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Institutional Controls Implementation and Assurance Plan (ICIAP) U.S. Department of Energy Mound, Ohio, Site

November 2025

U.S. DEPARTMENT OF ENERGY | Legacy Management

This document has been designed for online viewing.

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Abbreviations

AEC	U.S. Atomic Energy Commission
bgs	below ground surface
BVA	Buried Valley Aquifer
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
COPC	contaminant of potential concern
DOE	U.S. Department of Energy
EC	environmental covenant
EM	Office of Environmental Management
EPA	U.S. Environmental Protection Agency
ES	Environmental Summary
FFA	Federal Facility Agreement
ft	feet
IC	institutional control
ICIAP	Institutional Controls Implementation and Assurance Plan
LM	Office of Legacy Management
LTS&M Plan	Long-Term Surveillance and Maintenance Plan
MATC	Mound Advanced Technology Center
MCP	Miamisburg Closure Project
MDC	Mound Development Corporation (formerly MMCIC)
MEMP	Miamisburg Environmental Management Project
MMCIC	Miamisburg Mound Community Improvement Corporation
msl	mean sea level
NPL	National Priorities List
ODH	Ohio Department of Health
Ohio EPA	Ohio Environmental Protection Agency
O&M Plan	Operations and Maintenance Plan
ORC	*Ohio Revised Code*
OU	operable unit
PRG	preliminary remediation goal
PRS	potential release site
Pu	plutonium

QC	quitclaim
RBGV	risk-based guideline value
ROD	Record of Decision
RRE	residual risk evaluation
RREM	residual risk evaluation methodology
SI	special instrument
T Building	Technical Building
VI	vapor intrusion

1.0 Introduction

Institutional controls (ICs) are nonengineered instruments such as administrative and legal controls that help minimize the potential for human exposure to contamination and protect the integrity of the remedy.

This *Institutional Controls Implementation and Assurance Plan*, hereafter referred to as the ICIAP, has been prepared for the U.S. Department of Energy (DOE) Office of Legacy Management (LM) by the Legacy Management Support (LMS) contractor, RSI EnTech, LLC.

The objective of the ICIAP is to describe plans to implement, maintain, and ensure compliance with the ICs. The ICIAP explains how LM will continue to fulfill its surveillance and maintenance obligations of ICs at the Mound, Ohio, Site[1] to ensure that the selected IC remedies remain functional and effective so that conditions at the site remain protective of human health and the environment.

LM has successfully overseen the IC compliance responsibilities since 2006 when it assumed the responsibility from the DOE Office of Environmental Management (EM) during the site transition from EM to LM. LM works in collaboration with the U.S. Environmental Protection Agency (EPA) Region 5 and Ohio Environmental Protection Agency (Ohio EPA) Southwest District Office to ensure compliance with the ICs.

This document provides the information suggested in the *EPA Guidance, Institutional Controls: A Guide to Preparing Institutional Control Implementation and Assurance Plans at Contaminated Sites* (EPA 2012). This ICIAP addresses the topics suggested in that guidance with the information in the *Operations and Maintenance Plan for the U.S. Department of Energy, Mound, Ohio, Site* (DOE 2015), also called the O&M Plan, relating to ICs.

This document replaces the IC information in the O&M Plan.

Electronic copies of the plans can be found online at Mound site's public document library: https://lmpublicsearch.lm.doe.gov/SitePages/CERCLA.aspx?sitename=Mound.

2.0 Site Details

2.1 Site Name and Identification

The Mound site has undergone many name changes since it began operation in 1948. It was formerly called the Mound Laboratory, Mound Laboratories, the Mound Plant (EPA ID OH6890008984) (Comprehensive Environmental Response, Compensation, and Liability Information System [CERCLIS] ID 04935), the USDOE Mound Plant, the Mound Facility, the USDOE Mound Facility,

[1] The Mound site has also been called the Mound Laboratory, Mound Laboratories, the Mound Plant (EPA ID OH6890008984), (Comprehensive Environmental Response, Compensation, and Liability Information System [CERCLIS] ID 04935), the USDOE Mound Plant, the Mound Facility, the USDOE Mound Facility, the Miamisburg Environmental Management Project (MEMP), and Miamisburg Closure Project (MCP). LM uses Mound, Ohio, Site as the formal name of the site.

the Miamisburg Environmental Management Project (MEMP), and EM Miamisburg Closure Project (MCP). LM uses Mound, Ohio, Site as the formal name of the site.

2.2 Location

The Mound site lies within the city limits of Miamisburg, in southern Montgomery County, Ohio, approximately 10 miles southwest of Dayton (Figure 1). Miamisburg is predominantly a residential community with supporting commercial facilities and industrial development.

Figure 1. Regional Context for the Mound Site

Additional detail regarding the Mound site area is described in Section 2.3 and Figure 2. Figure 2 shows the Mound site boundary on an aerial image which also contains site street names and adjacent street names for understanding of the location.

Figure 2. Mound Site with Boundary in Red

2.2.1 Land Use in the Area

The adjacent upland land use is primarily for residences or undeveloped land. The lowland land use is a mix of residential, business, and undeveloped land. The 2020 U.S. Census shows that 19,847 residents live in Miamisburg, Ohio. The river valley is highly industrialized, and the rest of the region is a mix of farmland, residential area, small communities, and light industry. Many city and township residences, schools, the Miamisburg downtown area, and six city parks are located within 1 mile of the Mound site.

The Mound Golf Course and the Miamisburg Mound State Memorial Park are both directly east of the Mound site across Mound Road. The park contains a 68-foot-high ancient Native American Indian mound, 380 feet (ft) east of the site boundary.

The only major water body in the area of the Mound site is the Great Miami River approximately 2000 ft to the west. The river is approximately 150–200 ft wide in this area. Some vestiges of the old Miami-Erie Canal lie west of the Mound site. This remnant of the old Miami-Erie Canal was designated as Operable Unit (OU)-4. OU-4 is located outside the site boundary shown in Figure 3. The canal was included with the listing on the National Priorities List (NPL) due to impact from operational and accidental releases from the site. In July 1995, DOE issued a Removal Action Memorandum proposing to excavate the contaminated soils and sediments from the canal. DOE remediated the canal soil to residential use risk levels and in September 2004 the agency issued a Record of Decision (ROD) that determined that OU-4 did not require any remedial action or ICs.

2.2.2 Site Geology, Hydrogeology, and Topography

The geologic record preserved in the rocks underlying the site indicates that the area has been relatively stable since the beginning of the Paleozoic era, more than 500 million years ago. There is no evidence indicating subsurface structural folding, significant stratigraphic thinning, or subsurface faulting. The bedrock consists of limestone, which is interbedded with shale layers at the site. No evidence of solution cavities or cavern development has been observed in any borings or outcrops in the Miamisburg area. The bedrock is overlain with glacial till, which exhibits some fracturing that allows infiltration of precipitation.

The aquifer system at the Mound site consists of two different hydrogeologic environments: groundwater flow through the bedrock beneath the hills and groundwater flow within the unconsolidated glacial deposits and alluvium associated within the Buried Valley Aquifer (BVA) in the Great Miami River valley. The bedrock flow system is dominated by fracture flow and is not considered a highly productive aquifer. The BVA is dominated by porous flow with interbedded gravel deposits providing the major pathway for water movement. The unconsolidated deposits are Quaternary-age sediments consisting of both glacial and fluvial deposits. The BVA is a highly productive aquifer capable of yielding a significant quantity of water and is designated a sole-source aquifer.

The Mound site sits atop an elevated area overlooking the city of Miamisburg, the Great Miami River, and the river plain area to the west. To the west of the site is an abandoned section of the Miami-Erie Canal that parallels the river. An intermittent stream, referred to as the main ditch, runs through the site valley and drains to the river. Site elevations vary from 700 to 900 ft above mean sea level (msl); most of the site is higher than 800 ft above msl. The Great Miami River is

located approximately 1500 ft west of the site. The typical nonflood stage of the Great Miami River is 682 ft msl. The highest floodwater levels that can be reasonably postulated for the Great Miami River basin (100-year storm event) would result in flooding to 700 ft msl. The southwestern edge of the site lies within the 100-year floodplain of the Great Miami River.

2.3 Site Area

The term "Mound site" used in this plan is synonymous with the term "1998 Mound Plant property" used in other documents. Lockwood, Jones & Beal generated a legal description of the DOE property in May 1982 and described it as an area of 305.16 acres "more or less." DOE filed an affidavit deed on November 13, 1990, that applied the Federal Facility Agreement (EPA 1990) (FFA) to this defined area. Using the 1982 legal description as a basis, Beals Surveying Corporation (Beals) resurveyed this outer boundary in July 2005 and described it as an area of 305.063 acres more or less. A copy of the Beals July 2005 survey has been included in Appendix A.

The site has been divided into 14 areas (called parcels or phases) that were addressed by the various cleanup documents (Figure 3; Table 1). Cleanup activities included soil excavation in several areas, including at a historical landfill located on Parcel 9 that was excavated instead of being capped (see Section 2.6). There are no other landfills or capped areas at the site. Groundwater contamination is being addressed through enhanced attenuation (using edible vegetable oils) in OU-1/Parcel 9 and monitored natural attenuation in Parcels 6, 7, and 8 and Phase I (see Figure 4 and Section 3.3.4).

A total of 138 structures were demolished during the cleanup of this site. An additional six buildings were demolished by MDC after the cleanup was completed and property was no longer owned by DOE. Eighteen buildings remain at the site, one of which is the Technical Building (T Building), which is a unique underground building with its own special ICs as noted in this report. The detailed history of the demolition of the buildings can be found in Appendix 2 of the *Long-Term Surveillance and Maintenance Plan for the U.S. Department of Energy Mound, Ohio, Site* (DOE 2021b), also called the LTS&M Plan.

The site was cleaned up to industrial/commercial standards for soil and does not allow the use of any groundwater as a drinking water supply. The OU-1/Parcel 9 area also has additional IC requirements to protect against vapor intrusion (VI) from volatile organic compound-contaminated groundwater.

All of the Mound property has been transferred out of DOE ownership. Appendix B summarizes the existing buildings, county parcel IDs, current tenants and owners, and applicable RODs for each of the site areas. Property owners and tenants have the potential to change frequently as the site transitions form city into private ownership with additional development. These changes will continue to be tracked as part of the annual IC monitoring process with the details reported in annual IC reports (see Section 4.0 and Appendix B, Figure B-1).

The IC requirements outlined in this plan apply to the entire Mound site shown in Figure 2. There are exceptions to the soil removal restriction on the Mound and Benner roadways, which are detailed in Section 3.3.4.

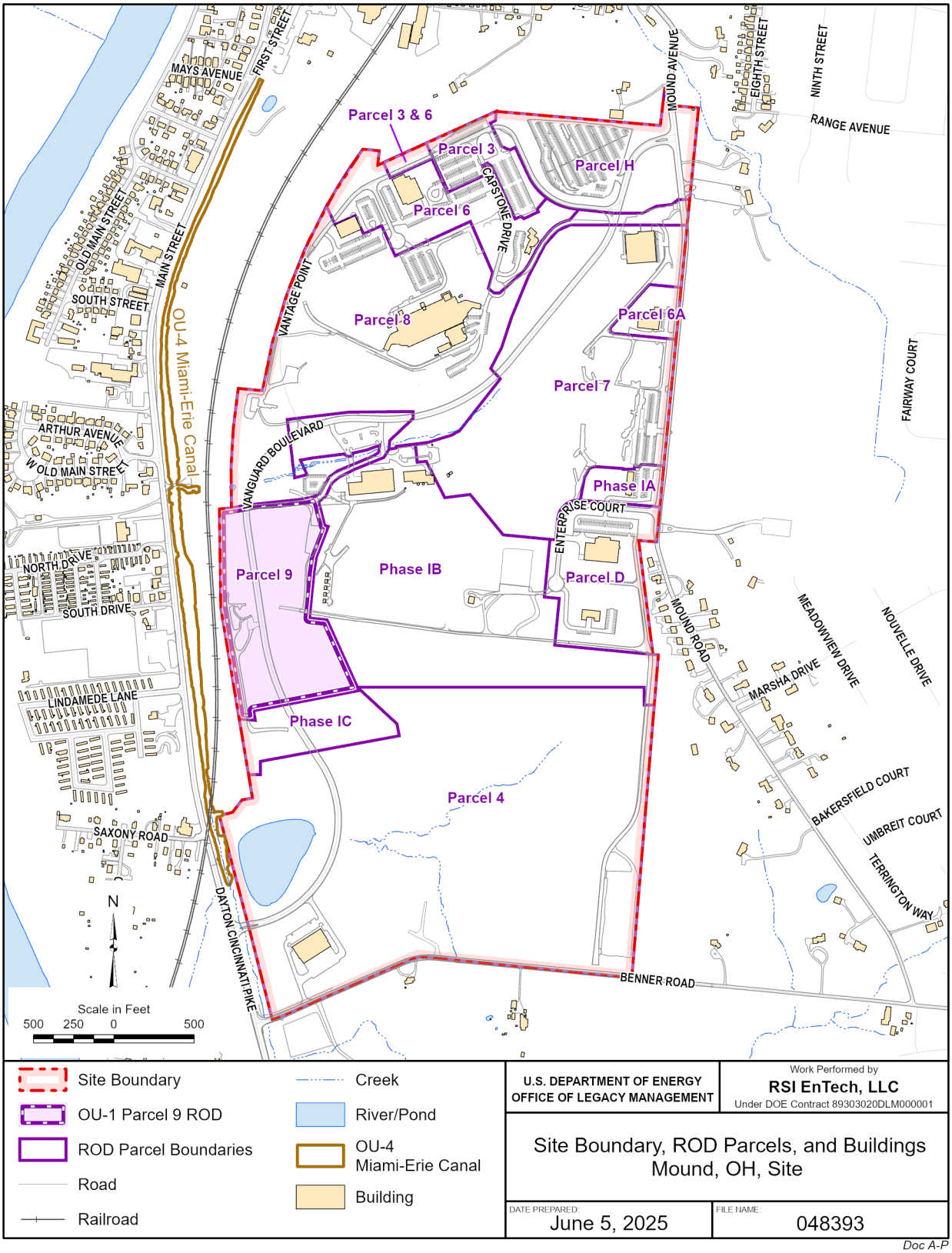


Figure 3. Mound Site Boundary, ROD Parcels, and Buildings

Table 1. Mound Site ROD and Environmental Summary Document Information

ROD Parcel ID	Document	Approval Date
D	*Record of Decision for Release Block D* (DOE 1999c)	February 1999
	CERCLA 120(h) Summary Notice of Hazardous Substances, Release Block D, Mound Plant, Miamisburg, Ohio (DOE 1999a)	
H	*Record of Decision for Release Block H, Mound Plant, Miamisburg, Ohio* (DOE 1999d)	June 1999
	CERCLA 120(h) Summary Notice of Hazardous Substances, Release Block H, Mound Plant, Miamisburg, Ohio (DOE 1999b)	July 1999
3	*Parcel 3 Record of Decision, Mound Plant, Miamisburg, Ohio* (DOE 2001b)	September 2001
	Parcel 3 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Mound Plant, Miamisburg, Ohio (DOE 2001a)	
4	*Parcel 4 Record of Decision, Mound Plant, Miamisburg, Ohio* (DOE 2001d)	February 2001
	Parcel 4 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Mound Plant, Miamisburg, Ohio (DOE 2001c)	March 2001
6, 7, 8 (included former Parcel 6A)	*Parcels 6, 7, and 8 Record of Decision, Miamisburg Closure Project, Miamisburg, Ohio* (DOE 2009a)	August 2009
	Parcels 6, 7, and 8 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances (DOE 2010)	August 2010
9 (OU-1 and all of expanded Parcel 9 area)	*Operable Unit 1 Record of Decision* (DOE 1995a); the OU-1 groundwater remedy is also known as Area B	June 1995
	Parcel 9 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances (DOE 2011c)	July 2011
	Amendment of the Operable Unit 1 Record of Decision, U.S. Department of Energy, Mound Closure Project (DOE 2011a)	August 2011
9 OU-1 Parcel 9 area only	*Amendment to the Record of Decision for Operable Unit 1 of the Mound Site, Miamisburg, Ohio* (DOE 2023)	September 2023
	OU-1/Parcel 9 Area Environmental Summary, Mound, Ohio, Site, LMS/MND/49392 (DOE 2025)	April 2025
Phase I (A, B, C)	*Phase I Record of Decision, Miamisburg Closure Project* (DOE 2003b)	July 2003
	Phase I Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Miamisburg Closure Project (DOE 2003a)	December 2003
OU-4	*Miami-Erie Canal Record of Decision, Miamisburg Closure Project* (DOE 2004)	September 2004
	OU-4 on City of Miamisburg property; unrestricted use; no ICs or use restrictions	

Abbreviation:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

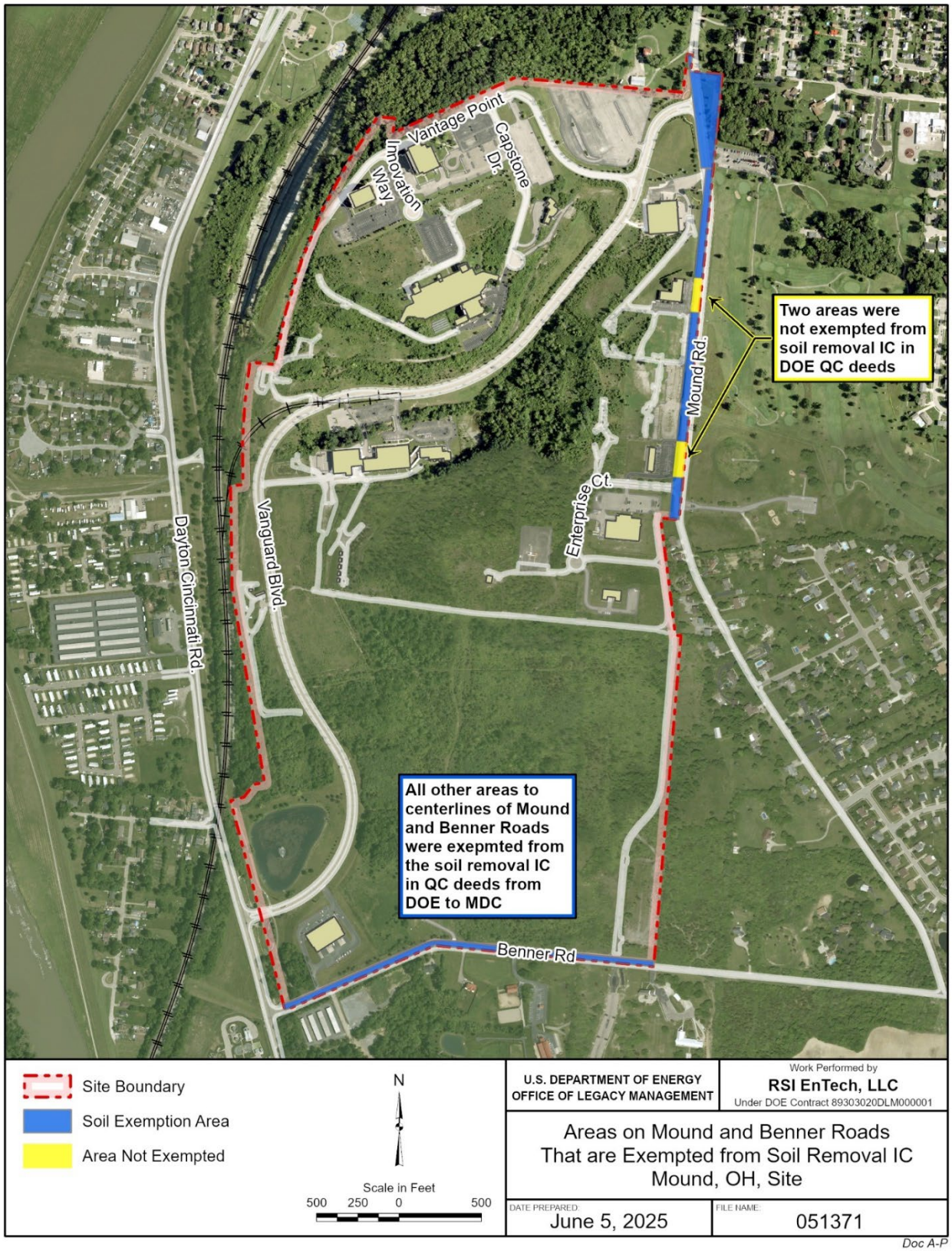


Figure 4. Areas on Mound and Benner Roads That are Exempted from Soil Removal IC

2.4 Site History

2.4.1 Operational History and Previous Site Uses

In 1948, the U.S. Atomic Energy Commission (AEC) began operations at the Mound site as an integrated research, development, and production facility that supported the nation's weapons and energy programs, with emphasis on explosives and nuclear technology. The site, which was in operation from 1948 to 2003, was situated on 182 acres. In 1981, DOE purchased an additional 124 acres of land south of the original property, called the "New" or "South" property, which remained undeveloped. At one time, the Mound site contained approximately 116 buildings and more than 30 additional structures (i.e. stacks, water towers) and employed over 2500 highly skilled workers.

Early Mound site programs investigated the chemical and metallurgical properties of polonium-210 and its applications—particularly, the fabrication of neutron and alpha sources for weapon and non-weapon use. Investigations involving uranium, protactinium-231, and plutonium-239 (^{239}Pu) were performed from 1950 to 1963 as part of the national civilian power reactor program. In 1954, the Mound site began the separation of stable isotopes.

In the mid-1950s, Mound workers-initiated efforts to develop a large-scale process for the recovery of thorium from a variety of thorium-bearing ores and sludges. Even though this project was canceled before full-scale operation, approximately 1650 tons of thorium-containing sludge was received at the Mound site. Due to its corrosivity, the thorium sludge was continually repackaged and stored in various areas on site. This resulted in a number of thorium-contaminated areas around the site. During remediation all materials were shipped to approved disposal sites and all areas were remediated following the Mound 2000 Approach (see Section 2.4.3.3).

Plutonium-238 research and development activity began at the Mound site in the mid-1950s. From the early 1960s to the late 1970s, Mound site workers processed ^{238}Pu for use in heat sources within radioisotopic thermoelectric generators. The fabrication of heat sources from plutonium metal was terminated in the mid-1960s. Plutonium oxide processes continued into the late 1970s. After early 1979, Mound site workers did not handle unencapsulated ^{238}Pu.

The Mound site had an extensive history of manufacturing and working with non-nuclear energetic materials, such as explosives, pyrotechnics, and thermites. Other processes included precision machining and the manufacture of plastics and ceramics, weapons components, flexible circuits, and rare gases.

2.4.2 Site Management History

This section summarizes the changes in organizations and contractors during the operational period, the 20-plus years of remediation, and the current period.

During operations and into the environmental remediation process, AEC transitioned to DOE, which managed site operations under various oversight organizations including the following:

- Albuquerque Operations Office
- EM Ohio Field Office

- EM Consolidated Business Center
- Advanced Nuclear Systems and Projects Division, Nuclear Energy
- LM now manages DOE's post closure responsibilities

During operations and remediation of the Mound site, it was operated by DOE prime site contractors and an OU-1 removal contractor as follows:

- 1948–1988: Monsanto Research Corporation
- 1988–1997: EG&G Mound Applied Technologies Inc.
- 1997–2002: BWXTO Inc.
- 2003–2006: CH2M HILL Mound Inc.
- 2006–2010: Accelerated Remediation Company (aRc)—A non-Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) OU-1 excavation and two CERCLA potential release site (PRS) removals (EM-managed contract)

In 2005, LM began to work with EM MCP to transition the site from remediation status to postclosure surveillance and monitoring. The LM Mound site manager and their prime contractor occupied a site office from 2005 until 2011, when EM relocated and LM consolidated its site offices at the Fernald Preserve, Ohio, Site office at Harrison, Ohio. The EM MCP project manager also worked on the Mound site until September 2011.

During and after the Mound site transitioned from EM to LM management, LM prime site contractors included the following:

- 2005–2015: Stoller Newport News Nuclear, Inc., a wholly owned subsidiary of Huntington Ingalls Industries, Inc. (LM contractor)
- 2015–2021: Navarro Research and Engineering, Inc. (LM contractor)
- 2021–present: RSI EnTech, LLC (LM contractor)

2.4.3 CERCLA History

2.4.3.1 National Priorities List

Because volatile organic compounds were discovered in groundwater that underlies the site, and because of the site's proximity to a sole-source aquifer, the Mound site was placed on the NPL on November 21, 1989.

2.4.3.2 Federal Facility Agreement

After the site was placed on the NPL in 1989, DOE signed a CERCLA Section 120 FFA with the EPA, effective October 1990 (EPA 1990). The FFA clarified the roles and responsibilities for CERCLA actions and required approvals. Ohio EPA was added to the FFA in 1993, making it a tripartite agreement (EPA 1993).

2.4.3.3 The Mound 2000 Process

The overall goal for the Mound site is to ensure that environmental restoration activities achieve protection of human health and the environment for the anticipated land use of commercial and industrial and to release the site for economic redevelopment. DOE and the Miamisburg Mound Community Improvement Corporation (MMCIC), presently knows as the Mound Development Corporation (MDC) agreed on industrial and commercial land use as the future land use for the site in1997. All remedial actions performed at the Mound site have been designed to meet this land use.

DOE, EPA, and Ohio EPA originally planned to address the site's environmental restoration issues under a set of larger OUs. As remedial investigations progressed, it was determined that because of past operations, over 400 areas existed at the Mound site where potential releases of hazardous waste may have occurred as detailed in the *Mound 2000 Residual Risk Evaluation Methodology, Mound Plant* (DOE 1997), hereafter called the Mound 2000 RREM. These areas were called PRSs and were identified based on knowledge of historical land use or an actual sampling result that showed elevated concentrations of contaminants. After recognizing that the contamination at the Mound site occurred in a multitude of discrete sites rather than widespread areas, it was decided that the conventional CERCLA cleanup strategy based on larger OUs was not ideal.

DOE and its regulators determined during a strategic review in 1995 that the OU approach was inefficient for the Mound site. DOE and its regulators agreed on the Mound 2000 Process, which evaluated each PRS or building separately, used removal action authority to remediate the PRSs as needed, and established a goal for no additional remediation other than ICs for the final remedy.

The Mound 2000 Process is a systematic approach to address the environmental restoration of the Mound site. In general, it breaks the Mound site into smaller areas called PRSs which were identified from contaminated media (soil, sediment, groundwater, soil gas, surface water, etc.) or buildings or groups of buildings. The Mound 2000 Process is explained in the *Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach* (DOE 1999e) and outlines the evaluation process for PRSs, building disposition, and the evaluation of residual risk.

The purpose of the Mound 2000 Process for a PRS or building is to:

- Identify environmental concerns.
- Identify if the environmental conditions warrant action.
- Identify appropriate actions.
- Communicate the evaluation and outcome to the Core Team and stakeholders.

The Mound 2000 Process established a "Core Team" of representatives from DOE, EPA, and Ohio EPA. The Core Team has evaluated more than 400 PRSs and recommended the appropriate response based on process knowledge, site visits, and existing data. If a decision could not be made, the Core Team identified specific additional information needed (e.g., data collection, investigations). The Core Team also received input from technical experts, the public, and interest groups.

2.4.3.4 Contaminants of Potential Concern (COPCs)

The COPCs, both radiological and chemical, are detailed in the residual risk evaluations (RREs) for each parcel. Appendix C contains tables for each parcel listing the COPCs used in the RREs prepared for each ROD parcel described in Section 2.5.2. Appendix C also contains links to the RREs.

2.4.3.5 Risk Exposure Pathways

Residual risks were evaluated according to the process detailed the Mound 2000 RREM (DOE 1997). The evaluation process was applied to a parcel once necessary remediation was completed, and the remaining PRSs or buildings in the parcel were designed as No Further Assessment (NFA). Once these environmental concerns were adequately addressed by the Core Team, an RRE was performed. The RRE formed part of the basis for determining what restrictions should be placed on the parcel.

The site was remediated in accordance with the regulator approved Mound 2000 Process, which used removal action authority to remediate as needed. The goal was for that the final remedies for the soil and buildings in each parcel would be ICs. Risk-based guideline values (RBGVs) were developed specifically for the Mound site. These RBGVs were developed by using EPA's *Risk Assessment Guidance for Superfund* (EPA 1989). The RBGVs were intended to be used as an evaluation and prioritization decision-making tool for DOE and the regulators during site characterization and remediation. The sitewide applicability of the RBGVs was used to significantly streamline the preliminary remediation goal (PRG) development process by minimizing the efforts required to develop site-specific PRGs for each area. The RBGVs were developed using Mound site-specific parameters, including PCOCs, physical and chemical characteristic of media, future land uses, and exposure pathways. The RBGVs were updated throughout the project in response to changes in risk determination and exposure assessment, with the last official revision being issued in 2006. The RBGVs continue to be reviewed in the projected Five-Year Review process.

The scope of each RRE was to evaluate risk associated with two exposure scenarios selected to represent reasonable maximum exposure in a commercial/industrial setting. The two scenarios are:

- Construction workers who may be directly exposed to surface (0–2 ft below ground surface [bgs]) and subsurface (all depths below 2 ft bgs) soil over a period of 5 years.
- Site workers, such as office workers, who may be exposed to surface soil (0–2 ft bgs) over a period of 25 years.

The RRE did not include an evaluation for exposures to sensitive populations. This RRE for groundwater in OU-1 was performed using a modified approach to the Mound 2000 RREM (DOE 1997) to quantify the potential carcinogenic and noncancer health effects from chronic low-level exposure to site-related contaminants remaining in groundwater in OU 1. An RRE assesses human health risks associated with residual levels of contamination remaining within an area to ensure that future land users will not be exposed to contaminant levels that would pose unacceptable risks. The results were used to update the risk and hazard estimates for residual contaminants remaining in OU-1 groundwater and to reassess the COPCs and associated remedial action levels. Although the RREM method was developed specifically for use at the Mound site, the method is consistent with the *Risk Assessment Guidance for Superfund, Part A*

(EPA 1989) to ensure that future land users will not be exposed to contaminant levels that would pose unacceptable risks. The Mound 2000 RREM performed screening of the contaminant dataset based on frequency of detections and background earlier in the evaluation process to focus the list of COPCs. To be more consistent with current EPA guidance, a screening process was done after the quantitative determination of risk for the full list of COPCs to identify if they pose an unacceptable risk to hypothetical residential groundwater users.

Groundwater remedies were established in Phase I and Parcels 6, 7, and 8. The 1995 OU-1 ROD was established prior to the Mound 2000 Process. Subsequent ROD amendments incorporated the Mound 2000 Process where applicable as well.

Each ROD parcel was evaluated in an RRE that detailed the exposure pathways considered for two types of individuals using the site: construction workers and site workers. The RREs focused on those pathways that are likely to occur and are likely to contribute significantly to the overall risk.

VI was not originally required by CERCLA to be evaluated as a potential exposure pathway for the Mound site under the Mound 2000 Approach. As a result of the Five-Year Review completed in 2016, DOE initiated a sitewide assessment regarding VI to evaluate whether complete exposure pathways are present under current or reasonably foreseeable future conditions. During this assessment, it was determined that vapor-forming chemicals, namely trichloroethene and vinyl chloride, are present at sufficient levels in the vadose zone within the former OU-1 landfill area to result in an unacceptable risk to future building occupants if a complete exposure pathway were present. VI was addressed as part of the 2023 OU-1 ROD Amendment and the required land use and activity restrictions are outlined in Section 3.3.4.2. The VI assessment is ongoing for the remainder of the site and if it is determined based on data collected during the ongoing assessment that VI should be addressed, a decision for that area of the site will be presented in a future decision document.

As shown in Figure 3, there is a retention pond in the southwest corner of the site. DOE does not own this pond; MDC owns the pond. The pond was installed after the property was transferred to the MDC. Details regarding pond ownership and enforcement of the nonrecreational IC restriction are managed by MDC. MDC has signs posted that indicate no fishing is permitted in the pond and they are responsible for the enforcement of these restrictions. MDC does regularly monitor the pond for these recreational activities and asks people to leave if they are seen not following the signs. During the annual IC inspections, LM ensures that signs are still in place and confirms that MDC is still enforcing the no-fishing rules. Below is a photograph of the no trespassing and notice of no fishing permitted signs at the pond (Figure 5).

Recreational use including fishing at the pond is prohibited by the quitclaim (QC) deed stated above and within the City of Miamisburg zoning laws. To be clear, fishing and other recreational activities are prohibited on this parcel.

Figure 5. No Trespassing and No Fishing Notice Signs at the MDC Pond

The "Mound Core Team IC Guidance: General Including Soil Removal September 12, 2012" (Appendix D) stated that "DOE, EPA, and Ohio EPA considered the exposure assumptions used to develop the industrial/commercial cleanup standards for the Mound site and concluded that occasional visits to the retention pond by area residents will not result in an unacceptable risk to the visitors.

However, if recreational activities are observed, MDC and future property owners will continue to monitor and discourage these unauthorized uses. Continued fishing or other recreational activities may result in more rigorous enforcement of ICs."

2.4.3.6 Cleanup Objectives

The site was remediated to an industrial or commercial standard that allowed some residual contamination to remain onsite.

Cleanup objectives based on CERCLA were evaluated using the *Risk-Based Guideline Values, Mound Plant, Miamisburg, Ohio* (DOE 1995b). These values were updated as necessary with the final Revision 9 in June 2006 (DOE 2006).

The CERCLA remedies that are described in the Mound site parcel RODs ensure protection of human health and the environment. These remedies ensure that exposure to the residual contamination does not exceed the exposure criteria of the industrial/commercial worker scenario.

The Mound site CERCLA ROD remedies include ICs and groundwater monitoring. The remedies must be maintained to ensure protection of human health and the environment.

2.5 Remediation Response Actions

2.5.1 Response Action Summary

The Mound site was remediated over a 20 plus year period at a cost of approximately $1 billion to an industrial/commercial-use standard that allowed some residual contamination to remain onsite.

Physical remediation of the Mound site lasted from the early 1990s through 2011. The work was done under CERCLA following the Mound 2000 Process that is explained in the *Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach* (DOE 1999e).

The Mound 2000 Process established a Core Team of representatives from EM MCP, EPA, and Ohio EPA. The Core Team evaluated over 400 PRSs and recommended the appropriate response based on process knowledge, site visits, and existing data. If a decision could not be made, the Core Team identified specific additional information needed (e.g., data collection, investigations). The Core Team also received input from technical experts, the public, and public interest groups.

One area of the Mound Plant known as the Burn Area was also subject to Resource Conservation and Recovery Act (RCRA) regulations. The closure was documented in the *Burn Area Certification of Closure and Final Amended Closure Plan* (DOE 1998).

During the CERCLA remediation process, DOE and its prime contractors reorganized its activities using different nomenclatures (i.e., areas, OUs, PRSs, release blocks, phases, and parcels). Administrative Record documents will use and reference these terms.

2.5.2 Decision Documents—CERCLA RODS

DOE completed a ROD for each area that summarized the contamination, potential future uses, site risks, Remedial Action Objectives, remedial alternatives, and the selected remedy evaluated against the nine NPL weighting criteria, however, the ROD for each area summarizes the remaining contamination at the site after the PRS required soil and building removals.

The site had a total of eight RODs that combined encompass all the parcels shown in Figure 3 and further explained in Table 1. The RODs cover the following parcels or set of parcels:

- Parcel 3
- Parcel 4
- Parcel D (initially called Release Block D)
- Parcel H (initially called Release Block H)
- Phase I Parcels (A, B, C)
- Parcels 6, 7, and 8
- OU-4 (offsite with no ICs)

- OU-1 ROD that had two amendments
  - Parcel 9: First OU-1 ROD amendment in 2011 that modified ICs and expanded ROD area into Parcel 9.
  - OU-1 Parcel 9: Second OU-1 ROD amendment in 2023 that added VI ICs and modified groundwater remedy to monitored natural attenuation. Changes only cover the southern area within Parcel 9 identified as the OU-1 Parcel 9 area.

Figure 3 shows the parcels within the Mound site boundary that are covered by RODs, outlined in purple, and it shows OU-4 in gold. OU-4 is an offsite area owned by the City of Miamisburg, west of the site, which has a no-action ROD and no ICs.

Each ROD also specified key elements for monitoring remedies and the requirement for CERCLA Five-Year Reviews.

DOE documented the final physical site condition of each onsite parcel in a CERCLA 120(h) Summary Notice of Hazardous Substances, hereafter called an Environmental Summary (ES). An ES is required for transfer of contaminated property by the federal government.

Table 1 lists the current RODs, approval dates, and corresponding ESs, if appropriate. These documents are available on the LM Mound site webpage at https://lmpublicsearch.lm.doe.gov/SitePages/CERCLA.aspx?sitename=Mound.

Figure 3 also shows that currently there are a total of eighteen buildings that remain at the site. One of which, is the T Building which is a unique underground building with its own specific area ICs as further detailed in Section 3.3.3. A total of 138 structures were demolished during the cleanup of this site. An additional six buildings were demolished by MDC after the cleanup was completed and property was no longer owned by DOE. The detailed history of the demolition of the buildings can be found in the site LTS&M Plan in Appendix 2. A summary of the remaining buildings, the tenants, and related RODs is summarized in Appendix B.

2.6 Non-CERCLA Response Actions

The bulk of the contaminated soil and waste materials from the former OU-1 landfill were removed from 2007 through 2010 as part of two non-CERCLA removal actions. Any IC requirements under the 1995 OU-1 ROD are no longer required after its excavation. This is reflected in the 2011 OU-1 ROD Amendment. The landfill area is shown on Figure 6 in Parcel 9 OU-1 area. There are no other capped landfills at the Mound site.

The only building restrictions for this area were stipulated in the 2023 OU-1 ROD Amendment in the form of VI ICs. The VI ICs are further explained in Section 3.3.2 and only apply to new construction in this area. This ROD Amendment also outlines the modified groundwater remedy of enhanced attenuation. The changes in the 2023 OU-1 ROD Amendment are only applied to the southern area within Parcel 9 identified as the OU-1 Parcel 9 area as show in Figure 6.

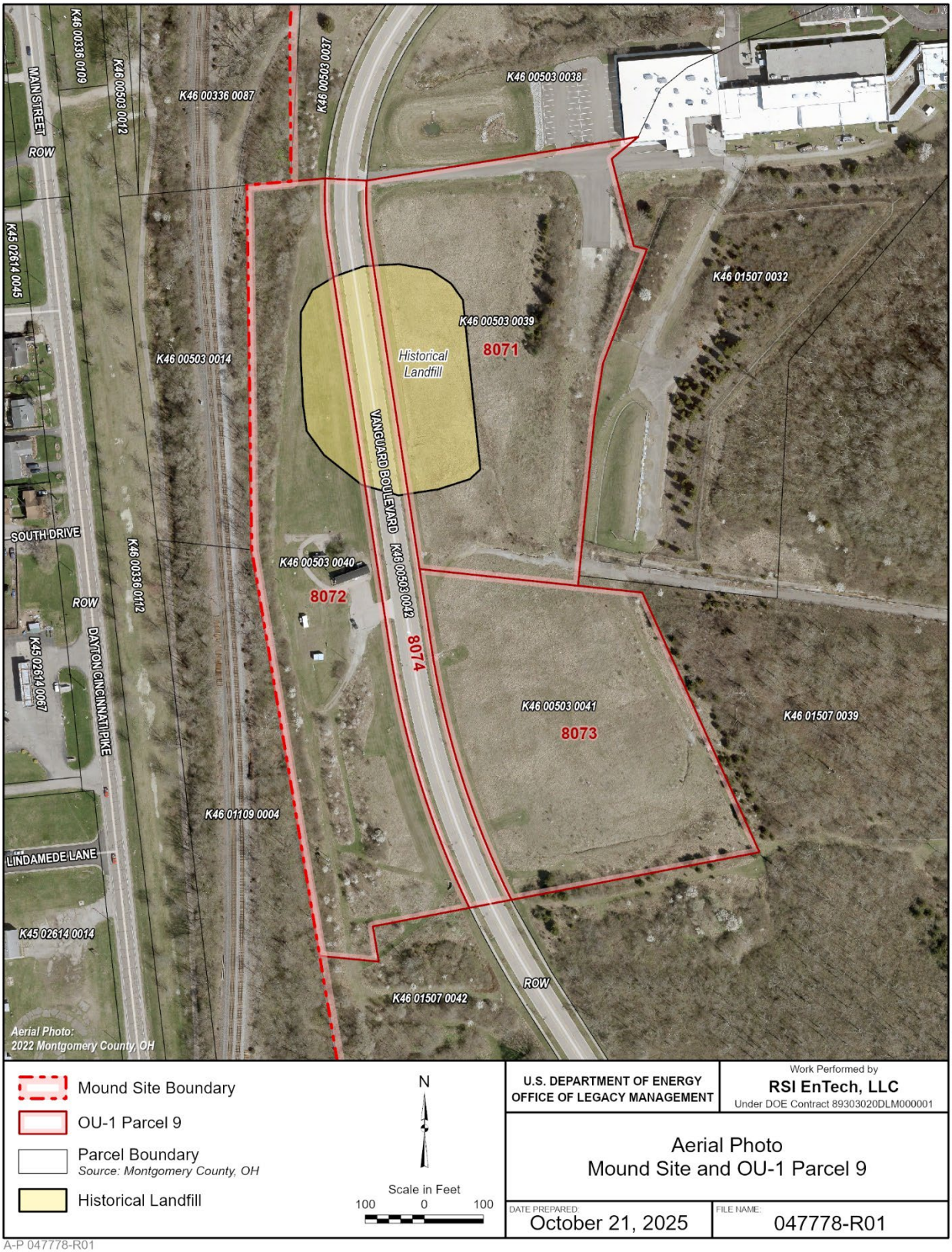


Figure 6. Parcel 9 OU-1 Area

2.7 Final Physical Site Conditions

The Mound site has completed all of the CERCLA 120(h) requirements for property transfer as an industrial or commercial use site.

The CERCLA remedies require adherence to ICs and groundwater monitoring.

All of the Mound property has transferred to MDC, the City of Miamisburg, for beneficial reuse. MDC has sold approximately 20% of that property to private property owners for commercial/industrial reuse. The site is called the Mound Business Park and is subject to a City of Miamisburg special zoning district, Mound Business (MB-1) and Special Development District (SDD-3) that only applies to City Lot 8058, Montgomery County Parcel K46 00501 0019 as detailed in Section 5.3.4.2. City Lot 8058, Montgomery County Parcel K46 00501 0019 is the T Building parcel (Figure 7 and Figure 8).

Other IC compliance controls are detailed in Section 5.0.

Details of current property ownership are included in Section 5.2 and detailed in Appendix B, "Property Ownership Information."

Appendix E provides a copy of the MB-1 to SDD-3 zoning ordinance and a current map of the zoning districts at the site.

3.0 ICs for Substantive Use Restrictions

3.1 IC Introduction

ICs are an important component of the CERCLA remedies selected for the Mound site. ICs are nonengineered instruments, such as administrative and legal controls, that help to minimize the potential for exposure to contamination or protect the integrity of a response action or both. Detailed information on the remedies and development of the ICs is contained in parcel-specific CERCLA documents, primarily the RODs and ESs listed in Table 1.

The Mound site ICs run with the land in the form of (1) restrictions and covenants in the DOE QC deeds or (2) activity and use limitations in the two environmental covenants (ECs) filed with Montgomery County, Ohio, so that all future property owners will know about the deed restrictions.

Annual assessments conducted by DOE, its successor, or consultants, review all the QC deeds and EC requirements for each parcel to ensure that the IC objectives from each parcel are adequate and are being maintained to achieve protectiveness statements in the ROD objective.

This section and the following sections describe the ICs and the site's IC-management and land-use control activities that are necessary to ensure that the remedies in place continue to remain protective of human health and the environment.

Section 3.5 details guidance documents developed by the Core Team relating to ICs.

3.2 IC Relationship Matrix

Table 2 summarizes the IC information as suggested in the EPA guidance (EPA 2012). Copies of all deeds and ECs are publicly available at the Montgomery County Recorder's office; many deeds are also available online by searching (https://riss.mcrecorder.org/).

3.3 Summary of ICs

The following Mound site ICs, as defined in the RODs, run with the land in the form of restrictions and covenants in QC deeds or activity and use limitations in the two ECs. The ICs are summarized in Section 3.3.1 and detailed in Section 3.3.4

3.3.1 ICs That Apply to the Entire Mound Site

The following ICs apply to the area outlined in red in Figure 7:

- Maintenance of industrial/commercial land use and prohibition against residential land use
- Prohibition against the use of groundwater without prior written approval from EPA and Ohio EPA
- Prohibition against the removal of soil from within the site boundary to offsite locations without prior written approval from EPA, Ohio EPA, and Ohio Department of Health (ODH)
- Allowed site access for federal and state agencies for the purpose of sampling and monitoring

Figure 7. Mound Site Institution Controls Map

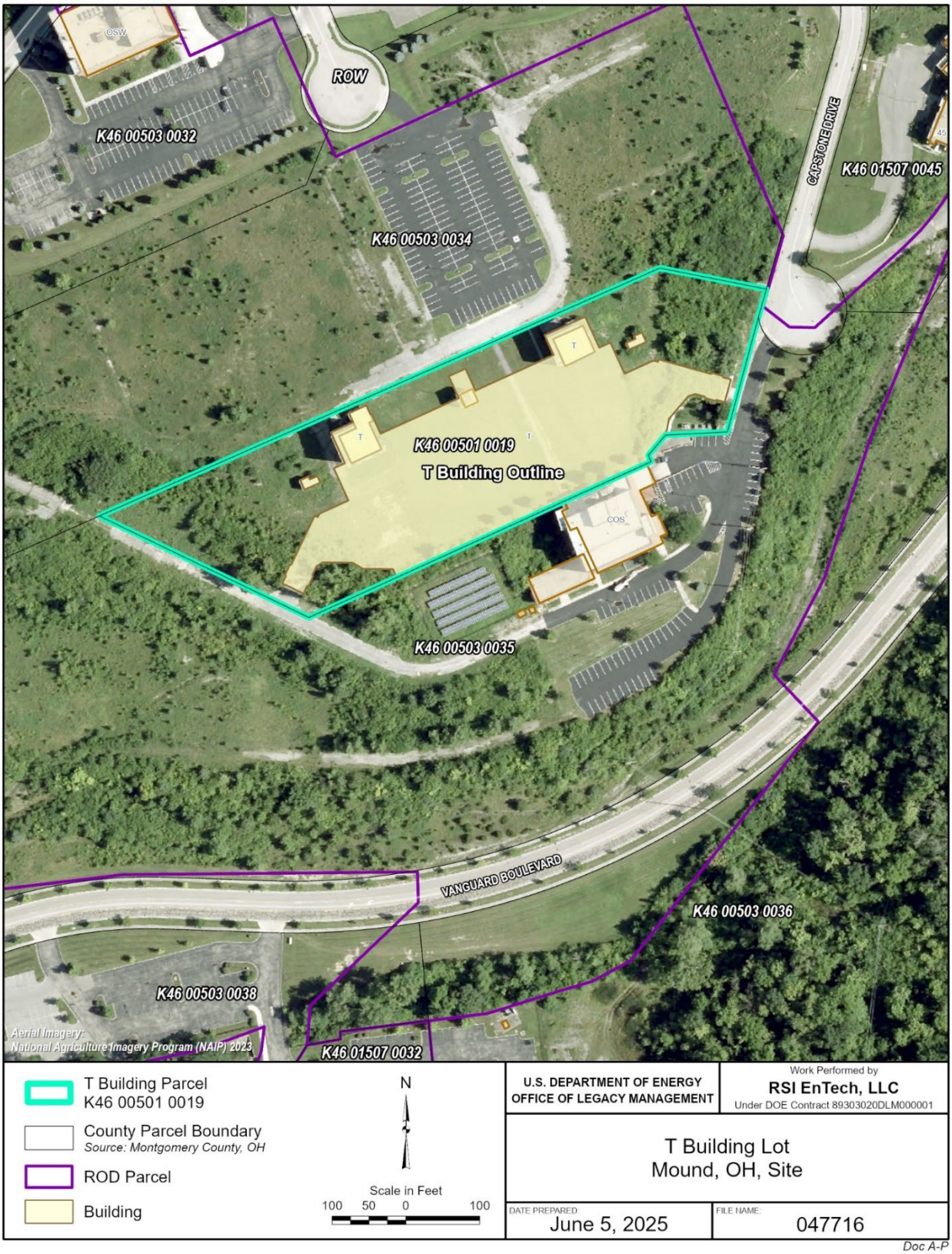


Figure 8. Aerial Showing the Outline of the Underground T Building Within Property Boundary

Table 2. IC Relationship Matrix

ROD Parcel ID[a]	Former ID or Other Names	ROD Date	Media	Cleanup Objective	CERCLA Remedy	Use Restriction Objectives of ICs	IC Instruments Quitclaim Deeds[b] DOE to MDC and Environmental Covenants (Planned or Implemented)
D	Release Block D	1999	Soil	Industrial use	ICs	Prohibition against removal of soils from the DOE Mound property boundary without approval from ODH, Ohio EPA, and EPA. Prohibit against the use of groundwater. Maintenance of industrial/commercial land use. Prohibition against residential use.	Parcel D QC deed: **QC 02-146503,** 11-22-2002 Parcel H Quitclaim deed: **QC 02-146504**, 11-22-2002 Parcel 3 QC deed: **QC 02-028206**, 10-18-2002 Parcel 4 QC deed: **QC 02-128007**, 10-17-2002 The following QC deed *replaced previous deeds* listed above for Parcels 3, 4, D, H, and combined them with the Phase I Parcel QC deed: **QC 09-011643,** 02-24-2009[d]
H	Release Block H	1999	Soil	Industrial use	ICs		
3	None	2001	Soil	Industrial or commercial use	ICs		
4	South Property[c]	2001	Soil	Industrial or commercial use	ICs		
Phase I	A B C	2003	Soil and groundwater	Industrial or commercial use	ICs and MNA		
6 7 8	Parcels 6, 7, and 8 Includes subparcel 6A	2009	Soil and groundwater	Industrial or commercial use	ICs and MNA	Prohibit the removal of soil from within the site boundary without prior approval from EPA, Ohio EPA, and ODH. Prohibits the extraction, consumption, exposure, or use of groundwater in any way without prior written approval from the EPA and Ohio EPA. Maintenance of industrial/commercial land use. Prohibition against residential use. Prohibit the removal of concrete floor material in specified rooms of T Building without prior approval from EPA, Ohio EPA, and ODH. Prohibit the penetration of concrete floor material in specified rooms of T Building without prior approval from EPA, Ohio EPA, and ODH.	QC deeds: QC **12-00083743**, 12-19-2012 for 995 Mound Road **QC 17-00055321**, 09-19-2017 for 885 Mound Road **QC 17-00045599**, 08-04-2017 for 930 Capstone Drive **QC 18-00006246**, 01-31-2018 for 460 and 480 Vantage Point and lot on north hillside **QC 18-00064591**, 11-01-2018 for 945 Capstone Drive **QC 19-00061640**, 11-05-2019 for remainder of Parcels 6, 7, and 8 plus a part of Parcel 9

Table 2. IC Relationship Matrix (continued)

ROD Parcel ID[a]	Former ID or Other Names	ROD Date	Media	Cleanup Objective	CERCLA Remedy	Use Restriction Objectives of ICs	IC Instruments Quitclaim Deeds[b] DOE to MDC and Environmental Covenants (Planned or Implemented)
9	OU-1 landfill[e] Area B	1995 OU-1 ROD	Soil and groundwater	Industrial or commercial use	Modified in 2023; see OU-1/Parcel 9 area	Prohibit the removal of soil without prior written approval from ODH, Ohio EPA and US EPA. Maintenance of industrial/commercial land use. Prohibit the use of groundwater. Groundwater under the property shall not be extracted, consumed, exposed, or used in any way without prior written approval of EPA and Ohio EPA. Prohibition against residential use or farming activities. The property shall not be used for any residential or farming activities, or any other activities which result in the chronic exposure of children under 18 years of age to soil or ground water from the property.	**SI 12-00004722**,01-24-2012 *Environmental Covenant* (DOE 2011b) (entire Parcel 9 area) Special Instrument Deed[d] **QC 19-00061640,** 11-05-2019 for remainder of Parcels 6, 7, and 8 plus northern part of Parcel 9
	Parcel 9	2011 OU-1 ROD amendment (DOE 2011a)	Soil and groundwater	Industrial or commercial use	Expanded area and adopted the sitewide ICs		
OU-1 Parcel 9 area	Southern area of Parcel 9 including the OU-1 area	2023 OU-1 ROD Amendment (DOE 2023)	Soil, soil vapor, and groundwater	Industrial or commercial use	ICs and enhanced attenuation with monitoring	Prohibit the removal of soil without prior written approval from the ODH, Ohio EPA, and EPA. Groundwater under the property shall not be extracted, consumed, exposed, or used in any way without the prior written approval of the EPA. Restrict land use to industrial/commercial only. Mitigation of VI through engineering controls; or provide information and evidence that the VI exposure pathway is incomplete, such plans and information shall be provided to DOE, EPA, and Ohio EPA for review and approval prior to construction.	**SI 12-00004722**,01-24-2012 *Environmental Covenant* (DOE 2011b) (entire Parcel 9 area) Special Instrument Deed[f] *Environmental Covenant* QC 202500045320, 08-21-2025 (OU-1 Parcel 9 Area) (DOE 2025]) for southern part of Parcel 9 identified as OU-1 Parcel 9 area

Table 2. IC Relationship Matrix (continued)

ROD Parcel ID[a]	Former ID or Other Names	ROD Date	Media	Cleanup Objective	CERCLA Remedy	Use Restriction Objectives of ICs	IC Instruments Quitclaim Deeds[b] DOE to MDC and Environmental Covenants (Planned or Implemented)
OU-4	Miami-Erie Canal	2004	None	Free release	No action	None	None required

Notes:
There are no conditions for termination for ICs at this time.
Appendix B is a summary of the current property ownership information at the time of this plan.
Please note that updated property ownership information is reviewed annually in the IC assessment.
Potential residual contaminants identified in RREs for each parcel are detailed in Appendix C.
[a] See ROD Parcels depicted on Figure 3.
[b] QC deeds and ECs are filed at Montgomery County, Ohio.
[c] Portions of the New or South Property are included in Phase I and Parcel 9 areas.
[d] On February 24, 2009, the following QC deeds were merged for Parcels 3, 4, D, H, and combined with Phase I Parcel Quitclaim Deed QC 09 011643 at the request of MDC. No additional revisions to the content or restrictions were made with this deed combination.
[e] The OU-1 landfill was removed through two non-CERCLA actions performed from 2007 through 2010.
[f] Special instrument deed in Ohio provides a limited warranty regarding the property's title, offering less protection to the buyer than a general warranty deed.

Abbreviation:
MNA = monitored natural attenuation

3.3.2 Additional ICs That Only Apply to OU-1 Parcel 9 Area

As detailed in Section 3.3.4.2, these are additional ICs that apply only to the OU-1 Parcel 9 area defined as Montgomery County parcels and shown in Figure 6. These ICs were imposed in the OU-1 Parcel 9 ROD Amendment (DOE 2023):

- K46 00503 0039–Lot 8071 (5.9521 acres)
- K46 00503 0040–Lot 8072 (5.7021 acres)
- K46 00503 0041–Lot 8073 (4.8771 acres)
- K46 00503 0042–Lot 8074 (2.0185 acres)

Mitigation of VI through engineering controls. The landowner acknowledges that environmental conditions present may impact indoor air quality. Landowners shall choose from *one* of the following alternatives prior to performing any new construction of buildings:

- Incorporate engineering controls (i.e., vapor mitigation system) at the time of construction and ensure continued operation, maintenance, and monitoring to ensure that the controls are effective in the long term
- Provide evidence that the VI exposure pathway is incomplete and engineering controls (i.e., vapor mitigation system) are not necessary

3.3.3 Additional ICs That Only Apply to Specified Areas in T Building at 945 Capstone Drive, Miamisburg, Ohio

As described in the *T Building Special ICs Core Team Agreement and Position Paper* (DOE 2009b) (included in Appendix D) the T Building is a massively constructed underground building that contains 10-foot-thick heavily reinforced concrete walls, floors, and ceilings. Due to the contamination of the floors in specific areas of the building it was determined during remediation that it was not economically or technically feasible to remove all the contamination. Therefore to meet the residual contamination regulations for commercial or industrial property and ensure worker safety, two working populations were modeled for risk, an office worker and renovation worker, and then restrictions were placed on specific areas of the building. The study showed, based on low-dose rates, that capping the floors (red concrete/green concrete areas) and ensuring no future penetrations of these areas would be sufficient to protect the environment and safety of the workers within the building.

As detailed in Section 3.3.4.3, there are additional ICs that apply only to specified areas within the underground building (T Building) at 945 Capstone Drive, Miamisburg, Ohio, Montgomery County Parcel K46 00501 0019–Lot 8058 shown in Figure 8 and Figure 9.

This area was included in the Parcels 6, 7, and 8 ROD (DOE 2009a) that imposed these restrictions.

- Prohibition against the removal of concrete floor material in specified rooms of the T Building to offsite locations without prior written approval from EPA, Ohio EPA, and ODH
- Prohibition against the penetration of concrete floors in specified rooms of T Building locations without prior written approval from EPA, Ohio EPA, and ODH

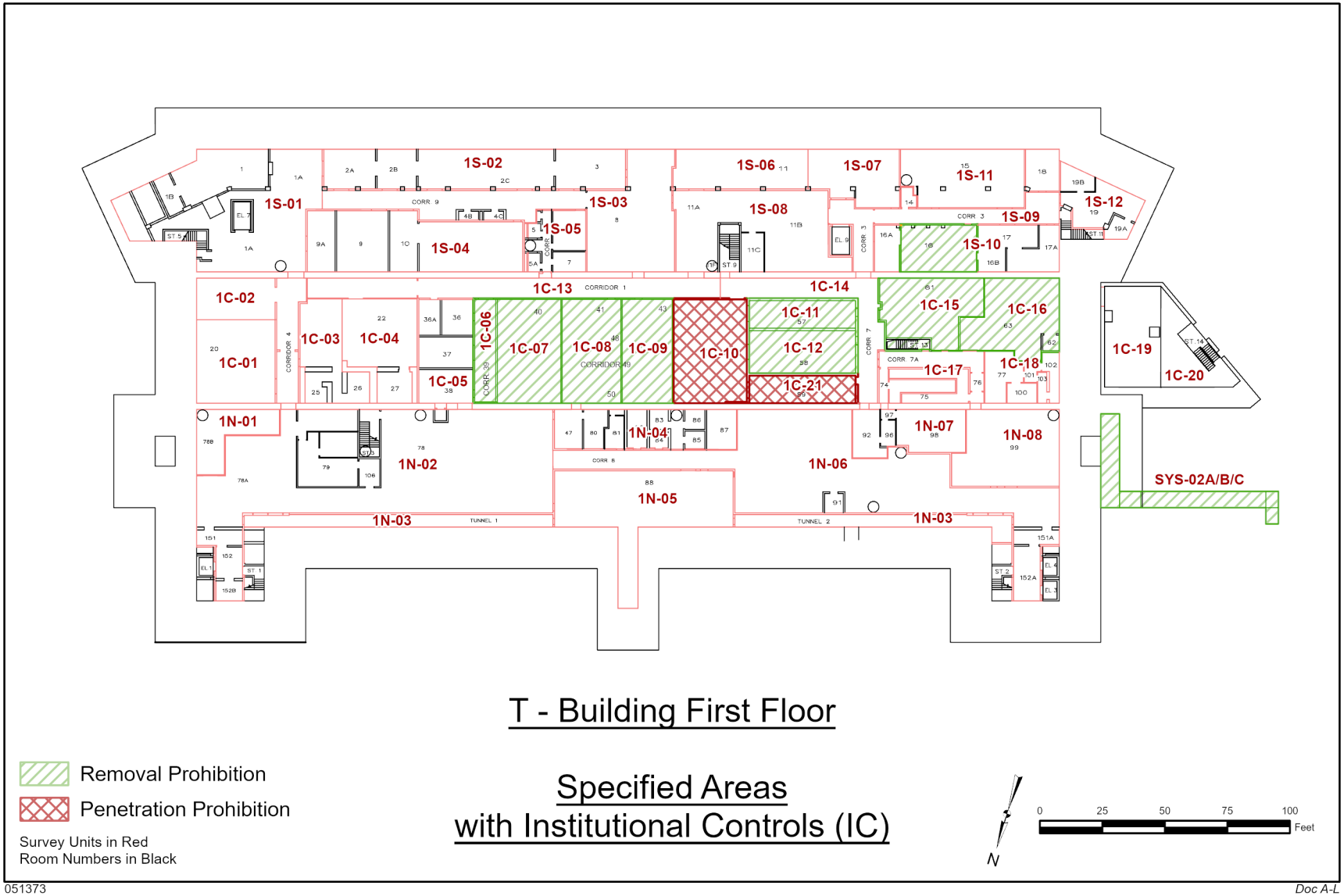


Figure 9. T Building Specified Areas with Additional ICs

3.3.4 Details of ICs

3.3.4.1 ICs That Apply to the Entire Mound Site Shown on Figure 2

Maintain Industrial/Commercial Land Use and Prohibit Residential Land Use

The RODs require land use to be industrial or commercial only. The RODs detail specific land uses that will not be permitted onsite, but the list in the RODs is not all-inclusive. Land parcels may not be used for any residential or farming activities or for any other activities that could result in the chronic exposure of children under 18 years of age to soil or groundwater from the premises. Prohibited land uses listed in the RODs include, but are not limited to, single or multifamily dwellings or rental units, schools, and childcare facilities.

Prohibit Use of Groundwater from Within the Site Boundary

The RODs prohibit the extraction, consumption, exposure, or use in any way of the groundwater underlying the Mound site without prior written approval of EPA and Ohio EPA. The landowner will need to obtain written approval from EPA and Ohio EPA to install a new well for any use (e.g., consumption, irrigation, dewatering).

Prohibit Removal of Soil from Site to Offsite Locations

The RODs prohibit the removal of soil from the Mound site without prior written approval from EPA, Ohio EPA, and ODH. The risk associated from the exposure to contaminants in soil at the site has not been evaluated for any use other than onsite industrial/commercial use. Any offsite disposal without proper handling, sampling, and management could create an unacceptable risk to offsite receptors. Information about the cleanup process, background levels, and toxicology data are contained in or referenced in the Mound 2000 RREM (DOE 1997).

The landowner will need to obtain written approval from EPA and Ohio EPA to remove soil from within the site boundary to an offsite location. The current decision authority for removing soil from the site resides within the Division of Environmental Response and Revitalization at the Southwest District Office in Dayton, Ohio.

Currently, there are two minor roadway areas to center lines of Mound and Benner Roads that are not exempted from the soil removal IC restriction because it was not stated in QC deed. These areas are illustrated in Figure 4. The City of Miamisburg and MDC are aware of these areas and DOE is working with them on potential alternatives if they want to update the deed document with the exemptions.

Allow Site Access for Federal and State Agencies for Sampling and Monitoring

The RODs require continued site access by LM, EPA, Ohio EPA, and ODH to conduct inspections and perform the monitoring required by the ROD remedies. The QC deeds and EC grant the right of access for environmental investigation or remedial action.

The right of access provides LM, EPA, Ohio EPA, and ODH with access at all reasonable times for purpose of conducting any and all activities related to an Environmental Response Project as

defined in Title 53 *Ohio Revised Code* Section 5301.80(E) (53 ORC 5301 et seq.), including but not limited to the following activities:

1. Performing or implementing any activity relating to response actions described in the ROD and amendments thereto
2. Verifying any data or information submitted to EPA or Ohio EPA
3. Verifying that no action is being taken on the Mound site in violation of the terms of a deed restriction, EC, or any federal or state environmental laws or regulations
4. Monitoring response actions on the Mound site and conducting investigations relating to the response actions, including but not limited to sampling of air, water, sediment, soil, or soil vapors and installation or removal of monitoring wells and sampling devices
5. Conducting periodic reviews of response actions

DOE Sampling and Monitoring

There are currently no active soil remedies. Groundwater contamination is being addressed through enhanced attenuation in OU-1 and monitor natural attenuation in Parcels 6, 7, and 8 and Phase I. Figure 10 maps the existing groundwater monitoring well locations and seeps on the aerial image of the Mound site which also includes the ROD parcel boundaries. There are no soil gas monitoring wells at the Mound site. The Mound site does not have specific ICs to protect the monitoring wells. The site monitoring wells are accessed under the deed into perpetuity or until DOE removes or abandons them. Please note that there is potential for the wells to be removed and or new wells to be installed until site cleanup objectives are achieved. All this information is further detailed in the annual groundwater monitoring reports and optimization plans.

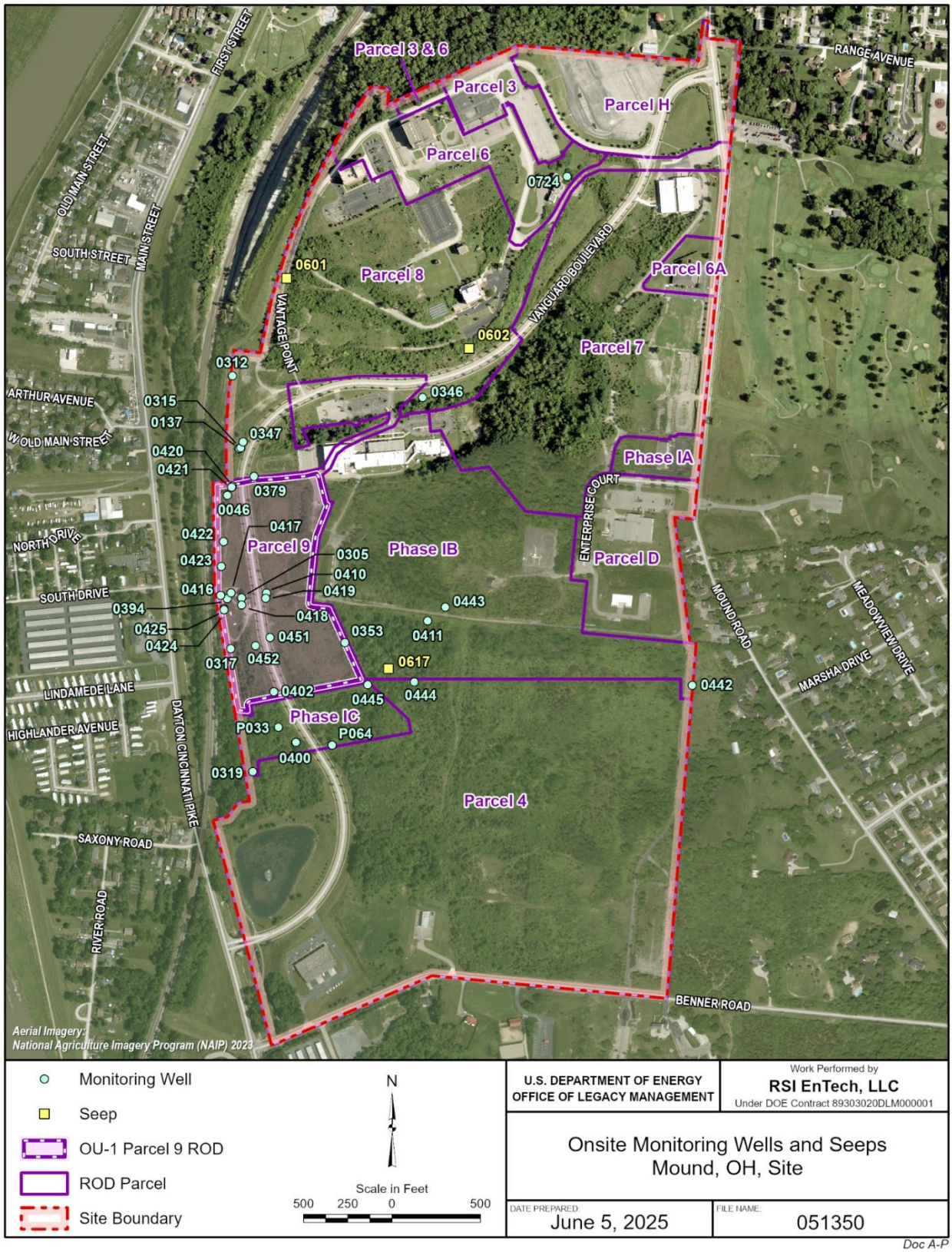


Figure 10. Current Onsite Monitoring Wells and Seeps (2025)

3.3.4.2 Additional ICs That Only Apply to OU-1 Parcel 9 Area

The OU-1 ROD Amendment for this area (DOE 2023) requires mitigation of VI through engineering controls for any new construction in the four parcels defined in Section 3.3.2. The property owner acknowledges that environmental conditions are present that may impact indoor air quality.

Property owners shall choose from one of the following alternatives prior to performing any new construction of buildings in the OU-1 Parcel 9 area.

Planning must be done and approved by DOE and regulators as part of the building planning stages and design prior to any buildings being constructed.

Alternatives:

- **Incorporate engineering controls (i.e., vapor mitigation system).** Incorporate engineering controls at the property or portion thereof at the time of construction and ensure continued operation, maintenance, and monitoring to ensure that the controls are effective in the long term to protect human health and the environment.
  - Such plans, including O&M Plans shall be provided to LM, EPA, and Ohio EPA for review and approval prior to construction
  - Information and evidence regarding the final and as-built engineering controls shall be provided in writing to the parties identified in Section 6.6
- **Show that VI exposure pathway is incomplete.** Provide information and evidence that demonstrates the conditions at the property or portion thereof are such that the VI exposure pathway is incomplete and engineering controls (i.e., vapor mitigation system) are not necessary to protect human health and the environment.
  - Such information shall be provided to LM, EPA, and Ohio EPA for review and approval prior to construction. Information and evidence that demonstrate there is no risk from VI should be obtained through samples collected from the property.
  - A final determination of the risk that concentrations of subsurface vapors could pose to building occupants shall be provided in writing to the parties identified in Section 6.6.

3.3.4.3 Additional ICs That Only Apply to Specified Rooms of the T Building at 945 Capstone Drive, Miamisburg, Ohio

Prohibition Against the Removal of Concrete Floor Material in Specified rooms of the T Building to Offsite Locations

The Parcels 6, 7, and 8 ROD contains ICs that prohibit removal of concrete from the floor of specified rooms in the T Building (as shown in Figure 9) to offsite locations without prior written approval from EPA, Ohio EPA, and ODH. Removing concrete from these areas is prohibited. The Core Team developed the guidance and protocol provided in Appendix D.

The QC deed (19-00028127, June 3, 2019, LM to MDC T Building parcel refiled) states, "Grantee shall not remove concrete floor material to a location outside that specified in

paragraph 1.1 (a) without the approval of USEP A or Ohio EPA, and for areas 1C-10 and 1 C21, Grantee shall take no action that causes a penetration in the concrete floor of those areas without the prior approval of EPA and Ohio EPA."

LM also inspects this area of the T Building each year during the annual IC assessment to ensure that the concrete floors have not been penetrated and the red/green caps are still intact.

Prohibit Penetration of Concrete Floors in Specified Rooms of the T Building

The Parcels 6, 7, and 8 ROD prohibits penetration of the red concrete floor in T Building specified areas (Figure 9) without prior written approval from EPA, Ohio EPA, and ODH. Drilling, sawing, or otherwise penetrating concrete from these areas could result in an unacceptable exposure to the equipment operator and other workers in the area.

The Core Team developed the June 29, 2009, Mound Core Team IC Guidance: T Building Special IC Areas provided in Appendix D.

3.4 Quitclaim Deeds and Environmental Covenants

The QC deeds for the Mound site simply transfer the property from DOE to the City of Miamisburg, MDC, for redevelopment. These deeds incorporate the same requirements of each ROD parcel as explained in Section 3.3 while allowing DOE to transfer the property with specific warranties or limited and stated guarantees regarding the property condition at time of transfer.

The requirements of the Mound ECs running with the land for perpetuity and shall be binding upon the owner and all assigns and successors in interest, including any transferee, pursuant to 53 ORC5301.85. The term *transferee* as used, shall mean any future owner of any interest in the property or any portion thereof, including, but not limited to, owners of an interest in fee simple, mortgagees, easement holders, or lessees.

In addition to the activity and use limitations of the ROD requirements, as listed in Table 2 and Section 3.3, the ECs also include the following requirements:

- **Rights of Access:** The owner shall grant the right of access to DOE, EPA, Ohio EPA, and ODH, their agents, contractors, and employees to the property for inspection, monitoring, or enforcement.
- **Compliance Reporting:** DOE, or its successors or assigns, shall submit to EPA, Ohio EPA, and ODH on an annual basis written documentation, in accordance with the OU-1 ROD (June 1995), as amended in August 2011 and September 2023, verification that the activity and use limitations are being complied with and remain in place. This report is known as the annual IC assessment. In addition, CERCLA Five-Year Reviews will be conducted by DOE, or its successors or assigns, to ensure that protectiveness of the EC and ICs are being maintained.
- **Notice of Conveyance:** If any property, interest in, or portion of property is transferred the owner shall provide notice that the property being transferred contains activity and use limitations as set forth in the EC.

3.5 Mound Core Team IC Guidance Documents

The Mound Core Team has issued three guidance documents that provide more detail on IC compliance (DOE 2021c). They are included in Appendix D of this ICIAP.

3.5.1 IC Guidance—General Including Soil Removal

The *Mound Core Team IC Guidance* (DOE 2012) provides additional detail and clarity to the ICs.

3.5.2 IC Guidance—T Building Special IC Areas

The *T Building Special ICs Core Team Agreement and Position Paper* (DOE 2009b) provides additional detail on IC compliance.

3.5.3 IC Guidance—Process to Evaluate Mound Business Park Property Owner Requests for Land Uses Not Specifically Addressed Under CERCLA RODs

This guidance provides the Core Team's formal process to evaluate requests from property owners for new site activities that are not specifically prohibited or permitted in the IC wording. The requests are submitted using the form included in this guidance document.

Appendix D also includes a blank copy of the *Request for Regulatory Approval of New Site Activity* form. Property owners can use this form to submit a formal request to DOE, EPA, and Ohio EPA to provide written approval of an activity not generally covered by the ICs at the Mound site.

DOE and EPA have developed a decision tree to help property owners determine if a *Request for Regulatory Approval for New Site Activity* form needs to be completed for any potential new site uses. The decision tree is a working document and can be obtained by contacting the DOE site manager.

The requests and all decisions on these requests will also be included in annual IC assessment reports.

4.0 IC Compliance Inspections

LM will inspect the Mound site to monitor IC compliance, so the remedies remain protective. These inspections include the annual IC assessment and CERCLA Five-Year Reviews.

4.1 IC Effectiveness Assessments

LM will assess the effectiveness of the Mound site's ICs annually. These assessments determine whether the ICs continue to function as designed, adequate oversight mechanisms are in place to identify possible violations of ICs, and adequate resources are available to correct or mitigate any problems if violations occur.

These assessments will examine changes that could indicate an IC violation, such as use other than industrial/commercial, unapproved use of groundwater, unapproved soil removal, or unapproved penetration or removal of concrete from specific T Building areas. See Section 4.1.3 for the scope of the inspections.

4.1.1 Frequency

LM currently assesses the effectiveness of ICs applied to the Mound site annually and publishes an assessment report each June. LM will notify EPA, Ohio EPA, ODH, the City of Miamisburg, MDC, other site landowners and tenants, and other interested stakeholders at least 30 days before this inspection.

LM will review the ICs any time there is reason to believe a degradation of any control has occurred.

As stated in the RODs, LM can petition the regulators to decrease the assessment frequency (e.g., to every 5 years) in the future.

4.1.2 Inspector Qualifications

LM or its designated agent will perform inspections and assessments. Inspectors will be experienced engineers or scientists who have the required knowledge, skills, and abilities to evaluate site conditions and recognize potential or actual problems. Areas of expertise may include civil, geotechnical, and geological engineering; geology and hydrology; biology; and environmental science (e.g., ecology, soils, or range management). If conditions warrant, other inspectors with other skill sets may be assigned to evaluate serious or unusual problems and make appropriate recommendations.

4.1.3 Scope

LM will evaluate changes in the site that could indicate an IC violation; each IC assessment will include the following:

- Physical inspections of the site, including photos of changed conditions relating to ICs.
- Reviews of Montgomery County property records to determine whether property ownership has changed.
- Contact with the property owners and tenants, if possible, to review the ICs and answer their questions. LM requests landowners and tenants to complete and return a form each year and will include these in the annual report. An example of this form is included in Appendix D.
- Review of IC-related property-owner requests to EPA and Ohio EPA to approve land uses, soil removal, groundwater use, penetration or removal of concrete in the T Building, if any are submitted. Appendix D contains an example request form that documents EPA and Ohio EPA decisions with LM concurrence; all requests are reviewed or approved by regulators.
- Review City of Miamisburg records to identify property improvements or construction that could relate to the ICs and to determine whether any LM actions are needed. Records to be requested and reviewed include the following:
  - Permits, including construction, street-opening, and occupancy

  - Permits for new construction
  - Planning commission records
  - Zoning modifications
  - Requests for approvals of parking lots and other changes that do not require building permits
- Review of the Ohio Department of Natural Resources website and the well-drilling information posted to determine whether unauthorized wells were drilled onsite.
- Review of all Ohio 811 notifications over the previous 12 months.

LM will also conduct a walkdown with EPA, Ohio EPA, ODH, the City of Miamisburg, MDC, and other interested parties. LM will notify these parties at least 30 days before the walkdown.

If access is denied during the IC inspection, LM will notify EPA and Ohio EPA.

IC inspectors use a checklist similar to the one in Appendix D to record inspection findings. The checklist questions are reviewed and revised as necessary.

4.1.4 Report

LM will issue a report that documents the results of the annual IC assessment to EPA, Ohio EPA, ODH, MDC, and the City of Miamisburg no later than June 13 each year in accordance with the FFA (EPA 1993). LM will publish a public notice and post the final report on the LM Mound, Ohio, Site webpage (https://www.energy.gov/lm/mound-ohio-site). The report will address surveillance and maintenance inspection results for the defined period and will describe the cause and outcome of any events that require notification of local, state, or federal officials. The report will include aerial imagery used for the CERCLA Five-Year Reviews.

4.1.5 Follow-Up Inspections

Follow-up inspections are unscheduled inspections that are conducted in response to threatening, unusual, or changed site conditions. LM may conduct follow-up inspections if either of the following situations arise:

- A condition is identified during the routine site inspection or other site visit that requires personnel with specific expertise to return to the site to evaluate the condition
- LM is notified by a citizen, employee, or federal, state, or local agency that conditions at the site are substantially changed

When a condition or concern is identified at the site, LM personnel will evaluate the information and decide whether to respond with a follow-up inspection. At any time, LM may request the assistance of local authorities (e.g., law enforcement, fire protection, the city engineer) to provide an initial visual reconnaissance and confirm the seriousness of a reported condition at the site before scheduling a follow-up inspection. Upon identifying that a follow-up inspection is warranted, LM will notify EPA and Ohio EPA.

Specific conditions that may necessitate a follow-up inspection include violation of ICs, vandalism, or the need to revisit the site to evaluate, define, or conduct unscheduled or emergency maintenance tasks. Conditions that may require a more immediate follow-up inspection include extreme weather, seismic events, and the disclosure of deliberate human activity that threatens the integrity of physical structures (e.g., wells). LM will evaluate risk when scheduling follow-up inspections. The follow-up inspection's urgency will be in proportion to the seriousness of the condition. Inspectors assigned to conduct follow-up inspections will be selected on the same basis as for routine site inspections.

If an incident or activity threatens or compromises ICs, LM will follow the procedures outlined in Section 6.4 of this plan.

Results of follow-up inspections will be included in the next annual inspection report. Separate reports will not be prepared unless LM determines that it is advisable to notify EPA, Ohio EPA, or another outside agency of a situation at the site that could result in unacceptable risk to the public or the environment.

4.2 CERCLA Five-Year Reviews of Remedies

Under CERCLA Section 121(c), "Review," EPA is required to review the remedies at CERCLA sites where hazardous substances remain at levels that potentially pose an unacceptable risk. These reviews must be conducted at least every 5 years to ensure that the remedies remain protective of human health and the environment. At federal facilities such as the Mound site, the federal agency in charge of the facility (LM) is responsible for conducting the Five-Year Review. EPA will either provide concurrence with the protectiveness determinations or develop its own independent determinations.

LM will conduct the CERCLA Five-Year Review and prepare a Five-Year Review report in accordance with current EPA Five-Year Review guidance. LM will add essential elements to the inspection to capture necessary field observations and will conduct any additional evaluation of site monitoring data deemed necessary for the 5-year period that the review covers.

The Five-Year Review report will use current EPA guidance to evaluate IC and groundwater monitoring remedy performance and will present recommendations for modifying the surveillance program, implementing corrective action, or revising the selected remedies if necessary. Recommendations may also be based on changes in guidance, risk values, cleanup standards, and emerging contaminants. The Five-Year Review report will also serve as the principle mechanism for monitoring, evaluating, improving, and reporting on all long-term management activities, long-term monitoring, IC monitoring and enforcement, community involvement, information systems, contingency actions, and post-ROD changes.

LM received concurrence from EPA to combine all CERCLA remedies for the site RODs into a single Five-Year Review report. The most recent report, the Fifth Five-Year Review, was conducted in 2021 (DOE 2021a).

5.0 IC Management and Oversight

5.1 Roles and Responsibilities

LM—or its successors or assignees—is responsible for implementing, reporting on, monitoring, maintaining, and ensuring compliance with the Mound site ICs. LM will consult with EPA should an enforcement action be required due to inconsistent land use as described in the deed restriction.

The landowners are legally responsible for adhering to the ICs, which run with the land in the form of restrictions and covenants in QC deeds, or activity and use limitations in the EC. Landowners shall contact EPA and Ohio EPA to get written approval of soil removal, groundwater use, penetration, or removal of concrete in the T Building or new construction in the OU-1 Parcel 9 area.

Landowners must also receive written approval for new site activities that are not generally covered by the ICs. Appendix D contains guidance and an example request form for other land uses that documents these requests and also includes copies of all previous EPA and Ohio EPA decisions with LM concurrence.

As a best practice, landowners should also notify LM of street name changes, because the city permits, Ohio Department of Natural Resources well-drilling permits, and similar activities are filed by street addresses.

For areas within Parcel 9, the *Environmental Covenant* (DOE 2011b) requires owners or transferees, if applicable, to notify Ohio EPA within 10 days after each conveyance of an interest of the property or any portion thereof.

5.2 Property Ownership Information

LM will gather information on changes in property ownership from the Montgomery County, Ohio, Auditor and maintain a list of current property owners and contact information. New tenants are identified through county property records searches and by working with MDC to identify any new leases.

The deed is a legal document that secures property ownership. The county auditor is responsible for maintaining the accuracy of ownership records by means of a deed transfer for every parcel of real estate in Montgomery County. This procedure is required for the transfer to be considered a legal transaction. The following records are checked annually as part of the IC assessment:

- Deed transfers which are documented by the county recorder's office
- Tax records which are maintained by the county auditor

Appendix B, "Property Ownership Information" includes tables that contain the current Montgomery County, Ohio, parcel IDs and ownership.

The information in Appendix F will be updated during the annual IC assessments and included in the assessment report each year.

The LTS&M Plan contains more details on LM's tracking of property transfers and ownership.

5.3 IC Oversight Mechanisms

5.3.1 LM

- FFA: A tripartite agreement with DOE, EPA, and Ohio EPA.
- QC deeds.
- This ICIAP.
- Annual IC effectiveness assessments that include communication with all landowners.
- CERCLA Five-Year Reviews of remedy effectiveness.
- Core Team protocol for T Building ICs (Appendix D).
- Core Team IC guidance (including soil handling protocol) (Appendix D). Includes a form for property owners to request EPA and Ohio EPA approval of site uses not specifically covered by ICs. Decisions made on these requests will be documented in annual IC assessment reports and CERCLA Five-Year Reviews.
- Requirement in the Parcel 9 *Environmental Covenant* (DOE 2011b) to notify Ohio EPA of other site events (such as property transfers) that states "Owner or transferee, if applicable, shall notify Ohio EPA within ten (10) days after each conveyance of an interest of the Property or any portion thereof…"
- LM website that includes contact information, site information, and documents.
- LM 24-hour toll-free number: (877) 695-5322.

5.3.2 EPA

- FFA: A tripartite agreement with DOE, EPA, and Ohio EPA
- CERCLA Five-Year Review requirements

5.3.3 State of Ohio

- FFA: A tripartite agreement with DOE, EPA, and Ohio EPA
- Ohio EPA oversight
- ODH oversight
- ORC requirement to obtain a permit to drill and register a well with Ohio Department of Natural Resources
- Ohio EPA regulates public water systems

5.3.4 Other Controls and Information Sources

LM has worked with MDC, the City of Miamisburg, and other entities and has identified the following formal and informal processes that assist LM in managing and monitoring IC compliance. These mechanisms form extra layers of protection for IC compliance.

5.3.4.1 MDC

- MDC's *Comprehensive Reuse Plan Update* (MMCIC 2003) reflects the industrial-use-only requirement.
- MDC has two special instrument (SI) deeds that apply to all parcels created in the Mound Advanced Technology Center (MATC) Sections 1–5 plats, "…restrictions on the use to and for which the Property or Parcels created from the Property may be put, to define the rights and responsibilities of Owners of the Parcels, to reserve the right to establish easements as needed to further the development of the Property, and to otherwise establish certain terms, covenants and restrictions for the benefit of the MATC and to advance the development of the Property as a planned industrial and technology park…" Although these do not directly discuss ICs, they are a legal mechanism to control site activities.
  - SI Deed 2012-00084258 Covenants and Restrictions, December 20, 2012. MDC filed for Parcels 3, 4, D, H, Phase I (A, B, C) and Tracts 1 and 2 containing Building 126.
  - SI Deed 2018-00009416 Amendment to MDC Covenants, February 14, 2018. MDC filed to apply the SI Deed 2012-00084258 covenants and restrictions to three properties. created by MATC Section 3 plat.

5.3.4.2 City of Miamisburg

- City Ordinance 5733 dated September 3, 2003, which adopted MDC's *Comprehensive Reuse Plan Update* (MMCIC 2003) as the City's guide for review and approval of development of the Mound site.
- City Ordinance 6393 dated April 16, 2013, which allows the City to accept temporary ownership of certain parcels owned by MDC. The property will remain tax exempt until redevelopment. MDC will maintain the property.
- The City of Miamisburg codified the industrial/commercial-use-only requirement and other restrictions in the Mound Business Park special zoning district, MB-1, which limits types of businesses allowed. MB-1 Section 1271.10 lists the ICs, and it states that IC compliance enforcement remains LM's responsibility.
- City Ordinance 7006 dated March 21, 2023, established a special-zoning development district (SDD-3) within the Mound Business Park MB-1 boundaries for the City of Miamisburg, Lot 8085 (County Parcel K46 00501 0019).

MDC is expected to be funded for the next several years and maintain the ownership of the business park; if funding is not sustainable the property ownership would default to the City of Miamisburg.

5.3.4.3 Montgomery County

- Auditor maintains the property ownership records for every parcel of real estate in Montgomery County
- County requires a deed transfer with a current property description for any property transfer to be considered a legal transaction
- Combined Health District regulates private water systems

5.3.4.4 Private Property Owners

Some businesses within the Mound site are private property owners. Annually all property owners are invited to participate in the IC assessment process through questionnaires, teleconferences, or meetings. If the property owners have questions regarding the ICs at the Mound site, they can contact the DOE site manager or assigned contractor. Each property owner should be given a notice regarding the site activity and use limitations in accordance with the EC during sales agreements and property due diligence. There are several businesses within the Mound site that are also lessees, from the private property owners, the City, or MDC. These tenants are also invited to participate in the annual IC assessment and encouraged to understand how the property use restrictions and limitations may apply to them.

6.0 IC Enforcement Elements

6.1 Federal Facility Agreement

The FFA (EPA 1990; EPA 1993) is a tripartite agreement that clarifies and defines LM and regulator roles and responsibilities. DOE filed the FFA as Affidavit (Deed) 1990-00020967 with Montgomery County in 1990 to apply the FFA to the "1998 Mound Plant property."

6.2 DOE Quitclaim Deeds

The DOE QC deeds listed in Table 2 that were filed with the Montgomery County for the original transfers of property to MDC are the legal enforcement documents for the ICs. Those QC deeds impose the ICs as "restrictions and covenants" that run with the property.

The QC deeds also allow access for environmental sampling or other CERCLA-type activities stating:

> …RESERVING unto Grantor, the United States of America, acting by and through the U.S. Department of Energy (DOE) and/or the U.S. Environmental Protection Agency (EPA), their successors and assigns, an easement to, upon or across the Premises in connection with the covenants of Grantor and/or Grantee in paragraphs numbered 1.1-1.3, 3.2, and 3.3 of this Deed and as otherwise needed for purposes of any response action as defined under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, including but not limited to, environmental investigation or remedial action on the Premises or on property in the vicinity thereof, including the right of access to, and use of, to the extent permitted by applicable law, utilities at reasonable cost to Grantor…

Additional information on QC deeds is included in Section 3.4.

6.3 Environmental Covenants

Activity and use restrictions (i.e., ICs) for Parcel 9 are documented in two ECs, which were prepared in accordance with 53 ORC 5301.80–5301.92, "Conveyances; Encumbrances." The covenants shall be binding upon the landowner and all assigns and successors in interest and shall run with the land, pursuant to 53 ORC 5301.85.

Additional information on the EC is included in Section 3.4.

6.3.1 Parcel 9 Environmental Covenant

The Parcel 9 *Environmental Covenant* (DOE 2011b) that covers the entire Parcel 9 area describes the ICs as an "activity or use limitation" states:

> 7. Activity and Use Limitations. As part of the remedial action described in the Record of Decision dated June 1995 and Record of Decision Amendment dated September 2011 for Parcel 9, Owner hereby imposes and agrees to comply with the following activity and use limitations: These legal documents run with the land and require landowners and managers to comply with ICs. IC requirements must be included in all property sale or transfer legal documents.…
>
> 8. Running with the Land. This Environmental Covenant shall be binding upon the Owner and all assigns and successors in interest, including any Transferee, and shall run with the land, pursuant to ORC §5301.85, subject to amendment or termination as set forth herein…

The Parcel 9 *Environmental Covenant* also imposes rights of access:

> 10. Rights of Access. Owner hereby grants to US EPA, Ohio EPA and ODH, their agents, contractors, and employees the right of access to the Property for implementation or enforcement of this Environmental Covenant. Any Transferee shall grant to US EPA, Ohio EPA, ODH, US DOE, its agents, contractors, and employees the right of access to the Property for implementation or enforcement of this Environmental Covenant…

The Parcel 9 *Environmental Covenant* was filed with Montgomery County as an SI Deed, Instrument Number 2012-00004722, on January 24, 2012.

6.3.2 OU-1 Parcel 9 Area Environmental Covenant

The *OU-1 Parcel 9 Area Environmental Covenant* (DOE forthcoming[A]) is for the OU-1 Parcel 9 Area. This EC only covers the four lots described in Section 3.3.2. It was filed with Montgomery County as a QC deed on August 24, 2025.

The *OU-1 Parcel 9 Environmental Covenant* subjects that defined area to the same activity and use limitations as the sitewide ICs listed in Section 3.3.1 and detailed in Section 3.3.4.1.

Additional ICs relating to VI are detailed in Section 3.3.2 and Section 3.3.4.2.

The *OU-1 Parcel 9 Environmental Covenant* also imposes rights of access:

> The right of access granted under Paragraph 10 of this Environmental Covenant shall provide the Parties with access at all reasonable times to OU-1 for purpose of conducting any and all activities related to the Record of Decision for OU-1 dated June 1995, the Record of Decision Amendment dated August 2011, and the Record of Decision Amendment dated September 2023 are an Environmental Response Project as defined in ORC § 5301.80(E), including but not limited to the following activities: a) performing or implementing any activity relating to response actions described in the ROD and amendments thereto; b) verifying any data or information submitted to US EPA and/or OH EPA; c) verifying that no action is being taken on the Property in violation of the terms of this Environmental Covenant or any federal or state environmental laws or regulations; d) monitoring response actions on the Property and conducting investigations relating to the response actions, including but not limited to sampling of air, water, sediment or soils, installation and/or removal of monitoring wells; and, e) conducting periodic reviews of responses actions.

6.4 IC Violations

LM—or its successors or assignees—is responsible for implementing, reporting on, monitoring, maintaining, and ensuring compliance the ICs. It is LM's responsibility to ensure that ROD IC remedies remain in place as imposed in the EC and QC deeds. When LM conveyed the property, it retained the right to restrict certain activities on the property via restrictive QC deed covenants. Should a landowner attempt to conduct an activity that violates any of the ICs, then the landowner is violating LM's rights in the property and LM has the right to enforce the restriction.

6.5 Disputes Under the FFA

If a dispute arises among EPA, Ohio EPA, ODH, and LM, Section XXII, "Resolution of Disputes," of the July 15, 1993, FFA will be implemented. Ohio EPA will represent all state agencies during the dispute resolution process. The FFA defines LM's, EPA's, and Ohio EPA's responsibilities and authorities.

If the FFA is terminated, then LM, EPA, and the State of Ohio will need to enter into a new legally binding agreement. For now, the FFA (including its dispute-resolution clause) remains the governing document for all LM activities undertaken at the "1998 Mound Plant property."

6.6 Contacts

LM will update the contact list as necessary to reflect the most current contact information. Updates to this list are minor and will not cause the issuance of a revision to the ICIAP or LTS&M Plan.

- LM 24-hour monitored security telephone numbers (at Grand Junction, Colorado): (970) 248-6070.

- Webpage: https://www.energy.gov/lm/mound-ohio-site
- General site inquiries: public.affairs@lm.doe.gov

The following are the current EPA and Ohio EPA points of contact for the Mound site:

Nicole Goers
Remedial Project Manager
EPA Region 5 (SR-6J)
77 W. Jackson Blvd.
Chicago, IL 60604
(312) 886-5736
Email: nicole.goers@epa.gov

Alyssa Corbeil
Site Coordinator
Ohio Environmental Protection Agency
Southwest District Office
220 East Monument Street, Suite 400
Dayton, OH 45402
(937) 285-6065
Email: alyssa.corbeil@epa.ohio.gov

6.7 Organizational Contacts for Approving VI Mitigation Plans in OU-1 Parcel 9 Area

Table 3 provides the titles and addresses of organization contacts for approvals of VI mitigation plans for new building construction in the OU-1 Parcel 9 area.

Table 3. OU-1 Parcel 9 Area VI Plan Approval Organizations

Regional Project Manager, Mound Site EPA Region V – SR-6J 77 West Jackson Boulevard Chicago, IL 60604	Site Coordinator, Mound Site Division of Environmental Response and Revitalization Ohio EPA Southwest District Office 401 East 5th Street Dayton, OH 45402
LM Site Manager 99 Research Park Road Morgantown, WV 26505 Attention: Mound, Ohio, Site Manager	U.S. DOE/LM-2012 2597 Legacy Way Grand Junction, CO 81503 Attention: LM Realty Officer

6.8 Stakeholders

LM will maintain a site stakeholder list to ensure that the public and community leaders are informed of LM activities and status changes. Anyone can request to be added to the list, which now includes:

- Legislative and executive branch officials (federal and state).
- Local elected and appointed officials (city, township, and county).
- Regulators, including EPA, Ohio EPA, and ODH.
- Property owners, including MDC and subsequent owners.
- Local news media.
- Interested citizens and former employees (groups and individuals).

7.0 Reporting

7.1 Annual Assessment of the Effectiveness of ICs

The IC assessment report will document the annual assessment described in Section 4.1 that is due to EPA, Ohio EPA, and ODH by June 13 of each year. EPA, Ohio EPA, ODH, MDC, and the City of Miamisburg are asked to participate in the physical site walkdown and provide comments to DOE that are included in the report.

LM will post the report on the LM website (https://www.energy.gov/lm/mound-ohio-site).

7.2 Five-Year Review Report

LM conducts CERCLA Five-Year Reviews and prepares reports for the Mound site. The most recent Five-Year Review was completed in 2021 (DOE 2021a). The next Five-Year Review will be conducted in 2026.

LM will submit the draft CERCLA Five-Year Review report to EPA to allow sufficient time for review, comment resolution, and EPA concurrence by the statutory due date, which is 5 years after EPA approval of the previous Five-Year Review.

LM will post the final report on the LM website (https://www.energy.gov/lm/mound-ohio-site).

8.0 Records

LM follows DOE policies to manage site records needed for long-term surveillance and maintenance purposes at the LM Business Center at Morgantown, West Virginia, and at the National Archives and Records Administration—a certified facility for the storage of federal records. Records are maintained with the use of an electronic recordkeeping system. Records will be dispositioned in accordance with DOE requirements at the National Archives and Records Administration or a Federal Records Center for their required retention period.
The Mound site information repository and administrative records are available in PDF format at https://lmpublicsearch.lm.doe.gov/SitePages/CERCLA.aspx?sitename=Mound.

9.0 Funding

LM will request adequate funds to maintain the remedies specified in the RODs for this site and provide appropriated funds to conduct long-term surveillance and maintenance as part of an annual congressional appropriation.

10.0 References

53 ORC 5301 et seq. "Conveyances; Encumbrances," *Ohio Revised Code*.

DOE (U.S. Department of Energy), 1995a. *Operable Unit 1 Record of Decision*, Final, June.

DOE (U.S. Department of Energy), 1995b. *Risk-Based Guideline Values, Mound Plant, Miamisburg, Ohio*, Final, December, https://lmpublicsearch.lm.doe.gov/SiteDocs/010307XXXX-9603050013.pdf.

DOE (U.S. Department of Energy), 1997. *Mound 2000 Residual Risk Evaluation Methodology, Mound Plant*, January.

DOE (U.S. Department of Energy), 1998. *Burn Area Certification of Closure and Final Amended Closure Plan*, January.

DOE (U.S. Department of Energy), 1999a. *CERCLA 120(h) Summary Notice of Hazardous Substances, Release Block D, Mound Plant, Miamisburg, Ohio*, Final, February.

DOE (U.S. Department of Energy), 1999b. *CERCLA 120(h) Summary Notice of Hazardous Substances, Release Block H, Mound Plant, Miamisburg, Ohio*, Final, July.

DOE (U.S. Department of Energy), 1999c. *Record of Decision for Release Block D*, Final, February.

DOE (U.S. Department of Energy), 1999d. *Record of Decision for Release Block H, Mound Plant, Miamisburg, Ohio*, Final, June.

DOE (U.S. Department of Energy), 1999e. *Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach*, February.

DOE (U.S. Department of Energy), 2001a. *Parcel 3 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Mound Plant, Miamisburg, Ohio*, Final, September.

DOE (U.S. Department of Energy), 2001b. *Parcel 3 Record of Decision, Mound Plant, Miamisburg, Ohio*, Final, September.

DOE (U.S. Department of Energy), 2001c. *Parcel 4 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Mound Plant, Miamisburg, Ohio*, Final, March.

DOE (U.S. Department of Energy), 2001d. *Parcel 4 Record of Decision, Mound Plant, Miamisburg, Ohio*, Final, February.

DOE (U.S. Department of Energy), 2003a. *Phase I Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances, Miamisburg Closure Project*, Final, December.

DOE (U.S. Department of Energy), 2003b. *Phase I Record of Decision*, *Miamisburg Closure Project*, Final, July.

DOE (U.S. Department of Energy), 2004. *Miami-Erie Canal Record of Decision, Miamisburg Closure Project*, Final, Rev. 0, September.

DOE (U.S. Department of Energy), 2006. *Risk-Based Guideline Value Document*, Miamisburg Closure Project, Revision 9, June, https://lmpublicsearch.lm.doe.gov/SiteDocs/0814XXXXXX-0810200003.pdf.

DOE (U.S. Department of Energy), 2009a. *Parcels 6, 7, and 8 Record of Decision*, *Miamisburg Closure Project, Miamisburg, Ohio*, Final, August.

DOE (U.S. Department of Energy), 2009b. *T Building Special ICs Core Team Agreement and Position Paper*, June.

DOE (U.S. Department of Energy), 2010. *Parcels 6, 7, and 8 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances*, Final, August.

DOE (U.S. Department of Energy), 2011a. *Amendment of the Operable Unit 1 Record of Decision, U.S. Department of Energy, Mound Closure Project*, Final, August.

DOE (U.S. Department of Energy), 2011b. *Environmental Covenant*, approved December 22, 2011, and recorded with Montgomery County, Ohio, as Special Instrument Deed 2012-00004722 on January 24, 2012.

DOE (U.S. Department of Energy), 2011c. *Parcel 9 Environmental Summary, CERCLA 120(h) Summary Notice of Hazardous Substances*, Final, August.

DOE (U.S. Department of Energy), 2012. *Mound Core Team IC Guidance: General Including Soil Removal*, September.

DOE (U.S. Department of Energy), 2015. *Operations and Maintenance Plan for the U.S. Department of Energy, Mound, Ohio, Site*, LMS/MND/S08406, Office of Legacy Management, January.

DOE (U.S. Department of Energy), 2021a. *Fifth Five-Year Review for the Mound, Ohio, Site, Miamisburg, Ohio*, LMS/MND/S31971, Office of Legacy Management, September.

DOE (U.S. Department of Energy), 2021b. *Long-Term Surveillance and Maintenance Plan for the U.S. Department of Energy Mound, Ohio, Site*, LMS/MND/S01369-2.0, Office of Legacy Management, December.

DOE (U.S. Department of Energy), 2021c. *Mound Site Core Team Memorandum Mound Core Team process to evaluate Mound Business Park property owner requests for land uses not specifically addressed under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Records of Decision (RODs)*, December.

DOE (U.S. Department of Energy), 2023. *Amendment to the Record of Decision for Operable Unit 1 of the Mound Site, Miamisburg, Ohio*, LMS/MND/S29546, Office of Legacy Management, September.

DOE (U.S. Department of Energy), 2025a. *OU-1 and Parcel 9 Area Environmental Summary, Mound Site, Miamisburg, Ohio*, LMS/MND/49392, Office of Legacy Management, April.

DOE (U.S. Department of Energy), 2025b. *OU-1 Parcel 9 Environmental Covenant*, Office of Legacy Management, September.

EPA (U.S. Environmental Protection Agency), 1989. *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual, Part A*, EPA/540/1-89/002, Office of Emergency and Remedial Response, December.

EPA (U.S. Environmental Protection Agency), 1990. *Federal Facility Agreement*, Region V U.S. Environmental Protection Agency and U.S. Department of Energy, August.

EPA (U.S. Environmental Protection Agency), 1993. *Federal Facility Agreement*, Region V U.S. Environmental Protection Agency, Ohio Environmental Protection Agency, and U.S. Department of Energy, July 15.

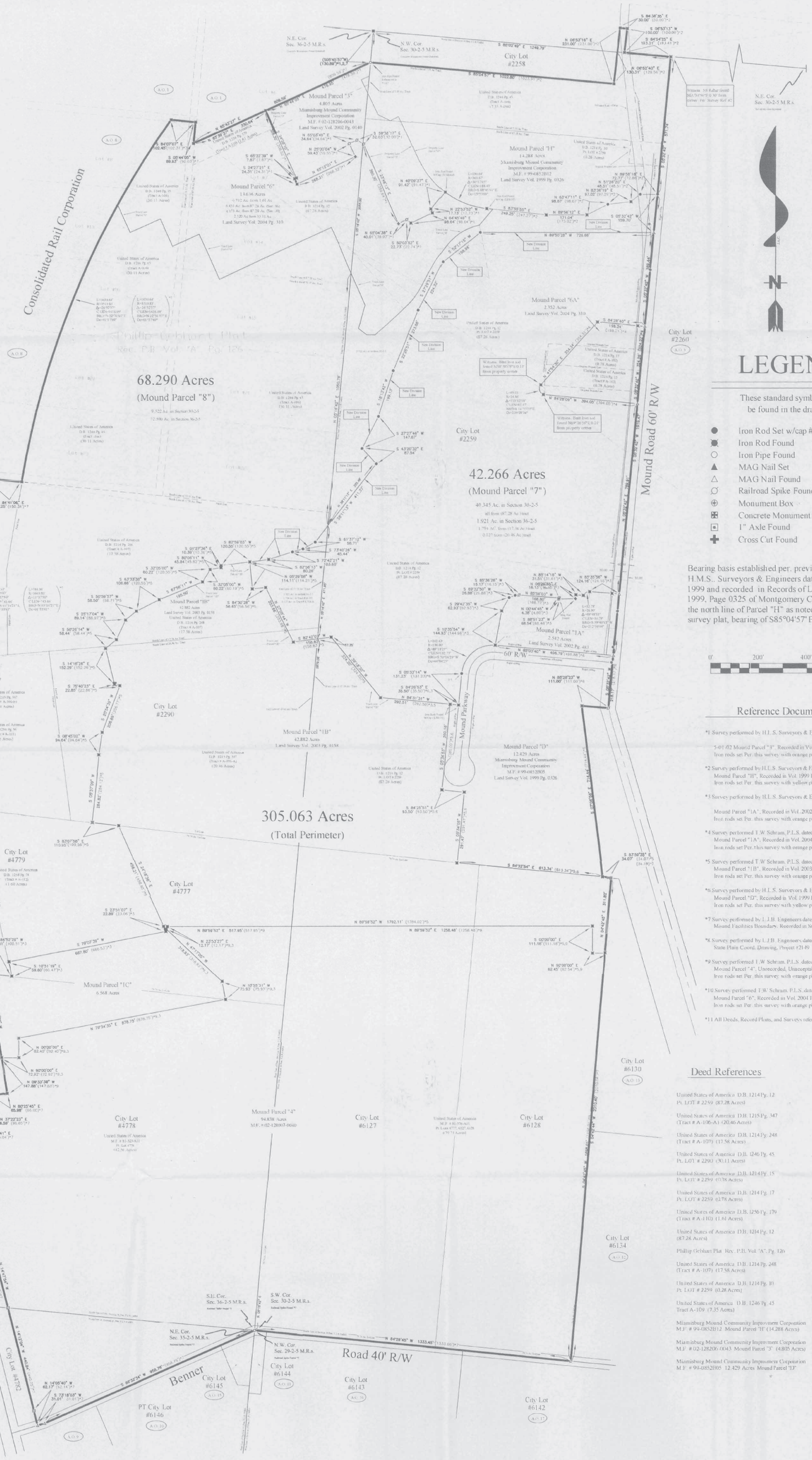
EPA (U.S. Environmental Protection Agency), 2012. *Institutional Controls: A Guide to Preparing Institutional Control Implementation and Assurance Plans at Contaminated Sites*, OSWER 9200.0-77, EPA-540-R-09-002, December.

MMCIC (Miamisburg Mound Community Improvement Corporation), 2003. *Comprehensive Reuse Plan Update*, December.

Appendix A

Beals Survey (July 2005)

N. E.	35					
N. E. & S. E.	36					
N. W. & S. W.	30	2	5 M. R. s	Miami	Montgomery	OH
QUARTER	SECTION	TOWNSHIP	RANGE	TOWNSHIP	COUNTY	STATE



LEGEND

These standard symbols will be found in the drawing.

- ● Iron Rod Set w/cap #7955
- ◙ Iron Rod Found
- ○ Iron Pipe Found
- ▲ MAG Nail Set
- △ MAG Nail Found
- ℘ Railroad Spike Found
- ⊕ Monument Box
- ▩ Concrete Monument Found
- ◙ 1" Axle Found
- ✚ Cross Cut Found

Bearing basis established per. previous survey by H.M.S.. Surveyors & Engineers dated December 9, 1999 and recorded in Records of Land Survey Volume 1999, Page 0325 of Montgomery County, Ohio, along the north line of Parcel "H" as noted on said reference survey plat, bearing of S85°04'57" E

0' 200' 400' 600'

Reference Documents

*1 Survey performed by H.L.S. Surveyors & Engeneers dated 5-01-02 Mound Parcel "5". Recorded in Vol. 2002 Pg.0140 Iron rods set Per. this survey with orange plastic cap (SCHRAM 7299)

*2 Survey performed by H.L.S. Surveyors & Engeneers dated 09-22-99 Mound Parcel "H", Recorded in Vol. 1999 Pg. 0326 Iron rods set Per. this survey with yellow plastic cap (LEROY 7664)

*3 Survey performed by H.L.S. Surveyors & Engeneers dated 10-24-02 Mound Parcel "1A", Recorded in Vol. 2002 Pg. 0483 Iron rods set Per. this survey with orange plastic cap (SCHRAM 7299)

*4 Survey performed T.W Schram, P.L.S. dated 7-28-04 Mound Parcel "1A", Recorded in Vol. 2004 Pg. 0310 Iron rods set Per. this survey with orange plastic cap (SCHRAM 7299)

*5 Survey performed T.W Schram, P.L.S. dated 3-31-03 Mound Parcel "1B", Recorded in Vol. 2003 Pg. 0000 Iron rods set Per. this survey with orange plastic cap (SCHRAM 7299)

*6 Survey performed by H.L.S. Surveyors & Engeneers dated 9-22-99 Mound Parcel "D", Recorded in Vol. 1999 Pg. 0326 Iron rods set Per. this survey with yellow plastic cap (LEROY 7664)

*7 Survey performed by L.J.B. Engeneers dated 06-01-82 Mound Facilities Boundary. Recorded in Survey Record 83-88

*8 Survey performed by L.J.B. Engeneers dated 06-01-82 State Plain Coord. Drawing, Project #21-9

*9 Survey performed T.W Schram, P.L.S. dated 1-10-02 Mound Parcel "4", Unrecorded, Unacceptable Per. Montgomery Co. Iron rods set Per. this survey with orange plastic cap (SCHRAM 7299)

*10 Survey performed T.W Schram, P.L.S. dated 7-28-04 Mound Parcel "6", Recorded in Vol. 2004 Pg. 0309 Iron rods set Per. this survey with orange plastic cap (SCHRAM 7299)

*11 All Deeds, Record Plans, and Surveys referenced on this plat.

Deed References

United States of America D.B. 1214 Pg. 12 Pt. LOT # 2259 (87.28 Acres)

United States of America D.B. 1215 Pg. 347 (Tract # A-106-A) (20.46 Acres)

United States of America D.B. 1214 Pg. 248 (Tract # A-107) (17.58 Acres)

United States of America D.B. 1246 Pg. 45 Pt. LOT # 2290 (30.11 Acres)

United States of America D.B. 1214 Pg. 15 Pt. LOT # 2259 (0.78 Acres)

United States of America D.B. 1214 Pg. 17 Pt. LOT # 2259 (0.78 Acres)

United States of America D.B. 1256 Pg. 179 (Tract # A-110) (1.61 Acres)

United States of America D.B. 1214 Pg. 12 (87.28 Acres)

Phillip Gebhart Plat Rec. P.B. Vol. "A", Pg. 126

United States of America D.B. 1214 Pg. 248 (Tract # A-107) (17.58 Acres)

United States of America D.B. 1214 Pg. 10 Pt. LOT # 2259 (0.28 Acres)

United States of America D.B. 1246 Pg. 45 Tract A-109 (7.35 Acres)

Miamisburg Mound Community Improvement Corporation M.F. # 99-0852H12 Mound Parcel "H" (14.288 Acres)

Miamisburg Mound Community Improvement Corporation M.F. # 02-128206-0043 Mound Parcel "5" (4.805 Acres)

Miamisburg Mound Community Improvement Corporation M.F. # 99-0852H05 12.429 Acres Mound Parcel "D"

Adjoining Owner Deed References

1) Village of Miamisburg D.B. Vol. 594 Pg. 410

2) Justin J. Kapp M.F. # 97-0746-A08

3) Betty J. Eckhart, Trustee M.F. # 98-0834-C09

4) Melissa A. Wilson M.F. # 89-0125-D01

5) City of Miamisburg D.B. Vol. 776 Pg. 581

6) Phillip S. & Kathleen J. Barker M.F. # 02-0155-B06

7) Timothy A. & Coleen K. Bell M.F. # 96-0744-A01

8) Consolidated Railroad Corporation M.F. # 78-502-A01

9) Wilmer E. & Celesta L. Branscum M.F. #00-0160-B03

10) Robert D. & Mildred S. Macfarlane M.F. # 92-0548-A01

11) Danny L. & Judith A. Hall M.F. # 89-0316-B06

12) Frank C. Dickinson M.F. # 93-0516-A05

13) Daniel R. Shell M.F. # 85-0443-D02

14) Miami Conservancy District D.B. Vol 2450 Pg. 190

15) Danny L. & Judith A. Hall M.F. # 88-598-D12

16) Mary Hoemer D.B. Vol. 2357 Pg. 106

17) Thelma Dunaway & Barbara Yeigel M.F. # 96-864-A05

Date	Drawn by
19 July 2005	JAC
W.O. #	Checked by
20299	GEM
Sheet No.	Plot Scale
1 of 1	1"=200'
Plat Number	
D-	

Revisions

No.	Date	By	Description
1			
2			
3			
4			
5			
6			

Plat of Survey
Mound Perimeter

Beals Surveying Corporation
122 South 8th Street Richmond, Indiana 47374
Phone (765) 962-1023 Fax (765) 962-5274
E-Mail: jjbeals@gte.net

SURVEYED & PREPARED BY :

Gordon E. Moore
P.S. #7588
STATE OF OHIO

Appendix B

Property Ownership Information

Table B-1. Property Data for Mound Site from Montgomery County Auditor's Website (May 2024)

Owner	County Parcel ID	Acres	DOE QC Deed to MDC with ICs	MATC Plats and Subsequent Deeds	Owner	General Location Building Address	Applicable ROD
City	K46 00503 0031	2.197	QC 18-00076268	One of three lots created in MATC Section 3 Plat 18-00004495	City of Miamisburg	Lot on hillside north of OSW Building	Parcels 6, 7, and 8, and Parcel 3
City	K46 01507 0025	2.1941	QC 09-00011643	MDC to City QC 13-00079430 with MATC Section 1 Plat 13-00057208 Then mod MATC Section 1-A Plat 15-00008913	City of Miamisburg	Left of main entrance	Parcel H minus road
City	K46 01507 0037	0.8456	QC 09-00011643	MDC to City QC 13-00079430 with MATC Section 1 Plat 13-00057208 Then mod MATC Section 1-A Plat 15-00008913	City of Miamisburg	Parking lot on right, top of hill	Parcel 3 minus road
City	K46 01507 0038	7.8502	QC 09-00011643	MDC to City QC 13-00079430 with MATC Section 1 Plat 13-00057208 Then mod MATC Section 1-A Plat 15-00008913	City of Miamisburg	Large parking lot	Parcel H minus road
City	K46 01507 0039	109.4752	QC 09-00011643	MDC to City QC 13-00079430 with MATC Section 1 Plat 13-00057208 Then mod MATC Section 1-A Plat 15-00008913	City of Miamisburg	Large area with Parcel 4 and Phase I parts	Parcel 4, Phase IB, IC minus road
MDC	K46 01507 0040	4.6975	QC 09-00011643	MDC to City QC 13-00079430 with MATC Section 1 Plat 13-00057208 Then mod MATC Section 1-A Plat 15-00008913	Mound Development Corporation	Flex Building near Benner Road and State Route 25 southwest entrance to site 1370–1390 Vanguard Blvd	Parcel 4
City	K46 01507 0041	2.7833	QC 09-00011643	MDC to City QC 13-00079430 with MATC Section 1 Plat 13-00057208 Then mod MATC Section 1-A Plat 15-00008913	City of Miamisburg and Miamisburg Mound Community Improvement Corporation	Corner Benner and Rt. 25. Note: Includes 0.9776 acres of former Canal City Lot 4782 to Route 25 added during MATC Plat Section 1 and 1-A	Parcel 4 minus road

Table B-1. Property Data for Mound Site from Montgomery County Auditor's Website (May 2024) (continued)

Owner	County Parcel ID	Acres	DOE QC Deed to MDC with ICs	MATC Plats and Subsequent Deeds	Owner	General Location Building Address	Applicable ROD
City	K46 01507 0042	14.8489	QC 09-00011643	MDC to City QC 13-00079430 with MATC Section 1 Plat 13-00057208 Then mod MATC Section 1-A Plat 15-00008913	City of Miamisburg	Pond area Note: Includes 1.1884 acres from former Canal city lot 4781 to Route 25 added during MATC Plat Section 1-A	Parcel 4 minus road
City	K46 01507 0044	2.570	QC 09-00011643	MDC to City QC 13-00079430 with MATC Section 1 Plat 13-00057208 Then mod MATC Section 1-A Plat 15-00008913 Then mod in MATC Section 2 Plat 17-00036642	City of Miamisburg	Guard house (GH) parking lot	Parcel 3 minus road
City	Former K46 00501 0018 No parcel number now	0.00	QC 12-00083743 0.2710 acres Now in Mound Road shown in Section 5 plat	MDC to BOI BOI to MDC MDC to Sharpstone 16-00071750 Sharpstone to City 19-00045569	City of Miamisburg road right-of-way	Part of 6A road front	Parcels 6, 7, and 8
MDC	K46 01507 0029	2.3279	QC 09-00011643	MDC to City QC 13-00079430 with MATC Section 1 Plat 13-00057208 City to MDC QC 16-00049911	Mound Development Corporation	Building 102 1075 Mound Road Mound Cold War Discovery Center	Phase IA
MDC	K46 01507 0032	10.0802	QC 09-00011643	MDC to City QC 13-00079430 with MATC Section 1 Plat 13-00057208 MATC Section 1-A Plat 15-00008913 City to MDC QC 19-00020278	Mound Development Corporation	Teledyne Technologies Incorporated (previously Excelitas) Old Test Fire area Buildings 3 and 87 1100 Vanguard Blvd	Phase IB
City	K46 00503 0034	11.8801	QC 19-00061640	Created in MATC Section 5 Plat 19-00058552	City of Miamisburg	Western Main Hill area	Parcel 6, 7, and 8
City	K46 00503 0035	17.5691	QC 19-00061640	Created in MATC Section 5 Plat 19-00058552	City of Miamisburg	North of Vanguard Blvd COS Building 965 Capstone	Parcel 6, 7, and 8 Parcel 9 Plus Environmental Covenant

Table B-1. Property Data for Mound Site from Montgomery County Auditor's Website (May 2024) (continued)

Owner	County Parcel ID	Acres	DOE QC Deed to MDC with ICs	MATC Plats and Subsequent Deeds	Owner	General Location Building Address	Applicable ROD
City	K46 00503 0036	29.1291	QC 19-00061640	Created in MATC Section 5 Plat 19-00058552	City of Miamisburg	East of Vanguard Blvd	Parcel 6, 7, and 8
City	K46 00503 0037	4.0117	QC 19-00061640	Created in MATC Section 5 Plat 19-00058552	City of Miamisburg	West of Vanguard Blvd	Parcel 6, 7, and 8 Parcel 9 Plus Environmental Covenant
City	K46 00503 0038	6.3717	QC 19-00061640	Created in MATC Section 5 Plat 19-00058552	City of Miamisburg	South of Vanguard Blvd Excelitas parking area	Parcel 6, 7, and 8 Parcel 9 Plus Environmental Covenant
City	K46 00503 0039 Lot 8071	5.9521	None	MATC Section 5 Plat 19-00058552 **No deed**	United States of America	OU-1 area	Parcel 9 – OU-1 ROD and Amendment
City	K46 00503 0040 Lot 8072	5.7021	None	MATC Section 5 Plat 19-00058552 **No deed**	United States of America	OU-1 area	Parcel 9 – OU-1 ROD and Amendment
City	K46 00503 0041 Lot 8073	4.8771	None	MATC Section 5 Plat 19-00058552 **No deed**	United States of America	OU-1 area	Parcel 9 – OU-1 ROD and Amendment
City	K46 00503 0042 Lot 8074	2.0185	None	MATC Section 5 Plat 19-00058552 **No deed**	United States of America	OU-1 roadway	Parcel 9 – OU-1 ROD and Amendment
	Total MDC	**266.649**					
Sharpstone Investment Properties LLC	K46 00501 0017	5.3500	QC 12-00083743	BOI to Sharpstone GW 16 00071750	Sharpstone Investment Properties LLC GoKeyless	Most of former 6A plus parts of Parcel 7 Building 126 955 Mound Road	Parcels 6, 7, and 8

Table B-1. Property Data for Mound Site from Montgomery County Auditor's Website (May 2024) (continued)

Owner	County Parcel ID	Acres	DOE QC Deed to MDC with ICs	MATC Plats and Subsequent Deeds	Owner	General Location Building Address	Applicable ROD
Oscar Lopez	K46 01507 0031	5.5191	QC 09-00011643	MATC Section 1 Plat 13-00087203 Plat 13-00057208 MDC to Dyrdek 14 00069587 GW 15-00026231 Dyrdek Group to Dyrdek Enterprises 5-20-15 WD 20-00054057 Dyrdek Enterprises to ROBERT S DYRDEK WD 19-00054058 Robert S Dyrdek to Dyrdek Trust 9-14-20 WD 21-00092524 Dyrdek Trust to Oscar Lopez	Oscar Lopez Lopez Roofing 790 Enterprise Court, Miamisburg, Ohio 45342	Parcel D minus road Building 100 790 Enterprise Court	Parcel D
All Aspects LLC	K46 01507 0045	3.2975	QC 17-00045599	Created in MATC Section 2 Plat 17-00036642 LW 17 00045600 GW 23-00004713	All Aspects LLC 4 Knightsbridge Road Middletown, DE 19709	Building 45 930 Capstone Drive	Parcel 6 and 7
Mound Research LLC	K46 01507 0046	4.9537	QC 17 00055321	Lot created in MATC Section 2 Plat 17-00036642 LW 17 00055322	Deed: Advanced Service Technologies) County records lists mailing address as Mound Research LLC 885 Mound Dr (spelled as shown) Miamisburg OH 45343	Building 61 885 Mound Road	Parcel D minus road
Montgomery County, Ohio	K46 00503 0032	4.50	QC 18 0006246	One of three lots created in MATC Section 3 Plat 18-00004495 MDC to Jen Skyline LW 18 0009417 Jen Skyline to Montgomery County LW 19-00070585	Montgomery County Consolidated Dispatch Center	OSW Building. 460 Vantage Point	Parcels 6, 7, and 8
Pinnacle Architects	K46 00503 0033	3.833	QC 18-00006246	One of three lots created in MATC Section 3 Plat 18-00004495 LW 18-00045894	Pinnacle Architects Inc 480 Vantage Point Miamisburg, Ohio 45342	OSE Building 480 Vantage Point	Parcels 6, 7, and 8

Table B-1. Property Data for Mound Site from Montgomery County Auditor's Website (May 2024) (continued)

Owner	County Parcel ID	Acres	DOE QC Deed to MDC with ICs	MATC Plats and Subsequent Deeds	Owner	General Location Building Address	Applicable ROD
Pinnacle Architects	K46 01507 0043	1.3035	DOE to MDC Two QC deeds for Parcel 3 contained this area original QC 02-00128206 replaced by QC 09-00011643	MDC to City Deed 13-00079430 Created in MATC Section 1 Plat 13-00057208 Modified in MATC Section 2 Plat 17-00036642 City to MDC 18-00045893 MDC to Pinnacle 18-00045894	Pinnacle Architects	OSE Building parking lot	Parcel 3 minus road
The Ark of Ohio LLC	K46 00501 0019	4.26	DOE to MDC QC 18-00064591 Rerecorded as QC 19-00028127 LW 23-00003825	New lot created in MATC Section 4 Plat 18-00052009 MDC to Pinnacle LW 18-00064592	The Ark of Ohio, LLC P.O. Box 157, Germantown, OH 45327	T Building 945 Capstone Drive	Parcels 6, 7, and 8
TWS Properties LLC	K46 01507 0030	4.8008	DOE to MDC QC 09-00011643	MATC Sect 1 Plat-13-00087203 City owned City to MDC QC 15-00023825 MDC to TWS LW 19-00015160 Refiled LW 19-00030809	TWS Properties LLC (The Woodworking Shop)	Building 105 1195 Mound Road	Parcel D minus road
	Total Other Owners	**37.8176**					

Notes:
County parcel information can be accessed on the Montgomery County Auditor's website at https://www.mcrealestate.org/forms/htmlframe.aspx?mode=content/home.htm.
Copies of QC and SI deeds and MATC section plats can be accessed on the Montgomery County recorder's website at https://riss.mcrecorder.org/.

Abbreviations:
Blvd = Boulevard
BOI = BOI Solutions, Inc.
COS = Central Operational Support
MATC = Mound Advanced Technology Center
mod = modified
OSE = Operational Support East
OSW = Operational Support West
QC = quitclaim

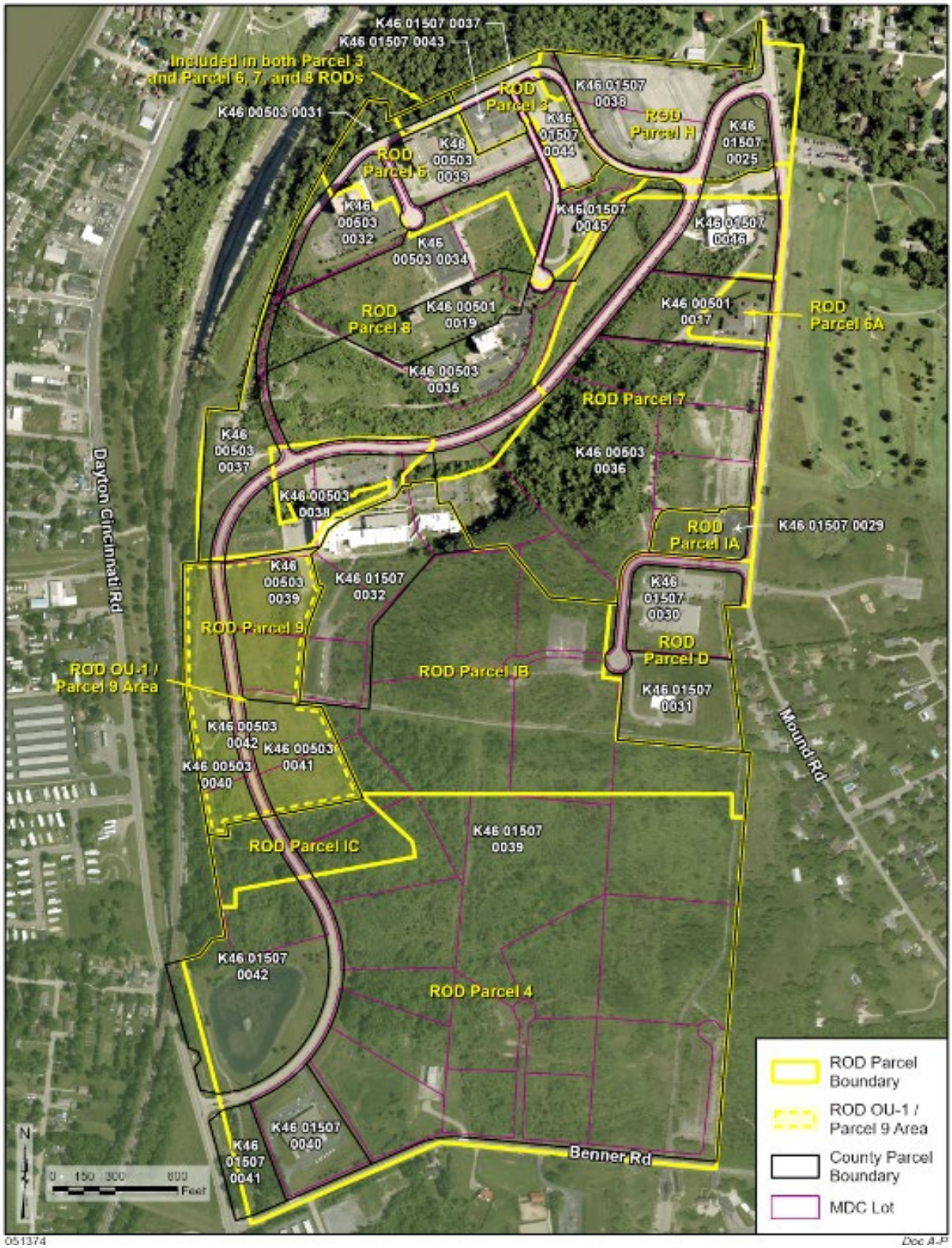


Figure B-1. Mound, Ohio, Site ROD and Montgomery County Parcel Boundaries

Appendix C

COPC Tables from Mound Site RREs

Appendix C

COPC Tables for Mound Parcels

The following tables are extracted from the Residual Risk Assessments (RREs) and a focused Feasibility Study (FS).

References to the documents are listed on the following page.

1. Parcel 3 RRE
2. Parcel 4 RRE
3. Parcel D RRE
4. Parcel H RRE
5. Phase I (A, B, and C) Parcel RRE
6. Parcel 6, 7, and 8 RRE
7. Parcel 9 RRE
8. OU-1 Parcel 9 FS

Reference Documents—Sources of COPC Tables

1. *Parcel 3, Residual Risk Evaluation*, Final, September 2001
   - https://lmpublicsearch.lm.doe.gov/SiteDocs/220901XXXX-0205100002.pdf

2. *Parcel 4, Residual Risk Evaluation, Mound Plant*, Final February 1, 2001
   - https://lmpublicsearch.lm.doe.gov/SiteDocs/3001XXXXXX-0302060002.pdf

3. *Parcel D, Residual Risk Evaluation, Release Block D, Revision Summary, Final*, December 1998; December 1, 1998
   - https://lmpublicsearch.lm.doe.gov/SiteDocs/300301XXXX-0010300010.pdf

4. *Parcel H, Residual Risk Evaluation Release Block H*, Final, Revision 0, August 1997; August 1, 1997
   - https://lmpublicsearch.lm.doe.gov/SiteDocs/300301XXXX-9712040041.pdf

5. *Phase I (A, B, and C), Residual Risk Evaluation*, Final and Public Review Draft, September 2002 With Comments March 1, 2003
   - https://lmpublicsearch.lm.doe.gov/SiteDocs/250401XXXX-0406230004.pdf

6. *Miamisburg Closure Project, Parcel 6, 7 and 8, Residual Risk Evaluation (RRE), Public Review Draft*, September 2007
   - https://lmpublicsearch.lm.doe.gov/SiteDocs/780303XXXX-0810220002.pdf

7. *Miamisburg Closure Project, Parcel 9 Residual Risk Evaluation*, Final, June 2011
   - https://lmpublicsearch.lm.doe.gov/SiteDocs/Revised%20210307XXXX-1108040001.pdf

8. *Operable Unit 1/Parcel 9 Focused Feasibility Study, Mound, Ohio, Site*, November 1, 2022
   - https://lmpublicsearch.lm.doe.gov/SiteDocs/MND%201029.pdf

Parcel 3
COPC
Tables

Table 2 Final Identification of Current and Future Soil Constituents of Potential Concern for the Construction Worker Scenario in Parcel 3 (Exposure Point Concentration Compared to Background Values)

CAS Number	Chemical	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration (depth in ft)	Detection Frequency	95 Percent UCL	Concentration Used for Screening	Background Value	COPC for RRE
Radionuclides										
10045-97-3	Cesium-137	0.02	0.50	pCi/g	S011 (0)	54-165	0.07	0.07	0.42	NO
14255-04-0	Lead-210+D*	0.47	2.99	pCi/g	4459 (0)	70-145	0.85	0.85	1.2	NO
13981-16-3	Plutonium-238	0.02	34.80	pCi/g	602 (0)	36-177	67.20	34.80	0.13	YES
13982-63-3	Radium-226	0.40	3.53	pCi/g	4444 (0)	142-164	1.48	1.48	2	NO
14269-63-7	Thorium-230	0.40	10.10	pCi/g	X5 (8)	145-156	1.27	1.27	1.9	NO
7440-29-1	Thorium-232+D	0.17	4.47	pCi/g	C0004 (3)	155-175	0.75	0.75	1.4	NO

CAS = Chemical Abstract Service
COPC = Constituent of Potential Concern
NO < Background
RRE = Residual Risk Evaluation
UCL = Upper Confidence Limit
* Lead-210 background value is based upon its parent Uranium-238 background value.

Table 4 Final Identification of Current and Future Soil Constituents of Potential Concern for the Site Employee Scenario in Parcel 3 (Exposure Point Concentration Compared to Background Values)

CAS Number	Chemical	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration (depth in ft)	Detection Frequency	95 Percent UCL	Concentration Used for Screening (EPC)	Background Value	COPC for RRE
Radionuclides										
10045-97-3	Cesium-137	0.02	0.50	pCi/g	S011 (0)	53-142	0.05	0.05	0.42	NO
13981-16-3	Plutonium-238	0.02	34.80	pCi/g	602 (0)	28-160	28.20	28.20	0.13	YES
13982-63-3	Radium-226	0.40	3.53	pCi/g	4444 (0)	119-141	1.48	1.48	2	NO
14269-63-7	Thorium-230	0.40	6.09	pCi/g	4442 (0)	131-142	1.27	1.27	1.9	NO
7440-29-1	Thorium-232+D	0.17	2.71	pCi/g	PRS99/100	139-158	0.73	0.73	1.4	NO

CAS - Chemical Abstract Service
COPC - Constituent of Potential Concern
EPC - Exposure Point Concentration
NO <Background Value
UCL - Upper Confidence Limit
RRE - Residual Risk Evaluation

Table 6 Final Identification of Current Groundwater Constituents of Potential Concern for the Construction Worker Scenario (Exposure Point Concentration Compared to Background Values)

Chemical	Minimum Concentration	Maximum Concentration	Units	Detection Frequency	95 Percent UCL	Concentration Used for Screening EPC	Background Value	COPC for RRE
Inorganics								
Antimony	2.8	40.20	ug/L	5-29	80.30	40.20	0.578	YES
Cadmium	4.6	7.70	ug/L	6-32	5.25	5.25		YES
Copper	1.6	593.00	ug/L	22-32	22.70	22.70	1.167	YES
Lead	3.4	40.00	ug/L	5-32	7.28	7.28	10.05	NO
Radionuclides								
Thorium-230	0.01	1.99	pCi/L	11-32	1.25	1.25		YES
Uranium-238+D	0.13	8.25	pCi/L	41-48	0.47	0.47	0.683	NO

COPC= Constituent of Potential Concern
EPC= Exposure Point Concentration, minimum of 95% UCL or maximum detected concentration
NO <Background Value
RRE= Residual Risk Evaluation
UCL= Upper Confidence Limit

Table 7 Initial Identification of Current Groundwater Constituents of Potential Concern for the Site Employee Scenario
(Maximum Detected Values Compared to Background and Risk-Based Guideline Values)

Chemical	Minimum Concentration	Maximum Concentration	Units	Detection Frequency	Concentration Used for Screening and Risk	Background Value	Site Employee Risk-Based GV	Reference Risk-Based GV	Initial COPC
Inorganics									
Aluminum	67.91	148.00	ug/L	7-29	148.00	37.523	10000.00	a,d	NO:3
Antimony	2.8	40.20	ug/L	5-29	40.20	0.578	4.10	a	YES
Barium	75	115.00	ug/L	27-29	115.00	310.209	720.00	a	NO:2,3
Cadmium	4.6	7.70	ug/L	6-32	7.70		5.10	a	YES
Calcium	94300	126000.00	ug/L	33-33	126000.00	111110.664			NO:4
Chromium (assume all is VI)	18.3	24.91	ug/L	6-32	24.91	6.076	31.00	b,d	NO:3
Copper	1.6	593.00	ug/L	22-32	593.00	1.167	410.00	a, d	YES
Iron	18.8	1890.00	ug/L	14-31	1890.00	4064.888			NO:2
Lead	3.4	40.00	ug/L	5-32	40.00	10.05			YES
Lithium	2.9	2.90	ug/L	4-10	2.90	55.7			NO:2
Magnesium	29100	39600.00	ug/L	32-32	39600.00	40428.111			NO:2
Manganese	2.8	224.00	ug/L	30-32	224.00	229.568	51.00	a	NO:2
Molybdenum	1.6	2.70	ug/L	5-10	2.70	5.597			NO:2
Nickel	2.1	27.10	ug/L	5-32	27.10	34.957	200.00	a	NO:2,3
Potassium	2390	3761.00	ug/L	27-33	3761.00	4461.063			NO:2
Selenium	1.5	1.50	ug/L	1-32	1.50				NO:1
Silver	16.9	24.20	ug/L	6-29	24.20		51.00	a	NO:3
Sodium	46600	84200.00	ug/L	32-32	84200.00	62425.563			NO:4
Thallium	2.4	2.40	ug/L	1-29	2.40				NO:1
Tin	8.7	8.70	ug/L	1-10	8.70	34.382			NO:2
Vanadium	3.9	14.60	ug/L	12-29	14.60	17.1	72.00	a	NO:2,3
Zinc	4.5	57.70	ug/L	10-32	57.70	119.6	3100.00	a	NO:2,3
Volatile Organic Compounds									
1,1,1-Trichloroethane	0.30	3.30	ug/L	79-193	3.30	0.668	360.00	a, d	NO:3
1,1,2 Trichloro-1,2,2-trifluoroethane	2.00	34.00	ug/L	13-18	34.00		310000.00	a, d	NO:3
1,1-Dichloroethane	2.50	3.50	ug/L	2-191	3.50		1000.00	a	NO:1
1,1-Dichloroethene	1.70	1.70	ug/L	1-193	1.70				NO:1
cis-1,2-Dichloroethene	0.47	4.00	ug/L	103-159	4.00	0.999	100.00	a, d	NO:3
trans-1,2-Dichloroethene	0.50	3.00	ug/L	8-195	3.00		200.00	a	NO:1
cis-1,3-Dichloropropene	0.50	1.20	ug/L	2-195	1.20				NO:1
2-Butanone	7.00	41.00	ug/L	3-12	41.00		6100.00	a	NO:3
Acetone	1.00	12.00	ug/L	6-12	12.00		1000.00	a	NO:3
Bromodichloromethane	2.20	3.70	ug/L	2-193	3.70		4.60	c	NO:1
Chloroform	0.50	5.40	ug/L	9-197	5.40	0.516	36.00	c	NO:1
Dichloromethane	3.00	13.00	ug/L	8-195	13.00		38.00	c	NO:1
Ethylbenzene	0.50	0.60	ug/L	2-197	0.60		1000.00	a	NO:1
Tetrachloroethene	0.15	2.20	ug/L	109-196	2.20		100.00	a	NO:3
Toluene	0.60	1.50	ug/L	4-197	1.50		2000.00	a	NO:1
Trichloroethene	0.47	5.90	ug/L	176-197	5.90		26.00	f	NO:3
Trichlorofluoromethane	2.20	2.50	ug/L	2-188	2.50		3100.00	a	NO:1
Xylenes, Total	0.60	3.60	ug/L	8-190	3.60		20000.00	a	NO:1

Table 8 Final Identification of Current Groundwater Constituents of Potential Concern for the Site Employee Scenario (Exposure Point Concentration Compared to Background Values)

Chemical	Minimum Concentration	Maximum Concentration	Units	Detection Frequency	95 Percent UCL	Concentration Used for Screening and EPC	Background Value	COPC for RRE
Inorganics								
Antimony	2.8	40.20	ug/L	5-29	80.30	40.20	0.578	YES
Cadmium	4.6	7.70	ug/L	6-32	5.25	5.25		YES
Copper	1.6	593.00	ug/L	22-32	22.70	22.70	1.167	YES
Lead	3.4	40.00	ug/L	5-32	7.28	7.28	10.05	NO
Radionuclides								
Actinium-227	0.50	0.50	pCi/L	1-10	NC	0.50		YES
Plutonium-239/240	0.00	2.00	pCi/L	6-20	8.87	2.00	0.125	YES
Thorium-228+D	0.01	2.17	pCi/L	14-35	105.00	2.17	0.779	YES
Thorium-230	0.01	1.99	pCi/L	11-32	1.25	1.25		YES
Tritium	110.00	7200.00	pCi/L	112-128	861.00	861.00	1485.47	NO
Uranium-234	0.20	8.14	pCi/L	14-19	NC	8.14	0.792	YES
Uranium-238+D	0.13	8.25	pCi/L	41-48	0.47	0.47	0.688	NO

COPC= Constituent of Potential Concern
EPC= minimum of 95% UCL or maximum detected concentration
NC= Not calculated, less than 20 samples in the data set
NO <Background Value
RRE= Residual Risk Evaluation
UCL= Upper Confidence Limit

Table 10 Final Identification of Future Groundwater Constituents of Potential Concern for the Construction Worker Scenario (Bedrock 95% UCL or Maximum Detected Concentration Compared to Background Values)

Chemical	Minimum Concentration In Bedrock Wells	Maximum Concentration In Bedrock Wells	Units	Detection Frequency In Bedrock Wells	95 Percent UCL	Concentration Used for Screening	Background Value	COPC?
Inorganics								
Aluminum	20.1	31500.00	ug/L	107/ 115	6840.00	6840.00	37.523	YES
Antimony	0.35	41.60	ug/L	21/ 122	2.82	2.82	0.578	YES
Arsenic**	0.3	933.00	ug/L	26/ 114	11.80	11.80	32.997	NO
Beryllium**	0.03	2.30	ug/L	41/ 115	0.47	0.47		YES
Bismuth**	0.9	264.00	ug/L	23/ 103	23.20	23.20		YES
Cadmium	0.14	13.10	ug/L	11/ 124	0.75	0.75		YES
Chromium*	0.27	44800.00	ug/L	78/ 120	5010.00	5010.00	6.076	YES
Copper	0.38	514.00	ug/L	81/ 117	26.80	26.80	1.167	YES
Lead**	0.4	32.00	ug/L	55/ 125	4.90	4.90	10.05	NO
Lithium	8.8	4280.00	ug/L	87/ 102	123.00	123.00	55.7	YES
Manganese [a]	0.037	3030.00	ug/L	155/ 165	737.00	737.00	229.568	NO
Molybdenum	0.79	474.00	ug/L	51/ 98	32.50	32.50	5.597	YES
Nickel	1.2	11600.00	ug/L	82/ 120	749.00	749.00	34.957	YES
Thallium	3.1	6.90	ug/L	6/ 107	4.44	4.44		YES
Vanadium	0.15	277.00	ug/L	65/ 115	33.00	33.00	17.1	YES
Organic Compounds								
1,1-Dichloroethane^^	2.00	2.00	ug/L	1/ 238	0.75	0.75		NO:1
1,2-Dichloroethene**	1.00	35.00	ug/L	13/ 38	6.61	6.61		YES
Dichloromethane	1.00	610.00	ug/L	41/ 239	3.28	3.28		YES
Tetrachloroethene**	0.30	25.00	ug/L	55/ 247	3.37	3.37		YES
Trichloroethene	0.44	46.00	ug/L	152/ 273	5.12	5.12		YES
Radionuclides								
Radium-226	0.1260	39.47	pCi/L	43/ 59	2.34	2.34	0.996	YES
Strontium-90	0.74	42.40	pCi/L	7/ 57	2.22	2.22	0.975	YES
Thorium-228 + D	0.02	8.50	pCi/L	39/ 54	90.70	8.50	0.779	YES
Thorium-230	0.0044	4.07	pCi/L	43/ 56	0.57	0.57		YES
Thorium-232 + D [a]	0.0005	2.11	pCi/L	31/ 63	0.78	0.78	0.314	NO
	2.95	2816310.00	pCi/L	4440/4455	206000.00	206000.00	1485.47	YES
Uranium-234	0.03	59.10	pCi/L	60/ 69	2.12	2.12	0.792	YES
Uranium-238 + D	0.03	1.34	pCi/L	57/ 75	0.51	0.51	0.688	NO

a= Flow tube modeled manganese (179.2 ug/L) and thorium-232 (0.1747pCi/L) concentrations were below backgroud values and are screened out of the RRE.
COPC= Constituent of Potential Concern
UCL= Upper Confidence Limit
* = Chromium conservatively assumed to be present in the hexavalent state.
** = Constituent detected in bedrock well, but not in production well
^^ = Constituent detected in production well, not in bedrock wells; reported frequency of detection based on production wells analyses

Table 12 Final Identification of Future Groundwater Constituents of Potential Concern for the Site Employee Scenario (Bedrock 95% UCL or Maximum Detected Concentration Compared to Background Values)

Chemical	Minimum Concentration In Bedrock Wells	Maximum Concentration In Bedrock Wells	Units	Detection Frequency In Bedrock Wells	95 Percent UCL	Concentration Used for Screening	Background Value	COPC?
Inorganics								
Aluminum	20.1	31500.00	ug/L	107/ 115	6840.00	6840.00	37.523	YES
Antimony	0.35	41.60	ug/L	21/ 122	2.82	2.82	0.578	YES
Arsenic**	0.3	933.00	ug/L	26/ 114	11.80	11.80	32.997	NO
Beryllium**	0.03	2.30	ug/L	41/ 115	0.47	0.47		YES
Bismuth**	0.9	264.00	ug/L	23/ 103	23.20	23.20		YES
Cadmium	0.14	13.10	ug/L	11/ 124	0.75	0.75		YES
Chromium*	0.27	44800.00	ug/L	78/ 120	5010.00	5010.00	6.076	YES
Copper	0.38	514.00	ug/L	81/ 117	26.80	26.80	1.167	YES
Lead**	0.4	32.00	ug/L	55/ 125	4.90	4.90	10.05	NO
Lithium	8.8	4280.00	ug/L	87/ 102	123.00	123.00	55.7	YES
Manganese [a]	0.037	3030.00	ug/L	155/ 165	737.00	737.00	229.568	NO
Molybdenum	0.79	474.00	ug/L	51/ 98	32.50	32.50	5.597	YES
Nickel	1.2	11600.00	ug/L	82/ 120	749.00	749.00	34.957	YES
Thallium	3.1	6.90	ug/L	6/ 107	4.44	4.44		YES
Vanadium	0.15	277.00	ug/L	65/ 115	33.00	33.00	17.1	YES
Organic Compounds								
1,2-Dichloroethene**	1.00	35.00	ug/L	13/ 38	6.61	6.61		YES
Dichloromethane	1.00	610.00	ug/L	41/ 239	3.28	3.28		YES
Trichloroethene	0.44	46.00	ug/L	152/ 273	5.12	5.12		YES
Radionuclides								
Plutonium-238	0.012	1.870	pCi/L	8/ 60	0.15	0.15	0.087	YES
Plutonium-239/240	0.003	0.18	pCi/L	12/ 51	0.42	0.18	0 125	YES:2
Radium-226	0.1260	39.47	pCi/L	43/ 59	2.34	2.34	0.996	YES
Radium-228**	1.50	1.50	pCi/L	1/ 1	NC	1.50		YES
Strontium-90	0.74	42.40	pCi/L	7/ 57	2.22	2.22	0.975	YES
Thorium-228 + D	0.02	8.50	pCi/L	39/ 54	90.70	8.50	0.779	YES
Thorium-230	0.0044	4.07	pCi/L	43/ 56	0.57	0.57		YES
Thorium-232 + D [a]	0.0005	2.11	pCi/L	31/ 63	0.78	0.78	0.314	NO
Tritium	2.95	2816310.00	pCi/L	4440/4455	206000.00	206000.00	1485.47	YES
Uranium-234	0.03	59.10	pCi/L	60/ 69	2.12	2.12	0.792	YES
Uranium-238 + D	0.03	1.34	pCi/L	57/ 75	0.51	0.51	0.688	NO

COPC= Constituent of Potential Concern

NC= 95% UCL not calculated, less than 20 samples in the data set.

UCL= Upper confidence Limit

a= Flow tube modeled manganese (179.2 ug/L) and thorium-232 (0.1747pCi/L) concentrations were below backgroud values and are screened out of the RRE.

* = Chromium conservatively assumed to be present in the hexavalent state.

** = Constituent detected in bedrock well, but not in production well

^^ = Constituent detected in production well, not in bedrock wells; reported frequency of detection based on production wells analyses

YES:2 - Current groundwater COPC, therefore, future groundwater COPC

Parcel 4
COPC
Tables

Table 2.4 Final Identification of Surface Soil Constituents of Potential Concern for the Site Employee in Parcel 4. (Exposure Point Concentration Compared to Background Values)

CAS Number	Chemical	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	95% UCL	Concentration Used for Screening (EPC)	Background Value	Rationale for Contaminant Deletion or Selection
Metals										
7429-90-5	Aluminum	1680	21400	mg/kg	B409	22-22	8570.00	8570.00	19000.00	NO
14733-03-0	Bismuth	0.76	28.50	mg/kg	CJ	12-14	NC	28.50		YES
7439-93-2	Lithium	2.7	27.30	mg/kg	B409	12-13	NC	27.30	26.00	YES
Semi-Volatile Organic Compounds										
91-57-6	2-Methylnaphthalene	63	63	ug/kg	B401	1-15	NC	63.00		YES
59-50-7	4-Chloro-3-methylphenol	7	7	ug/kg	MND33-0104	1-15	NC	7.00		YES
85-01-8	Phenanthrene	78	78	ug/kg	B401	1-15	NC	78.00		YES
Pesticides/PCBs										
72-54-8	4,4'-DDD	0.4	6.60	ug/kg	B409	2-21	4.04	4.04	4.20	NO
319-86-8	Delta-BHC	0.08	5.3	ug/kg	MND22-4101	3-22	4.67	4.67		YES
1031-07-8	Endosulfan Sulfate	0.13	0.56	ug/kg	MND22-4101	2-22	10.20	0.56		YES
7421-93-4	Endrin Aldehyde	0.28	0.93	ug/kg	MND22-4102	3-22	9.30	0.93		YES
53494-70-5	Endrin Ketone	0.24	0.25	ug/kg	B407	2-22	10.10	0.25		YES
Radionuclides										
AC-227	Actinium-227	0.13	2.01	pCi/g		14-124	0.24	0.24		YES
10045-97-3	Cesium-137	0.055	0.895	pCi/g		119-137	0.37	0.37	0.42	NO
14255-04-0	Lead-210	0.38	3.35	pCi/g		94-117	1.76	1.76		YES
13981-16-3	Plutonium-238	0.013	55.40	pCi/g		88-358	20.40	20.40	0.13	YES
13982-63-3	Radium-226	0.64	3.26	pCi/g		95-131	1.41	1.41	2.00	NO
	Radium-228	0.636	2.57	pCi/g		10-10	NC	2.57		YES
14274-82-9	Thorium-228	0.21	1.66	pCi/g	B405	38-40	1.03	1.03	1.50	NO
14269-63-7	Thorium-230	0.316	2.69	pCi/g		41-138	4.21	2.69	1.90	YES
7440-29-1	Thorium-232	0.037	5.60	pCi/g	S1049	141-369	0.73	0.73	1.40	NO
24678-82-8	Uranium-238	0.32	1.95	pCi/g		72-75	1.23	1.23	1.20	YES

UCL - Upper Confidence Limit
EPC Exposure Point Concentration= minimum of either 95% UCL or maximum detected concentration

Table 2.6 Final Identification of Current Groundwater Constituents of Potential Concern for the Construction Worker Scenario (Exposure Point Concentration Compared to Background Values)

Chemical	Minimum Concentration	Maximum Concentration	Units	Detection Frequency	95 Percent UCL	Concentration Used for Screening EPC	Background Value	COPC for RRE
Inorganics								
Antimony	2.8	40.20	ug/L	5-29	80.30	40.20	0.578	YES
Cadmium	4.6	7.70	ug/L	6-32	5.25	5.25		YES
Copper	1.6	593.00	ug/L	22-32	22.70	22.70	1.167	YES
Lead	3.4	40.00	ug/L	5-32	7.28	7.28	10.05	NO
Radionuclides								
Thorium-230	0.01	1.99	pCi/L	11-32	1.25	1.25		YES
Uranium-238	0.13	8.25	pCi/L	41-48	0.47	0.47	0.688	NO:3

UCL= Upper Confidence Limit

EPC= Exposure point concentration minimum of 95% UCL or maximum detected concentration

NO <Background Value

NC= 95% UCL not calculated, less than 20 samples in the data set.

Table 2.8 Final Identification of Current Groundwater Constituents of Potential Concern for the Site Employee Scenario (Exposure Point Concentration Compared to Background Values)

Chemical	Minimum Concentration	Maximum Concentration	Units	Detection Frequency	95 Percent UCL	Concentration Used for Screening and EPC	Background Value	COPC for RRE
Inorganics								
Antimony	2.8	40.20	ug/L	5-29	80.30	40.20	0.578	YES
Cadmium	4.6	7.70	ug/L	6-32	5.25	5.25		YES
Copper	1.6	593.00	ug/L	22-32	22.70	22.70	1.167	YES
Lead	3.4	40.00	ug/L	5-32	7.28	7.28	10.05	NO
Radionuclides								
Actinium-227	0.50	0.50	pCi/L	1-10	NC	0.50		YES
Plutonium-239/240	0.00	2.00	pCi/L	6-20	8.87	2.00	0.125	YES
Thorium-228	0.01	2.17	pCi/L	14-35	105.00	2.17	0.779	YES
Thorium-230	0.01	1.99	pCi/L	11-32	1.25	1.25		YES
Tritium	110.00	7200.00	pCi/L	112-128	861.00	861.00	1485.47	NO
Uranium-234	0.20	8.14	pCi/L	14-19	NC	8.14	0.792	YES
Uranium-238	0.13	8.25	pCi/L	41-48	0.47	0.47	0.688	NO

UCL= Upper Confidence Limit
EPC= minimum of 95% UCL or maximum detected concentration
NO <Background Value
NC= 95% UCL not calculated, less than 20 samples in the data set.

Table 2.10 Final Identification of Future Groundwater Constituents of Potential Concern for the Construction Worker Scenario (Bedrock 95% UCL or Maximum Detected Concentration Compared to Background Values)

Chemical	Minimum Concentration In Bedrock Wells	Maximum Concentration In Bedrock Wells	Units	Detection Frequency In Bedrock Wells	95 Percent UCL	Concentration Used for Screening	Background Value	COPC?
Inorganics								
Aluminum	20.1	31500.00	ug/L	107/ 115	6840.00	6840.00	37.523	YES
Antimony	0.35	41.60	ug/L	21/ 122	2.82	2.82	0.578	YES
Arsenic**	0.3	933.00	ug/L	26/ 114	11.80	11.80	32.997	NO
Beryllium**	0.03	2.30	ug/L	41/ 115	0.47	0.47		YES
Bismuth**	0.9	264.00	ug/L	23/ 103	23.20	23.20		YES
Cadmium	0.14	13.10	ug/L	11/ 124	0.75	0.75		YES
Chromium*	0.27	44800.00	ug/L	78/ 120	5010.00	5010.00	6.076	YES
Copper	0.38	514.00	ug/L	81/ 117	26.80	26.80	1.167	YES
Lead**	0.4	32.00	ug/L	55/ 125	4.90	4.90	10.05	NO
Lithium	8.8	4280.00	ug/L	87/ 102	123.00	123.00	55.7	YES
Manganese	0.037	3030.00	ug/L	155/ 165	737.00	737.00	229.568	YES
Molybdenum	0.79	474.00	ug/L	51/ 98	32.50	32.50	5.597	YES
Nickel	1.2	11600.00	ug/L	82/ 120	749.00	749.00	34.957	YES
Thallium	3.1	6.90	ug/L	6/ 107	4.44	4.44		YES
Vanadium	0.15	277.00	ug/L	65/ 115	33.00	33.00	17.1	YES
Organic Compounds								
1,1-Dichloroethane^^	2.00	2.00	ug/L	1/ 238	0.75	0.75		NO:1
1,2-Dichloroethene**	1.00	35.00	ug/L	13/ 38	6.61	6.61		YES
Dichloromethane	1.00	610.00	ug/L	41/ 239	3.28	3.28		YES
Tetrachloroethene**	0.30	25.00	ug/L	55/ 247	3.37	3.37		YES
Trichloroethene	0.44	46.00	ug/L	152/ 273	5.12	5.12		YES
Radionuclides								
Radium-226	0.1260	39.47	pCi/L	43/ 59	2.34	2.34	0.996	YES
Strontium-90	0.74	42.40	pCi/L	7/ 57	2.22	2.22	0.975	YES
Thorium-228	0.02	8.50	pCi/L	39/ 54	90.70	8.50	0.779	YES
Thorium-230	0.0044	4.07	pCi/L	43/ 56	0.57	0.57		YES
Thorium-232	0.0005	2.11	pCi/L	31/ 63	0.78	0.78	0.314	YES
Tritium	2.95	2816310.00	pCi/L	4440/4455	206000.00	206000.00	1485.47	YES
Uranium-234	0.03	59.10	pCi/L	60/ 69	2.12	2.12	0.792	YES
Uranium-238	0.03	1.34	pCi/L	57/ 75	0.51	0.51	0.688	NO

UCL= Upper Confidence Limit

NC= 95% UCL not calculated, less than 20 samples in the data set.

* = Chromium conservatively assumed to be present in the hexavalent state.

** = Constituent detected in bedrock well, but not in production well

^^ = Constituent detected in production well, not in bedrock wells; reported frequency of detection based on production wells analyses

Table 2.12 Final Identification of Future Groundwater Constituents of Potential Concern for the Site Employee Scenario (Bedrock 95% UCL or Maximum Detected Concentration Compared to Background Values)

Chemical	Minimum Concentration In Bedrock Wells	Maximum Concentration In Bedrock Wells	Units	Detection Frequency In Bedrock Wells	95 Percent UCL	Concentration Used for Screening	Background Value	COPC?
Inorganics								
Aluminum	20.1	31500.00	ug/L	107/ 115	6840.00	6840.00	37.523	YES
Antimony	0.35	41.60	ug/L	21/ 122	2.82	2.82	0.578	YES
Arsenic**	0.3	933.00	ug/L	26/ 114	11.80	11.80	32.997	NO
Beryllium**	0.03	2.30	ug/L	41/ 115	0.47	0.47		YES
Bismuth**	0.9	264.00	ug/L	23/ 103	23.20	23.20		YES
Cadmium	0.14	13.10	ug/L	11/ 124	0.75	0.75		YES
Chromium*	0.27	44800.00	ug/L	78/ 120	5010.00	5010.00	6.076	YES
Copper	0.38	514.00	ug/L	81/ 117	26.80	26.80	1.167	YES
Lead**	0.4	32.00	ug/L	55/ 125	4.90	4.90	10.05	NO
Lithium	8.8	4280.00	ug/L	87/ 102	123.00	123.00	55.7	YES
Manganese	0.037	3030.00	ug/L	155/ 165	737.00	737.00	229.568	YES
Molybdenum	0.79	474.00	ug/L	51/ 98	32.50	32.50	5.597	YES
Nickel	1.2	11600.00	ug/L	82/ 120	749.00	749.00	34.957	YES
Thallium	3.1	6.90	ug/L	6/ 107	4.44	4.44		YES
Vanadium	0.15	277.00	ug/L	65/ 115	33.00	33.00	17.1	YES
Organic Compounds								
1,2-cis-Dichloroethene	0.06	17.00	ug/L	48/ 148	1.61	1.61	0.999	YES
1,2-Dichloroethene**	1.00	35.00	ug/L	13/ 38	6.61	6.61		YES
Dichloromethane	1.00	610.00	ug/L	41/ 239	3.28	3.28		YES
Trichloroethene	0.44	46.00	ug/L	152/ 273	5.12	5.12		YES
Radionuclides								
Plutonium-238	0.012	1.870	pCi/L	8/ 60	0.15	0.15	0.087	YES
Radium-226	0.1260	39.47	pCi/L	43/ 59	2.34	2.34	0.996	YES
Radium-228**	1.50	1.50	pCi/L	1/ 1	NC	1.50		YES
Strontium-90	0.74	42.40	pCi/L	7/ 57	2.22	2.22	0.975	YES
Thorium-228	0.02	8.50	pCi/L	39/ 54	90.70	8.50	0.779	YES
Thorium-230	0.0044	4.07	pCi/L	43/ 56	0.57	0.57		YES
Thorium-232	0.0005	2.11	pCi/L	31/ 63	0.78	0.78	0.314	YES
Tritium	2.95	2816310.00	pCi/L	4440/4455	206000.00	206000.00	1485.47	YES
Uranium-234	0.03	59.10	pCi/L	60/ 69	2.12	2.12	0.792	YES
Uranium-238	0.03	1.34	pCi/L	57/ 75	0.51	0.51	0.688	NO

UCL= Upper confidence Limit

NC= 95% UCL not calculated, less than 20 samples in the data set.

* = Chromium conservatively assumed to be present in the hexavalent state.

** = Constituent detected in bedrock well, but not in production well

^^ = Constituent detected in production well, not in bedrock wells; reported frequency of detection based on production wells analyses

12/15/00 12:47 PM

Parcel D COPC Tables

Table III.1. Soil Constituents Carried through Release Block D RRE

Constituent	C_{soil}					ABS
	Total[1] Construction Worker	Total[1] Site Employee	BG[2]	Increment Construction Worker	Increment Site Employee	
ORGANICS (mg/kg)						
Benzo(a)anthracene	3.776	0.371	NAv	3.776	0.371	0.1
Benzo(a)pyrene	3.107	0.365	NAv	3.107	0.365	0.1
Benzo(b)fluoranthene	4.686	0.386	NAv	4.686	0.386	0.1
Benzo(g,h,i)perylene	0.511	0.346	NAv	0.511	0.346	0.1
Carbazole	0.165	0.165	NAv	0.165	0.165	0.1
Fluorene	0.894	0.17	NAv	0.894	0.170	0.1
Indeno(1,2,3-cd)pyrene	2.059	0.357	NAv	2.059	0.357	0.1
Naphthalene	0.569	0.23	NAv	0.569	0.230	0.1
Phenanthrene	4.447	0.436	NAv	4.447	0.436	0.1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.003	0.003	NAv	0.003	0.003	0.1
INORGANICS (mg/kg)						
Antimony	14.635	18.118	NAv	14.635	18.118	0.01
Arsenic[3]	4.927	4.504	8.6	0	0	0.01
Bismuth	5.7	5.7	NAv	5.7	5.7	0.01
Copper[3]	18.513	18.167	26	0	0	0.01
RADIONUCLIDES (pCi/g)						
Cesium-137[3]	0.309	0.12	0.42	0	0	NAp
Plutonium-238[4]	2.69	2.75	0.13	2.56	2.62	NAp
Thorium-232[3]	1.004	1.005	1.4	0	0	NAp

ABS - Absorption factor (unitless)
NAv - Not Available
NAp - Not Applicable

[1] Soil exposure concentration for Release Block D, based on the 95th% UCL for all parameters with greater than 20 analyses completed. These exclude the Site Employee value for fluorene and naphthalene, all carbazole, bismuth and 1,1,2-trichloro-1,2,2-trifluoroethane data. These parameters use the maximum concentration value since N<20 samples.

[2] Soil background concentration for Mound facility (see RREM, DOE, 1996).

[3] Arsenic, cesium-137, copper and thorium-232 total values were less than the background value therefore not carried thru the RRE.

[4] Pu-238 values were log-normally distributed and hence, concentrations (95th% UCL) shown were based on the log-transformed data.

Table III.2. Current Groundwater Constituents Carried through Release Block D RRE

Groundwater Constituent	C_{gw}			Kp	T	Detects / Analyses
	Total[1]	BG[2]	Increment[3]			
ORGANICS (mg/L)						
1,1-Dichloroethene	0.0017	NAv	0.0017	0.016	0.34	8/11
1,1,1-Trichloroethane[4]	0.0007	0.0007	0.000001	0.017	0.57	21/41
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0087	NAv	0.0087	NAv	NAv	3/3
INORGANICS (mg/L)						
Cadmium[4]	0.0019	NAv	0.0019	0.001	NAp	7/28
Copper	0.593	0.0012	0.5918	0.001	NAp	6/12
Lead[4]	0.0025	0.0101	0	0	NAp	17/28
RADIONUCLIDES (pCi/L)						
Actinium-227	0.335	NAv	0.335	NAp	NAp	1/1
Bismuth-210	0.39	NAv	0.39	NAp	NAp	2/2
Plutonium-239/240	2	0.125	1.875	NAp	NAp	3/3
Tritium[4]	2709	1485	1224	NAp	NAp	23/23
Uranium-234	8.14	0.792	7.348	NAp	NAp	11/11
Uranium-238	8.25	0.688	7.562	NAp	NAp	9/9

Kp - Permeability constant for dermal exposures.
T - Tau, a chemical specific timing constant for dermal exposures.
NAv - Not Available
NAp - Not Applicable

1 - Groundwater exposure concentrations for Release Block D, based on measured data from Production Wells 0076 and 0271. All total values were C_{max} from Table II.2. except 1,1,1-Trichloroethane, Cadmium, Lead and Tritium.
2 - Groundwater background concentrations for the BVA (see RREM).
3 - Increment above background for Release Block D groundwater contaminant concentrations.
4 - Total concentration was based 95th% UCL on of mean (by log transformed values except Lead). These contaminants were carried through the RRE because C_{max} > BG and/or GV.

Table III.3. Future Groundwater Constituents Carried through Release Block D RRE

Groundwater Constituent	C_{gw}			Kp	T
	Estimated Total[1]	BG[2]	Increment[3]		
ORGANICS (mg/L)					
1,1-Dichloroethene	0.0017	NAv	0.0017	0.016	0.34
1,1,1-Trichloroethane[4]	0.0054	0.0007	0.0047	0.017	0.57
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0087	NAv	0.0087	NAv	NAv
INORGANICS (mg/L)					
Beryllium	0.0001	NAv	0.0001	0.001	NAp
Bismuth	0.0016	NAv	0.0016	0.001	NAp
Cadmium[4]	0.0019	NAv	0.0019	0.001	NAp
Chromium	0.4961	0.0061	0.49	0.002	NAp
Cobalt	0.0039	NAv	0.0039	0.0004	NAp
Copper	0.5964	0.0012	0.5952	0.001	NAp
Lead[4]	0.002509	0.01005	0	0	NAp
Molybdenum	0.0096	0.0056	0.004	0.001	NAp
RADIONUCLIDES (pCi/L)					
Actinium-227	0.355	NAv	0.355	NAp	NAp
Bismuth-210	0.39	NAv	0.39	NAp	NAp
Plutonium-239/240	2.02	0.125	1.895	NAp	NAp
Tritium[4]	5936	1485	4451	NAp	NAp
Uranium-234	8.14	0.792	7.348	NAp	NAp
Uranium-238	8.25	0.688	7.562	NAp	NAp

Kp - Permeability constant for dermal exposures.
T - Tau, a chemical specific timing constant for dermal exposures.
NAv - Not Available
NAp - Not Applicable
[1] - Estimated future groundwater exposure concentrations for Release Block D, based on measured data from Production Wells 0076 and 0271 and bedrock wells. All total values were C_{max} from Table II.3. except 1,1,1-Trichloroethane, Cadmium, Lead and Tritium.
[2] - Groundwater background concentrations for the BVA (see RREM).
[3] - Increment above background for estimated future Release Block D groundwater contaminant concentrations.
[4] - Total concentration was based on 95th% UCL of mean (by log transformed values except Lead). These contaminants were carried through the RRE because C_{max} > BG and/or GV.

Parcel H
COPC
Tables

Revised Table II.1. Summary Table of All Soil Contaminants Detected in Release Block H

Soil contaminants above detection limit	Maximum concentration Any Depth	Maximum concentration Shallow - only	Soil background	G.V. for construction worker	G.V. for site employee	Detects / Analyses	Carried through RRE?	Reason
ORGANICS (mg/kg)								
Acenaphthene	0.18	0.18				3/10	Yes	F.O.D.[7] = 30%
Acenaphthylene	0.7	0.7				1/10	Yes	F.O.D.[7] = 10%
Acetone	0.0355	0.0355		21000[2]	200000[2]	2/10	No	Conc. < G.V.
Aldrin	0.0031	0.0031				2 /11	Yes	F.O.D.[7] = 18%
Anthracene	1.25	1.25		64000[2]	610000[2]	2/10	No	Conc. < G.V.
Aroclor-1254	0.0037	0.0037	58	4.3[2]	41[2]	1/11	No	Conc. < G.V. and Bkgd.
Benzene	0.0015	0.0015		32[3]	8.9[3]	1/10	No	Conc. < G.V.
Benzo(a)anthracene	1.4	1.4		4.1[4]	7.8[4]	5/10	No	Conc. < G.V.
Benzo(a)pyrene	1.115	1.115		0.41[4]	0.78[4]	5/10	Yes	Conc. > G.V.
Benzo(b)fluoranthene	0.9125	0.9125		4.1[4]	7.8[4]	5/10	No	Conc < G.V.
Benzo(g,h,i) perylene	1.0625	1.0625				4/10	Yes	F.O.D.[7] = 40%
Benzo(k)fluoranthene	0.915	0.915		41[4]	78[4]	3/10	No	Conc < G.V.
Benzoic acid	0.072	0.072		850000[2]	8200000[2]	1/9	No	Conc. < G.V.
delta-BHC	0.00025	0.00025				1/11	Yes	F.O.D.[7] = 9%
2-Butanone	0.0115	0.0115		9300[1]	9300[1]	1/10	No	Conc. < G.V.
Carbazole	0.5875	0.5875				1/6	Yes	F.O.D.[7] = 17%
alpha Chlordane	0.01	0.01				4/7	Yes	F.O.D.[7] = 57%
gamma Chlordane	0.0074	0.0074				4/7	Yes	F.O.D.[7] = 57%
4-chloro-3-methyl phenol	0.047	0.047				1/10	Yes	F.O.D.[7] = 10%
Chrysene	1.4	1.4		410[4]	780[4]	5/10	No	Conc. < G.V.
Dibenzo(a,h)anthracene	0.78	0.78		0.41[4]	0.78[4]	2/10	Yes	Conc. > G.V.
Dibenzofuran	1.035	1.035				1/10	Yes	F.O.D.[7] = 10%
Dieldrin	0.145	0.145		0.185[3]	0.36[3]	3/11	No	Conc. < G.V.
bis(2-ethylhexyl)phthalate	3.4	0.13		215[4]	410[4]	5/10	No	Conc. < G.V.
Fluoranthene	2.325	2.325		8500[2]	82000[2]	7/10	No	Conc. < G.V.
Fluorene	1.45	1.45				1/10	Yes	F.O.D.[7] = 10%

Revised Table II.1. Summary Table of All Soil Contaminants Detected in Release Block H

Soil contaminants above detection limit	Maximum concentration Any Depth	Maximum concentration Shallow - only	Soil background	G.V. for construction worker	G.V. for site employee	Detects / Analyses	Carried through RRE?	Reason
Heptachlor epoxide	0.0022	0.0022				2/11	Yes	F.O.D.[7] = 18%
Indeno(1,2,3-cd)pyrene	0.99	0.99		4.1[4]	7.8[4]	5/10	No	Conc. < G.V.
Methylene chloride	0.0065	0.0065		1000[1]	1000[1]	4/10	No	Conc. < G.V.
2-Methylnaphthalene	0.92	0.92				1/10	Yes	F.O.D.[7] = 10%
Napthalene	2.625	2.625				1/10	Yes	F.O.D.[7] = 10%
Phenanthrene	3.75	3.75				5/10	Yes	F.O.D.[7] = 50%
Pyrene	1.975	1.975		6400[2]	61000[2]	6/10	No	Conc. < G.V.
Toluene	0.002	0.002		250[1]	250[1]	1/10	No	Conc. < G.V.
1,1,2-Trichloro-1,2,2-trifluoroethane	0.002	0.002				1/5	Yes	F.O.D.[7] = 20%
Xylenes, total	0.0018	0.0018		430000[2]	4100000[2]	1/10	No	Conc. < G.V.
INORGANICS (mg/kg)								
Aluminum	15900	13500	19000			11/11	No	Conc. < Bkgd.
Antimony	0.235	0.235		85[2]	820[2]	1/8	No	Conc. < G.V.
Arsenic (total)	10.9	10.9	8.6	64[2]	610[2]	11/11	Yes	Conc. > G.V. & Bkgd.
Barium (total)	249	249	180	15000[1]	140000[1]	11/11	No	Conc. < G.V.
Beryllium	0.89	0.89	1.3	0.7[3]	1.3[3]	11/11	No	Conc. < Bkgd.
Bismuth	58.6	58.6				4/7	Yes	F.O.D.[7] = 57%
Cadmium (total)	0.35	0.255	2.1	210[2]	2000[2]	12/22	No	Conc. < Bkgd. & G.V.
Calcium (total)	152000	152000	310000			11/11	No	Conc. < Bkgd.
Chloride	1300	1300	107			6/6	No	Common soil constituent
Chromium (total)	23.9	19.8	20	1100[2]	10000[2]	22/22	No	Conc. < G.V.
Cobalt (total)	12.3	12.3	19			11/11	No	Conc. < Bkgd.
Copper (total)	26.4	22.1	26			11/11	Yes	Conc. > Bkgd.
Cyanide	1.7	1.7		4300[2]	41000[2]	2/11	No	Conc. < G.V.
Fluoride	7.8	7.8	6.7			6/6	No	Common soil constituent
Iron (total)	34700	34700	35000			11/11	No	Conc. < Bkgd.
Lead (total)	163	163	48			22/22	Yes	Conc. > Bkgd.

Revised Table II.1. Summary Table of All Soil Contaminants Detected in Release Block H

Soil contaminants above detection limit	Maximum concentration Any Depth	Maximum concentration Shallow - only	Soil background	G.V. for construction worker	G.V. for site employee	Detects / Analyses	Carried through RRE?	Reason
Lithium	40.2	19	26			2/2	Yes	Conc. > Bkgd.
Magnesium (total)	54100	39900	40000			11/11	No	Common soil constituent
Manganese (total)	1200	1200	1400	27000[1]	150000[1]	11/11	No	Conc. < G.V. & Bkgd.
Mercury (total)	0.04	0.04		64[1]	610[1]	3/11	No	Conc. < G.V.
Molybdenum	7.7	0.935	27			2/2	No	Conc. < Bkgd.
Nickel (total)	29.5	23.4	32	4300[2]	41000[2]	22/22	No	Conc. < G.V. & Bkgd.
Nitrate	1.32	---				1/1	No	Common soil constituent
Nitrate/Nitrite	9	9	26			6/6	No	Conc. < Bkgd.
Organic Carbon	216670	216670				4/4	No	Common soil constituent
Potassium (total)	3750	1680	1900			11/11	No	Common soil constituent
Silver (total)	8.9	0.56	1.7	1100[2]	10000[2]	4/11	No	Conc. < G.V.
Sodium (total)	2670	2670	240			11/11	No	Common soil constituent
Sulfate	322	322	150			5/6	No	Common soil constituent
Vanadium	30.8	27.9	25	1500[2]	14000[2]	11/11	No	Conc. < G.V.
Zinc (total)	311	311	140	64000[2]	610000[2]	11/11	No	Conc. < G. V.
RADIONUCLIDES (pCi/g)								
Cesium-137	1.9	1.9	0.42	0.46[5]	0.42[5]	9/14	Yes	Conc. > G.V. & Bkgd.
Plutonium-238	56	56	0.13	5.5[5]	11[5]	563/573	Yes	Conc. > G.V. & Bkgd.
Plutonium-239/240	0.0328	0.0328	0.18	5.5[5]	10[5]	3/12	No	Conc. < G.V. & Bkgd.
Plutonium-242	0.0143	0.0143				2/5	Yes	F.O.D.[7] = 40%
Potassium-40	45.4	21	37			12/12	Yes	Conc. > Bkgd.
Radium-226	3.15	3.15	2	0.14[5]	0.13[5]	12/14	Yes	Conc. > G.V. & Bkgd.
Strontium-90	0.845	0.384	0.72	3.0[5]	57[5]	2/6	No	Conc. < G.V.
Thorium-228	1.17	0.847	1.5	0.85[5]	0.83[5]	11/11	No	Conc. < Bkgd.
Thorium-230	1.6	1.6	1.9	44[5]	81[5]	11/11	No	Conc. < Bkgd.
Thorium-232	4.47	2.3	1.4	0.85[5,6]	0.83[5,6]	475/561	Yes	Conc. > G.V. & Bkgd.
Tritium	0.3	---	1.6	23500[5]	45000[5]	1/3	No	Conc. < G.V. & Bkgd.

Revised Table II.1. Summary Table of All Soil Contaminants Detected in Release Block H

Soil contaminants above detection limit	Maximum concentration Any Depth	Maximum concentration Shallow - only	Soil background	G.V. for construction worker	G.V. for site employee	Detects / Analyses	Carried through RRE?	Reason
Uranium-234	1.02	0.851	1.1	37.5[5]	70[5]	10/11	No	Conc. < G.V. & Bkgd.
Uranium-235	0.0659	0.0659	0.11	3.35[5]	3.1[5]	3/11	No	Conc. < G.V. & Bkgd.
Uranium-238	0.962	0.962	1.2	11.0[5]	13.0[5]	10/11	No	Conc. < G.V. & Bkgd.

NOTES: Contaminants with no background or Guideline Value available were left blank.
--- No shallow data available.

[1] - Hazard Quotient for both ingestion and inhalation. (Decision made on 0.1 x G.V.)
[2] - Hazard Quotient for ingestion only. (Decision made on 0.1 x G.V.)
[3] - Total Risk 10^{-6} for both ingestion and inhalation.
[4] - Total Risk 10^{-6} for ingestion only.
[5] - Total Risk 10^{-6} for ingestion, inhalation and external.
[6] - Guideline values from thorium-228 + D.
[7] - F.O.D. = Frequency of detection. Contaminants with a F.O.D. greater than 5% were carried through the RRE.

Phase 1
COPC
Tables

Table 3: Final Identification of Current and Future Soil COPCs for the Construction Worker Scenario

(EPC vs. Background)

Analyte (unit)	CAS Number	Minimum Detect	Maximum Detect	Dist.	Detection Frequency	95% UCL of Mean	EPC	Background Concentration	COPC
Inorganics (mg/kg)									
Aluminum	7429-90-5	589.000	23000.000	N	145/ 146	15400.000	15400.000	19000.000	NO
Antimony	7440-36-0	0.210	44.500	D	64/ 209	8.460	8.460		YES
Arsenic	7440-38-2	0.490	19.500	X	137/ 143	8.220	8.220	8.600	NO
Bismuth	7440-69-9	0.820	72.700	X	33/ 59	133.000	72.700		YES
Copper	7440-50-8	1.800	1100.000	X	143/ 146	22.100	22.100	26.000	NO
Lead	7439-92-1	1.600	220.000	X	242/ 256	15.400	15.400	48.000	NO
Lithium	7439-93-2	2.300	34.100	N	53/ 55	18.300	18.300	26.000	NO
Manganese	7439-96-5s	65.200	8190.000	X	137/ 138	679.000	679.000	1400.000	NO
Thallium	7440-28-0	0.200	3.500	D	29/ 142	1.140	1.140	0.460	YES
Pesticides (mg/kg)									
Chlordane	57-74-9	0.019	0.098	D	2/ 23	0.016	0.016		YES
SVOCs (mg/kg)									
Benzo(a)anthracene	56-55-3	0.023	4.200	D	31/ 174	0.321	0.321		YES
Benzo(a)pyrene	50-32-8	0.023	3.600	D	29/ 174	0.316	0.316		YES
Benzo(g,h,i)perylene	191-24-2	0.027	2.100	D	16/ 174	0.304	0.304		YES
Phenanthrene	85-01-8	0.027	11.000	D	32/ 174	0.348	0.348		YES
Radionuclides (pCi/g)									
Actinium-227 +D	14952-40-0(+D)	0.050	2.110	D	37/ 282	0.304	0.304		YES:1
Actinium-227 long lived decay	14952-40-0L	0.050	2.110	D	37/ 282	0.304	0.304		YES
Actinium-228	14331-83-0	0.762	1.380	D	7/ 7	1.230	1.380		YES:3
Bismuth-214	14733-03-0	0.699	0.926	N	10/ 10	0.858	0.926		YES:2
Cesium-137 +D	10045-97-3(+D)	0.021	1.600	D	276/ 564	0.159	0.159	0.420	NO
Cesium-137 long lived decay	10045-97-3L	0.021	1.600	D	276/ 564	0.159	0.159	0.420	NO
Lead-210	14255-04-0	0.487	3.730	X	180/ 344	1.150	1.150		YES:2
Lead-210+D	14255-04-0(+D)	0.487	3.730	X	180/ 344	1.150	1.150		YES:2
Lead-210 long lived decay	14255-04-0L	0.487	3.730	X	180/ 344	1.150	1.150		YES:2
Lead-214	15067-28-4	0.570	1.120	N	20/ 20	0.921	0.921		YES:2
Plutonium-238	13981-16-3	0.012	396.400	D	665/1545	25.900	25.900	0.130	YES
Plutonium-239/240	PU-239/240	0.004	1.010	D	79/ 254	0.044	0.044	0.180	NO
Radium-224	13233-32-4	0.073	6.270	X	190/ 190	1.250	1.250		YES:3

Table 3: Final Identification of Current and Future Soil COPCs for the Construction Worker Scenario

(EPC vs. Background)

Analyte (unit)	CAS Number	Minimum Detect	Maximum Detect	Dist.	Detection Frequency	95% UCL of Mean	EPC	Background Concentration	COPC
Radium-226	13982-63-3	0.179	3.700	X	494/ 567	1.240	1.240	2.000	NO
Radium-226+D	13982-63-3(+D)	0.179	3.700	X	494/ 567	1.240	1.240	2.000	NO
Radium-226 long lived decay	13982-63-3L	0.179	3.700	X	494/ 567	1.240	1.240	2.000	NO
Radium-228	15262-20-1	0.309	1.990	N	80/ 81	1.220	1.220		YES:3
Radium-228+D	15262-20-1(+D)	0.309	1.990	N	80/ 81	1.220	1.220		YES:3
Radium-228 long lived decay	15262-20-1L	0.309	1.990	N	80/ 81	1.220	1.220		YES:3
Thallium-208	14913-50-9	0.156	0.401	N	10/ 10	0.377	0.401		YES:3
Thorium-228+D	14274-82-9(+D)	0.037	4.520	X	342/ 384	1.640	1.640	1.500	YES:3
Thorium-228 long lived decay	14274-82-9L	0.037	4.520	X	342/ 384	1.640	1.640	1.500	YES:3
Thorium-230 long lived decay	14269-63-7L	0.100	7.510	X	340/ 595	2.830	2.830	1.900	YES:2
Thorium-232	7440-29-1	0.045	80.100	D	789/1805	0.832	0.832	1.400	NO
Thorium-232 long lived decay	7440-29-1L	0.045	80.100	D	789/1805	0.832	0.832	1.400	YES:4
Uranium-238 long lived decay	7440-61-1L	0.408	1.950	X	72/ 119	1.880	1.880	1.200	YES

"+D" : incorporates daughter products within the risk calculations

CAS: Chemical Abstract Service

UCL: upper confidence limit

EPC: Exposure Point Concentration

SVOCs: semivolatile organic compounds

Dist.: distribution where:

N = normal, L = lognormal, D = distribution not determined due to less than 20 or less than 50% detects, and

X = significantly different from lognormal or normal distribution

COPC: Constituent of Potential Concern, evaluation based on EPC vs. background

COPC = YES indicates the analyte is retained as a COPC; however, will not be evaluated individually because it is included in the risk assessment as part of the long lived decay chain of Ac-227 (reference 1), U-238 (reference 2), or Th-232 (reference 3). See Appendix H for details. For reference 4, Th-232 screens out but the Th-232 long lived decay chain was retained for risk evaluation.

COPC = NO indicates analyte was screened out based on: 2 = comparison to background, 3 = comparison to RBGV, and/or 4 = analyte is an essential human nutrient

Parcel 6, 7, and 8 COPC Tables

Table 2.1: Identification of Constituents of Potential Concern for the Construction Worker Exposed to Surface and Subsurface Soil in Parcel 6

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Inorganics (mg/kg)									
Aluminum	7429-90-5	2.69E+03	1.47E+04	4/ 4	6.45E+05	1.47E+04	1.90E+04	1.69E+05	NO:2
Arsenic	7440-38-2	2.10E+00	5.30E+00	4/ 4	1.15E+01	5.30E+00	8.60E+00	2.26E+00	NO:2
Barium	7440-39-3	1.57E+01	4.54E+01	4/ 4	4.10E+02	4.54E+01	1.80E+02	1.25E+04	NO:2
Beryllium	7440-41-7	1.40E-01	8.60E-01	4/ 4	3.99E+01	8.60E-01	1.30E+00	3.70E+02	NO:2
Bismuth	7440-69-9	1.50E+00	1.50E+00	1/ 3	2.22E+01	1.50E+00	3.84E+01	---	NO:2
Cadmium	7440-43-9	3.00E-01	4.20E-01	3/ 5	1.02E+01	4.20E-01	2.10E+00	---	NO:2
Calcium	7440-70-2	5.80E+04	2.17E+05	4/ 4	4.19E+06	2.17E+05	3.10E+05	---	NO:2
Chromium	**7440-47-3**	**5.40E+00**	**2.08E+01**	**5/ 5**	**2.61E+01**	**2.08E+01**	**2.00E+01**	---	**YES**
Cobalt	7440-48-4	3.00E+00	1.94E+01	4/ 4	2.39E+03	1.94E+01	1.90E+01	1.93E+03	NO:3
Copper	7440-50-8	1.06E+01	2.91E+01	4/ 4	1.11E+02	2.91E+01	2.60E+01	8.18E+03	NO:3
Iron	7439-89-6	6.51E+03	3.04E+04	4/ 4	5.92E+05	3.04E+04	3.50E+04	---	NO:2
Lead	7439-92-1	2.60E+00	2.67E+01	6/ 6	5.83E+01	2.67E+01	4.80E+01	---	NO:2
Lithium	**7439-93-2**	**1.03E+01**	**3.86E+01**	**4/ 4**	**2.56E+02**	**3.86E+01**	---	---	**YES**
Magnesium	7439-95-4	1.05E+04	1.02E+05	4/ 4	8.61E+08	1.02E+05	4.00E+04	---	NO:5
Manganese	7439-96-5	2.64E+02	1.08E+03	4/ 4	8.39E+03	1.08E+03	1.40E+03	---	NO:2
Mercury	7439-97-6	1.30E-01	1.30E-01	1/ 4	1.17E+03	1.30E-01	1.50E-01	5.78E+04	NO:2
Molybdenum	7439-98-7	5.10E-01	2.10E+00	2/ 3	7.96E+05	2.10E+00	2.72E+01	1.02E+03	NO:2
Nickel	7440-02-0	6.40E+00	3.46E+01	5/ 5	5.71E+01	3.46E+01	3.20E+01	4.09E+03	NO:3
Potassium	7440-09-7	5.55E+02	3.28E+03	4/ 4	1.52E+05	3.28E+03	1.90E+03	---	NO:5
Silver	7440-22-4	2.10E-01	2.10E-01	2/ 4	8.33E-01	2.10E-01	1.70E+00	1.02E+03	NO:2
Sodium	7440-23-5	2.16E+02	7.07E+02	4/ 4	5.65E+03	7.07E+02	2.40E+02	---	NO:5
Tin	7440-31-5	6.90E-01	1.20E+00	2/ 3	1.63E+01	1.20E+00	2.09E+01	1.23E+05	NO:2
Vanadium	7440-62-2	6.70E+00	1.97E+01	4/ 4	1.45E+02	1.97E+01	2.50E+01	2.04E+02	NO:2
Zinc	7440-66-6	2.71E+01	2.54E+02	4/ 4	1.23E+05	2.54E+02	1.40E+02	6.13E+04	NO:3
Semi-Volatile Organic Compounds (ug/kg)									
Acenaphthene	83-32-9	4.17E+01	3.37E+02	3/ 8	9.97E+02	3.37E+02	---	3.09E+06	NO:3
Anthracene	120-12-7	2.60E+01	9.28E+02	5/ 8	1.44E+03	9.28E+02	---	1.55E+07	NO:3
Benzo(a)anthracene	56-55-3	1.80E+01	1.64E+03	7/ 8	6.07E+03	1.64E+03	---	1.98E+03	NO:3
Benzo(a)pyrene	**50-32-8**	**2.30E+01**	**1.22E+03**	**6/ 8**	**1.96E+03**	**1.22E+03**	---	**1.98E+02**	**YES**
Benzo(b)fluoranthene	205-99-2	2.30E+01	1.89E+03	6/ 8	3.56E+03	1.89E+03	---	1.98E+03	NO:3
Benzo(g,h,i)perylene	**191-24-2**	**6.38E+01**	**8.55E+02**	**5/ 8**	**5.70E+02**	**5.70E+02**	---	---	**YES**
Benzo(k)fluoranthene	207-08-9	2.30E+01	7.45E+02	6/ 8	8.79E+02	7.45E+02	---	1.98E+04	NO:3
Bis(2-ethylhexyl)phthalate	117-81-7	4.30E+01	5.80E+01	2/ 4	3.37E+04	5.80E+01	---	1.25E+05	NO:3
Chrysene	218-01-9	2.90E+01	3.01E+02	6/ 8	4.93E+02	3.01E+02	---	1.98E+05	NO:3
Dibenz(a,h)anthracene	**53-70-3**	**2.90E+01**	**2.18E+02**	**2/ 8**	**1.96E+03**	**2.18E+02**	---	**1.98E+02**	**YES**
Di-n-octyl Phthalate	117-84-0	1.70E+02	1.70E+02	1/ 4	2.17E+02	1.70E+02	---	8.18E+06	NO:3
Fluoranthene	206-44-0	4.50E+01	3.67E+03	7/ 8	1.27E+04	3.67E+03	---	2.06E+06	NO:3
Fluorene	86-73-7	4.60E+01	4.74E+02	3/ 8	1.15E+03	4.74E+02	---	2.06E+06	NO:3
Indeno(1,2,3-cd)pyrene	193-39-5	7.90E+01	9.77E+02	5/ 8	6.63E+02	6.63E+02	---	1.98E+03	NO:3
Phenanthrene	**85-01-8**	**2.50E+01**	**3.89E+03**	**7/ 8**	**3.21E+04**	**3.89E+03**	---	---	**YES**
Pyrene	129-00-0	5.00E+01	4.56E+03	7/ 8	1.53E+04	4.56E+03	---	1.55E+06	NO:3
Volatile Organic Compounds (ug/kg)									
4-Methyl-2-pentanone	108-10-1	7.97E-01	7.97E-01	1/ 8	4.87E+03	7.97E-01	---	1.64E+07	NO:3
Acetone	67-64-1	1.10E+01	1.80E+01	3/ 8	4.50E+01	1.80E+01	---	1.84E+08	NO:3
Dichloromethane (Methylene Chloride)	75-09-2	6.00E+00	1.60E+01	4/ 8	2.37E+04	1.60E+01	---	7.63E+05	NO:3
Naphthalene	91-20-3	3.43E+01	3.43E+01	1/ 8	1.09E+03	3.43E+01	---	1.24E+06	NO:3
Tetrachloroethene	127-18-4	1.31E+00	1.30E+01	2/ 8	7.23E+02	1.30E+01	---	1.06E+04	NO:3
Toluene	108-88-3	5.41E-01	1.15E+00	4/ 9	9.56E+01	1.15E+00	---	2.00E+02	NO:3
Radionuclides (pCi/g)									
Actinium-227	14952-40-0(+D)	7.00E-02	1.10E-01	4/ 136	1.14E-01	1.10E-01	1.10E-01	5.02E-01	NO:1
Cesium-137	10045-97-3(+D)	2.00E-02	5.00E-01	79/ 148	5.82E-02	5.82E-02	4.20E-01	3.56E-01	NO:4
Cobalt-60	10198-40-0	3.00E-02	3.00E-02	1/ 146	2.18E-02	2.18E-02	---	7.35E-02	NO:1
Lead-210	14255-04-0(+D)	1.50E-01	2.05E+00	102/ 145	6.23E-01	6.23E-01	1.20E+00	1.19E+00	NO:4
Plutonium-238	**13981-16-3**	**1.24E-02**	**4.10E+01**	**70/ 428**	**2.90E+01**	**2.90E+01**	**1.30E-01**	**1.13E+01**	**YES**
Plutonium-239/240	PU-239/240	3.70E-02	3.70E-02	1/ 9	7.16E-01	3.70E-02	1.80E-01	6.01E+00	NO:2
Potassium-40	13966-00-2	1.80E+01	2.31E+01	3/ 3	2.78E+01	2.31E+01	3.70E+01	1.12E+00	NO:2
Radium-226	13982-63-3(+D)	1.30E-01	3.53E+00	140/ 149	1.31E+00	1.31E+00	2.00E+00	1.05E-01	NO:4
Thorium-227	15623-47-9	1.80E-01	1.80E-01	1/ 2	0.00E+00	1.80E-01	---	2.17E+00	NO:3
Thorium-228	14274-82-9(+D)	2.81E-01	9.00E-01	10/ 12	5.82E+01	9.00E-01	1.50E+00	1.14E-01	NO:2
Thorium-230 +D	**14269-63-7(+D)**	**3.28E-01**	**2.32E+00**	**12/ 150**	**2.76E+00**	**2.32E+00**	**1.90E+00**	**9.26E-02**	**YES**
Thorium-232	7440-29-1(+D)	4.00E-02	2.30E+00	157/ 452	1.12E+00	1.12E+00	1.40E+00	6.90E-02	NO:4
Tritium	10028-17-8p	1.87E-01	3.91E+00	4/ 4	3.33E+09	3.91E+00	1.60E+00	1.45E+04	NO:3
Uranium-233/234	U-233/234	1.80E-01	6.70E-01	2/ 2	0.00E+00	6.70E-01	1.10E+00	5.52E-01	NO:2
Uranium-234	13966-29-5	2.31E-01	7.23E-01	5/ 5	1.37E+00	7.23E-01	1.10E+00	1.97E+01	NO:2
Uranium-235	15117-96-1(+D)	2.40E-02	4.75E-02	2/ 9	4.99E+01	4.75E-02	1.10E-01	1.55E+00	NO:2
Uranium-238	7440-61-1(+D)	2.32E-01	8.85E-01	8/ 11	3.51E+01	8.85E-01	1.20E+00	5.22E+00	NO:2

CAS - Chemical Abstract Service
COPC - Constituents of Potential Concern
EPC - exposure point concentration (lower of maximum concentration and 95%UCL).
mg/kg - milligram per kilogram
ug/kg - microgram per kilogram
pCi/g - picocurie per gram
RBGV - Risk Based Guideline Value
UCL - Upper Confidence Limit

NO:1 - <5% Detects
NO:2 - Max<Background
NO:3 - Max< Risk Based Guideline Value
NO:4 - EPC< Background
NO:5 - Essential Human Nutrient

Bold text indicates COPCs selected

Lithium note: The RREM background value for lithium is 26 mg/kg and not 0.00 mg/kg as presented in this table; however, since the analyte would still become a COPC, the value in the table was not modified.

Background values are based on the Operable Unit 9 Background Soils Investigation Chemistry Report (DOE 1994) or, in the case of nuclides with short half lives (Ac-227, Pb-210, and Pa-231) are based on the parent nuclide background and assumption of equilibrium with the parent nuclide.

- - -: not applicable, not available, or not calculated due to insufficient toxicity data

Table 2.2: Identification of Constituents of Potential Concern for a Site Employee Exposed to Surface Soil in Parcel 6

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Inorganics (mg/kg)									
Aluminum	7429-90-5	2.69E+03	1.47E+04	4/ 4	6.45E+05	1.47E+04	1.90E+04	1.69E+05	NO:2
Arsenic	7440-38-2	2.10E+00	5.30E+00	4/ 4	1.15E+01	5.30E+00	8.60E+00	2.26E+00	NO:2
Barium	7440-39-3	1.57E+01	4.54E+01	4/ 4	4.10E+02	4.54E+01	1.80E+02	1.25E+04	NO:2
Beryllium	7440-41-7	1.40E-01	8.60E-01	4/ 4	3.99E+01	8.60E-01	1.30E+00	3.70E+02	NO:2
Bismuth	7440-69-9	1.50E+00	1.50E+00	1/ 3	2.22E+01	1.50E+00	3.84E+01	---	NO:2
Cadmium	7440-43-9	3.00E-01	4.20E-01	3/ 5	1.02E+01	4.20E-01	2.10E+00	---	NO:2
Calcium	7440-70-2	5.80E+04	2.17E+05	4/ 4	4.19E+06	2.17E+05	3.10E+05	---	NO:2
Chromium	**7440-47-3**	**5.40E+00**	**2.08E+01**	**5/ 5**	**2.61E+01**	**2.08E+01**	**2.00E+01**	---	**YES**
Cobalt	7440-48-4	3.00E+00	1.94E+01	4/ 4	2.39E+03	1.94E+01	1.90E+01	1.93E+03	NO:3
Copper	7440-50-8	1.06E+01	2.91E+01	4/ 4	1.11E+02	2.91E+01	2.60E+01	8.18E+03	NO:3
Iron	7439-89-6	6.51E+03	3.04E+04	4/ 4	5.92E+05	3.04E+04	3.50E+04	---	NO:2
Lead	7439-92-1	2.60E+00	2.67E+01	6/ 6	5.83E+01	2.67E+01	4.80E+01	---	NO:2
Lithium	**7439-93-2**	**1.03E+01**	**3.86E+01**	**4/ 4**	**2.56E+02**	**3.86E+01**	---	---	**YES**
Magnesium	7439-95-4	1.05E+04	1.02E+05	4/ 4	8.61E+08	1.02E+05	4.00E+04	---	NO:5
Manganese	7439-96-5	2.64E+02	1.08E+03	4/ 4	8.39E+03	1.08E+03	1.40E+03	---	NO:2
Mercury	7439-97-6	1.30E-01	1.30E-01	1/ 4	1.17E+03	1.30E-01	1.50E-01	5.78E+04	NO:2
Molybdenum	7439-98-7	5.10E-01	2.10E+00	2/ 3	7.96E+05	2.10E+00	2.72E+01	1.02E+03	NO:2
Nickel	7440-02-0	6.40E+00	3.46E+01	5/ 5	5.71E+01	3.46E+01	3.20E+01	4.09E+03	NO:3
Potassium	7440-09-7	5.55E+02	3.28E+03	4/ 4	1.52E+05	3.28E+03	1.90E+03	---	NO:5
Silver	7440-22-4	2.10E-01	2.10E-01	2/ 4	8.33E-01	2.10E-01	1.70E+00	1.02E+03	NO:2
Sodium	7440-23-5	2.16E+02	7.07E+02	4/ 4	5.65E+03	7.07E+02	2.40E+02	---	NO:5
Tin	7440-31-5	8.90E-01	1.20E+00	2/ 3	1.63E+01	1.20E+00	2.09E+01	1.23E+05	NO:2
Vanadium	7440-62-2	6.70E+00	1.97E+01	4/ 4	1.45E+02	1.97E+01	2.50E+01	2.04E+02	NO:2
Zinc	7440-66-6	27.1	254.0	4/ 4	123,000.0	254.0	140.0	61,320.0	NO:3
Semi-Volatile Organic Compounds (ug/kg)									
Acenaphthene	83-32-9	4.17E+01	3.37E+02	3/ 8	9.97E+02	3.37E+02	---	3.09E+06	NO:3
Anthracene	120-12-7	2.60E+01	9.28E+02	5/ 8	1.44E+03	9.28E+02	---	1.55E+07	NO:3
Benzo(a)anthracene	56-55-3	1.80E+01	1.64E+03	7/ 8	6.07E+03	1.64E+03	---	1.98E+03	NO:3
Benzo(a)pyrene	**50-32-8**	**2.30E+01**	**1.22E+03**	**6/ 8**	**1.96E+03**	**1.22E+03**	---	**1.98E+02**	**YES**
Benzo(b)fluoranthene	205-99-2	2.30E+01	1.89E+03	6/ 8	3.56E+03	1.89E+03	---	1.98E+03	NO:3
Benzo(g,h,i)perylene	**191-24-2**	**6.38E+01**	**8.55E+02**	**5/ 8**	**5.70E+02**	**5.70E+02**	---	---	**YES**
Benzo(k)fluoranthene	207-08-9	2.30E+01	7.45E+02	6/ 8	8.79E+02	7.45E+02	---	1.98E+04	NO:3
Bis(2-ethylhexyl)phthalate	117-81-7	4.30E+01	5.80E+01	2/ 4	3.37E+04	5.80E+01	---	1.25E+05	NO:3
Chrysene	218-01-9	2.90E+01	3.01E+02	6/ 8	4.93E+02	3.01E+02	---	1.98E+05	NO:3
Dibenz(a,h)anthracene	**53-70-3**	**2.90E+01**	**2.18E+02**	**2/ 8**	**1.96E+03**	**2.18E+02**	---	**1.98E+02**	**YES**
Di-n-octyl Phthalate	117-84-0	1.70E+02	1.70E+02	1/ 4	2.17E+02	1.70E+02	---	8.18E+06	NO:3
Fluoranthene	206-44-0	4.50E+01	3.67E+03	7/ 8	1.27E+04	3.67E+03	---	2.06E+06	NO:3
Fluorene	86-73-7	4.60E+01	4.74E+02	3/ 8	1.15E+03	4.74E+02	---	2.06E+06	NO:3
Indeno(1,2,3-cd)pyrene	193-39-5	7.90E+01	9.77E+02	5/ 8	6.63E+02	6.63E+02	---	1.98E+03	NO:3
Phenanthrene	**85-01-8**	**2.50E+01**	**3.89E+03**	**7/ 8**	**3.21E+04**	**3.89E+03**	---	---	**YES**
Pyrene	129-00-0	5.00E+01	4.56E+03	7/ 8	1.53E+04	4.56E+03	---	1.55E+06	NO:3
Volatile Organic Compounds (ug/kg)									
4-Methyl-2-pentanone	108-10-1	7.97E-01	7.97E-01	1/ 8	4.87E+03	7.97E-01	---	1.64E+07	NO:3
Acetone	67-64-1	1.10E+01	1.80E+01	3/ 8	4.50E+01	1.80E+01	---	1.84E+08	NO:3
Dichloromethane (Methylene C	75-09-2	6.00E+00	1.60E+01	4/ 8	2.37E+04	1.60E+01	---	7.63E+05	NO:3
Naphthalene	91-20-3	3.43E+01	3.43E+01	1/ 8	1.09E+03	3.43E+01	---	1.24E+06	NO:3
Tetrachloroethene	127-18-4	1.31E+00	1.30E+01	2/ 8	7.23E+02	1.30E+01	---	1.06E+04	NO:3
Toluene	108-88-3	5.41E-01	1.15E+00	4/ 9	9.56E+01	1.15E+00	---	4.09E+07	NO:3
Radionuclides (pCi/g)									
Actinium-227	14952-40-0(+D)	7.00E-02	1.10E-01	4/ 136	1.14E-01	1.10E-01	1.10E-01	5.02E-01	NO:1
Cesium-137	10045-97-3(+D)	2.00E-02	5.00E-01	79/ 148	5.82E-02	5.82E-02	4.20E-01	3.56E-01	NO:4
Cobalt-60	10198-40-0	3.00E-02	3.00E-02	1/ 146	2.18E-02	2.18E-02	---	7.35E-02	NO:1
Lead-210	14255-04-0(+D)	1.50E-01	2.05E+00	102/ 145	6.23E-01	6.23E-01	1.20E+00	1.19E+00	NO:4
Plutonium-238	**13981-16-3**	**1.24E-02**	**4.10E+01**	**70/ 428**	**2.90E+01**	**2.90E+01**	**1.30E-01**	**1.13E+01**	**YES**
Plutonium-239/240	PU-239/240	3.70E-02	3.70E-02	1/ 9	7.16E-01	3.70E-02	1.80E-01	---	NO:2
Potassium-40	13966-00-2	1.80E+01	2.31E+01	3/ 3	2.78E+01	2.31E+01	3.70E+01	1.12E+00	NO:2
Radium-226	13982-63-3(+D)	1.30E-01	3.53E+00	140/ 149	1.31E+00	1.31E+00	2.00E+00	1.05E-01	NO:4
Thorium-227	15623-47-9	1.80E-01	1.80E-01	1/ 2	---	1.80E-01	---	2.17E+00	NO:3
Thorium-228	14274-82-9(+D)	2.81E-01	9.00E-01	10/ 12	5.82E+01	9.00E-01	1.50E+00	1.14E-01	NO:2
Thorium-230 +D	**14269-63-7(+D)**	**3.28E-01**	**2.32E+00**	**12/ 150**	**2.76E+00**	**2.32E+00**	**1.90E+00**	**5.86E-01**	**YES**
Thorium-232	7440-29-1(+D)	4.00E-02	2.30E+00	157/ 452	1.12E+00	1.12E+00	1.40E+00	---	NO:4
Tritium	10028-17-8p	1.87E-01	3.91E+00	4/ 4	3.33E+09	3.91E+00	1.60E+00	1.45E+04	NO:3
Uranium-233/234	U-233/234	1.80E-01	6.70E-01	2/ 2	---	6.70E-01	1.10E+00	5.52E-01	NO:2
Uranium-234	13966-29-5	2.31E-01	7.23E-01	5/ 5	1.37E+00	7.23E-01	1.10E+00	1.97E+01	NO:2
Uranium-235	15117-96-1(+D)	2.40E-02	4.75E-02	2/ 9	4.99E+01	4.75E-02	1.10E-01	1.55E+00	NO:2
Uranium-238	7440-61-1(+D)	2.32E-01	8.85E-01	8/ 11	3.51E+01	8.85E-01	1.20E+00	5.22E+00	NO:2

CAS - Chemical Abstract Service
COPC - Constituents of Potential Concern
EPC - exposure point concentration (lower of maximum concentration and 95%UCL).
mg/kg - milligram per kilogram
ug/kg - microgram per kilogram
pCi/g - picocurie per gram
RBGV - Risk Based Guideline Value
UCL - Upper Confidence Limit
- - -: not applicable, not available, or not *calculated due to insufficient toxicity data*

NO:1 - <5% Detects
NO:2 - Max<Background
NO:3 - Max< Risk Based Guideline Value
NO:4 - EPC< Background
NO:5 - Essential Human Nutrient

Bold text indicates COPCs selected

Background values are based on the Operable Unit 9 Background Soils Investigation Chemistry Report (DOE 1994) or, in the case of nuclides with short half lives (Ac-227, Pb-210, and Pa-231) are based on the parent nuclide background and assumption of equilibrium with the parent nuclide.

Table 2.3: Identification of Constituents of Potential Concern for the Construction Worker Exposed to Surface and Subsurface Soil in MCP Parcel 7

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Inorganics (mg/kg)									
Aluminum	7429-90-5	7.45E+01	3.03E+05	491/ 492	1.30E+04	1.30E+04	1.90E+04	2.08E+04	NO:4
Antimony	**7440-36-0**	**1.90E-01**	**3.37E+01**	**122/ 476**	**7.23E-01**	**7.23E-01**	---	**8.52E+00**	**YES**
Arsenic	7440-38-2	1.00E+00	1.46E+01	493/ 529	5.59E+00	5.59E+00	8.60E+00	1.85E+00	NO:4
Barium	7440-39-3	1.90E-01	5.64E+02	497/ 527	6.36E+01	6.36E+01	1.80E+02	1.47E+03	NO:3
Beryllium	7440-41-7	9.00E-02	1.80E+00	463/ 493	6.46E-01	6.46E-01	1.30E+00	4.21E+01	NO:3
Bismuth	7440-69-9	4.60E-01	1.41E+02	37/ 134	1.76E+01	1.76E+01	3.84E+01	---	NO:4
Cadmium	7440-43-9	4.00E-02	7.30E+00	341/ 507	4.49E-01	4.49E-01	2.10E+00	---	NO:4
Calcium	7440-70-2	1.19E+03	3.09E+05	499/ 522	1.98E+05	1.98E+05	3.10E+05	---	NO:2
Cerium	7440-45-1	1.27E+01	7.41E+01	21/ 38	3.31E+01	3.31E+01	---	3.85E+04	NO:3
Chromium	7440-47-3	1.00E-01	7.57E+01	492/ 520	1.61E+01	1.61E+01	2.00E+01	---	NO:4
Cobalt	7440-48-4	6.00E-02	2.89E+01	480/ 516	8.66E+00	8.66E+00	1.90E+01	3.83E+02	NO:3
Copper	7440-50-8	1.00E-01	4.30E+02	494/ 516	1.73E+01	1.73E+01	2.60E+01	8.52E+02	NO:3
Cyanide	57-12-5	1.10E-01	3.14E+01	14/ 184	5.90E-01	5.90E-01	---	4.26E+02	NO:3
Dysprosium	**7429-91-6**	**2.40E+00**	**5.90E+00**	**10/ 25**	**3.05E+00**	**3.05E+00**	---	---	**YES**
Erbium	**7440-52-0**	**6.60E+00**	**7.90E+00**	**6/ 38**	**4.78E+00**	**4.78E+00**	---	---	**YES**
Europium	**7440-53-1**	**8.80E-01**	**2.00E+00**	**16/ 24**	**1.31E+00**	**1.31E+00**	---	---	**YES**
Gadolinium	**7440-54-2**	**7.10E+00**	**8.83E+01**	**9/ 38**	**1.95E+01**	**1.95E+01**	---	---	**YES**
Holmium	**7440-60-0**	**2.20E+00**	**2.40E+00**	**2/ 38**	**1.47E+00**	**1.47E+00**	---	---	**YES**
Iron	7439-89-6	1.42E+02	1.28E+05	501/ 523	5.19E+04	5.19E+04	3.50E+04	---	NO:5
Lanthanum	**7439-91-0**	**5.50E+00**	**1.57E+01**	**10/ 38**	**9.59E+00**	**9.59E+00**	---	---	**YES**
Lead	7439-92-1	1.30E+00	8.83E+01	502/ 532	1.19E+01	1.19E+01	4.80E+01	---	NO:4
Lithium	**7439-93-2**	**1.40E-01**	**4.96E+01**	**410/ 446**	**2.25E+01**	**2.25E+01**	---	---	**YES**
Lutetium	**7439-94-3**	**5.00E-01**	**9.20E-01**	**4/ 24**	**3.87E-01**	**3.87E-01**	---	---	**YES**
Magnesium	7439-95-4	4.22E+01	1.46E+05	501/ 523	4.08E+04	4.08E+04	4.00E+04	---	NO:5
Manganese	7439-96-5	9.50E+00	1.79E+03	488/ 510	8.95E+02	8.95E+02	1.40E+03	---	NO:4
Mercury	7439-97-6	1.00E-02	2.60E+00	157/ 515	5.56E-02	5.56E-02	1.50E-01	5.78E+04	NO:3
Molybdenum	7439-98-7	1.90E-01	1.08E+01	57/ 117	2.47E+00	2.47E+00	2.72E+01	1.06E+02	NO:2
Neodymium	**7440-00-8**	**1.32E+01**	**4.61E+01**	**31/ 38**	**2.44E+01**	**2.44E+01**	---	---	**YES**
Nickel	7440-02-0	1.10E-01	5.67E+01	485/ 517	1.84E+01	1.84E+01	3.20E+01	4.26E+02	NO:3
Potassium	7440-09-7	2.26E+01	6.49E+03	483/ 500	2.89E+03	2.89E+03	1.90E+03	---	NO:5
Praseodymium	**7440-10-0**	**7.30E+00**	**1.21E+02**	**7/ 38**	**2.34E+01**	**2.34E+01**	---	---	**YES**
Samarium	**7440-19-9**	**1.81E+01**	**2.04E+01**	**3/ 38**	**1.19E+01**	**1.19E+01**	---	---	**YES**
Selenium	7782-49-2	2.40E-01	1.20E+00	60/ 494	3.17E-01	3.17E-01	5.90E-01	1.06E+02	NO:3
Silver	7440-22-4	7.00E-02	1.85E+01	93/ 507	5.45E-01	5.45E-01	1.70E+00	1.06E+02	NO:3
Sodium	7440-23-5	2.40E+00	4.08E+03	483/ 523	4.36E+02	4.36E+02	2.40E+02	---	NO:5
Tantalum	**7440-25-7**	**2.01E+02**	**4.59E+02**	**7/ 31**	**1.41E+03**	**4.59E+02**	---	---	**YES**
Terbium	**7440-27-9**	**1.37E+01**	**1.49E+01**	**2/ 38**	**8.54E+00**	**8.54E+00**	---	---	**YES**
Thallium	7440-28-0	1.70E-01	1.30E+00	54/ 517	3.36E-01	3.36E-01	4.60E-01	1.41E+00	NO:3
Tin	7440-31-5	6.40E-01	6.30E+00	38/ 141	3.40E+00	3.40E+00	2.09E+01	1.28E+04	NO:2
Vanadium	7440-62-2	9.00E-02	5.57E+01	491/ 516	1.99E+01	1.99E+01	2.50E+01	2.13E+01	NO:4
Ytterbium	**7440-64-4**	**3.30E+00**	**3.90E+00**	**4/ 38**	**2.48E+00**	**2.48E+00**	---	---	**YES**
Zinc	7440-66-6	4.70E-01	3.49E+03	498/ 520	6.79E+01	6.79E+01	1.40E+02	6.39E+03	NO:3
Explosives (ug/kg)									
2,6-Dinitrotoluene	606-20-2	5.00E+02	5.00E+02	1/ 516	2.20E+02	2.20E+02	---	3.54E+03	NO:1
HMX	2691-41-0	2.40E+02	2.40E+02	2/ 84	1.36E+03	2.40E+02	---	1.06E+06	NO:1
RDX	121-82-4	1.90E+02	1.90E+02	1/ 83	1.00E+03	1.90E+02	---	2.71E+04	NO:1
Pesticides and/or PCBs (ug/kg)									
4,4'-DDD	72-54-8	1.40E-01	1.40E-01	1/ 389	3.90E+00	1.40E-01	---	1.24E+04	NO:1
4,4'-DDE	72-55-9	7.90E-02	5.60E+00	6/ 389	3.64E+00	3.64E+00	---	8.77E+03	NO:1
4,4'-DDT	50-29-3	2.90E-01	7.90E+00	5/ 389	3.88E+00	3.88E+00	---	8.12E+03	NO:1
Aldrin	309-00-2	1.70E-01	2.20E-01	3/ 389	1.83E+00	2.20E-01	---	1.42E+02	NO:1
Alpha Chlordane	5103-71-9	1.00E-01	4.20E+01	9/ 367	7.83E+00	7.83E+00	---	7.61E+03	NO:1
Alpha-BHC	319-84-6	8.80E-01	3.00E+00	2/ 389	1.84E+00	1.84E+00	---	4.73E+02	NO:1
Aroclor-1248	12672-29-6	4.10E+01	1.70E+03	7/ 390	3.14E+01	3.14E+01	---	---	NO:1
Aroclor-1254	11097-69-1	1.40E+01	2.00E+02	10/ 390	4.05E+01	4.05E+01	---	3.20E+02	NO:1
Aroclor-1260	11096-82-5	4.00E+01	9.60E+01	3/ 390	3.94E+01	3.94E+01	---	---	NO:1
Beta-BHC	319-85-7	1.20E+01	1.20E+01	1/ 374	1.63E+00	1.63E+00	---	1.66E+03	NO:1
Chlordane	57-74-9	1.80E+01	4.00E+01	2/ 17	1.03E+01	4.00E+01	---	7.61E+03	NO:3
Delta-BHC	319-86-8	1.90E-01	1.50E+00	2/ 388	2.01E+00	1.50E+00	---	---	NO:1
Dieldrin	60-57-1	1.70E-01	7.90E-01	3/ 388	3.67E+00	7.90E-01	---	1.86E+02	NO:1
Endosulfan I	959-98-8	1.40E+00	1.70E+01	3/ 389	2.18E+00	2.18E+00	---	---	NO:1
Endosulfan II	33213-65-9	1.50E-01	2.50E+00	2/ 389	3.56E+00	2.50E+00	---	---	NO:1
Endosulfan Sulfate	1031-07-8	7.30E-01	7.30E-01	1/ 388	4.68E+00	7.30E-01	---	---	NO:1
Endrin	72-20-8	1.60E-01	1.30E+00	5/ 389	3.62E+00	1.30E+00	---	6.39E+03	NO:1
Endrin Aldehyde	7421-93-4	5.20E-01	8.40E-01	3/ 342	2.49E+00	8.40E-01	---	---	NO:1
Endrin Ketone	53494-70-5	1.00E-01	2.00E+01	4/ 388	4.71E+00	4.71E+00	---	---	NO:1
Gamma Chlordane	5103-74-2	6.60E-02	5.00E+01	14/ 372	7.84E+00	7.84E+00	---	7.61E+03	NO:1
Heptachlor	76-44-8	9.30E-02	2.90E+00	4/ 389	1.83E+00	1.83E+00	---	6.62E+02	NO:1
Heptachlor Epoxide	1024-57-3	5.60E-01	5.60E-01	1/ 389	2.80E+00	5.60E-01	---	2.77E+02	NO:1
Methoxychlor	72-43-5	7.80E-01	1.12E+01	4/ 388	2.15E+01	1.12E+01	---	1.06E+05	NO:1
Semi-Volatile Organic Compounds (ug/kg)									
1,2-Dichlorobenzene	95-50-1	1.30E+01	1.30E+01	1/ 520	2.31E+02	1.30E+01	---	1.55E+06	NO:1
2,4,6-Tribromophenol	**118-79-6**	**1.70E+03**	**1.70E+03**	**1/ 1**	---	**1.70E+03**	---	---	**YES**
2-Fluorobiphenyl	**321-60-8**	**1.40E+03**	**1.40E+03**	**1/ 1**	---	**1.40E+03**	---	---	**YES**
2-Fluorophenol	**367-12-4**	**1.90E+03**	**1.90E+03**	**1/ 1**	---	**1.90E+03**	---	---	**YES**
2-Methylnaphthalene	91-57-6	2.00E+01	2.70E+03	28/ 517	2.28E+02	2.28E+02	---	8.52E+04	NO:3
4-Nitroaniline	100-01-6	9.20E+02	9.20E+02	1/ 515	6.63E+02	6.63E+02	---	5.16E+04	NO:1
Acenaphthene	83-32-9	1.90E+01	2.80E+03	59/ 517	2.32E+02	2.32E+02	---	9.76E+05	NO:3
Acenaphthylene	208-96-8	2.40E+01	6.10E+02	14/ 517	2.24E+02	2.24E+02	---	---	NO:1
Anthracene	120-12-7	1.80E+01	4.90E+03	88/ 517	2.39E+02	2.39E+02	---	4.88E+06	NO:3
Benzo(a)anthracene	**56-55-3**	**1.70E+01**	**5.70E+03**	**143/ 517**	**2.57E+02**	**2.57E+02**	---	**3.12E+03**	**YES**

Table 2.3: Identification of Constituents of Potential Concern for the Construction Worker Exposed to Surface and Subsurface Soil in MCP Parcel 7

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Benzo(a)pyrene	**50-32-8**	**2.20E+01**	**5.10E+03**	**135/ 518**	**2.53E+02**	**2.53E+02**	---	**3.12E+02**	**YES**
Benzo(b)fluoranthene	**205-99-2**	**1.70E+01**	**5.00E+03**	**140/ 517**	**2.50E+02**	**2.50E+02**	---	**3.12E+03**	**YES**
Benzo(g,h,i)perylene	**191-24-2**	**1.30E+01**	**3.50E+03**	**113/ 517**	**2.38E+02**	**2.38E+02**	---	---	**YES**
Benzo(k)fluoranthene	207-08-9	2.00E+01	4.80E+03	132/ 517	2.58E+02	2.58E+02	---	3.12E+04	NO:3
Benzoic Acid	65-85-0	4.60E+01	1.80E+02	13/ 138	1.63E+03	1.80E+02	---	6.88E+07	NO:3
Bis(2-ethylhexyl)phthalate	117-81-7	1.90E+01	1.20E+04	188/ 515	2.50E+02	2.50E+02	---	1.72E+05	NO:3
Butyl Benzyl Phthalate	85-68-7	5.80E+01	1.00E+03	13/ 515	2.29E+02	2.29E+02	---	3.44E+06	NO:1
Carbazole	86-74-8	1.90E+01	1.50E+03	52/ 467	2.07E+02	2.07E+02	---	1.20E+05	NO:3
Chrysene	218-01-9	1.90E+01	6.30E+03	148/ 517	2.62E+02	2.62E+02	---	3.12E+05	NO:3
Di-n-butyl Phthalate	84-74-2	1.90E+01	5.30E+03	115/ 515	2.41E+02	2.41E+02	---	1.72E+06	NO:3
Di-n-octyl Phthalate	117-84-0	2.20E+01	8.20E+01	12/ 515	2.23E+02	8.20E+01	---	8.52E+05	NO:1
Dibenz(a,h)anthracene	**53-70-3**	**2.00E+01**	**9.30E+02**	**46/ 517**	**2.24E+02**	**2.24E+02**	---	**3.12E+02**	**YES**
Dibenzofuran	132-64-9	1.80E+01	9.90E+02	39/ 517	2.25E+02	2.25E+02	---	3.44E+04	NO:3
Diethyl Phthalate	84-66-2	1.20E+01	1.60E+03	23/ 515	2.25E+02	2.25E+02	---	1.38E+07	NO:1
Dimethyl Phthalate	131-11-3	3.90E+02	3.90E+02	1/ 515	2.24E+02	2.24E+02	---	2.13E+08	NO:1
Fluoranthene	206-44-0	2.00E+01	1.50E+04	184/ 516	3.23E+02	3.23E+02	---	6.51E+05	NO:3
Fluorene	86-73-7	1.90E+01	4.50E+03	51/ 517	2.32E+02	2.32E+02	---	6.51E+05	NO:3
Hexachlorobenzene	118-74-1	7.40E+02	7.40E+02	1/ 519	2.24E+02	2.24E+02	---	1.51E+03	NO:1
Hexachlorobutadiene	87-68-3	7.40E+02	7.40E+02	1/ 519	2.24E+02	2.24E+02	---	5.16E+03	NO:1
Hexachlorocyclopentadiene	77-47-4	7.40E+02	7.40E+02	1/ 515	2.24E+02	2.24E+02	---	1.03E+05	NO:1
Hexachloroethane	67-72-1	7.40E+02	7.40E+02	1/ 519	2.24E+02	2.24E+02	---	1.72E+04	NO:1
Indeno(1,2,3-cd)pyrene	193-39-5	1.70E+01	3.10E+03	103/ 515	2.36E+02	2.36E+02	---	3.12E+03	NO:3
Isophorone	78-59-1	1.30E+01	4.80E+01	4/ 515	2.25E+02	4.80E+01	---	2.54E+06	NO:1
N-Nitrosodiphenylamine	86-30-6	2.80E+02	2.80E+02	1/ 515	2.22E+02	2.22E+02	---	3.44E+05	NO:1
Nitrobenzene-d5	**4165-60-0**	**1.30E+03**	**1.30E+03**	**1/ 1**	---	**1.30E+03**	---	---	**YES**
P-Terphenyl-d14	**1718-51-0**	**1.40E+03**	**1.40E+03**	**1/ 1**	---	**1.40E+03**	---	---	**YES**
Pentachlorophenol	87-86-5	9.40E+01	9.40E+01	1/ 518	6.62E+02	9.40E+01	---	1.56E+04	NO:1
Phenanthrene	**85-01-8**	**1.80E+01**	**1.20E+04**	**176/ 517**	**2.99E+02**	**2.99E+02**	---	---	**YES**
Phenol	108-95-2	2.00E+01	1.50E+02	7/ 514	2.25E+02	1.50E+02	---	5.16E+06	NO:1
Phenol-d5	**4165-62-2**	**1.90E+03**	**1.90E+03**	**1/ 1**	---	**1.90E+03**	---	---	**YES**
Pyrene	129-00-0	1.80E+01	2.10E+04	187/ 516	3.18E+02	3.18E+02	---	4.88E+05	NO:3
Volatile Organic Compounds (ug/kg)									
1,1,1-Trichloroethane	71-55-6	1.00E+00	8.00E+00	8/ 969	3.65E+00	3.65E+00	---	6.84E+05	NO:1
1,1,2,2-Tetrachloroethane	79-34-5	6.00E-01	3.00E+00	4/ 968	3.64E+00	3.00E+00	---	3.50E+03	NO:1
1,1,2-Trichloroethane	79-00-5	1.00E+00	1.00E+00	2/ 968	3.64E+00	1.00E+00	---	8.19E+03	NO:1
1,1-Dichloroethane	75-34-3	6.00E+00	6.00E+00	1/ 969	3.65E+00	3.65E+00	---	1.93E+05	NO:1
1,1-Dichloroethene	75-35-4	3.00E+00	5.30E+01	4/ 973	3.69E+00	3.69E+00	---	4.20E+04	NO:1
1,2-Dichloroethane	107-06-2	2.00E+00	2.00E+00	1/ 973	3.65E+00	2.00E+00	---	3.45E+03	NO:1
1,2-Dichloroethene	540-59-0	9.00E-02	1.10E+04	50/ 962	5.36E+00	5.36E+00	---	1.92E+05	NO:3
1,2-Dichloropropane	78-87-5	1.00E+00	2.00E+00	2/ 969	3.64E+00	2.00E+00	---	2.08E+03	NO:1
1,2-Diethylbenzene	135-01-3	1.30E+01	1.30E+01	1/ 398	5.42E+00	5.42E+00	---	---	NO:1
1,2-cis-Dichloroethene (DCE)	156-59-2	2.00E+01	3.20E+03	15/ 28	1.59E+04	3.20E+03	---	2.13E+05	NO:3
1,3-Dichlorobenzene	541-73-1	1.00E+00	1.60E+01	2/ 520	2.34E+02	1.60E+01	---	5.16E+05	NO:1
1,3-cis-Dichloropropene	10061-01-5	8.00E-01	8.00E-01	1/ 762	3.76E+00	8.00E-01	---	---	NO:1
1,3-trans-Dichloropropene	10061-02-6	9.00E-01	9.00E-01	1/ 969	3.64E+00	9.00E-01	---	---	NO:1
1,4-Dichlorobenzene	106-46-7	1.30E+01	7.90E+01	3/ 524	2.28E+02	7.90E+01	---	1.00E+05	NO:1
2-Butanone	78-93-3	1.00E+00	2.50E+02	214/ 972	7.71E+00	7.71E+00	---	6.65E+06	NO:3
2-Hexanone	591-78-6	2.00E+00	1.30E+01	8/ 970	6.48E+00	6.48E+00	---	---	NO:1
4-Methyl-2-pentanone	108-10-1	8.00E-01	2.00E+01	20/ 970	6.51E+00	6.51E+00	---	1.47E+06	NO:1
Acetone	67-64-1	2.00E+00	3.40E+04	532/ 968	2.17E+01	2.17E+01	---	1.92E+07	NO:3
Acetonitrile	75-05-8	3.20E+01	1.20E+02	3/ 387	6.63E+01	6.63E+01	---	2.00E+05	NO:1
Acrylonitrile	107-13-1	4.00E+00	1.30E+01	3/ 399	6.73E+01	1.30E+01	---	1.82E+03	NO:1
Benzene	71-43-2	6.00E-01	9.00E+00	12/ 974	3.62E+00	3.62E+00	---	6.46E+03	NO:1
Bromodichloromethane	75-27-4	6.00E-01	6.00E-01	1/ 969	3.64E+00	6.00E-01	---	4.81E+04	NO:1
Bromoform	75-25-2	8.00E-01	1.00E+00	2/ 969	3.64E+00	1.00E+00	---	3.77E+05	NO:1
Carbon Disulfide	75-15-0	1.00E+00	3.70E+01	88/ 969	3.66E+00	3.66E+00	---	1.16E+05	NO:3
Carbon Tetrachloride	56-23-5	1.00E+00	2.00E+00	4/ 973	3.64E+00	2.00E+00	---	2.44E+03	NO:1
Chlorobenzene	108-90-7	5.00E-01	5.30E+03	15/ 974	3.83E+00	3.83E+00	---	4.85E+04	NO:1
Chloromethane	74-87-3	4.00E-01	1.10E+01	2/ 763	6.56E+00	6.56E+00	---	1.59E+04	NO:1
Dibromochloromethane	124-48-1	7.00E-01	7.00E-01	1/ 969	3.64E+00	7.00E-01	---	3.55E+04	NO:1
Dichloromethane (Methylene Chloride)	75-09-2	1.00E+00	3.00E+04	756/ 970	2.31E+01	2.31E+01	---	8.25E+04	NO:3
Ethylbenzene	100-41-4	1.00E+00	2.80E+02	18/ 971	3.62E+00	3.62E+00	---	7.80E+04	NO:1
FREON-113	76-13-1	3.00E+00	2.10E+01	4/ 572	3.73E+00	3.73E+00	---	6.93E+06	NO:1
Hexane	110-54-3	1.00E+00	4.20E+01	71/ 566	5.42E+00	5.42E+00	---	4.08E+04	NO:3
Isopropyl Benzene	98-82-8	2.00E+00	2.00E+00	1/ 5	7.08E+01	2.00E+00	---	5.28E+04	NO:3
Methyl Cyclohexane	**108-87-2**	**5.00E+00**	**6.00E+00**	**2/ 5**	**6.19E+00**	**6.00E+00**	---	---	**YES**
Naphthalene	91-20-3	2.40E+01	1.90E+03	26/ 517	2.25E+02	2.25E+02	---	3.44E+05	NO:3
Styrene	100-42-5	1.00E-01	2.80E+01	16/ 969	3.62E+00	3.62E+00	---	1.46E+06	NO:1
Tetrachloroethene (PCE)	127-18-4	5.00E-01	8.00E+00	24/ 973	3.62E+00	3.62E+00	---	3.66E+03	NO:1
Toluene	108-88-3	3.00E-01	3.20E+01	144/ 971	3.51E+00	3.51E+00	---	2.00E+05	NO:3
Trichloroethylene (TCE)	**79-01-6**	**8.00E-01**	**2.30E+04**	**81/ 996**	**5.54E+00**	**5.54E+00**	---	**4.38E+02**	**YES**
Trichloromethane (Cholorform)	67-66-3	4.00E-01	6.70E+01	15/ 972	3.69E+00	3.69E+00	---	2.56E+03	NO:1
Vinyl Chloride	75-01-4	1.00E+00	4.40E+02	22/ 996	7.71E+00	7.71E+00	---	1.07E+03	NO:1
Xylenes, Total	1330-20-7	5.00E-01	2.70E+02	35/ 971	3.72E+00	3.72E+00	---	6.42E+04	NO:1
Radionuclides (pCi/g)									
Actinium-227	**14952-40-0(+D)**	**6.00E-02**	**3.10E+00**	**177/1914**	**2.12E-01**	**2.12E-01**	**1.10E-01**	**4.56E-01**	**YES**
Actinium-228	14331-83-0	3.00E-01	1.83E+00	87/ 87	1.02E+00	1.02E+00	---	2.17E-01	NO:6
Americium-241	14596-10-2	2.00E-02	2.60E+00	103/2540	7.14E-02	7.14E-02	---	6.32E+00	NO:1
Bismuth-207	13982-38-2	1.00E-02	2.00E-01	14/ 623	3.24E-02	3.24E-02	---	1.39E-01	NO:1
Bismuth-210	14331-79-4	1.00E-02	1.00E-01	7/ 148	5.11E-02	5.11E-02	---	5.52E+01	NO:1
Bismuth-210M	BI-210M	4.70E-02	4.70E-02	1/ 581	4.20E-02	4.20E-02	---	---	NO:1
Bismuth-212	14913-49-6	6.60E-01	1.74E+00	18/ 18	1.09E+00	1.74E+00	---	1.11E+00	NO:6
Bismuth-214	14733-03-0	2.20E-01	1.40E+00	89/ 89	6.92E-01	6.92E-01	1.20E+00	1.31E-01	NO:6
Cerium-141	13967-74-3	1.61E+00	1.61E+00	1/ 1	---	1.61E+00	---	4.18E+00	NO:3

Table 2.3: Identification of Constituents of Potential Concern for the Construction Worker Exposed to Surface and Subsurface Soil in MCP Parcel 7

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Cerium-144	14762-78-8	5.12E-01	5.12E-01	1/ 1	- - -	5.12E-01	- - -	8.91E+00	NO:3
Cerium-144/Praseodymium	14762-78-8(+D)	1.02E+00	1.02E+00	1/ 1	- - -	1.02E+00	- - -	3.23E+00	NO:3
Cesium-137	10045-97-3(+D)	1.00E-02	3.10E+01	545/2614	5.21E-02	5.21E-02	4.20E-01	3.82E-01	NO:4
Cobalt-60	10198-40-0	1.00E-02	9.19E-02	80/2514	3.22E-02	3.22E-02	- - -	7.91E-02	NO:1
Lead-210	14255-04-0	1.40E-01	3.97E+00	770/1932	6.48E-01	6.48E-01	1.20E+00	9.05E-01	NO:6
Lead-212	15092-94-1	8.50E-02	2.42E+00	204/ 204	8.46E-01	8.46E-01	- - -	1.79E+00	NO:6
Lead-214	15067-28-4	1.33E-01	1.66E+00	191/ 191	8.06E-01	8.06E-01	1.20E+00	1.00E+00	NO:6
Plutonium-238	**13981-16-3**	**3.10E-03**	**4.94E+02**	**2083/5827**	**5.94E+01**	**5.94E+01**	**1.30E-01**	**6.12E+00**	**YES**
Plutonium-239	15117-48-3	2.20E-02	3.20E-02	3/ 5	1.42E-01	3.20E-02	- - -	6.03E+00	NO:3
Plutonium-239/240	PU-239/240	1.60E-03	7.26E+00	422/1303	3.59E-02	3.59E-02	1.80E-01	- - -	NO:4
Plutonium-242	13982-10-0	4.26E-03	8.48E-03	2/ 6	1.03E-02	8.48E-03	- - -	6.33E+00	NO:3
Potassium-40	13966-00-2	1.15E+00	4.26E+01	720/ 749	2.28E+01	2.28E+01	3.70E+01	1.18E+00	NO:4
Protactinium-231	14331-85-2	6.30E-01	1.87E+00	2/ 441	9.09E-01	9.09E-01	- - -	2.73E+00	NO:1
Radium-224	13233-32-4	3.30E-01	1.94E+00	61/ 61	1.10E+00	1.10E+00	- - -	3.24E+00	NO:3
Radium-226	13982-63-3(+D)	1.50E-01	4.06E+00	2195/2527	1.18E+00	1.18E+00	2.00E+00	1.10E-01	NO:4
Radium-228 +D	**15262-20-1(+D)**	**2.12E-01**	**1.32E+01**	**502/ 515**	**1.06E+00**	**1.06E+00**	- - -	**1.67E-01**	**YES**
Strontium-90	10098-97-2(+D)	1.06E-01	1.58E+00	18/ 127	2.98E-01	2.98E-01	7.20E-01	9.40E+00	NO:3
Thallium-208	14913-50-9	4.00E-02	8.00E-01	149/ 150	3.34E-01	3.34E-01	- - -	5.59E-02	NO:6
Thorium-227	15623-47-9	2.30E-02	4.21E-01	36/ 37	1.82E-01	1.82E-01	- - -	2.14E+00	NO:3
Thorium-228	14274-82-9(+D)	7.30E-03	4.10E+01	1232/1508	1.84E+00	1.84E+00	1.50E+00	1.19E-01	NO:6
Thorium-230	14269-63-7(+D)	2.06E-02	1.32E+01	1204/2931	2.72E+00	2.72E+00	1.90E+00	9.26E-02	NO:6
Thorium-232	7440-29-1(+D)	6.80E-03	2.92E+01	3374/5057	8.10E-01	8.10E-01	1.40E+00	6.90E-02	NO:4
Thorium-234	15065-10-8	6.40E-01	2.20E+00	10/ 10	1.73E+00	2.20E+00	- - -	1.76E+01	NO:3
Tritium	10028-17-8p	1.00E-02	5.85E+01	221/ 318	2.44E+00	2.44E+00	1.60E+00	7.58E+03	NO:3
Uranium-233/234	**U-233/234**	**7.34E-01**	**1.39E+00**	**4/ 4**	**2.24E+00**	**1.39E+00**	- - -	**4.82E-01**	**YES**
Uranium-234	13966-29-5	7.05E-02	1.70E+00	505/ 545	5.70E-01	5.70E-01	1.10E+00	1.05E+01	NO:3
Uranium-235	15117-96-1(+D)	4.00E-03	2.50E-01	206/ 742	1.29E-01	1.29E-01	1.10E-01	1.54E+00	NO:3
Uranium-235/236	U-235/236	2.02E-02	5.38E-02	10/ 37	3.88E-02	3.88E-02	- - -	3.10E-01	NO:3
Uranium-238	7440-61-1(+D)	5.62E-02	2.20E+00	569/1031	2.04E+00	2.04E+00	1.20E+00	4.13E+00	NO:3

CAS - Chemical Abstract Service
COPC - Constituents of Potential Concern
EPC - exposure point concentration (lower of maximum concentration and 95%UCL).
mg/kg - milligram per kilogram
ug/kg - microgram per kilogram

- - - : not applicable, not available, or not calculated due to insufficient toxicity data

NO:1 - <5% Detects
NO:2 - Max<Background
NO:3 - Max< Risk Based Guideline Value
NO:4 - EPC< Background
NO:5 - Essential Human Nutrient
NO:6 - Part of a chain which has members above that are COPCs
Bold text indicates COPCs selected

Lithium note: The RREM background value for lithium is 26 mg/kg and not - - - as presented in this table; however, since the analyte would still become a COPC, the value in the table was not modified.

Background values are based on the Operable Unit 9 Background Soils Investigation Chemistry Report (DOE 1994) or, in the case of nuclides with short half lives (Ac-227, Pb-210, and Pa-231) are based on the parent nuclide background and assumption of equilibrium with the parent nuclide.

Ra-228 note: A background value has not been calculated for Ra-228 and why none is provided in the table above. However, if Ra-228's parent nuclide background is considered (Th-232 at 1.4 pCi/g), Ra-228 would not be brought forward as a COPC. To be consistent with previous RREs, Ra-228 was presented with no background value and was brought forward as a COPC.

Table 2.4: Identification of Constituents of Potential Concern for the Site Employee Exposed to Surface Soil in Parcel 7

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Inorganics (mg/kg)									
Aluminum	7429-90-5	6.59E+02	1.57E+05	84/ 84	1.21E+04	1.21E+04	1.90E+04	1.69E+05	NO:3
Antimony	7440-36-0	2.30E-01	2.60E+00	21/ 74	2.37E+00	2.37E+00	---	8.18E+01	NO:3
Arsenic	7440-38-2	1.20E+00	1.46E+01	83/ 89	5.58E+00	5.58E+00	8.60E+00	2.26E+00	NO:4
Barium	7440-39-3	6.10E+00	4.24E+02	80/ 89	7.06E+01	7.06E+01	1.80E+02	1.25E+04	NO:3
Beryllium	7440-41-7	9.00E-02	1.10E+00	63/ 85	8.67E-01	8.67E-01	1.30E+00	3.70E+02	NO:2
Bismuth	7440-69-9	4.60E-01	1.41E+02	12/ 60	7.32E+00	7.32E+00	3.84E+01	---	NO:4
Cadmium	7440-43-9	1.00E-01	6.80E+00	36/ 83	1.57E+00	1.57E+00	2.10E+00	---	NO:4
Calcium	7440-70-2	4.93E+03	3.09E+05	84/ 85	1.94E+05	1.94E+05	3.10E+05	---	NO:2
Cerium	7440-45-1	1.27E+01	4.47E+01	6/ 9	4.63E+01	4.47E+01	---	3.85E+04	NO:3
Chromium	7440-47-3	1.30E+00	5.78E+01	82/ 86	1.42E+01	1.42E+01	2.00E+01	---	NO:4
Cobalt	7440-48-4	8.50E-01	2.04E+01	71/ 83	8.55E+00	8.55E+00	1.90E+01	1.93E+03	NO:3
Copper	7440-50-8	1.30E+00	4.80E+01	82/ 83	1.66E+01	1.66E+01	2.60E+01	8.18E+03	NO:3
Cyanide	57-12-5	2.40E-01	2.70E-01	2/ 73	5.17E-01	2.70E-01	---	4.09E+03	NO:1
Dysprosium	**7429-91-6**	**4.50E+00**	**4.50E+00**	**1/ 6**	**4.58E+00**	**4.50E+00**	---	---	**YES**
Erbium	**7440-52-0**	**7.20E+00**	**7.20E+00**	**1/ 9**	**5.78E+00**	**7.20E+00**	---	---	**YES**
Europium	**7440-53-1**	**1.40E+00**	**1.60E+00**	**2/ 6**	**2.13E+00**	**1.60E+00**	---	---	**YES**
Gadolinium	**7440-54-2**	**2.89E+01**	**6.59E+01**	**3/ 9**	**2.02E+02**	**6.59E+01**	---	---	**YES**
Iron	7439-89-6	2.33E+03	3.88E+04	85/ 86	2.64E+04	2.64E+04	3.50E+04	---	NO:4
Lanthanum	**7439-91-0**	**7.20E+00**	**1.57E+01**	**3/ 9**	**1.49E+01**	**1.57E+01**	---	---	**YES**
Lead	7439-92-1	3.60E+00	8.83E+01	89/ 91	1.61E+01	1.61E+01	4.80E+01	---	NO:4
Lithium	**7439-93-2**	**1.90E+00**	**4.31E+01**	**62/ 65**	**2.02E+01**	**2.02E+01**	---	---	**YES**
Magnesium	7439-95-4	2.51E+03	1.46E+05	85/ 86	4.78E+04	4.78E+04	4.00E+04	---	NO:5
Manganese	7439-96-5	1.63E+02	9.76E+02	82/ 83	6.30E+02	6.30E+02	1.40E+03	—	NO:2
Mercury	7439-97-6	2.00E-02	6.60E-01	24/ 86	7.26E-02	7.26E-02	1.50E-01	5.78E+04	NO:3
Molybdenum	7439-98-7	1.90E-01	1.08E+01	44/ 55	2.68E+00	2.68E+00	2.72E+01	1.02E+03	NO:2
Neodymium	**7440-00-8**	**1.32E+01**	**2.99E+01**	**8/ 9**	**3.16E+01**	**2.99E+01**	---	---	**YES**
Nickel	7440-02-0	1.40E+00	3.22E+01	75/ 83	1.73E+01	1.73E+01	3.20E+01	4.09E+03	NO:3
Potassium	7440-09-7	2.50E+02	6.09E+03	76/ 85	1.81E+03	1.81E+03	1.90E+03	---	NO:4
Praseodymium	**7440-10-0**	**1.21E+02**	**1.21E+02**	**1/ 9**	**9.52E+01**	**1.21E+02**	---	---	**YES**
Selenium	7782-49-2	3.10E-01	7.60E-01	6/ 82	7.02E-01	7.02E-01	5.90E-01	1.02E+03	NO:3
Silver	7440-22-4	1.00E-01	6.60E+00	12/ 83	6.14E-01	6.14E-01	1.70E+00	1.02E+03	NO:3
Sodium	7440-23-5	9.48E+01	2.15E+03	71/ 86	5.13E+02	5.13E+02	2.40E+02	---	NO:5
Tantalum	**7440-25-7**	**2.74E+02**	**4.59E+02**	**3/ 5**	**1.69E+03**	**4.59E+02**	---	---	**YES**
Thallium	7440-28-0	8.00E-01	8.00E-01	1/ 82	8.47E-01	8.00E-01	4.60E-01	1.35E+01	NO:1
Tin	7440-31-5	6.40E-01	6.30E+00	30/ 56	2.42E+00	2.42E+00	2.09E+01	1.23E+05	NO:2
Vanadium	7440-62-2	3.40E+00	4.00E+01	79/ 83	1.92E+01	1.92E+01	2.50E+01	2.04E+02	NO:3
Zinc	7440-66-6	4.90E+00	3.28E+02	84/ 85	7.01E+01	7.01E+01	1.40E+02	6.13E+04	NO:3
Pesticides and/or PCBs (ug/kg)									
4,4'-DDE	72-55-9	2.20E-01	3.90E-01	2/ 79	4.56E+00	3.90E-01	---	1.68E+04	NO:1
4,4'-DDT	50-29-3	2.90E-01	4.90E+00	2/ 79	4.67E+00	4.67E+00	---	9.56E+03	NO:1
Alpha Chlordane	5103-71-9	1.50E+00	1.60E+01	6/ 73	1.83E+01	1.60E+01	---	7.64E+03	NO:3
Aroclor-1248	12672-29-6	9.80E+01	9.80E+01	1/ 79	3.14E+01	3.14E+01	---	---	NO:1
Aroclor-1254	11097-69-1	3.80E+01	1.30E+02	6/ 79	4.78E+01	4.78E+01	---	6.83E+02	NO:3
Delta-BHC	319-86-8	1.90E-01	1.90E-01	1/ 78	2.41E+00	1.90E-01	---	---	NO:1
Dieldrin	60-57-1	2.40E-01	7.90E-01	2/ 78	5.23E+00	7.90E-01	---	3.58E+02	NO:1
Endosulfan I	959-98-8	2.40E+00	2.40E+00	1/ 79	2.33E+00	2.33E+00	---	---	NO:1
Endrin	72-20-8	3.30E-01	1.30E+00	3/ 79	4.31E+00	1.30E+00	---	6.13E+04	NO:1
Endrin Aldehyde	7421-93-4	5.70E-01	5.70E-01	1/ 69	2.84E+00	5.70E-01	---	---	NO:1
Endrin Ketone	53494-70-5	2.10E-01	2.10E-01	1/ 79	5.78E+00	2.10E-01	---	---	NO:1
Gamma Chlordane	5103-74-2	4.80E-01	1.60E+01	8/ 76	1.76E+01	1.60E+01	---	7.64E+03	NO:3
Heptachlor	76-44-8	1.40E-01	2.90E+00	3/ 79	2.16E+00	2.16E+00	---	1.27E+03	NO:1
Heptachlor Epoxide	1024-57-3	5.60E-01	5.60E-01	1/ 79	3.30E+00	5.60E-01	---	6.29E+02	NO:1
Methoxychlor	72-43-5	7.80E-01	7.80E-01	1/ 78	2.50E+01	7.80E-01	---	1.02E+06	NO:1
Semi-Volatile Organic Compounds (ug/kg)									
1,2-Dichlorobenzene	95-50-1	1.30E+01	1.30E+01	1/ 90	3.04E+02	1.30E+01	---	2.92E+00	NO:1
2,4,6-Tribromophenol	**118-79-6**	**1.70E+03**	**1.70E+03**	**1/ 1**	**0.00E+00**	**1.70E+03**	---	---	**YES**
2-Fluorobiphenyl	**321-60-8**	**1.40E+03**	**1.40E+03**	**1/ 1**	**0.00E+00**	**1.40E+03**	---	---	**YES**
2-Fluorophenol	**367-12-4**	**1.90E+03**	**1.90E+03**	**1/ 1**	**0.00E+00**	**1.90E+03**	---	---	**YES**
2-Methylnaphthalene	91-57-6	3.30E+01	2.70E+03	7/ 87	2.64E+02	2.64E+02	---	8.18E+05	NO:3
Acenaphthene	83-32-9	2.20E+01	2.80E+03	20/ 87	2.90E+02	2.90E+02	---	3.09E+06	NO:3
Acenaphthylene	208-96-8	3.10E+01	6.10E+02	4/ 87	2.45E+02	2.45E+02	---	---	NO:1
Anthracene	120-12-7	2.50E+01	4.90E+03	30/ 87	3.31E+02	3.31E+02	---	1.55E+07	NO:3
Benzo(a)anthracene	**56-55-3**	**2.10E+01**	**5.70E+03**	**46/ 87**	**4.51E+02**	**4.51E+02**	---	**1.98E+03**	**YES**
Benzo(a)pyrene	**50-32-8**	**2.40E+01**	**5.10E+03**	**44/ 88**	**4.41E+02**	**4.41E+02**	---	**1.98E+02**	**YES**
Benzo(b)fluoranthene	**205-99-2**	**1.70E+01**	**5.00E+03**	**46/ 87**	**4.67E+02**	**4.67E+02**	---	**1.98E+03**	**YES**
Benzo(g,h,i)perylene	**191-24-2**	**1.30E+01**	**3.50E+03**	**43/ 87**	**3.53E+02**	**3.53E+02**	---	---	**YES**
Benzo(k)fluoranthene	207-08-9	2.00E+01	4.80E+03	46/ 87	5.01E+02	5.01E+02	---	1.98E+04	NO:3
Benzoic Acid	65-85-0	4.80E+01	1.80E+02	8/ 35	1.93E+03	1.80E+02	---	2.49E+08	NO:3
Bis(2-ethylhexyl)phthalate	117-81-7	2.00E+01	6.50E+03	44/ 85	3.14E+02	3.14E+02	---	1.25E+05	NO:3
Butyl Benzyl Phthalate	85-68-7	5.80E+01	5.20E+02	2/ 85	2.38E+02	2.38E+02	---	1.25E+07	NO:1
Carbazole	86-74-8	1.90E+01	1.50E+03	23/ 72	2.53E+02	2.53E+02	---	8.72E+04	NO:3

Table 2.4: Identification of Constituents of Potential Concern for the Site
Employee Exposed to Surface Soil in Parcel 7

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Chrysene	218-01-9	2.30E+01	6.30E+03	48/ 87	5.23E+02	5.23E+02	---	1.98E+05	NO:3
Di-n-butyl Phthalate	84-74-2	3.40E+01	2.80E+02	9/ 85	2.38E+02	2.38E+02	---	6.23E+06	NO:3
Dibenz(a,h)anthracene	**53-70-3**	**2.00E+01**	**9.30E+02**	**22/ 87**	**2.50E+02**	**2.50E+02**	---	**1.98E+02**	**YES**
Dibenzofuran	132-64-9	1.80E+01	9.90E+02	14/ 87	2.50E+02	2.50E+02	---	1.25E+05	NO:3
Diethyl Phthalate	84-66-2	2.30E+01	7.90E+01	6/ 85	2.28E+02	7.90E+01	---	4.99E+07	NO:3
Fluoranthene	206-44-0	2.20E+01	1.50E+04	51/ 87	8.71E+02	8.71E+02	---	2.06E+06	NO:3
Fluorene	86-73-7	1.90E+01	4.50E+03	18/ 87	2.93E+02	2.93E+02	---	2.06E+06	NO:3
Hexachlorobenzene	118-74-1	7.40E+02	7.40E+02	1/ 88	2.36E+02	2.36E+02	---	1.09E+03	NO:1
Hexachlorobutadiene	87-68-3	7.40E+02	7.40E+02	1/ 88	2.36E+02	2.36E+02	---	1.87E+04	NO:1
Hexachlorocyclopentadiene	77-47-4	7.40E+02	7.40E+02	1/ 85	2.38E+02	2.38E+02	---	3.70E+05	NO:1
Hexachloroethane	67-72-1	7.40E+02	7.40E+02	1/ 88	2.36E+02	2.36E+02	---	6.23E+04	NO:1
Indeno(1,2,3-cd)pyrene	**193-39-5**	**1.70E+01**	**3.10E+03**	**42/ 87**	**3.34E+02**	**3.34E+02**	---	**1.98E+03**	**YES**
N-Nitrosodiphenylamine	86-30-6	2.80E+02	2.80E+02	1/ 85	2.26E+02	2.26E+02	---	3.56E+05	NO:1
Nitrobenzene-d5	**4165-60-0**	**1.30E+03**	**1.30E+03**	**1/ 1**	**0.00E+00**	**1.30E+03**	---	---	**YES**
P-Terphenyl-d14	**1718-51-0**	**1.40E+03**	**1.40E+03**	**1/ 1**	**0.00E+00**	**1.40E+03**	---	---	**YES**
Phenanthrene	**85-01-8**	**2.10E+01**	**1.20E+04**	**50/ 87**	**7.16E+02**	**7.16E+02**	---	---	**YES**
Phenol	108-95-2	4.00E+01	1.50E+02	2/ 84	2.35E+02	1.50E+02	---	1.87E+07	NO:1
Phenol-d5	**4165-62-2**	**1.90E+03**	**1.90E+03**	**1/ 1**	**0.00E+00**	**1.90E+03**	---	---	**YES**
Pyrene	129-00-0	1.80E+01	2.10E+04	53/ 86	9.97E+02	9.97E+02	---	1.55E+06	NO:3
Volatile Organic Compounds (ug/kg)									
1,1,2,2-Tetrachloroethane	79-34-5	3.00E+00	3.00E+00	1/ 264	4.15E+00	3.00E+00	---	2.86E+04	NO:1
1,1,2-Trichloroethane	79-00-5	1.00E+00	1.00E+00	1/ 264	4.15E+00	1.00E+00	---	1.00E+05	NO:1
1,2-Dichloroethane	107-06-2	2.00E+00	2.00E+00	1/ 267	4.14E+00	2.00E+00	---	6.29E+04	NO:1
1,2-Dichloroethene	540-59-0	1.00E+00	1.40E+02	13/ 259	4.92E+00	4.92E+00	---	1.84E+06	NO:3
1,2-Dichloropropane	78-87-5	2.00E+00	2.00E+00	1/ 264	4.13E+00	2.00E+00	---	8.42E+04	NO:1
1,2-cis-Dichloroethene (DCE)	156-59-2	2.00E+01	3.20E+03	15/ 28	1.59E+04	3.20E+03	---	2.04E+06	NO:3
1,3-Dichlorobenzene	541-73-1	1.00E+00	1.60E+01	2/ 90	3.32E+02	1.60E+01	---	1.87E+06	NO:1
1,4-Dichlorobenzene	106-46-7	1.30E+01	4.40E+01	2/ 93	2.83E+02	4.40E+01	---	7.27E+04	NO:1
2-Butanone	78-93-3	2.00E+00	5.50E+01	27/ 267	7.83E+00	7.83E+00	---	1.23E+08	NO:3
2-Hexanone	591-78-6	5.00E+00	1.30E+01	2/ 265	6.96E+00	6.96E+00	---	---	NO:1
4-Methyl-2-pentanone	108-10-1	7.00E+00	2.00E+01	4/ 265	7.01E+00	7.01E+00	---	1.64E+07	NO:1
Acetone	67-64-1	2.00E+00	6.00E+03	97/ 264	1.41E+01	1.41E+01	---	1.84E+08	NO:3
Acrylonitrile	107-13-1	4.00E+00	5.00E+00	2/ 141	6.43E+01	5.00E+00	---	1.06E+04	NO:1
Bromoform	75-25-2	1.00E+00	1.00E+00	1/ 264	4.15E+00	1.00E+00	---	7.24E+05	NO:1
Carbon Disulfide	75-15-0	1.00E+00	2.00E+00	2/ 264	4.14E+00	2.00E+00	---	2.04E+07	NO:1
Chlorobenzene	108-90-7	3.00E+00	1.00E+02	5/ 268	4.34E+00	4.34E+00	---	4.09E+06	NO:1
Dichloromethane (Methylene Chloride)	75-09-2	3.00E+00	1.20E+04	203/ 265	2.16E+01	2.16E+01	---	7.63E+05	NO:3
Ethylbenzene	100-41-4	1.00E+00	4.00E+00	4/ 266	4.10E+00	4.00E+00	---	2.04E+07	NO:1
FREON-113	76-13-1	3.00E+00	3.00E+00	3/ 167	3.57E+00	3.00E+00	---	6.13E+09	NO:1
Hexane	110-54-3	2.00E+00	8.00E+00	13/ 162	5.77E+00	5.77E+00	---	2.25E+09	NO:3
Isopropyl Benzene	98-82-8	2.00E+00	2.00E+00	1/ 5	7.08E+01	2.00E+00	---	2.04E+07	NO:3
Methyl Cyclohexane	**108-87-2**	**5.00E+00**	**6.00E+00**	**2/ 5**	**6.19E+00**	**6.00E+00**	---	---	**YES**
Naphthalene	91-20-3	2.70E+01	1.90E+03	11/ 87	2.62E+02	2.62E+02	---	1.24E+06	NO:3
Styrene	100-42-5	4.00E-01	2.00E+00	3/ 265	4.12E+00	2.00E+00	---	4.09E+07	NO:1
Tetrachloroethene (PCE)	127-18-4	1.00E+00	5.00E+00	5/ 268	4.13E+00	4.13E+00	---	1.06E+04	NO:1
Toluene	108-88-3	1.00E+00	3.00E+00	33/ 266	4.00E+00	3.00E+00	---	4.09E+07	NO:3
Trichloroethylene (TCE)	79-01-6	1.00E+00	5.40E+03	52/ 290	1.36E+01	1.36E+01	---	1.43E+04	NO:3
Trichloromethane (Cholorform)	67-66-3	4.00E-01	6.70E+01	4/ 267	4.39E+00	4.39E+00	---	2.04E+06	NO:1
Vinyl Chloride	75-01-4	9.00E+00	4.40E+02	10/ 290	9.98E+00	9.98E+00	---	3.82E+03	NO:1
Xylenes, Total	1330-20-7	1.00E+00	1.80E+01	9/ 266	4.16E+00	4.16E+00	---	4.09E+07	NO:1
Radionuclides (pCi/g)									
Actinium-227 +D	**14952-40-0(+D)**	**2.30E-01**	**3.10E+00**	**62/ 805**	**2.08E-01**	**2.08E-01**	**1.10E-01**	**5.02E-01**	**YES**
Actinium-228	14331-83-0	3.00E-01	1.78E+00	81/ 81	1.00E+00	1.00E+00	---	2.01E-01	NO:6
Americium-241	14596-10-2	4.00E-02	2.60E+00	50/1145	7.30E-02	7.30E-02	---	9.93E+00	NO:1
Bismuth-207	13982-38-2	1.50E-02	3.40E-02	4/ 205	3.47E-02	3.40E-02	---	1.29E-01	NO:1
Bismuth-210	14331-79-4	1.00E-02	1.00E-02	2/ 61	6.96E-02	1.00E-02	---	9.07E+01	NO:1
Bismuth-210M	BI-210M	4.70E-02	4.70E-02	1/ 251	3.62E-02	3.62E-02	---	---	NO:1
Bismuth-212	14913-49-6	6.60E-01	1.74E+00	18/ 18	1.09E+00	1.74E+00	---	1.03E+00	NO:6
Bismuth-214	14733-03-0	2.20E-01	1.28E+00	83/ 83	6.64E-01	6.64E-01	1.20E+00	1.22E-01	NO:4
Cesium-137	10045-97-3(+D)	1.00E-02	2.90E+01	328/1229	7.20E-02	7.20E-02	4.20E-01	3.56E-01	NO:4
Cobalt-60	10198-40-0	2.00E-02	9.19E-02	24/1134	3.51E-02	3.51E-02	---	7.35E-02	NO:1
Lead-210	14255-04-0(+D)	1.40E-01	3.97E+00	338/ 802	7.12E-01	7.12E-01	1.20E+00	1.19E+00	NO:4
Lead-212	15092-94-1	8.50E-02	2.42E+00	147/ 147	7.62E-01	7.62E-01	---	1.73E+00	NO:6
Lead-214	15067-28-4	1.33E-01	1.23E+00	134/ 134	7.16E-01	7.16E-01	1.20E+00	9.29E-01	NO:4
Plutonium-238	**13981-16-3**	**3.10E-03**	**4.94E+02**	**1435/3726**	**4.39E+01**	**4.39E+01**	**1.30E-01**	**1.13E+01**	**YES**
Plutonium-239	15117-48-3	2.20E-02	3.20E-02	3/ 4	6.88E-02	3.20E-02	---	1.12E+01	NO:3
Plutonium-239/240	PU-239/240	1.60E-03	7.26E+00	363/ 837	4.97E-02	4.97E-02	1.80E-01	---	NO:4
Plutonium-242	13982-10-0	4.26E-03	8.48E-03	2/ 6	1.03E-02	8.48E-03	---	1.17E+01	NO:3
Potassium-40	13966-00-2	1.15E+00	3.92E+01	339/ 342	1.94E+01	1.94E+01	3.70E+01	1.12E+00	NO:4
Radium-224	13233-32-4	8.09E-01	1.11E+00	3/ 3	1.38E+00	1.11E+00	---	5.47E+00	NO:3
Radium-226	13982-63-3(+D)	1.68E-01	4.06E+00	965/1142	1.20E+00	1.20E+00	2.00E+00	1.05E-01	NO:4
Radium-228 +D	**15262-20-1(+D)**	**2.88E-01**	**3.97E+00**	**179/ 181**	**1.05E+00**	**1.05E+00**	---	**1.76E-01**	**YES**
Strontium-90	10098-97-2(+D)	1.06E-01	1.58E+00	18/ 62	3.48E-01	3.48E-01	7.20E-01	1.50E+01	NO:3
Thallium-208	14913-50-9	4.00E-02	8.00E-01	115/ 116	3.27E-01	3.27E-01	---	5.18E-02	NO:6
Thorium-227	15623-47-9	4.00E-02	4.21E-01	23/ 24	2.32E-01	2.32E-01	---	2.17E+00	NO:3

Table 2.4: Identification of Constituents of Potential Concern for the Site Employee Exposed to Surface Soil in Parcel 7

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Thorium-228	14274-82-9(+D)	7.30E-03	4.34E+00	799/1032	2.57E+00	2.57E+00	1.50E+00	1.14E-01	NO:6
Thorium-230	14269-63-7(+D)	2.06E-02	7.62E+00	772/1526	2.47E+00	2.47E+00	1.90E+00	---	NO:6
Thorium-232	7440-29-1(+D)	6.80E-03	2.92E+01	1794/2929	8.01E-01	8.01E-01	1.40E+00	---	NO:4
Thorium-234	15065-10-8	6.40E-01	2.20E+00	8/ 8	2.08E+00	2.20E+00	---	2.58E+01	NO:3
Tritium	10028-17-8p	3.91E-02	9.50E+00	12/ 28	3.57E+01	9.50E+00	1.60E+00	1.45E+04	NO:3
Uranium-233/234	**U-233/234**	**7.34E-01**	**1.39E+00**	**4/ 4**	**2.24E+00**	**1.39E+00**	---	**5.52E-01**	**YES**
Uranium-234	13966-29-5	9.60E-02	1.46E+00	242/ 246	6.57E-01	6.57E-01	1.10E+00	1.97E+01	NO:3
Uranium-235	15117-96-1(+D)	4.00E-03	2.30E-01	131/ 479	2.12E-01	2.12E-01	1.10E-01	1.55E+00	NO:3
Uranium-235/236	U-235/236	5.07E-02	5.07E-02	1/ 2	0.00E+00	5.07E-02	---	3.32E-01	NO:3
Uranium-238	7440-61-1(+D)	9.00E-02	2.20E+00	265/ 568	2.43E+00	2.20E+00	1.20E+00	5.22E+00	NO:3

CAS - Chemical Abstract Service
COPC - Constituents of Potential Concern
EPC - exposure point concentration (lower of maximum concentration and 95%UCL).
mg/kg - milligram per kilogram
ug/kg - microgram per kilogram
pCi/g - picocurie per gram
RBGV - Risk Based Guideline Value
UCL - Upper Confidence Limit

NO:1 - <5% Detects
NO:2 - Max<Background
NO:3 - Max< Risk Based Guideline Value
NO:4 - EPC< Background
NO:5 - Essential Human Nutrients
NO:6 - Part of a chain which has members above that are COPCs

Bold text indicates COPCs selected

--- : not applicable, not available, or not calculated due to insufficient toxicity data

Background values are based on the Operable Unit 9 Background Soils Investigation Chemistry Report (DOE 1994) or, in the case of nuclides with short half lives (Ac-227, Pb-210, and Pa-231) are based on the parent nuclide background and assumption of equilibrium with the parent nuclide.

Ra-228 note: A background value has not been calculated for Ra-228 and why none is provided in the table above. However, if Ra-228's parent nuclide background is considered (Th-232 at 1.4 pCi/g), Ra-228 would not be brought forward as a COPC. To be consistent with previous RREs, Ra-228 was presented with no background value and was brought forward as a COPC.

Table 2.5: Identification of Constituents of Potential Concern for a Construction Worker Exposed to Surface and Subsurface Soil in the MCP Parcel 8

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Inorganics (mg/kg)									
Aluminum	7429-90-5	1.59E+00	2.14E+04	308/ 309	1.10E+04	1.10E+04	1.90E+04	2.08E+04	NO:4
Antimony	**7440-36-0**	**2.30E-01**	**6.90E+01**	**55/ 290**	**9.91E+00**	**9.91E+00**	---	**8.52E+00**	**YES**
Arsenic	7440-38-2	2.30E-03	3.22E+01	313/ 325	5.36E+00	5.36E+00	8.60E+00	1.85E+00	NO:4
Barium	7440-39-3	1.20E-02	6.23E+02	294/ 321	5.89E+01	5.89E+01	1.80E+02	1.47E+03	NO:3
Beryllium	7440-41-7	1.50E-04	1.30E+00	291/ 462	5.49E-01	5.49E-01	1.30E+00	4.21E+01	NO:3
Bismuth	7440-69-9	4.30E-01	1.01E+02	35/ 126	1.34E+01	1.34E+01	3.84E+01	---	NO:4
Cadmium	7440-43-9s	6.00E-02	2.42E+01	112/ 321	1.37E+00	1.37E+00	2.10E+00	5.46E+00	NO:4
Calcium	7440-70-2	1.33E+02	2.68E+05	309/ 311	1.42E+05	1.42E+05	3.10E+05	---	NO:2
Cerium	7440-45-1	2.46E+01	2.84E+01	2/ 25	2.38E+01	2.38E+01	---	3.85E+04	NO:3
Chromium	7440-47-3	3.60E-03	9.21E+01	303/ 308	1.73E+01	1.73E+01	2.00E+01	---	NO:4
Cobalt	7440-48-4	1.70E-03	2.80E+01	278/ 311	9.63E+00	9.63E+00	1.90E+01	3.83E+02	NO:3
Copper	7440-50-8	6.50E-03	3.82E+02	301/ 305	2.09E+01	2.09E+01	2.60E+01	8.52E+02	NO:3
Cyanide	57-12-5	1.10E-01	1.01E+01	45/ 254	5.58E-01	5.58E-01	---	4.26E+02	NO:3
Erbium	**7440-52-0**	**4.00E+01**	**1.62E+02**	**19/ 25**	**1.90E+02**	**1.62E+02**	---	---	**YES**
Iron	7439-89-6	4.33E+00	1.09E+05	312/ 314	2.28E+04	2.28E+04	3.50E+04	---	NO:4
Lead	7439-92-1	2.40E-03	3.10E+03	300/ 307	1.24E+01	1.24E+01	4.80E+01	---	NO:4
Lithium	**7439-93-2**	**1.10E+00**	**4.29E+01**	**195/ 208**	**1.97E+01**	**1.97E+01**	---	---	**YES**
Magnesium	7439-95-4	4.31E+01	1.08E+05	307/ 311	3.52E+04	3.52E+04	4.00E+04	---	NO:4
Manganese	7439-96-5s	1.75E-01	1.49E+03	304/ 306	5.49E+02	5.49E+02	1.40E+03	4.85E+02	NO:4
Mercury	7439-97-6	2.00E-02	9.10E-01	54/ 318	7.09E-02	7.09E-02	1.50E-01	5.78E+04	NO:3
Molybdenum	7439-98-7	5.30E-01	1.64E+01	58/ 122	2.65E+00	2.65E+00	2.72E+01	1.06E+02	NO:2
Neodymium	**7440-00-8**	**1.98E+01**	**2.22E+01**	**2/ 25**	**2.32E+01**	**2.22E+01**	---	---	**YES**
Nickel	7440-02-0	4.20E-03	1.07E+02	286/ 302	2.13E+01	2.13E+01	3.20E+01	4.26E+02	NO:3
Potassium	7440-09-7	5.16E-01	7.46E+03	286/ 313	2.22E+03	2.22E+03	1.90E+03	---	NO:5
Selenium	7782-49-2	1.20E-01	2.90E+00	34/ 303	5.41E-01	5.41E-01	5.90E-01	1.06E+02	NO:3
Silver	7440-22-4	1.90E-01	2.06E+01	92/ 319	3.74E+00	3.74E+00	1.70E+00	1.06E+02	NO:3
Sodium	7440-23-5	3.23E-01	2.62E+03	269/ 314	4.17E+02	4.17E+02	2.40E+02	---	NO:5
Tantalum	**7440-25-7**	**1.68E+02**	**5.53E+02**	**23/ 49**	**2.69E+02**	**2.69E+02**	---	---	**YES**
Thallium	**7440-28-0**	**6.20E-04**	**5.50E+00**	**58/ 312**	**7.05E-01**	**7.05E-01**	**4.60E-01**	**1.41E+00**	**YES**
Tin	7440-31-5	9.80E-01	8.00E+00	18/ 116	2.28E+00	2.28E+00	2.09E+01	1.28E+04	NO:2
Vanadium	7440-62-2	6.10E-03	4.88E+01	308/ 311	1.97E+01	1.97E+01	2.50E+01	2.13E+01	NO:4
Zinc	7440-66-6	1.20E-02	1.18E+03	305/ 307	6.55E+01	6.55E+01	1.40E+02	6.39E+03	NO:3
Dioxins/Dibenzofurans (µg/kg)									
1,2,3,4,6,7,8-HpCDD	**35822-46-9**	**2.10E-01**	**2.30E+00**	**3/ 27**	**4.34E-01**	**4.34E-01**	---	---	**YES**
1,2,3,6,7,8-HxCDF	55684-94-1	3.60E-01	3.60E-01	1/ 27	2.92E-01	2.92E-01	---	1.99E-01	NO:1
HpCDD	**37871-00-4**	**5.00E-01**	**4.10E+00**	**3/ 27**	**7.56E-01**	**7.56E-01**	---	**1.99E+00**	**YES**
HpCDF	38998-75-3	7.30E-01	7.30E-01	1/ 27	4.94E-01	4.94E-01	---	1.99E+00	NO:1
HxCDD	34465-46-8	1.70E-01	1.70E-01	1/ 27	2.02E-01	1.70E-01	---	1.99E-01	NO:1
OCDD	3268-87-9	3.10E-01	1.66E+01	3/ 27	1.71E+00	1.71E+00	---	1.99E+01	NO:3
OCDF	39001-02-0	5.40E-01	5.40E-01	1/ 27	6.28E-01	5.40E-01	---	1.99E+01	NO:1
Explosives (µg/kg)									
1,3,5-Trinitrobenzene	99-35-4	3.70E+02	3.70E+02	1/ 73	7.24E+02	3.70E+02	---	6.39E+05	NO:1
2,4-Dinitrotoluene	121-14-2	8.50E+02	8.50E+02	1/ 46	2.01E+02	2.01E+02	---	3.54E+03	NO:1
2,6-Dinitrotoluene	606-20-2	8.50E+01	9.50E+01	2/ 270	3.18E+02	9.50E+01	---	3.54E+03	NO:1
HMX	2691-41-0	3.80E+02	1.40E+03	4/ 73	1.40E+03	1.40E+03	---	1.06E+06	NO:3
RDX	121-82-4	2.90E+02	2.40E+03	6/ 73	1.11E+03	1.11E+03	---	2.71E+04	NO:3
Pesticides/PCBs (µg/kg)									
4,4'-DDD	72-54-8	2.40E-01	1.10E+01	5/ 220	6.19E+00	6.19E+00	---	1.24E+04	NO:1
4,4'-DDE	72-55-9	2.20E-01	3.10E+00	6/ 220	4.86E+00	3.10E+00	---	8.77E+03	NO:1
4,4'-DDT	50-29-3	1.40E-01	2.70E+01	23/ 219	6.49E+00	6.49E+00	---	8.12E+03	NO:3
Aldrin	309-00-2	5.70E-02	4.00E+00	10/ 220	2.85E+00	2.85E+00	---	1.42E+02	NO:1
Alpha Chlordane**	5103-71-9	2.70E-02	1.50E+00	10/ 216	2.02E+01	1.50E+00	---	7.61E+03	NO:1
Alpha-BHC	319-84-6	4.30E-02	3.20E+00	24/ 220	2.91E+00	2.91E+00	---	4.73E+02	NO:3
Aroclor-1248	12672-29-6	1.80E+01	1.80E+01	1/ 239	4.39E+01	1.80E+01	---	---	NO:1
Aroclor-1254	11097-69-1	1.50E+01	7.60E+01	10/ 239	8.24E+01	7.60E+01	---	3.20E+02	NO:1
Aroclor-1260	11096-82-5	1.50E+01	4.40E+01	2/ 238	8.03E+01	4.40E+01	---	---	NO:1
Beta-BHC	319-85-7	4.20E-01	1.30E+01	5/ 220	3.06E+00	3.06E+00	---	1.66E+03	NO:1
Delta-BHC	319-86-8	1.00E-02	4.10E-01	6/ 220	3.94E+00	4.10E-01	---	---	NO:1
Dieldrin	60-57-1	7.80E-02	5.00E+01	14/ 220	4.47E+00	4.47E+00	---	1.86E+02	NO:3
Endosulfan I	959-98-8	4.80E-01	4.80E-01	1/ 220	4.34E+00	4.80E-01	---	---	NO:1
Endosulfan II	33213-65-9	1.50E-01	4.40E+00	8/ 220	4.67E+00	4.40E+00	---	---	NO:1
Endosulfan Sulfate	1031-07-8	2.20E-01	1.30E+00	6/ 220	9.56E+00	1.30E+00	---	---	NO:1
Endrin	72-20-8	2.20E-01	4.10E+00	10/ 219	5.08E+00	4.10E+00	---	6.39E+03	NO:1
Endrin Aldehyde	7421-93-4	1.30E-01	1.40E+01	7/ 203	6.61E+00	6.61E+00	---	---	NO:1
Endrin Ketone	53494-70-5	1.60E-01	5.40E+00	7/ 220	9.20E+00	5.40E+00	---	---	NO:1
Gamma Chlordane	5103-74-2	6.80E-01	5.10E+00	6/ 216	1.96E+01	5.10E+00	---	7.61E+03	NO:1
Gamma-BHC (Lindane)	58-89-9	4.30E-01	4.30E-01	1/ 220	2.70E+00	4.30E-01	---	2.29E+03	NO:1
Heptachlor	76-44-8	2.00E-01	7.20E-01	3/ 220	2.49E+00	7.20E-01	---	6.62E+02	NO:1
Heptachlor Epoxide	1024-57-3	1.40E-01	7.00E+00	11/ 220	5.80E+00	5.80E+00	---	2.77E+02	NO:3
Methoxychlor	72-43-5	1.30E+00	1.00E+02	6/ 220	4.51E+01	4.51E+01	---	1.06E+05	NO:1
Semi-Volatile Organic Compounds (µg/kg)									
1,2,4-Trichlorobenzene	120-82-1	1.20E+03	1.20E+03	1/ 254	2.96E+02	2.96E+02	---	1.72E+05	NO:1
1,2-Dichlorobenzene	95-50-1	6.40E-01	6.40E-01	1/ 257	3.27E+02	6.40E-01	---	1.55E+06	NO:1
2,4-Dimethylphenol	105-67-9	3.10E+04	3.10E+04	1/ 254	3.09E+02	3.09E+02	---	3.44E+05	NO:1
2,4-Dinitrotoluene	121-14-2	8.50E+02	8.50E+02	1/ 46	2.01E+02	2.01E+02	---	3.54E+03	NO:1
2-Benzyl-4-Chlorophenol	120-32-1	1.20E+02	1.20E+02	1/ 40	1.95E+02	1.20E+02	---	---	NO:1
2-Chlorophenol	95-57-8	9.40E+01	1.80E+03	2/ 254	2.96E+02	2.96E+02	---	8.60E+04	NO:1
2-Methylnaphthalene	91-57-6	1.40E+01	2.30E+04	11/ 269	4.38E+02	4.38E+02	---	8.52E+04	NO:1
2-Methylphenol	95-48-7	9.00E+01	1.30E+04	2/ 261	2.96E+02	2.96E+02	---	1.06E+06	NO:1
3,3'-Dichlorobenzidine	91-94-1	4.80E+01	1.10E+02	2/ 254	4.49E+02	1.10E+02	---	5.35E+03	NO:1
4-Chloro-3-methylphenol	59-50-7	8.50E+01	2.20E+03	3/ 254	2.96E+02	2.96E+02	---	---	NO:1
4-Methylphenol	106-44-5	4.60E+01	2.50E+04	3/ 261	3.09E+02	3.09E+02	---	1.06E+05	NO:1
4-Nitrophenol	100-02-7	2.40E+03	2.40E+03	1/ 254	1.11E+03	1.11E+03	---	---	NO:1

Table 2.5: Identification of Constituents of Potential Concern for a Construction Worker Exposed to Surface and Subsurface Soil in the MCP Parcel 8

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Acenaphthene	83-32-9	1.90E+01	5.10E+03	29/ 269	4.38E+02	4.38E+02	- - -	9.76E+05	NO:3
Acenaphthylene	208-96-8	1.20E+01	7.30E+02	7/ 269	4.19E+02	4.19E+02	- - -	- - -	NO:1
Anthracene	120-12-7	1.80E+01	3.80E+04	45/ 269	4.90E+02	4.90E+02	- - -	4.88E+06	NO:3
Benzo(a)anthracene	**56-55-3**	**2.00E+01**	**9.60E+04**	**70/ 269**	**5.14E+02**	**5.14E+02**	**- - -**	**3.12E+03**	**YES**
Benzo(a)pyrene	**50-32-8**	**2.00E+01**	**1.10E+05**	**69/ 269**	**4.93E+02**	**4.93E+02**	**- - -**	**3.12E+02**	**YES**
Benzo(b)fluoranthene	**205-99-2**	**2.20E+01**	**1.20E+05**	**75/ 269**	**5.19E+02**	**5.19E+02**	**- - -**	**3.12E+03**	**YES**
Benzo(g,h,i)perylene	**191-24-2**	**2.00E+01**	**1.65E+05**	**59/ 269**	**5.23E+02**	**5.23E+02**	**- - -**	**- - -**	**YES**
Benzo(k)fluoranthene	**207-08-9**	**1.90E+01**	**1.10E+05**	**67/ 269**	**5.09E+02**	**5.09E+02**	**- - -**	**3.12E+04**	**YES**
Benzoic Acid	65-85-0	4.00E+01	5.80E+03	9/ 126	2.03E+03	2.03E+03	- - -	6.88E+07	NO:3
Benzyl Alcohol	100-51-6	1.70E+04	1.70E+04	1/ 132	3.27E+02	3.27E+02	- - -	5.16E+06	NO:1
Bis(2-ethylhexyl)phthalate	117-81-7	2.20E+01	3.40E+03	138/ 255	3.46E+02	3.46E+02	- - -	1.72E+05	NO:3
Butyl Benzyl Phthalate	85-68-7	3.20E+01	1.30E+03	33/ 254	3.10E+02	3.10E+02	- - -	3.44E+06	NO:3
Carbazole	86-74-8	1.90E+01	1.70E+03	25/ 169	2.85E+02	2.85E+02	- - -	1.20E+05	NO:3
Chrysene	218-01-9	2.60E+01	1.20E+05	73/ 256	4.75E+02	4.75E+02	- - -	3.12E+05	NO:3
Dibenz(a,h)anthracene	**53-70-3**	**2.00E+01**	**7.50E+02**	**28/ 267**	**4.27E+02**	**4.27E+02**	**- - -**	**3.12E+02**	**YES**
Dibenzofuran	132-64-9	2.80E+01	1.10E+03	15/ 254	3.05E+02	3.05E+02	- - -	3.44E+04	NO:3
Diethyl Phthalate	84-66-2	2.00E+01	1.00E+02	6/ 254	2.93E+02	1.00E+02	- - -	1.38E+07	NO:1
Dimethyl Phthalate	131-11-3	3.40E+01	1.30E+02	3/ 254	2.93E+02	1.30E+02	- - -	2.13E+08	NO:1
Di-n-butyl Phthalate	84-74-2	1.90E+01	7.80E+04	68/ 256	3.61E+02	3.61E+02	- - -	1.72E+06	NO:3
Di-n-octyl Phthalate	117-84-0	2.10E+01	3.50E+05	34/ 254	3.05E+02	3.05E+02	- - -	8.52E+05	NO:3
Fluoranthene	206-44-0	1.50E+01	1.80E+05	101/ 270	6.29E+02	6.29E+02	- - -	6.51E+05	NO:3
Fluorene	86-73-7	2.30E+01	2.10E+04	26/ 269	4.57E+02	4.57E+02	- - -	6.51E+05	NO:3
Hexachlorobenzene	118-74-1	4.90E+01	4.90E+01	1/ 261	2.89E+02	4.90E+01	- - -	1.51E+03	NO:1
Indeno(1,2,3-cd)pyrene	**193-39-5**	**1.60E+01**	**1.20E+05**	**57/ 267**	**4.56E+02**	**4.56E+02**	**- - -**	**3.12E+03**	**YES**
Isophorone	78-59-1	4.10E+02	7.80E+02	2/ 254	2.84E+02	2.84E+02	- - -	2.54E+06	NO:1
N-Nitroso-di-n-propylamine	621-64-7	4.10E+01	1.10E+03	6/ 254	2.94E+02	2.94E+02	- - -	3.44E+02	NO:1
N-Nitrosodiphenylamine	86-30-6	1.50E+02	1.50E+02	1/ 254	2.91E+02	1.50E+02	- - -	3.44E+05	NO:1
Pentachlorophenol	87-86-5	1.20E+02	1.80E+03	5/ 261	1.08E+03	1.08E+03	- - -	1.56E+04	NO:1
Phenanthrene	**85-01-8**	**1.80E+01**	**1.00E+05**	**82/ 269**	**6.23E+02**	**6.23E+02**	**- - -**	**- - -**	**YES**
Phenol	108-95-2	1.10E+02	2.20E+04	5/ 257	3.06E+02	3.06E+02	- - -	5.16E+06	NO:1
Pyrene	129-00-0	1.90E+01	1.60E+05	93/ 270	6.00E+02	6.00E+02	—	4.88E+05	NO:2
Volatile Organic Compounds (µg/kg)									
1,1,1-Trichloroethane	71-55-6	1.00E+00	3.04E+01	8/ 354	4.52E+00	4.52E+00	- - -	6.84E+05	NO:1
1,1-Dichloroethane	75-34-3	4.00E-01	4.00E-01	1/ 354	4.47E+00	4.00E-01	- - -	1.93E+05	NO:1
1,2-cis-Dichloroethene (DCE)	156-59-2	2.37E-01	1.12E+03	22/ 41	9.19E+01	9.19E+01	- - -	2.13E+05	NO:3
1,2-Dichloroethane	107-06-2	1.00E+00	1.00E+00	1/ 361	4.48E+00	1.00E+00	- - -	3.45E+03	NO:1
1,2-Dichloroethene	540-59-0	4.33E-01	1.16E+03	30/ 364	5.99E+00	5.99E+00	- - -	1.92E+05	NO:3
1,2-Dichloropropane	78-87-5	2.87E+00	2.87E+00	1/ 354	4.46E+00	2.87E+00	- - -	2.08E+03	NO:1
1,2-trans-Dichloroethene	156-60-5	2.00E+00	4.38E+02	3/ 44	4.35E+01	4.35E+01	- - -	4.26E+05	NO:3
1,4-Dichlorobenzene	106-46-7	1.10E+02	1.10E+03	2/ 264	3.16E+02	3.16E+02	- - -	1.00E+05	NO:1
2-Butanone	78-93-3	6.00E-01	4.60E+01	65/ 357	8.08E+00	8.08E+00	- - -	6.65E+06	NO:3
2-Hexanone	591-78-6	3.00E+00	6.10E+01	11/ 354	7.30E+00	7.30E+00	- - -	- - -	NO:1
4-Methyl-2-pentanone	108-10-1	6.00E-01	2.00E+01	23/ 354	7.17E+00	7.17E+00	- - -	1.47E+06	NO:3
Acetone	67-64-1	2.00E+00	2.50E+02	170/ 344	2.12E+01	2.12E+01	- - -	1.92E+07	NO:3
Acetonitrile	75-05-8	6.70E+01	6.70E+01	1/ 91	8.18E+01	6.70E+01	- - -	2.00E+05	NO:1
Acrylonitrile	107-13-1	8.00E+00	8.00E+00	1/ 94	9.65E+01	8.00E+00	- - -	1.82E+03	NO:1
Benzene	71-43-2	5.00E-01	8.00E+00	16/ 384	4.37E+00	4.37E+00	- - -	6.46E+03	NO:1
Carbon Disulfide	75-15-0	8.00E-01	1.33E+01	42/ 354	4.47E+00	4.47E+00	- - -	1.16E+05	NO:3
Carbon Tetrachloride	56-23-5	2.00E+00	2.00E+00	1/ 361	4.56E+00	2.00E+00	- - -	2.44E+03	NO:1
Chlorobenzene	108-90-7	2.00E+00	1.10E+01	2/ 361	4.49E+00	4.49E+00	- - -	4.85E+04	NO:1
Chloromethane	74-87-3	1.00E+00	6.00E+00	3/ 354	6.45E+00	6.00E+00	- - -	1.59E+04	NO:1
Dichloromethane (Methylene Chloride)	75-09-2	1.00E+00	1.40E+03	219/ 354	1.97E+01	1.97E+01	- - -	8.25E+04	NO:3
Ethylbenzene	100-41-4	7.00E-01	1.80E+01	33/ 377	4.32E+00	4.32E+00	- - -	7.80E+04	NO:3
FREON-113	76-13-1	2.00E+00	4.00E+01	4/ 128	6.39E+00	6.39E+00	- - -	6.93E+06	NO:1
Hexane	110-54-3	2.00E+00	3.00E+00	2/ 91	8.13E+00	3.00E+00	- - -	4.08E+04	NO:1
Naphthalene	91-20-3	1.60E+01	4.50E+03	11/ 269	4.31E+02	4.31E+02	- - -	3.44E+05	NO:1
Styrene	100-42-5	3.00E-01	3.00E+00	25/ 354	4.47E+00	3.00E+00	- - -	1.46E+06	NO:3
Tetrachloroethene (PCE)	**127-18-4**	**2.00E-01**	**5.94E+03**	**59/ 374**	**8.15E+00**	**8.15E+00**	**- - -**	**3.66E+03**	**YES**
Toluene	108-88-3	5.70E-01	7.00E+01	82/ 377	4.25E+00	4.25E+00	- - -	2.00E+05	NO:3
Trichloroethylene (TCE)	**79-01-6**	**2.81E-01**	**9.52E+03**	**63/ 374**	**9.27E+00**	**9.27E+00**	**- - -**	**4.38E+02**	**YES**
Trichloromethane (Cholorform)	67-66-3	3.00E-01	2.00E+00	25/ 361	4.46E+00	2.00E+00	- - -	2.56E+03	NO:3
Vinyl Chloride	75-01-4	3.86E-01	6.82E+01	6/ 374	7.35E+00	7.35E+00	- - -	1.07E+03	NO:1
Xylenes, Total	1330-20-7	3.00E-01	1.50E+02	45/ 377	4.75E+00	4.75E+00	- - -	6.42E+04	NO:3
Radionuclides (pCi/g)									
Actinium-227 +L ***	**14952-40-0L**	**3.80E-02**	**2.65E+00**	**330/2319**	**2.57E-01**	**2.57E-01**	**1.10E-01**	**4.56E-01**	**YES**
Actinium-228	14331-83-0	3.80E-05	2.48E+00	998/1309	6.69E-01	6.69E-01	- - -	2.17E-01	NO:6
Americium-241	**14596-10-2**	**3.00E-02**	**3.36E+01**	**226/2650**	**1.08E-01**	**1.08E-01**	**- - -**	**6.32E+00**	**YES**
Bismuth-207	13982-38-2	1.00E-02	1.53E-01	10/1708	3.50E-02	3.50E-02	- - -	1.39E-01	NO:1
Bismuth-210M	BI-210M	5.00E-02	2.41E+00	32/1617	4.96E-02	4.96E-02	- - -	- - -	NO:1
Bismuth-212	14913-49-6	5.30E-01	2.40E+00	36/ 37	1.48E+00	1.48E+00	- - -	1.11E+00	NO:6
Bismuth-214 ****	14733-03-0	2.81E-05	1.97E+00	1366/1381	6.18E-01	6.18E-01	1.20E+00	1.31E-01	NO:4
Cesium-137	10045-97-3(+D)	1.00E-02	2.50E+00	273/2643	5.94E-02	5.94E-02	4.20E-01	3.82E-01	NO:4
Cobalt-60	10198-40-0	1.00E-02	1.10E+00	40/2595	5.60E-02	5.60E-02	- - -	7.91E-02	NO:1
Lead-210 ****	14255-04-0(+D)	4.00E-02	1.17E+01	424/2255	1.10E+00	1.10E+00	1.20E+00	6.25E-01	NO:4
Lead-212	15092-94-1	3.44E-05	2.67E+00	1401/1407	6.51E-01	6.51E-01	- - -	1.79E+00	NO:6
Lead-214 ****	15067-28-4	2.10E-01	1.32E+00	481/ 483	5.99E-01	5.99E-01	1.20E+00	1.00E+00	NO:4
Neptunium-237	13994-20-2(+D)	5.00E-04	2.40E-01	13/ 14	6.91E-01	2.40E-01	- - -	1.10E+00	NO:3
Plutonium-238	**13981-16-3**	**3.38E-03**	**8.44E+03**	**2758/5349**	**3.23E+01**	**3.23E+01**	**1.30E-01**	**6.12E+00**	**YES**
Plutonium-239	15117-48-3	9.00E-03	1.24E-01	2/ 4	4.77E+03	1.24E-01	- - -	6.03E+00	NO:3
Plutonium-239/240	PU-239/240	3.30E-03	2.01E+01	821/2560	5.83E-02	5.83E-02	1.80E-01	- - -	NO:4
Plutonium-241	14119-32-5	1.50E+00	2.95E+00	4/ 6	1.03E+01	2.95E+00	- - -	5.06E+02	NO:3
Plutonium-242	13982-10-0	3.72E-03	5.50E-01	15/ 26	6.59E-01	5.50E-01	- - -	6.33E+00	NO:3
Potassium-40	13966-00-2	1.32E-03	4.64E+01	1526/1533	1.89E+01	1.89E+01	3.70E+01	1.18E+00	NO:4
Protactinium-231	14331-85-2(+D)	1.43E+00	3.00E+00	5/1666	9.62E-01	9.62E-01	- - -	- - -	NO:1
Radium-224	13233-32-4	2.36E-01	2.50E+00	20/ 20	9.35E-01	9.35E-01	- - -	3.24E+00	NO:3
Radium-226	13982-63-3(+D)	2.81E-05	3.91E+00	2435/2603	8.23E-01	8.23E-01	2.00E+00	1.10E-01	NO:4
Radium-228 +L	**15262-20-1L**	**2.40E-01**	**2.48E+00**	**341/ 498**	**7.00E-01**	**7.00E-01**	**- - -**	**6.96E-02**	**YES**

Table 2.5: Identification of Constituents of Potential Concern for a Construction Worker Exposed to Surface and Subsurface Soil in the MCP Parcel 8

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Strontium-90	10098-97-2(+D)	2.00E-01	1.62E+00	25/ 168	5.09E-01	5.09E-01	7.20E-01	9.40E+00	NO:3
Thallium-208	14913-50-9	4.70E-02	5.70E-01	428/ 430	2.61E-01	2.61E-01	- - -	5.59E-02	NO:6
Thorium-227	15623-47-9	2.00E-02	6.00E-01	48/ 53	3.07E-01	3.07E-01	- - -	2.14E+00	NO:6
Thorium-228 +L	14274-82-9L	3.85E-02	2.50E+01	2471/2528	8.26E-01	8.26E-01	1.50E+00	1.19E-01	NO:4
Thorium-229	15594-54-4	4.90E-01	8.45E-01	2/1201	4.78E-01	4.78E-01	- - -	1.90E+00	NO:1
Thorium-230	14269-63-7(+D)	5.00E-02	1.34E+01	2485/2953	1.25E+00	1.25E+00	1.90E+00	9.26E-02	NO:4
Thorium-232	7440-29-1(+D)	5.60E-02	3.77E+01	2979/5392	8.16E-01	8.16E-01	1.40E+00	6.90E-02	NO:4
Thorium-232 Daughters	TH-232DA	4.10E-01	4.90E-01	2/ 2	- - -	4.90E-01	1.40E+00	- - -	NO:2
Thorium-234	15065-10-8	5.48E-01	5.41E+00	21/ 21	1.53E+00	1.53E+00	- - -	1.76E+01	NO:3
Tritium	10028-17-8p	6.80E-02	8.95E+02	341/ 549	4.21E+01	4.21E+01	1.60E+00	7.58E+03	NO:3
Uranium-233/234	**U-233/234**	**4.47E-01**	**1.02E+00**	**37/ 37**	**7.34E-01**	**7.34E-01**	**- - -**	**4.82E-01**	**YES**
Uranium-234	13966-29-5	2.01E-01	1.26E+01	420/ 425	9.01E-01	9.01E-01	1.10E+00	1.05E+01	NO:4
Uranium-235	15117-96-1(+D)	3.00E-03	1.02E+00	269/1465	3.67E-01	3.67E-01	1.10E-01	1.54E+00	NO:3
Uranium-235/236	U-235/236	1.94E-02	6.78E-02	13/ 27	4.69E-02	4.69E-02	- - -	3.10E-01	NO:3
Uranium-238 +L	7440-61-1L	1.10E-01	1.10E+02	528/1651	9.17E-01	9.17E-01	1.20E+00	8.98E-02	NO:4

CAS - Chemical Abstract Service
COPC - Constituents of Potential Concern
EPC - exposure point concentration (lower of maximum concentration and 95%UCL).
mg/kg - milligram per kilogram
ug/kg - microgram per kilogram
pCi/g - picocurie per gram
RBGV - Risk Based Guideline Value
UCL - Upper Confidence Limit
+D - Plus daughters up to the next long-lived daughter
+L - Includes long-lived daughters.

NO:1 - <5% Detects
NO:2 - Max<Background
NO:3 - Max< Risk Based Guideline Value
NO:4 - EPC< Background
NO:5 - Essential Human Nutrients
NO:6 - Part of a chain which has members above that are COPCs
*** Ac-227 background level assumes secular equilibrium with U235/236.
**** Pb-210, Pb-214 and Bi-214 background levels assume secular equilibrium with U-238.

Background values are based on the Operable Unit 9 Background Soils Investigation Chemistry Report (DOE 1994) or, in the case of nuclides with short half lives (Ac-227, Pb-210, and Pa-231) are based on the parent nuclide background and assumption of equilibrium with the parent nuclide.

- - - : not applicable, not available, or not calculated due to insufficient toxicity data

Ra-228 note: A background value has not been calculated for Ra-228 and why none is provided in the table above. However, if Ra-228's parent nuclide background is considered (Th-232 at 1.4 pCi/g), Ra-228 would not be brought forward as a COPC. To be consistent with previous RREs, Ra-228 was presented with no background value and was brought forward as a COPC.

Table 2.6: Identification of Constituents of Potential Concern for the Site Employee Exposed to Surface Soil in Parcel 8

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Inorganics (mg/kg)									
Aluminum	7429-90-5	1.59E+00	1.93E+04	147/ 148	1.20E+04	1.20E+04	1.90E+04	1.69E+05	NO:3
Antimony	7440-36-0	2.30E-01	6.90E+01	24/ 133	1.06E+01	1.06E+01	---	8.18E+01	NO:3
Arsenic	7440-38-2	2.30E-03	1.33E+01	148/ 156	5.87E+00	5.87E+00	8.60E+00	2.26E+00	NO:4
Barium	7440-39-3	1.20E-02	6.23E+02	129/ 154	8.76E+01	8.76E+01	1.80E+02	1.25E+04	NO:3
Beryllium	7440-41-7	1.50E-04	1.30E+00	134/ 296	4.78E-01	4.78E-01	1.30E+00	3.70E+02	NO:3
Bismuth	7440-69-9	4.30E-01	1.01E+02	13/ 49	8.71E+00	8.71E+00	3.84E+01	---	NO:4
Cadmium	7440-43-9s	6.00E-02	2.42E+01	67/ 154	1.47E+00	1.47E+00	2.10E+00	1.01E+01	NO:4
Calcium	7440-70-2	1.33E+02	2.64E+05	147/ 148	1.63E+05	1.63E+05	3.10E+05	---	NO:2
Chromium	7440-47-3	3.60E-03	9.21E+01	150/ 154	1.70E+01	1.70E+01	2.00E+01	---	NO:4
Cobalt	7440-48-4	1.70E-03	2.80E+01	124/ 148	1.06E+01	1.06E+01	1.90E+01	1.93E+03	NO:3
Copper	7440-50-8	6.50E-03	3.82E+02	144/ 147	2.79E+01	2.79E+01	2.60E+01	8.18E+03	NO:3
Cyanide	57-12-5	1.20E-01	1.01E+01	22/ 119	8.64E-01	8.64E-01	---	4.09E+03	NO:3
Erbium	**7440-52-0**	**4.00E+01**	**6.87E+01**	**3/ 4**	**4.92E+08**	**6.87E+01**	---	---	**YES**
Iron	7439-89-6	4.33E+00	1.00E+05	150/ 151	2.41E+04	2.41E+04	3.50E+04	---	NO:4
Lead	7439-92-1	2.40E-03	3.10E+03	135/ 138	1.96E+01	1.96E+01	4.80E+01	---	NO:4
Lithium	**7439-93-2**	**1.10E+00**	**3.93E+01**	**68/ 73**	**1.57E+01**	**1.57E+01**	---	---	**YES**
Magnesium	7439-95-4	4.31E+01	1.08E+05	147/ 148	4.53E+04	4.53E+04	4.00E+04	---	NO:5
Manganese	7439-96-5s	1.75E-01	8.31E+02	142/ 143	5.71E+02	5.71E+02	1.40E+03	3.25E+03	NO:2
Mercury	7439-97-6	2.00E-02	9.10E-01	38/ 150	9.08E-02	9.08E-02	1.50E-01	5.78E+04	NO:3
Molybdenum	7439-98-7	5.30E-01	1.64E+01	37/ 56	2.79E+00	2.79E+00	2.72E+01	1.02E+03	NO:2
Nickel	7440-02-0	4.20E-03	1.07E+02	136/ 148	2.28E+01	2.28E+01	3.20E+01	4.09E+03	NO:3
Potassium	7440-09-7	5.16E-01	5.15E+03	127/ 148	1.90E+03	1.90E+03	1.90E+03	---	NO:5
Selenium	7782-49-2	1.20E-01	2.30E+00	12/ 138	6.04E-01	6.04E-01	5.90E-01	1.02E+03	NO:3
Silver	7440-22-4	1.90E-01	1.89E+01	46/ 152	2.91E+00	2.91E+00	1.70E+00	1.02E+03	NO:3
Sodium	7440-23-5	3.23E-01	2.62E+03	119/ 151	6.71E+02	6.71E+02	2.40E+02	---	NO:5
Tantalum	**7440-25-7**	**1.68E+02**	**4.44E+02**	**3/ 10**	**2.91E+02**	**4.44E+02**	---	---	**YES**
Thallium	7440-28-0	6.20E-04	5.50E+00	26/ 148	8.27E-01	8.27E-01	4.60E-01	1.35E+01	NO:3
Tin	7440-31-5	9.80E-01	8.00E+00	16/ 48	4.12E+00	4.12E+00	2.09E+01	1.23E+05	NO:2
Vanadium	7440-62-2	6.10E-03	4.88E+01	147/ 148	2.07E+01	2.07E+01	2.50E+01	2.04E+02	NO:3
Zinc	7440-66-6	1.20E-02	1.18E+03	143/ 144	1.00E+02	1.00E+02	1.40E+02	6.13E+04	NO:3
Dioxins & Dibenzofurans (µg/kg)									
1,2,3,4,6,7,8-HpCDD	**35822-46-9**	**2.30E+00**	**2.30E+00**	**1/ 6**	**4.51E+02**	**2.30E+00**	---	---	**YES**
HpCDD	**37871-00-4**	**4.10E+00**	**4.10E+00**	**1/ 6**	**7.64E+02**	**4.10E+00**	---	**3.81E+00**	**YES**
OCDD	3268-87-9	3.10E-01	1.66E+01	2/ 6	1.77E+05	1.66E+01	---	3.81E+01	NO:3
Pesticides/PCBs (µg/kg)									
4,4'-DDD	72-54-8	2.40E-01	2.40E-01	1/ 109	1.20E+01	2.40E-01	---	2.38E+04	NO:1
4,4'-DDE	72-55-9	2.20E-01	3.10E+00	6/ 109	1.14E+01	3.10E+00	---	1.68E+04	NO:3
4,4'-DDT	50-29-3	9.00E-01	2.70E+01	9/ 108	1.22E+01	1.22E+01	---	9.56E+03	NO:3
Aldrin	309-00-2	5.70E-02	1.40E+00	8/ 109	6.30E+00	1.40E+00	---	1.03E+02	NO:3
Alpha Chlordane**	5103-71-9	2.70E-02	1.50E+00	9/ 108	1.19E+02	1.50E+00	---	7.64E+03	NO:3
Alpha-BHC	319-84-6	4.30E-02	2.50E+00	7/ 109	6.47E+00	2.50E+00	---	9.08E+02	NO:3
Aroclor-1248	12672-29-6	1.80E+01	1.80E+01	1/ 116	6.84E+01	1.80E+01	---	---	NO:1
Aroclor-1254	11097-69-1	1.50E+01	6.30E+01	9/ 116	1.45E+02	6.30E+01	---	6.83E+02	NO:3
Aroclor-1260	11096-82-5	1.50E+01	4.40E+01	2/ 115	1.42E+02	4.40E+01	---	---	NO:1
Beta-BHC	319-85-7	6.60E-01	1.30E+01	2/ 109	6.02E+00	6.02E+00	---	3.18E+03	NO:1
Delta-BHC	319-86-8	1.20E-01	4.10E-01	5/ 109	7.44E+00	4.10E-01	---	---	NO:1
Dieldrin	60-57-1	7.80E-02	5.00E+01	10/ 109	1.21E+01	1.21E+01	---	3.58E+02	NO:3
Endosulfan I	959-98-8	4.80E-01	4.80E-01	1/ 109	8.03E+00	4.80E-01	---	---	NO:1
Endosulfan II	**33213-65-9**	**1.50E-01**	**4.40E+00**	**8/ 109**	**1.06E+01**	**4.40E+00**	---	---	**YES**
Endosulfan Sulfate	**1031-07-8**	**2.20E-01**	**1.30E+00**	**6/ 109**	**1.91E+01**	**1.30E+00**	---	---	**YES**
Endrin	72-20-8	1.80E+00	4.10E+00	4/ 109	1.04E+01	4.10E+00	---	6.13E+04	NO:1
Endrin Aldehyde	**7421-93-4**	**1.30E-01**	**1.40E+01**	**7/ 93**	**1.20E+01**	**1.20E+01**	---	---	**YES**
Endrin Ketone	**53494-70-5**	**1.60E-01**	**5.40E+00**	**6/ 109**	**1.75E+01**	**5.40E+00**	---	---	**YES**
Gamma Chlordane	5103-74-2	6.80E-01	5.10E+00	6/ 108	1.06E+02	5.10E+00	---	7.64E+03	NO:3
Gamma-BHC (Lindane)	58-89-9	4.30E-01	4.30E-01	1/ 109	5.45E+00	4.30E-01	---	4.40E+03	NO:1
Heptachlor	76-44-8	2.00E-01	2.00E-01	1/ 109	5.20E+00	2.00E-01	---	1.27E+03	NO:1
Heptachlor Epoxide	1024-57-3	1.40E-01	6.80E-01	7/ 109	1.14E+01	6.80E-01	---	6.29E+02	NO:3
Methoxychlor	72-43-5	1.50E+00	1.00E+02	2/ 109	8.37E+01	8.37E+01	---	1.02E+06	NO:1
Semi-Volatile Organic Compounds (µg/kg)									
1,2-Dichlorobenzene	95-50-1	6.40E-01	6.40E-01	1/ 133	4.50E+02	6.40E-01	---	2.92E+00	NO:1
2,4-Dimethylphenol	105-67-9	3.10E+04	3.10E+04	1/ 130	3.93E+02	3.93E+02	---	1.25E+06	NO:1
2-Benzyl-4-Chlorophenol	**120-32-1**	**1.20E+02**	**1.20E+02**	**1/ 17**	**2.03E+02**	**1.20E+02**	---	---	**YES**
2-Methylnaphthalene	91-57-6	2.50E+01	2.30E+04	9/ 145	7.32E+02	7.32E+02	---	8.18E+05	NO:3
2-Methylphenol	95-48-7	1.30E+04	1.30E+04	1/ 133	3.69E+02	3.69E+02	---	1.02E+07	NO:1
3,3'-Dichlorobenzidine	91-94-1	4.80E+01	4.80E+01	1/ 130	6.12E+02	4.80E+01	---	3.88E+03	NO:1
4-Methylphenol	106-44-5	4.60E+01	2.50E+04	2/ 133	4.01E+02	4.01E+02	---	1.02E+06	NO:1
Acenaphthene	83-32-9	1.90E+01	5.10E+03	22/ 145	7.35E+02	7.35E+02	---	3.09E+06	NO:3
Acenaphthylene	208-96-8	3.50E+01	7.30E+02	6/ 145	6.75E+02	6.75E+02	---	---	NO:1
Anthracene	120-12-7	1.90E+01	3.80E+04	35/ 145	9.03E+02	9.03E+02	---	1.55E+07	NO:3
Benzo(a)anthracene	**56-55-3**	**2.00E+01**	**9.60E+04**	**54/ 145**	**1.00E+03**	**1.00E+03**	---	**1.98E+03**	**YES**
Benzo(a)pyrene	**50-32-8**	**2.00E+01**	**1.10E+05**	**54/ 145**	**9.27E+02**	**9.27E+02**	---	**1.98E+02**	**YES**
Benzo(b)fluoranthene	**205-99-2**	**2.20E+01**	**1.20E+05**	**56/ 145**	**1.01E+03**	**1.01E+03**	---	**1.98E+03**	**YES**
Benzo(g,h,i)perylene	**191-24-2**	**2.00E+01**	**1.65E+05**	**47/ 145**	**1.04E+03**	**1.04E+03**	---	---	**YES**
Benzo(k)fluoranthene	**207-08-9**	**1.90E+01**	**1.10E+05**	**52/ 145**	**9.73E+02**	**9.73E+02**	---	**1.98E+04**	**YES**
Benzoic Acid	65-85-0	4.50E+01	1.70E+02	5/ 72	1.91E+03	1.70E+02	---	2.49E+08	NO:3
Benzyl Alcohol	100-51-6	1.70E+04	1.70E+04	1/ 73	3.87E+02	3.87E+02	---	1.87E+07	NO:1

Table 2.6: Identification of Constituents of Potential Concern for the Site Employee Exposed to Surface Soil in Parcel 8

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Bis(2-ethylhexyl)phthalate	117-81-7	3.10E+01	2.30E+03	79/ 130	4.01E+02	4.01E+02	---	1.25E+05	NO:3
Butyl Benzyl Phthalate	85-68-7	3.20E+01	5.20E+02	15/ 130	3.71E+02	3.71E+02	---	1.25E+07	NO:3
Carbazole	86-74-8	1.90E+01	1.70E+03	23/ 74	4.48E+02	4.48E+02	---	8.72E+04	NO:3
Chrysene	218-01-9	2.60E+01	1.20E+05	55/ 132	9.38E+02	9.38E+02	---	1.98E+05	NO:3
Dibenz(a,h)anthracene	**53-70-3**	**2.00E+01**	**7.50E+02**	**27/ 143**	**7.40E+02**	**7.40E+02**	---	**1.98E+02**	**YES**
Dibenzofuran	132-64-9	2.80E+01	1.10E+03	15/ 130	3.85E+02	3.85E+02	---	1.25E+05	NO:3
Diethyl Phthalate	84-66-2	2.00E+01	1.00E+02	3/ 130	3.56E+02	1.00E+02	---	4.99E+07	NO:1
Dimethyl Phthalate	131-11-3	1.30E+02	1.30E+02	1/ 130	3.52E+02	1.30E+02	---	2.04E+09	NO:1
Di-n-butyl Phthalate	84-74-2	1.90E+01	7.80E+04	28/ 130	3.76E+02	3.76E+02	---	6.23E+06	NO:3
Di-n-octyl Phthalate	117-84-0	2.70E+01	3.50E+05	16/ 130	3.81E+02	3.81E+02	---	8.18E+06	NO:3
Fluoranthene	206-44-0	2.40E+01	1.80E+05	72/ 145	1.31E+03	1.31E+03	---	2.06E+06	NO:3
Fluorene	86-73-7	2.30E+01	2.10E+04	24/ 145	8.29E+02	8.29E+02	---	2.06E+06	NO:3
Hexachlorobenzene	118-74-1	4.90E+01	4.90E+01	1/ 133	3.48E+02	4.90E+01	---	1.09E+03	NO:1
Indeno(1,2,3-cd)pyrene	**193-39-5**	**1.60E+01**	**1.20E+05**	**45/ 143**	**8.09E+02**	**8.09E+02**	---	**1.98E+03**	**YES**
Isophorone	78-59-1	4.10E+02	7.80E+02	2/ 130	3.33E+02	3.33E+02	---	1.84E+06	NO:1
N-Nitroso-di-n-propylamine	621-64-7	7.40E+02	7.40E+02	1/ 130	3.45E+02	3.45E+02	---	2.49E+02	NO:1
N-Nitrosodiphenylamine	86-30-6	1.50E+02	1.50E+02	1/ 130	3.50E+02	1.50E+02	---	3.56E+05	NO:1
Pentachlorophenol	87-86-5	1.80E+02	1.90E+02	2/ 133	1.34E+03	1.90E+02	---	7.12E+03	NO:1
Phenanthrene	**85-01-8**	**1.80E+01**	**1.00E+05**	**61/ 145**	**1.42E+03**	**1.42E+03**	---	---	**YES**
Phenol	108-95-2	2.20E+04	2.20E+04	1/ 133	3.79E+02	3.79E+02	---	1.87E+07	NO:1
Pyrene	129-00-0	1.90E+01	1.60E+05	69/ 145	1.28E+03	1.28E+03	---	1.55E+06	NO:3
Volatile Organic Compounds (µg/kg)									
1,1,1-Trichloroethane	71-55-6	3.00E+00	1.10E+01	4/ 138	4.20E+00	4.20E+00	---	5.72E+07	NO:1
1,2-cis-Dichloroethene (DCE)	156-59-2	2.37E-01	1.12E+03	11/ 13	3.04E+04	1.12E+03	---	2.04E+06	NO:3
1,2-Dichloroethane	107-06-2	1.00E+00	1.00E+00	1/ 141	4.12E+00	1.00E+00	---	6.29E+04	NO:1
1,2-Dichloroethene	540-59-0	4.33E-01	1.16E+03	12/ 148	6.48E+00	6.48E+00	---	1.84E+06	NO:3
1,2-trans-Dichloroethene	156-60-5	3.61E+01	4.38E+02	2/ 16	6.82E+03	4.38E+02	---	4.09E+06	NO:3
2-Butanone	78-93-3	1.00E+00	2.10E+01	11/ 140	9.60E+00	9.60E+00	---	1.23E+08	NO:3
2-Hexanone	591-78-6	3.00E+00	6.10E+01	3/ 138	8.66E+00	8.66E+00	---	---	NO:1
4-Methyl-2-pentanone	108-10-1	6.00E-01	2.00E+01	5/ 138	8.49E+00	8.49E+00	---	1.64E+07	NO:1
Acetone	67-64-1	3.00E+00	2.10E+02	61/ 136	2.20E+01	2.20E+01	---	1.84E+08	NO:3
Acetonitrile	**75-05-8**	**6.70E+01**	**6.70E+01**	**1/ 20**	**7.99E+01**	**6.70E+01**	---	---	**YES**
Acrylonitrile	107-13-1	8.00E+00	8.00E+00	1/ 23	1.93E+02	8.00E+00	---	1.06E+04	NO:1
Benzene	71-43-2	1.00E+00	2.00E+00	2/ 159	4.14E+00	2.00E+00	---	1.04E+05	NO:1
Carbon Disulfide	75-15-0	3.00E+00	9.00E+00	2/ 138	4.37E+00	4.37E+00	---	2.04E+07	NO:1
Carbon Tetrachloride	56-23-5	2.00E+00	2.00E+00	1/ 141	4.32E+00	2.00E+00	---	4.40E+04	NO:1
Chlorobenzene	108-90-7	2.00E+00	2.00E+00	1/ 141	4.11E+00	2.00E+00	---	4.09E+06	NO:1
Chloromethane	74-87-3	6.00E+00	6.00E+00	1/ 138	6.45E+00	6.00E+00	---	---	NO:1
Dichloromethane (Methylene Chloride)	75-09-2	1.00E+00	1.40E+03	88/ 138	2.76E+01	2.76E+01	---	7.63E+05	NO:3
Ethylbenzene	100-41-4	8.00E-01	1.70E+01	8/ 156	4.08E+00	4.08E+00	---	2.04E+07	NO:3
FREON-113	76-13-1	2.00E+00	2.00E+00	1/ 37	6.54E+00	2.00E+00	---	6.13E+09	NO:1
Naphthalene	91-20-3	4.50E+01	4.50E+03	10/ 145	7.11E+02	7.11E+02	---	1.24E+06	NO:3
Styrene	100-42-5	6.00E-01	2.00E+00	4/ 138	4.26E+00	2.00E+00	---	4.09E+07	NO:1
Tetrachloroethene (PCE)	127-18-4	2.58E-01	2.54E+03	18/ 154	8.96E+00	8.96E+00	---	1.06E+04	NO:3
Toluene	108-88-3	5.70E-01	7.00E+01	23/ 156	4.36E+00	4.36E+00	---	4.09E+07	NO:3
Trichloroethylene (TCE)	79-01-6	2.81E-01	9.52E+03	22/ 154	9.64E+00	9.64E+00	---	1.43E+04	NO:3
Trichloromethane (Chloroform)	67-66-3	3.00E-01	2.00E+00	8/ 141	4.01E+00	2.00E+00	---	2.04E+06	NO:3
Vinyl Chloride	75-01-4	3.86E-01	6.82E+01	5/ 154	9.14E+00	9.14E+00	---	3.82E+03	NO:1
Xylenes, Total	1330-20-7	3.00E-01	1.50E+02	12/ 156	4.56E+00	4.56E+00	---	4.09E+07	NO:3
Radionuclides (pCi/g)									
Actinium-227 +L***	**14952-40-0L**	**3.80E-02**	**2.65E+00**	**296/2160**	**2.64E-01**	**2.64E-01**	**1.10E-01**	**5.02E-01**	**YES**
Actinium-228	14331-83-0	3.80E-05	2.48E+00	998/1309	6.69E-01	6.69E-01	---	2.01E-01	NO:6
Americium-241	**14596-10-2**	**3.00E-02**	**3.36E+01**	**209/2258**	**1.07E-01**	**1.07E-01**	---	**9.93E+00**	**YES**
Bismuth-207	13982-38-2	1.00E-02	1.53E-01	7/1562	3.57E-02	3.57E-02	---	1.29E-01	NO:1
Bismuth-210M	BI-210M	9.70E-02	2.41E+00	30/1518	5.06E-02	5.06E-02	---	8.67E-01	NO:1
Bismuth-212	14913-49-6	5.30E-01	2.40E+00	36/ 37	1.48E+00	1.48E+00	---	1.03E+00	NO:6
Bismuth-214 ****	14733-03-0	2.81E-05	1.97E+00	1366/1381	6.18E-01	6.18E-01	1.20E+00	1.22E-01	NO:4
Cesium-137	10045-97-3(+D)	1.00E-02	1.40E+00	253/2281	5.61E-02	5.61E-02	4.20E-01	3.56E-01	NO:4
Cobalt-60	10198-40-0	1.00E-02	1.01E+00	33/2245	5.15E-02	5.15E-02	---	7.35E-02	NO:1
Lead-210 +D ****	14255-04-0(+D)	2.40E-01	1.17E+01	374/2066	1.13E+00	1.13E+00	1.20E+00	1.19E+00	NO:4
Lead-212	15092-94-1	3.44E-05	2.67E+00	1400/1406	6.51E-01	6.51E-01	1.50E+00	1.73E+00	NO:4
Lead-214 ****	15067-28-4	2.10E-01	1.32E+00	480/ 482	5.99E-01	5.99E-01	1.20E+00	9.29E-01	NO:4
Neptunium-237	13994-20-2(+D)	2.00E-02	2.40E-01	4/ 4	3.16E+05	2.40E-01	---	1.08E+00	NO:3
Plutonium-238	**13981-16-3**	**4.74E-03**	**8.44E+03**	**2473/4317**	**2.59E+01**	**2.59E+01**	**1.30E-01**	**1.13E+01**	**YES**
Plutonium-239	15117-48-3	9.00E-03	1.24E-01	2/ 4	4.77E+03	1.24E-01	---	1.12E+01	NO:3
Plutonium-239/240	PU-239/240	3.30E-03	2.01E+01	788/2330	6.02E-02	6.02E-02	1.80E-01	1.11E+01	NO:4
Plutonium-242	13982-10-0	1.40E-01	5.50E-01	4/ 5	2.78E+02	5.50E-01	---	1.17E+01	NO:3
Potassium-40	13966-00-2	1.32E-03	4.64E+01	1468/1471	1.88E+01	1.88E+01	3.70E+01	1.12E+00	NO:4
Radium-224	13233-32-4	2.36E-01	2.50E+00	8/ 8	1.97E+00	2.50E+00	1.50E+00	5.47E+00	NO:3
Radium-226	13982-63-3(+D)	2.81E-05	3.91E+00	2124/2249	7.96E-01	7.96E-01	2.00E+00	1.05E-01	NO:4
Radium-228 +L	**15262-20-1L**	**2.40E-01**	**2.48E+00**	**327/ 483**	**7.00E-01**	**7.00E-01**	---	**6.92E-02**	**YES**
Strontium-90	10098-97-2(+D)	4.60E-01	1.62E+00	14/ 118	5.55E-01	5.55E-01	7.20E-01	1.50E+01	NO:3
Thallium-208	14913-50-9	4.70E-02	5.70E-01	428/ 430	2.61E-01	2.61E-01	---	5.18E-02	NO:6
Thorium-227	15623-47-9	2.00E-02	6.00E-01	48/ 53	3.07E-01	3.07E-01	---	2.17E+00	NO:3
Thorium-228 +L	14274-82-9L	3.85E-02	2.50E+01	2272/2291	7.96E-01	7.96E-01	1.50E+00	1.14E-01	NO:4
Thorium-230	14269-63-7(+D)	5.00E-02	5.23E+00	2281/2600	1.15E+00	1.15E+00	1.90E+00	9.58E-02	NO:4
Thorium-232	7440-29-1(+D)	5.60E-02	3.77E+01	2606/4290	7.52E-01	7.52E-01	1.40E+00	6.88E-02	NO:4
Thorium-232 Daughters (PCI/G)	TH-232DA	4.10E-01	4.90E-01	2/ 2	0.00E+00	4.90E-01	1.40E+00	---	NO:2

Table 2.6: Identification of Constituents of Potential Concern for the Site Employee Exposed to Surface Soil in Parcel 8

Analyte (SRC)	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL	EPC	Background Value	RBGV	COPC?
Thorium-234	15065-10-8	6.26E-01	5.41E+00	9/ 9	3.14E+00	5.41E+00	- - -	2.58E+01	NO:3
Tritium	10028-17-8p	6.80E-02	8.95E+02	292/ 436	5.43E+01	5.43E+01	1.60E+00	1.45E+04	NO:3
Uranium-233/234	**U-233/234**	**4.47E-01**	**8.13E-01**	**12/ 12**	**6.86E-01**	**8.13E-01**	- - -	**5.52E-01**	**YES**
Uranium-234	13966-29-5	2.01E-01	1.26E+01	309/ 310	8.97E-01	8.97E-01	1.10E+00	1.97E+01	NO:3
Uranium-235	15117-96-1(+D)	3.00E-03	1.02E+00	188/1318	4.01E-01	4.01E-01	1.10E-01	1.55E+00	NO:3
Uranium-235/236	U-235/236	4.82E-02	4.82E-02	1/ 4	2.02E-01	4.82E-02	- - -	3.32E-01	NO:3
Uranium-238 +L	7440-61-1L	1.10E-01	1.10E+02	372/1421	8.41E-01	8.41E-01	1.20E+00	9.36E-02	NO:4

CAS - Chemical Abstract Service
COPC - Constituents of Potential Concern
EPC - exposure point concentration (lower of maximum concentration and 95%UCL).
mg/kg - milligram per kilogram
ug/kg - microgram per kilogram
pCi/g - picocurie per gram
RBGV - Risk Based Guideline Value
UCL - Upper Confidence Limit
+D - Plus daughters up to the next long-lived daughter
+L - Includes long-lived daughters.

NO:1 - <5% Detects
NO:2 - Max<Background
NO:3 - Max< Risk Based Guideline Value
NO:4 - EPC< Background
NO:5 Essential Human Nutrients
NO:6 Part of a Chain that has members above that are COPCs
*** Ac-227 background level assumes secular equilibrium with U235/236.
**** Pb-210, Pb-214 and Bi-214 background levels assume secular equilibrium with U-238.
Bold text indicates COPCs selected

Lithium note: The RREM background value for lithium is 26 mg/kg and not 0.00 mg/kg as presented in this table; however, since the analyte would still become a COPC, the value in the table was not modified.

- - - : not applicable, not available, or not calculated due to insufficient toxicity data

Background values are based on the Operable Unit 9 Background Soils Investigation Chemistry Report (DOE 1994) or, in the case of nuclides with short half lives (Ac-227, Pb-210, and Pa-231) are based on the parent nuclide background and assumption of equilibrium with the parent nuclide.

Ra-228 note: A background value has not been calculated for Ra-228 and why none is provided in the table above. However, if Ra-228's parent nuclide background is considered (Th-232 at 1.4 pCi/g), Ra-228 would not be brought forward as a COPC. To be consistent with previous RREs, Ra-228 was presented with no background value and was brought forward as a COPC.

PARCEL 9
COPC
Tables

Table 2.1 – Identification of COPCs for the Construction Worker Exposure Scenario (Surface and Subsurface Soil)

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
Inorganics (mg/kg)									
Aluminum	7429-90-5	1.10E+03	3.20E+04	85/89	9.63E+03	9.63E+03	1.90E+04	2.08E+04	No:1
Antimony	**7440-36-0**	**1.00E+00**	**4.46E+01**	**40/77**	**1.25E+01**	**1.25E+01**	**--**	**8.52E+00**	**Yes**
Arsenic	7440-38-2	1.20E+00	3.70E+01	95/107	5.06E+00	5.06E+00	8.60E+00	1.85E+00	No:1
Barium	7440-39-3	1.02E+01	3.20E+02	85/93	4.77E+01	4.77E+01	1.80E+02	1.47E+03	No:1
Beryllium	7440-41-7	1.10E-01	1.70E+00	71/88	6.48E-01	6.48E-01	1.30E+00	4.21E+01	No:1
Bismuth	07440-69-9	5.40E-01	7.70E+01	19/65	1.83E+01	1.83E+01	3.80E+01	--	No:1
Cadmium	7440-43-9	2.20E-01	9.30E+00	48/100	1.86E+00	1.86E+00	2.10E+00	5.46E+00	No:1
Calcium	7440-70-2	1.45E+04	3.45E+05	86/90	1.13E+05	1.13E+05	3.10E+05	--	No:1
Cerium	07440-45-1	1.59E+01	1.59E+01	1/5	1.18E+01[c]	1.18E+01	--	3.85E+04	No:2
Chromium	7440-47-3	1.20E+00	1.12E+02	88/94	2.29E+01	2.29E+01	2.00E+01	3.19E+04[d]	No:2
Cobalt	7440-48-4	1.00E+00	2.07E+01	89/95	9.19E+00	9.19E+00	1.90E+01	3.83E+02	No:1
Copper	7440-50-8	3.90E+00	4.46E+02	93/99	4.85E+01	4.85E+01	2.60E+01	8.52E+02	No:2
Gadolinium	**7440-54-2**	**9.00E+01**	**9.00E+01**	**1/1**	**--**	**9.00E+01**	**--**	**--**	**Yes**
Iron	7439-89-6	1.05E+01	3.60E+04	99/103	1.89E+04	1.89E+04	3.50E+04	--	No:1
Lanthanum	**7439-91-0**	**4.60E+00**	**9.10E+00**	**4/5**	**6.02E+00[c]**	**6.02E+00**	**--**	**--**	**Yes**
Lead	7439-92-1	2.90E+00	9.61E+01	93/107	1.33E+01	1.33E+01	4.80E+01	--	No:1
Lithium	7439-93-2	1.70E+00	3.95E+01	44/58	1.53E+01	1.53E+01	2.60E+01	--	No:1
Magnesium	7439-95-4	7.18E+03	8.23E+04	86/90	3.25E+04	3.25E+04	4.00E+04	--	No:1
Manganese	7439-96-5	2.97E-01	1.32E+03	97/103	4.19E+02	4.19E+02	1.40E+03	4.85E+02	No:1
Mercury	7439-97-6	7.00E-02	1.20E+00	19/99	1.63E-01	1.63E-01	1.50E-01	5.78E+04	No:2
Molybdenum	7439-98-7	9.00E-01	2.46E+01	13/36	1.07E+01	1.07E+01	2.72E+01	1.06E+02	No:1
Nickel	7440-02-0	3.20E+00	5.08E+01	85/100	1.96E+01	1.96E+01	3.20E+01	4.26E+02	No:1
Potassium	7440-09-7	1.95E+02	1.30E+04	92/98	2.35E+03	2.35E+03	1.90E+03	--	No:4
Praseodymium	**7440-10-0**	**1.07E+01**	**1.07E+01**	**1/5**	**7.36E+00[c]**	**7.36E+00**	**--**	**--**	**Yes**
Samarium	**7440-19-9**	**5.31E+01**	**5.31E+01**	**1/5**	**1.88E+01[c]**	**1.88E+01**	**--**	**--**	**Yes**
Selenium	07782-49-2	4.70E-01	7.10E+01	11/104	1.00E+00[c]	1.00E+00	5.90E-01	1.06E+02	No:2
Silver	7440-22-4	1.60E+00	2.15E+01	54/100	7.24E+00	7.24E+00	1.70E+00	1.06E+02	No:2
Sodium	7440-23-5	9.34E+01	1.55E+03	84/100	4.35E+02	4.35E+02	2.40E+02	--	No:4
Tantalum	**7440-25-7**	**1.90E+02**	**4.02E+02**	**8/12**	**2.87E+02**	**2.87E+02**	**--**	**--**	**Yes**
Thallium	07440-28-0	2.40E-01	7.60E-01	13/99	1.40E+00[c]	7.60E-01	4.60E-01	1.41E+00	No:2

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
Tin	07440-31-5	1.60E+00	1.61E+01	8/36	8.60E+00[c]	8.60E+00	2.09E+01	1.28E+04	No:1
Total Cyanide	00057-12-5	1.40E-01	6.10E-01	12/52	6.10E-01[c]	6.10E-01	--	4.26E+02	No:2
Vanadium	7440-62-2	4.80E+00	5.50E+01	91/95	2.07E+01	2.07E+01	2.50E+01	2.13E+01	No:1
Zinc	7440-66-6	9.40E+00	2.74E+02	86/100	7.45E+01	7.45E+01	1.40E+02	6.39E+03	No:1
Dioxins (ug/kg)									
1,2,3,4,6,7,8-Heptachlorodibenzofuran	**67562-39-4**	**2.20E-04**	**6.30E-03**	**4/13**	**4.30E-04[c]**	**4.30E-04**	**--**	**--**	**Yes**
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	**57653-85-7**	**1.70E-03**	**1.70E-03**	**1/13**	**5.32E-04[c]**	**5.32E-04**	**--**	**--**	**Yes**
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	**19408-74-3**	**8.90E-04**	**1.80E-03**	**2/13**	**5.66E-04[c]**	**5.66E-04**	**--**	**--**	**Yes**
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	4.20E-04	1.10E-03	2/13	4.08E-04[c]	4.08E-04	--	3.97E-02	No:2
1234678-HpCDD	**35822-46-9**	**5.20E-04**	**3.03E-02**	**5/13**	**1.46E-03[c]**	**1.46E-03**	**--**	**--**	**Yes**
1234789-HpCDF	**55673-89-7**	**6.20E-04**	**6.20E-04**	**1/13**	**4.00E-04[c]**	**4.00E-04**	**--**	**--**	**Yes**
123478-HxCDD	**39227-28-6**	**6.50E-04**	**6.50E-04**	**1/13**	**5.82E-04[c]**	**5.82E-04**	**--**	**--**	**Yes**
123478-HxCDF	**70648-26-9**	**1.80E-04**	**2.20E-03**	**3/13**	**3.98E-04[c]**	**3.98E-04**	**--**	**--**	**Yes**
123678-HxCDF	57117-44-9	5.80E-04	1.20E-03	2/13	2.88E-04[c]	2.88E-04	--	1.99E-01	No:2
2,3,4,6,7,8-Hexachlorodibenzofuran	**60851-34-5**	**1.50E-04**	**1.00E-03**	**3/13**	**5.52E-04[c]**	**5.52E-04**	**--**	**--**	**Yes**
2,3,7,8-Tetrachlorodibenzofuran	051207-31-9	3.90E-04	2.80E-03	2/13	5.80E-04[c]	5.80E-04	--	1.99E-01	No:2
2,3,7,8-Tetrachlorodibenzo-p-dioxin	001746-01-6	1.50E-03	3.00E-03	3/13	1.09E-03[c]	1.09E-03	--	1.86E-02	No:2
23478-PeCDF	57117-31-4	2.40E-04	1.50E-03	3/13	5.04E-04[c]	5.04E-04	--	3.97E-01	No:2
Octachlorodibenzofuran	39001-02-0	2.20E-04	1.03E-02	7/13	9.08E-04[c]	9.08E-04	--	1.99E+01	No:2
Octachlorodibenzo-p-dioxin	003268-87-9	2.73E-01	2.73E-01	1/13	1.72E-02[c]	1.72E-02	--	1.99E+01	No:2
Explosives (ug/kg)									
1,3-Dinitrobenzene	000099-65-0	2.00E+02	2.00E+02	1/57	1.50E+03[c]	2.00E+02	--	2.13E+03	No:2
1,3,5-Trinitrobenzene	000099-35-4	3.10E+02	3.10E+02	1/57	1.50E+03[c]	3.10E+02	--	6.39E+05	No:2
2,4-Dinitrotoluene	000121-14-2	2.00E+02	2.00E+02	1/163	5.94E+02[c]	2.00E+02	--	3.54E+03	No:2
2,6-Dinitrotoluene	000606-20-2	2.90E+02	2.90E+02	1/163	1.30E+03[c]	2.90E+02	--	3.54E+03	No:2
HMX	002691-41-0	4.10E+02	6.60E+02	2/62	2.97E+03[c]	6.60E+02	--	1.06E+06	No:2
RDX	000121-82-4	7.10E+02	6.85E+03	4/62	2.41E+03[c]	2.41E+03	--	2.71E+04	No:2
Pesticides and PCBs (ug/kg)									
4,4'-DDD	000072-54-8	9.20E-01	2.80E+00	5/100	8.33E+00[c]	2.80E+00	4.20E+03	1.24E+04	No:1
4,4'-DDE	000072-55-9	2.40E-01	1.60E+00	10/100	3.70E+00[c]	1.60E+00	4.30E+03	8.77E+03	No:1
4,4'-DDT	000050-29-3	2.20E-01	3.10E+00	9/100	9.13E+00[c]	3.10E+00	1.30E+04	8.12E+03	No:1
Aldrin	000309-00-2	1.20E-01	2.50E+00	8/100	3.13E+00[c]	2.50E+00	--	1.42E+02	No:2

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
alpha-BHC	000319-84-6	2.10E-01	1.10E+01	13/100	2.33E+00[c]	2.33E+00	--	4.73E+02	No:2
alpha-Chlordane	005103-71-9	1.00E-01	4.80E+00	10/99	1.07E+01[c]	4.80E+00	--	7.61E+03	No:2
Aroclor-1242	053469-21-9	3.70E+01	1.00E+03	3/610	4.00E+01[c]	4.00E+01	--	--	No:3
Aroclor-1248	**12672-29-6**	**7.10E+00**	**3.80E+04**	**307/610**	**9.60E+02**	**9.60E+02**	**--**	**--**	**Yes**
Aroclor-1254	011097-69-1	4.24E+01	2.00E+02	7/285	7.09E+01[c]	7.09E+01	5.80E+04	3.20E+02	No:1
Aroclor-1260	011096-82-5	2.54E+01	9.90E+01	4/285	7.28E+01[c]	7.28E+01	--	--	No:3
Aroclor-1262	**037324-23-5**	**4.10E+00**	**1.30E+03**	**32/325**	**4.00E+01[c]**	**4.00E+01**	**--**	**--**	**Yes**
Aroclor-1268	011100-14-4	5.60E+01	1.80E+02	5/325	3.90E+01[c]	3.90E+01	--	--	No:3
delta-BHC	000319-86-8	1.90E-01	1.90E-01	1/100	6.83E+00[c]	1.90E-01	--	--	No:3
Dieldrin	000060-57-1	9.20E-02	6.40E+00	10/100	3.73E+00[c]	3.73E+00	--	1.86E+02	No:2
Endosulfan II	033213-65-9	2.00E-01	3.50E+00	3/100	3.80E+00[c]	3.50E+00	--	--	No:3
Endosulfan sulfate	001031-07-8	1.30E-01	2.00E+00	5/100	1.83E+01[c]	2.00E+00	--	--	No:3
Endrin	000072-20-8	1.20E-01	1.60E+00	5/100	4.73E+00[c]	1.60E+00	--	6.39E+03	No:3
Endrin aldehyde	**007421-93-4**	**7.10E-01**	**4.70E+00**	**8/96**	1.72E+01[c]	**4.70E+00**	**--**	**--**	**Yes**
Endrin ketone	053494-70-5	1.50E-01	2.00E+00	5/100	1.83E+01[c]	2.00E+00	--	--	No:3
gamma-BHC (Lindane)	000058-89-9	3.30E-02	3.30E-02	1/100	3.20E+00[c]	3.30E-02	--	2.29E+03	No:2
gamma-Chlordane	005103-74-2	2.90E-01	3.50E+00	7/100	1.06E+01[c]	3.50E+00	--	7.61E+03	No:2
Heptachlor	000076-44-8	3.60E-02	2.80E-01	2/100	2.40E+00[c]	2.80E-01	--	6.62E+02	No:2
Heptachlor epoxide	001024-57-3	1.00E-01	1.10E+01	6/100	9.23E+00[c]	9.23E+00	--	2.77E+02	No:2
Methoxychlor	00072-43-5	3.10E-01	1.80E+01	7/100	9.12E+01[c]	1.80E+01	3.00E+04	1.06E+05	No:1
Semi-Volatile Organic Compounds (ug/kg)									
1,2,4-Trichlorobenzene	000120-82-1	3.00E-01	2.20E+00	17/678	5.80E+00[c]	2.20E+00	--	1.72E+05	No:2
2-Methylnaphthalene	000091-57-6	8.60E+01	1.90E+02	3/108	7.69E+02[c]	1.90E+02	--	8.52E+04	No:2
4-Methylphenol	000106-44-5	2.60E+02	2.90E+02	2/106	7.70E+02[c]	2.90E+02	--	1.06E+05	No:2
Acenaphthene	000083-32-9	2.10E+01	1.30E+03	9/108	7.49E+02[c]	7.49E+02	--	9.76E+05	No:2
Acenaphthylene	000208-96-8	2.30E+02	2.30E+02	1/108	7.59E+02[c]	2.30E+02	--	--	No:3
Anthracene	000120-12-7	3.10E+01	8.00E+02	12/109	7.40E+02[c]	7.40E+02	--	4.88E+06	No:2
Benz(a)anthracene	000056-55-3	2.90E+01	2.50E+03	26/108	3.24E+02	3.24E+02	--	3.12E+03	No:2
Benzo(a)pyrene	**000050-32-8**	**3.10E+01**	**2.30E+03**	**28/108**	**2.95E+02**	**2.95E+02**	**--**	**3.12E+02**	**Yes**
Benzo(b)fluoranthene	**000205-99-2**	**3.80E+01**	**4.90E+03**	**26/108**	**4.54E+02**	**4.54E+02**	**--**	**3.12E+03**	**Yes**
Benzo(g,h,i)perylene	**000191-24-2**	**1.00E+02**	**1.10E+03**	**16/108**	**7.20E+02[c]**	**7.20E+02**	**--**	**--**	**Yes**
Benzo(k)fluoranthene	000207-08-9	3.70E+01	4.50E+03	20/108	7.70E+02[c]	7.70E+02	--	3.12E+04	No:2

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
Benzoic acid	000065-85-0	3.90E+01	7.70E+02	12/90	3.60E+03[c]	7.70E+02	--	6.88E+07	No:2
Bis(2-ethylhexyl) phthalate	00117-81-7	4.80E+01	2.90E+03	44/106	4.43E+02	4.43E+02	--	1.72E+05	No:2
Butyl benzyl phthalate	000085-68-7	2.50E+01	6.70E+02	6/106	7.55E+02[c]	6.70E+02	--	3.44E+06	No:2
Carbazole	000086-74-8	1.90E+01	3.00E+02	4/66	3.90E+02[c]	3.00E+02	--	1.20E+05	No:2
Chrysene	000218-01-9	2.90E+01	4.00E+03	31/106	3.64E+02	3.64E+02	--	3.12E+05	No:2
Dibenz(a,h)anthracene	**000053-70-3**	**2.40E+01**	**1.00E+03**	**8/108**	**7.49E+02[c]**	**7.49E+02**	**--**	**3.12E+02**	**Yes**
Dibenzofuran	000132-64-9	4.00E+01	2.40E+02	4/106	**7.55E+02[c]**	2.40E+02	--	3.44E+04	No:2
Diethyl phthalate	000084-66-2	9.00E+00	1.10E+02	4/106	**7.55E+02[c]**	1.10E+02	--	1.38E+07	No:2
Dimethyl phthalate	000131-11-3	1.00E+02	1.10E+02	2/106	**7.65E+02[c]**	1.10E+02	--	2.13E+08	No:2
Di-n-butyl phthalate	000084-74-2	3.90E+01	6.70E+02	17/106	**7.45E+02[c]**	6.70E+02	--	1.72E+06	No:2
Di-n-octyl phthalate	000117-84-0	9.00E+00	3.00E+02	7/106	**7.65E+02[c]**	3.00E+02	--	8.52E+05	No:2
Fluoranthene	00206-44-0	6.00E+00	5.60E+03	34/108	4.97E+02	4.97E+02	--	6.51E+05	No:2
Fluorene	000086-73-7	6.40E+01	3.90E+02	4/108	7.59E+02[c]	3.90E+02	--	6.51E+05	No:2
Indeno(1,2,3-cd)pyrene	000193-39-5	4.60E+01	1.30E+03	19/108	7.19E+02[c]	7.19E+02	--	3.12E+03	No:2
N-Nitrosodi-n-propylamine	000621-64-7	5.10E+01	5.10E+01	1/106	7.70E+02[c]	5.10E+01	--	3.44E+02	No:2
N-Nitrosodiphenylamine	000086-30-6	6.60E+01	1.10E+02	2/106	7.55E+02[c]	1.10E+02	--	3.44E+05	No:2
Phenanthrene	**000085-01-8**	**2.70E+01**	**3.90E+03**	**30/108**	**3.72E+02**	**3.72E+02**	**--**	**--**	**Yes**
Phenol	000108-95-2	9.00E+01	1.20E+02	3/106	7.65E+02[c]	1.20E+02	--	5.16E+06	No:2
Phenol, 4-chloro-2-(phenylmethyl)	**120-32-1**	**1.10E+02**	**2.00E+02**	**4/19**	6.38E+02[c]	2.00E+02	**--**	**--**	**Yes**
Pyrene	00129-00-0	3.00E+00	6.10E+03	36/108	5.02E+02	5.02E+02	--	4.88E+05	No:2
Volatile Organic Compounds (ug/kg)									
1,1,1-Trichloroethane	000071-55-6	3.40E-01	2.10E+02	14/758	5.80E+00[c]	5.80E+00	--	6.84E+05	No:2
1,1,2-Trichloro-1,1,2-trifluoroethane	000076-13-1	7.40E-01	1.80E+01	17/608	5.70E+00[c]	5.70E+00	--	6.93E+06	No:2
1,1-Dichloroethane	000075-34-3	3.90E+00	5.20E+00	2/757	5.80E+00[c]	5.20E+00	--	1.93E+05	No:2
1,1-Dichloroethene	000075-34-3	1.00E+00	3.03E+04	73/864	5.80E+00[c]	5.80E+00	--	4.20E+04	No:2
1,2-Dibromo-3-chloropropane	000096-12-8	7.00E+00	7.00E+00	1/572	1.10E+01[c]	7.00E+00	--	7.28E+02	No:2
1,2-Dichlorobenzene	000095-50-1	3.90E-01	3.20E+01	23/679	5.80E+00[c]	5.80E+00	--	2.86E+05	No:2
1,2-Dichloroethane	000107-06-2	4.80E-01	1.50E+01	3/757	5.70E+00[c]	5.70E+00	--	3.45E+03	No:2
1,2-Dichloropropane	000078-87-5	4.80E-01	2.00E+00	5/757	5.80E+00[c]	2.00E+00	--	2.08E+03	No:2
1,3-Dichlorobenzene	000541-73-1	3.90E-01	1.70E+00	8/678	5.80E+00[c]	1.70E+00	--	5.16E+05	No:2
1,4-Dichlorobenzene	000106-46-7	4.30E-01	4.20E+00	12/678	5.80E+00[c]	4.20E+00	--	1.00E+05	No:2
2-Butanone	000078-93-3	2.00E+00	7.20E+01	30/754	2.20E+01[c]	2.20E+01	--	6.65E+06	No:2

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
2-Hexanone	000591-78-6	2.00E+00	1.70E+01	3/755	2.20E+01[c]	1.70E+01	--	--	No:3
4-Methyl-2-Pentanone	000108-10-1	1.00E+00	1.30E+02	10/755	2.20E+01[c]	2.20E+01	--	1.47E+06	No:2
Acetone	000067-64-1	2.00E+00	5.30E+02	140/755	2.20E+01[c]	2.20E+01	--	1.92E+07	No:2
Ammonia	**07664-41-7**	**1.40E+01**	**2.70E+01**	**2/13**	**2.00E+03[c]**	**2.70E+01**	--	--	**Yes**
Benzene	000071-43-2	4.60E-01	1.40E+03	78/872	5.80E+00[c]	5.80E+00	--	6.46E+03	No:2
Carbon disulfide	000075-15-0	4.00E-01	4.30E+01	83/755	5.80E+00[c]	5.80E+00	--	1.16E+05	No:2
Carbon tetrachloride	000056-23-5	1.00E+00	5.80E+02	32/866	5.80E+00[c]	5.80E+00	--	2.44E+03	No:2
Chlorobenzene	000108-90-7	1.60E+00	3.00E+00	3/757	5.80E+00[c]	3.00E+00	--	4.85E+04	No:2
Chloroform	**000067-66-3**	**1.60E-01**	**3.67E+03**	**211/866**	**3.13E+01**	**3.13E+01**	--	**2.56E+03**	**Yes**
Chloromethane	000074-87-3	6.90E-01	6.90E-01	1/757	1.10E+01[c]	6.90E-01	--	1.59E+04	No:2
cis-1,2-Dichloroethene	000156-59-2	4.30E-01	2.01E+05	157/672	5.80E+00[c]	5.80E+00	--	2.13E+05	No:2
Cyclohexane	000110-82-7	5.00E-01	6.40E-01	3/583	5.80E+00[c]	6.40E-01	--	--	No:3
Ethylbenzene	000100-41-4	2.80E-01	7.50E+03	83/871	5.80E+00[c]	5.80E+00	--	7.80E+04	No:2
Isopropylbenzene	000098-82-8	8.00E-01	8.00E-01	1/585	5.80E+00[c]	8.00E-01	--	5.28E+04	No:2
Methyl-Cyclohexane	000108-87-2	4.00E-01	1.40E+00	29/583	5.80E+00[c]	1.40E+00	--	--	No:3
Methylene chloride	00075-09-2	8.40E-01	2.90E+03	340/757	2.01E+01	2.01E+01	--	8.25E+04	No:2
m-Xylene	000108-38-3	1.70E+01	1.70E+01	1/18	5.80E+00[c]	5.80E+00	--	2.77E+05	No:2
Naphthalene	000091-20-3	2.00E+00	1.30E+02	5/114	5.80E+00[c]	5.80E+00	--	1.79E+04	No:2
o-Xylene	000095-47-6	7.00E+00	7.00E+00	1/18	5.80E+00[c]	5.80E+00	--	4.26E+07	No:2
Styrene	000100-42-5	1.60E-01	9.00E-01	7/757	5.80E+00[c]	9.00E-01	--	1.46E+06	No:2
Tetrachloroethene	**00127-18-4**	**3.50E-01**	**2.23E+04**	**327/864**	**1.92E+02**	**1.92E+02**	--	**3.66E+03**	**Yes**
Toluene	00108-88-3	2.20E-01	7.16E+04	577/870	6.40E+02	6.40E+02	--	2.00E+05	No:2
Total 1,2-Dichloroethene	000540-59-0	1.00E+00	1.80E+03	50/192	6.71E+01	6.71E+01	--	1.92E+05	No:2
Total Xylenes	001330-20-7	4.00E-01	2.40E+01	31/788	5.80E+00[c]	5.80E+00	--	6.42E+04	No:2
trans-1,2-Dichloroethene	000156-60-5	3.20E-01	2.00E+03	35/672	5.80E+00[c]	5.80E+00	--	4.26E+05	No:3
Trichloroethene	**00079-01-6**	**4.20E-01**	**1.43E+05**	**378/863**	**1.28E+03**	**1.28E+03**	--	**4.38E+02**	**Yes**
Trichlorofluoromethane	000075-69-4	2.90E-01	5.50E+00	35/590	5.80E+00[c]	5.50E+00	--	1.30E+05	No:2
Vinyl chloride	000075-01-4	2.00E+00	2.30E+03	33/866	5.80E+00[c]	5.80E+00	--	1.07E+03	No:3
Radionuclides (pCi/g)									
Actinium-227		1.50E-01	2.29E+00	52/3883	3.59E-01[c]	3.59E-01	1.10E-01	4.56E-01	No:3
Actinium-228	14331-83-0	1.90E-01	1.79E+00	408/500	6.46E-01	6.46E-01	--	2.17E-01	No:5
Americium-241		4.00E-02	5.42E-01	78/3978	8.81E-02[c]	8.81E-02	--	6.32E+00	No:2

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
Beryllium-7	013966-02-4	2.20E+00	2.20E+00	1/5	4.72E-01[c]	4.72E-01	--	4.61E+00	No:2
Bismuth-210M		4.79E-02	9.10E-01	6/3168	6.35E-02[c]	6.35E-02	--	8.97E-01	No:3
Bismuth-212	14913-49-6	3.80E-01	1.76E+00	58/58	1.21E+00	1.21E+00	--	1.11E+00	No:5
Bismuth-214	14733-03-3	2.33E-01	2.50E+00	506/511	8.21E-01	8.21E-01	1.20E+00	1.31E-01	No:1
Cesium-134	13967-70-9	5.30E-02	5.30E-02	1/1	--	5.30E-02	--	1.38E-01	No:2
Cesium-137+D		**1.00E-02**	**1.50E+00**	**307/3937**	**6.00E-02[c]**	**6.00E-02**	**4.20E-01**	**3.82E-01**	**Yes**
Cobalt-60		1.00E-02	8.85E-02	35/3937	7.80E-02[c]	7.80E-02	--	7.91E-02	No:3
Lead-210+D	14255-04-0	2.16E-01	5.69E+00	1568/3840	6.69E-01	6.69E-01	1.20E+00	6.25E-01	No:1
Lead-212	15092-94-1	1.12E-01	2.00E+00	156/505	6.61E-01	6.61E-01	1.50E+00	1.79E+00	No:1
Lead-214	15067-28-4	2.20E-01	3.20E+00	498/500	8.69E-01	8.69E-01	1.20E+00	1.00E+00	No:1
Neptunium-237+D	13994-20-2	4.70E-01	4.70E-01	1/1	--	4.70E-01	--	1.10E+00	No:2
Plutonium-238		**2.90E-03**	**5.39E+01**	**697/4304**	**8.40E+00[c]**	**8.40E+00**	**1.30E-01**	**6.12E+00**	**Yes**
Plutonium-239/240		7.85E-03	1.74E+00	104/639	6.95E-02[c]	6.95E-02	1.80E-01	6.01E+00	No:2
Potassium-40	13966-00-2	9.90E-01	3.94E+01	540/558	1.44E+01	1.44E+01	3.70E+01	1.18E+00	No:1
Protactinium-231+D		6.67E-01	1.91E+00	5/3168	1.93E+00[c]	1.91E+00	--	3.91E-01	No:3
Radium-224	13233-32-4	1.04E+00	2.30E+00	13/13	1.80E+00	1.80E+00	1.50E+00	3.24E+00	No:2
Radium-226+D	13982-63-3	1.19E-01	2.80E+00	3886/3942	8.72E-01	8.72E-01	2.00E+00	1.10E-01	No:1
Radium-228+D	**15262-20-1**	**2.90E-01**	**1.31E+00**	**9/9**	**7.58E-01**	**7.58E-01**	**--**	**1.67E-01**	**Yes**
Strontium-90+D		7.18E-02	5.78E+00	9/47	4.88E-01[c]	4.88E-01	7.20E-01	9.40E+00	No:2
Thallium-208	14913-50-9	7.20E-02	5.80E-01	440/443	2.55E-01	2.55E-01	--	5.59E-02	No:5
Thorium-227	15623-47-9	7.00E-02	2.29E+00	4/7	2.07E+00[c]	2.07E+00	--	2.14E+00	No:5
Thorium-228+D	14274-82-9(+D)	2.90E-02	2.10E+00	698/719	7.57E-01	7.57E-01	1.50E+00	1.19E-01	No:1
Thorium-230+D		**8.40E-02**	**2.71E+00**	**708/3957**	**7.53E+00[c]**	**2.71E+00**	**1.90E+00**	**9.26E-02**	**Yes**
Thorium-232+D	7440-29-1	3.70E-02	2.00E+01	3648/4280	4.90E-01	4.90E-01	1.40E+00	6.90E-02	No:1
Thorium-234	15065-10-8	1.16E+00	3.60E+00	37/38	2.12E+00	2.12E+00	--	1.76E+01	No:2
Tritium	10028-17-8	1.70E-02	5.00E+01	119/119	4.57E+00	4.57E+00	1.60E+00	7.58E+03[e]	No:2
Uranium-233/234	**U-233/234**	**1.89E-01**	**1.70E+00**	**525/527**	**7.16E-01**	**7.16E-01**	**--**	**4.82E-01**	**Yes**
Uranium-234	13966-29-5	2.79E-01	1.08E+00	73/78	6.82E-01	6.82E-01	1.10E+00	1.05E+01	No:1
Uranium-235+D		1.40E-02	1.60E-01	92/544	4.00E-01[c]	1.60E-01	1.10E-01	1.54E+00	No:2
Uranium-235/236		2.77E-02	1.50E-01	88/420	8.30E-02[c]	8.30E-02	1.10E-01	3.10E-01	No:2
Uranium-238+D	**7440-61-1(+D)**	**1.80E-01**	**2.21E+00**	**2791/3240**	**6.92E-01**	**6.92E-01**	**1.20E+00**	**4.13E+00**	**Yes[f]**

Notes:
a. Unless otherwise denoted, value listed represents 95% UCL
b. COPC analyte status definitions:
Yes –retained as a COPC
No:1 –not retained as a COPC due to background concentration > lower of the maximum detected concentration or 95% UCL concentration
No:2 –not retained as a COPC due to RBGV > maximum concentration
No:3 –not retained as a COPC due to ≤5% detected
No:4 –not retained as a COPC as it is considered an essential nutrient
No:5 –not retained as a COPC as it is part of the thorium-232, uranium-235, and uranium-238 natural decay series with a half-lives less than or equal to 6 months
c. Value represents 70th percentile
d. RBGV for chromium (III)
e. RBGV for tritium (particulate)
f. Although the 95% UCL is < background, uranium-238 was retained as a COPC as it is process-related.

Analyte	EPC	Percent of Nondetects	Distribution	Method
Aroclor-1248	0.96	50%	Non-parametric	97.5% KM (Chebyshev) UCL
Benzo(a)pyrene	0.295	26%	Gamma	95% KM (t) UCL
Plutonium-238	8.40	16%	NA	70th Percentile
Radium-228 + D	0.758	100%	Gamma	95% Approximate Gamma UCL
Th-230 + D	2.71	18%	NA	70th Percentile
Uranium-238 + D	0.692	86%	Non-parametric	95% KM (BCA) UCL

Table 2.2 – Identification of COPCs for the Site Worker Exposure Scenario (Surface Soil)

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
Inorganics (mg/kg)									
Aluminum	7429-90-5	1.10E+03	3.20E+04	30/30	1.25E+04	1.25E+04	1.90E+04	1.69E+05	No:1
Antimony	7440-36-0	1.00E+00	4.46E+01	14/30	1.97E+01	1.97E+01	--	8.18E+01	No:2
Arsenic	7440-38-2	1.60E+00	7.70E+00	32/36	4.48E+00	4.48E+00	8.60E+00	2.26E+00	No:1
Barium	7440-39-3	1.02E+01	1.10E+02	30/30	5.87E+01	5.87E+01	1.80E+02	1.25E+04	No:1
Beryllium	7440-41-7	1.10E-01	1.40E+00	27/30	8.90E-01	8.90E-01	1.30E+00	3.70E+02	No:1
Bismuth	07440-69-9	3.60E-01	6.91E+01	17/22	2.64E+01	2.64E+01	3.84E+01	--	No:1
Cadmium	7440-43-9	3.50E-01	9.30E+00	20/36	2.83E+00	2.83E+00	2.10E+00	1.01E+01	No:2
Calcium	7440-70-2	4.51E+04	3.45E+05	36/36	1.24E+05	1.24E+05	3.10E+05	--	No:1
Chromium	7440-47-3	2.70E+00	4.64E+01	36/36	2.48E+01	2.48E+01	2.00E+01	3.07E+05[d]	No:2
Cobalt	7440-48-4	1.00E+00	1.30E+01	36/36	8.52E+00	8.52E+00	1.90E+01	1.93E+03	No:1
Copper	7440-50-8	3.90E+00	4.46E+02	36/36	1.05E+02	1.05E+02	2.60E+01	8.18E+03	No:2
Iron	7439-89-6	3.31E+03	3.40E+04	36/36	1.79E+04	1.79E+04	3.50E+04	--	No:1
Lanthanum	**7439-91-0**	**3.40E+00**	**4.60E+00**	**1/2**	**--**	**4.60E+00**	**--**	**--**	**Yes**
Lead	7439-92-1	2.90E+00	9.61E+01	36/36	2.71E+01	2.71E+01	4.80E+01	--	No:1
Lithium	7439-93-2	1.70E+00	3.95E+01	16/22	1.65E+01	1.65E+01	2.60E+01	--	No:1
Magnesium	7439-95-4	1.44E+04	8.23E+04	36/36	3.84E+04	3.84E+04	4.00E+04	--	No:1
Manganese	7439-96-5	1.34E+02	6.36E+02	36/36	4.07E+02	4.07E+02	1.40E+03	3.25E+03	No:1
Mercury	7439-97-6	1.30E-01	1.20E+00	8/33	2.00E-01[c]	2.00E-01	1.50E-01	5.78E+04	No:2
Molybdenum	7439-98-7	9.00E-01	2.46E+01	12/16	1.27E+01	1.27E+01	2.72E+01	1.02E+03	No:1
Nickel	7440-02-0	3.20E+00	3.15E+01	36/36	2.10E+01	2.10E+01	3.20E+01	4.09E+03	No:1
Potassium	7440-09-7	5.03E+02	1.00E+04	32/32	4.44E+03	4.44E+03	1.90E+03	--	No:4
Selenium	07782-49-2	3.80E+01	5.50E+01	3/36	1.10E+00[c]	1.10E+00	5.90E-01	1.02E+03	No:2
Silver	7440-22-4	1.60E+00	2.15E+01	28/36	8.34E+00	8.34E+00	1.70E+00	1.02E+03	No:2
Sodium	7440-23-5	9.34E+01	1.55E+03	29/36	6.94E+02	6.94E+02	2.40E+02	--	No:4
Tantalum	**7440-25-7**	**3.28E+02**	**3.28E+02**	**1/1**	**--**	**3.28E+02**	**--**	**--**	**Yes**
Thallium	07440-28-0	4.30E-01	6.90E-01	2/33	1.64E+00[c]	6.90E-01	4.60E-01	1.35E+01	No:2
Tin	07440-31-5	1.60E+00	1.61E+01	8/16	6.73E+00	6.73E+00	2.09E+01	1.23E+05	No:1
Total Cyanide	00057-12-5	1.40E-01	3.10E-01	4/23	1.20E+00[c]	3.10E-01	--	4.09E+03	No:2

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
Vanadium	7440-62-2	4.80E+00	4.80E+01	36/36	2.36E+01	2.36E+01	2.50E+01	2.04E+02	No:1
Zinc	7440-66-6	9.40E+00	2.74E+02	36/36	1.39E+02	1.39E+02	1.40E+02	6.13E+04	No:1
Explosives (ug/kg)									
1,3-Dinitrobenzene	000099-65-0	2.00E+02	2.00E+02	1/27	1.50E+03[c]	2.00E+02	--	2.04E+04	No:2
1,3,5-Trinitrobenzene	000099-35-4	3.10E+02	3.10E+02	1/27	1.50E+03[c]	3.10E+02	--	6.13E+06	No:2
2,4-Dinitrotoluene	000121-14-2	2.00E+02	2.00E+02	1/64	7.20E+02[c]	2.00E+02	--	2.57E+03	No:2
HMX	002691-41-0	4.10E+02	6.60E+02	2/32	3.00E+03[c]	6.60E+02	--	1.02E+07	No:2
RDX	000121-82-4	7.10E+02	6.85E+03	4/32	2.50E+03[c]	2.50E+03	--	5.20E+04	No:2
Pesticides/PCBs (ug/kg)									
4,4'-DDD	000072-54-8	9.20E-01	2.80E+00	5/37	8.20E+00[c]	2.80E+00	4.30E+03	2.38E+04	No:1
4,4'-DDE	000072-55-9	2.40E-01	1.60E+00	9/37	3.80E+00[c]	1.60E+00	4.00E+03	1.68E+04	No:1
4,4'-DDT	000050-29-3	2.20E-01	2.10E+00	6/37	8.92E+00[c]	2.10E+00	1.30E+04	9.56E+03	No:1
Aldrin	000309-00-2	1.20E-01	2.50E+00	6/37	3.22E+00[c]	2.50E+00	--	1.03E+02	No:2
alpha-BHC	000319-84-6	2.10E-01	1.10E+01	9/37	2.40E+00[c]	2.40E+00	--	9.08E+02	No:2
alpha-Chlordane	005103-71-9	1.00E-01	4.80E+00	10/37	1.04E+01[c]	4.80E+00	--	7.64E+03	No:2
Aroclor-1242	053469-21-9	3.70E+01	1.00E+03	3/547	4.00E+01[c]	4.00E+01	--	--	No:3
Aroclor-1248	**12672-29-6**	7.10E+00	3.80E+04	**305/547**	**1.07E+03**	**1.07E+03**	**--**	**--**	**Yes**
Aroclor-1254	011097-69-1	4.24E+01	6.64E+01	5/222	5.62E+01[c]	5.62E+01	5.80E+04	6.83E+02	No:1
Aroclor-1260	011096-82-5	4.46E+01	9.90E+01	3/222	4.67E+01[c]	4.67E+01	--	--	No:3
Aroclor-1262	**037324-23-5**	**4.10E+00**	**1.30E+03**	**32/325**	4.00E+01[c]	**4.00E+01**	**--**	**--**	**Yes**
Aroclor-1268	011100-14-4	5.60E+01	1.80E+02	5/325	3.90E+01[c]	3.90E+01	--	--	No:3
delta-BHC	000319-86-8	1.90E-01	1.90E-01	1/37	6.70E+00[c]	1.90E-01	--	--	No:3
Dieldrin	000060-57-1	9.20E-02	6.40E+00	9/37	3.82E+00[c]	3.82E+00	--	3.58E+02	No:2
Endosulfan II	**033213-65-9**	**2.00E-01**	**3.50E+00**	**3/37**	**4.94E+00[c]**	**3.50E+00**	**--**	**--**	**Yes**
Endosulfan sulfate	**001031-07-8**	**1.30E-01**	**2.00E+00**	**4/37**	**1.78E+01[c]**	**2.00E+00**	**--**	**--**	**Yes**
Endrin	000072-20-8	1.50E-01	1.60E+00	3/37	5.34E+00[c]	1.60E+00	--	6.13E+04	No:2
Endrin aldehyde	**007421-93-4**	**7.10E-01**	**4.70E+00**	**8/34**	**1.67E+01[c]**	**4.70E+00**	**--**	**--**	**Yes**
Endrin ketone	**053494-70-5**	**1.50E-01**	**2.00E+00**	**5/37**	**1.78E+01[c]**	**2.00E+00**	**--**	**--**	**Yes**
gamma-BHC (Lindane)	000058-89-9	3.30E-02	3.30E-02	1/37	3.54E+00[c]	3.30E-02	--	4.40E+03	No:2
gamma-Chlordane	005103-74-2	2.90E-01	3.50E+00	7/37	1.04E+01[c]	3.50E+00	--	7.64E+03	No:2
Heptachlor	000076-44-8	3.60E-02	2.80E-01	2/37	2.68E+00[c]	2.80E-01	--	1.27E+03	No:2
Heptachlor epoxide	001024-57-3	1.00E-01	4.10E-01	4/37	8.92E+00[c]	4.10E-01	--	6.29E+02	No:2

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
Methoxychlor	00072-43-5	3.10E-01	1.80E+01	5/37	8.93E+01[c]	1.80E+01	3.00E+04	1.02E+06	No:1
Semi-Volatile Organic Compounds (ug/kg)									
1,2,4-Trichlorobenzene	000120-82-1	3.00E-01	2.20E+00	17/604	5.70E+00[c]	2.20E+00	--	6.23E+05	No:2
2-Methylnaphthalene	000091-57-6	1.70E+02	1.90E+02	2/39	7.62E+02[c]	1.90E+02	--	8.18E+05	No:2
4-Methylphenol	000106-44-5	2.60E+02	2.60E+02	1/37	7.72E+02[c]	2.60E+02	--	1.02E+06	No:2
Acenaphthene	000083-32-9	2.10E+01	1.30E+03	8/39	7.62E+02[c]	7.62E+02	--	3.09E+06	No:2
Anthracene	000120-12-7	5.20E+01	8.00E+02	9/39	7.46E+02$_c$	7.46E+02	--	1.55E+07	No:2
Benz(a)anthracene	**000056-55-3**	**5.30E+01**	**2.50E+03**	**20/39**	**5.88E+02**	**5.88E+02**	**--**	**1.98E+03**	**Yes**
Benzo(a)pyrene	**000050-32-8**	**3.10E+01**	**2.30E+03**	**24/39**	**5.34E+02**	**5.34E+02**	**--**	**1.98E+02**	**Yes**
Benzo(b)fluoranthene	**000205-99-2**	**4.70E+01**	**4.90E+03**	**20/39**	**9.82E+02**	**9.82E+02**	**--**	**1.98E+03**	**Yes**
Benzo(g,h,i)Perylene	**000191-24-2**	**1.00E+02**	**1.10E+03**	**14/39**	**3.38E+02**	**3.38E+02**	**--**	**--**	**Yes**
Benzo(k)fluoranthene	000207-08-9	3.70E+01	4.50E+03	15/39	9.33E+02	9.33E+02	--	1.98E+04	No:2
Benzoic acid	000065-85-0	8.20E+01	7.70E+02	7/34	3.51E+03[c]	7.70E+02	--	2.49E+08	No:2
Bis(2-ethylhexyl) phthalate	00117-81-7	6.90E+01	2.90E+03	19/37	7.40E+02	7.40E+02	--	1.25E+05	No:2
Butyl benzyl phthalate	000085-68-7	8.30E+01	6.70E+02	4/37	7.54E+02[c]	6.70E+02	--	1.25E+07	No:2
Carbazole	000086-74-8	1.90E+01	3.00E+02	4/22	7.05E+02[c]	3.00E+02	--	8.72E+04	No:2
Chrysene	000218-01-9	2.90E+01	4.00E+03	23/37	6.85E+02	6.85E+02	--	1.98E+05	No:2
Dibenz(a,h)anthracene	**000053-70-3**	**2.40E+01**	**1.00E+03**	**7/39**	**7.62E+02[c]**	**7.62E+02**	**--**	**1.98E+02**	**Yes**
Dibenzofuran	000132-64-9	4.00E+01	2.40E+02	4/37	7.54E+02[c]	2.40E+02	--	1.25E+05	No:2
Diethyl phthalate	000084-66-2	8.30E+01	1.10E+02	2/37	7.54E+02[c]	1.10E+02	--	4.99E+07	No:2
Dimethyl phthalate	000131-11-3	1.10E+02	1.10E+02	1/37	7.72E+02[c]	1.10E+02	--	2.04E+09	No:2
Di-n-butyl phthalate	000084-74-2	8.80E+01	6.70E+02	7/37	7.42E+02[c]	6.70E+02	--	6.23E+06	No:2
Di-n-octyl phthalate	000117-84-0	2.40E+01	1.80E+02	4/37	7.72E+02[c]	1.80E+02	--	8.18E+06	No:2
Fluoranthene	00206-44-0	5.50E+01	5.60E+03	25/39	1.14E+03	1.14E+03	--	2.06E+06	No:2
Fluorene	000086-73-7	6.40E+01	3.90E+02	4/39	7.62E+02[c]	3.90E+02	--	2.06E+06	No:2
Indeno(1,2,3-cd)pyrene	000193-39-5	4.60E+01	1.30E+03	17/39	3.56E+02	3.56E+02	--	1.98E+03	No:2
Phenanthrene	**000085-01-8**	**5.30E+01**	**3.90E+03**	**22/39**	**1.25E+03**	**1.25E+03**	**--**	**--**	**Yes**
PHENOL, 4-CHLORO-2-(PHENYLMETHYL	**120-32-1**	**1.10E+02**	**2.00E+02**	**4/14**	**6.76E+02[c]**	**2.00E+02**	**--**	**--**	**Yes**
Pyrene	00129-00-0	3.80E+01	6.10E+03	26/39	1.08E+03	1.08E+03	--	1.55E+06	No:2
Volatile Organic Compounds (ug/kg)									
1,1,1-Trichloroethane	000071-55-6	3.40E-01	2.10E+02	14/621	5.70E+00[c]	5.70E+00	--	5.72E+07	No:2
1,1,2-Trichloro-1,1,2-trifluoroethane	000076-13-1	7.40E-01	1.80E+01	16/597	5.70E+00[c]	5.70E+00	--	6.13E+09	No:2

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
1,1-Dichloroethane	000075-34-3	3.90E+00	5.20E+00	2/621	5.70E+00[c]	5.20E+00	--	2.04E+07	No:2
1,1-Dichloroethene	000075-34-3	1.90E+00	4.20E+00	2/621	5.70E+00[c]	4.20E+00	--	1.02E+07	No:2
1,2-Dibromo-3-chloropropane	000096-12-8	7.00E+00	7.00E+00	1/567	1.10E+01[c]	7.00E+00	--	4.09E+03	No:2
1,2-Dichlorobenzene	000095-50-1	3.90E-01	3.20E+01	23/605	5.70E+00[c]	5.70E+00	--	2.92E+00	No:3
1,2-Dichloroethane	000107-06-2	4.80E-01	1.50E+01	3/621	5.70E+00[c]	5.70E+00	--	6.29E+04	No:2
1,2-Dichloropropane	000078-87-5	4.80E-01	9.50E-01	4/621	4.73E+01[c]	9.50E-01	--	8.42E+04	No:2
1,3-Dichlorobenzene	000541-73-1	3.90E-01	1.70E+00	8/604	5.70E+00[c]	1.70E+00	--	1.87E+06	No:2
1,4-Dichlorobenzene	000106-46-7	4.30E-01	4.20E+00	12/604	5.70E+00[c]	4.20E+00	--	6.50E-02	No:3
2-Butanone	000078-93-3	2.00E+00	3.80E+01	11/620	2.30E+01[c]	2.30E+01	--	1.23E+08	No:2
4-Methyl-2-Pentanone	000108-10-1	1.00E+00	1.30E+02	3/620	2.30E+01[c]	2.30E+01	--	1.64E+07	No:2
Acetone	000067-64-1	4.40E+00	5.30E+02	123/620	2.30E+01[c]	2.30E+01	--	1.84E+08	No:2
Ammonia	**07664-41-7**	**2.70E+01**	**2.70E+01**	**1/1**	**--**	**2.70E+01**	**--**	**--**	**Yes**
Benzene	000071-43-2	4.60E-01	2.20E+01	12/653	5.70E+00[c]	5.70E+00	--	1.04E+05	No:2
Carbon Disulfide	000075-15-0	4.00E-01	4.30E+01	65/620	5.70E+00[c]	5.70E+00	--	2.04E+07	No:2
Chlorobenzene	000108-90-7	1.60E+00	1.60E+00	1/621	5.70E+00[c]	1.60E+00	--	4.09E+06	No:2
Chloroform	000067-66-3	1.60E-01	1.90E+03	105/621	5.70E+00[c]	5.70E+00	--	2.04E+06	No:2
Chloromethane	000074-87-3	6.90E-01	6.90E-01	1/621	1.10E+01[c]	6.90E-01	--	--	No:3
cis-1,2-Dichloroethene	000156-59-2	4.30E-01	1.50E+04	75/584	5.70E+00[c]	5.70E+00	--	2.04E+06	No:2
Cyclohexane	000110-82-7	5.00E-01	6.40E-01	3/583	1.10E+01[c]	6.40E-01	--	--	No:3
Ethylbenzene	000100-41-4	2.80E-01	5.00E+00	14/653	5.70E+00[c]	5.00E+00	--	2.04E+07	No:2
Isopropylbenzene	000098-82-8	8.00E-01	8.00E-01	1/580	5.70E+00[c]	8.00E-01	--	2.04E+07	No:2
methyl-Cyclohexane	000108-87-2	4.00E-01	1.40E+00	29/583	1.10E+01[c]	1.40E+00	--	--	No:3
Methylene chloride	00075-09-2	8.40E-01	2.90E+03	326/621	2.16E+01	2.16E+01	--	7.63E+05	No:2
m-Xylene	000108-38-3	1.70E+01	1.70E+01	1/17	6.00E+00[c]	6.00E+00	--	4.09E+08	No:2
Naphthalene	**000091-20-3**	**2.00E+00**	**1.30E+02**	**3/40**	**--**	**1.30E+02**	**--**	**4.38E-02**	**Yes**
o-Xylene	000095-47-6	7.00E+00	7.00E+00	1/17	6.00E+00[c]	6.00E+00	--	4.09E+08	No:2
Styrene	000100-42-5	1.60E-01	6.00E-01	3/621	5.70E+00[c]	6.00E-01	9.40E+00	4.09E+07	No:1
Tetrachloroethene	**00127-18-4**	**3.50E-01**	**1.20E+04**	**175/621**	**1.25E+02**	**1.25E+02**	**--**	**1.06E+04**	**Yes**
Toluene	00108-88-3	2.20E-01	3.00E+03	467/653	6.10E+01	6.10E+01	--	4.09E+07	No:2
Total Xylenes	001330-20-7	8.30E-01	2.40E+01	15/653	1.10E+01[c]	1.10E+01	--	4.09E+07	No:2
trans-1,2-Dichloroethene	000156-60-5	3.20E-01	4.60E+02	13/584	5.70E+00[c]	5.70E+00	--	4.09E+06	No:2
Trichloroethene	**00079-01-6**	**4.20E-01**	**5.30E+04**	**221/621**	**5.88E+02**	**5.88E+02**	**--**	**1.43E+04**	**Yes**

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
Trichlorofluoromethane	000075-69-4	2.90E-01	5.50E+00	35/584	5.70E+00[c]	5.50E+00	--	6.13E+07	No:2
Vinyl chloride	000075-01-4	3.20E+00	8.70E+00	2/621	5.70E+00[c]	5.70E+00	--	3.82E+03	No:2
Radionuclides (pCi/g)									
Actinium-227+D		1.50E-01	2.29E+00	32/2530	3.63E-01[c]	3.63E-01	1.10E-01	5.02E-01	No:3
Actinium-228	14331-83-0	1.90E-01	1.79E+00	383/470	6.46E-01	6.46E-01	--	2.01E-01	No:5
Americium-241		4.00E-02	5.42E-01	61/2583	9.00E-02[c]	9.00E-02	--	9.93E+00	No:2
Beryllium-7	013966-02-4	2.20E+00	2.20E+00	1/5	4.72E-01[c]	4.72E-01	--	4.28E+00	No:2
Bismuth-210M		4.85E-02	9.10E-01	4/2242	6.38E-02[c]	6.38E-02	--	8.67E-01	No:3
Bismuth-212	14913-49-6	3.80E-01	1.76E+00	56/56	1.21E+00	1.21E+00	--	1.03E+00	No:5
Bismuth-214	14733-03-3	2.33E-01	2.50E+00	472/476	8.03E-01	8.03E-01	1.20E+00	1.22E-01	No:1
Cesium-134	13967-70-9	5.30E-02	5.30E-02	1/1	--	5.30E-02	--	1.28E-01	No:2
Cesium-137+D		**1.20E-02**	**1.50E+00**	**211/2552**	**6.15E-02[c]**	**6.15E-02**	**4.20E-01**	**3.56E-01**	**Yes**
Cobalt-60		1.00E-02	8.85E-02	17/2551	7.80E-02[c]	7.80E-02	--	7.35E-02	No:3
Lead-210+D	14255-04-0	2.16E-01	5.69E+00	1004/2533	6.65E-01	6.65E-01	1.20E+00	1.19E+00	No:1
Lead-212	15092-94-1	1.12E-01	2.00E+00	474/474	6.64E-01	6.64E-01	1.50E+00	1.73E+00	No:1
Lead-214	15067-28-4	2.20E-01	3.20E+00	465/467	8.49E-01	8.49E-01	1.20E+00	9.29E-01	No:1
Neptunium-237+D	13994-20-2	4.70E-01	4.70E-01	1/1	--	4.70E-01	--	1.08E+00	No:2
Plutonium-238		**2.90E-03**	**5.39E+01**	**590/2719**	**7.95E+00[c]**	**7.95E+00**	**1.30E-01**	**1.13E+01**	**Yes**
Plutonium-239/240		8.60E-03	1.74E+00	85/540	6.92E-02[c]	6.92E-02	1.80E-01	1.11E+01	No:2
Potassium-40	13966-00-2	9.90E-01	3.94E+01	484/489	1.49E+01	1.49E+01	3.70E+01	1.12E+00	No:1
Protactinium-231+D		6.67E-01	1.91E+00	4/2243	1.90E+00[c]	1.90E+00	--	4.41E-01	No:3
Radium-224	13233-32-4	1.04E+00	2.30E+00	13/13	1.80E+00	1.80E+00	1.50E+00	5.47E+00	No:2
Radium-226+D	13982-63-3	1.19E-01	2.72E+00	2525/2552	8.11E-01	8.11E-01	2.00E+00	1.05E-01	No:1
Radium-228+D	**15262-20-1**	**2.90E-01**	**1.31E+00**	**9/9**	**7.58E-01**	**7.58E-01**	**--**	**1.76E-01**	**Yes**
Strontium-90+D		7.18E-02	6.27E-01	5/13	4.32E-01[c]	4.32E-01	7.20E-01	1.50E+01	No:1
Thallium-208	14913-50-9	7.20E-02	5.80E-01	415/418	2.55E-01	2.55E-01	--	5.18E-02	No:5
Thorium-227	15623-47-9	7.00E-02	2.29E+00	4/7	3.44E-01[c]	3.44E-01	--	2.17E+00	No:5
Thorium-228+D	14274-82-9(+D)	2.90E-02	2.10E+00	612/622	7.72E-01	7.72E-01	1.50E+00	1.14E-01	No:1
Thorium-230+D		**8.40E-02**	**2.71E+00**	**616/2560**	**7.29E+00[c]**	**2.71E+00**	**1.90E+00**	**9.58E-02**	**Yes**
Thorium-232+D	7440-29-1	3.70E-02	4.82E+00	2408/2703	5.22E-01	5.22E-01	1.40E+00	6.88E-02	No:1
Thorium-234	15065-10-8	1.16E+00	3.60E+00	34/35	2.08E+00	2.08E+00	--	2.58E+01	No:2

Analyte	CAS Number	Minimum Concentration	Maximum Concentration	Detection Frequency	95% UCL or 70th Percentile[a]	EPC	Background Value	RBGV	COPC?[b]
Tritium	10028-17-8	1.02E-01	8.68E-01	8/14	5.73E-01	5.73E-01	1.60E+00	1.45E+04[e]	No:1
Uranium-233/234	**U-233/234**	**1.89E-01**	**1.70E+00**	**495/497**	**7.14E-01**	**7.14E-01**	**--**	**5.52E-01**	**Yes**
Uranium-234	13966-29-5	3.10E-01	9.40E-01	30/30	7.01E-01	7.01E-01	1.10E+00	1.97E+01	No:1
Uranium-235+D		1.40E-02	1.30E-01	85/498	1.30E-01[c]	1.30E-01	1.10E-01	1.55E+00	No:2
Uranium-235/236		3.40E-02	1.50E-01	72/358	9.28E-02[c]	9.28E-02	--	3.32E-01	No:2
Uranium-238+D	**7440-61-1(+D)**	**1.80E-01**	**2.21E+00**	**2019/2271**	**7.07E-01**	**7.07E-01**	**1.20E+00**	**5.22E+00**	**Yes[f]**

Notes:
a. Unless otherwise denote, value listed represents 95% UCL
b. COPC analyte status definitions:
Yes –retained as a COPC
No:1 –not retained as a COPC due to background concentration > lower of the maximum detected concentration or 95% UCL concentration
No:2 –not retained as a COPC due to RBGV > maximum concentration
No:3 –not retained as a COPC due to ≤5% detected
No:4 –not retained as a COPC as it is considered an essential nutrient
No:5 –not retained as a COPC as it is part of the thorium-232, uranium-235, and uranium-238 natural decay series with a half-lives less than or equal to 6 months
c. Value represents 70th percentile
d. RBGV for chromium (III)
e. RBGV for tritium (particulate)
f. Although the 95% UCL is < background, uranium-238 was retained as a COPC as it is process-related.

Analyte	EPC	Percent of Nondetects	Distribution	Method
Aroclor-1248	1.065	56%	Non-parametric	97.5% KM (Chebyshev) UCL
Benzo(a)pyrene	534	62%	Gamma	95% KM (BCA) UCL
Plutonium-238	7.95	22%	NA	70th Percentile
Radium-228 + D	0.758	100%	Gamma	95% Approximate Gamma UCL
Th-230 + D	2.71	23%	NA	70th Percentile
Uranium-238 + D	0.707	89%	Non-parametric	95% KM (BCA) UCL

OU-1
Parcel 9
COPC
Table

Table 6. Summary of Contaminants of Potential Concern for the Focused FS for Groundwater in OU-1

Contaminant	Maximum Contaminant Level	Preliminary Remediation Goal (from 1995 ROD)
1,2-DCA	100 μg/L	0.1 μg/L
Chlordane (alpha)[1]	2 μg/L	0.06 μg/L
Carbon tetrachloride	5 μg/L	0.2 μg/L
Chloroform	100 μg/L	2 μg/L
cDCE	70 μg/L	60 μg/L
PCE	5 μg/L	5 μg/L
TCE	5 μg /L	2 μg/L
VC	2 μg/L	1 μg/L
Ac-227[1]	2 pCi/L	2 pCi/L
Pu-238[1]	15 pCi/L	0.2 pCi/L
Pu-239/240[1]	15 pCi/L	0.6 pCi/L
Tritium	20,000 pCi/L	3000 pCi/L

Note:
[1] Contaminants were not included in the updated risk evaluation for groundwater.

Appendix D

Mound Core Team IC Guidance Documents

Appendix D

Table of Contents

D1- Mound Core Team IC Guidance: General Including Soil Removal September 12, 2012.

2012 Core Team IC Guidance

The Mound Core Team
250 East Fifth Street, Suite 500
Cincinnati, Ohio 45202

9/12/12 Update

Purpose

The Core Team has prepared the following guidance for assisting with compliance with the existing Mound Site Institutional Controls (ICs). Mound Development Corporation (MDC), or any other future owners of Mound Site property, can use the following guidance and best management practices to maintain compliance with Mound Site ICs when conducting future site activities. It is important to note that this guidance is not intended to be all inclusive, and requirements, including this document, could be subject to change or updating based on site activities, future remedy changes or changes to existing environmental laws.

Background Summary

The former Mound Site Property was remediated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) with associated Records of Decision (RODs) requiring adherence to enforceable Institutional Controls (IC's).

Records of Decision

The following are the approved RODs for the Mound Site:

1. *Operable Unit 1 Record of Decision, Final, June 1995 (amended in 2011)*
2. *Record of Decision for Release Block D, Final February 1999*
3. *Record of Decision for Release Block H, Final June 1999*
4. *Parcel 3 Record of Decision, Final, August 2001*
5. *Parcel 4 Record of Decision, Final, February 2001*
6. *Phase 1 Record of Decision, Final, July 2003*
7. *Miami-Erie Canal, Record of Decision, Final September 2004* (OU-4)
8. *Parcels 6, 7, and 8 Record of Decision, August 2009*
9. *Amendment of the Operable Unit 1 Record of Decision, August 2011*

Institutional Controls (ICs)

The Mound Site RODs, except for the OU4 Miami Erie Canal area, require ICs in the form of deed restrictions or an environmental covenant. The U.S. Department of Energy (DOE) is the lead agency with the responsibility to monitor, maintain and enforce the ICs. The U.S. Environmental Protection Agency (EPA), the Ohio Environmental Protection Agency (Ohio EPA), and the Ohio Department of Health (ODH) provide independent oversight and authority to approve requests regarding IC compliance. The ICs are designed to ensure:

- Maintenance of industrial or commercial land use and prohibition of residential land use.
- Prohibition against the use of groundwater without prior approval by EPA and Ohio EPA.
- Prohibition against the removal of soils from the Mound Site boundary (as of 1998) to offsite locations without prior approval. by EPA, Ohio EPA, and ODH.
- Allowing site access for federal and state agencies for the purpose of taking response actions, including sampling and monitoring.

The Parcels 6, 7 and 8 ROD includes the following additional institutional control requirements:

- Prohibition against the penetration of concrete floors in specified rooms in T Building without prior approval by EPA, Ohio EPA, and ODH.
- Prohibition against the removal of concrete floor material in specified rooms in T Building to offsite locations without prior approval by EPA, Ohio EPA, and ODH.

Details on the ICs listed above are included in the *Mound Site Operations and Maintenance Plan*, (O&M), Section 3, IC Management and Land Use Control. Additional information regarding each parcel and the associated ICs is included in the individual ROD for the specific parcel(s). These RODs are available on the DOE Office of Legacy Management (LM) website http://www.lm.doe.gov/CERCLA_Home.aspx.

Implementation – Best Management Practice

Implementation of the above IC language in contract and work planning documents may be accomplished as follows:

IC #1 - Maintenance of industrial or commercial land use and prohibition of residential land use.

Continue regular observation of site activities for signs of use other than industrial.

Allow no single or multi-family dwellings or rental units; day care facilities; schools or other educational facilities for children under 18 years of age; and no community centers, playgrounds or other recreational or religious facilities for children under 18 years of age are permitted on the property.

Fishing is considered recreational use and is prohibited. The photo above shows two individuals observed fishing in a Mound facility pond in Parcel 4. Note the "Recreational Use Prohibited" sign in the foreground. DOE, EPA, and Ohio EPA considered the exposure assumptions used to develop the industrial/commercial cleanup standards for the Mound site and concluded that occasional visits to the retention pond by area residents will not result in an unacceptable risk to the visitors.

However, if recreational activities are observed, MDC and future property owners will continue to monitor and discourage these unauthorized uses. Continued fishing or other recreational activities may result in more rigorous enforcement of ICs

IC#2 - Prohibition against the use of groundwater without prior approval from EPA and Ohio EPA.

No new wells may be installed on the Mound Site without prior approval from EPA and Ohio EPA. Groundwater use is prohibited.

IC#3 - Prohibition against the removal of soils from the Mound Site boundary (as of 1998) to offsite locations without prior approval. by EPA, Ohio EPA, and ODH.

One small area at the northeast corner of the site along Mound Road is excepted from this prohibition as described in the O&M Plan.

On typical plans that involve excavation, the following are examples of what should be considered for compliance with ICs:

- Earthwork/Demolition -- Due to deed restrictions, no soil shall be removed from the Mound Site without EPA and Ohio EPA approval. Excavated material may be used as fill in other areas on the project within the former Mound Site boundary. Spoil areas on the Mound Site shall be coordinated with the landowner. All materials removed from the site must be hauled per state and federal regulations.

- Soil -- No soil is allowed to leave the Mound Site without written approval of the EPA, Ohio EPA, and ODH. All excavated soil materials may be transported within the area of the Mound Site to an area or areas on site designated by the landowner.

- Concrete/Asphalt and Other Large Miscellaneous Debris – Prior to removal from the Mound Site, turn debris over and remove excess soils. *The following photo shows concrete removed during the construction of the Vanguard Blvd. extension. The removal of residual soil material on the concrete is viewed as being adequate for off site disposal.*

.

Trees – Prior to removal from the Mound Site, remove the majority of dirt from the root ball.

The photo below from the Vanguard Project shows a tree that was removed and cleared of excess soil for off property disposal.

<u>IC#4</u> - Provide site access for federal and state agencies for the purpose of taking response actions, including sampling and monitoring:

All future work planned at the former Mound site should include a provision allowing for federal and state agency access to the site.

<u>IC#5</u> - The ROD for Parcels 6, 7 and 8 includes the following additional institutional control requirements:

- Prohibition against the penetration of concrete floors in specified rooms in T Building without prior approval by EPA, Ohio EPA, and ODH.
- Prohibition against the removal of concrete floor material in specified rooms in T Building to offsite locations without prior approval by EPA, Ohio EPA, and ODH.

In a Position Paper, *T Building Special ICs Core Team Agreement and Position Paper,* dated June 29, 2009, the Core Team previously addressed compliance with restrictions against penetration of the floor in certain areas of T Building. Please refer to Sections 3.6.4 and 3.6.5 and Appendix B of the *Mound Site Operations and Maintenance Plan LMS/MND/S08406-0.0* for further details.

As mentioned above, this guidance is not intended to address every circumstance that may require compliance with ICs. For questions or further information, please contact the DOE Legacy Management at:

Grand Junction 24-Hour Monitored Security Telephone Numbers
(970) 248-6070 or (877) 695-5322
Website: http://www.lm.doe.gov

Gwendolyn Hooten, LM Mound Site Manager
U.S. Department of Energy/LM-20.1
10995 Hamilton-Cleves Highway
Harrison, OH 45030-9728
(513) 648-3148
Gwen.Hooten@lm.doe.gov

DOE: Gwen N Hooten

Digitally signed by Gwen N Hooten
DN: c=us, o=u.s. government, ou=department of energy, ou=headquarters, ou=people, cn=Gwen N Hooten
Date: 2012.09.13 09:52:33 -06'00'

Gwendolyn Hooten, Site Manager

USEPA: [redacted]

Timothy J. Fisher, Remedial Project Manager

OEPA: Brian Nickel

Digitally signed by Brian Nickel
DN: cn=Brian Nickel, o=Ohio EPA, ou=DERR/SWDO, email=Brian.Nickel@epa.state.oh.us, c=US
Date: 2012.09.13 14:02:43 -04'00'

Brian K. Nickel, Project Manager

D2 - Mound Core Team IC Guidance: T Building Special IC Areas June 29, 2009.

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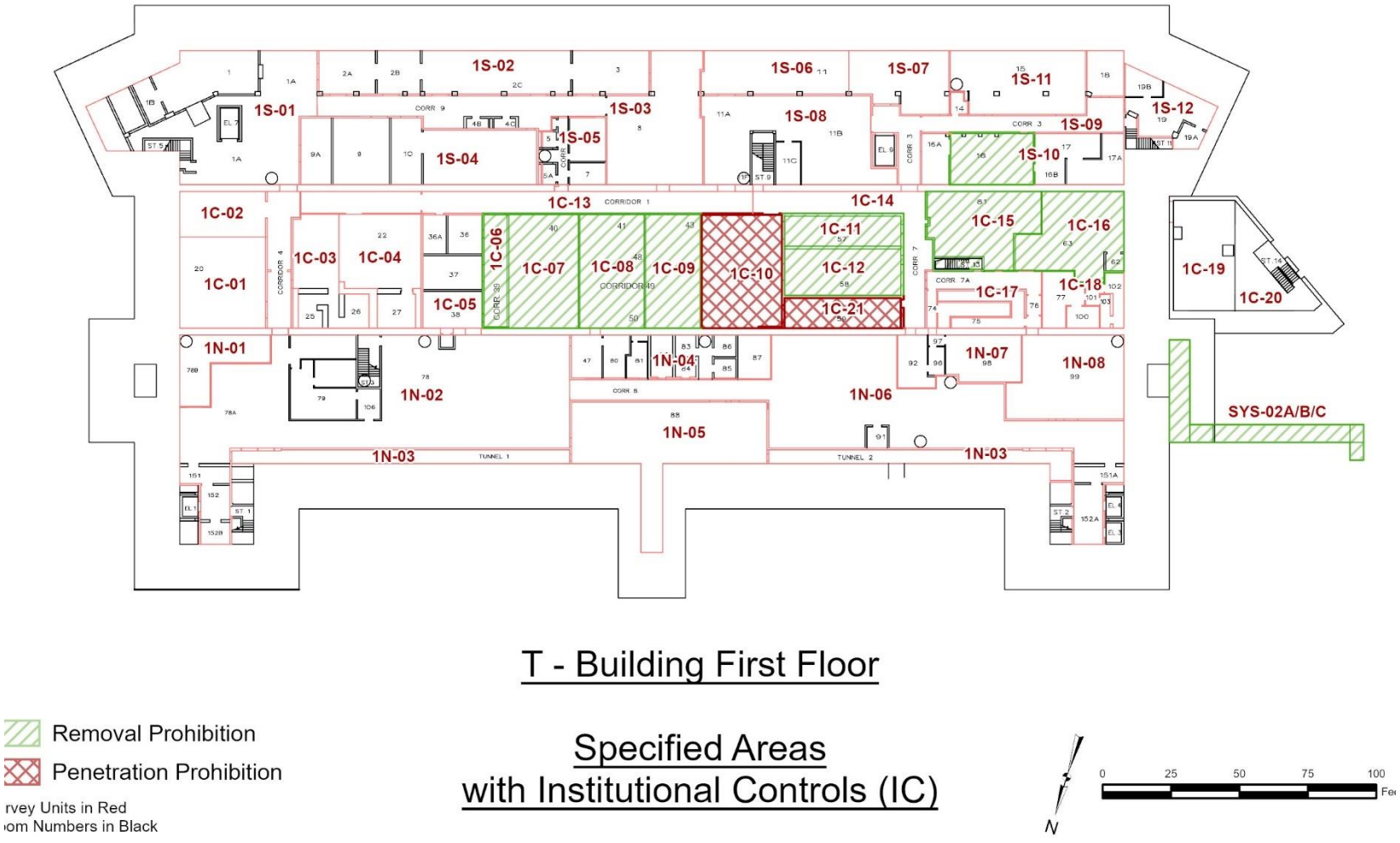


Figure C-1. T Building Rooms with Special ICs

T Building Special ICs Core Team Agreement and Position Paper

7806XXXXXX-1105260001

The Mound Core Team
P.O. Box 66
Miamisburg, Ohio 45343-0066

6/29/09

As you know, The Proposed Plan for Parcels 6, 7 and 8 contains a restriction on the use of T Building which prohibits the penetration of concrete floors in rooms 50, 57 and 59 of T Building without prior approval from USEPA, OEPA, and ODH. The Miamisburg Mound Community Improvement Corporation (MMCIC) has asked the Core Team for a "blanket" approval to conduct limited activities in these rooms that should not result in an unacceptable risk to workers in the building.

The Core Team has evaluated this request and hereby grants approval for these activities provided they are conducted in accordance with the following policy guidelines:

1. Any driven penetration (e.g. concrete nails or explosive driven nails) of up to four inches in depth can be conducted without approval. As notification, the Core Team shall be provided a description of the activity, drawing of the room, and location of the proposed penetrations two weeks prior to physical activity.
2. Penetrations that involve removal of concrete shall be filled with concrete or steel. They shall not exceed four inches depth without approval of the Core Team. All penetrations of four inches or less requiring removal of concrete (drilling etc.) will require the submittal of a description of the activity, drawing of the room, and location of the proposed penetrations to the Core Team two weeks prior to the physical activity for notification purposes.
3. Any actions which remove or damage the concrete (including "driven penetrations") shall be filled within 120 days of completion.
4. Routine T Building occupants should be excluded from the area of activity for the duration of the renovation.

For your information, the Core Team has prepared the attached Position Paper which the Core Team used in its evaluation. MMCIC can use this Position Paper and these policy guidelines in determining which future activities may be acceptable to the Core Team in rooms 50, 57 and 59 of T Building. In any event, MMCIC must request approval for any activity not on this approved list.

DOE/MEMP: [redacted]
Paul C. Lucas, Remedial Project Manager

USEPA: [redacted]
Timothy J. Fischer, Remedial Project Manager

OEPA: [redacted]
Brian K. Nickel, Project Manager

Position Paper
T Building Cap Areas Renovation Guidelines

Background: T Building (Technical Building) is a massively constructed building on the Mound site with ten foot thick heavily reinforced concrete floors and similarly robust ceilings and walls. During the remediation of the T Building, the contractor encountered bulk contamination of the floor and footings in certain areas. Attempts to complete remediation of the contaminated floor and footer in the west end of room 50 and east end of rooms 57 and 59 were technically and economically difficult to justify. Following an assessment of the risks involved to the building's structural integrity if removal of contaminated concrete continued (attached), a decision was made to leave the contaminated concrete sub floor and footer in place, and to add a cap of color coded (red) concrete to provide a margin of safety from the residual contamination. The Department of Energy (DOE) currently owns the facility and wishes to transfer ownership to the Miamisburg Mound Community Improvement Corporation (MMCIC) for future development. To ensure the health and safety of future workers and occupants of T Building, a deed restriction will be placed on T Building limiting the disturbance of concrete in those areas with residual contamination. This paper outlines some of the technical basis allowing latitude in the disturbance of the concrete cap.

As stated above, the DOE and its contractors evaluated the residual contamination to ensure that future worker safety was protected. Specifically future worker doses were modeled to ensure that they would not reasonably be expected to receive an additional 15 mrem of equivalent dose due to occupation in T Building. Samples of the residual contamination were taken. As a conservative measure, the average of the five highest areas of contamination was used as input for the entire area. This data was input into the RESRAD Build dose evaluation code. This code is jointly developed by the DOE and the Nuclear Regulatory Commission (NRC) for just this type of situation.

Under this scenario, two types of workers were evaluated. The first type was an office worker who occupies the building for an entire year. Doses for this type of worker were previously calculated and found to fall within the 15 mrem per year guidelines. The calculations for this type of worker assume that no renovation is occurring while that worker occupies the area, i.e. the concrete cap is intact. A second worker, the renovation worker, was originally modeled using similar physical characteristics of the building, but differing inputs commensurate with the type of work. For example, the breathing rates and occupancy rates for the renovation worker differ from that of an office worker. The original calculations for the renovation worker in T Building were 1.86 mrem. Of that dose, 0.17 mrem is due to direct radiation from the residual contamination under the protective cap. The remainder is from low level residual contamination throughout T Building.

A review of the Final Status Surveys for T Building indicates that the thickness of the cap is nominally 11 inches. It was placed at this thickness to bring the floor elevation level with the adjoining hallway floor surfaces. Based on the very low dose rates cited above (0.17 mrem) for external exposure, there is excess concrete serving as a shielding material for the bulk contamination below. This would allow for temporary removal or penetration of some portion of this concrete to allow for anchoring of equipment and walls of future tenants. It should be noted,

that in order to maintain the integrity of the calculations for the office worker, any floor penetration should be repaired or steel anchors inserted (steel being a better shield than concrete).

Calculations: As implied, records for the original calculations were retrieved from storage. Although it was generally known that excess concrete was placed, there was no known calculation of how much excess existed and none was found during the review of the records. The RESRAD Build calculations that were found used all 11 inches of concrete as shielding to arrive at the 0.17 mrem cited earlier. In addition, due to the presence of the cap, it was assumed that none of the contamination contained in the subsurface concrete and footers becomes airborne.

RESRAD Build continues to be maintained and updated by Argonne National Laboratory. The current version is slightly modified from the version originally used to model these doses. In order to ensure continuity, a baseline calculation was performed using the parameters from the original calculations. With only slight variations, they agreed. The original calculations indicated 1.70 mrem due to other building residual contamination. The new version calculated this same component to be 1.69 mrem. The total for both the cap area and the remainder of the building was 1.86 mrem for both versions, indicating strong agreement between the two.

In order to establish a margin of safety another calculation used the same input parameters except that the thickness of the cap was reduced by seven inches (to a nominal four inches total thickness). This further reduced thickness yielded an exposure to the renovation worker of 5.93 mrem. This remains protective of the renovation worker.

Recommendation: If the core team decides to allow penetration of the "red" concrete cap, it would be prudent to allow for some margin of safety to preclude accidental penetration to depths greater than currently analyzed. Note that the cap penetrations should be restored or replaced with anchors that provide similar or greater shielding capabilities. Recall also that one of the major assumptions is that the cap prevents the contamination below it from becoming airborne, so that the integrity of the cap must be maintained. Consideration must be given to the ability to ensure that recommendations are followed (i.e. penetrations are not greater than depth specified etc.). Also note that additional work could be carried out safely but may require additional analysis.

Policy Guidelines: As discussed, some guidelines should be established to administer penetration of the concrete in these areas. Such guidelines could be as follows:

1. Any driven penetration (e.g. concrete nails or explosive driven nails) of up to four inches in depth can be conducted without approval. As notification, the Core Team should be provided a description of the activity, drawing of the room, and location of the proposed penetrations two weeks prior to physical activity.
2. Penetrations that involve removal of concrete shall be filled with concrete or steel. They shall not exceed four inches depth without approval of the Core Team. All penetrations of four inches or less requiring removal of concrete (drilling etc.) will require the submittal of a description of the activity, drawing of the room, and location of the proposed penetrations to the Core Team two weeks prior to the physical activity for notification purposes.
3. Any actions which remove or damage the concrete (including "driven penetrations") shall be filled within 120 days of completion.
4. Routine T Building occupants should be excluded from the area of activity for the duration of the renovation.

2010 Baseline Photos of Each Room with Special ICs

(The floor plan to the right shows the camera angles for Figures C-2 through C-11.)

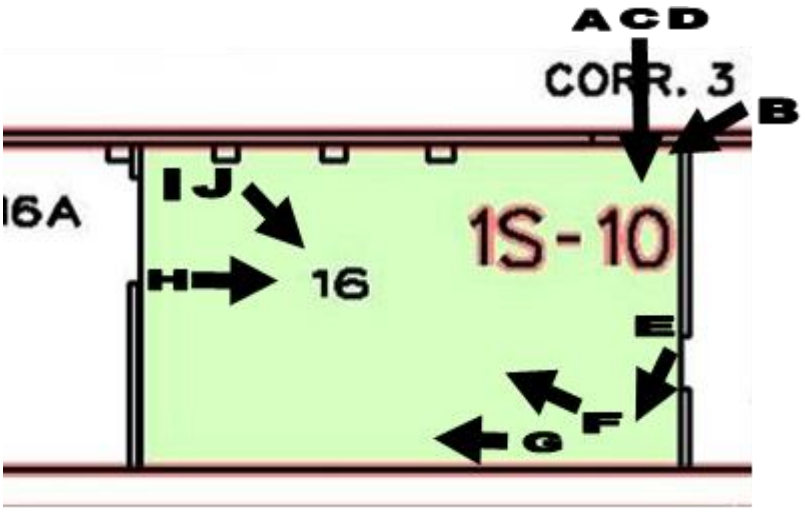


Figure C-2. T Building Room 16 View A

Figure C-3. T Building Room 16 View B

Figure C-4. T Building Room 16 View C

Figure C-5. T Building Room 16 View D

Figure C-6. T Building Room 16 View E

Figure C-7. T Building Room 16 View F

Figure C-8. T Building Room 16 View G

Figure C-9. T Building Room 16 View H

Figure C-10. T Building Room 16 View I

Figure C-11. T Building Room 16 View J

(The floor plan to the right shows the camera angles for Figures C-12 through C-19.)

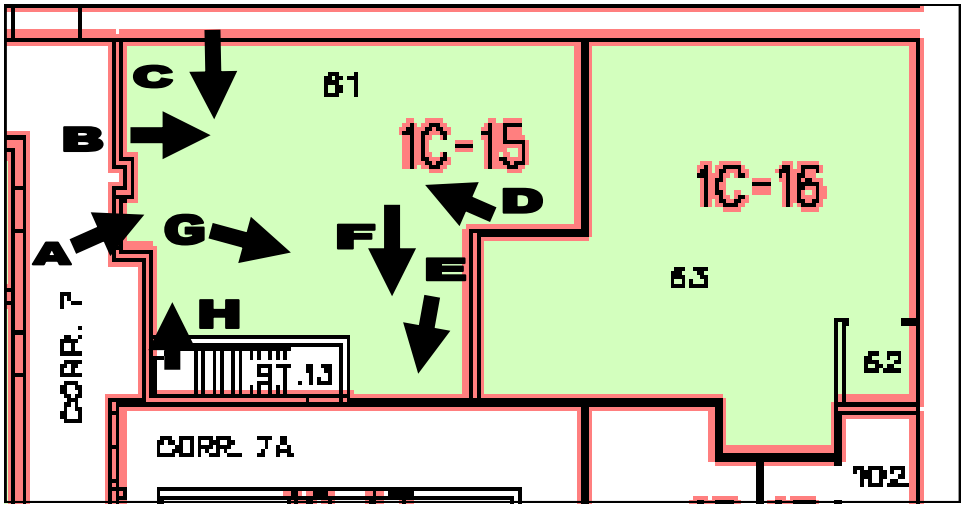


Figure C-12. T Building Room 61 View A

Figure C-13. T Building Room 61 View B

Figure C-14. T Building Room 61 View C

Figure C-15. T Building Room 61 View D

Figure C-16. T Building Room 61 View E

Figure C-17. T Building Room 61 View F

Figure C-18. T Building Room 61 View G

Figure C-19. T Building Room 61 View H

(The floor plan to the right shows the camera angles for Figures C-20 through C-31.)

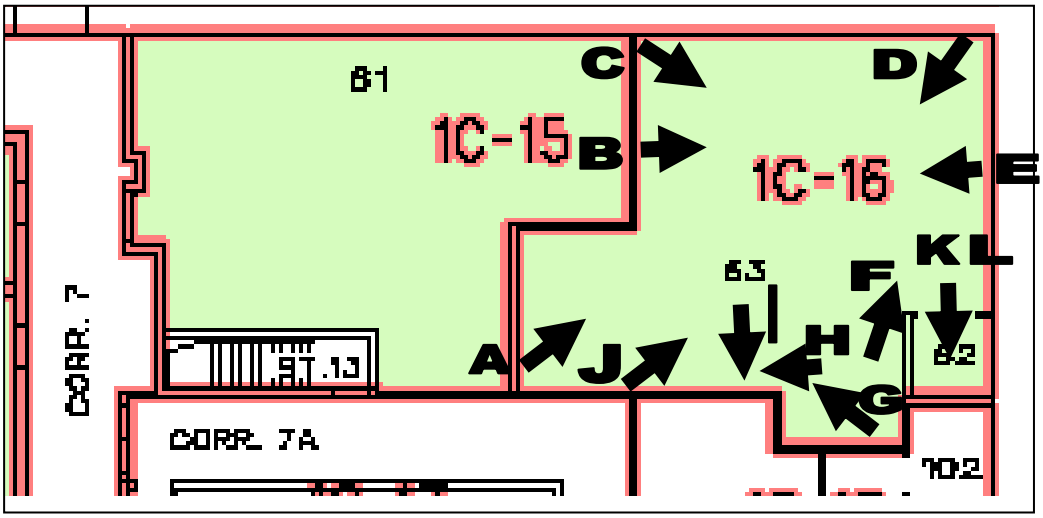


Figure C-20. T Building Room 63 View A

Figure C-21. T Building Room 63 View B

Figure C-22. T Building Room 63 View C

Figure C-23. T Building Room 63 View D

Figure C-24. T Building Room 63 View E

Figure C-25. T Building Room 63 View F

Figure C-26. T Building Room 63 View G

Figure C-27. T Building Room 63 View H

Figure C-28. T Building Room 63 View I

Figure C-29. T Building Room 63 View J

Figure C-30. T Building Room 62 View K

Figure C-31. T Building Room 62 View L

(The floor plan to the right shows the camera angles for Figures C-32 through C-37.)

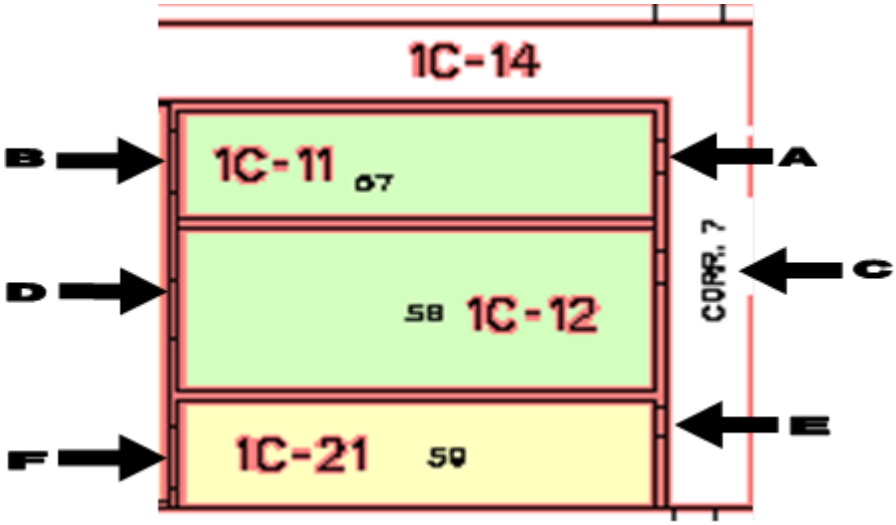


Figure C-32. T Building Room 57 View A

Figure C-33. T Building Room 57 View B

Figure C-34. T Building Room 58 View C

Figure C-35. T Building Room 58 View D

Figure C-36. T Building Room 59 View E

Figure C-37. T Building Room 59 View F

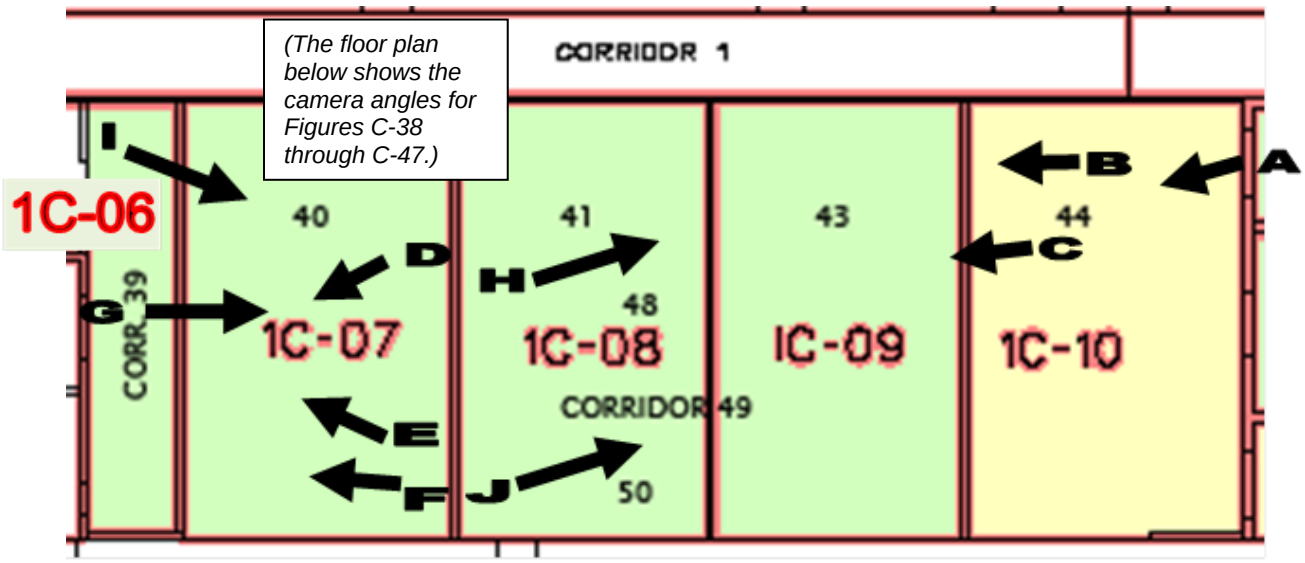


Figure C-38. T Building Rooms 39–44 and 48–50 View A

Figure C-39. T Building Rooms 39–44 and 48–50 View B

Figure C-40. T Building Rooms 39–44 and 48–50 View C

Figure C-41. T Building Rooms 39–44 and 48–50 View D

Figure C-42. T Building Rooms 39–44 and 48–50 View E

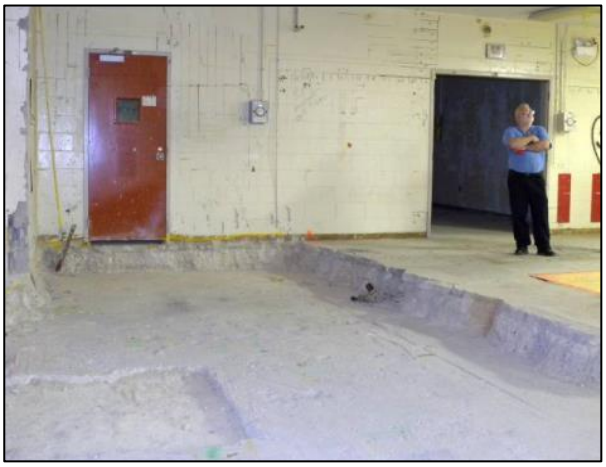


Figure C-43. T Building Rooms 39–44 and 48–50 View F

Figure C-44. T Building Rooms 39–44 and 48–50 View G

Figure C-45. T Building Rooms 39–44 and 48–50 View H

Figure C-46. T Building Rooms 39–44 and 48–50 View I

Figure C-47. T Building Rooms 39–44 and 48–50 View J

2018 Final LM Photos of Red Concrete Cracks

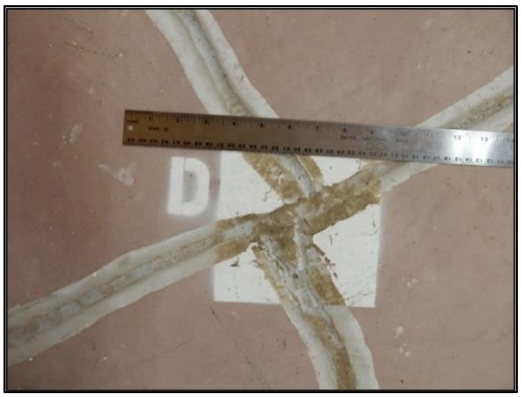
The photographs in Figure C-48 were taken on February 13, 2018, for the 2018 Mound site annual IC assessment to document the condition of the filled cracks in the red concrete in specified rooms in the T Building before LM transferred the building to MDC.

The locations of the crack monitoring points are shown in Figure C-48.

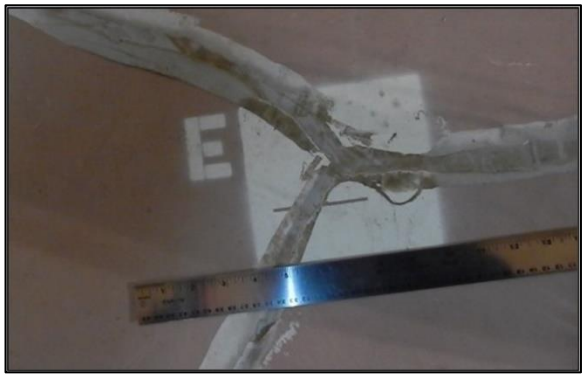
Monitoring Point A

Monitoring Point B

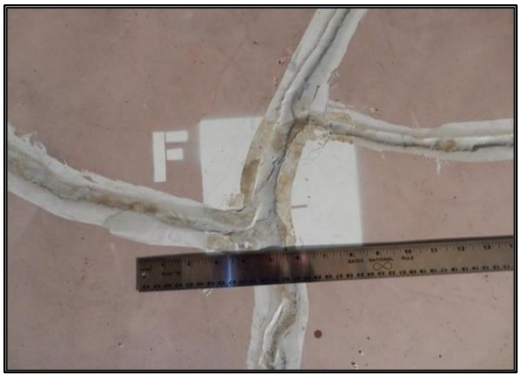
Monitoring Point C



Monitoring Point D



Monitoring Point E

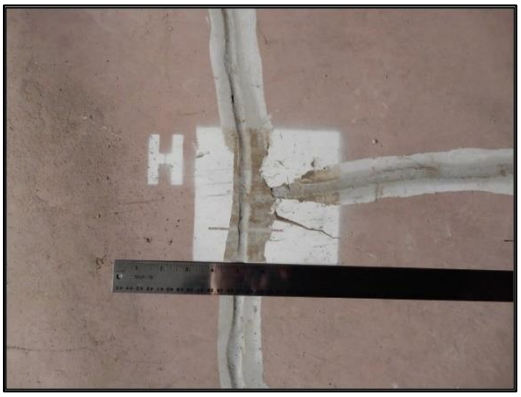


Monitoring Point F

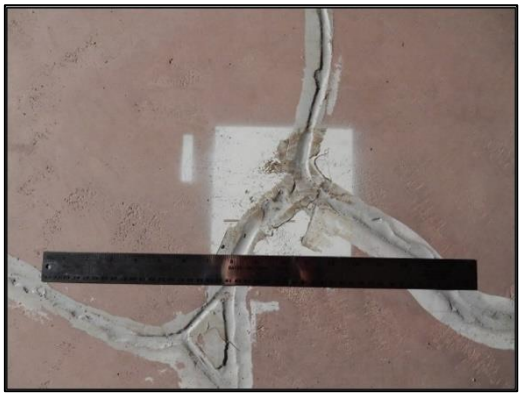
Figure C-48. Condition of the Cracks in the Red Concrete in Specified Rooms in the T Building, February 2018

2018 Photos of Red Concrete Cracks

Monitoring Point G



Monitoring Point H



Monitoring Point I

Figure C-48. Condition of the Cracks in the Red Concrete in Specified Rooms in the T Building, February 2018 (continued)

ATC 100 Fact Sheet for Crack Filler Product

ATC 100

Description and Uses

ATC 100 is a single component elastomeric sealant without free isocyanates or solvents (VOCs.) It cures rapidly by drying to form a flexible joint between substrates. It has excellent adhesion to most materials including plywood, plastic, concrete, masonry and metal.

ATC 100 is a hybrid water, vapor, gas and radon resistant sealant polymer, specially designed to adhere to damp or dry surfaces, making it excellent for sealing cove joints and concrete floor cracks against radon, methane, water, water vapor and other soil gasses. ATC 100 is excellent for bonding plastic, concrete and other materials and substrates. ATC 100 is UV resistant and can be used on exterior and interior surfaces. ATC 100 can be painted after curing

Where to Use

- Cove joints
- Concrete floor cracks
- Interior or exterior

Advantages

- No VOCs
- Combines the best qualities of polyurethane and silicone sealant
- Non-yellowing
- Isocyanate free
- High bond strength
- Easy flow

Technical Data

Appearance	Pasty
Color	Grey
Density at 200 C	1.65 +/- 0.05
Sagging (ISO 73900)	No
Application Temperature	40^0-100^0F
Temperature resistance	-4^0-190^0F
Cure Time @ 750F and 50% HR	50 minutes
Skin Formation time @750F and 50% HR	24-36 Hrs
Final Shore A Hardness (ISO 868-3 sec.)	>30
Modulus at 100% (ISO 8339)	>70 psi
Elongation at Break (ISO 8339)	>140 psi
Resistance to dilute acids and bases	Good
UV Resistance	Excellent
Water and salt spray resistance	Excellent
Compatibility with paints	Yes

Application Instructions

Preparation:

The substrates must be clean, dry free of dust, oil, grease, and any contaminates that could harm bonding. All traces of poorly adhered paint or coatings should be removed beforehand. If the substrates to be cleaned, solvents such as methylethylketone (MEK) or acetone may be used. Check the compatibility of the solvent used with the substrates. It may be necessary to rub down the substrate beforehand. After rubbing down, the surface should be recleaned. Allow the substrate to dry after degreasing. Note: When using solvents, extinguish all sources of ignition and carefully follow the safety and handling instruction given by the manufacturer or supplier.

Caulking:

ATC 100 may be applied by manual or pneumatic gun.
After application, each joint should be tight up to the joint lip and smoothed with a putty knife. This product should be used within 24 hours of opening the cartridge. If stored in cold weather, store the cartridges at 70°F prior to use.

Drying Time

Skin time is 50 minutes. Full cure at 24 hours depending on temperature and humidity.

Clean Up

Tools should be cleaned with MEK or acetone before the sealant has completely cured. After curing, abrasion is necessary.

Storage and Shelf Life

12 months in the original hermetically sealed packaging between 40-75°F.

Packaging

10.4 oz cartridges

Safety

Not classified as hazardous. Read the MSDS before use.

Warranty

Recommendations concerning the performance or use of this product are based upon independent test reports believed to be reliable. If the product is proven to be defective, at the option of the Manufacturer, it will be either replaced or the purchase price refunded. The Manufacturer will not be liable in excess of the purchase price. The user will be responsible for deciding if the product is suitable for his application and will assume all risk associated with the use of the product. This warranty is in lieu of any other warranty expressed or implied, including but not limited to an implied warranty of merchantability or an implied warranty of fitness for a particular use.

THE FOREGOING WARRANTY SHALL BE EXCLUDSIVE AND IN LIEU OF AN OTHER WARRANTY, EXPRESS OR IMPLIED INCLUDING WARRANTIES OF MERCHANTIBLITY AND FITNESS FOR A PARTICULAR USE AND PURPOSE AND ALL OTHER WARRANTIES OTHERWISE ARISING BE OPERATION OF LAW, COURSE OR DEALING, CUSTOM, TRADE OR OTHERWISE

Applied Technologies LLC
P. O. Box 18476 Fairfield, OH 45018
1-877-277-5948 (513) 939-3767
www.appliedtechnologies.com
07/07

D3 - Mound Site Core Team Memorandum: Mound Core Team process to evaluate Mound Business Park property owner requests for land uses not specifically addressed under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Records of Decision (RODs) (December 16, 2021)

December 16, 2021

Mound Site Core Team Memorandum

Mound Core Team process to evaluate Mound Business Park property owner requests for land uses not specifically addressed under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Records of Decision (RODs)

Background

After the U.S. Department of Energy (DOE) and Miamisburg Mound Community Improvement Corporation/City of Miamisburg agreed to industrial use as the future land use for the site, a process was developed to focus the cleanup approach on that end use and make property available for release and reuse. The property was divided into release blocks or parcels and evaluated per the *Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach*, February 1999. A figure showing the site boundary and parcels is contained as Attachment A. After each parcel was cleaned up and evaluated, a CERCLA ROD was developed. The CERCLA RODs dictate permitted land uses via institutional controls (ICs) at the Mound Site. The CERCLA ICs, bulletized below, run with the land in the form of restrictions and covenants in Quit Claim Deeds (QCDs), or activity and use limitations in the Environmental Covenant (EC) (parcel 9 only):

- Maintenance of industrial or commercial land use and prohibition against residential land use.
- Prohibition against the use of groundwater without prior written approval from U.S. Environmental Protection Agency (EPA) and Ohio EPA.
- Prohibition against the removal of soil from within the site boundary (as of 1998) to offsite locations without prior written approval from U.S. EPA, Ohio EPA, and Ohio Department of Health (ODH).
- Prohibition against the removal of concrete floor material in specified rooms of T Building to offsite locations without prior written approval from U.S. EPA, Ohio EPA, and ODH.
- Prohibition against the penetration of concrete floors in specified rooms of T Building locations without prior written approval from U.S. EPA, Ohio EPA, and ODH.
- Allowing site access for federal and state agencies for the purpose of sampling and monitoring.

The RODs detail specific land uses that will not be permitted onsite, but the list in the RODs is not all-inclusive. Land parcels may not be used for any residential or farming activities, or for any other activities that could result in the chronic exposure of children less than 18 years of age to soil or groundwater from the premises. Prohibited land uses listed in the RODs include, but are not limited to, single or multifamily dwellings or rental units, schools, and childcare facilities.

Upon conclusion of remediation activities at the Mound site (excluding groundwater) in 2006, much of the site had been transferred to the Mound Development Corporation (MDC), a non-profit associated with the City of Miamisburg, to manage the site's economic redevelopment as an industrial park (i.e. Mound Business Park).

In anticipation of future growth and development of the Mound Business Park, on January 15, 2019, the City of Miamisburg passed Ordinance 6758 titled MB-1 Mound Business District that applies to all lands within the boundaries of the Mound Business Park. MB-1 was designed to promote orderly growth of Mound Business Park; identify that CERCLA institutional controls have been imposed upon parcels within Mound Business Park; identify both permitted and prohibited uses; and establish basic standards for structures, landscaping and other improvements on the properties within Mound Business Park.

Until 2019, requests for regulatory approval of site uses not specifically prohibited by the CERCLA RODs were limited to short duration activities (science fair competition) or one-time events ("Turkey Trot" Thanksgiving Day footrace). In response to those requests, the Core Team created the "Request for Regulatory Approval of New Site Activity" form that the requestor would complete, providing details that will be used to assist with the evaluation of the activity. Examples of the type of information needed include timeframe and duration of event, ages of participants, and amount of time spent on site. The "Request for Regulatory Approval of New Site Activity" form is contained in Attachment B.

Purpose

The purpose of this document is to outline a process for evaluating property owner or lessee requests for land uses that are not specifically addressed in the CERCLA RODs and ICs. Any lessee requests would come through the property owner. This process will allow for a more consistent approach for review of future requests. This document does not change or modify the existing ICs identified in the RODs, QCDs, or Parcel 9 EC. Land uses prohibited under the existing ICs will not be considered or evaluated.

Property Owner Request Process

The proposed process is as follows:

Activity Requestor (land owner, lessee, etc.) shall fill out the "Request for Regulatory Approval of New Site Activity" form (Attachment B) and submit to DOE Legacy Management (LM) as the lead agency under CERCLA for evaluation. DOE LM shall notify the Core Team and share the request.

DOE LM will then evaluate the request by doing the following:

- Engage directly with the property owner, should clarification of the request be needed.
- Review of existing information such as historical land uses, previous requests, and available site information (e.g. RODs, QCDs, Mound Land Use Controls Uncertainty Analysis, Parcel 9 EC).
- Engage legal counsel, other subject matter experts, and the Core Team as necessary.

- Evaluate the requested activity and bounding conditions against the exposure conditions in the specific parcel Residual Risk Evaluation.
- Perform a risk assessment if deemed necessary by the Core Team.

After completing the request evaluation, DOE-LM will prepare and present a recommendation to the Mound Core Team. The Core Team, in coordination with agency legal counsel when appropriate, will issue a decision on the request and notify the property owner.

Should a request be denied by the Core Team, the property owner will be given the opportunity to request a meeting with LM to discuss.

All new site activity requests and the Core Team's decision to approve/or deny the request will be included in LM's next annual report on effectiveness of ICs. This would ensure all such requests and approvals/disapprovals are archived in a single, publicly available document. For requests that are still pending, those will not be recorded in the annual IC report.

Any decision acted upon by the Core Team will be made in accordance with CERCLA requirements only and will be independent of any state or local ordinances or zoning actions, since the U.S. government has no control over such activities. Should the regulators agree that a requested land use is protective of human health and environment as defined in approved CERCLA documents, LM would notify the affected parties such as the property owner, MDC (manages Mound Business Park), and City of Miamisburg (implements and enforces zoning requirements).

The Core Team will not rely upon local government ordinances or zoning restrictions to be the primary means of IC enforcement; however, when properly coordinated with the appropriate local governing entity, zoning and other ordinances could provide an additional layer of protectiveness for ensuring property owners are aware of CERCLA ICs.

Monitoring Process

DOE will monitor compliance of any new site activities that are approved by the Core Team in the same manner that DOE monitors compliance with Mound sitewide and T Building specific ICs. In the event DOE determined a property owner was not complying with the regulator-approved new site activity/land use (e.g., was using property inconsistent with the originally proposed bounding conditions the Core Team evaluated, upon which the regulators based their final decision), DOE would take the lead in resolving the issue with the property owner. Resolution could include dialogue with the property owner to use the land only in accordance with the stated bounding conditions and regulator-approved land use, or suggestion that the property owner submit an additional new site activity request for Mound Core Team's consideration. Both DOE and the regulators would have the authority to enforce compliance with regulator-approved new site activity/land uses.

Any new DOE monitoring requirements associated with regulator-approved new site activities would be captured in the Mound Long-Term Surveillance and Maintenance plan/Operations and Maintenance plan as appropriate.

Enforcement Actions

This process was developed to offer clarification on land uses that are not specifically identified in the RODs and subsequent execution instruments (QCDs, ECs, etc.). This is not to change or erode property use restrictions. As the grantor who created the original restrictive Covenants and ICs, the United States would likely take the lead in their enforcement, probably through the Department of Justice or the local US Attorney's office (Reference: Tormey memo 2/17/1999 and included in Attachment C).

Attachments:

Attachment A – Mound, Ohio, Site Boundary and Parcel Figure
Attachment B – Request for Regulatory Approval of New Site Activity Form
Attachment C – Randy Tormey Memo dated February 17, 1999

DOE:

Signed electronically on 6-14-21.

Brian Zimmerman, DOE-LM Mound Site Manager

USEPA:

Signed electronically on 12-16-21.

David Seely, EPA Region 5, Remedial Project Manager

OEPA:

Signed electronically on 6-22-21.

Brian Nickel, Ohio EPA, Remedial Project Manager

D4 - Mound Core Team Process to Evaluate Mound Business Park Property Owner Requests for Land Uses Not Specifically Addressed Under CERCLA RODs. Includes:

- Example Form: *Request for Regulatory Approval of New Site Activity*
- Approved IC requests (2022 and 2025)

Mound Site, Miamisburg, Ohio
Request for Regulatory Approval of New Site Activity

This is a formal request to the U.S. Department of Energy (DOE), the Environmental Protection Agency (EPA) and the Ohio EPA to provide written approval of an activity not generally covered by the institutional controls at the Mound Site. The institutional controls are part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedies established in the Records of Decision for the Mound Site.

The Mound site institutional controls run with the land in the form of restrictions and covenants in quitclaim deeds or activity and use limitations in the Environmental Covenant: See the *Operations and Maintenance (O&M) Plan for the U.S. Department of Energy Mound Site, Miamisburg, Ohio,* for details on records of decision.

- Maintenance of industrial or commercial land use and prohibition against residential land use.
- Prohibition against the use of groundwater without prior written approval from EPA and Ohio EPA.
- Prohibition against the removal of soil from within the site boundary (as of 1998) to offsite locations without prior written approval from EPA, Ohio EPA, and ODH.
- Prohibition against the removal of concrete floor material in specified rooms of T Building to offsite locations without prior written approval from EPA, Ohio EPA, and ODH.
- Prohibition against the penetration of concrete floors in specified rooms of T Building locations without prior written approval from EPA, Ohio EPA, and ODH.
- Allowing site access for federal and state agencies for the purpose of sampling and monitoring.

Submitting Organization: _____
Sponsoring Organization: _____
Date Submitted: _____

1. The proposed activity:

2. Describe the proposed site activity. (Add supplemental documentation to this form if required)

3. **Does the proposed activity violate any of the following restricted uses described in quitclaim deeds and the Environmental Covenant? (Note: Environmental Covenant is applicable only to Parcel 9 – see attached figure) Yes □ No □**

- Will not use, or allow the use of, the Premises for any residential or farming activities, or any other activities which could result in the chronic exposure of children under eighteen years of age to soil or groundwater from the Premises. Restricted uses shall include, but not be limited to:
  1) single or multifamily dwellings or rental units;
  2) day care facilities;
  3) schools or other educational facilities for children under eighteen years of age;
  4) community centers, playgrounds, or other recreational or religious facilities for children under eighteen years of age
- Will not extract, consume, expose, or use in any way the groundwater underlying the premises without the prior written approval of the EPA and the Ohio EPA.
- Will not remove soil from the property except for exempted area in northeast corner Parcel H. without the prior written approval of the EPA and the Ohio EPA.

4. Is this a short-term or permanent activity? If short term, what duration do you anticipate? Specific date(s)?

5. When do you wish to begin this activity?
6. What ages of individuals would participate in this activity?
7. Estimate an average duration of time on site that these individuals participate in this activity? (hours per day x number of days per year; or hours per month; or total hours per year)

FOR REGULATOR USE ONLY
1. What is the basis for approval/disapproval?
2. What actions, precautions, notifications (if any) are required to mitigate risk?
3. Does a risk assessment need to be performed by DOE? Attach a copy.

Approvals:

Print name Signature Date
U.S. Environmental Protection Agency Representative

Print name Signature Date
Ohio Environmental Protection Agency Representative

Concurrence:

Print name Signature Date
U.S. Department of Energy Representative

Department of Energy
Washington, DC 20585

April 20, 2022

Mr. Ferdinand Ejinaka
Pinnacle Architects
480 Vantage Point
Miamisburg, OH 45342

Subject: U.S. Department of Energy Response to Pinnacle Architects *Request for Regulatory Approval of New Site Activity* Form

Dear Mr. Ejinaka:

This letter is in response to Pinnacle Architects *Request for Regulatory Approval of New Site Activity* form (Pinnacle request) for new proposed activities (conference center, restaurant, and medical office) located at 480 Vantage Point, Miamisburg, Ohio 45342 (formerly known as the OSE Building) within the boundaries of the former Mound Site in Miamisburg, Ohio. In accordance with the site's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents and following a review of the proposed uses in comparison to previous residual risk evaluations, the Mound Site Core Team, consisting of members of the U.S. Department of Energy Office of Legacy Management (LM), Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency (Ohio EPA), have completed review of the Pinnacle Request.

The Mound Site Core Team approves this request. LM, in consultation with EPA and Ohio EPA, concluded the proposed activity uses along with the proposed bounding conditions provided in the Pinnacle request (and if followed by property owner, tenants, or visitors) would not result in unsafe exposures for either employees over the age of 16 years or adult or child visitors.

It is important to understand this approval only applies to the activities specified in the above referenced request proposed in the former OSE Building. Additionally, this approval does not state nor imply a blanket approval for other new activities in the OSE Building or any other buildings within the former Mound Site's boundaries.

This decision has been made in accordance with CERCLA requirements only and is independent of any state or local ordinances or zoning actions, as the U.S. government has no control over such activities. The requestor is responsible for any other state, or local business requirements. The regulators have agreed this requested land use is protective of human health and environment as defined in approved CERCLA documents, however, it should be noted that some land uses proposed by the Pinnacle Architects request are not approved by the city under the current MB-1 zoning ordinances.

This letter and its enclosures serve as notification to the affected parties including the property owner, Mound Development Corporation, and the City of Miamisburg. Property owners are responsible for notifying their tenants.

Please contact me at (636) 485-0036 or Tiffany.Drake@lm.doe.gov if you have any questions. Please send any correspondence to:

U.S. Department of Energy
Office of Legacy Management
7295 Highway 94 South
St. Charles, MO 63304

Sincerely,

Tiffany L. Drake

Digitally signed by Tiffany L. Drake
Date: 2022.04.20 13:48:50 -05'00'

Tiffany Drake
Mound Site Manager

Enclosures

cc w/enclosures via email:
Syed Quadri, EPA
Scott Glum, Ohio EPA
Shannon Dettmer, Ohio DHS
Chris Fine, City of Miamisburg
Andrew Rodney, City of Miamisburg
Ellen Stanifer, City of Miamisburg
Dick Church, MDC
April Hauser, MDC
Cliff Carpenter, DOE-LM
Becky Cato, RSI
Chuck Friedman, RSI
Greg Lupton, RSI
Joyce Massie, RSI
DOE Read File
File: E/19/584 F/20/205

Mound Site, Miamisburg, Ohio
Request for Regulatory approval of new site activity

This is a formal request to the Environmental Protection Agency (EPA) and the Ohio EPA to provide written approval of an activity not generally covered by the institutional controls at the Mound Site. The institutional controls are part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedies established in the Records of Decision for the Mound Site.

The Mound site institutional controls run with the land in the form of restrictions and covenants in quitclaim deeds or activity and use limitations in the Environmental Covenant: See the *Operations and Maintenance (O&M) Plan for the U.S. Department of Energy Mound Site, Miamisburg, Ohio,* for details on records of decision.

- Maintenance of industrial or commercial land use and prohibition against residential land use.
- Prohibition against the use of groundwater without prior written approval from EPA and Ohio EPA.
- Prohibition against the removal of soil from within the site boundary (as of 1998) to offsite locations without prior written approval from EPA, Ohio EPA, and ODH.
- Prohibition against the removal of concrete floor material in specified rooms of T Building to offsite locations without prior written approval from EPA, Ohio EPA, and ODH.
- Prohibition against the penetration of concrete floors in specified rooms of T Building locations without prior written approval from EPA, Ohio EPA, and ODH.
- Allowing site access for federal and state agencies for the purpose of sampling and monitoring.

Submitting Organization: PINNACLE ARCHITECTS - 480 VANTAGE PROPERTY OWNER
Sponsoring Organization: _____
Date Submitted: 11/14/19

1. **The proposed activity:** CONFERENCE CENTER, EATING ESTABLISHMENTS/ RESTAURANT & MEDICAL OFFICE

2. **Describe the proposed site activity. (Add supplemental documentation to this form if required)**
CONF. CENTER: SPECIAL EVENTS VENUE W/ CATERED FOOD FOR A WHOLE VARIATY OF FUNCTIONS.
RESTAURANT: SALE OF FOOD TO THE PUBLIC. OUR FACILITY USED TO HOUSE A CAFETERIA & SERVING LINE & DINING ROOMS FOR THE MOUND CAMPUS. THIS IS A SIMILAR USE, EXCEPT FOR THE PUBLIC.
MEDICAL OFFICE: PHYSICIAN OFFICES FOR EXAM - NOT AMBULATORY CARE OR HOSPITAL FUNCTIONS

3. **Does the proposed activity violate any of the following restricted uses described in quitclaim deeds and the Environmental Covenant? Yes ☐ No ☒**
   - Will not use, or allow the use of, the Premises for any residential or farming activities, or any other activities which could result in the chronic exposure of children under eighteen years of age to soil or groundwater from the Premises. Restricted uses shall include, but not be limited to:
     1) single or multifamily dwellings or rental units;
     2) day care facilities;
     3) schools or other educational facilities for children under eighteen years of age;
     4) community centers, playgrounds, or other recreational or religious facilities for children under eighteen years of age
   - Will not extract, consume, expose, or use in any way the groundwater underlying the premises without the prior written approval of the EPA and the Ohio EPA.
   - Will not remove soil from the property except for exempted area in northeast corner Parcel H. without the prior written approval of the EPA and the Ohio EPA.

4. **Is this a short-term or permanent activity? If short term, what duration do you anticipate? Specific date(s)?** PERMANENT ACTIVITY.

5. **When do you wish to begin this activity?** AS SOON AS WE WOULD FIND TENANTS FOR USES DESCRIBED. COULD BE WITHIN A FEW MONTHS.

6. **What ages of individuals would participate in this activity?** TYPICALLY ADULTS, THE RESTAURANT & CONFERENCE CENTER MAY HAVE CHILDREN BUT THIS WOULD BE FOR SHORT PERIODS OF TIME ON A LIMITED BASIS. NOT A "CHRONIC EXPOSURE".

7. **Estimate an average duration of time on site that these individuals participate in this activity? (hours per day x number of days per year; or hours per month; or total hours per year)**
CONF. CENTER: 3-4 HRS. PER DAY (TYPICALLY 1 TIME EVENT)
RESTAURANT: 1-2 HRS MAYBE 6 TIMES PER YEAR. MEDICAL OFFICE WOULD BE SIMILAR TO RESTAURANT

8. **Does a risk assessment need to be performed? Attach a copy.**
NOT REQUIRED BY OUR COMPANY.

FOR REGULATOR USE ONLY

1. **What is the basis for approval/disapproval?**

2. **What actions, precautions, notifications (if any) are required to mitigate risk?**

Approvals:

Print name	Signature	Date
Syed Quadri	SYED QUADRI Digitally signed by SYED QUADRI Date: 2022.03.28 10:52:14 -05'00'	3/28/22

U.S. Environmental Protection Agency Representative

Print name	Signature	Date
Scott Glum	Scott Glum Digitally signed by Scott Glum Date: 2022.03.16 16:55:31 -04'00'	3/16/22

Ohio Environmental Protection Agency Representative

Concurrence:

Print name	Signature	Date
Tiffany Drake	Tiffany L. Drake Digitally signed by Tiffany L. Drake Date: 2022.03.16 15:41:47 -05'00'	3/16/22

U.S. Department of Energy Representative

Mound Core Team Evaluation of Proposed New Site Uses
Pinnacle Architects (Former OSE Building)

Pinnacle Architects, the owner of the former OSE Building, requested that the following uses be allowed on the property:

- Conference center – special event venue with catered food and drink
- Restaurant – sale of food to the public with cafeteria and dining room
- Medical office – physician offices for routine medical services

The property owner completed the required "*Request for Regulatory Approval of New Site Activity*" form for the Core Team to review. The property owner included the required information that identified typical ages of visitors and employees and time that would be spent at the location (i.e., duration of potential exposure). The form is included as Attachment A.

For the evaluation of the Pinnacle Architects request, LM reviewed a risk evaluation that was performed in 2014 for applicability to the Pinnacle Architects request. The previous use requests that received approval in 2014 were for specific, limited activities that included the following:

- science fair (middle school to adult, annual event),
- outdoor summer worker (high school to adult, seasonal exposure), and
- walker/jogger (toddler to adult, exposure throughout the year)

The 2014 evaluation did not include a new risk assessment; rather the exposure assumptions from the Parcels 6, 7 & 8 Residual Risk Evaluation (RRE) were used as a starting point to evaluate the exposure for the proposed activities or uses. The two exposure scenarios defined under the Mound 2000 approach of office worker and construction worker were used to build the activity-based risk scenarios. The officer worker and construction worker scenarios are based on adult exposures, where an adult is defined as older than 18 years, during reasonably expected work conditions of a 40-hour work week. Under the Mound 2000 approach, no consideration was given to exposures for children under the age of 18. The 2014 evaluations extrapolated the RRE exposure assumptions to include child exposure scenarios for the activities listed above. The analysis determined that the proposed activities did not exceed the permitted exposure limits and did not result in unsafe exposures to participants. The Mound Core Team approved these 3 uses and a summary of the 2014 risk evaluation is included as Attachment B.

For the Pinnacle Architects request, the office worker and construction worker scenarios were again used as starting point. The LM Contractor risk assessment SME involved in the 2014 evaluation also evaluated the Pinnacle Architect's request and determined that the proposed land uses along with the proposed bounding conditions (if followed by property owner, tenants, or visitors) would not result in unsafe exposures for either visitors or employees under either scenario. It was decided that the employees at the proposed facilities match the office worker scenario, noting that this scenario was based on a 40-hour work week. If an employee of 16 or

17 years old was hired, per EPA guidance there is no age adjustment factor for a child 16 years old or over; therefore, exposure would be same as an adult employee.

Visitors for any of these businesses include both adults and children. The estimated duration for visits to these businesses was estimated to be 12 hours per year on site, which is conservative when using the estimated durations provided by Pinnacle Architects. The 2014 science fair scenario or walker-jogger scenarios, which assumed 16 hours/year and 175 hours/year, respectively, where both only a small fraction of the permitted exposure. Therefore, it was concluded that visitors to these proposed businesses, would be well below the permitted exposures.

The evaluation of the Pinnacle Architects request concludes that the proposed activity uses along with the proposed bounding conditions provided in the request (and if followed by property owner, tenants, or visitors) would not result in unsafe exposures for either employees over the age of 16 years or adult or child visitors.

Department of Energy
Washington, DC 20585

October 16, 2025

Via email: aprilh@mound.com

April Hauser
Executive Director
Mound Development Corporation
965 Capstone Drive, Suite 418
Miamisburg, OH 45342

Subject: Response to Mound Site, Miamisburg, Ohio *Request for Regulatory Approval of New Site Activity*

Ms. Hauser:

This letter is in response to Mound Development Corporation's two separate "*Request for Regulatory Approval of New Site Activity*" forms (MDC requests) for two new proposed activities on two separate locations within the boundaries of the former Mound Site in Miamisburg, Ohio. These two activities include:

i) Behind-the-wheel driving with an instructor in the large lower parking lot at the site;
ii) Classroom instruction for 24 hours of driver's training at the Mound Central Operations Support (COS) building

In accordance with the site's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents and following a review of the proposed uses in comparison to previous residual risk evaluations, the Mound Site Core Team, consisting of members of the Department of Energy Office of Legacy Management (LM), Environmental Protection Agency (EPA) and Ohio Environmental Protection Agency (OEPA), have completed the enclosed review of the MDC requests.

The Mound Site Core Team approves both of these requests. LM, in consultation with EPA and Ohio EPA, concluded that the proposed activity uses along with the proposed bounding conditions provided in the MDC request (and if followed by property owner, tenants, or site visitors) would not result in unsafe exposures for participants in the behind-the-wheel driving and classroom instructions for ages 15.5 years or older.

It is important to understand that this approval only applies to the activities specified in the above referenced requests that are proposed in the large lower parking lot and the COS Building. Additionally, this approval does not state nor imply a blanket approval for other new activities on the parking lot or in the COS Building or any other buildings within the former Mound site's boundaries.

This decision has been made in accordance with CERCLA requirements only and is independent of any state or local ordinances or zoning actions, as the U.S. government has no control over such activities. The requestor is responsible for any other state, or

local business requirements. The regulators have agreed that this requested land use is protective of human health and environment as defined in approved CERCLA documents.

This letter and its attachments serve as notification to the affected parties including MDC as the property owner and the City of Miamisburg. Property owners are responsible for notifying their tenants.

Please contact me at (636) 485-0036 or tiffany.drake@lm.doe.gov, if you have any questions. Please send any correspondence to:

U.S. Department of Energy
Office of Legacy Management
99 Research Park Road
Morgantown, WV 26505

Sincerely,

TIFFANY DRAKE

Digitally signed by TIFFANY DRAKE
Date: 2025.10.16 12:39:11 -04'00'

Tiffany Drake, PE
Mound Site Manager

Enclosure

cc via email w/enclosure:
Nicole Goers, EPA
Scott Glum, Ohio EPA
Shannon Dettmer, Ohio DHS
Chris Fine, City of Miamisburg
Andrew Rodney, City of Miamisburg
Cliff Carpenter, DOE-LM
Katherine Chester, DOE-LM
Kate Whysner, DOE-LM
Brett Zank, DOE-LM
Becky Cato, RSI
Julie Fero, RSI
Jodi Keller, RSI
Alex Lamore, RSI
Greg Lupton, RSI
Ann Wei, RSI
FOLD/20/208

Mound Core Team Evaluation of Proposed New Site Uses: Parcel H Parking Lot and COS Building

The Mound Core Team, which is comprised of representatives from the U.S. Environmental Protection Agency (EPA), Ohio Environmental Protection Agency (Ohio EPA), and U.S. Department of Energy (DOE) created the "Request for Regulatory Approval of New Site Activity" form that allows property owners or lessees at the Mound site to provide detail that will assist with the evaluation of a site use or activity not specifically prohibited by the Records of Decision (ROD) or generally covered by the institutional controls (IC) at the site. This evaluation process allows for a more consistent approach for review of special use requests. The focus of the evaluation is whether the requested use would result in unacceptable exposures to the public or the environment. It should be noted that the Residual Risk Evaluations (RRE) performed for each area of the site focused on exposures to adults (i.e., 18 years or older). This specific evaluation focused on the potential of unacceptable exposure of participates less than 18 years old. The training instructors and other employees fit the site employee scenario and therefore do not require additional risk evaluation.

Mound Development Corporation (MDC) is leasing the lower parking lot in Parcel H and conference room space in Central Operations Support (COS) Building to Professional Driving Systems (PDS) and has requested that the following uses be allowed on the property:

- Classroom instruction in the COS Training Room
- Driving instruction on the Parcel H lower parking lot
- Enrollment of students from 15½ years old to adult

The property owner completed the required "*Request for Regulatory Approval of New Site Activity*" forms for the Core Team to review and the forms are included in Attachment A. The property owner included the required information that identified typical ages of students and employees and time that would be spent at the location (i.e., duration of potential exposure) and is summarized below:

- Classroom instruction – 24-hour session (once); student ages are 15½ to adult
- Driving instruction – 2-hour session (once); student ages are 15½ to adult

For the evaluation, DOE reviewed a risk evaluation that was performed in 2014 for applicability to the MDC/PDS request. The use request was for specific, limited activities that included the following:

- science fair (middle school to adult, annual event),
- outdoor summer worker (high school to adult, seasonal exposure), and
- walker/jogger (toddler to adult, exposure throughout the year)

Another special use request was approved in 2021 but was not used as part of this evaluation because the requested uses were for specific long-term business activities.

The 2014 evaluation did not include new risk assessments; rather the exposure assumptions from RRE were used as a starting point to evaluate the exposure (to contaminated soil) for the proposed activities or uses. The two exposure scenarios evaluated in the RREs of (1) Site Employee and (2) Construction Worker were used to build the activity-based risk scenarios for future evaluations. The site employee and construction worker scenarios are based on adult exposures, where an adult is defined as older than 18 years, during reasonably expected work conditions of a 40-hour work week. It should be noted that no consideration was given to exposures for children under the age of 18 in either the site employee or construction worker exposure scenarios. The 2014 evaluations extrapolated the RRE exposure assumptions to include child exposure scenarios. It was noted in the 2014 evaluation that per EPA guidance there is no age adjustment factor for a child 16 years old or over; therefore, exposure would be same as an adult. The age adjustment factor for children between 2 and 16 years is 3 times that of an adult. The activity-based risk scenarios and method for their development is presented in Attachment B.

For the MDC/PDS request, the approach developed for previous requests was used for this evaluation (Attachment B). Of most interest was the evaluation of the risk to participants less than 18 years old as the ICs state that any use or activity cannot result in a chronic exposure (i.e., repeated, long term exposure) of children under the age of 18 years of age to soil or groundwater. The following information was used to evaluate the two requested uses:

Classroom instruction (COS Building/Parcel 8):

- Length of time: several sessions / 24 hours total
- Participants: 15½ years old to adult
- Frequency of occurrence: one time
- Exposure type: indoors
- Evaluation: based on the Site Employee scenario that has a permissible indoor exposure period of 6250 8-hour days (50,000 hrs), one-time participation equates to 0.048% of the permitted exposure for participants 16 years and over. For participants that are under 16 years of age, one-time participation equates to 0.144% of the permitted exposure.

Driving instruction (Parcel H)

- Length of time: 2 hours
- Participants: 15½ years old to adult
- Frequency of occurrence: one time
- Exposure type: outdoors
- Evaluation: based on Construction Worker scenario that has a permissible outdoor exposure of 1250 8-hour days (10,000 hrs), one-time participation equates to 0.02% of the permitted exposure for participants 16 years and over. For participants that are under 16 years of age, one-time participation equates to 0.06% of the permitted exposure.

The RRE results for the two areas where these activities will occur are summarized in Tables 1 and 2.

Table1. Parcel 8 (COS Building) – Site Employee Residual Risk (from soil)

	Total Risk	Background Risk	Incremental Risk
Cancer Effects	2.6 x 10-5	9.0 x 10-9	2.6 x 10-5
Non-Cancer Effects	1.8 x 10-10	0	1.8 x 10-10

Source: DOE 2007, Tables 5.16 through 5.18

Table 2. Parcel H (parking lot) – Construction Worker Residual Risk (from soil)

	Total Risk	Background Risk	Incremental Risk
Cancer Effects	6.5 x 10-5	4.5 x 10-9	2.0 x 10-5
Non-Cancer Effects	1.7 x 10-1	1.3 x 10-1	4.0 x 10-2

Source: DOE 1997, Tables V.7 through V.9

The RREs do not include exposures associated with working inside a building. The building data packages (BDP) prepared for each remaining building outline any residual risks or unsafe conditions (i.e., presence of asbestos, lead-based paint, mercury, PCBs, hazardous products, etc.) associated with working inside structures that were released for reuse. The COS Building consists of four floors, a basement level, and a penthouse. It was originally constructed for production support for weapons components, including explosives laboratories, a standards laboratory, and a robotics laboratory. No radiological work was performed in the COS Building. After thorough review of the environmental data and the BDP, the Core Team agreed that all existing environmental issues associated with the COS Building were resolved, as documented in the COS BDP (DOE 2001). Future use of the COS Building is restricted to commercial or industrial use.

In 1996, DOE allowed for a “transfer-in-place” of specific personal property located in the COS Building to Miamisburg Mound Community Improvement Corporation (predecessor to MDC). The DOE contractor conducted high-risk review of the subject property, and some of the property was found to have been exposed to energetic materials and may have still contained some energetic material contamination as a result of its previous use. Since MMCIC and its customers were willing to accept this leased property in its current condition, the DOE contractor was exempted from having to perform additional cleaning of energetic materials from the listed property (DOE 2001, Appendix P).

Students for the driving instruction include students ranging in age from 15½ years old to adult. The estimated total duration for driver training calls is estimated to be 26 hours per year on site (24 hours classroom/2 hours driving instruction) and will not result in a chronic exposure to soil. Also, the estimated total duration is conservative and only a small fraction of the permitted exposure for Site Employee and Construction Worker scenarios. The classroom instruction will not result in an unsafe exposure. It should be noted that equipment may still be present within the COS Building that could have energetic material contamination. Its location should be verified as not being within the classroom area. Provided the equipment is not located within the classroom area, it was determined that students attending the PDS instruction class, would be well below the permitted exposures.

The evaluation of the MDC/PDS request concludes that the proposed activity uses along with the proposed bounding conditions provided in the request (and if followed by property owner, tenants, or students) would not result in unacceptable (i.e., chronic or unsafe) exposures for students under the age of 16 years, students under the age of 18, or adult students, provided equipment that identified as having energetic materials contamination are not located within the classroom area. It should be noted that the training instructors and other employees fit the site employee scenario, noting that this scenario was based on a 40-hour work week. The requested exposures are by far lower than those used in the residual risk evaluation . The time on site is very low and exposures either with the classroom and limited exposure while on the driving course are low.

References:

DOE 1997. *Residual Risk Evaluation – Release Block H*, Revision 0, Final, prepared by EG&G Mound Applied Technologies for the U.S. Department of Energy, Miamisburg Environmental Management Project, August.

DOE 2001. *Mound Plant Building Data Package for the COS Building*, Final, prepared by BWX Technologies, Inc for the U.S, Department of Energy, Miamisburg Environmental Management Project, January.

DOE 2007. *Miamisburg Closure Project, Parcel 6, 7, and 8 Residual Risk Evaluation*, prepared by CH2M Hill, Mound Inc. for the U.S. Department of Energy Ohio Field Office, September.

Attachment A

“Request for Regulatory Approval of New Site Activity” Forms

Mound Site, Miamisburg, Ohio
Request for Regulatory Approval of New Site Activity

This is a formal request to the U.S. Department of Energy (DOE), the Environmental Protection Agency (EPA) and the Ohio EPA to provide written approval of an activity not generally covered by the institutional controls at the Mound Site. The institutional controls are part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedies established in the Records of Decision for the Mound Site.

The Mound site institutional controls run with the land in the form of restrictions and covenants in quitclaim deeds or activity and use limitations in the Environmental Covenant: See the *Operations and Maintenance (O&M) Plan for the U.S. Department of Energy Mound Site, Miamisburg, Ohio,* for details on records of decision.

- Maintenance of industrial or commercial land use and prohibition against residential land use.
- Prohibition against the use of groundwater without prior written approval from EPA and Ohio EPA.
- Prohibition against the removal of soil from within the site boundary (as of 1998) to offsite locations without prior written approval from EPA, Ohio EPA, and ODH.
- Prohibition against the removal of concrete floor material in specified rooms of T Building to offsite locations without prior written approval from EPA, Ohio EPA, and ODH.
- Prohibition against the penetration of concrete floors in specified rooms of T Building locations without prior written approval from EPA, Ohio EPA, and ODH.
- Allowing site access for federal and state agencies for the purpose of sampling and monitoring.

Submitting Organization: Mound Development Corporation
Sponsoring Organization:
Date Submitted: September 4, 2025

1. The proposed activity:

In classroom instruction for Drivers Training at Mound COS building

2. Describe the proposed site activity. (Add supplemental documentation to this form if required)

In classroom instruction for Drivers Training at Mound COS building

3. **Does the proposed activity violate any of the following restricted uses described in quitclaim deeds and the Environmental Covenant? (Note: Environmental Covenant is applicable only to Parcel 9 – see attached figure)** Yes☒ No ☐

- Will not use, or allow the use of, the Premises for any residential or farming activities, or any other activities which could result in the chronic exposure of children under eighteen years of age to soil or groundwater from the Premises. Restricted uses shall include, but not be limited to:
  1) single or multifamily dwellings or rental units;
  2) day care facilities;
  3) schools or other educational facilities for children under eighteen years of age;
  4) community centers, playgrounds, or other recreational or religious facilities for children under eighteen years of age
- Will not extract, consume, expose, or use in any way the groundwater underlying the premises without the prior written approval of the EPA and the Ohio EPA.
- Will not remove soil from the property except for exempted area in northeast corner Parcel H. without the prior written approval of the EPA and the Ohio EPA.

4. Is this a short-term or permanent activity? If short term, what duration do you anticipate? Specific date(s)?

This would be short term for participants. In class instruction would be limited to 24 hours of class time per student, unless otherwise requested by court order or additional instruction needed (rare).

5. When do you wish to begin this activity?

As soon as possible, however pro-active in request

6. What ages of individuals would participate in this activity?

15.5 Years of age through Adult

7. Estimate an average duration of time on site that these individuals participate in this activity? (hours per day x number of days per year; or hours per month; or total hours per year)

The average normal amount of time in the building in class would be 24 hours in total. That can be spread out by days or weeks but the total time remains the same.

FOR REGULATOR USE ONLY

1. What is the basis for approval/disapproval?

2. What actions, precautions, notifications (if any) are required to mitigate risk?

3. Does a risk assessment need to be performed by DOE? Attach a copy.

Approvals: NICOLE GOERS Digitally signed by NICOLE GOERS Date: 2025.10.09 12:12:48 -05'00'

Print name | Signature | Date

U.S. Environmental Protection Agency Representative

Scott Glum Digitally signed by Scott Glum Date: 2025.10.14 15:52:31 -04'00'

Print name | Signature | Date

Ohio Environmental Protection Agency Representative

Concurrence: TIFFANY DRAKE Digitally signed by TIFFANY DRAKE Date: 2025.10.15 12:21:44 -04'00'

Print name | Signature | Date

U.S. Department of Energy Representative

Mound Site, Miamisburg, Ohio
Request for Regulatory Approval of New Site Activity

This is a formal request to the U.S. Department of Energy (DOE), the Environmental Protection Agency (EPA) and the Ohio EPA to provide written approval of an activity not generally covered by the institutional controls at the Mound Site. The institutional controls are part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedies established in the Records of Decision for the Mound Site.

The Mound site institutional controls run with the land in the form of restrictions and covenants in quitclaim deeds or activity and use limitations in the Environmental Covenant: See the *Operations and Maintenance (O&M) Plan for the U.S. Department of Energy Mound Site, Miamisburg, Ohio,* for details on records of decision.

- Maintenance of industrial or commercial land use and prohibition against residential land use.
- Prohibition against the use of groundwater without prior written approval from EPA and Ohio EPA.
- Prohibition against the removal of soil from within the site boundary (as of 1998) to offsite locations without prior written approval from EPA, Ohio EPA, and ODH.
- Prohibition against the removal of concrete floor material in specified rooms of T Building to offsite locations without prior written approval from EPA, Ohio EPA, and ODH.
- Prohibition against the penetration of concrete floors in specified rooms of T Building locations without prior written approval from EPA, Ohio EPA, and ODH.
- Allowing site access for federal and state agencies for the purpose of sampling and monitoring.

Submitting Organization: Mound Development Corporation
Sponsoring Organization:
Date Submitted: August 25, 2025

1. The proposed activity:

PDS Driving School- Large lower lot for driver training.
Ohio law requires 8 hours of behind the wheel driving with an instructor. This lot would likely be used for about 1-2 hours of this time. There should be minimal time out of car, if only to look at cones, arrival and departure.

2. Describe the proposed site activity. (Add supplemental documentation to this form if required)

PDS will use the site for driving training as required by state law for ages 15.5-Adult. This lot specific to skid training, manuvare ability and basic concepts. Max use for one (under 18) person would be up to 2 hours. Most will be limited to about an hour. Adult classes for police and other responders is longer.

3. **Does the proposed activity violate any of the following restricted uses described in quitclaim deeds and the Environmental Covenant? (Note: Environmental Covenant is applicable only to Parcel 9 – see attached figure) Yes ☐ No ☑**

- Will not use, or allow the use of, the Premises for any residential or farming activities, or any other activities which could result in the chronic exposure of children under eighteen years of age to soil or groundwater from the Premises. Restricted uses shall include, but not be limited to:
  1) single or multifamily dwellings or rental units;
  2) day care facilities;
  3) schools or other educational facilities for children under eighteen years of age;
  4) community centers, playgrounds, or other recreational or religious facilities for children under eighteen years of age
- Will not extract, consume, expose, or use in any way the groundwater underlying the premises without the prior written approval of the EPA and the Ohio EPA.
- Will not remove soil from the property except for exempted area in northeast corner Parcel H. without the prior written approval of the EPA and the Ohio EPA.

4. Is this a short-term or permanent activity? If short term, what duration do you anticipate? Specific date(s)?

Yes, as it shall not usually be repeated. Only if court ordered additional training is needed.

5. When do you wish to begin this activity?

Sept. 1, 2025

6. What ages of individuals would participate in this activity?

15.5 - adult

7. Estimate an average duration of time on site that these individuals participate in this activity? (hours per day x number of days per year; or hours per month; or total hours per year)

Approx: 2 hours a year, if just visiting the site for this only...

FOR REGULATOR USE ONLY

1. What is the basis for approval/disapproval?

2. What actions, precautions, notifications (if any) are required to mitigate risk?

3. Does a risk assessment need to be performed by DOE? Attach a copy.

Approvals: NICOLE GOERS Digitally signed by NICOLE GOERS Date: 2025.10.09 12:11:10 -05'00'

Print name | Signature | Date

U.S. Environmental Protection Agency Representative

Scott Glum Digitally signed by Scott Glum Date: 2025.10.14 15:56:16 -04'00'

Print name | Signature | Date

Ohio Environmental Protection Agency Representative

Concurrence: TIFFANY DRAKE Digitally signed by TIFFANY DRAKE Date: 2025.10.15 12:20:02 -04'00'

Print name | Signature | Date

U.S. Department of Energy Representative

Attachment B

Mound Core Team Evaluation of Proposed New Site Uses: MDC Outreach Activities (2014)

Mound Site risk overview based on Parcel 6, 7, and 8 Residual Risk Evaluation (RRE) Assumptions[1]

Purpose: Use existing approved residual risk assessment assumptions as a starting point to evaluate other exposure scenarios.

Construction worker:

- Outdoors
- 8 hrs/day, 250 days/yr for 5 yrs (total of 1250 days or 10,000 hours exposure)
- Soil ingestion rate of 480 mg/day
- Adult exposure parameters

Indoor site worker:

- Primarily indoors
- 8 hrs/day, 250 days/yr for 25 yrs (total of 6250 days or 50,000 hours exposure)
- Includes soil ingestion rate of 50 mg/day
- Adult exposure parameters

RRE Results

- Maximum carcinogenic risk for a given parcel is 3.5×10^{-5} total (including background; maximum acceptable risk is 1×10^{-4}); average incremental risk (excluding background) for overall site is about 1×10^{-5} (see table 1)
- Maximum Hazard Index (HI) for noncarcinogens is 0.18 (acceptable HI = 1)

Possible approach for evaluating future activities

- Use construction worker exposures to evaluate outdoor activities and indoor site worker exposures for indoor activities
- Use 1250 days and 6250 days as rough gauge of "acceptable" exposures (in addition to being a current or future site worker) for outdoor and indoor exposures, respectively
- Note that risks are directly proportional to exposures—doubling exposure frequency doubles the risk

Considerations

- Very conservative assumption are used for the soil ingestion rate for a construction worker (even compared to rates for children)—this assumption will not underestimate child ingestion rates—note that study used as for basis of this rate is not even cited in EPA's latest Exposure Factors Handbook; 100 mg/day soil ingestion rate is recommended instead (consistent with National Council on Radiation Protection for construction worker)
- Uses only adult body weight, respiration rate, etc. –can use recommended EPA age-adjustments for <16 yrs (see example)

[1] (Developed under the guidance of the *Mound 2000 Residual Risk Evaluation Methodology,* January 6,1997 Final, Revision 0. ER Program, Mound Plant)

- Exposure point concentrations use either maximum or UCL 95 of the mean for all constituents included (whichever is lower)—likely overestimates exposure to residual contamination
- Exposure received by a construction worker in an open excavation would likely be significantly higher than casual site users due to shielding and dust suppression provided by sidewalks, pavement, vegetation, buildings, etc.; RRE assumes no cover on residual soils
- Release Block H had total risk of 6.5×10^{-5}; Phase 1 had total risks of 5.1×10^{-5}
- EPA's upper percentile recommendation for ingestion of soil by children is 200 mg/d (EPA 2011)

Examples

Science Fair:

- Length of time: 2 days, 16 hours
- Participants: Middle school to adults
- Frequency of occurrence: Annual at most
- Exposure type: indoor
- Evaluation: based on permissible indoor exposures of 6250 days, one-time participation equates to 0.032% of permitted exposure; participation annually for 6 years equates to 0.19%

Outdoor Summer Worker:

- Length of time: 1 day/week, 6 months per year (26 days, 208 hours)
- Participants: High school age to adult
- Frequency: annual for 1 to 4 years (assumes summer job for student)
- Exposure type: Outdoor
- Evaluation: based on permissible outdoor exposure of 1250 days, one year exposure equates to 2.08% of permitted exposure; participation annually for 4 years equates to 8.32%

Jogger/Walker

- Length of time: 1 hour/event; ½ hour spent on site
- Participants: toddler to adult
- Frequency: could be occasional to daily over many years
- Exposure type: outdoor
- Evaluation: based on permissible outdoor exposures of 1250 days (or 10,000 hours); ½ hour/day for one year (350 days) would equate to 175 hours or 1.75% of permitted exposure; permitted exposure "cap" would be reached in 57 years; 18 years of exposure would equate to 31.5% of permitted exposure
- Exposures are probably overestimated for this example; could use more realistic numbers based on EPA's exposure factors handbook if this land use was actually being considered for the site

Jogger/Walker—Age adjusted

- 1 hr/event; ½ hour spent on site
- Toddler to adult
- Age adjustment factors from EPA (2005):
  0 – 2 yrs = 10-fold
  2 - <16 yrs (14-yr interval) = 3-fold
  >16 yrs = no adjustment

Exposure occurs for ½ hr/day for 350 days/yr (1.75% of permitted exposure per year)

For 0 to 2 yrs exposure: 1.75% x 10-fold adjustment = 17.5% of permitted exposure per year
For 2 – 16 year age interval: 1.75% x 3-fold adjustment = 5.25% of permitted exposure per year (would achieve 73.5% of exposure for entire 14-year period)

Table 1. Mound REE risk summary—Construction worker scenario

Parcel	**Incremental Risk—Oral**	**Incremental Risk—External**
Parcel 6	9.3 E-06	4.4E-06
Parcel 7	1.4 E-05	6.8 E-06
Parcel 8	1.0 E-05	1.0 E-05
Average	1.1 E-05 (1/4 = 2.7 E-06)[a]	7.1 E-06

[a]This would equate to the risk associated with a more reasonable amount of soil ingestion than assumed in the RRE (120 mg/d)

The results above indicate that based on the two dominant pathways, average risk associated with the site is about 1 x 10^{-5}

Residential Occupancy Periods (years at same location; from EPA 2011 Exposure Factors Handbook)

50th %ile 11.7 years
75th %ile 16 years
90th %ile 26 years

[Note: At the Fernald site, it was assumed that the maximum period of exposure to the site would be 30 years based on likely occupancy periods.]

Appendix E

Mound Business (MB-1) to
Special Development District (SDD-3)

ORDINANCE NO. 7006

AN ORDINANCE TO AMEND THE OFFICIAL ZONING MAP TO REZONE THE PROPERTY AT 945 CAPSTONE DRIVE (CITY LOT #8058) FROM MOUND BUSINESS (MB-1) TO SPECIAL DEVELOPMENT DISTRICT (SDD-3), AND TO APPROVE THE COMPANION DEVELOPMENT GUIDELINES REPORT, PRELIMINARY DEVELOPMENT PLAN, AND FINAL DEVELOPMENT PLAN.

WHEREAS, an Agent of the Owner of City Lot #8058 filed an application with the City of Miamisburg Development Department to rezone the subject parcel from Mound Business (MB-1) to Special Development District (SDD-3); and

WHEREAS, the subject property, due to its distinctive history and construction, is uniquely difficult to re-utilize or redevelop for commercial or industrial purposes in accordance with the rules and regulations governing the Mound Business Park; and

WHEREAS, establishing the SDD-3 district will allow the Owner to make beneficial use of the property which would otherwise be unlikely under the MB-1 zoning designation; and

WHEREAS, the City of Miamisburg Planning Commission reviewed the requested rezoning in accordance with the provisions set forth in the City Charter and the Planning and Zoning Code; and

WHEREAS, the City of Miamisburg Planning Commission found the proposed rezoning and accompanying reports and plans to be consistent with the requirements and standards of the Planning and Zoning Code, and meets the intent of the City of Miamisburg Comprehensive Plan, and therefore recommends their adoption; and

WHEREAS, City Council reviewed the case material and concurred with the Planning Commission's recommendation.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF MIAMISBURG, STATE OF OHIO, TWO-THIRDS OF THE ELECTED MEMBERS THERETO CONCURRING THAT:

Section 1.

The Development Guidelines Report as shown in "Exhibit A", attached hereto, is hereby approved.

Section 2.

Due to the unique nature of the building and site, no exterior improvements of significance are proposed. Therefore, neither a Preliminary nor a Final Development Plan is required at this time. If exterior improvements of significance are proposed in the future, the Special Development District regulations shall be amended as required by the Planning and Zoning Code.

Section 3.

The Zoning Map is subsequently amended, attached to, and made a part of Ordinance No. 2712 is hereby amended, per Exhibit B, to reflect the foregoing rezoning classification contained herein and the City Manager is authorized and directed to cause said rezoning to be reflected on the Zoning Map.

Section 4.

This measure shall take effect and be in full force from and after the earliest period allowed by law.

Passed: March 21, 2023 Attested: [redacted]
Kim Combs, Clerk of Council

Approved: [redacted]
Michelle L. Collins, Mayor

EXHIBIT A

DEVELOPMENT GUIDELINES REPORT

Special Development District 3 (SDD-3)
Development Guidelines Report

945 Capstone Drive (aka T-Building)
January 2023

SECTION 1 - DESCRIPTION OF THE SITE AND INTENT:

Parcels Included.

The propose rezoning encompasses 4.26 acres located at 945 Capstone Drive, further identified as City Lot #8058 and County Parcel ID #K46 00501 0019.

Ownership of Site.

The Parcel Owner according to the Montgomery County Auditor is Patriot Communications, LLC with a mailing address of 965 Capstone Drive, Miamisburg, OH 45342.

Justification for Special Development District Designation.

The subject property, known as the Technical Building (aka T-Building), was the former site for enrichment of Polonium-210 needed in the manufacture of the initiators for nuclear weapons. Production of Polonium-210 at the T-Building began in 1947 and continued until 1975. The justification for a Special Development District is the unique architecture of the building. The structure is entirely subterranean, with no infrastructure on the surface except for the ventilation shafts visible above ground. The building walls are 16 feet thick, with 8-foot-thick floors, and three heavy blast doors protecting entrances to the interior vehicle tunnel. It was built to withstand the most powerful conventional weapon in the U.S. arsenal at the time: a 2,000 lb. semi-armor piercing jet-assisted torpedo. All waste liquids are pumped to the surface and ventilation is provided via air shafts and dual 200 ft. exhaust stacks. Due to its unique construction and the costs involved in maintaining the heating and ventilation systems, the building has extremely limited use for private commercial or industrial activity.

Intent.

The intent of this Special Development District is to allow the Owner to conduct specialized automotive manufacturing and storage within the building. It is believed these uses can co-exist with the uses permitted elsewhere on the Mound property. Furthermore, all activity related to the proposed uses would occur completely within the T-Building, thus having little to no impact on adjacent land uses and property owners. These uses are not permitted under the current MB-1, Mound Business, zoning classification.

Refer to Exhibit 1 – Building Floor Plans – attached to this Special Development District document and incorporated herein for the Floor Plan of the existing building.

SECTION 2 - DEVELOPMENT GUIDELINES.

The development of the site shall be in conformance with the following standards and guidelines:

A) Definitions: In addition to the General Provisions and Definitions found in Chapter 1230 of the Miamisburg Zoning Code, the following definitions shall apply to this Special Development District.

(1) AFTER-MARKET CUSTOM VEHICLE MANUFACTURING AND RE-CONDITIONING: The process of designing, re-conditioning, and manufacturing a unique, one-of-a-kind vehicle using after-market and custom parts and materials.

(2) LONG-TERM SECURE VEHICLE STORAGE, INTERNAL ONLY: The long-term storage of private vehicles within a secured building.

B) Uses:

(1) Permitted Uses. The following uses are permitted on the site:
A. After-Market Custom Vehicle Manufacturing and Re-Conditioning.
B. Long-term Secure Vehicle Storage, Internal Only.
C. All generally permitted uses in the MB-1 zoning district.

(2) Special Uses. The following special uses are subject to review in accordance with Chapters 1294 and 1296 of the Planning and Zoning Code:
A. All special uses in the MB-1 zoning district.

(3) Accessory Uses. The following accessory uses are permitted on the site:
A. Any accessory use customary to a Permitted Use provided it occurs wholly within the building.

(4) Prohibited Uses. The following uses are prohibited:
A. All prohibited uses in the MB-1 zoning district, except for those expressly permitted as noted above.

C) Specific Requirements:

(1) Outside storage of vehicles or materials of any kind for any reason, other than customary parking for employees, visitors, and customers, is prohibited.

(2) Deliveries by semi-trailer or similar vehicle are prohibited.

(3) Deliveries of vehicles, parts, or other materials shall not obstruct the normal flow of traffic on any public street, nor access to any parking lot from any public street.

(4) Noise, fumes, vibrations, pollution, or any other negative externality shall not be readily perceptible beyond the property boundaries. Any such readily detectible negative externality shall cease immediately upon notification by the City of Miamisburg.

(5) Detached accessory buildings or structures of any kind are prohibited.

D) All Other Requirements:

As required under MB-1 zoning and the rules and regulations of the Miamisburg Zoning Code and all other applicable codes and ordinances.

Exhibit Summary:
Exhibit 1 – Building Floor Plans

RECOMMENDATION OF THE PLANNING COMMISSION

January 24, 2023

Scott Thomae
14481 Anthony Road
Germantown, OH 45327

Cold War Customs
945 Capstone Drive
Miamisburg, OH 45342

RE: Case RZ-01-2023, Zoning Map Amendment @ 945 Capstone Drive

Greetings,

Please accept this letter as Official Notice of a recommendation in Case RZ-01-2023. On Monday, January 23, 2023, the Planning Commission, by a 5-0 vote, RECOMMENDED APPROVAL of an amendment to the Official Zoning Map to rezone the property located at 945 Capstone Drive (City Lot #8058) from Mound Business (MB-1) to Special Development District (SDD-3), and the companion Development Guidelines Report, Preliminary Development Plan, and Final Development Plan.

The matter will appear on the City Council agenda under New Business on Tuesday, February 21, 2023 at 6:00pm in Council Chambers at 10 N. First Street, Miamisburg, OH 45342. Your attendance at the meeting is requested to answer questions of City Council.

Should you have any questions or concerns, please call (937-847-6536) or email (andrew.rodney@cityofmiamisburg.com).

Sincerely,

[redacted]

Andrew E. Rodney, AICP
City Planner

CC: File

EXHIBIT B

PROPOSED ZONING MAP

Ord. 7006, Proposed Zoning Map

Appendix F

Example Forms

IC Assessment Checklist
and
Mound Site Landowners—Institutional Controls Compliance Form

IC Assessment Checklist of Items Covered by the Annual IC Assessment

Scope: IC Compliance for the Mound, Ohio, Site
Preliminary inspections performed on: <*dates*>
Physical inspection walkdown with regulators, MDC, and city on:
Review led by:
Participants in physical inspection walkdown:
Summary and status of open issues or recommendations from previous annual IC assessment reports, follow-up inspections, Five-Year Reviews, and so on:
Describe major property improvements or physical changes since the previous IC assessment. Buildings demolished or erected, extensive landscaping, road or parking lots constructed or modified, or other.
List personnel interviewed during the physical walkdowns or during review of documentation.
List site use requests for site activities not covered by industrial/commercial use. Include copies of requests and regulators' responses in IC report.
List the city, township, county, and state records reviewed for the period of the review (e.g., street opening permits or construction permits, engineering drawings for improvements to property, aerial photographs, maps, City Planning Commission requests, Ohio Department of Natural Resources well logs). Based on the review of documents and interviews, were property improvements covered by the appropriate approvals? (For example, was construction permit approved by the City of Miamisburg?)
Based on the review of MDC *Comprehensive Reuse Plan Update*, Miamisburg Zoning Map, and Miamisburg Land Use Plan, were any changes made to those documents that affect IC compliance?
List the legal documents reviewed to determine whether ownership had changed (e.g., quitclaim deeds, environmental covenants, property transfer records). If property ownership changed, were the requirements for IC compliance included in the legal documents filed with Montgomery County? Was EPA notified of the property transfer as required in the quitclaim deed? Were there any reported issues relating to access by LM, EPA, Ohio EPA, ODH, their agents, contractors, or employees to property to implement or enforce the ICs?
During Physical Inspections, Was There:
• Evidence of unauthorized soil removal?
• Evidence of unauthorized groundwater use?
• Evidence of land use other than "industrial/commercial" (e.g., residential)?
• Signage and markers in good repair (if applicable)?
• Evidence of tampering on the groundwater monitoring wells or seeps? (Well maintenance is not an IC.)
• Evidence that ICs have not been followed in T Building Special IC areas? See O&M Plan, Appendix B, "T Building Special IC Areas—Core Team Agreement, position paper, and floor plan figure."
Based on Physical Inspections and Records Reviews, Was There Evidence of IC Noncompliance?
Miscellaneous items noted during review or physical walkdown:
Note: Attach copies of completed *Mound Site Landowners – Institutional Control Compliance Forms* and all previous *Site Use Request Forms* and all previous and new decisions on these requests made by the Core Team in each annual IC report.
Recommendations from preliminary inspections:
Recommendations from physical walkdown with regulators:
Conclusion or comments: Checklist prepared by: Date:

Mound Site Landowners—Institutional Controls Compliance Form

The U.S. Department of Energy (DOE) remediated the Mound, Ohio, Site property to the U.S. Environmental Protection Agency's (EPA's) risk-based standards for *industrial/commercial use only*. Because the site is not approved for unlimited use, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedy includes institutional controls (ICs) in the form of use restrictions imposed by DOE quitclaim deeds and an Environmental Covenant.

ICs are administrative and legal controls that help minimize the potential for human exposure to contamination or to protect the integrity of the CERCLA remedy. ICs apply to all property on the Mound site. The Office of Legacy Management is required to monitor for adherence to the ICs to ensure compliance.

Please acknowledge below that you understand and comply with the following ICs for the period of April 1, (previous year), to March 31, (current year). The Mound site ICs are designed to:

1) **Prohibit the removal of soil** from the original DOE Mound Plant Property boundaries, unless prior written approval from EPA, Ohio Environmental Protection Agency (Ohio EPA), and Ohio Department of Health (ODH) has been obtained.
2) **Prohibit the extraction or consumption of, exposure to, or the use in any way of the groundwater** underlying the premises, unless prior written approval from EPA and Ohio EPA has been obtained.
3) **Limit land use to industrial/commercial use only**. The Record of Decision for each parcel identifies land uses that will not be permitted, but the list is not all-inclusive. Parcels may not be used for any residential or farming activities, or any activities that could result in the chronic exposure of children under 18 years of age to soil or groundwater from the premises. Restricted uses include, but are not limited to:
    - Single or multifamily dwellings or rental units.
    - Daycare facilities.
    - Schools or other educational facilities for children under 18 years of age.
    - Community centers, playgrounds, or other recreational or religious facilities for children under 18 years of age.
4) **Prohibit the removal of concrete floor material in specified rooms of the T Building** to offsite locations without prior approval from EPA, Ohio EPA, and ODH.
5) **Prohibit the penetration of concrete floors in specified rooms of the T Building** without prior approval from EPA, Ohio EPA, and ODH.
6) **Allow site access** to federal and state agencies and their contractors for sampling and monitoring.
7) **Prohibit the construction of buildings** in the OU-1 and Parcel 9 area without prior approval from EPA, Ohio EPA, and DOE.

As a property owner or company representative, I understand and comply with these ICs.

Printed Name	Signature	Date

Title	Company

Property Address

Please return the signed form within 15 days via email to: public.affairs@lm.doe.gov.

If you have any questions about the ICs, please contact:
LM Mound Site Manager
U.S. Department of Energy
Office of Legacy Management
(include current contact information)