



**BWX Technologies, Inc.**

a M:Derriott company

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0102050003

**BWXT of Ohio, Inc.**

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P.O. Box 3030  
Miamisburg, Ohio 45343-3030  
(937) 855-4020

ESC-067/01  
April 19, 2001

Mr. Richard B. Provencher, Director  
Miamisburg Environmental Management Project  
U. S. Department of Energy  
P. O. Box 66  
Miamisburg, OH 45343-0066

ATTENTION: Robert S. Rothman

SUBJECT: Contract No. DE-AC24-97OH20044  
**PARCEL 4 CERCLA DOCUMENTS – FINAL**

REFERENCE: Statement of Work Requirement C.7.1e—Regulator Reports

Dear Mr. Provencher:

Rob Rothman of your office has approved the release to USEPA, OEPA, ODH, MMCIC, the administrative record, and the Public Reading Room of the Final version of the following documents for Parcel 4:

Human Health Residual Risk Evaluation (RRE)  
Ecological Risk Evaluation (ERE)  
Record of Decision (ROD)  
Environmental Summary (ES) ✓

If you have any questions regarding the documents, or if additional support is needed, please contact Dave Rakel at extension 4203.

Sincerely,

Jeffrey S. Stapleton  
Manager, Environmental Safeguards & Compliance

JSS/DAR:jdg

cc: Tim Fischer, USEPA, w/attachments (1-RRE, 1-ERE, 5-ROD, 1-ES)  
Brian Nickel, OEPA, w/attachments (1-RRE, 1-ERE, 2-ROD, 1-ES)  
Ruth Vandegrift, ODH, w/attachments (2-RRE, 2-ERE, 2-ROD, 1-ES)  
John Ebersole DOE/OH, w/1 of each attachment  
Torrence Tracey DOE/HQ, w/1 of each attachment  
Monte Williams 1 w/1 of each attachment  
Dann Bird MMCIC w/attachments (2-RRE, 2-ERE, 2-ROD, 1-ES)  
Public Reading Room, w/5 of each attachment  
Administrative Record, w/2 of each attachment  
DCC

3001-0102050003

# Parcel 4

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# Environmental Summary

## CERCLA 120(h) SUMMARY NOTICE OF HAZARDOUS SUBSTANCES

Mound Plant  
Miamisburg, Ohio



FINAL

MARCH 2001



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

MAR 21 2001

REPLY TO THE ATTENTION OF:

SRF-6J

Mr. Richard B. Provencher  
Director  
U.S. Department of Energy  
Miamisburg Environmental Management Project  
P.O. Box 66  
Miamisburg, OH 45343-0066

RE: U.S. DOE Mound Plant  
Parcel 4  
Request for Concurrence to Transfer

Dear Mr. Provencher:

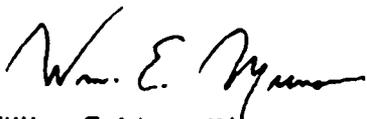
Thank you for your letter dated February 28, 2001, requesting concurrence to transfer Parcel 4 at the United States Department of Energy (U.S. DOE) Mound Plant in Miamisburg, Ohio.

The United States Environmental Protection Agency (US EPA) has reviewed the *Record of Decision for Parcel 4, Mound Plant, Miamisburg, Ohio, Final, March 2001*, which, as of March 12, 2001, has been signed by U.S. DOE, U.S. EPA, and the Ohio Environmental Protection Agency, and the *Environmental Summary - Notice of Hazardous Substances for Parcel 4, Mound Plant, Miamisburg, Ohio, Final, February 2001*. Based upon this information, U.S. EPA concurs that all remedial action necessary to protect public health and the environment with respect to any substance remaining in Parcel 4 has been taken, and that the transfer of Parcel 4 may take place.

It is understood that any additional remedial action found to be necessary in the future shall be conducted by U.S. DOE to the extent necessary to protect human health and the environment.

The U.S. EPA fully supports redevelopment and reuse of the structures and other property available at the Mound Plant. However, assurances must be provided that all property and building leases and transfers will be protective of public health and the environment. If you have any questions or concerns about this or future economic development issues at the site, please contact Timothy Fischer, of my staff, at (312) 886-5787.

Sincerely yours,



William E. Muno, Director  
Superfund Division  
U.S. EPA, Region 5

cc: Ken Tindall, SRF-5J  
Tim Thurlow, ORC  
Graham Mitchell, Ohio EPA  
Brian Nickel, Ohio EPA  
Catherine Stroop, Ohio EPA - Columbus  
Celeste Lipp, ODH  
Rob Rothman, US DOE-MEMP  
Dave Rakel, BWXTO

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# ACRONYMS

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As	arsenic
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
COPC	Constituent of Potential Concern
Cr	chromium
DOE	Department of Energy
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
HI	Hazard Index
HQ	Hazard Quotient
MCL	Maximum Contaminant Level
MMCIC	Miamisburg Mound Community Improvement Corporation
Mn	manganese
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NFA	No Further Assessment
Ni	nickel
NPDES	National Pollutant Discharge Elimination System
ODH	Ohio Department of Health
OEPA	Ohio Environmental Protection Agency
OU	Operable Unit
ppb	parts per billion
PRS	Potential Release Site
RRE	Residual Risk Evaluation
RREM	Residual Risk Evaluation Methodology
SM/PP	Special Metallurgical/Plutonium Processing
TCE	trichloroethene(ethylene)
US DOE	United States Department of Energy
US EPA	United States Environmental Protection Agency

# Parcel 4 Environmental Summary

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## CERCLA 120 (h) Summary of Finding of Suitability to Transfer

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### I. PURPOSE

The information contained in this notice is required under the authority of regulations promulgated under section 120 (h) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). This CERCLA 120 (h) Summary (hereinafter "Environmental Summary") is intended to support a transfer by deed to new ownership for economic development, by documenting that the U.S. Department of Energy's (US DOE, hereinafter "DOE") Mound Plant has met the requirements of CERCLA 120 (h) for Parcel 4. A copy of this Environmental Summary shall be provided to all future owners.

### II. PROPERTY DESCRIPTION

#### A. Description of Property Suitable for Transfer

This Environmental Summary addresses Parcel 4, which is located on the southern border of the Mound Plant (hereinafter "Plant") as shown on Figure 1. Parcel 4 is generally bounded to the north by the plant, to the east by off-site residences, to the south by Benner Road, and to the west by the Miami-Erie Canal. There are currently no structures on Parcel 4.

The legal description of Parcel 4, as recorded in the Parcel 4 Record of Decision (Draft Proposed Final, January 2001) is included as Appendix A of this Environmental Summary.

#### B. Regional Context of Mound Plant and Transferred Property

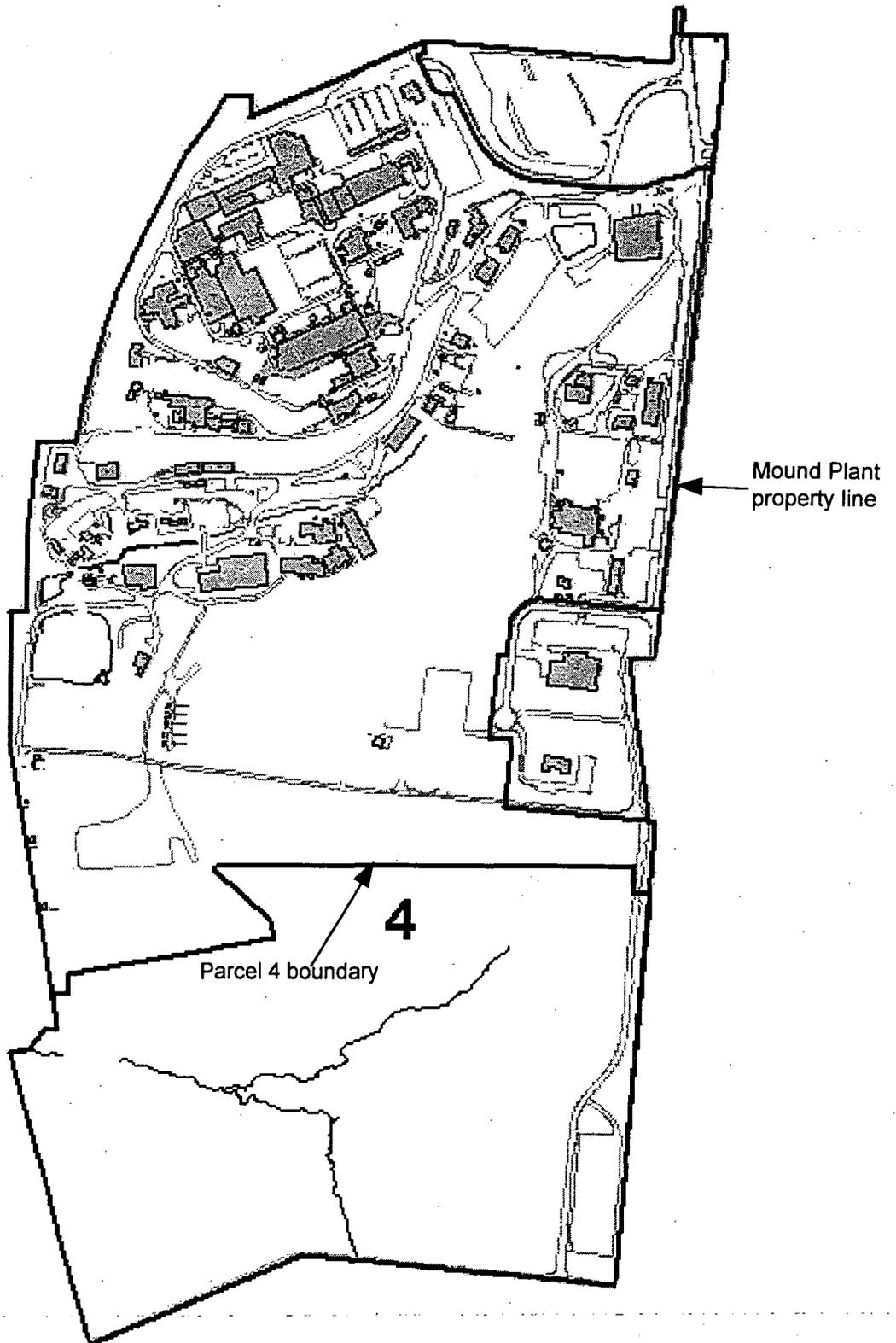
The Mound Plant occupies an approximately 306-acre site in Montgomery County within the City of Miamisburg, Ohio as shown on Figure 2.

Benner Road forms the southern boundary of the Plant, and the Norfolk Southern Railroad roughly parallels the western boundary at a distance of 50-200 feet. At one time, the Mound Plant consisted of approximately 130 buildings with a total of 1.4 million square feet of floor space (although the number of buildings is constantly diminishing as buildings are decommissioned and demolished); none of which are located on Parcel 4.

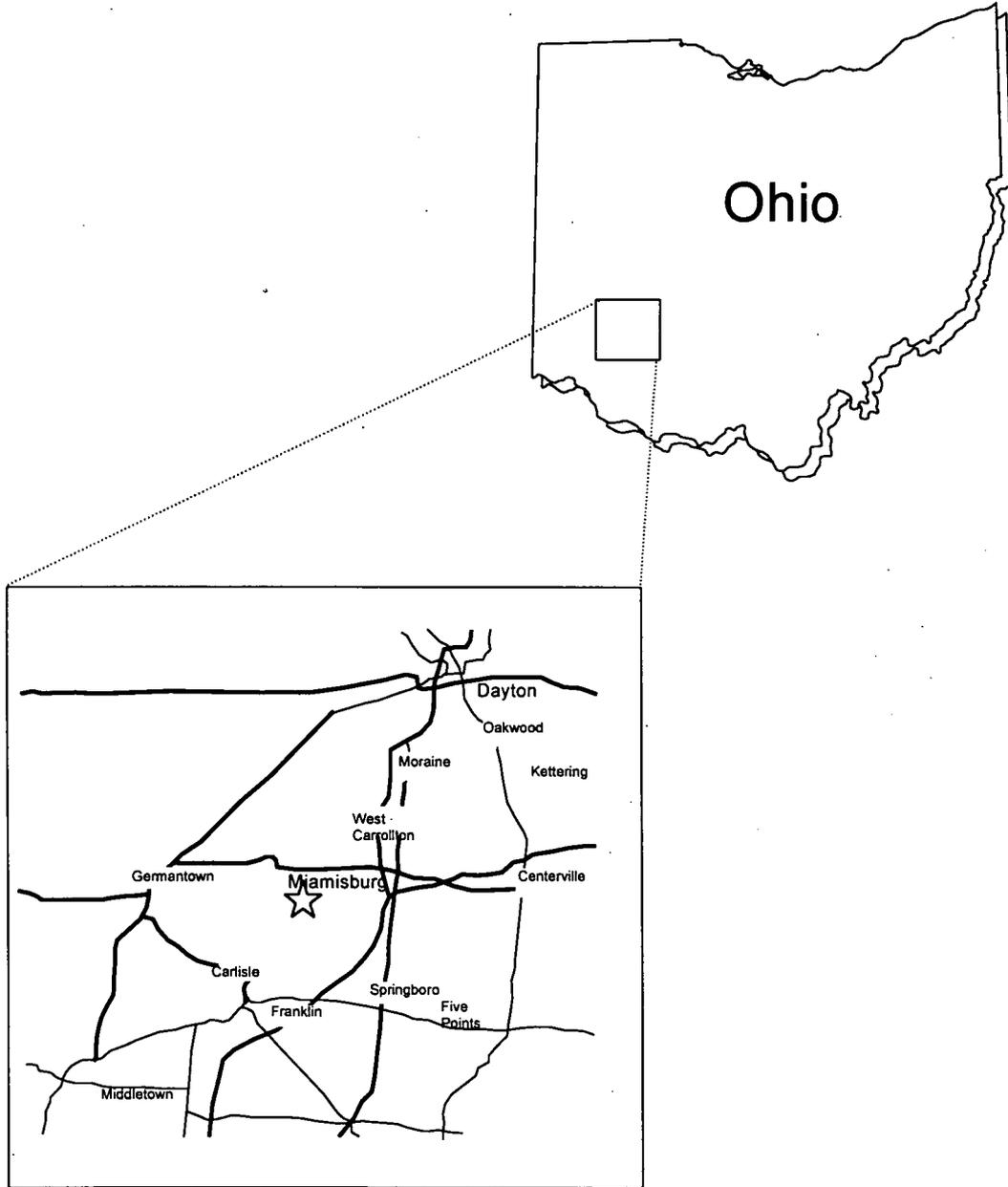
#### C. Historical Uses of Parcel 4

On August 26, 1981, DOE purchased 124 acres of land (the New Property) contiguous with and south of the original 182 acres at Mound Plant. Parcel 4 was part of that purchase and consists of approximately 95 acres, the remainder of which is included in other parcel(s). Prior to DOE's purchase, Parcel 4 had been used for agricultural purposes and is gently rolling in all areas except the northern portion of the parcel that is steeply sloped. DOE razed a two-story brick house, a barn, a frame tool shed, and an outhouse, and

Figure 1: Location of Parcel 4



**Figure 2: Regional Context of the Mound Plant**



discarded appliances and some old implements that were left by the former owner. A farm fence was put up around the perimeter of the purchased property. There are natural drainage channels and some groundwater seeps present year-round, but no surface water bodies such as ponds or streams on the land. In order to monitor Plant runoff, Mound set up a flow activated water sampler in Parcel 4 to obtain runoff water during rain events. An archaeological survey was conducted in 1987. Although two relevant sites were discovered, neither was regarded "as having eligibility for the National Register, and no further work is recommended at either location" (*An Archaeological Survey of Portions of the Mound Facility, Montgomery County, Ohio*, December 1987). Other than a construction gate, parking area, contractor storage area, an access road that extends from Benner Road to the Plant, and an above ground power line running approximately north-south through the center of the property, the property remains undeveloped.

### III. ENVIRONMENTAL FINDINGS

#### A. Methodology

In accordance with Section 120 (h)(3) of CERCLA, to the extent that information is available based on a complete search of DOE files, the following shall be placed in deeds: (1) a notice of the type and quantity of hazardous substances stored, disposed of, or released; (2) a notice of the time at which such storage, disposal, or release took place; and, (3) a description of any remedial action taken.

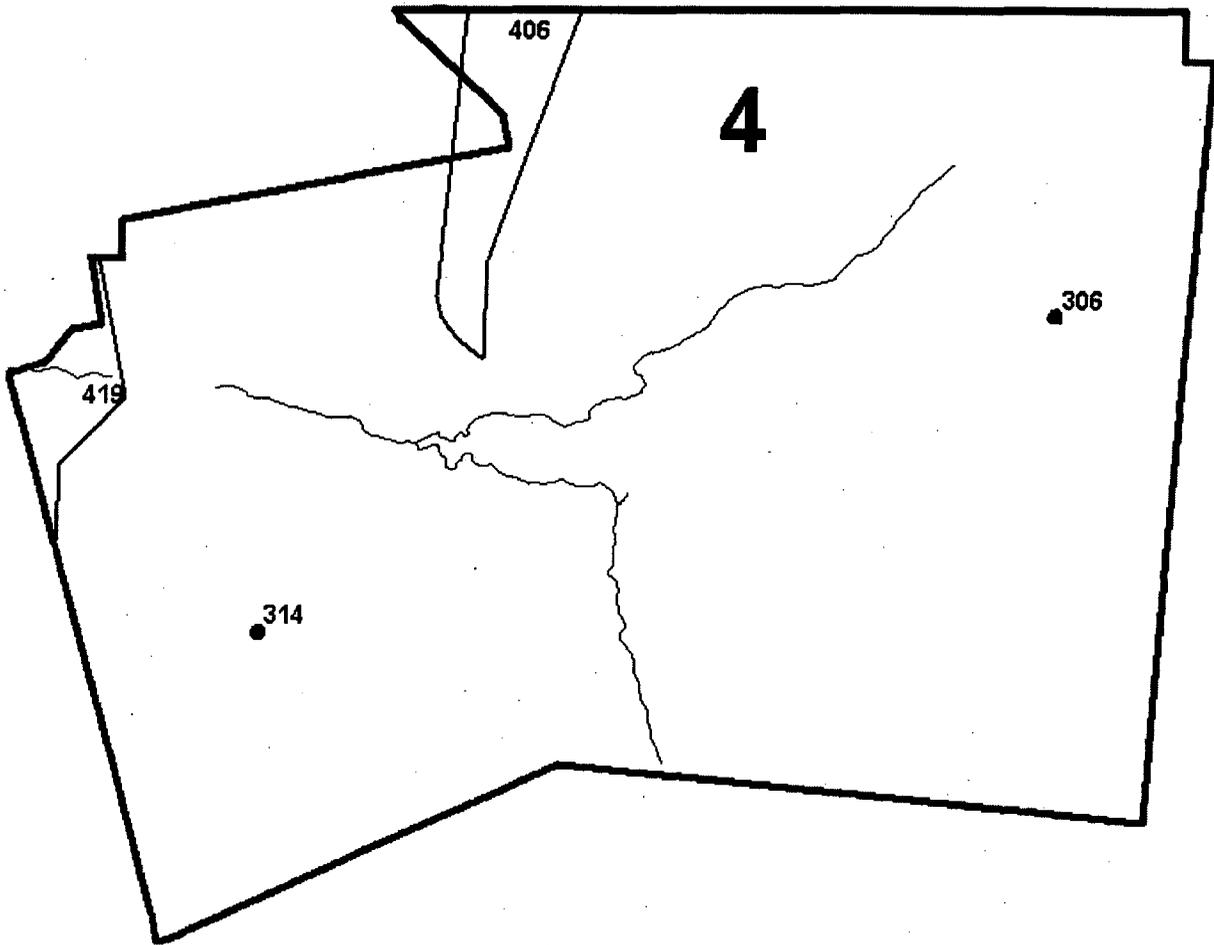
Information sources required to be reviewed include:

- ▶ Federal Government records,
- ▶ Recorded chain of title documents,
- ▶ Reasonably obtainable aerial photographs,
- ▶ Visual inspection of the property and adjacent properties,
- ▶ Reasonably obtainable records of releases on adjacent properties,
- ▶ Interviews with current or former employees, and
- ▶ Sampling, if appropriate under the circumstances.

Parcel 4 includes four Potential Release Sites (PRSs) that have undergone previous investigations. These PRSs were identified on the basis of potential radiological and/or chemical (non-radioactive) contamination based on knowledge of historical land use or on the basis of actual sample data. The locations of the PRSs in Parcel 4 are shown in Figure 3. Before transfer of a parcel can be completed, all buildings and PRSs must be evaluated for protectiveness or remediated to a protective level. Residual risks associated with remaining contamination in Parcel 4 have been evaluated.

A Core Team with representatives from the US DOE, US Environmental Protection Agency (US EPA), and Ohio Environmental Protection Agency (OEPA) performs a joint agency evaluation of each PRS. The Core Team uses process knowledge, site visits, and existing data to determine whether or not any action is warranted concerning the PRS and recommends the appropriate response(s).

**Figure 3: PRSs within Parcel 4**



Information in the following documents was used to support this Environmental Summary:

1. PRS Data Packages for the PRSs located within Parcel 4. *PRS Packages provide a summary of information sufficient for the Core Team to make recommendations or change the status of the PRS.* The locations of the PRSs in Parcel 4 are shown on Figure 3. The rationale for designation of these PRSs is outlined in Table 1. These PRSs were identified on the basis of potential radiological and/or chemical (non-radioactive) contamination using knowledge of historical land use or on actual sample data.

**TABLE 1: Parcel 4 PRSs and Conclusions**

PRS	Reason for Identification	Core Team Decision	Core Team Conclusion
306	SM/PP Hill Seep 0609	Binned NFA	Recommendation for NFA signed by Core Team on 3/14/96
314	Farm Trash Area	Binned NFA	Recommendation for NFA signed by Core Team on 3/14/96
406	Southern Portion of PRS 283	Binned NFA	Recommendation for NFA signed by Core Team on 3/14/96
419	Drainage Outflow Reroute	Binned NFA	Recommendation for NFA signed by Core Team on 11/17/99

NFA: No Further Assessment

2. Residual Risk Evaluation, Parcel 4, Final, February 2001. *Provides the evaluation of human health risks associated with residual contamination that may remain in the parcel after all PRSs and buildings within the parcel have been addressed. The evaluation, used in conjunction with the Proposed Plan, ensures that future users of the land will not be exposed to contamination levels that would pose unacceptable health risks.*

3. Screening Level Ecological Risk Assessment, Parcel 4, Final, February 2001. *Provides the evaluation of ecological risks associated with residual contamination that may remain in the parcel after all PRSs and buildings within a parcel have been addressed. The evaluation, used in conjunction with the Proposed Plan, ensures that future ecological receptors on the land will not be exposed to contamination levels that would pose unacceptable risks.*

4. Proposed Plan for Parcel 4, Mound Plant, Miamisburg, Ohio, Public Review Draft, Revision 0, December 2000. *Identifies to the public the preferred option for addressing residual contamination at the Mound Plant, Parcel 4 by briefly summarizing the alternatives studied and highlighting the key factors that led to identifying the preferred alternative.*

5. Parcel 4 Record of Decision, Mound Plant, Miamisburg, Ohio, Final, February 2001.

*Documents the remedial action plan for a parcel and serves the following three functions: (1) certifies the remedy selection process was carried out in accordance with CERCLA, (2) describes the technical parameters of the remedy, specifying the treatment, engineering, and institutional components as well as clean up levels; and, (3) provides the public with a consolidated summary of information about the site and the chosen remedy, including the rationale behind the selection.*

## **B. Building Analysis Summary**

There are no DOE-owned buildings within Parcel 4. Consequently, there is no building-related contamination warranting remedial action or environmental concern.

## **C. Potential Release Site (PRS) Summary**

The US DOE, US EPA, and OEPA have jointly decided that no removal actions for the PRSs in Parcel 4 are necessary with the placement of Institutional Controls in the form of deed restrictions on future land use for Parcel 4 upon transfer.

A brief summary of the history of the PRSs in Parcel 4 and their contaminants follows. For a more detailed description of these PRSs, refer to the PRS data packages as previously referenced.

There are two PRSs (PRS 306 and 314) located entirely within Parcel 4, and there are two PRSs (PRS 406 and 419) partially located within Parcel 4. The PRSs at Mound were identified based on either knowledge of historical land use that was considered potentially detrimental, or on an actual sampling result showing elevated concentrations of contaminants. The locations of these PRSs are shown in Figure 3.

The rationale for designation of PRS 306, 314, 406, and 419 is outlined as follows:

PRS 306 is a groundwater seep (seep 0609/0610). This seep is not suspected to be a source of contamination to the groundwater. The seep is a surface expression of groundwater and could be an exposure point to possible contaminated groundwater if contamination exists. At the time that PRS 306 was identified, it was the only documented seep on Parcel 4, and the water quality at the seep was unknown. For this reason, it was retained as a PRS until the groundwater quality could be analyzed.

PRS 314, the Farm Trash Area, was identified as a PRS because historical information suggested that waste oil from farm operations may have contaminated this area prior to DOE's purchase of the property.

PRS 406 (previously known as the southern portion of PRS 283) became a PRS due to potential thorium from thorium sludge re-drumming. PRS 406 is located on the southern end of the Mound Plant at the northern end and directly north of Parcel 4. Radiological surveys conducted in 1983 indicated potential radiological contamination.

PRS 306, 314, and 406 were evaluated by the Core Team using information from the *OU-5 New Property Remedial Investigation Report, Final, Rev. 0* (February 1996). All radiological concentrations reported in the vicinity of these PRSs were below guideline criteria. Twenty

groundwater samples were collected from four monitoring wells, two borings, and eight seeps in the vicinity of these PRSs. Sample results detected trichloroethene/ethylene (TCE) from well 411 and seep 617 (both located immediately north of Parcel 4) at 8 parts per billion (ppb) (the maximum contaminant level (MCL) for trichloroethene is 5 ppb). Only infrequent and scattered occurrences of arsenic (As), manganese (Mn), nickel (Ni) and chromium (Cr) are above background criteria; these metals do not appear to be the result of current or past activities conducted in Parcel 4. No plumes of contaminated groundwater were identified. The Core Team decided that PRSs 306, 314, and 406 required No Further Assessment.

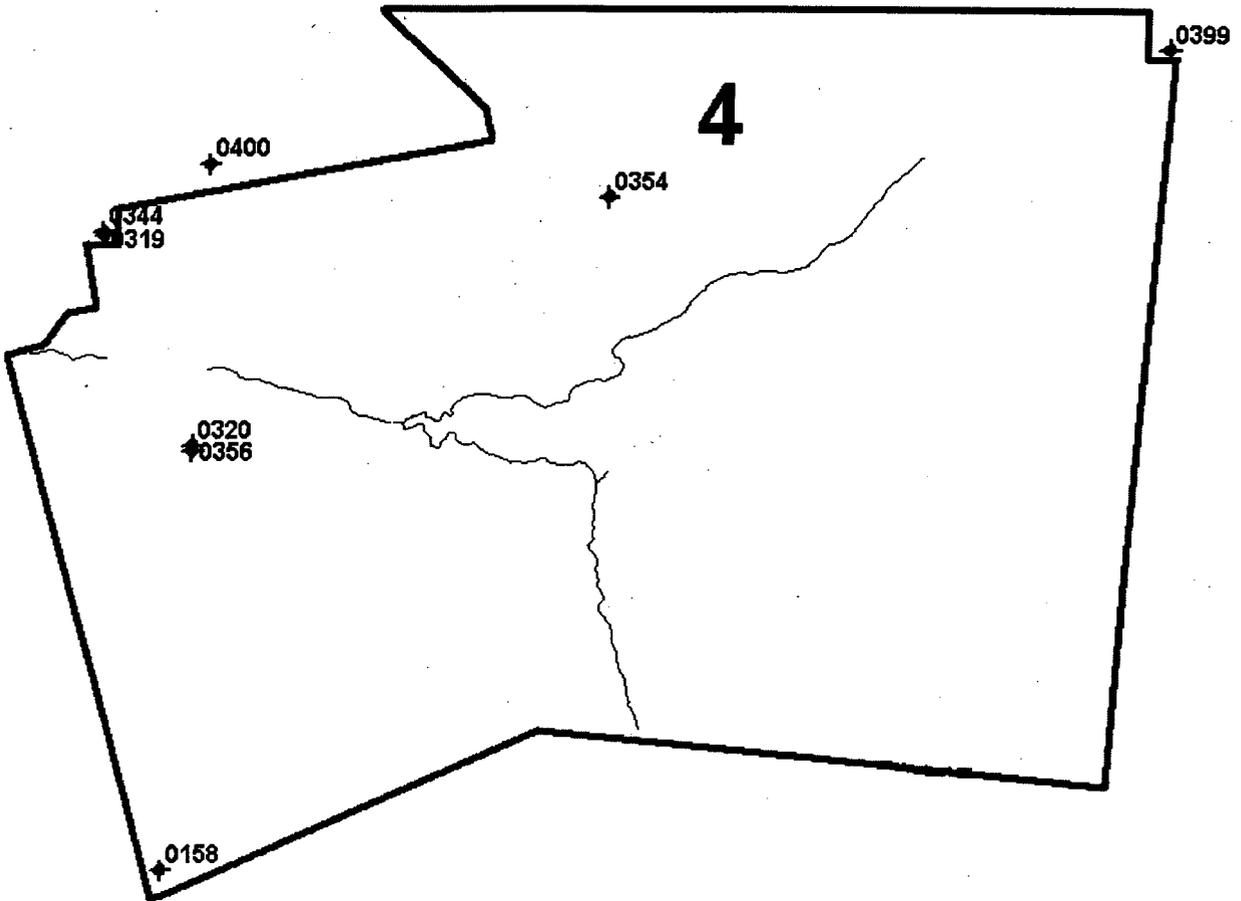
More recently, monitoring wells have been sampled. Monitoring wells in Parcel 4 are shown on Figure 4. Monitoring wells 400 and 319 (both located just north of the Parcel 4 boundary) show elevated levels of nickel. Additional site-wide investigations of elevated nickel are underway and monitoring is continuing.

PRS 419 is the Mound Plant Drainage Outflow Reroute. It was constructed in 1996 as part of the Miami-Erie Canal Remediation Project. It conveys the Mound Plant's non-process and stormwater to the Great Miami River. The effluent is monitored for a variety of chemicals and properties to demonstrate compliance with the Mound Plant's National Pollutant Discharge Elimination System (NPDES) Permit. The effluent is also monitored for a variety of radioactive constituents to demonstrate compliance with DOE Order 5400.1. In November 1999, the Core Team decided that PRS 419 required No Further Assessment.

#### **D. Residual Risk Evaluation (RRE) Summary**

Pursuant to the *Residual Risk Evaluation Methodology* (RREM) (Final, Rev. 0, January 6, 1997), risks are quantified for both carcinogenic (cancer-causing) and non-carcinogenic (non cancer-causing) contaminants. All analytes (carcinogenic and non-carcinogenic) detected at least once in soil and/or groundwater in Parcel 4 were identified as constituents of potential concern (COPCs). The maximum concentration of each COPC for soil and groundwater were compared to and screened against criteria established in the RREM and presented in the *Residual Risk Evaluation* (Final, February 2001). COPC tables for both groundwater and soil are presented in Appendix B. COPCs shaded in the tables were carried through the RRE process, unshaded COPCs were screened out. The risk associated with the intake of a known or suspected carcinogen is reported in terms of the incremental lifetime cancer risk presented by that COPC, as estimated using the appropriate slope factor and the amount of material available for uptake. The acceptable risk range as defined by CERCLA and the National Contingency Plan (NCP) is  $10^{-4}$  to  $10^{-6}$  (one human in ten-thousand to one human in one-million incremental cancer incidence). Potential human health hazards from exposure to non-carcinogenic contaminants are evaluated by using a Hazard Quotient (HQ). The HQ is determined by the ratio of the intake of a COPC to a reference dose or concentration for the contaminant of concern that is believed to represent a no-observable effect level. The contaminant of concern-specific HQs are then summed to provide an overall Hazard Index (HI). US EPA guidance sets a limit of 1.0 for the Comprehensive HI. The incremental carcinogenic risks and hazards associated with residual concentrations of COPCs in Parcel 4 are also shown in Appendix B.

**Figure 4: Monitoring Wells within Parcel 4**



Evaluation of residual soil and groundwater contaminants within Parcel 4 has resulted in a determination that future users of the land will not be exposed to contaminant levels that would pose unacceptable risks as long as compliance with the deed restrictions described in the Parcel 4 Record of Decision are maintained. The soils within Parcel 4 have not been evaluated for any use other than on-site industrial/commercial use. Any off-site disposition of the Parcel 4 soil without proper handling, sampling, and management could create an unacceptable risk to off-site receptors.

## **E. Other Factors Considered**

DOE developed a generic checklist of the issues to be considered in evaluating property to be transferred. The checklist was modified from that used by the Department of Defense when releasing property for sale. The checklist includes environmental issues at the Mound Plant that are likely to concern a potential purchaser as well as items relating to the operational concerns from ongoing and future remedial actions. Table 9 contains a brief summary and references for all factors considered. Results of only those factors that affect Parcel 4 are presented as follows:

### **1. Drinking Water**

Mound Plant drinking water has exceeded the action levels for lead and copper due to the corrosiveness of the water distribution system. When the action level for lead is exceeded, EPA regulations require corrosion control and public education programs. These programs are in place at Mound. Information on the steps being taken to reduce lead concentrations in the Mound Plant water system, and on the hazards associated with ingesting lead are available to all Mound drinking water users.

### **2. Monitoring Equipment**

There is an air monitoring station (217) located in Parcel 4. Monitoring wells 158, 320, 356, and 354, are located in Parcel 4. DOE will maintain continuing access to this air monitoring station and these wells via the site access institutional control.

### **3. National Environmental Policy Act (NEPA)**

A Finding of No Significant Impact (FONSI) was issued on June 18, 1999 for the sale of the Mound Plant's South Property. Parcel 4 lies entirely within the South Property.

### **4. Floodplain**

A small portion of Parcel 4 lies within the 100-year floodplain. This means that most of Parcel 4 is not subject to a 1% chance per year of inundation from a tributary of the Great Miami River.

## **IV. FINDINGS OF SUITABILITY TO TRANSFER**

In accordance with the provisions of CERCLA Section 120 (h)(3), contaminated property

**TABLE 9: Summary of Other Factors Considered for Parcel 4**

FACTOR CONSIDERED	AFFECTS Parcel 4? YES	AFFECTS Parcel 4? NO	RECOMMENDATION/ CONCLUSION	REFERENCE
Cultural Resources		✓	There are no historic or cultural resources within Parcel 4.	Correspondence From Mark J. Epstein, Department Head, Resource Protection and Review, Ohio Historic Preservation Office dated July 31, 1998.
Drinking Water Quality	✓		Mound Plant drinking water has exceeded the action levels for lead and copper due to the corrosiveness of the water distribution system. When the action level for lead is exceeded, EPA regulations require corrosion control and public education programs. These programs are in place at Mound. Information on the steps being taken to reduce lead concentrations in the Mound Plant water system, and on the hazards associated with ingesting lead will be made available to all Mound drinking water users.	Miamisburg Environmental Management Project, Annual Site Environmental Report for Calendar Year 1999, September 2000.
Endangered Species		✓	Two state protected species were found, the dark-eyed junco ( <i>Junco hyemalis</i> ) and the inland rush ( <i>Juncus interior</i> ). Because only one individual inland rush was located, it is not considered a viable breeding population at the Mound facility. The dark-eyed junco is not known to breed in southwestern Ohio. It has also been determined that the plant site is in the habitat range of the federally endangered species of Indiana Bat ( <i>Myotis sodalis</i> ), however, the Mound site does not provide a suitable habitat for the Indiana Bat. Neither the solitary sitings of the rush and the junco, nor the potential habitat for the Indiana bat, are expected to affect ongoing or future activities at the site. Parcel 4 lies within the range of the eastern massasauga; a docile rattlesnake that is currently listed as endangered by the State of Ohio. Surveys for reptiles and amphibians during the ecological characterization did not find the eastern massasauga in Parcel 4. Potential habitat is very limited and the species is considered not to occur on or in the vicinity of Parcel 4.	Operable Unit 9 Ecological Characterization Report, Mound Plant, Final, March 1994.  Screening Level Ecological Risk Assessment, Parcel 4, Public Review Draft, December 2000.

**TABLE 9: Summary of Other Factors Considered for Parcel 4**

FACTOR CONSIDERED	AFFECTS Parcel 4 YES	AFFECTS Parcel 4 NO	RECOMMENDATION/CONCLUSION	REFERENCE
Monitoring Equipment	✓		There is an air monitoring station located in Parcel 4. Monitoring Wells 158, 320, 356, and 354 are located in Parcel 4.	Mound Plant Environmental Monitoring Plan dated September 2000.
National Environmental Policy Act (NEPA)	✓		A Finding of No Significant Impact (FONSI) was issued on June 18, 1999 for the sale of Mound Plant's South Property.	The Mound Plant EA for Disposition of Mound Plant's South Property DOE/EA-1239 and FONSI dated June 18, 1999.
Resource Conservation and Recovery Act (RCRA)		✓	DOE has found no RCRA regulated units within Parcel 4 warranting a RCRA closure action. It has been determined that the closest facility boundary from Buildings 23 and 72 will not change with the sale of Parcel 4. Therefore, the risk assessment information in the RCRA Part B Permit will not change.	RCRA Part B Permit Application, Volume I, Section A, September 1995 (as amended)  Responses to Information Requested by the Ohio HWFB Technical Staff transmitted to Bob Brown of the State of Ohio Hazardous Waste Facility Board dated March 12, 1996.
Underground Storage Tanks (USTs)		✓	There are no USTs located within Parcel 4.	EG&G Mound Applied Technologies, Active Underground Storage Tank Plan, November 1994.
Wetlands		✓	Three characteristics must be present to be classified as jurisdictional wetlands: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetlands hydrology. Absence of any one of these characteristics removes an area from consideration. None of the sites examined within Parcel 4 constitute jurisdictional wetlands.	Operable Unit 9 Hydrogeologic Investigation: Wetlands Determination Report, Technical Memorandum, Revision 1, January 1994.  Delineation of Federal Wetland and Other Waters of the U.S., August 1999
Floodplains	✓		A small portion of Parcel 4 lies within the 100-year floodplain. Consistent with 10 CFR 1022, the applicability of floodplain regulations to the property must be disclosed to the new owner.	South Property Flood Plan Assessment and Notice of Flood Plain Involvement issued in Environmental Assessment Disposition of Mound Plant's South Property June, 1999.

can only be transferred if one of the following applies:

- (1) a decision has been made that no remedial action is necessary,
- (2) all remedial action necessary to protect human health and the environment with respect to any such substance remaining on the property has been taken before the date of transfer, or
- (3) Early Transfer Authority, which allows for transfer before all necessary action is complete, has been granted by US EPA with concurrence from the Governor of the State of Ohio pursuant to CERCLA Section 120(h)(3)(C).

The future industrial/commercial use of the Mound Plant has been determined based upon agreement among US DOE, US EPA, and OEPA, and interested stakeholders. This land use is reflected in the Mound Comprehensive Reuse Plan of the Miamisburg Mound Community Improvement Corporation (MMCIC) and is currently codified in the City of Miamisburg Zoning Ordinance for industrial/commercial use.

A joint agency decision among the US DOE, US EPA, and OEPA has been made that a remedial action has been taken that protects human health and the environment. EPA deems this condition to be satisfied if the Institutional Controls are implemented and operating successfully. Institutional controls in the form of deed restrictions on future land use will be placed on Parcel 4 upon transfer, as part of the remedy. The objective of these institutional controls is to prevent an unacceptable risk to human health and the environment by restricting the use of Parcel 4, including Parcel 4 soils and groundwater, to that which is consistent with assumptions in the Parcel 4 RRE. DOE or its successors will retain the right and responsibility to monitor, maintain, and enforce these institutional controls. The following property deed restrictions and requirements will be imposed on the property to maintain protection of human health and the environment in the future:

- Maintenance of industrial/commercial land use;
- Prohibition against residential use;
- Prohibition against the use of groundwater;
- Site access for federal and state agencies for the purpose of sampling and monitoring; and,
- Prohibition against removal of Parcel 4 soils from the DOE Mound property (as owned in 1998) boundary without approval from the Ohio Department of Health (ODH) and OEPA.

## **V. ENVIRONMENTAL COVENANTS**

DOE is committed to include a covenant in accordance with Section 120 (h)(3) of CERCLA in the deed for the sale or transfer of the property that warrants that:

- A. All remedial action necessary to protect human health and the environment has been taken as long as the deed restrictions limiting land and ground water use are in effect and enforced.

- B. Any additional response action or corrective action found to be necessary after the date of sale or transfer shall be conducted by the United States [Section 120(h)(4)(D)(i)]. The requirements of the covenant shall not apply in any case in which the person or entity to whom the property is transferred is a potentially responsible party with respect to the property.
- C. A clause granting the United States access to the property in any case in which a response action or corrective action is found to be necessary or such access is necessary to carry out a response action or corrective action on the adjoining property [Section 120 (h)(4)(D)(ii)].

## VI. NOTIFICATION/PUBLIC PARTICIPATION

The community has been an active participant in this process to date. Comments from the public on the PRS recommendations have been incorporated as part of the remedy evaluation. DOE believes all comments have been resolved with the commentor and the documents, comments, and responses have been placed in the CERCLA Public Reading Room.

Table 10 lists the Parcel 4 documents made public for review and the dates they were made available for public comment.

**Table 10: Public Comment Periods for Parcel 4 Documents**

<b>DOCUMENT</b>	<b>COMMENT PERIOD (BEGIN)</b>	<b>COMMENT PERIOD (END)</b>
PRS 306 Data Package	3/18/96	4/01/96
PRS 314 Data Package	3/18/96	4/14/96
PRS 406 Data Package	3/18/96	4/01/96
PRS 419 Data Package	1/19/00	2/17/00
Parcel 4 Residual Risk Evaluation	12/18/00	1/16/01
Parcel 4 Screening Level Environmental Risk Assessment	12/18/00	1/16/01
Parcel 4 Proposed Plan	12/18/00	1/16/01

**APPENDIX A**

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**Legal Description of Parcel 4**

**Exhibit "A"**  
**DESCRIPTION OF**  
**94.838 Acres**

located in  
**Section 30, 35 and 36, Town 2, Range 5, MRs.**  
**City of Miamisburg, Montgomery County, Ohio**

Situate in the Southwest Quarter of Section 30, Town 2, Range 5, MRs., the Southeast Quarter of Section 36, Town 2, Range 5, MRs., Northeast Quarter Section 36, Town 2, Range 5, MRs., City of Miamisburg, County of Montgomery, State of Ohio, *being part of a 79.74 acre tract conveyed to the United States of America, as recorded in Microfiche No. 81-376A01* of the Deed Records of Montgomery County, Ohio, said 79.74 acre tract being comprised of a 24.197 acre tract and known as Lot Numbered 6128 of the consecutive numbered lots of the City of Miamisburg, also a 35.50 acre tract known as Lot Numbered 6127 of the consecutive numbered lots of the City of Miamisburg, and a 24.24 acre tract known as Lot Numbered 4777 of the consecutive numbered lots of the City of Miamisburg, *also being part of a 42.56 acre tract conveyed to the United States of America, as recorded in Microfiche No. 81-323A11* of the Deed Records of Montgomery County, Ohio, said 42.56 acre tract being comprised of a 46.313 acre tract known as Lot Numbered 4778 of the consecutive numbered lots of the City of Miamisburg, said 42.56 acre tract being all the remainder of an 80 acre tract as conveyed from Ray C. Dunaway and Thelma Mae Dunaway to Oak Knoll Development and Investment Co., Inc., as recorded in Microfiche No. 71-513B06 of the Deed Records of Montgomery County, Ohio, *being a new division of 94.838 acres from said 79.74 acre and 42.56 acre tracts* and being more fully bounded and described as follows:

**Commencing** at a railroad spike found in concrete, said spike being the southwest corner of Section 30, the southeast corner of Section 36 and the northeast corner of Section 35, said spike lying in the center line of Benner Road at an angle point in said road, said spike also being the southwest corner of said United States of America 79.74 acre tract and the southeast corner of said United States of America 42.56 acre tract, also being the northeast corner of a 0.47 acre tract conveyed to Danny and Judith Hall, as recorded in Microfiche No. 88-598D12 of the Deed Records of Montgomery County, Ohio, said spike having a scale coordinate value of North 594,365.34, East 1,496,165.88 of the Ohio Plane Coordinate System, South Zone, said spike being the **True Point of Beginning** of the hereinafter described 95.146 acre tract;

**Thence** with the center line of Benner Road and the northwesterly line of said Hall 0.47 acre tract, also the northwesterly line of a 0.764 acre tract conveyed to the City of Miamisburg, Ohio, as recorded in Microfiche No. 00-356C07 of the Deed Records of Montgomery County, Ohio, **South 66° 32' 34" West**, a distance of **958.76 feet** to a **Mag nail set**, said Mag nail being an angle point in the center line of Benner Road;

**Thence** continuing with the center line of Benner Road and the northwesterly line of said City of Miamisburg, Ohio 0.764 acre tract, **South 73° 18' 03" West**, a distance of **31.01 feet** to a **Mag nail set**, said Mag nail being the southwest corner of said United States of America 42.56 acre tract, said Mag nail also lying in the northeasterly line of the abandoned Miami & Erie canal lands, said lands being a 1.448 acre tract conveyed to the Miami Conservancy District, as recorded in Deed Book Volume 2450, Page 190 of the Deed Records of Montgomery County, Ohio, said Miami Conservancy

District 1.448 acre tract also being known as Lot Numbered 4782 of the consecutive numbered lots of the City of Miamisburg, Ohio;

**Thence** with the southwesterly line of said United States of America 42.56 acre tract and the northeasterly line of said Miami Conservancy District 1.448 acre tract on the following three (3) courses,

- 1) **North 14° 05' 40" West**, a distance of **62.17 feet to an axle found**, said axle being an angle point in said line;
- 2) **Thence, North 14° 12' 04" West**, a distance of **440.84 feet to an axle found**, said axle lying in the north line of the Northeast Quarter of Section 35 and the south line of the Southeast Quarter of Section 36, said axle also being an angle point in said line;
- 3) **Thence, North 14° 47' 54" West**, a distance of **259.69 feet to an axle found**, said axle being the northeasterly corner of said Miami Conservancy District 1.448 acre tract, said axle also being the southeasterly corner of lands conveyed to the Miami Conservancy District, as recorded in Deed Book Volume 2450, Page 194 of the Deed Records of Montgomery County, Ohio, said lands also being known as Lot Numbered 4781 of the consecutive numbered lots of the City of Miamisburg, Ohio;

**Thence** with the southwesterly line of said United States of America 42.56 acre tract and the northeasterly line of said Miami Conservancy District lands, **North 14° 45' 30" West**, a distance of **546.20 feet to a 5/8" iron pin set**, said iron pin being the southwesterly corner of a 5.481 acre tract conveyed to the Consolidated Railroad Corporation, as recorded in Microfiche No. 78-502A01 of the Deed Records of Montgomery County, Ohio, said Consolidated Railroad Corporation 5.481 acre tract also known as Lot Numbered 4780 of the consecutive numbered lots of the City of Miamisburg, Ohio;

**Thence** with the southerly line of said Consolidated Railroad Corporation 5.481 acre tract on the following three (3) courses,

- 1) **North 74° 56' 41" East**, a distance of **85.24 feet to a 1" iron pipe found**, said pipe being an angle point in said line;
- 2) **Thence, North 37° 22' 23" East**, a distance of **96.59 feet to a 5/8" iron pin found**, said iron pin being an angle point in said line;
- 3) **Thence, North 80° 25' 45" East**, a distance of **65.98 feet to a 1" iron pipe found**, said iron pipe being the southeasterly corner of said Consolidated Railroad Corporation 5.481 acre tract;

**Thence** with the northeasterly line of said Consolidated Railroad Corporation 5.481 acre tract, **North 09° 33' 38" West**, a distance of **147.88 feet to a 5/8" iron pin set**, said iron pin being the northwesterly corner of the herein described new division of 95.146 acres;

**Thence** with a new division line on the following nine (9) courses,

- 1) **Due East**, a distance of **72.92 feet to a 5/8" iron pin set**;
- 2) **Thence, Due North**, a distance of **82.40 feet to a 5/8" iron pin set**;
- 3) **Thence, North 79° 34' 35" East**, a distance of **878.75 feet to a 5/8" iron pin set**;
- 4) **Thence, North 10° 55' 31" West**, a distance of **75.93 feet to a 5/8" iron pin set**;
- 5) **Thence, North 47° 17' 05" West**, a distance of **318.93 feet to a 5/8" iron pin set**;
- 6) **Thence, North 23° 53' 27" East**, a distance of **12.17 feet to a 5/8" iron pin set**;

7) **Thence, North 89° 59' 52" East**, passing a point at 517.95 feet, said point lying in the east line of the Southeast Quarter of Section 36 and the west line of the Southwest Quarter of Section 30, reference a broken concrete monument found, North 05° 16' 42" East, 3724.34 feet, said concrete monument being the northeast corner of Section 36 and the northwest corner of Section 30 by common report, in all a distance of **1767.43 feet to a 5/8" iron pin set**;

8) **Thence, Due South**, a distance of **111.18 feet to a 5/8" iron pin set**;

9) **Thence, Due East**, a distance of **62.54 feet to a 5/8" iron pin set**, said iron pin lying in the east line of said United States of America 79.74 acre tract, said iron lying in the west line of a 7.502 acre tract conveyed to Daniel R. Shell, as recorded in Microfiche No. 85-443D02 of the Deed Records of Montgomery County, Ohio, said Shell 7.502 acre tract also being known as Lot Numbered 6130 of the consecutive numbered lots of the City of Miamisburg, Ohio, witness a concrete Department of Defense monument found, North 04° 42' 45" East, 311.82 feet, said monument being the northeast corner of said United States of America 79.74 acre tract;

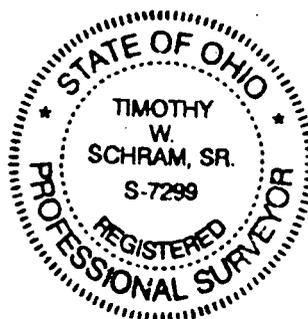
**Thence** with the east line of said United States of America 79.74 acre tract and the west line of said Shell 7.502 acre tract, also the west line of a 8.850 acre tract conveyed to Frank C. Dickinson, as recorded in Microfiche No. 93-516A05 of the Deed Records of Montgomery County, Ohio, **South 04° 42' 45" West**, passing a 1" pinched top pipe found at 737.06 feet, said pipe lying 1.49 feet east of the line, said pipe being the common corner of said Shell 7.502 acre tract and Dickinson 8.850 acre tract, in all a distance of **1698.01 feet to a railroad spike in concrete found**, said spike lying in the south line of the Southwest Quarter of Section 30, said spike being the southeast corner of said United States of America 79.74 acre tract, said spike lying in the center line of Benner Road;

**Thence** with the south line of the Southwest Quarter of Section 30 and the center line of Benner Road, **North 84° 29' 45" West**, a distance of **1333.45 feet to the True Point of Beginning**, containing **94.838 acres**, more or less, of which **52.932 acres lying in the Southwest Quarter of Section 30**, **36.224 acres lying in the Southeast Quarter of Section 36** and **5.682 acres lying in the Northeast Quarter of Section 35** and being subject to all easements, highways and right of ways of record..

Bearing basis established on State Plane Coordinates South Zone, State of Ohio, per prior survey by Lockwood, Jones and Beals, dated; June 1<sup>st</sup>, 1982, said survey filed in the Montgomery County Engineer's Record of Land Surveys as survey reference number SUR-83-88.

This description prepared from an actual field survey performed under my direct supervision, Timothy W. Schram, Sr., Registered Professional Surveyor number 7299 of the State of Ohio, and that all monuments referenced herein and placed on the ground represents the boundaries of the herein described tract, and based on a Plat of Survey as recorded in the Montgomery County Engineer's Record of Land Surveys in Record Volume number \_\_\_\_\_.

  
\_\_\_\_\_  
Timothy W. Schram, Sr., Regist. Prof. Surveyor No. 7299  
of the State of Ohio, August 21, 2000.





DAYTON - CINCINNATI PIKE  
AKA: SOUTH DIXIE DRIVE

BENNER ROAD  
(40' R.W.)

94,838 ACRES  
PLAT NO. 36119  
MOUND PARCEL #  
SECTION 30, TOWN 2, RANGE 5 W.  
SECTION 33, TOWN 2, RANGE 5 W.  
SECTION 36, TOWN 2, RANGE 5 W.  
L25 MAPPED 648 647 677 6 678  
MONTGOMERY COUNTY, OHIO

H L A  
Surveyors & Engineers  
1000 W. 12th Street, Columbus, OH 43260

## **APPENDIX B**

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### **RRE Summary Tables (Tables 2 through 8)**

Table 2	Identification of Soil Constituents of Potential Concern for the Construction Worker Scenario in Parcel 4
Table 3	Identification of Soil Constituents of Potential Concern for the Site Employee Scenario in Parcel 4
Table 4	Identification of Current Groundwater Constituents of Potential Concern for the Construction Worker Scenario in Parcel 4
Table 5	Identification of Current Groundwater Constituents of Potential Concern for the Site Employee Scenario in Parcel 4
Table 6	Identification of Future Groundwater Constituents of Potential Concern for the Construction Worker Scenario in Parcel 4
Table 7	Identification of Future Groundwater Constituents of Potential Concern for the Site Employee Scenario in Parcel 4
Table 8	Current and Future Incremental Residual Risks for Parcel 4

**Table 2: Identification of Soil Constituents of Potential Concern for the Construction Worker Scenario in Parcel 4  
(Exposure Point Concentration (EPC) Compared to Background)**

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
<b>Metals</b>										
7429-90-5	Aluminum	363	21400.00	mg/kg	B409	65-65	12700	12700.00	19000.00	NO
7440-36-0	Antimony	0.27	42.20	mg/kg	MND33-0103	20-48	12.6	12.60		YES
7440-38-2	Arsenic	1.7	17.10	mg/kg		65-65	6.99	6.99	8.60	NO
14733-03-0	Bismuth	0.76	70.40	mg/kg	CI	48-51	73.3	70.40		YES
	Cerium	23.60	50.90	mg/kg		8-8	NC	50.90		YES
15067-28-4	Lead	2	255.00	mg/kg		65-65	20.6	20.60	48.00	NO
7439-93-2	Lithium	2.7	41.40	mg/kg	B409	45-46	17.6	17.60	26.00	NO
7439-95-4	Magnesium	583	68800.00	mg/kg	MND33-0103	65-65	21700	21700.00	40000.00	NO
7439-96-5	Manganese	42.3	5240.00	mg/kg		65-65	1010	1010.00	1400.00	NO
	Neodymium	16.5	33.40	mg/kg		7-8	NC	33.40		YES
14913-30-9	Thallium	0.35	2.10	mg/kg		11-50	0.66	0.66	0.46	YES
<b>Semi-Volatile Organic Compounds</b>										
	Acenaphthylene	44.0	290.00	ug/kg		4-58	243	243.00		YES
50-32-8	Benzo(a)pyrene	40.0	2500.00	ug/kg		11-58	330	330.00		YES
205-99-2	Benzo(b)fluoranthene	35.0	4800.00	ug/kg		21-58	439	439.00		YES
191-24-2	Benzo(g,h,i)perylene	47.0	250.00	ug/kg		8-58	241	241.00		YES
	Carbazole	41.0	420.00	ug/kg		4-50	219	219.00		YES
	Indeno(1,2,3-cd)pyrene	67.0	830.00	ug/kg		8-58	253	253.00		YES
85-01-8	Phenanthrene	78.0	3700.00	ug/kg		10-58	338	338.00		YES
<b>Pesticides/PCBs</b>										
7421-93-4	Endrin Aldehyde	0.28	0.93	ug/kg	MND22-4102	4-60	3.34	0.93		YES
53494-70-5	Endrin Ketone	0.24	0.86	ug/kg		4-65	3.43	0.86		YES
<b>Radionuclides</b>										
AC-227DA	Actinium-227	0.13	2.01	pCi/g		14-130	0.23	0.23		YES
10045-97-3	Cesium-137	0.06	0.90	pCi/g		130-188	0.36	0.36	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		142-480	87	55.40	0.13	YES
13982-63-3	Radium-226	0.39	3.26	pCi/g		137-180	1.34	1.34	2.00	NO
	Radium-228	0.636	2.57	pCi/g		10-10	NC	2.57		YES
14274-82-9	Thorium-228	0.195	1.79	pCi/g		66-80	1.07	1.07	1.50	NO
14269-63-7	Thorium-230	0.35	2.69	pCi/g		79-178	3.57	2.69	1.90	YES
7440-29-1	Thorium-232	0.037	5.60	pCi/g	S1049	184-491	0.83	0.83	1.40	NO
24678-82-8	Uranium-238	0.32	1.95	pCi/g		110-115	1.08	1.08	1.20	NO

Shaded items are COPCs

UCL - Upper Confidence Limit

EPC Exposure Point Concentration= minimum of either 95% UCL or maximum detected concentration

**Table 3: Identification of Soil Constituents of Potential Concern for the Site Employee Scenario 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
<b>Metals</b>										
7429-90-5	Aluminum	1680	21400	mg/kg	B409	22-22	8570.00	8570.00	19000.00	NO
14733-03-0	Bismuth	0.76	2850	mg/kg	CJ	12-14	NC	2850		YES
7439-93-2	Lithium	2.7	2730	mg/kg	B409	12-13	NC	2730	26.00	YES
<b>Semi-Volatile Organic Compounds</b>										
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	MND22-0104	1-15	NC	7.00		YES
85-01-8	Phenanthrene	78	78	ug/kg	B401	1-15	NC	78.00		YES
<b>Pesticides/PCBs</b>										
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	5.5	ug/kg	MND22-4101	3-22	4.67	4.67		YES
1031-07-8	Endosulfan Sulfate	0.18	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
<b>Radionuclides</b>										
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	3.95	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	1.60	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	11.95	pCi/g		72-75	1.23	1.23	1.20	YES

Shaded items are COPCs

UCL - Upper Confidence Limit

EPC Exposure Point Concentration= minimum of either 95% UCL or maximum detected concentration

**Table 4: Identification of Current Groundwater Constituents of Potential Concern for the Construction Worker Scenario in Parcel 4**

**(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
<b>Inorganics</b>								
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	393.00	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
<b>Radionuclides</b>								
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

Shaded items are COPCs

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 5: Identification of Current Groundwater Constituents of Potential Concern for the Site Employee Scenario in Parcel 4**

**(Exposure Point Concentration Compared to Background Values)**

Chemical	Minimum Concentration	Maximum Concentration	Units	Detection Frequenc	95 Percent UCL	Concentration Used for Screening and EPC	Background Value	COPC for RRE
<b>Inorganics</b>								
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
<b>Radionuclides</b>								
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.

Shaded items are COPCs

**Table 6: Identification of Future Groundwater Constituents of Potential Concern for the Construction Worker Scenario in Parcel 4 (table comprises 2 pages)**

**(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?
<b>Inorganics</b>								
Aluminum	20.1	31500.00	ug/L	107/115	6840.00	6840.00	37523	YES
Antimony	0.35	4160	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	230	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	6076	YES
Copper	0.38	514.00	ug/L	81/117	2680	2680	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	557	YES
Manganese	0.037	3030.00	ug/L	155/165	737.00	737.00	229568	YES
Molybdenum	0.79	474.00	ug/L	51/98	32.50	32.50	3.527	YES
Nickel	1.2	11600.00	ug/L	82/120	749.00	749.00	34957	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	174	YES

**Table 6: Identification of Future Groundwater Constituents of Potential Concern for the Construction Worker Scenario in Parcel 4** (table comprises 2 pages)

(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?
<b>Organic Compounds</b>								
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
<b>Radionuclides</b>								
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

Shaded items are COPCs

UCL= Upper Confidence Limit

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

\*\* = 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 7: Identification of Future Groundwater Constituents of Potential Concern for the Site Employee Scenario in Parcel 4 (table comprises 2 pages)**

**(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?
<b>Inorganics</b>								
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	10.578	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

**Table 7: Identification of Future Groundwater Constituents of Potential Concern for the Site Employee Scenario in Parcel 4 (table comprises 2 pages)**

**(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?
<b>Organic Compounds</b>								
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
<b>Radionuclides</b>								
Plutonium-238	0.012	1870	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	0.914	YES
Tritium	2.95	2816310.00	pCi/L	4440/4455	206000.00	206000.00	1435.47	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

Shaded items are COPCs

UCL= Upper confidence Limit

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

\*\* = 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 8: Current and Future Incremental Residual Risks for Parcel 4\*\***

Scenario and Receptor	Media	Constituents	Pathway	Total Noncarcinogen Risk HI	Total Carcinogenic Risk ELCR
Construction Worker Scenario	Soil (all sample depths) Current and Future	Chemical and Radiological	Ingestion	1.6E-01	1.7E-05
			Dermal Contact	1.7E-03	4.0E-07
			Inhalation of Dust	NA	1.3E-08
			Inhalation of VOCs	NA	NA
			External	NA	1.2E-05
	Soil Total Risk			1.6E-01	2.9E-05
	Groundwater (Current)	Chemical and Radiological	Ingestion	1.1E+00	2.1E-06
			Dermal Contact	1.9E-01	NA
			Inhalation While Showering	NA	NA
	Current Groundwater Total Risk			1.3E+00	2.1E-06
	Groundwater (Future)	Chemical and Radiological	Ingestion	4.9E+00	9.6E-06
			Dermal Contact	4.6E-01	2.8E-04
			Inhalation While Showering	4.8E-04	7.6E-08
	Future Groundwater Total Risk			5.4E+00	2.9E-04
	Air*	Radiological	Inhalation	NA	2.0E-07
Air Total Risk			NA	2.0E-07	
Cumulative Incremental Current Risk			1.5E+00	3.2E-05	
Cumulative Incremental Future Risk			5.5E+00	3.2E-04	
Site Employee Scenario	Soil (0-2 ft bls) Current and Future	Chemical and Radiological	Ingestion	3.2E-05	3.0E-06
			Inhalation of Dust	NA	2.5E-08
			Inhalation of VOCs	NA	NA
			External	NA	6.1E-05
	Soil Total Risk			3.2E-05	6.4E-05
	Groundwater (Current)	Chemical and Radiological	Ingestion	1.1E+00	1.8E-05
			Current Groundwater Total Risk		1.1E+00
	Groundwater (Future)	Chemical and Radiological	Ingestion	4.9E+00	5.4E-05
			Future Groundwater Total Risk		4.9E+00
	Air*	Radiological	Inhalation	NA	9.9E-07
			Air Total Risk		NA
Cumulative Incremental Current Risk			1.1E+00	8.3E-05	
Cumulative Incremental Future Risk			4.9E+00	1.2E-04	

bls - below land surface

NA - Not applicable

\*RRE values for air were brought forward from the Technical Position Report for Release Blocks D and H. (DOE 1999).

Numbers written as 1.0E-03 equal  $1 \times 10^{-3}$

\*\*Source: Parcel 4 RRE Table 5.21. (DOE 2000)

Note: Negative risk values were not added into the total incremental risk.