lead-212	1.01	0.0531	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Lead-212	1.04	0.055	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Lead-214	0.823	0.053	PCIG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Lead-214	0.84	0.0518	PCIG			

FTB	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Plutonium-239	0.002	0.001	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Radium-223	0.0501	0.207	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Radium-223	0.14	0.203	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Radium-224	2.66	0.423	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Radium-224	2.76	0.425	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Radium-226	1.28	0.413	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Radium-226	1.68	0.429	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Ruthenium-106	0.0099	0.114	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Selenium-75	0.0033	0.012	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Selenium-75	0.011	0.012	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Tin-113	0.0083	0.014	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Thallium-208	0.342	0.0302	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Thallium-208	0.348	0.033	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Yttrium-88	0.0232	0.0165	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Zinc-65	0.062	0.0389	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Zinc-65	0.0622	0.0391	PCUG			
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Aluminum	1680		MG/KG		38700	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Arsenic	1.8		MG/KG	B	7.82	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Barium	21.3		MG/KG	B	315	MG/KG

FFS	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Beryllium	0.38		MG/KG	D	1.95	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Calcium	2190		MG/KG		6120	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Chromium, Total	1.8		MG/KG	D	19.3	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Copper	5.6		MG/KG	D	15.5	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Iron	4790		MG/KG		21300	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Mercury	0.08		MG/KG	D	0.1	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Potassium-40	27.2	1.17	PCIU		28.6	PCIU
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Potassium-40	28	1.22	PCIU		28.6	PCIU
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Magnesium	450		MG/KG	D	4610	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Manganese	178		MG/KG	*	714	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Sodium	70.6		MG/KG	D	915	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Uranium	1.74	0.115	U/KG		1.87	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Vanadium	3.5		MG/KG	D	41.9	MG/KG
73-001(a)	0173-96-0108	73-02157	3	10	SOIL	Zinc	46.1		MG/KG		50.8	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Anthracene	940		U/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Pyrene	2700		U/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Dibenzofuran	290		U/KG	J		
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Benzo(a,h)pyrene	920		U/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Indeno(1,2,3-cd)pyrene	850		U/KG			

FFB	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Benzo(b)fluoranthene	1400		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Fluoranthene	3800		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Benzo(k)fluoranthene	1400		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Chrysene	1800		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	DDT(4,4')	38		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Benzo(a)pyrene	1400		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Chlordane(gamma-)	4.4		UG/KG	P		
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Dibenz(a,h)anthracene	240		UG/KG	J		
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Benzo(a)anthracene	1600		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Acenaphthene	640		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Phenanthrene	3000		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Fluorene	520		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Naphthalene	430		UG/KG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Methylnaphthalene(2-)	85		UG/KG	J		
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Actinium-228	1.03	0.072	PC/G			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Americium-241	0.022	0.0775	PC/G			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Annihilation Radiation	0.047	0.0235	PC/G			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Barium-140	0.028	0.0555	PC/G			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Bismuth-211	2.65	0.164	PC/G			

FRB	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Bismuth-212	0.654	0.324	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Bismuth-214	0.809	0.052	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Cadmium-103	1.38	0.417	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Cerium-139	0.001	0.007	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Cerium-144	0.011	0.052	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Cobalt-57	0.001	0.007	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Cobalt-60	0.01	0.014	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Cesium-134	0.008	0.09	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Cesium-137	0.022	0.01	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Mercury-203	0.05	0.0195	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Manganese 54	0.002	0.011	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Neptunium-237	0.401	0.121	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Protactinium-231	1.01	0.299	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Protactinium-234M	2.19	1.765	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Lead-210	8.71	1.6	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Lead-211	0.26	0.253	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Lead-212	1.06	0.051	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Lead-214	0.919	0.0485	PCIG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Plutonium-238	0.014	0.002	PCIG			

FFB	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Plutonium-239	0.171	0.019	PCUG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Radium-224	2.6	0.3485	PCUG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Radium-226	2.17	0.3585	PCUG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Thallium-208	0.371	0.0275	PCUG			
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Aluminum	4330		MG/KG		38700	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Arsenic	1.7		MG/KG	B	7.82	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Barium	74.2		MG/KG		315	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Beryllium	0.46		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Calcium	2240		MG/KG		6120	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Cadmium	0.5		MG/KG	B*	2.6	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Cobalt	2.6		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Chromium, Total	4.5		MG/KG		19.3	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Copper	5.5		MG/KG	B	15.5	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Iron	7170		MG/KG		21300	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Mercury	0.06		MG/KG	B	0.1	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Potassium	492		MG/KG	B	3410	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Potassium-40	22.3	0.91	PCUG		28.6	PCUG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Magnesium	1060		MG/KG		4610	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Manganese	225		MG/KG	*	714	MG/KG

FRS	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Sodium	134		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Nickel	4.8		MG/KG	B	15.2	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Uranium	4.6	0.31	UG/G		1.87	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Vanadium	15.8		MG/KG		41.9	MG/KG
73-001(a)	0173-96-0109	73-02158	0	10	SOIL	Zinc	33.4		MG/KG		50.8	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Bis(2-ethylhexyl)phthalate	370		UG/KG	J		
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Actinium-228	1.74	0.114	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Americium-241	0.0038	0.0718	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Annihilation Radiation	0.105	0.0385	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Bismuth-211	4.03	0.261	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Bismuth-212	0.551	0.661	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Bismuth-214	1.28	0.0903	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Cadmium-109	1.68	0.588	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Cerium-139	0.0168	0.0111	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Cobalt-57	0.0012	0.0105	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Cesium-137	0.0121	0.0201	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Sodium-22	0.0092	0.0165	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Neptunium-237	0.489	0.171	PCI/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Protactinium-231	2.7	0.505	PCI/G			

FF3	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Protactinium-234M	2.6	3.38	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Lead-211	0.272	0.418	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Lead-212	1.75	0.0855	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Lead-214	1.4	0.0765	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Plutonium-238	0.002	0.0005	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Plutonium-239	0.016	0.0045	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Radium-224	4.02	0.579	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Radium-226	3.26	0.569	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Radon-219	0.0831	0.1865	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Selenium-75	0.0113	0.0155	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Thallium-208	0.552	0.0475	PC/G			
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Aluminum	7900		MG/KG		38700	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Arsenic	2.4		MG/KG	B	7.82	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Barium	60.7		MG/KG		315	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Beryllium	1.1		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Calcium	1890		MG/KG		6120	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Cobalt	2.2		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Chromium, Total	5.1		MG/KG		19.3	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Copper	5.9		MG/KG	B	15.5	MG/KG

FFS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Iron	9330		MG/KG		21300	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Potassium	982		MG/KG	B	3410	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Potassium-40	26.4	1.2	PC/KG		28.6	PC/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Magnesium	1430		MG/KG		4610	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Manganese	218		MG/KG		714	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Sodium	101		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Nickel	2.7		MG/KG	B	15.2	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Uranium	3.05	0.41	UG/G		1.87	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Uranium	3.39	0.23	UG/G		1.87	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Vanadium	9.8		MG/KG	B	41.9	MG/KG
73-001(a)	0173-96-0110	73-02159	0	6	SOIL	Zinc	36.5		MG/KG		50.8	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Actinium-228	1.42	0.0948	PC/KG			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Americium-241	0.0501	0.0812	PC/KG			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Annihilation Radiation	0.369	0.0302	PC/KG			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Barium-140	0.133	0.0835	PC/KG			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Bismuth-211	3.64	0.21	PC/KG			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Bismuth-212	1.52	0.452	PC/KG			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Bismuth-214	1.3	0.0742	PC/KG			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Cadmium-109	2.38	0.387	PC/KG			

FFS	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Cesium-137	0.0045	0.0158	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Protactinium-231	2.3	0.47	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Protactinium-234M	3.31	2.69	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Lead-210	1.42	1.69	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Lead-211	0.249	0.326	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Lead-212	1.45	0.0683	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Lead-214	1.3	0.0655	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Plutonium-239 + -240	0.014	0.003	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Radium-224	3.4	0.463	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Radium-226	3.53	0.469	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Ruthenium-106	0.0954	0.136	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Thallium-208	0.614	0.0369	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Yttrium-88	0.0345	0.0175	PC/G			
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Aluminum	2000		MG/KG		38700	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Arsenic	0.88		MG/KG	B	7.82	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Barium	16.2		MG/KG	B	315	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Beryllium	0.42		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Calcium	1020		MG/KG	B	6120	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Chromium, Total	1.5		MG/KG	B	19.3	MG/KG

FRS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Copper	3.4		MG/KG	B	16.5	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Iron	4740		MG/KG		21300	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Potassium-40	28.6	1.17	PC/KG		28.6	PC/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Magnesium	438		MG/KG	B	4610	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Manganese	175		MG/KG		714	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Sodium	91.7		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Uranium	2.75	0.185	UQ/KG		1.87	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Vanadium	2.7		MG/KG	B	41.9	MG/KG
73-001(a)	0173-96-0111	73-02160	0	6	SOIL	Zinc	37.1		MG/KG		50.6	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Actinium-228	1.73	0.107	PC/KG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Americium-241	0.034	0.0725	PC/KG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Annihilation Radiation	0.398	0.0301	PC/KG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Bismuth-211	2.54	0.19	PC/KG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Bismuth-212	1.63	0.68	PC/KG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Bismuth-214	0.834	0.0875	PC/KG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Cadmium-109	2.77	0.486	PC/KG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Cerium-144	0.0123	0.0078	PC/KG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Cobalt-57	0.0059	0.0085	PC/KG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Cobalt-60	0.0141	0.0195	PC/KG			

FFB	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	YTL	Units
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Cesium-134	0.0059	0.0141	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Cesium-137	0.0042	0.0162	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Europlum-152	0.0566	0.0382	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Sodium-22	0.0445	0.0172	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Neptunium-237	1.04	0.1475	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Protactinium-231	2.92	0.465	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Lead-210	0.91	1.22	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Lead-212	1.84	0.0795	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Lead-214	0.938	0.0572	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Plutonium-239 + -240	0.009	0.003	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Radium-224	3.27	0.424	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Radium-226	3.29	0.436	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Ruthenium-106	0.0467	0.125	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Selenium-75	0.0138	0.014	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Thallium-208	0.617	0.0395	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Zinc-65	0.0067	0.0357	PCMG			
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Aluminum	13500		MG/KG		38700	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Arsenic	6		MG/KG		7.62	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Barium	123		MG/KG		315	MG/KG

ITG	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Beryllium	1.9		MG/KG		1.95	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Calcium	4920		MG/KG		6120	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Cobalt	3.9		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Chromium, Total	10.2		MG/KG		19.3	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Copper	14.4		MG/KG		15.5	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Iron	15100		MG/KG		21300	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Mercury	0.09		MG/KG	B	0.1	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Potassium	1090		MG/KG	B	3410	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Potassium-40	19.3	0.905	PC/G		28.6	PC/G
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Magnesium	2990		MG/KG		4610	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Manganese	151		MG/KG		714	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Sodium	81.6		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Nickel	11		MG/KG		15.2	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Selenium	0.47		MG/KG	B	1.7	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Uranium	2.72	0.185	UG/G		1.87	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Vanadium	23.2		MG/KG		41.9	MG/KG
73-001(a)	0173-96-0112	73-02161	0	6	SOIL	Zinc	56.3		MG/KG		50.8	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Pyrene	60		UG/KG	J		
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Fluoranthene	50		UG/KG	J		

FIG	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	DDT(4,4')	3.5		UG/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Benzo(a)anthracene	36		UG/KG	J		
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Actinium-228	1.48	0.09	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Americium-241	0.001	0.016	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Barium-140	0.115	0.0708	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Bismuth-211	3.9	0.2045	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Bismuth-212	1.05	0.66	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Bismuth-214	1.27	0.0735	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Cadmium-109	1.72	0.221	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Cerium-144	0.0101	0.044	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Cobalt-57	0.0018	0.0055	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Cesium-137	0.0495	0.0232	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Manganese-54	0.0113	0.0139	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Neptunium-237	0.82	0.0808	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Protactinium-231	1.27	0.347	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Protactinium-233	0.0452	0.0175	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Protactinium-234M	0.905	2.82	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Lead-210	1.17	0.304	PC/KG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Lead-212	1.42	0.0632	PC/KG			

RES	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Lead-214	1.37	0.0632	PCIG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Plutonium-239 + -240	0.0969	0.0112	PCIG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Radium-224	3.59	0.399	PCIG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Radium-226	2.99	0.408	PCIG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Radon-219	0.137	0.1375	PCIG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Ruthenium-106	0.0256	0.1085	PCIG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Selenium-75	0.0106	0.0112	PCIG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Thorium-234	0.28	0.291	PCIG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Thallium-208	0.454	0.0355	PCIG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Zinc-65	0.001	0.0355	PCIG			
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Aluminum	4550		MG/KG		38700	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Arsenic	2.7		MG/KG		7.82	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Barium	66.1		MG/KG		315	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Beryllium	0.6		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Calcium	1980		MG/KG		6120	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Cobalt	2.9		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Chromium, Total	4.1		MG/KG		19.3	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Copper	9.6		MG/KG	B	15.5	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Iron	7960		MG/KG		21300	MG/KG

FFB	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Potassium	632		MG/KG	B	3410	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Potassium-40	25.2	1.11	PC/G		28.6	PC/G
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Magnesium	1050		MG/KG	B	4810	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Manganese	245		MG/KG		714	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Sodium	134		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Nickel	2.8		MG/KG	B	15.2	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Uranium	4.04	0.27	UG/G		1.87	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Vanadium	11		MG/KG		41.9	MG/KG
73-001(a)	0173-96-0113	73-02162	0	12	SOIL	Zinc	35.6		MG/KG		50.8	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Aroclor-1254	120		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Anthracene	340		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Pyrene	130		UG/KG	J		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Pyrene	1500		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Dibenzofuran	69		UG/KG	J		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Benzo(g,h,i)perylene	390		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Indeno(1,2,3-cd)pyrene	390		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Benzo(b)fluoranthene	95		UG/KG	J		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Benzo(b)fluoranthene	950		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Fluoranthene	130		UG/KG	J		

FE	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Fluoranthene	2200		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Benzo(k)fluoranthene	65		UG/KG	J		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Benzo(k)fluoranthene	660		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Chrysene	87		UG/KG	J		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Chrysene	690		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	DDT[4,4'-]	46		UG/KG	P		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Benzo(a)pyrene	710		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Chlordane[alpha-]	5.6		UG/KG	P		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Chlordane[gamma-]	13		UG/KG	P		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Benzo(a)anthracene	81		UG/KG	J		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Benzo(a)anthracene	780		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Acenaphthene	240		UG/KG	J		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Di-n-butylphthalate	340		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Di-n-butylphthalate	420		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Phenanthrene	60		UG/KG	J		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Phenanthrene	1600		UG/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Fluorene	160		UG/KG	J		
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Actinium-228	1.04	0.0645	PC/KG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Americium-241	0.0179	0.0255	PC/KG			

FFS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	QTL	Units
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Annihilation Radiation	0.0743	0.0209	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Barium-140	0.0025	0.0498	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Bismuth-211	2.62	0.155	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Bismuth-212	0.252	0.314	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Bismuth-214	0.831	0.0528	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Cadmium-109	1.31	0.279	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Cobalt-57	0.0033	0.005	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Cesium-134	0.01	0.009	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Cesium-137	0.191	0.010	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Manganese-54	0.0218	0.0089	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Sodium-22	0.0025	0.01	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Neptunium-237	0.379	0.0809	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Protactinium-231	1.07	0.274	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Protactinium-234M	5.21	2.75	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Lead-210	1.3	0.545	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Lead-211	0.211	0.202	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Lead-212	1.04	0.0475	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Lead-214	0.929	0.0475	PCVG			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Plutonium-238	0.002	0.0005	PCVG			

ITS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Plutonium-239 + -240	0.419	0.0325	PC/G			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Radium-223	0.0359	0.147	PC/G			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Radium-224	2.48	0.329	PC/G			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Radium-226	3.64	0.367	PC/G			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Radon-219	0.0392	0.0875	PC/G			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Strontium-90	0.319	0.165	PC/G			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Thorium-234	4.07	0.33	PC/G			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Thallium-203	0.344	0.0235	PC/G			
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Aluminum	5020		MG/KG		38700	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Arsenic	2.1		MG/KG	D	7.82	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Barium	114		MG/KG		315	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Beryllium	0.56		MG/KG	D	1.95	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Calcium	3070		MG/KG		6120	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Cadmium	0.68		MG/KG	B*	2.6	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Cobalt	3.8		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Chromium, Total	14.1		MG/KG		19.3	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Copper	9		MG/KG	B	15.5	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Iron	9770		MG/KG		21300	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Mercury	0.07		MG/KG	B	0.1	MG/KG

FRQ	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Potassium	771		MG/KG	B	3410	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Potassium-40	22	0.825	PC/KG		28.6	PC/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Magnesium	1340		MG/KG		4610	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Manganese	292		MG/KG		714	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Sodium	112		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Nickel	11.2		MG/KG		15.2	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Uranium	8.1	0.55	UG/KG		1.87	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Vanadium	20.9		MG/KG		41.9	MG/KG
73-001(a)	0173-96-0114	73-02163	0	12	SOIL	Zinc	234		MG/KG		50.8	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Aroclor-1254	77		UG/KG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Bis(2-ethylhexyl)phthalate	40		UG/KG	J		
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Anthracene	44		UG/KG	J		
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Pyrene	270		UG/KG	J		
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Fluoranthene	180		UG/KG	J		
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Chrysene	110		UG/KG	J		
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	DDT[4,4'-]	57		UG/KG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Chlordane[alpha-]	7.4		UG/KG	P		
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Chlordane[gamma-]	15		UG/KG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Benzo(a)anthracene	110		UG/KG	J		

FFS	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Di-n-butylphthalate	930		UG/KG	B		
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Phenanthrene	140		UG/KG	J		
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Actinium-228	1.06	0.0625	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Actinium-228	1.16	0.0824	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Americium-241	0.001	0.0342	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Americium-241	0.0937	0.0429	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Annihilation Radiation	0.0571	0.0208	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Annihilation Radiation	0.089	0.0303	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Barium-140	0.0474	0.0495	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Bismuth-211	2.97	0.151	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Bismuth-211	2.99	0.182	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Bismuth-212	0.88	0.477	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Bismuth-212	1.87	0.446	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Bismuth-214	0.852	0.0489	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Bismuth-214	0.928	0.0678	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cadmium-109	1.37	0.275	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cadmium-109	1.47	0.326	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cerium-144	0.0233	0.0415	PC/G			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cobalt-57	0.0026	0.0055	PC/G			

FRS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cobalt-60	0.001	0.01	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cesium-134	0.0102	0.0095	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cesium-134	0.0283	0.0141	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cesium-137	0.189	0.0248	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cesium-137	0.193	0.0181	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Mercury-203	0.0156	0.0119	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Manganese-54	0.01	0.0092	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Manganese-54	0.0215	0.014	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Neptunium-237	0.427	0.0946	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Protactinium-231	1.39	0.266	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Protactinium-231	1.77	0.365	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Protactinium-233	0.0154	0.0193	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Protactinium-234M	3.97	2.1	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Lead-210	1.67	1.02	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Lead-211	0.125	0.269	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Lead-212	1.06	0.0473	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Lead-212	1.07	0.0544	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Lead-214	1.04	0.0476	PCUG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Lead-214	1.09	0.0558	PCUG			

FTS	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UCL	Units
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Plutonium-238	0.002	0.0003	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Plutonium-239 + -240	0.0721	0.01	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Plutonium-239 + -240	0.0766	0.01	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Radium-223	0.0615	0.105	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Radium-223	0.146	0.143	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Radium-224	2.78	0.435	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Radium-224	3.22	0.338	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Radium-226	2.72	0.467	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Radium-226	3.4	0.377	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Radon-219	0.0434	0.119	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Radon-219	0.0943	0.0909	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Ruthenium-106	0.0653	0.114	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Selenium-75	0.0038	0.01	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Tin-113	0.0038	0.0136	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Strontium-90	0.16	0.157	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Thorium-234	3.62	0.416	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Thorium-234	4.23	0.351	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Thallium-208	0.314	0.0308	PCIO			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Thallium-208	0.333	0.0232	PCIO			

FRB	Sample ID	Location ID	Depth Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Zinc-65	0.0226	0.02	PC/KG			
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Aluminum	4160		MG/KG		38700	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Arsenic	1.9		MG/KG	B	7.82	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Barium	107		MG/KG		315	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Beryllium	0.56		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Calcium	2810		MG/KG		6120	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cadmium	0.63		MG/KG	B'	2.6	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Cobalt	3.8		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Chromium, Total	5.3		MG/KG		19.3	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Copper	9.2		MG/KG	B	15.5	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Iron	8380		MG/KG		21300	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Mercury	0.07		MG/KG	B	0.1	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Potassium	777		MG/KG	B	3410	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Potassium-40	22.3	0.825	PC/KG		28.6	PC/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Potassium-40	23.6	0.94	PC/KG		28.6	PC/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Magnesium	1190		MG/KG		4610	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Manganese	246		MG/KG	'	714	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Sodium	103		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0118	73-02163	0	12	SOIL	Nickel	5.1		MG/KG	B	15.2	MG/KG

FB	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-98-0118	73-02163	0	12	SOIL	Lead	48.4		MG/KG	E*	23.3	MG/KG
73-001(a)	0173-98-0118	73-02163	0	12	SOIL	Uranium	4.22	0.285	UG/KG		1.87	MG/KG
73-001(a)	0173-98-0118	73-02163	0	12	SOIL	Vanadium	19		MG/KG		41.9	MG/KG
73-001(a)	0173-98-0118	73-02163	0	12	SOIL	Zinc	173		MG/KG		50.8	MG/KG
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Bis(2-ethylhexyl)phthalate	840		UG/KG	J		
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Pyrene	110		UG/KG	J		
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Fluoranthene	110		UG/KG	J		
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Silver	1.72		MG/KG	*		
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Silver	3.52		MG/KG	*		
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Aluminum	4470		MG/KG		38700	MG/KG
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Aluminum	4720		MG/KG		38700	MG/KG
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Arsenic	1.12		MG/KG		7.82	MG/KG
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Barium	70.8		MG/KG		315	MG/KG
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Barium	73.7		MG/KG		315	MG/KG
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Beryllium	0.491		MG/KG	B	1.95	MG/KG
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Beryllium	0.953		MG/KG		1.95	MG/KG
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Calcium	2130		MG/KG		6120	MG/KG
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Calcium	2550		MG/KG		6120	MG/KG
73-001(a)	0173-98-0121	73-02173	0	3	SOIL	Cadmium	0.901		MG/KG		2.6	MG/KG

FFB	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Cadmium	1.29		MG/KG		2.6	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Cobalt	3.89		MG/KG		19.2	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Cobalt	4.34		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Chromium, Total	15.9		MG/KG	*	19.3	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Chromium, Total	23.3		MG/KG	N*	19.3	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Copper	188		MG/KG	*	15.5	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Copper	7660		MG/KG	*	15.5	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Iron	10800		MG/KG	*	21300	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Iron	21600		MG/KG	*	21300	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Mercury	0.197		MG/KG	*	0.1	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Mercury	0.498		MG/KG	*	0.1	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Potassium	737		MG/KG		3410	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Potassium	780		MG/KG		3410	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Magnesium	752		MG/KG		4610	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Manganese	244		MG/KG		714	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Manganese	281		MG/KG		714	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Sodium	304		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Sodium	312		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Nickel	18		MG/KG		15.2	MG/KG

FFS	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Nickel	21.5		MG/KG		15.2	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Lead	89.6		MG/KG	N*	23.3	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Lead	380		MG/KG	*	23.3	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Vanadium	8.3		MG/KG		41.9	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Vanadium	9.06		MG/KG		41.9	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Zinc	608		MG/KG	*	50.8	MG/KG
73-001(a)	0173-96-0121	73-02173	0	3	SOIL	Zinc	2090		MG/KG	*	50.8	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Pyrene	540		UG/KG	J		
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Benzo(b)fluoranthene	200		UG/KG	J		
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Fluoranthene	660		UG/KG	J		
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Benzo(k)fluoranthene	200		UG/KG	J		
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Chrysene	290		UG/KG	J		
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Benzo(a)pyrene	240		UG/KG	J		
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Benzo(a)anthracene	240		UG/KG	J		
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Phenanthrene	600		UG/KG	J		
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Aluminum	1330		MG/KG		38700	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Arsenic	0.63		MG/KG	BW	7.82	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Barium	20.3		MG/KG	B	315	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Beryllium	0.805		MG/KG		1.95	MG/KG

FRS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	YTL	Units
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Calcium	815		MG/KG		6120	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Copper	16		MG/KG	†	15.5	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Iron	3040		MG/KG	†	21300	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Potassium	169		MG/KG	B	3410	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Magnesium	286		MG/KG	B	4610	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Manganese	192		MG/KG		714	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Sodium	308		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Lead	17.3		MG/KG		23.3	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Vanadium	3.09		MG/KG	B	41.9	MG/KG
73-001(a)	0173-96-0122	73-02174	0	5	SOIL	Zinc	40.4		MG/KG	†	50.8	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Aluminum	7370		MG/KG		38700	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Arsenic	2.1		MG/KG		7.82	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Barium	113		MG/KG		315	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Beryllium	0.86		MG/KG		1.95	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Calcium	2860		MG/KG		6120	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Cobalt	5.1		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Chromium, Total	7.3		MG/KG	N†	19.3	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Copper	11.3		MG/KG	†	15.5	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Iron	10500		MG/KG	†	21300	MG/KG

FFS	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Mercury	0.06		MG/KG	D	0.1	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Potassium	1210		MG/KG		3410	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Magnesium	1710		MG/KG		4610	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Manganese	327		MG/KG		714	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Sodium	313		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Nickel	6.38		MG/KG		15.2	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Lead	14.5		MG/KG		23.3	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Vanadium	22.2		MG/KG		41.9	MG/KG
73-001(a)	0173-96-0123	73-02175	0	6	SOIL	Zinc	35.2		MG/KG		50.8	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Anthracene	200		UG/KG	J		
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Pyrene	950		UG/KG	J		
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Benzo(g,h,i)perylene	370		UG/KG	J		
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Indeno(1,2,3-cd)pyrene	300		UG/KG	J		
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Benzo(b)fluoranthene	280		UG/KG	J		
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Fluoranthene	980		UG/KG	J		
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Benzo(k)fluoranthene	400		UG/KG	J		
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Chrysene	470		UG/KG	J		
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Benzo(a)pyrene	440		UG/KG	J		
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Benzo(a)anthracene	410		UG/KG	J		

FRB	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Phenanthrene	870		UG/KG	J		
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Aluminum	4160		MG/KG		39700	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Arsenic	1.4		MG/KG		7.82	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Barium	72.5		MG/KG		315	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Beryllium	0.46		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Calcium	3340		MG/KG		6120	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Cobalt	1.9		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Chromium, Total	4.1		MG/KG	H*	19.3	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Copper	75.8		MG/KG	I	15.5	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Iron	7440		MG/KG	I	21300	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Mercury	0.09		MG/KG	B*	0.1	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Potassium	653		MG/KG		3410	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Magnesium	1050		MG/KG		4610	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Manganese	256		MG/KG		714	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Sodium	316		MG/KG	B	915	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Nickel	3.4		MG/KG	B	15.2	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Lead	17.5		MG/KG		23.3	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Vanadium	10.3		MG/KG		41.9	MG/KG
73-001(a)	0173-96-0128	73-02176	0	6	SOIL	Zinc	49.2		MG/KG	I	50.8	MG/KG

FTG	Sample ID	Location ID	Begin Depth (in)	End Depth (in)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Aluminum	72.8		MG/KG		38700	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Arsenic	5.9		MG/KG	S	7.82	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Barium	1.4		MG/KG	B	315	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Calcium	792		MG/KG		6120	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Chromium, Total	2.7		MG/KG	H'	19.3	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Copper	2.6		MG/KG	'	15.5	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Iron	386		MG/KG	'	21300	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Magnesium	33.6		MG/KG	B	4610	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Manganese	4.5		MG/KG		714	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Sodium	37100		MG/KG		915	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Nickel	1.9		MG/KG	B	15.2	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Lead	1.6		MG/KG		23.3	MG/KG
73-001(a)	0173-96-0129	73-02172	0	1	SOIL	Zinc	2.7		MG/KG	'	50.8	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Toluene	2		UG/KG	J		
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Tetrachloroethene	13		UG/KG			
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Tetrachloroethene	18		UG/KG			
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Acetone	43		UG/KG			
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Acetone	46		UG/KG	B		
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Trichloroethane[1,1,1-]	92		UG/KG			

FFQ	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Trichloroethane[1,1,1-]	130		UG/KG			
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Methylene Chloride	23		UG/KG			
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Methylene Chloride	30		UG/KG			
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Dichloroethane[1,1-]	2		UG/KG	J		
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Aluminum	3420		MG/KG		38700	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Arsenic	2.1		MG/KG		7.82	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Barium	101		MG/KG		315	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Beryllium	0.41		MG/KG	B	1.95	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Calcium	4590		MG/KG		6120	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Cadmium	1		MG/KG		2.6	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Cobalt	2.4		MG/KG	B	19.2	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Chromium, Total	13.4		MG/KG	N*	19.3	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Copper	85.3		MG/KG	*	15.5	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Iron	12400		MG/KG	*	21300	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Mercury	0.09		MG/KG	B*	0.1	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Potassium	537		MG/KG		3410	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Magnesium	700		MG/KG		4610	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Manganese	258		MG/KG		714	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Sodium	353		MG/KG	B	915	MG/KG

PTS	Sample ID	Location ID	Begin Depth (In)	End Depth (In)	Matrix	Analyte	Result	Uncertainty	Units	Lab Qualifier	UTL	Units
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Nickel	10.6		MG/KG		15.2	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Lead	463		MG/KG	N*	23.3	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Vanadium	8.4		MG/KG		41.9	MG/KG
73-001(a)	0173-96-0130	73-02171	0	2	SOIL	Zinc	472		MG/KG	*	50.8	MG/KG

Los Alamos National Laboratory

Environment, Safety & Health Division
ESH-18 Water Quality & Hydrology Group

Surface Water Assessment Erosion Matrix for PRS 73-001(a)

CRITERIA EVALUATED		Value	Erosion/Sediment Transport Potential			Calculated Score
			Low	Medium	High	
			0.1	0.5	1.0	
Site Setting (43)						
On mesa top	1	Defined based on topographic setting				
Within bench of canyon	4					
Within the canyon floodplain but not watercourse	13				13.0	
Within bottom of canyon channel in watercourse	17					
Estimated % ground and canopy cover	13	>75%	25-75%	<25%	6.5	
Slope	13	0-10%	10-30%	>30%	13.0	
Surface Water Factors-Run-off (46)						
Visible evidence of runoff discharging? (Yes/No)	5	If no, score of 0 for runoff section. If yes, score 5 and proceed with section.			5.0	
Where does runoff terminate?	19	Other	Bench Setting	Drainage/Wetland	19.0	
Has runoff caused visible erosion? (Yes/No)	22	Sheet	Rill	Gully	22.0	
		If no, score as 0. If yes, calculate as appropriate.				
Surface Water Factors-Run-on (11)						
Structures adversely affecting run-on (Yes/No)	7*	If yes, score as 7. If no, score as 0.			7.0	
Current operations adversely impacting (Yes/No)	4	If yes, score as 4. If no, score as 0.			0.0	
Natural drainages onto site (Yes/No)	7*	If yes, score as 7. If no, score as 0.			0.0	
*Select either structures or natural drainages.						
MAX. POSSIBLE EROSION MATRIX SCORE:	100	Total Score			85.5**	

** Indicates BMPs in place. Erosion potential without BMPs may be greater.

REVISED PART B

Report Printed 9/24/98 9:01:24 AM

Los Alamos National Laboratory
SURFACE WATER
SITE ASSESSMENT

Part B: page 2 of 4

15: Report Printed 9/24/98 9:01:26 AM

SITE INFORMATION

Revised Part B. Please discard previous.

1a) PRS Number 73-001(a) 1b) Structure Number 1c) FMU Number
2. Date/Time (M/D/Y H:M am/pm) 3/13/98

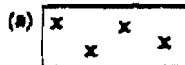
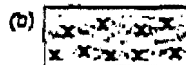
SITE SETTING (check all that apply)

3. ☒ On mesa top (a). ☒ In the canyon floor, but not in an established channel (c).
☐ Within a bench of a canyon (b). ☐ Within established channel in the canyon floor (d).

Explanation: Site of former town and laboratory landfill. Located between Pueblo Canyon and airport runway. Landfill debris also found off edge of cliff in drainages discharging into Pueblo Canyon.

4. Estimated ground and/or canopy cover at site: (deciduous leaves, pine needles, rocks, vegetation, trees, structures, asphalt, etc.)

(Illustration)



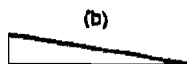
Estimated % of ground/canopy cover: ☐ 0% to 25% ☒ 25% to 75% ☐ 75% to 100%

Explanation: Ground cover on mesa is well vegetated, debris exposed on mesa edge.

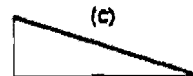
5. Steepest slope at the area impacted:



☒ Less than 10%



☐ 10% to 30%



☒ 30% and greater

Explanation: Cliff below landfill is shear, with visible debris below site.

RUNOFF FACTORS

Y/N

☒ 5. Is there visible evidence of runoff discharging from site? If yes, answer a) - c) below:

☒ 6a) Is runoff channelized? If yes, describe: ☒ Man-made channel. ☐ Natural channel.

Explanation: Manmade channel extending from storm drain at edge of runway to edge of Pueblo Canyon.

RUNOFF FACTORS, CONT'D

6b) Where does evidence of runoff terminate?

☒ Drainage or wetland (name) Pueblo Canyon☐ Within bench of canyon setting (name) ☐ Other (i.e., retention pond, meadow, mesa top)

Explanation: Sheet flow and minor/severe channelization evident across entire landfill site. Termination of runoff is Pueblo Canyon.

Y/N

☒ ☐ 6c) Has runoff caused visible erosion at the site? If yes, explain below: ☐ Sheet ☐ Rill ☒ Gully

Explanation: Rill erosion between perimeter fence and canyon edge. Severe gully erosion occurring in the central east facing lobe of landfill.

RUN-ON FACTORS

Please rate the potential for storm water to run on to this site: (Check EITHER #7 or #9)

☒ ☐ 7. Are structures (i.e., buildings, roof drains, parking lots, storm drains) creating run-on to the site?

Explanation: Storm drains conveying run-off from airport runway.

☐ ☒ 8. Are current operations (i.e., fire hydrants, NPDES outfalls) adversely impacting run-on to the site?

Explanation:

☐ ☒ 9. Are natural drainage patterns directing stormwater onto site?

Explanation:

ASSESSMENT FINDING:

☒ ☐ 10. Based on the above criteria and the assessment of this site, does soil erosion potential exist? (REFER TO EROSION POTENTIAL MATRIX.)

Steve Veenis

11. Signature of Water Quality/Hydrology Representative

 Initials of independent reviewer.
Check here when information is entered in database: ☒

This page is for ESH-18 notes, recommendations, and photos.

Y / N

12. a) ☒ ☐ Is there visible trash/debris on the site?

b) ☒ ☐ Is there visible trash/debris in a watercourse?

Description of existing BMPs:

Run-on control above exposed north facing debris pile (culvert) has been installed as a diversion practice.

☐ ☐ Are BMPs being properly maintained? If no, describe in "Other Internal Notes."

☐ ☐ Are BMPs effectively keeping sediment in place and reducing erosion potential?

OTHER INTERNAL NOTES:

Metal, paper and asphalt located in and around drainage channel near perimeter fence. Additional debris scattered around site (tires, sheet metal, concrete, rebar, misc. debris). Original assessment performed 10/15/97 did not reflect the entire boundary of the landfill. The assessment performed 3/13/98 included the debris found below the landfill proper, within a sub-drainage to Pueblo Canyon.

01-10-10-10-10-10

ATTACHMENT 3: ECOLOGICAL SCOPING CHECKLIST

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Ecological Scoping Checklist: Part A
Scoping Meeting Documentation

Site ID	PRS 73-001(a)	
Nature of PRS releases (indicate all that apply)	<u>Solid</u> <u>Liquid</u> <u>Gaseous</u> <u>Other, explain</u>	XXX XXX Municipal trash
List of Primary Impacted Media (indicate all that apply)	<u>Surface soil</u> <u>Surface water/sediment</u> <u>Subsurface</u> <u>Groundwater</u> <u>Other, explain</u>	XXX XXX XXX (Most material)
FIMAD vegetation class (indicate all that apply)	<u>Water</u> <u>Bare Ground</u> <u>Spruce/fir/aspen/mixed conifer</u> <u>Ponderosa pine</u> <u>Piñon juniper/juniper savannah</u> <u>Grassland/shrubland</u> <u>Developed</u>	 XXX XXX (Predominant) XXX
Is T&E Habitat Present? List species if applicable. Are there proposed activities that might impact T&E species at the site?	Yes. North-facing slopes of Pueblo Canyon are peregrine falcon foraging habitat. This area is listed as core area for peregrine and Mexican spotted owl. The area on top of the mesa, however, is not suitable owl nesting or roosting habitat.	
Provide list and description of Neighboring/ Contiguous/ Upgradient PRSs (consider need to aggregate PRS for screening)	PRS 73-001(b) is a waste oil pit near the southern debris disposal landfill trench (proposed for NFA, criterion 1). PRS 73-001(c) is a series of bunker debris pits (proposed for NFA, criterion 5). PRS 73-001(d) is a debris disposal area northeast of the runway. PRS 73-004(d) is a septic system that was not located (proposed for NFA criterion 1). There are several PRSs in TA-73 Group 2 that are not collocated. For the purposes of ecological screening, all TA-73 Group 1 PRSs should be considered a single aggregate.	
AP 4.5 Part B Information Run-off score (out of 46) Terminal point of surface water transport	Runoff score is 46 (of 46). There is debris in the watercourse. Terminal point of surface water transport is Pueblo Canyon.	
Other Scoping Meeting Notes	Much data on landfill gasses exists, with less data on soils and water. There is a vitrified asphalt flow to the northeast of the landfill that is not listed as a PRS, but must be considered concomitantly in scoping.	

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Ecological Scoping Checklist: Part B Site Visit Documentation

Site ID:	PRS 73-001(a)
Date of Site Visit	First visit (Rvri only) 3-10-98, second visit (Rvri and Hooten) 5-11-98.
Site Visit Conducted by	Randy Rvri and Mark M. Hooten

Receptor Information:

Estimate cover	% vegetated % wetland % structures/asphalt, etc.	20 to 50% over entire area. Quite variable. Current mowing practices affect roughly 60% of the area. 0% <5% (a small portion on the west end. PRS 73-001(b) is entirely paved by the airport runway.
Field notes on the FIMAD vegetation class	Field observations concur with FIMAD vegetation assessment.	
Field notes on T&E Habitat, if applicable	Pueblo canyon is considered good habitat for both the peregrine falcon and the Mexican spotted owl. However, areas off the northern edge of the mesa would require close investigation in order to determine its suitability for owl nesting and roosting. It is unclear how much/extensively these species may have been affected by habitat alteration, landfill practices, or contamination by debris or chemical constituents.	
Are ecological receptors present at the PRS? (yes/no/uncertain) Provide explanation	Many species of grasses and forbs on the landfill proper, with shrubs (e.g. Artemisia sp.), Gambel oak, piñon and junipers on the northern rim of the mesa. Ample evidence of fossorial animals (mammals and ants), surface-dwelling animals (mammals, birds), and invertebrates on site.	

Contaminant Transport Information:

Surface water transport Field notes on the terminal point of surface water transport (if applicable)	Many drainages north of the landfill drop steeply into Pueblo Canyon.
Are there any other off-site transport pathways? (yes/no/uncertain). Provide explanation	The northern edge of the landfill meets the native edge of the mesa top in many places. In these areas the soil layer is highly disturbed and may even be an artifact of sedimentation from fill materials eroding from the landfill and airport proper. There are some areas where the landfill materials are exposed on the northern mesa edge. These areas may provide pathways for leachate discharge. Sediments appear to be carried by storm water over the edge of the mesa in many places. In some areas vegetation on the mesa top, as well as some geologic features, appear to be sediment traps. Landfill gasses also act to carry contaminants off-site.

Ecological Effects Information:

Physical Disturbance (provide list of major types of disturbances)	Historically, the landfill and airport have been extraordinary disturbances to the mesa top biotic communities. The landfill and its operations have significantly altered the northern portion of the mesa, including the north-facing slope of Pueblo Canyon. Most vegetation over the landfill proper is either sparse or dominated by invasive types of annual forbs and grasses, many non-native. Areas less impacted or indirectly impacted by the landfill (and airport) activities have many remaining woody shrubs (e.g. Artemisia sp.) and trees (e.g. Gambel oak, piñon, and various junipers). Some of the run-off channels exit into Pueblo Canyon and receive ample sediments from fill material. Some portions of the landfill clearly had historical activities wherein large amounts of debris were pushed over the northern edge of the mesa. The eastern fill area of the main landfill has historically eroded, which has lead to the installation of a drainage diversion ditch at that end of the landfill.
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Ecological Scoping Checklist: Part C
Ecological Pathways Conceptual Exposure Model

Provide answers to Questions A to Q and use this information to complete the Ecological Pathways Conceptual Exposure Model

Question A:

Could soil contaminants reach receptors via vapors?

- Volatility of the hazardous substance (volatile chemicals generally have Henry's Law constant $>10^{-3}$ atm-m³/mol and molecular weight <200 g/mol).

Answer (yes/no/uncertain): Yes.

Provide explanation: Evidence of gasses already reaching receptors on landfill surface.

Question B:

Could the soil contaminants identified above reach receptors through fugitive dust carried in air?

- Soil contamination would have to be on the actual surface of the soil to become available for dust.
- In the case of dust exposures to burrowing animals, the contamination would have to occur in the depth interval where these burrows occur.

Answer (yes/no/uncertain): Yes.

Provide explanation: Some obvious surface contaminants (debris, waste tar, oil, paraffin) may affect surface soil composition. Much of the surface is bare ground and subject to wind erosion.

Question C:

Can contaminated soil be transported to aquatic ecological communities (use AP 4.5 run-off score and terminal point of surface water runoff to help answer this question)?

- If the AP 4.5 run-off score* equal to zero, this suggests that erosion at PRS is not a transport pathway. (* note that the runoff score is not the entire erosion potential score, rather it is a subtotal of this score with a maximum value of 46 points)
- If erosion is a transport pathway, evaluate the terminal point to see if aquatic receptors could be affected.

Answer (yes/no/uncertain): Yes.

Provide explanation: This is an obvious and viable pathway, which will be considered in Canyons Reach Reports. Thus, the aquatic communities in Pueblo Canyon are directly considered in the assessment of the Airport landfill. The landfill is one of many potential contaminant sources for Pueblo Canyon.

Question D:

Is contaminated groundwater potentially available to biological receptors through seeps or springs?

- Known or suspected presence of contaminants in groundwater.
- The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.
- Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).
- Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.

Answer (yes/no/uncertain): Uncertain.

Provide explanation: Groundwater modeling would help answer this question, but it is unlikely that constituents will reach groundwater that would further affect ecological receptors. Investigation into groundwater recharge and hydrology for this area is part of an ongoing LANL-wide investigation.

Question E:

Is infiltration/percolation from contaminated subsurface material a viable transport pathway?

- Suspected ability of contaminants to migrate to groundwater.
- The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.
- Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).
- Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.
- Also consider the importance of mass wasting as a potential release mechanism for subsurface material.

Answer (yes/no/uncertain): Uncertain.

Provide explanation: See Question D, above.

Question F:

Could airborne contaminants interact with plants or animals through respiration of vapors?

- Contaminants must be present as volatiles in the air.
- Consider the importance of inhalation of vapors for burrowing animals.
- Foliar uptake of organic vapors is typically not a significant pathway.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 3

Provide explanation: This pathway is judged to be major due to the prevalence of landfill gasses in the near subsurface.

Question G:

Could airborne contaminants interact with plants or animals through deposition of particulates or with animals through inhalation of fugitive dust?

- Contaminants must be present as particulates in the air or as dust for this pathway to be viable.
- Exposure via inhalation of fugitive dust is particularly applicable to ground-dwelling species that would be exposed to dust disturbed by their foraging or burrowing activities or by wind movement.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 2

Provide explanation: The majority of the waste and contamination is subsurface.

Question H:

Could contaminants interact with plants through root uptake or rain splash from surface soils?

- Contaminants in bulk soil may partition into soil solution, making them available to roots.
- Exposure of terrestrial plants to contaminants present in particulates deposited on leaf and stem surfaces by rain striking contaminated soils (i.e., rain splash).

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 2

Provide explanation: Root uptake of contaminants is typically considered to be a major contaminant pathway until further investigation demonstrates otherwise. However, in this case, it is more likely that this pathway is minor due to the fact that most contaminants are buried below the root-bearing zone of the soil.

Question I:

Could contaminants interact with receptors through food web transport from surface soils?

- The chemicals may bioaccumulate in animals (see list of potentially persistent bioaccumulators and biomagnifiers, presented in Table 1).
- Animals may ingest contaminated prey.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 2

Provide explanation: Potential persistent bioaccumulators are present, however, most contamination is subsurface. This pathway cannot be ruled out as a potentially major pathway to fossorial animals.

Question J:

Could contaminants interact with receptors via incidental ingestion of surface soils?

- Incidental ingestion of contaminated soil could occur while animals grub for food resident in the soil, feed on plant matter covered with contaminated soil or while grooming themselves clean of soil.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 2

Provide explanation: This pathway cannot be ruled out as a potentially major pathway to fossorial animals. However, most contamination is buried at a depth that fossorial activities (ants, squirrels) will not generally reach. It is unlikely that contaminants are being delivered to the surface due to biotic activity.

Question K:

Could contaminants interact with receptors through dermal contact with surface soils?

- Significant exposure via dermal contact would generally be limited to organic contaminants which are lipophilic and can cross epidermal barriers.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 1

Provide explanation: For fossorial invertebrates and vertebrates, this is a viable pathway. Dermal/cutaneous contact is unlikely to effect fossorial and ground-dwelling organisms to the degree of incidental ingestion, thus this is considered an unlikely pathway.

Question L:

Could contaminants interact with plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma emitting radionuclides.
- Burial of contamination severely attenuates radiological exposure.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 2

Provide explanation: The activity of three gamma-emitting radiological constituents is marginally different from background, thus external radiological exposure is not viewed to be a significant pathway.

Question M:

Could contaminants interact with plants through direct uptake from water and sediment or sediment rain splash?

- Contaminants may be taken-up by terrestrial plants whose roots are in contact with surface waters.
- Terrestrial plants may be exposed to particulates deposited on leaf and stem surfaces by rain striking contaminated sediments (i.e., rain splash on sediments *nor* soils), in an area that is only periodically inundated with water.
- Contaminants in sediment may partition into soil solution, making them available to roots.
- Aquatic plants are in direct contact with water.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 1

Provide explanation: Surface water is ephemeral and limited in quantity at the landfill.

Question N:

Could contaminants interact with receptors through food web transport from water and sediment?

- The chemicals may bioaccumulate in animals (see list of potentially persistent bioaccumulators and biomagnifiers, presented in Table 1.)
- Animals may ingest contaminated prey.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 1

Provide explanation: Potential persistent bioaccumulators are present in the surface soil, but this pathway is judged unlikely, because the landfill does not support an aquatic ecological community. Possible impacts from the landfill to the aquatic community present in Pueblo Canyon should be assessed in the Pueblo Canyon Reach Report.

Question O:

Could contaminants interact with receptors via incidental ingestion of water and sediment?

- If sediments are present in an area that is only periodically inundated with water, terrestrial receptors may incidentally ingest sediments.
- Terrestrial receptors may ingest water-borne contaminants if contaminated surface waters are used as a drinking water source.
- Aquatic receptors may regularly or incidentally ingest sediment while foraging.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 1

Provide explanation: Availability of surface water to receptors on the mesa top or the north-facing slope is highly ephemeral and most of the contamination of the landfill is subsurface, further reducing the likelihood of this pathway.

Question P:

Could contaminants interact with receptors through dermal contact with water and sediment?

- If sediments are present in an area that is only periodically inundated with water, terrestrial species may be dermally exposed during dry periods.
- Terrestrial organisms may be dermally exposed to water-borne contaminants as a result of wading or swimming in contaminated waters.
- Aquatic receptors may be directly exposed to sediments or may be exposed through osmotic exchange, respiration, or ventilation of sediment pore waters.
- Aquatic receptors may be exposed through osmotic exchange, respiration, or ventilation of surface waters.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 1

Provide explanation: Availability of surface water to receptors on the mesa top or the north-facing slope is highly ephemeral and most of the contamination of the landfill is subsurface, further reducing the likelihood of this pathway.

Question Q:

Could contaminants interact with plants or animals through external irradiation via water and sediment exposure?

- External irradiation effects are most relevant for gamma emitting radionuclides.
- Burial of contamination severely attenuates radiological exposure.
- The water column acts to absorb radiation, thus external irradiation is typically more important for sediment dwelling organisms.

Provide quantification of pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway): 1

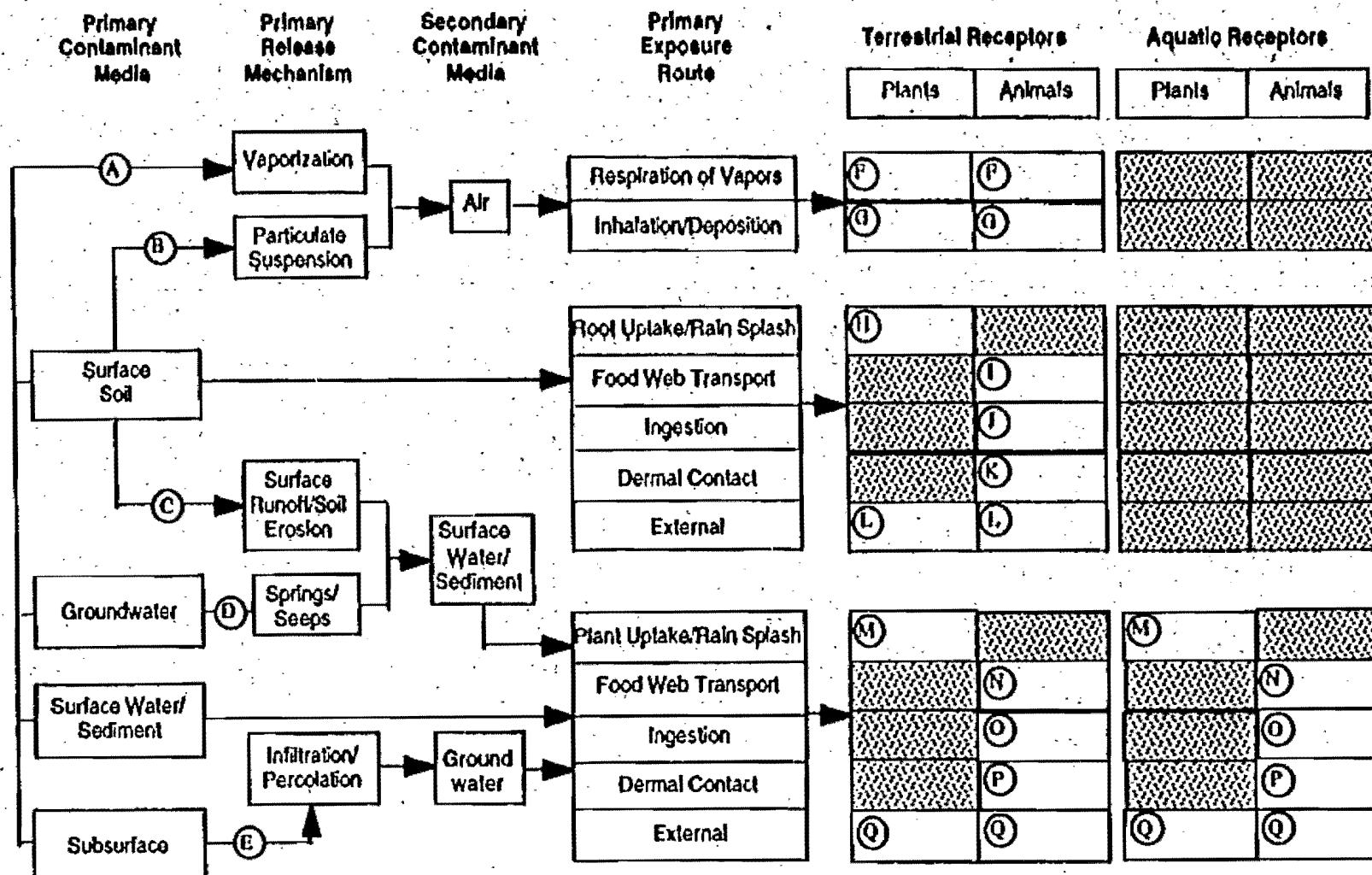
Provide explanation: Sedimentary deposits are extensive along the northern border of the landfill and cannot be viewed as less than a minor pathway. However, most of the contamination of the landfill is subsurface, further reducing the likelihood of this pathway. Availability of surface water to receptors on the mesa top or the north-facing slope is highly ephemeral.

Table 1
List of Bioaccumulating Chemicals

Volatile Organics	PCBs/Pesticides
Dichlorobenzene[1,4-]	<u>All Arp chemicals</u>
Trichlorobenzene[1,2,4-]	beta-BHC
Xylene (mixed isomers)	BHC-mixed isomers
Semivolatile Organics	<u>Chlordane</u>
<u>Acenaphthene</u>	Chlorocone (Kepone)
<u>Anthracene</u>	<u>DDT and metabolites</u>
<u>Benzo(a)anthracene</u>	Dieldrin
<u>Benzo(a)pyrene</u>	Endosulfan
<u>Benzo(b)fluoranthene</u>	Endrin
<u>Benzo(e,h)fluoranthene</u>	Heptachlor
<u>Benzo(k)fluoranthene</u>	Lindane
<u>Bis(2-ethylhexyl)phthalate</u>	<u>Methoxychlor</u>
Butyl benzyl phthalate	Toxaphene
<u>Chrysene</u>	Inorganics
<u>Dibenzo(a,h)anthracene</u>	Aluminum
Di-n-butyl phthalate	<u>Cadmium</u>
Di-n-octyl phthalate	<u>Copper</u>
<u>Fluoranthene</u>	<u>Lead</u>
<u>Fluorene</u>	<u>Mercury</u>
<u>Indeno(1,2,3-cd)pyrene</u>	<u>Nickel</u>
<u>Phenanthrene</u>	Selenium
<u>Pyrene</u>	Radionuclides
Pentachloronitrobenzene	Americium-241
Pentachlorophenol	<u>Cesium-137</u>
Dioxins/Furans	<u>Plutonium-238, 239</u>
Dibenzofuran	Radium-226, 228
2,3,7,8-tetrachloro-dibenzo(p)dioxin	Strontium-90
2,3,7,8-tetrachloro-dibenzo(p)uran	Thorium-228, 230, 232
	Uranium-234, 235, 238

Ecological Scoping Checklist: Ecological Pathways Conceptual Exposure Model

KEY:
0 = No Pathway
1 = Unlikely Pathway
2 = Minor Pathway
3 = Major Pathway



Signatures and certifications:

Checklist completed by (provide name, organization and phone number)

Name (printed):	Randall T. Rytli
Name (signature):	<i>Randall Rytli</i>
Organization:	Neptune and Co., Inc.
Phone number:	505-662-2121
Date completed:	May 11, 1998

Verification by a member of ER Project Ecological Risk Task Team (provide name, organization and phone number)

Name (printed):	Mark M. Hooten
Name (signature):	<i>Mark M. Hooten</i>
Organization:	Neptune and Co., Inc.
Phone number:	505-662-2121
Date completed:	May 11, 1998

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