ON SCENE COORDINATOR (OSC) REPORT

PRS 99
REMOVAL ACTION

MOUND PLANT
MIAMISBURG, OHIO

April, 2000

Working Draft
REVISION 0

Department of Energy
Ohio Field Office

BWXT of Ohio, Inc.

30 05

BWX Technologies, Inc.
a McDermott company

0408100023

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SP-007-00
April 13, 2000

00-TC-04-13
Mr. Richard B. Provencher
Miamisburg Environmental Management Project
U.S. Department of Energy
P.O. Box 66
Miamisburg, OH 45343-0066

ATTN: Paul Lucas

SUBJECT: Draft PRS 99 On Scene Coordinator Report
DE-AC-24-97OH20044

Dear Mr. Provencher:

The PRS 99 removal action was completed by backfilling the excavation the week of October 4, 1999. The On Scene Coordinator (OSC) report would therefore be due no later than September 30, 2000. The Department of Energy had previously proposed that the PRS 99 OSC Report would be accelerated and would be delivered to the regulatory agencies by April 17, 1999 in order to coordinate with the Parcel 3 schedule. BWXT of Ohio is therefore transmitting copies of the report to the US EPA and Ohio EPA for the specified 30-day review and comment.

If you have any questions please contact me at ext. 3954.

Sincerely,

John B. Price

John B. Price
Project Manager, Soils Project

CC: DOE/MEMP (2)
T. Fischer, US EPA
A. Kleinrath, DOE/MEMP
D. Meredith, TechLaw, Inc
B. Nickel, OEPA (2)
R. Vandegrift, ODH
DCC w/o attachment

BCC: J. Geneczko
D. Gallaher w/o attachment
D. Rakel

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EXECUTIVE SUMMARY

The Potential Release Site (PRS) 99 Removal Action was performed in the GH Parking Lot on the north end of the Mound Plant in the city of Miamisburg, Ohio. This removal action resulted in the excavation and containerization for disposal of approximately 12,000 cubic feet (440 cubic yards) of material. Containerized material is slated for disposal at NTS and Envirocare disposal facilities. The cleanup goal for plutonium^{238} was 55 pCi/g. All verification sample results were below 55 pCi/g Pu^{238}.

Arthur Kleinrath, OSC
U.S. Department of Energy
Miamisburg, Ohio

Tim Fischer
U.S.EPA
Chicago, Illinois

Brian Nickel
Ohio EPA
Dayton, Ohio

1.0 SUMMARY OF EVENTS

This section describes the site background and events leading up to the removal action, parties involved in responding to the removal action, cleanup objective determination, chronological narrative of the removal action, and resources committed to complete the project.

1.1 Site Conditions and Background

The Guard House (GH) Building and adjacent parking lot are located at the north end of the Mound Plant, on the Main Hill. The GH Lot was much smaller in the early 1950s, as shown on Figure 1. By 1959, the GH Parking Lot was shorter and narrower than the current dimensions, but significantly larger than the original. In 1963-64, prior to an expansion of the GH Parking Lot, waste was disposed of in a trench dug next to the GH Lot. Waste reportedly disposed of included 110 gallons of spent (neutralized) chromium plating bath solution and three 55-gallon drums of polonium^{210} (and possibly cobalt^{60} and cesium^{137}) contaminated blasting sand. Historical information indicated that sand, drums, and metal framework were disposed of in the vicinity of PRS 99. By 1965, the disposal was complete as the trench was backfilled and the lot was expanded south to its current length. By 1968, the lot was expanded to its current width as shown on Figure 1.

1.2 Organization of the Removal Action

Table 1 lists the parties responding to the removal action, and their responsibilities.

Table 1: Organization of the Removal Action

US EPA SFR-5J 77 W. Jackson Street Chicago, IL 60604 312-353-2000	Tim Fischer	Federal agency responsible for oversight
Ohio EPA 401 E. Fifth Street Dayton, OH 45402-2911 937-285-6357	Brian Nickel	State agency responsible for oversight
DOE-MEMP P.O. Box 66 1 Mound Road Miamisburg, OH 45343-0066 937-865-3597	Art Kleinrath	Federal OSC responsible for oversight and success
BWXT of Ohio Soils Project 1 Mound Road Miamisburg, OH 45343-3030 937-865-3954	John Price	Provide OSC with Technical Assistance, administrative support, field oversight, sample management, site safety, photo, site documentation, and preparation of the OSC Report

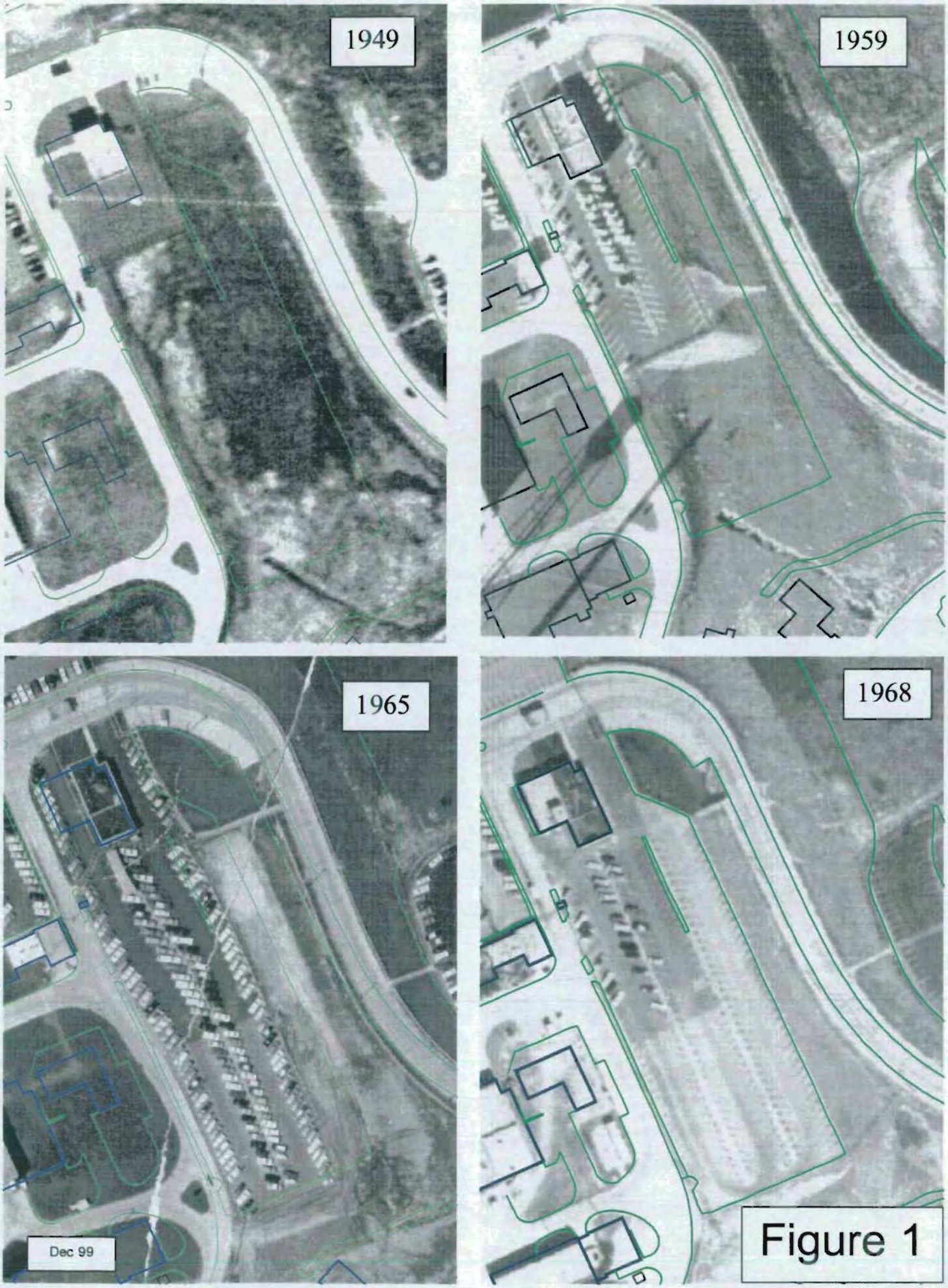


Figure 1

1.3 Objectives

Documentation Objective. The objective of this OSC Report is to describe the removal action fieldwork, items identified for continual improvement, and document successful completion of the project.

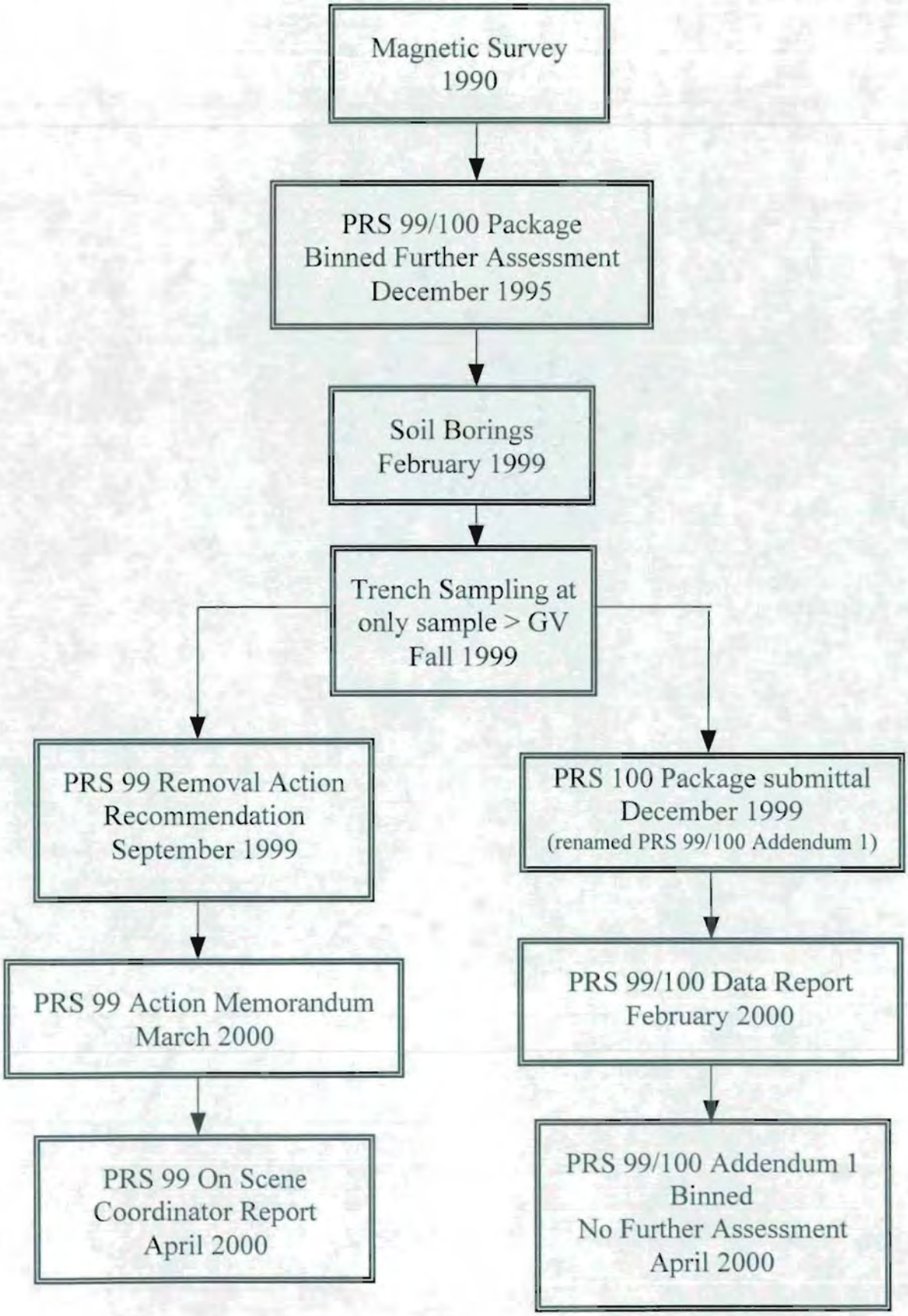
Cleanup Objective. The contaminant of concern for this removal action was Pu^{238}. The Mound Plant Risk-Based Guideline Value of 55 pCi/g for Pu^{238} (10^{-5} risk) was the cleanup objective for this removal action. All of the verification samples collected at the base of excavation were less than 55 pCi/g Pu^{238}.

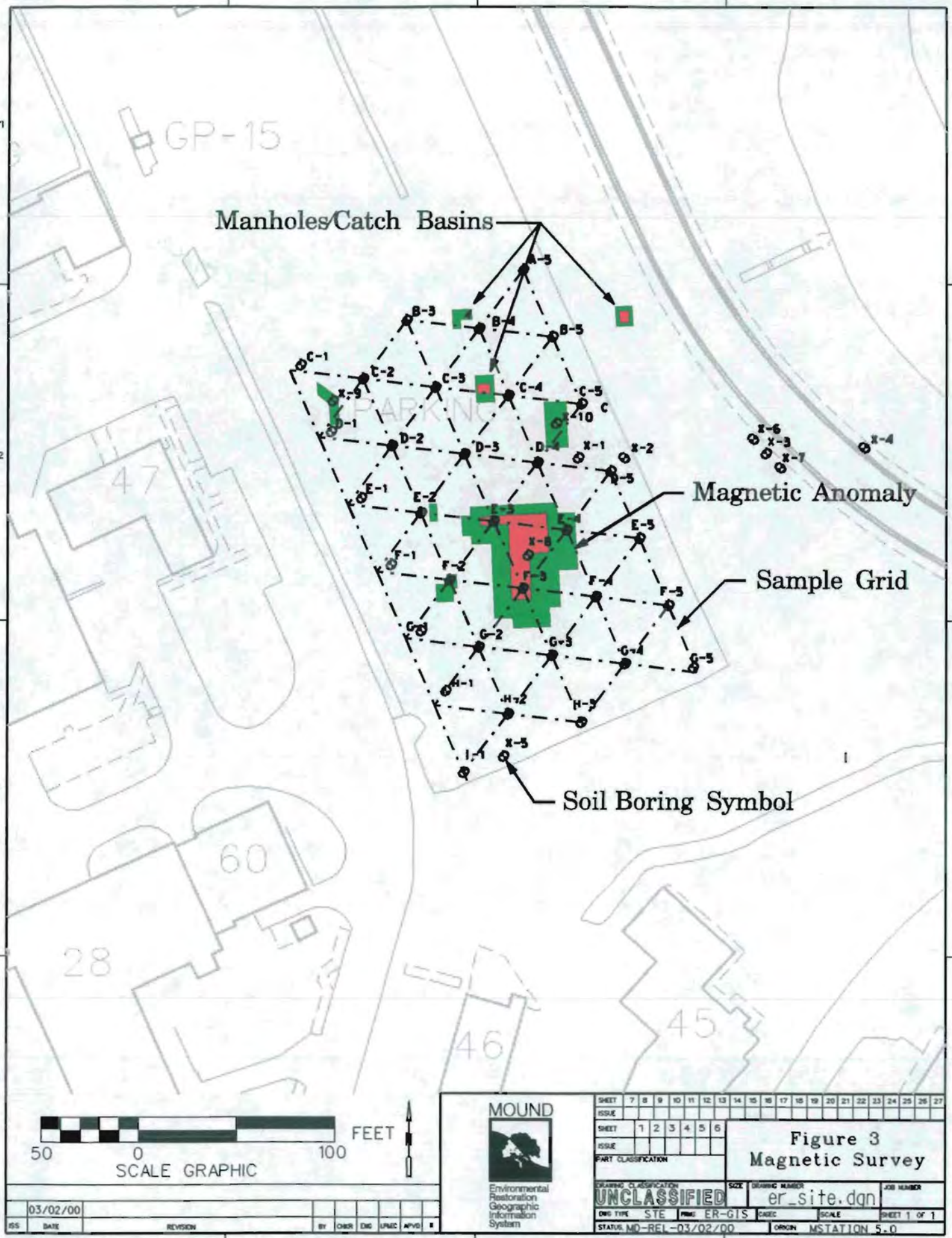
1.4 Chronological Narrative of Removal Action

The following is a chronological narrative of events surrounding the PRS 99 removal action. A summary flowchart of events is presented as Figure 2.

1963-64	Waste disposal period, exact location of buried material unknown.
1990	A magnetic survey of the GH Lot was performed to identify the location of buried material. Several anomalies were detected as shown on Figure 3, one of which was large enough to be a disposal area and was presumed to be a trench.
Dec 1995	PRS 99/100 binned Further Assessment by the Core Team.
1998	Further Assessment scheduled to meet the need for Release Block H transfer.
Feb 1999	Further Assessment sampling design used statistics to find disposal areas larger than 20 feet across. Extra borings were added to sample the center of the magnetic anomalies to confirm or deny the presence of waste. 137 investigative samples were collected from 46 soil borings across the parking lot (including PRS 99 and PRS 100). In an extra boring centered in the largest anomaly (PRS 99), one contaminant of concern was detected in excess of its risk-based guideline value. The single sample, located within Soil Boring X-8, displayed elevated Pu^{238} in soil at 297 pCi/g (offsite analysis) vs. risk value of 55 pCi/g (10^{-5} risk). Removable Pu^{238} was detected via field instrumentation on the split spoon used to collect the sample. A result of 70 disintegrations per minute per hundred centimeters square (dpm/100 cm^2) was detected. Removable Pu^{238} was associated with gray/white sand found in the 8-12' sample interval of X-8. Removable contamination can become airborne and is therefore considered more hazardous than "fixed" contamination that is not removable. Metal chips were also found in the sample containing the sand. All other samples in the other borings (including the extra borings at the other,

Figure 2: History of PRS 99/100




Manholes/Catch Basins
Magnetic Anomaly
Sample Grid
Soil Boring Symbol
GP-15
PARKING
47
60
28
46
45
A-5
B-3
B-4
B-5
C-1
C-2
C-3
C-4
C-5
D-1
D-2
D-3
D-4
D-5
E-1
E-2
E-3
E-4
E-5
F-1
F-2
F-3
F-4
F-5
G-1
G-2
G-3
G-4
G-5
H-1
H-2
H-3
I-1
X-1
X-2
X-3
X-4
X-5
X-6
X-7
X-8
X-9
X-10
FEET
50
0
100
SCALE GRAPHIC
MOUND
Environmental Restoration Geographic Information System
Figure 3
Magnetic Survey
UNCLASSIFIED
er_site.dgn
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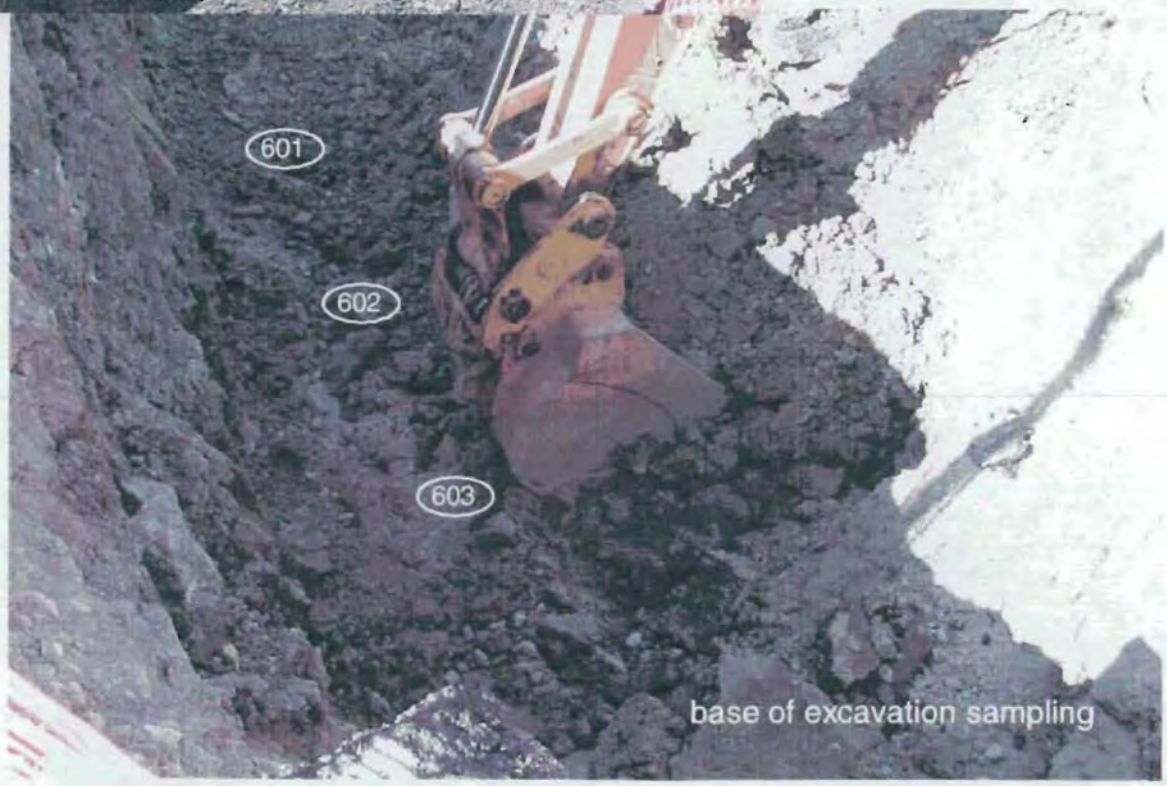
ER-GIS
MD-REL-03/02/00
MSTATION 5.0
03/02/00

	smaller anomalies) showed no sign of contamination or visual indication of waste. There were no elevated detections or visual indications of debris associated with any of the PRS 100 samples.
mid 1999	PRS 99 additional sample collection was designed via trenching method instead of additional soil borings. This sample method would allow for sampling as well as visual inspection and removal of contamination/debris if encountered.
fall 1999	Approval by DOE, USEPA, and Ohio EPA of the redirection for additional sampling via trenching.
10 Aug 1999	Excavation begins.
11 Aug 1999	Staging of soil in LSA boxes due to identification of low level soil contamination.
14 Aug 1999	Discovered process tank and significant amount of debris that warranted removal and disposal.
16 Sept 1999	Removal Action authorized by DOE and EPAs.
thru Sept 1999	Excavation continued until all visual indications of waste material were removed and bedrock was encountered. Indicators were metal debris, sand, or dissimilar soil. The extent of the excavation was consistent with the dimensions of the anomaly identified by magnetic survey. Verification samples were collected from both the excavation floor and sidewalls.
23 Sep 1999	Verification sampling for PRS 99 was performed and included collection of nine verification samples from the base and sidewalls of the excavation as shown in Figure 4. Numbers 601 through 609 on the photo correspond to sample identification numbers on the analytical results included at Appendix A. All nine samples were validated. Seven of the nine samples were split by Ohio EPA representative Anthony Campbell.
	A short count of the nine verification samples was performed at the onsite gamma spec lab to confirm that elevated levels of radionuclides were not present in the base and sidewalls of the excavation. Information obtained from short count results supported that samples could be shipped offsite for analysis (met DOT shipping requirements). A longer count was run to confirm MDAs below the guideline values (GVs). All long-count gamma spec MDAs were below their respective GV. Results of long-count onsite gamma spec analyses are presented in Appendix A to this OSC Report. All nine verification samples were submitted for offsite alpha and gamma spec analyses. Results are presented in Attachment A to this OSC Report. ***Results for all offsite radionuclide analyses (except Pb^{210}) and***

Figure 4:

Verification
Sample Locations

Notes:
-sample 608 opposite 607
-sample 606 opposite 605
-numbers correspond to verification sample IDs presented in Appendix A



	corresponding MDAs were less than the guideline values presented. Two of the Pb^{210} results were 0.1 pCi/g greater than the GV; all others were less than the GV. Some of the long counts for Ra^{226} were greater than the GV but all offsite Ra^{226} counts were less than the GV. Although not required by the sampling plan/work package, but based on the types and variety of material excavated (drums, soil discoloration, etc), offsite volatile organic compound (VOC) analyses were performed on all nine verification samples. Analytical results and available GVs for the VOC analyses are included as Appendix A. ***Most VOCs were "not detected" at the method detection limit.*** Some VOCs typically associated with solvents and fuel components were detected at very low levels (<60 ppb); there was one detection of total xylenes at 76 ppb. Also detected at <150ppb were common lab contaminants such as 2-butanone, acetone, and methylene chloride; there were detections of acetone at 52, 58 and 142 ppb. Chromium was not detected in any of the soil borings and was not detected in suspect soil removed from the excavation. Analysis for chromium was performed on all nine verification samples as additional confirmation. ***Results of all chromium analyses were "not detected" at the reporting limit of 0.5 mg/kg.***
4-5 Oct 1999	Approval was given by DOE to backfill. The excavated area was backfilled to grade. Metal spikes were set into the ground around the perimeter of the backfilled area to facilitate any future identification.
Oct 1999	Disturbed area of parking lot was paved with asphalt and stripes applied for parking.
pending	PRS 99 Action Memorandum approved by DOE and EPAs.
pending	PRS 99/100 PRS Package Addendum 1 approved by DOE and EPAs.

1.5 Resources Committed

Table 2: Materials and Disposition

Type of Material	Quantity	Disposal Method	Disposal Location
contaminated soil	12,300 cf	Rail transport	Envirocare
contaminated soil (>300pCi/g Pu^{238})	3 LSA boxes (300 cf)	truck	NTS
impeller assembly	rolloff box	TBD	
est. 400 gallon process tank	fabricated box	TBD	
soil with possible solvent contamination	8 LSA boxes	TBD based on RCRA sample results	

Table 3: Removal Project Cost

Extramural Costs	Cost
Fieldwork	$400,000
Transportation of Contaminated Soil*	$42,000
Disposal of Contaminated Soil*	$65,000
Verification Sampling & Analyses*	$10,000
Restoration/paving & striping	$4,000
Estimated Total Project Cost	$521,000

* does not include TBD items in Table 2 above

2.0 EFFECTIVENESS OF THE REMOVAL ACTION

Verification sample results are presented in Appendix A to this OSC Report. Validation was performed on all sample results from offsite laboratories. Statistical analysis of the results was not necessary as all results were below the cleanup objectives.

2.1 Actions Taken by Mound Personnel

Mound Soils Project and onsite personnel planned, oversighted, and performed the excavation, monitoring, sampling and analyses, and transportation of contaminated soil and debris to designated onsite staging areas. Information made available to the general public is included in Appendix B of this OSC Report. Additional field documentation is provided in Appendix C to this OSC Report. Photographic documentation is presented in Appendix D to this OSC Report.

2.2 Actions Taken by Local, State, and Federal Agencies

DOE/MEMP, USEPA, and Ohio EPA had oversight responsibility for the removal action.

2.3 Actions Taken by Subcontractors

Subcontractors involved in the project included the following:

- Roy F. Weston, Inc performed sample technician, laboratory liaison, and data validation support
- A to Z Asphalt Contracting
- NTS (disposal facility) slated to receive waste via truck
- Envirocare (disposal facility) slated to receive waste via rail transport

3.0 DIFFICULTIES ENCOUNTERED

3.1 Items that Affect the Removal Action

The difficulties encountered during the removal were primarily waste stream management issues including:

- managing disposal parameters and requirements for two different facilities
- container availability was a problem due to unexpectedly high waste volume, and was solved by recycling containers used on previous projects
- containerization of large and/or bulky items (up to 8' diameter)
- care had to be taken segregating "unlike" wastes

3.2 Issues of Intergovernmental Coordination

All DOE/OEPA/USEPA interactions were generally good. The agencies were updated at Core Team meetings and the Mound 2000 process worked well. Splitting of samples with Ohio EPA went well.

4.0 RECOMMENDATIONS

4.1 Means to Prevent a Recurrence

The waste was removed and therefore recurrence of a spill or leak, or spread of contamination is prevented. Recurrence will be prevented as it is no longer an accepted standard of the industry to land dispose via trench and backfill. This area will be transferred from federal to private ownership. All State and Federal disposal rules will apply.

APPENDIX A

Verification Sample Results

APPENDIX A: PRS 99 Removal Action Verification Results

Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
601	19990923	ORVOA	1,1,1-Trichloroethane	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,1,2,2-Tetrachloroethane	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,1,2-Trichloro-1,2,2-trifluoroethane	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,1,2-Trichloroethane	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,1-Dichloroethane	7.8E+3	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,1-Dichloroethene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,2-cis-Dichloroethene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,2-Dichloroethane	1.1E+4	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,2-Dichloroethene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,2-Dichloropropane	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,2-Diethylbenzene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,2-trans-Dichloroethene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,3-cis-Dichloropropene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	1,3-trans-Dichloropropene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	2-Butanone	9.3E+6	3.328		ug/kg		JB
601	19990923	ORVOA	2-Hexanone	none	12.593	12.593	ug/kg		U
601	19990923	ORVOA	2-Methyl-4-pentanone	none	12.593	12.593	ug/kg		U
601	19990923	ORVOA	Acetone	2.1E+7	12.986		ug/kg		B
601	19990923	ORVOA	Acetonitrile	none	125.93	125.93	ug/kg		U
601	19990923	ORVOA	Acrylonitrile	none	125.93	125.93	ug/kg		U
601	19990923	RAD	Actinium-227	1.0b	0.11	0.25	pCi/g		
601	19990923	RAD	Americium-241	4.95b	0.42	0.42	pCi/g		U
601	19990923	RAD	Americium-241	4.95b	0.02	0.07	pCi/g		U
601	19990923	ORVOA	Benzene	3.2E+4	6.296	6.296	ug/kg		U
601	19990923	RAD	Bismuth-207	0.175b	0.0846	0.0846	pCi/g		U
601	19990923	RAD	Bismuth-210	see Pb^{210}	0.126	0.126	pCi/g		U
601	19990923	ORVOA	Bromodichloromethane	4.3E+6	6.296	6.296	ug/kg		U
601	19990923	ORVOA	Bromoform	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	Bromomethane	none	12.593	12.593	ug/kg		U
601	19990923	ORVOA	Carbon Disulfide	2.8E+5	6.296	6.296	ug/kg		U
601	19990923	ORVOA	Carbon Tetrachloride	1.2E+4	6.296	6.296	ug/kg		U
601	19990923	RAD	Cesium-137	0.42c	0.114	0.114	pCi/g		U
601	19990923	RAD	Cesium-137	0.42c	0.06	0.06	pCi/g		U
601	19990923	ORVOA	Chlorobenzene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	Chloroethane	1.6E+5	12.593	12.593	ug/kg		U
601	19990923	ORVOA	Chloroform	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	Chloromethane	none	12.593	12.593	ug/kg		U
601	19990923	GENERA	Chromium VI	1,100	0.5	0.5	mg/kg		U
601	19990923	RAD	Cobalt-60	0.1b	0.116	0.116	pCi/g		U
601	19990923	RAD	Cobalt-60	0.1b	0.05	0.05	pCi/g		U
601	19990923	ORVOA	Dibromochloromethane	3.5E+4	6.296	6.296	ug/kg		U
601	19990923	ORVOA	Ethylbenzene	4.8E+2	6.296	6.296	ug/kg		U
601	19990923	ORVOA	Hexane	9.1E+4	12.593	12.593	ug/kg		U
601	19990923	ORVOA	Iodomethane	none	12.593	12.593	ug/kg		U
601	19990923	RAD	Lead-210	1.7c	0.895	0.739	pCi/g		J
601	19990923	RAD	Lead-210	1.7c	1.06	0.67	pCi/g		
601	19990923	ORVOA	Methylene Chloride	none	15.231		ug/kg		B
601	19990923	ORVOA	m-Xylene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	o-Xylene	none	6.296	6.296	ug/kg		U
601	19990923	GENERA	Percent Solids	na	79.8	0.01	%		
601	19990923	RAD	Plutonium-238	55d	2.51	0.022	pCi/g		
601	19990923	RAD	Plutonium-238	55d	18.08	18.08	pCi/g		U
601	19990923	RAD	Plutonium-239/240	5.5b	0.0246	0.0246	pCi/g		U
601	19990923	RAD	Potassium-40	na	31.2	4.12	pCi/g		

APPENDIX A: PRS 99 Removal Action Verification Results

Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
601	19990923	RAD	Radium-226	3.0a	2.19	0.78	pCi/g		
601	19990923	RAD	Radium-226	3.0a	0.943	0.2	pCi/g		
601	19990923	ORVOA	Styrene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	Tetrachloroethene	2.1E+6	6.296	6.296	ug/kg		U
601	19990923	RAD	Thorium-228	3.0a	0.823	0.0798	pCi/g		
601	19990923	RAD	Thorium-230	44c	0.643	0.0292	pCi/g		
601	19990923	RAD	Thorium-230	44c	7	7	pCi/g		U
601	19990923	RAD	Thorium-232	3.0a	0.702	0.0173	pCi/g		
601	19990923	RAD	Thorium-232	3.0a	0.82	0.25	pCi/g		
601	19990923	ORVOA	Toluene	2.5E+5	6.296	6.296	ug/kg		U
601	19990923	ORVOA	Trichloroethene	none	6.296	6.296	ug/kg		U
601	19990923	ORVOA	Vinyl Acetate	none	12.593	12.593	ug/kg		U
601	19990923	ORVOA	Vinyl Chloride	none	12.593	12.593	ug/kg		U
601	19990923	ORVOA	Xylenes, Total	4.3E+8	6.296	6.296	ug/kg		U
602	19990923	ORVOA	1,1,1-Trichloroethane	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,1,2,2-Tetrachloroethane	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,1,2-Trichloro-1,2,2-trifluoroethane	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,1,2-Trichloroethane	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,1-Dichloroethane	7.8E+3	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,1-Dichloroethene	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,2-cis-Dichloroethene	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,2-Dichloroethane	1.1E+4	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,2-Dichloroethene	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,2-Dichloropropane	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,2-Diethylbenzene	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,2-trans-Dichloroethene	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,3-cis-Dichloropropene	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	1,3-trans-Dichloropropene	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	2-Butanone	9.3E+6	4.998		ug/kg		JB
602	19990923	ORVOA	2-Hexanone	none	12.149	12.149	ug/kg		U
602	19990923	ORVOA	2-Methyl-4-pentanone	none	12.149	12.149	ug/kg		U
602	19990923	ORVOA	Acetone	2.1E+7	12.589		ug/kg		B
602	19990923	ORVOA	Acetonitrile	none	121.49	121.49	ug/kg		U
602	19990923	ORVOA	Acrylonitrile	none	121.49	121.49	ug/kg		U
602	19990923	RAD	Actinium-227	1.0b	0.32	0.32	pCi/g		U
602	19990923	RAD	Americium-241	4.95b	0.403	0.403	pCi/g		U
602	19990923	RAD	Americium-241	4.95b	0.09	0.09	pCi/g		U
602	19990923	ORVOA	Benzene	3.2E+4	6.074	6.074	ug/kg		U
602	19990923	RAD	Bismuth-207	0.175b	0.0685	0.0685	pCi/g		U
602	19990923	RAD	Bismuth-210	see Pb^{210}	0.106	0.106	pCi/g		U
602	19990923	ORVOA	Bromodichloromethane	4.3E+6	6.074	6.074	ug/kg		U
602	19990923	ORVOA	Bromoform	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	Bromomethane	none	12.149	12.149	ug/kg		U
602	19990923	ORVOA	Carbon Disulfide	2.8E+5	6.074	6.074	ug/kg		U
602	19990923	ORVOA	Carbon Tetrachloride	1.2E+4	6.074	6.074	ug/kg		U
602	19990923	RAD	Cesium-137	0.42c	0.0877	0.0877	pCi/g		U
602	19990923	RAD	Cesium-137	0.42c	0.05	0.04	pCi/g		
602	19990923	ORVOA	Chlorobenzene	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	Chloroethane	1.6E+5	12.149	12.149	ug/kg		U
602	19990923	ORVOA	Chloroform	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	Chloromethane	none	12.149	12.149	ug/kg		U
602	19990923	GENERA	Chromium VI	1,100	0.48	0.48	mg/kg		U
602	19990923	RAD	Cobalt-60	0.1b	0.0977	0.0977	pCi/g		U

APPENDIX A: PRS 99 Removal Action Verification Results

Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
602	19990923	RAD	Cobalt-60	0.1b	0.07	0.04	pCi/g		
602	19990923	ORVOA	Dibromochloromethane	3.5E+4	6.074	6.074	ug/kg		U
602	19990923	ORVOA	Ethylbenzene	4.8E+2	18.007		ug/kg		
602	19990923	ORVOA	Hexane	9.1E+4	12.149	12.149	ug/kg		U
602	19990923	ORVOA	Iodomethane	none	12.149	12.149	ug/kg		U
602	19990923	RAD	Lead-210	1.7c	1.37	1.06	pCi/g		
602	19990923	RAD	Lead-210	1.7c	0.85	0.85	pCi/g		U
602	19990923	ORVOA	Methylene Chloride	none	20.241		ug/kg		B
602	19990923	ORVOA	m-Xylene	none	37.134		ug/kg		
602	19990923	ORVOA	o-Xylene	none	39.708		ug/kg		
602	19990923	GENERA	Percent Solids	na	83.6	0.01	%		
602	19990923	RAD	Plutonium-238	55d	34.8	0.0339	pCi/g		
602	19990923	RAD	Plutonium-238	55d	27.66	27.66	pCi/g		U
602	19990923	RAD	Plutonium-239/240	5.5b	0.31	0.0339	pCi/g		
602	19990923	RAD	Potassium-40	na	18.9	0.635	pCi/g		
602	19990923	RAD	Radium-226	3.0a	0.872	0.149	pCi/g		
602	19990923	RAD	Radium-226	3.0a	1.04	1.04	pCi/g		U
602	19990923	ORVOA	Styrene	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	Tetrachloroethene	2.1E+6	2.936		ug/kg		J
602	19990923	RAD	Thorium-228	3.0a	0.7	0.0499	pCi/g		
602	19990923	RAD	Thorium-230	44c	1.03	0.0257	pCi/g		
602	19990923	RAD	Thorium-230	44c	9.62	9.62	pCi/g		U
602	19990923	RAD	Thorium-232	3.0a	0.644	0.0173	pCi/g		
602	19990923	RAD	Thorium-232	3.0a	0.75	0.15	pCi/g		
602	19990923	ORVOA	Toluene	2.5E+5	23.442		ug/kg		
602	19990923	ORVOA	Trichloroethene	none	6.074	6.074	ug/kg		U
602	19990923	ORVOA	Vinyl Acetate	none	12.149	12.149	ug/kg		U
602	19990923	ORVOA	Vinyl Chloride	none	12.149	12.149	ug/kg		U
602	19990923	ORVOA	Xylenes, Total	4.3E+8	76.983		ug/kg		
603	19990923	ORVOA	1,1,1-Trichloroethane	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,1,2,2-Tetrachloroethane	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,1,2-Trichloro-1,2,2-trifluoroethane	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,1,2-Trichloroethane	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,1-Dichloroethane	7.8E+3	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,1-Dichloroethene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,2-cis-Dichloroethene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,2-Dichloroethane	1.1E+4	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,2-Dichloroethene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,2-Dichloropropane	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,2-Diethylbenzene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,2-trans-Dichloroethene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,3-cis-Dichloropropene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	1,3-trans-Dichloropropene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	2-Butanone	9.3E+6	28.129		ug/kg		B
603	19990923	ORVOA	2-Hexanone	none	12.563	12.563	ug/kg		U
603	19990923	ORVOA	2-Methyl-4-pentanone	none	12.563	12.563	ug/kg		U
603	19990923	ORVOA	Acetone	2.1E+7	142.36		ug/kg		B
603	19990923	ORVOA	Acetonitrile	none	125.63	125.63	ug/kg		U
603	19990923	ORVOA	Acrylonitrile	none	125.63	125.63	ug/kg		U
603	19990923	RAD	Actinium-227	1.0b	0.3	0.3	pCi/g		U
603	19990923	RAD	Americium-241	4.95b	0.11	0.11	pCi/g		U
603	19990923	RAD	Americium-241	4.95b	0.142	0.142	pCi/g		U
603	19990923	ORVOA	Benzene	3.2E+4	6.281	6.281	ug/kg		U

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Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
603	19990923	RAD	Bismuth-207	0.175b	0.067	0.067	pCi/g		U
603	19990923	RAD	Bismuth-210	see Pb^{210}	0.11	0.11	pCi/g		U
603	19990923	ORVOA	Bromodichloromethane	4.3E+6	6.281	6.281	ug/kg		U
603	19990923	ORVOA	Bromoform	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	Bromomethane	none	12.563	12.563	ug/kg		U
603	19990923	ORVOA	Carbon Disulfide	2.8E+5	6.281	6.281	ug/kg		U
603	19990923	ORVOA	Carbon Tetrachloride	1.2E+4	6.281	6.281	ug/kg		U
603	19990923	RAD	Cesium-137	0.42c	0.06	0.04	pCi/g		
603	19990923	RAD	Cesium-137	0.42c	0.103	0.103	pCi/g		U
603	19990923	ORVOA	Chlorobenzene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	Chloroethane	1.6E+5	12.563	12.563	ug/kg		U
603	19990923	ORVOA	Chloroform	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	Chloromethane	none	12.563	12.563	ug/kg		U
603	19990923	GENERA	Chromium VI	1,100	0.48	0.48	mg/kg		U
603	19990923	RAD	Cobalt-60	0.1b	0.06	0.06	pCi/g		U
603	19990923	RAD	Cobalt-60	0.1b	0.0701	0.0701	pCi/g		U
603	19990923	ORVOA	Dibromochloromethane	3.5E+4	6.281	6.281	ug/kg		U
603	19990923	ORVOA	Ethylbenzene	4.8E+2	6.281	6.281	ug/kg		U
603	19990923	ORVOA	Hexane	9.1E+4	12.563	12.563	ug/kg		U
603	19990923	ORVOA	Iodomethane	none	12.563	12.563	ug/kg		U
603	19990923	RAD	Lead-210	1.7c	1.03	1.03	pCi/g		U
603	19990923	RAD	Lead-210	1.7c	1.83	1.6	pCi/g		
603	19990923	ORVOA	Methylene Chloride	none	17.049		ug/kg		B
603	19990923	ORVOA	m-Xylene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	o-Xylene	none	6.281	6.281	ug/kg		U
603	19990923	GENERA	Percent Solids	na	82.7	0.01	%		
603	19990923	RAD	Plutonium-238	55d	30.97	30.97	pCi/g		U
603	19990923	RAD	Plutonium-238	55d	16	0.026	pCi/g		
603	19990923	RAD	Plutonium-239/240	5.5b	0.0826	0.0124	pCi/g		
603	19990923	RAD	Potassium-40	na	18.9	0.686	pCi/g		
603	19990923	RAD	Radium-226	3.0a	2.19	1	pCi/g		
603	19990923	RAD	Radium-226	3.0a	0.896	0.155	pCi/g		
603	19990923	ORVOA	Styrene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	Tetrachloroethene	2.1E+6	6.281	6.281	ug/kg		U
603	19990923	RAD	Thorium-228	3.0a	0.671	0.0613	pCi/g		
603	19990923	RAD	Thorium-230	44c	9.98	9.98	pCi/g		U
603	19990923	RAD	Thorium-230	44c	1	0.0432	pCi/g		
603	19990923	RAD	Thorium-232	3.0a	0.67	0.19	pCi/g		
603	19990923	RAD	Thorium-232	3.0a	0.671	0.0335	pCi/g		
603	19990923	ORVOA	Toluene	2.5E+5	1.432		ug/kg		J
603	19990923	ORVOA	Trichloroethene	none	6.281	6.281	ug/kg		U
603	19990923	ORVOA	Vinyl Acetate	none	12.563	12.563	ug/kg		U
603	19990923	ORVOA	Vinyl Chloride	none	12.563	12.563	ug/kg		U
603	19990923	ORVOA	Xylenes, Total	4.3E+8	6.281	6.281	ug/kg		U
604	19990923	ORVOA	1,1,1-Trichloroethane	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,1,2,2-Tetrachloroethane	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,1,2-Trichloro-1,2,2-trifluoroethane	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,1,2-Trichloroethane	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,1-Dichloroethane	7.8E+3	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,1-Dichloroethene	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,2-cis-Dichloroethene	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,2-Dichloroethane	1.1E+4	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,2-Dichloroethene	none	5.704	5.704	ug/kg		U

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Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
604	19990923	ORVOA	1,2-Dichloropropane	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,2-Diethylbenzene	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,2-trans-Dichloroethene	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,3-cis-Dichloropropene	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	1,3-trans-Dichloropropene	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	2-Butanone	9.3E+6	11.682		ug/kg		B
604	19990923	ORVOA	2-Hexanone	none	11.408	11.408	ug/kg		U
604	19990923	ORVOA	2-Methyl-4-pentanone	none	11.408	11.408	ug/kg		U
604	19990923	ORVOA	Acetone	2.1E+7	52.555		ug/kg		B
604	19990923	ORVOA	Acetonitrile	none	114.08	114.08	ug/kg		U
604	19990923	ORVOA	Acrylonitrile	none	114.08	114.08	ug/kg		U
604	19990923	RAD	Actinium-227	1.0b	0.2	0.2	pCi/g		U
604	19990923	RAD	Americium-241	4.95b	0.225	0.225	pCi/g		U
604	19990923	RAD	Americium-241	4.95b	0.05	0.05	pCi/g		U
604	19990923	ORVOA	Benzene	3.2E+4	5.704	5.704	ug/kg		U
604	19990923	RAD	Bismuth-207	0.175b	0.0737	0.0737	pCi/g		U
604	19990923	RAD	Bismuth-210	see Pb^{210}	0.102	0.102	pCi/g		U
604	19990923	ORVOA	Bromodichloromethane	4.3E+6	5.704	5.704	ug/kg		U
604	19990923	ORVOA	Bromoform	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	Bromomethane	none	11.408	11.408	ug/kg		U
604	19990923	ORVOA	Carbon Disulfide	2.8E+5	5.704	5.704	ug/kg		U
604	19990923	ORVOA	Carbon Tetrachloride	1.2E+4	5.704	5.704	ug/kg		U
604	19990923	RAD	Cesium-137	0.42c	0.235	0.0938	pCi/g		
604	19990923	RAD	Cesium-137	0.42c	0.1	0.04	pCi/g		
604	19990923	ORVOA	Chlorobenzene	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	Chloroethane	1.6E+5	11.408	11.408	ug/kg		U
604	19990923	ORVOA	Chloroform	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	Chloromethane	none	11.408	11.408	ug/kg		U
604	19990923	GENERA	Chromium VI	1,100	0.48	0.48	mg/kg		U
604	19990923	RAD	Cobalt-60	0.1b	0.0908	0.0908	pCi/g		U
604	19990923	RAD	Cobalt-60	0.1b	0.04	0.04	pCi/g		U
604	19990923	ORVOA	Dibromochloromethane	3.5E+4	5.704	5.704	ug/kg		U
604	19990923	ORVOA	Ethylbenzene	4.8E+2	5.704	5.704	ug/kg		U
604	19990923	ORVOA	Hexane	9.1E+4	11.408	11.408	ug/kg		U
604	19990923	ORVOA	Iodomethane	none	11.408	11.408	ug/kg		U
604	19990923	RAD	Lead-210	1.7c	1.8	0.795	pCi/g		
604	19990923	RAD	Lead-210	1.7c	0.78	0.48	pCi/g		
604	19990923	ORVOA	Methylene Chloride	none	9.883		ug/kg		B
604	19990923	ORVOA	m-Xylene	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	o-Xylene	none	5.704	5.704	ug/kg		U
604	19990923	GENERA	Percent Solids	na	83.8	0.01	%		
604	19990923	RAD	Plutonium-238	55d	0.0399	0.00833	pCi/g		
604	19990923	RAD	Plutonium-238	55d	10.87	10.87	pCi/g		U
604	19990923	RAD	Plutonium-239/240	5.5b	0.00921	0.00832	pCi/g		
604	19990923	RAD	Potassium-40	na	19.9	0.864	pCi/g		
604	19990923	RAD	Radium-226	3.0a	0.971	0.157	pCi/g		
604	19990923	RAD	Radium-226	3.0a	1.69	0.64	pCi/g		
604	19990923	ORVOA	Styrene	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	Tetrachloroethene	2.1E+6	5.704	5.704	ug/kg		U
604	19990923	RAD	Thorium-228	3.0a	0.635	0.0544	pCi/g		
604	19990923	RAD	Thorium-230	44c	0.633	0.0313	pCi/g		
604	19990923	RAD	Thorium-230	44c	5.11	4.75	pCi/g		
604	19990923	RAD	Thorium-232	3.0a	0.533	0.0253	pCi/g		
604	19990923	RAD	Thorium-232	3.0a	0.65	0.17	pCi/g		

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Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
604	19990923	ORVOA	Toluene	2.5E+5	5.704	5.704	ug/kg		U
604	19990923	ORVOA	Trichloroethene	none	5.704	5.704	ug/kg		U
604	19990923	ORVOA	Vinyl Acetate	none	11.408	11.408	ug/kg		U
604	19990923	ORVOA	Vinyl Chloride	none	11.408	11.408	ug/kg		U
604	19990923	ORVOA	Xylenes, Total	4.3E+8	5.704	5.704	ug/kg		U
605	19990923	ORVOA	1,1,1-Trichloroethane	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,1,2,2-Tetrachloroethane	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,1,2-Trichloro-1,2,2-trifluoroethane	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,1,2-Trichloroethane	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,1-Dichloroethane	7.8E+3	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,1-Dichloroethene	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,2-cis-Dichloroethene	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,2-Dichloroethane	1.1E+4	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,2-Dichloroethene	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,2-Dichloropropane	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,2-Diethylbenzene	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,2-trans-Dichloroethene	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,3-cis-Dichloropropene	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	1,3-trans-Dichloropropene	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	2-Butanone	9.3E+6	11.903		ug/kg		B
605	19990923	ORVOA	2-Hexanone	none	11.35	11.35	ug/kg		U
605	19990923	ORVOA	2-Methyl-4-pentanone	none	11.35	11.35	ug/kg		U
605	19990923	ORVOA	Acetone	2.1E+7	58.078		ug/kg		B
605	19990923	ORVOA	Acetonitrile	none	113.5	113.5	ug/kg		U
605	19990923	ORVOA	Acrylonitrile	none	113.5	113.5	ug/kg		U
605	19990923	RAD	Actinium-227	1.0b	0.4	0.3	pCi/g		
605	19990923	RAD	Americium-241	4.95b	0.12	0.12	pCi/g		U
605	19990923	RAD	Americium-241	4.95b	0.256	0.256	pCi/g		U
605	19990923	ORVOA	Benzene	3.2E+4	5.675	5.675	ug/kg		U
605	19990923	RAD	Bismuth-207	0.175b	0.0642	0.0642	pCi/g		U
605	19990923	RAD	Bismuth-210	see Pb^{210}	0.0978	0.0978	pCi/g		U
605	19990923	ORVOA	Bromodichloromethane	4.3E+6	5.675	5.675	ug/kg		U
605	19990923	ORVOA	Bromoform	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	Bromomethane	none	11.35	11.35	ug/kg		U
605	19990923	ORVOA	Carbon Disulfide	2.8E+5	5.675	5.675	ug/kg		U
605	19990923	ORVOA	Carbon Tetrachloride	1.2E+4	5.675	5.675	ug/kg		U
605	19990923	RAD	Cesium-137	0.42c	0.07	0.06	pCi/g		
605	19990923	RAD	Cesium-137	0.42c	0.103	0.103	pCi/g		U
605	19990923	ORVOA	Chlorobenzene	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	Chloroethane	1.6E+5	11.35	11.35	ug/kg		U
605	19990923	ORVOA	Chloroform	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	Chloromethane	none	11.35	11.35	ug/kg		U
605	19990923	GENERA	Chromium VI	1,100	0.47	0.47	mg/kg		U
605	19990923	RAD	Cobalt-60	0.1b	0.06	0.06	pCi/g		U
605	19990923	RAD	Cobalt-60	0.1b	0.0729	0.0729	pCi/g		U
605	19990923	ORVOA	Dibromochloromethane	3.5E+4	5.675	5.675	ug/kg		U
605	19990923	ORVOA	Ethylbenzene	4.8E+2	5.675	5.675	ug/kg		U
605	19990923	ORVOA	Hexane	9.1E+4	11.35	11.35	ug/kg		U
605	19990923	ORVOA	Iodomethane	none	11.35	11.35	ug/kg		U
605	19990923	RAD	Lead-210	1.7c	1.09	0.99	pCi/g		
605	19990923	RAD	Lead-210	1.7c	1.63	0.743	pCi/g		
605	19990923	ORVOA	Methylene Chloride	none	13.481		ug/kg		B
605	19990923	ORVOA	m-Xylene	none	5.675	5.675	ug/kg		U

APPENDIX A: PRS 99 Removal Action Verification Results

Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
605	19990923	ORVOA	o-Xylene	none	5.675	5.675	ug/kg		U
605	19990923	GENERA	Percent Solids	na	85.1	0.01	%		
605	19990923	RAD	Plutonium-238	55d	32.8	32.8	pCi/g		U
605	19990923	RAD	Plutonium-238	55d	7.48	0.0107	pCi/g		
605	19990923	RAD	Plutonium-239/240	5.5b	0.071	0.0107	pCi/g		
605	19990923	RAD	Potassium-40	na	17.9	0.606	pCi/g		
605	19990923	RAD	Radium-226	3.0a	2.21	1.14	pCi/g		
605	19990923	RAD	Radium-226	3.0a	1.11	0.151	pCi/g		
605	19990923	ORVOA	Styrene	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	Tetrachloroethene	2.1E+6	5.675	5.675	ug/kg		U
605	19990923	RAD	Thorium-228	3.0a	0.722	0.0508	pCi/g		
605	19990923	RAD	Thorium-230	44c	10.61	10.61	pCi/g		U
605	19990923	RAD	Thorium-230	44c	0.736	0.0267	pCi/g		
605	19990923	RAD	Thorium-232	3.0a	0.58	0.24	pCi/g		
605	19990923	RAD	Thorium-232	3.0a	0.65	0.018	pCi/g		
605	19990923	ORVOA	Toluene	2.5E+5	5.675	5.675	ug/kg		U
605	19990923	ORVOA	Trichloroethene	none	5.675	5.675	ug/kg		U
605	19990923	ORVOA	Vinyl Acetate	none	11.35	11.35	ug/kg		U
605	19990923	ORVOA	Vinyl Chloride	none	11.35	11.35	ug/kg		U
605	19990923	ORVOA	Xylenes, Total	4.3E+8	5.675	5.675	ug/kg		U
606	19990923	ORVOA	1,1,1-Trichloroethane	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,1,2,2-Tetrachloroethane	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,1,2-Trichloro-1,2,2-trifluoroethane	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,1,2-Trichloroethane	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,1-Dichloroethane	7.8E+3	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,1-Dichloroethene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,2-cis-Dichloroethene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,2-Dichloroethane	1.1E+4	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,2-Dichloroethene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,2-Dichloropropane	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,2-Diethylbenzene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,2-trans-Dichloroethene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,3-cis-Dichloropropene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	1,3-trans-Dichloropropene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	2-Butanone	9.3E+6	8.71		ug/kg		JB
606	19990923	ORVOA	2-Hexanone	none	11.469	11.469	ug/kg		U
606	19990923	ORVOA	2-Methyl-4-pentanone	none	11.469	11.469	ug/kg		U
606	19990923	ORVOA	Acetone	2.1E+7	47.428		ug/kg		B
606	19990923	ORVOA	Acetonitrile	none	114.69	114.69	ug/kg		U
606	19990923	ORVOA	Acrylonitrile	none	114.69	114.69	ug/kg		U
606	19990923	RAD	Actinium-227	1.0b	0.2	0.2	pCi/g		U
606	19990923	RAD	Americium-241	4.95b	0.137	0.137	pCi/g		U
606	19990923	RAD	Americium-241	4.95b	0.06	0.06	pCi/g		U
606	19990923	ORVOA	Benzene	3.2E+4	5.735	5.735	ug/kg		U
606	19990923	RAD	Bismuth-207	0.175b	0.0649	0.0649	pCi/g		U
606	19990923	RAD	Bismuth-210	see Pb^{210}	0.0982	0.0982	pCi/g		U
606	19990923	ORVOA	Bromodichloromethane	4.3E+6	5.735	5.735	ug/kg		U
606	19990923	ORVOA	Bromoform	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	Bromomethane	none	11.469	11.469	ug/kg		U
606	19990923	ORVOA	Carbon Disulfide	2.8E+5	5.735	5.735	ug/kg		U
606	19990923	ORVOA	Carbon Tetrachloride	1.2E+4	5.735	5.735	ug/kg		U
606	19990923	RAD	Cesium-137	0.42c	0.172	0.0906	pCi/g		
606	19990923	RAD	Cesium-137	0.42c	0.11	0.05	pCi/g		

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Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
606	19990923	ORVOA	Chlorobenzene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	Chloroethane	1.6E+5	11.469	11.469	ug/kg		U
606	19990923	ORVOA	Chloroform	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	Chloromethane	none	11.469	11.469	ug/kg		U
606	19990923	GENERA	Chromium VI	1,100	0.48	0.48	mg/kg		U
606	19990923	RAD	Cobalt-60	0.1b	0.076	0.076	pCi/g		U
606	19990923	RAD	Cobalt-60	0.1b	0.05	0.05	pCi/g		U
606	19990923	ORVOA	Dibromochloromethane	3.5E+4	5.735	5.735	ug/kg		U
606	19990923	ORVOA	Ethylbenzene	4.8E+2	5.735	5.735	ug/kg		U
606	19990923	ORVOA	Hexane	9.1E+4	11.469	11.469	ug/kg		U
606	19990923	ORVOA	Iodomethane	none	11.469	11.469	ug/kg		U
606	19990923	RAD	Lead-210	1.7c	1	1	pCi/g		U
606	19990923	RAD	Lead-210	1.7c	0.54	0.54	pCi/g		U
606	19990923	ORVOA	Methylene Chloride	none	17.576		ug/kg		B
606	19990923	ORVOA	m-Xylene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	o-Xylene	none	5.735	5.735	ug/kg		U
606	19990923	GENERA	Percent Solids	na	83.6	0.01	%		
606	19990923	RAD	Plutonium-238	55d	0.0681	0.0174	pCi/g		
606	19990923	RAD	Plutonium-238	55d	14.01	14.01	pCi/g		U
606	19990923	RAD	Plutonium-239/240	5.5b	0.00982	0.00982	pCi/g		U
606	19990923	RAD	Potassium-40	na	28.9	0.484	pCi/g		
606	19990923	RAD	Radium-226	3.0a	0.883	0.143	pCi/g		
606	19990923	RAD	Radium-226	3.0a	1.32	0.7	pCi/g		
606	19990923	ORVOA	Styrene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	Tetrachloroethene	2.1E+6	5.735	5.735	ug/kg		U
606	19990923	RAD	Thorium-228	3.0a	0.739	0.0665	pCi/g		
606	19990923	RAD	Thorium-230	44c	0.396	0.0158	pCi/g		
606	19990923	RAD	Thorium-230	44c	6.05	6.05	pCi/g		U
606	19990923	RAD	Thorium-232	3.0a	0.564	0.0234	pCi/g		
606	19990923	RAD	Thorium-232	3.0a	0.81	0.15	pCi/g		
606	19990923	ORVOA	Toluene	2.5E+5	1.328		ug/kg		J
606	19990923	ORVOA	Trichloroethene	none	5.735	5.735	ug/kg		U
606	19990923	ORVOA	Vinyl Acetate	none	11.469	11.469	ug/kg		U
606	19990923	ORVOA	Vinyl Chloride	none	11.469	11.469	ug/kg		U
606	19990923	ORVOA	Xylenes, Total	4.3E+8	5.735	5.735	ug/kg		U
607	19990923	ORVOA	1,1,1-Trichloroethane	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,1,2,2-Tetrachloroethane	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,1,2-Trichloro-1,2,2-trifluoroethane	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,1,2-Trichloroethane	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,1-Dichloroethane	7.8E+3	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,1-Dichloroethene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,2-cis-Dichloroethene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,2-Dichloroethane	1.1E+4	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,2-Dichloroethene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,2-Dichloropropane	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,2-Diethylbenzene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,2-trans-Dichloroethene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,3-cis-Dichloropropene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	1,3-trans-Dichloropropene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	2-Butanone	9.3E+6	7.92		ug/kg		JB
607	19990923	ORVOA	2-Hexanone	none	11.646	11.646	ug/kg		U
607	19990923	ORVOA	2-Methyl-4-pentanone	none	11.646	11.646	ug/kg		U
607	19990923	ORVOA	Acetone	2.1E+7	36.06		ug/kg		B

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Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
607	19990923	ORVOA	Acetonitrile	none	116.46	116.46	ug/kg		U
607	19990923	ORVOA	Acrylonitrile	none	116.46	116.46	ug/kg		U
607	19990923	RAD	Actinium-227	1.0b	0.34	0.2	pCi/g		
607	19990923	RAD	Americium-241	4.95b	0.07	0.07	pCi/g		U
607	19990923	RAD	Americium-241	4.95b	0.359	0.359	pCi/g		U
607	19990923	ORVOA	Benzene	3.2E+4	5.823	5.823	ug/kg		U
607	19990923	RAD	Bismuth-207	0.175b	0.0766	0.0766	pCi/g		U
607	19990923	RAD	Bismuth-210	see Pb^{210}	0.115	0.115	pCi/g		U
607	19990923	ORVOA	Bromodichloromethane	4.3E+6	5.823	5.823	ug/kg		U
607	19990923	ORVOA	Bromoform	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	Bromomethane	none	11.646	11.646	ug/kg		U
607	19990923	ORVOA	Carbon Disulfide	2.8E+5	5.823	5.823	ug/kg		U
607	19990923	ORVOA	Carbon Tetrachloride	1.2E+4	5.823	5.823	ug/kg		U
607	19990923	RAD	Cesium-137	0.42c	0.03	0.03	pCi/g		U
607	19990923	RAD	Cesium-137	0.42c	0.0883	0.0883	pCi/g		U
607	19990923	ORVOA	Chlorobenzene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	Chloroethane	1.6E+5	11.646	11.646	ug/kg		U
607	19990923	ORVOA	Chloroform	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	Chloromethane	none	11.646	11.646	ug/kg		U
607	19990923	GENERA	Chromium VI	1,100	0.46	0.46	mg/kg		U
607	19990923	RAD	Cobalt-60	0.1b	0.05	0.05	pCi/g		U
607	19990923	RAD	Cobalt-60	0.1b	0.0984	0.0984	pCi/g		U
607	19990923	ORVOA	Dibromochloromethane	3.5E+4	5.823	5.823	ug/kg		U
607	19990923	ORVOA	Ethylbenzene	4.8E+2	5.823	5.823	ug/kg		U
607	19990923	ORVOA	Hexane	9.1E+4	11.646	11.646	ug/kg		U
607	19990923	ORVOA	Iodomethane	none	11.646	11.646	ug/kg		U
607	19990923	RAD	Lead-210	1.7c	0.66	0.66	pCi/g		U
607	19990923	RAD	Lead-210	1.7c	1.28	0.832	pCi/g		
607	19990923	ORVOA	Methylene Chloride	none	13.364		ug/kg		B
607	19990923	ORVOA	m-Xylene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	o-Xylene	none	5.823	5.823	ug/kg		U
607	19990923	GENERA	Percent Solids	na	87.5	0.01	%		
607	19990923	RAD	Plutonium-238	55d	19.88	19.88	pCi/g		U
607	19990923	RAD	Plutonium-238	55d	0.0424	0.0105	pCi/g		
607	19990923	RAD	Plutonium-239/240	5.5b	0.0104	0.0104	pCi/g		U
607	19990923	RAD	Potassium-40	na	21.8	0.825	pCi/g		
607	19990923	RAD	Radium-226	3.0a	0.85	0.82	pCi/g		
607	19990923	RAD	Radium-226	3.0a	0.958	0.326	pCi/g		
607	19990923	ORVOA	Styrene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	Tetrachloroethene	2.1E+6	5.823	5.823	ug/kg		U
607	19990923	RAD	Thorium-228	3.0a	0.717	0.0762	pCi/g		
607	19990923	RAD	Thorium-230	44c	7.85	7.85	pCi/g		U
607	19990923	RAD	Thorium-230	44c	0.644	0.0278	pCi/g		
607	19990923	RAD	Thorium-232	3.0a	0.52	0.14	pCi/g		
607	19990923	RAD	Thorium-232	3.0a	0.536	0.0165	pCi/g		
607	19990923	ORVOA	Toluene	2.5E+5	5.823	5.823	ug/kg		U
607	19990923	ORVOA	Trichloroethene	none	5.823	5.823	ug/kg		U
607	19990923	ORVOA	Vinyl Acetate	none	11.646	11.646	ug/kg		U
607	19990923	ORVOA	Vinyl Chloride	none	11.646	11.646	ug/kg		U
607	19990923	ORVOA	Xylenes, Total	4.3E+8	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,1,1-Trichloroethane	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,1,2,2-Tetrachloroethane	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,1,2-Trichloro-1,2,2-trifluoroethane	none	1.41		ug/kg		JB

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Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
607dup	19990923	ORVOA	1,1,2-Trichloroethane	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,1-Dichloroethane	7.8E+3	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,1-Dichloroethene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,2-cis-Dichloroethene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,2-Dichloroethane	1.1E+4	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,2-Dichloroethene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,2-Dichloropropane	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,2-Diethylbenzene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,2-trans-Dichloroethene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,3-cis-Dichloropropene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	1,3-trans-Dichloropropene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	2-Butanone	9.3E+6	11.325		ug/kg		JB
607dup	19990923	ORVOA	2-Hexanone	none	11.646	11.646	ug/kg		U
607dup	19990923	ORVOA	2-Methyl-4-pentanone	none	11.646	11.646	ug/kg		U
607dup	19990923	ORVOA	Acetone	2.1E+7	48.898		ug/kg		B
607dup	19990923	ORVOA	Acetonitrile	none	116.46	116.46	ug/kg		U
607dup	19990923	ORVOA	Acrylonitrile	none	116.46	116.46	ug/kg		U
607dup	19990923	RAD	Americium-241	4.95b	0.333	0.333	pCi/g		U
607dup	19990923	ORVOA	Benzene	3.2E+4	5.823	5.823	ug/kg		U
607dup	19990923	RAD	Bismuth-207	0.175b	0.0623	0.0623	pCi/g		U
607dup	19990923	RAD	Bismuth-210	see Pb^{210}	0.0876	0.0876	pCi/g		U
607dup	19990923	ORVOA	Bromodichloromethane	4.3E+6	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	Bromoform	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	Bromomethane	none	12	12	ug/kg		U
607dup	19990923	ORVOA	Carbon Disulfide	2.8E+5	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	Carbon Tetrachloride	1.2E+4	5.823	5.823	ug/kg		U
607dup	19990923	RAD	Cesium-137	0.42c	0.0759	0.0759	pCi/g		U
607dup	19990923	ORVOA	Chlorobenzene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	Chloroethane	1.6E+5	12	12	ug/kg		U
607dup	19990923	ORVOA	Chloroform	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	Chloromethane	none	12	12	ug/kg		U
607dup	19990923	RAD	Cobalt-60	0.1b	0.0993	0.0993	pCi/g		U
607dup	19990923	ORVOA	Dibromochloromethane	3.5E+4	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	Ethylbenzene	4.8E+2	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	Hexane	9.1E+4	11.646	11.646	ug/kg		U
607dup	19990923	ORVOA	Iodomethane	none	11.646	11.646	ug/kg		U
607dup	19990923	RAD	Lead-210	1.7c	1.22	0.933	pCi/g		
607dup	19990923	ORVOA	Methylene Chloride	none	12.077		ug/kg		B
607dup	19990923	ORVOA	m-Xylene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	o-Xylene	none	5.823	5.823	ug/kg		U
607dup	19990923	RAD	Plutonium-238	55d	0.0283	0.0283	pCi/g		U
607dup	19990923	RAD	Plutonium-239/240	5.5b	0.0136	0.0136	pCi/g		U
607dup	19990923	RAD	Potassium-40	na	22.2	0.387	pCi/g		
607dup	19990923	RAD	Radium-226	3.0a	1.02	0.113	pCi/g		
607dup	19990923	ORVOA	Styrene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	Tetrachloroethene	2.1E+6	5.823	5.823	ug/kg		U
607dup	19990923	RAD	Thorium-228	3.0a	0.625	0.0541	pCi/g		
607dup	19990923	RAD	Thorium-230	44b	0.587	0.0376	pCi/g		
607dup	19990923	RAD	Thorium-232	3.0a	0.413	0.0312	pCi/g		
607dup	19990923	ORVOA	Toluene	2.5E+5	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	Trichloroethene	none	5.823	5.823	ug/kg		U
607dup	19990923	ORVOA	Vinyl Acetate	none	11.646	11.646	ug/kg		U
607dup	19990923	ORVOA	Vinyl Chloride	none	12	12	ug/kg		U
607dup	19990923	ORVOA	Xylenes, Total	4.3E+8	5.823	5.823	ug/kg		U

APPENDIX A: PRS 99 Removal Action Verification Results

Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
608	19990923	ORVOA	1,1,1-Trichloroethane	none	6	6	ug/kg		U
608	19990923	ORVOA	1,1,2,2-Tetrachloroethane	none	6	6	ug/kg		U
608	19990923	ORVOA	1,1,2-Trichloro-1,2,2-trifluoroethane	none	6	6	ug/kg		U
608	19990923	ORVOA	1,1,2-Trichloroethane	none	6	6	ug/kg		U
608	19990923	ORVOA	1,1-Dichloroethane	7.8E+3	6	6	ug/kg		U
608	19990923	ORVOA	1,1-Dichloroethene	none	6	6	ug/kg		U
608	19990923	ORVOA	1,2-cis-Dichloroethene	none	6	6	ug/kg		U
608	19990923	ORVOA	1,2-Dichloroethane	1.1E+4	6	6	ug/kg		U
608	19990923	ORVOA	1,2-Dichloroethene	none	6	6	ug/kg		U
608	19990923	ORVOA	1,2-Dichloropropane	none	6	6	ug/kg		U
608	19990923	ORVOA	1,2-Diethylbenzene	none	6	6	ug/kg		U
608	19990923	ORVOA	1,2-trans-Dichloroethene	none	6	6	ug/kg		U
608	19990923	ORVOA	1,3-cis-Dichloropropene	none	6	6	ug/kg		U
608	19990923	ORVOA	1,3-trans-Dichloropropene	none	6	6	ug/kg		U
608	19990923	ORVOA	2-Butanone	9.3E+6	10.892		ug/kg		B
608	19990923	ORVOA	2-Hexanone	none	10.824	10.824	ug/kg		U
608	19990923	ORVOA	2-Methyl-4-pentanone	none	10.824	10.824	ug/kg		U
608	19990923	ORVOA	Acetone	2.1E+7	10.824	10.824	ug/kg		U
608	19990923	ORVOA	Acetonitrile	none	108.24	108.24	ug/kg		U
608	19990923	ORVOA	Acrylonitrile	none	108.24	108.24	ug/kg		U
608	19990923	RAD	Actinium-227	1.0b	0.16	0.16	pCi/g		U
608	19990923	RAD	Americium-241	4.95b	0.05	0.05	pCi/g		U
608	19990923	RAD	Americium-241	4.95b	1.04	1.04	pCi/g		U
608	19990923	ORVOA	Benzene	3.2E+4	6	6	ug/kg		U
608	19990923	RAD	Bismuth-207	0.175b	0.0732	0.0732	pCi/g		U
608	19990923	RAD	Bismuth-210	see Pb^{210}	0.12	0.12	pCi/g		U
608	19990923	ORVOA	Bromodichloromethane	4.3E+6	6	6	ug/kg		U
608	19990923	ORVOA	Bromoform	none	6	6	ug/kg		U
608	19990923	ORVOA	Bromomethane	none	10.824	10.824	ug/kg		U
608	19990923	ORVOA	Carbon Disulfide	2.8E+5	6	6	ug/kg		U
608	19990923	ORVOA	Carbon Tetrachloride	1.2E+4	6	6	ug/kg		U
608	19990923	RAD	Cesium-137	0.42c	0.04	0.03	pCi/g		
608	19990923	RAD	Cesium-137	0.42c	0.0973	0.0973	pCi/g		U
608	19990923	ORVOA	Chlorobenzene	none	6	6	ug/kg		U
608	19990923	ORVOA	Chloroethane	1.6E+5	10.824	10.824	ug/kg		U
608	19990923	ORVOA	Chloroform	none	6	6	ug/kg		U
608	19990923	ORVOA	Chloromethane	none	10.824	10.824	ug/kg		U
608	19990923	GENERA	Chromium VI	1,100	0.47	0.47	mg/kg		U
608	19990923	RAD	Cobalt-60	0.1b	0.04	0.04	pCi/g		U
608	19990923	RAD	Cobalt-60	0.1b	0.0876	0.0876	pCi/g		U
608	19990923	ORVOA	Dibromochloromethane	3.5E+4	6	6	ug/kg		U
608	19990923	ORVOA	Ethylbenzene	4.8E+2	6	6	ug/kg		U
608	19990923	ORVOA	Hexane	9.1E+4	10.824	10.824	ug/kg		U
608	19990923	ORVOA	Iodomethane	none	10.824	10.824	ug/kg		U
608	19990923	RAD	Lead-210	1.7c	0.58	0.42	pCi/g		
608	19990923	RAD	Lead-210	1.7c	1.09	1.02	pCi/g		
608	19990923	ORVOA	Methylene Chloride	none	8.074		ug/kg		B
608	19990923	ORVOA	m-Xylene	none	6	6	ug/kg		U
608	19990923	ORVOA	o-Xylene	none	6	6	ug/kg		U
608	19990923	GENERA	Percent Solids	na	84.7	0.01	%		
608	19990923	RAD	Plutonium-238	55d	9.91	9.14	pCi/g		
608	19990923	RAD	Plutonium-238	55d	6.95	0.0203	pCi/g		
608	19990923	RAD	Plutonium-239/240	5.5b	0.018	0.00973	pCi/g		

APPENDIX A: PRS 99 Removal Action Verification Results

Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
608	19990923	RAD	Potassium-40	na	18.9	0.823	pCi/g		
608	19990923	RAD	Radium-226	3.0a	1.4	0.53	pCi/g		
608	19990923	RAD	Radium-226	3.0a	1.02	0.17	pCi/g		
608	19990923	ORVOA	Styrene	none	6	6	ug/kg		U
608	19990923	ORVOA	Tetrachloroethene	2.1E+6	6	6	ug/kg		U
608	19990923	RAD	Thorium-228	3.0a	0.603	0.0537	pCi/g		
608	19990923	RAD	Thorium-230	44c	4.77	4.77	pCi/g		U
608	19990923	RAD	Thorium-230	44c	0.7	0.0279	pCi/g		
608	19990923	RAD	Thorium-232	3.0a	0.47	0.17	pCi/g		
608	19990923	RAD	Thorium-232	3.0a	0.682	0.0165	pCi/g		
608	19990923	ORVOA	Toluene	2.5E+5	6	6	ug/kg		U
608	19990923	ORVOA	Trichloroethene	none	6	6	ug/kg		U
608	19990923	ORVOA	Vinyl Acetate	none	10.824	10.824	ug/kg		U
608	19990923	ORVOA	Vinyl Chloride	none	10.824	10.824	ug/kg		U
608	19990923	ORVOA	Xylenes, Total	4.3E+8	6	6	ug/kg		U
609	19990923	ORVOA	1,1,1-Trichloroethane	none	6	6	ug/kg		U
609	19990923	ORVOA	1,1,2,2-Tetrachloroethane	none	6	6	ug/kg		U
609	19990923	ORVOA	1,1,2-Trichloro-1,2,2-trifluoroethane	none	6	6	ug/kg		U
609	19990923	ORVOA	1,1,2-Trichloroethane	none	6	6	ug/kg		U
609	19990923	ORVOA	1,1-Dichloroethane	7.8E+3	6	6	ug/kg		U
609	19990923	ORVOA	1,1-Dichloroethene	none	6	6	ug/kg		U
609	19990923	ORVOA	1,2-cis-Dichloroethene	none	6	6	ug/kg		U
609	19990923	ORVOA	1,2-Dichloroethane	1.1E+4	6	6	ug/kg		U
609	19990923	ORVOA	1,2-Dichloroethene	none	6	6	ug/kg		U
609	19990923	ORVOA	1,2-Dichloropropane	none	6	6	ug/kg		U
609	19990923	ORVOA	1,2-Diethylbenzene	none	6	6	ug/kg		U
609	19990923	ORVOA	1,2-trans-Dichloroethene	none	6	6	ug/kg		U
609	19990923	ORVOA	1,3-cis-Dichloropropene	none	6	6	ug/kg		U
609	19990923	ORVOA	1,3-trans-Dichloropropene	none	6	6	ug/kg		U
609	19990923	ORVOA	2-Butanone	9.3E+6	5.852		ug/kg		JB
609	19990923	ORVOA	2-Hexanone	none	10.565	10.565	ug/kg		U
609	19990923	ORVOA	2-Methyl-4-pentanone	none	10.565	10.565	ug/kg		U
609	19990923	ORVOA	Acetone	2.1E+7	38.399		ug/kg		B
609	19990923	ORVOA	Acetonitrile	none	105.65	105.65	ug/kg		U
609	19990923	ORVOA	Acrylonitrile	none	105.65	105.65	ug/kg		U
609	19990923	RAD	Actinium-227	1.0b	0.52	0.52	pCi/g		U
609	19990923	RAD	Americium-241	4.95b	0.11	0.11	pCi/g		U
609	19990923	RAD	Americium-241	4.95b	0.129	0.129	pCi/g		U
609	19990923	ORVOA	Benzene	3.2E+4	6	6	ug/kg		U
609	19990923	RAD	Bismuth-207	0.175b	0.0649	0.0649	pCi/g		U
609	19990923	RAD	Bismuth-210	see Pb^{210}	0.0955	0.0955	pCi/g		U
609	19990923	ORVOA	Bromodichloromethane	4.3E+6	6	6	ug/kg		U
609	19990923	ORVOA	Bromoform	none	6	6	ug/kg		U
609	19990923	ORVOA	Bromomethane	none	10.565	10.565	ug/kg		U
609	19990923	ORVOA	Carbon Disulfide	2.8E+5	6	6	ug/kg		U
609	19990923	ORVOA	Carbon Tetrachloride	1.2E+4	6	6	ug/kg		U
609	19990923	RAD	Cesium-137	0.42c	0.06	0.06	pCi/g		U
609	19990923	RAD	Cesium-137	0.42c	0.0859	0.0859	pCi/g		U
609	19990923	ORVOA	Chlorobenzene	none	6	6	ug/kg		U
609	19990923	ORVOA	Chloroethane	1.6E+5	10.565	10.565	ug/kg		U
609	19990923	ORVOA	Chloroform	none	6	6	ug/kg		U
609	19990923	ORVOA	Chloromethane	none	10.565	10.565	ug/kg		U
609	19990923	GENERA	Chromium VI	1,100	0.46	0.46	ug/kg		U

APPENDIX A: PRS 99 Removal Action Verification Results

Sample ID	Sample Date	Class	Analyte	"GV"	Result	Det. Limit	Unit	DQ	LQ
609	19990923	RAD	Cobalt-60	0.1b	0.06	0.06	pCi/g		U
609	19990923	RAD	Cobalt-60	0.1b	0.0805	0.0805	pCi/g		U
609	19990923	ORVOA	Dibromochloromethane	3.5E+4	6	6	ug/kg		U
609	19990923	ORVOA	Ethylbenzene	4.8E+2	6	6	ug/kg		U
609	19990923	ORVOA	Hexane	9.1E+4	10.565	10.565	ug/kg		U
609	19990923	ORVOA	Iodomethane	none	10.565	10.565	ug/kg		U
609	19990923	RAD	Lead-210	1.7c	1.13	0.92	pCi/g		
609	19990923	RAD	Lead-210	1.7c	0.913	0.834	pCi/g		
609	19990923	ORVOA	Methylene Chloride	none	8.878		ug/kg		B
609	19990923	ORVOA	m-Xylene	none	6	6	ug/kg		U
609	19990923	ORVOA	o-Xylene	none	6	6	ug/kg		U
609	19990923	GENERA	Percent Solids	na	86.3	0.01	%		
609	19990923	RAD	Plutonium-238	55d	29.44	29.44	pCi/g		U
609	19990923	RAD	Plutonium-238	55d	0.172	0.0493	pCi/g		
609	19990923	RAD	Plutonium-239/240	5.5b	0.0379	0.0379	pCi/g		U
609	19990923	RAD	Potassium-40	na	16.8	0.626	pCi/g		
609	19990923	RAD	Radium-226	3.0a	1.35	1.1	pCi/g		
609	19990923	RAD	Radium-226	3.0a	1.05	0.347	pCi/g		
609	19990923	ORVOA	Styrene	none	6	6	ug/kg		U
609	19990923	ORVOA	Tetrachloroethene	2.1E+6	6	6	ug/kg		U
609	19990923	RAD	Thorium-228	3.0a	0.628	0.056	pCi/g		
609	19990923	RAD	Thorium-230	44c	10.12	9.17	pCi/g		
609	19990923	RAD	Thorium-230	44c	0.657	0.0323	pCi/g		
609	19990923	RAD	Thorium-232	3.0a	0.61	0.22	pCi/g		
609	19990923	RAD	Thorium-232	3.0a	0.471	0.0243	pCi/g		
609	19990923	ORVOA	Toluene	2.5E+5	6	6	ug/kg		U
609	19990923	ORVOA	Trichloroethene	none	6	6	ug/kg		U
609	19990923	ORVOA	Vinyl Acetate	none	10.565	10.565	ug/kg		U
609	19990923	ORVOA	Vinyl Chloride	none	10.565	10.565	ug/kg		U
609	19990923	ORVOA	Xylenes, Total	4.3E+8	6	6	ug/kg		U

DQ: data qualifier
LQ: lab qualifier

a: As Low As Reasonably Achievable (ALARA) value based on the quantitation limitatons of the Mound onsite screening laboratory

b: Risk-Based Guideline Values, March 1997, Final, Rev 4, Appendix B, Table 4B: Construction/Mound Employee, 10-6 Risk

c: value as presented in the "Technical Position Report in Support of the Release Block H Residual Risk Evaluation", Public Review Draft, Rev 2, April 1999 or the August 1997 Residual Risk Evaluation for Release Block H.

d: Risk-Based Guideline Values, March 1997, Final, Rev 4, Appendix B, Table 4B: Construction/Mound Employee, 10-5 Risk

NOTE: all other guideline values listed are the most restrictive of 10-6 or hazard index=1.

APPENDIX B

General Media Information

U.S. Department of Energy

PRS 99 and 100: GH PARKING LOT FACT SHEET

BACKGROUND:

The Guard House (GH) Building and its parking lot (GH Lot) are located on the Main Hill at the Mound Plant. In 1963-64, waste was disposed of in a trench dug next to the GH Lot and was subsequently filled in with soil. Waste reportedly disposed of included 110 gallons of neutralized chromium plating bath solution, three drums of contaminated blasting sand, and metal debris. In the late 1960s, the GH Lot was expanded to its current size, covering the disposal area.

RESOLUTION:

In 1990, a magnetic survey of the GH Lot was performed to identify the location of buried material. Several anomalies (blips caused by a change in magnetic field) were detected.

In February 1999, 137 samples were collected from 46 soil borings across the GH Lot. Statistics were used to decide where most of the borings were placed, and additional borings were added to the center of the anomalies to confirm or deny the presence of waste.

Only one sample had plutonium contaminates in the soil at 106 picoCuries per gram (pCi/gm) versus the guideline value of 55 pCi/gm. It was located in the center of the largest anomaly. All other samples in the other borings (including the other smaller anomalies) showed no sign of contamination or visual indication of waste. Sand and small pieces of metal were also found in the sample, which further identified it as the disposal area.

In August and September 1999, excavation and sampling occurred in and around the area where the Pu^{238}, sand, and metal was found. Excavation continued until all visual indications of waste

Excavation in GH Lot

material were removed. The excavation went down to bedrock and was consistent with the dimensions of the anomaly identified by magnetic survey. Verification samples were collected and the area was backfilled to grade.

Over a dozen drums were found, most contained sand, others were empty. Metal debris including framework, conveyor parts, small pieces of lead, flanges, and piping was also found. A few of the items removed in the excavation were found to have elevated levels of contamination including a piece of metal coated with plutonium contaminated "grease", and a black charcoal-like material found in the bottom of one of the drums was also contaminated with plutonium. They were removed and containerized, pending shipment to a disposal facility.

WORK PROTECTION:

A Radiological Work Permit (RWP) and Health and Safety Plan prescribed standard-of-the-industry protection for the workers specific to task and work area. Those plans were updated as necessary to ensure continued worker safety. Daily meetings with workers were held to emphasize safety and present new or noteworthy tasks and/or hazards associated with activities planned for the day. Radiological surveys, air monitoring, and sampling of soil and debris documented that workers were protected.

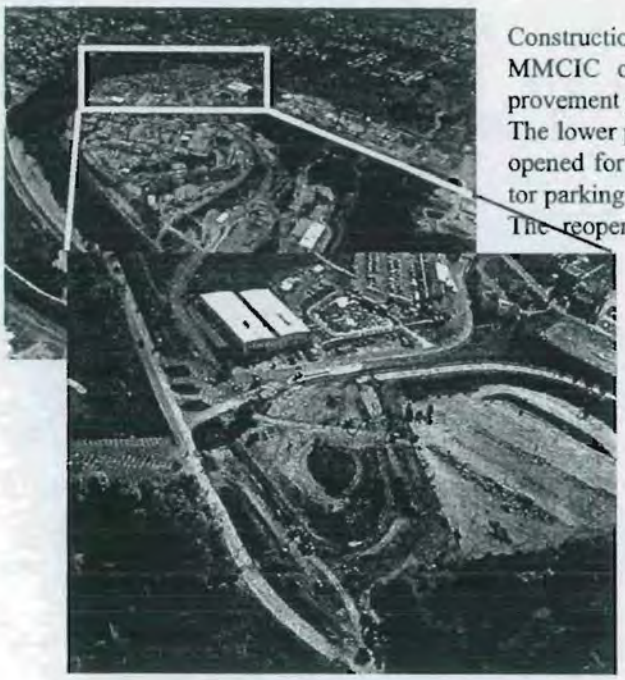
For more information on the types and levels of contamination found, visit our web site at www-doe-md-gov, or call Jane Greenwalt, DOE Public Affairs Officer, at (937) 865-3116.

A publication of the Department of Energy's Miamisburg Environmental Management Project

NEW DIRECTIONS

November 1999

Miamisburg Mound Community Improvement Corporation continues construction on the East Boundary Project



Construction continues by the MMCIC on the capital improvement project for Parcel H. The lower parking lot has been opened for employee and visitor parking in designated areas. The reopening of the parking lot was in response to the need for sampling to begin in PRS 66 where employee parking was located. Construction at Parcel H is scheduled for completion in late 1999.

PRS66 UPDATE

During the October 15, 1999 Mound Reuse Committee meeting, the PRS 66 Sampling Plan was presented for further comment. Rick Provencher, DOE Site Director, MEMP, stated during his update that comments received from stakeholders including EHS, University of Cincinnati, MESH, City of Miamisburg, and NIN had been incorporated into the Sampling Plan. Upon further discussion, it was agreed that revision to one section of the Sampling Plan will continue in parallel with the beginning of PRS 66 sampling which began on October 19, 1999.

Path to the Future

PRS 99/100 "GH Parking Lot"

During the PRS 99/100 project to remove contaminated material in the parking lot, it was decided to follow up drilling samples with trenching to encompass the complete anomaly. Trenches allow for visual inspection of waste areas compared to small samples from drilling. The excavation did in fact locate the earlier suspected waste material. Excavation continued until all waste material located (including metal debris), sand, or dissimilar soils were removed and bedrock was encountered. Verification samples were collected in both the vertical and horizontal directions and the area was backfilled to grade. The waste was containerized and is awaiting shipment to a disposal facility.

A Radiological Work Permit (RWP) and Health and Safety Plan prescribed standard-of-the-industry protection for the workers specific to task and work area. Those plans were updated as necessary to ensure continued worker safety. Daily meetings with workers were held to emphasize safety and present new or noteworthy tasks and/or hazards associated with activities planned for the day. Radiological surveys, air monitoring, and sampling of soil and debris documented that workers were protected.

APPENDIX C

Supplemental Field Documentation

PRS SUMMARY

PRS 100: Chromium Trench
PRS 99: Filter Waste

1.0 BACKGROUND

The Guard House (GH) Building and adjacent parking lot are located at the north end of the Mound Plant, on the Main Hill. The GH Lot was much smaller in the 1950s, as shown on Figure 1. By 1959, the GH Parking Lot was shorter and narrower than the current dimensions, but significantly larger than the original. The area next to the 1959 lot was used for waste disposal. In 1963-64, prior to the expansion of the GH Parking Lot, waste was disposed of in a trench dug next to the GH Lot. Waste reportedly disposed of included 110 gallons of spent (neutralized) chromium plating bath solution and three 55-gallon drums of polonium^{210} (and possibly cobalt^{60} and cesium^{137}) contaminated blasting sand were. Historical information indicates that sand, drums, and metal framework were disposed of in the vicinity of PRS 99. By 1965, the disposal was complete as the trench was backfilled and the lot was expanded south to its current length. By 1968, the lot was expanded to its current width as shown on Figure 1.

2.0 MAGNETIC SURVEY

In 1990, a magnetic survey of the GH Lot was performed to identify the location of buried material. Several anomalies were detected as shown on Figure X, one of which was large enough to be a disposal area and was presumed to be the trench.

3.0 PHASE I EFFORT

Phase I of the GH Parking Lot investigation occurred in February 1999. The investigation was designed using statistics to find disposal areas larger than 20 feet across. Borings were added (offsets) to sample the center the magnetic anomalies to confirm or deny the presence of waste. Of the 137 investigative samples collected from 46 soil borings across the parking lot (including PRS 99 and PRS 100), only one contaminant of concern was detected in excess of its risk-based guideline value (GV) (10^{-5} risk), in an offset boring associated with PRS 99.

The Phase I-identified sample displayed elevated Pu^{238} in soil at 106 pCi/g vs. guideline value of 55 pCi/g and was located within Soil Boring X-8 (one of the offset borings). Removable Pu^{238} was detected via field instrumentation on the split spoon used to collect the sample at 70 disintegrations per minute per hundred cubic centimeters (dpm/100 cm^2), exceeding the 20 dpm/100 cm^2 contamination criteria (RadCon Manual, Table 2-2). Removable Pu^{238} was associated with gray/white sand found in the 8-12' sample interval of SB X-8. Removable contamination can become airborne and is therefore considered more hazardous than "fixed" contamination that is not removable. Metal chips were also found in the sample.

All other samples in the other borings (including the other smaller anomalies) showed no sign of contamination or visual indication of waste. There were no elevated detections or visual indications of debris associated with any of the PRS 100 samples.

The suspect location found as a result of the Phase I Sampling became the basis for the Phase II effort at PRS 99. Phase I results also documented the absence of contamination in PRS 100.

4.0 PHASE II EFFORT

It was decided to follow up the Phase I drilling with trenching instead of more drilling. Trenches allow for visual inspection of waste areas compared to small samples from drilling. Phase II effort did in fact find the waste material because instead of soil borings, trenching was used which allowed for sampling and ability for removal action as part of the work. Excavation continued until all visual indications of waste material (including metal debris), sand, or dissimilar soil were removed and bedrock was encountered. The extent of the excavation was consistent with the dimensions of the anomaly identified by magnetic survey. Verification samples were collected in both the vertical and horizontal directions and the area was backfilled to grade.

4.1 Phase II Verification Sampling

Verification sampling for PRS 99 was performed at the GH Parking Lot excavation on 23 September 1999. Nine verification samples were collected from the base and sidewalls of the excavation as shown in the attached photograph (Figure X). Numbers 1 through 9 on the photo correspond to sample identification numbers on the analytical results included at Appendix A and B. Seven of the nine samples were split by Ohio EPA representative Anthony Campbell.

A short count of the nine verification samples was performed at the onsite gamma spec lab to confirm that elevated levels of radionuclides were not present in the base and sidewalls of the excavation. Short count analytical results are included as Appendix A. Information obtained from short count results supported that sufficient excavation had occurred (from a radionuclide perspective). A longer count was run to facilitate MDAs below the guideline values (GVs). Long-count onsite gamma spec results are included as Appendix B. GVs have been added (hand markup) as an additional column on the gamma spec result sheets for reference. Notations have been made next to the result (MDA or activity) documenting that the number is less than the GV. Selection of MDA or activity to use as the "official" result was based on an informational one-page fact sheet on gamma spec results presented in Appendix C. All long-count gamma spec results and MDAs were below their respective GV.

All nine verification samples were submitted for offsite alpha and gamma spec analyses with results not yet available.

4.2 Additional Analyses

Although not required, but based on the types and variety of material excavated (drums, funny-looking colored dirt, etc), offsite volatile organic compound (VOC) analyses were performed on all nine verification samples. Analytical results for the VOC analyses are included as Appendix D. Thirty-six of the 40 compounds included in the VOC analyte list were non-detects at the identified detection limits. Four of the 40 compounds were detected above the laboratory reporting limit, but below their respective GV. The GVs for the detected compounds are indicated next to the result for reference.

Even though chromium was not detected in any of the Phase I borings and not detected in suspect soil removed from the excavation, analysis for chromium will be performed on all nine verification samples. Results are not expected until December 1999.

✓ Results of all onsite gamma spec and offsite VOC analyses were below their respective guideline criteria.

4.3 BACKFILL

Backfill of the excavation occurred on 4 & 5 October 1999 following concurrence from Ohio EPA and DOE. **Sources** of backfill included:

- Three haulers-full of **dirt** were removed from the GH Lot before contamination was encountered. The contents of the haulers (approximately 30 cy) was sampled with results less than the GVs. The soil was staged under the FFTA structure with the intent of being used as backfill at the GH Lot.
- As part of the canal project, an enormous amount of **gravel/chips** mix was placed as a base for the trailer parking area. This material was not introduced to contamination and for that reason (it was also free for the hauling) was deemed appropriate for use as backfill for the GH Lot.
- **Chips and dust** are regularly used for parking areas around the plant site and used as the top layer at the GH Lot as well.

The **quantity** of material used for backfill included approximately 30 cy of soil staged under the FFTA structure, approximately 400 cy of gravel mix from the canal laydown area, and approximately 70 cy of chip and dust at the surface. All of the backfill was compacted in lifts using a vibratory attachment to the excavator. Metal stakes were placed in and flush to the ground around the perimeter of the excavation to identify it. The are was subsequently paved and striped.

4.4 PHASE II WASTE STREAMS

Over a dozen drums were found, most contained sand, others were empty. Metal debris including metal framework, conveyor components, lead, flanges, piping, and an impeller assembly were removed from the excavation. A process tank containing sand was also encountered. The levels of removable contamination found on metal objects was typically < 20 dpm/100cm^2, but was found at a maximum of 250 dpm/100 cm^2 (Pu^{238}). The highest level of activity (removable) in the sand was Pu^{238} at 855 pCi/g, but results were typically < 100 pCi/g.

The impellar assembly and other large metal debris were placed into a rolloff box. A metal box was fabricated onsite to contain the process tank with sand. Both containers were enveloped twice over with tarping and sealed with tape and are staged in a RadCon area near Building 94. Monthly surveys of the containers will be made to confirm the radiological integrity of the containment until its disposition offsite. Waste Management has been prompted to provide a more stable cover/roof over the containers to prevent integrity breaches from rain, snow, and ice.

An isolated anomaly "grease" was approximately the size of half a coffee can and was found to contain removable contamination (Pu^{238}) measuring 3,200 dpm/100cm^2 (α). Even though the removable contamination was high, the matrix of the material containing the contamination prevented it from being an airborne concern.

Another isolated anomaly was a black, charcoal-like material found in the bottom of one drum. It measured 5,985 pCi/g Pu^{238} and also contained elevated levels of Pu^{239} (46 pCi/g), Th^{227} (6.6 pCi/g), Th^{230} (240 pCi/g), Co^{60} (21.5 pCi/g), Cs^{137} (2.6 pCi/g), and Am^{241} (6.8 pCi/g). The "grease" and "charcoal" were containerized in LSA boxes.

Approx. 150 LSA boxes were filled with soil and debris and are pending shipment to a disposal facility. NTS WAC training for completion of shipping paperwork was performed and all containers were documented as if they would be shipped to NTS. One composite sample was collected from each LSA box and submitted for onsite gamma spec analyses. Waste Management has been prompted to review the onsite gamma spec data to evaluate the general need for offsite shipment of the LSA boxes. Three representative LSA box waste stream samples were shipped on 19 Nov 99 to RCRA Labnet for TCLP VOA, TCLP SVOC, and TCLP metals analyses. LSA boxes were removed from the GH Lot and staged at Building 31 and xxx.

5.0 Post-Job & ALARA Reviews

A meeting was held on 28 Oct 99 to discuss lessons learned during the course of the project. The ALARA post-job review was performed at the same meeting. All

participants in the project were invited to attend. The Post-Job Review Form that was submitted to the Lessons Learned Program Manager is included as Appendix E. The ALARA form is included in Appendix F.

6.0 RWP Closure

Three RWPs were generated during Phase II activities as follows:

- LS-18-1999 (for posting of a Contamination Area)
- LS-19-1999 (for posting of a High Contamination Area)
- LS-24-1999 (standby RWP for handling of "charcoal" material)

Table 1: Variances to the Work Package

Per Work Package	Variation	Reason
1. estimated excavation limits 6' x 18' x 12' deep	actual limits of excavation approx. 20'x60'x14' deep	anomalies found and removed
2. onsite verification analyses Pu^{238}, Th^{228}, Co^{60}	Th^{232} reported instead of Th^{228}	Because of the amount of time that has elapsed since placement of material that was excavated, the assumption was made that if Th^{228} was present, it would currently be at or near secular equilibrium with it's parent Th^{232} isotope and was reported as such.
3. offsite verification analyses Pu^{238}, Th^{228}, Co^{60}	none	na
4. contaminants of concern are rad only	offsite analyses for VOCs and chromium added	prudent based on variety of anomalies found and expanded excavation
5. collect 3 verification samples at base of excavation	collected 9 verification samples at base and sidewalls of excavation	excavation was larger than anticipated, verification sample frequency expanded to cover additional surface area, sidewalls sample because anomalies were found both vertically and horizontally
6.		
7. sample nomenclature	changed to a 6-digit number, 000500 series for all samples other than verification and 000600 series numbers for verification samples	specified nomenclature would not be easily loaded into MEIMS

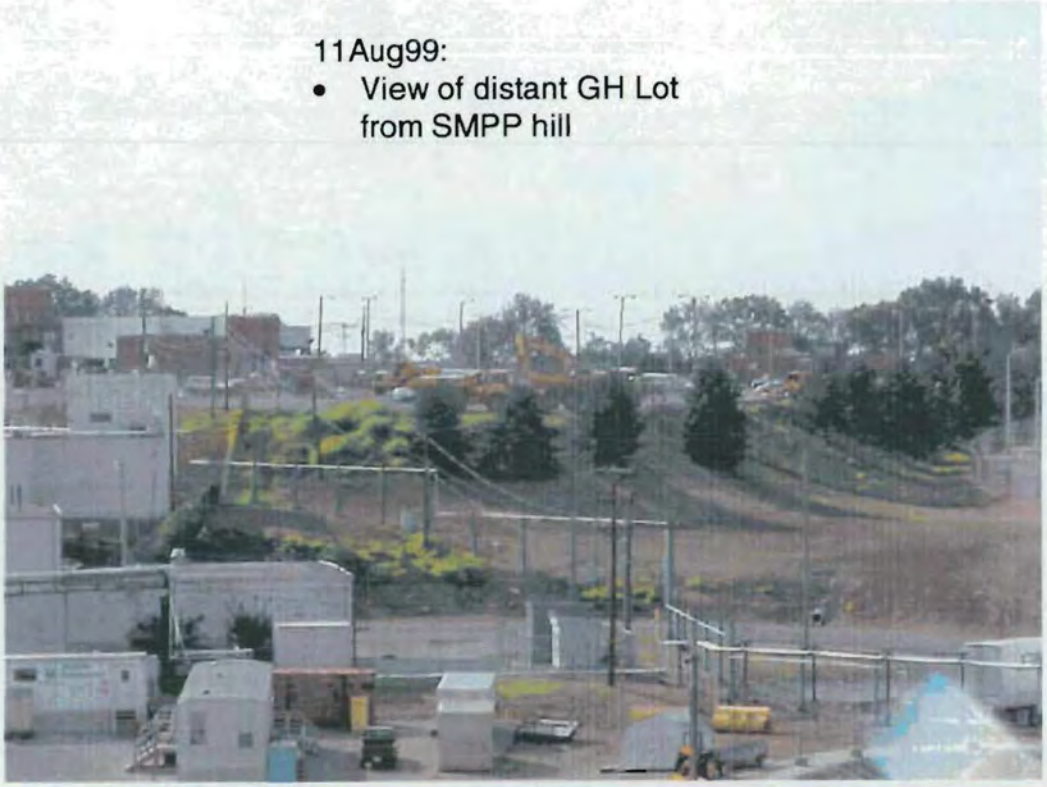
APPENDIX D

Photograph Documentation

6Aug99: Pre-dig surface of GH Lot, orange hashed area indicates initial excavation area, circled A, B, & C correspond to samples identified in the IWCP.

11Aug99:

- View of distant GH Lot from SMPP hill



11Aug99:

- Wrapped excavator bucket at end of day

13Aug99:
- crumpled drum

13Aug99:
- Tarp anchored to excavator to allow rainwater to run off of the area
- Supplies in left center photo weighted because of high winds
- Foreground is RadCon area entry/exit point

13Aug99:
- End of day excavation covering
- Wrapped bucket

13Aug99:

- Partially-filled LSA box locked during non-work hours

14Aug99:

- Workers cleaning up spilled material
- Required PPE per controlling RWP

14Aug99:

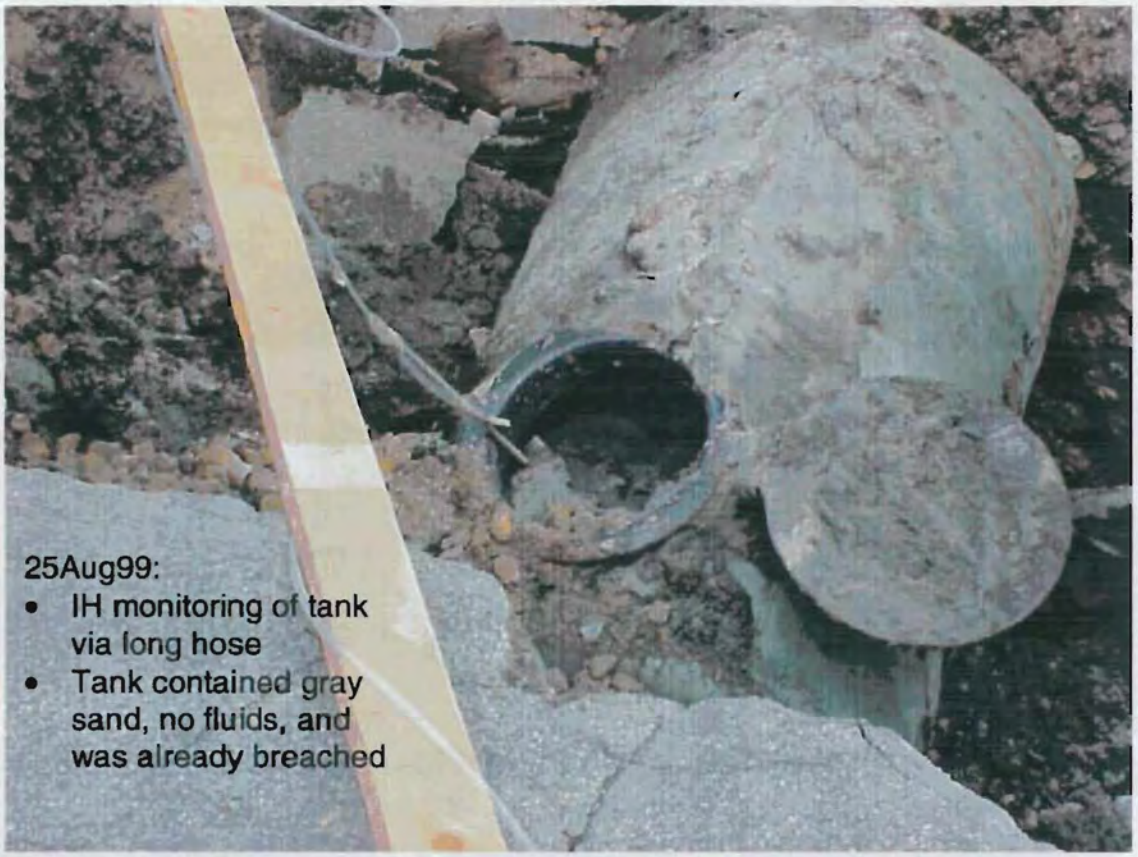
- Orange gloves removed from excavation

14Aug99:

- Piping removed from excavation
- RCTs surveying misc items found

14Aug99:

- Drum containing gray sand and conveyor components as removed from the excavation


25Aug99:
• IH monitoring of tank via long hose
• Tank contained gray sand, no fluids, and was already breached

25Aug99:
• Tank inspection

18Sept99:

- RCT surveys impeller assembly

22Sept99:

- RadCon entry/exit point in foreground
- Sandbags along west fence to divert runoff away from excavation

OhioEPA

State of Ohio Environmental Protection Agency

Southwest District Office
401 E. Fifth Street
Dayton, Ohio 45402-2911
(937) 285-6357
FAX (937) 285-6249

Bob Taft
Governor
Maureen O'Connor
Lt. Governor

FAX TRANSMISSION COVER SHEET

Date: April 17, 2000

To: Dave, Rakel

Company/Department: BWXT of Ohio

FAX #: 937-865-3725

From: Jane O'Dell

Office/Division: OFFO

Telephone: 937-285-6459

Number of pages including cover page: 9

Message: Ohio EPA comments on PRS 99/100 Further Assessment Report

State of Ohio Environmental Protection Agency

Southwest District Office

401 East Fifth Street
Dayton, Ohio 45402-2911

TELE: (937) 285-6357 FAX: (937) 285-6249

Bob Taft, Governor
Maureen O'Connor, Lt. Governor
Christopher Jones, Director

April 17, 2000

Mr. Arthur Kleinrath
U.S. DOE MEMP
P.O. Box 66
Miamisburg, Ohio 45343-0066

Review of the Further Assessment Report for Potential Release Site 99/100

Dear Mr Kleinrath:

The Ohio Environmental Protection Agency and The Department of Health has completed our review of the Further Assessment Report for Potential Release Site 99/100. Please refer to the attached comments on the document. Should there be any question concerning the above, please feel free to contact Jane O'Dell (937) 285-6459 or me at (937) 285-6468.

Sincerely,

Mr. Brian Nickel
OEPA/Mound Project Manager
Office of Federal Facilities Oversight

cc. Tim Fischer, USEPA Region V
D. Rakel, BWO
K. Arthur, BWO
R. Vandegrift, ODH
J. Price, BWO

FURTHER ASSESSMENT REPORT
SAMPLING AT PRS No. 99/100
FEBRUARY 2000 (DRAFT FINAL REVISION 1)
DOE MOUND
OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS

General Comments

1 Would anyone object to the title of Further Assessment Data Report versus Further Assessment Report(FAR)?

Specific Comments

1. Page iii, List of Appendicies - Under Appendix E, change the word "re-analsis" to re-analysis. The spelling also needs corrected on page E-1.

2. Page 1-1, Section 1.1 Overview - The last sentence on the page references the target analytes (change analyses to analytes) from the Sampling and Analysis Plan (SAP). The list excludes Trivalent Chromium, Cesium^{137} and Radium^{226}, all of which are listed on page 11 of the SAP. Why are there no sample results for Trivalent Chromium? Cesium^{137} has sample results listed within the Soil Analysis Reports and in Table 3 2 Radiological Analytical Results. Radium^{226} is listed only on the Soil Analysis Reports. Please reconcile.

3. Page 2-1, Section 2.1 Boring Locations and Sample Collection - The last sentence of text on the page indicates the survey coordinates for adjusted and offset borings were estimated. On page 3 of the SAP, under section 3, a sentence reads.. "If any sampling locations are moved during the field investigation, the locations will be re-surveyed." Why were the coordinates estimated and not re-surveyed?

4. Page 2-1, Section 2.1 Boring Locations and Sample Collection - Boring X-5 was specifically located over a trending gully to ensure proper characterization of this area. According to this section (page 2-4, CAR013), boring X-5 was adjusted due to safety concerns. As agreed in the March 23, 2000 meeting regarding responses to the Ohio EPA comments on the PRS 100 Site Package, Karen Arthur will review photos to determine if the depth of the area down by the road, where the discharge from this pipe would have settled, is similar to today's depth (within five feet). If the depth of any new soil within that area appears to be greater than five feet, an equipment based sample will need to be piggy backed onto another project (possibly PRS 66). This sample should be taken soon If the new soil appears to be less than five feet, a sample may be taken with a hand auger. The sample will be taken from this area to help characterize the soil as a result of the drainage. It was agreed that this should not hold up PRS 100 binning or the Release of Parcel 3. The proposed sample location falls out of PRS 100 and Parcel 3. Based upon what area this particular storm water drain collected, an analyte list will be prepared to determine contaminates of concern.

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Specific Comments

5. Pages 2-3 and 2-4 - These pages are out of sequence.

6. Page 2-3, Second sentence from the bottom - Please add a note to see appendix C when referencing the corrective action reports (i.e., CAR 012).

7. Page 3-1, Section 3.1, Inorganic Analytical Results - Please add a statement regarding the MDA detection results for the inorganic samples.

8 Page 3-2, Table 3-1 Inorganic Analytical Results

   A. In the Background Level column, please add the units of measure (mg/kg)

   B. Please identify the guideline value scenario and the risk value for the Mound Risk Based Cleanup Guideline Values column.

   C. Please describe the "NA" used in the Mound Risk Based Cleanup Guideline Value for Lead

   D. Chromium VI lab results were not in Reference 4 of the PRS 100 Site Package. Chromium VI lab results are in Table 3.1 Please explain why the results were left out of Reference 4

9. Page 3-9, Section 3.1.4, Nickel Analytical Results - The second sentence indicates the range of Nickel concentration from 4.1 to 30.5 mg/kg. The highest Nickel concentration was 64.1 mg/kg from boring D3, sample 000116. Please change the range values. The fourth sentence indicating no concentrations exceeding background level is inaccurate.

10 Page 3-9, Section 3.2, Radiological Analytical Results

   A. Add radium to the analyte list in the last full sentence on the page

   B. Please add a statement regarding the MDA detection results for the radiological samples.

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Specific Comments

11. Page 3-10, Section 3.2 Isotopic Uranium Analytical Results

A The first sentence indicates that the Uranium^{234} activities ranged from non-detect to 0.310 pCi/g. The lowest Uranium^{234} value was the sample specific MDA at 0.0265 pCi/g from boring X-8, sample 000159. The highest Uranium^{234} value was 0.368 pCi/g from boring X-5, sample 000139. Please change the range accordingly.

B The second sentence has an inaccurate background value for Uranium^{234}. The background value should be 1.1 pCi/g instead of 2.1 pCi/g.

C. The first sentence in the second paragraph within this section indicates the Uranium^{235} sample levels. The lowest Uranium^{235} value was the sample specific MDA at 0.0204 pCi/g from boring E-4, sample 000156. The highest Uranium^{235} value was the sample specific MDA at 0.04052 pCi/g from boring F-5, sample 000035. Please change the range accordingly.

12. Page 3-11, Table 3.2 Radiological Analytical Results

A. Add the Radium^{226} data that was reported in Reference 4 of the PRS 100 Site Package to Table 3.2.

B In the Background Level column, please add the units of measure (pCi/g).

C. Please identify the guideline value scenario used in the Mound 10-6 Risk Based Cleanup Guideline Value column.

D. Please identify the source of the values used for Thorium$^{228 \& 232}$ and Lead^{210} in the Mound 10-6 Risk Based Cleanup Guideline Value column.

E Clarify the "U" under the note section of the table. As per Karen Arthur, this is the sample specific MDA value

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Specific Comments

13. Page 3-13, Section 3.2.2 Isotopic Uranium Analytical Results - The first sentence in the first full paragraph on page 3-13 indicates the Uranium^{238} sample levels. The lowest Uranium^{235} value was the sample specific MDA at 0.0229 pCi/g from boring X-8, sample 000159 Please change the lowest value in the range.

14 Page 3-13, Section 3.2 Isotopic Thorium Analytical Results

A. The first sentence in the first paragraph within this section indicates the Thorium^{228} sample levels. The lowest Thorium^{228} value was the sample specific MDA at 0.442 pCi/g from boring X-3, sample 000085. The highest Thorium^{228} value was the sample specific MDA at 3.1 pCi/g from boring X-8, sample 000159 Please change the range accordingly.

B Please change the third sentence in the first paragraph to accurately label the 3.0 pCi/g value and provide a reference for its source. This is not a Mound Risk-Based Guideline Value.

C. The first sentence in the third paragraph within this section indicates the Thorium^{232} sample levels. The lowest Thorium^{232} value was at 0.366 pCi/g from boring X-3, sample 000085. The highest Thorium^{232} value was the sample specific MDA at 1.342 pCi/g from boring X-8, sample 000159 Please change the range accordingly.

D. Please change the last sentence in the last paragraph to accurately label the 3.0 pCi/g value and provide a reference for its source. This is not a Mound Risk-Based Guideline Value.

15. Page 3-14, Section 3.2.4, Cobalt^{60} Analytical Results - Please add the following text. The lowest Cobalt^{60} value was the sample specific MDA at 0.095 pCi/g from boring X-5, sample 000139. The highest Cobalt^{60} value was the sample specific MDA at 0.208 pCi/g from boring X-9, sample 000141

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Specific Comments

16. Page 3-14, Section 3.2.5, Lead^{210} Analytical Results

    A. The third sentence within the paragraph in this section indicates the Lead^{210} sample levels The lowest Lead^{210} value was the sample specific MDA at 1 12 pCi/g from boring X-6, sample 000084. Please change the lowest value in the range.

    B Please change the last sentence in the last paragraph to accurately label the 1.7 pCi/g value and reference its source. This is not a Mound Risk-Based Guideline Value.

17. Page 3-14, Section 3.2.5 Americium^{241} Analytical Results - Please add the following text. The lowest Americium^{241} value was the sample specific MDA at 0.1404 pCi/g from boring X-3, sample 000085. The highest Americium^{241} value was the sample specific MDA at 1.068 pCi/g from boring X-6, sample 000084.

18. Page 3-15, Section 3.2.7 Bismuth Analytical Results

    A. Please add the following text The lowest Bismuth^{207} value was the sample specific MDA at 0.05726 pCi/g from boring X-8, sample 000159. The highest Bismuth^{207} value was the sample specific MDA at 0.148 pCi/g from boring F-3, sample 000047.

    B Please add the following text The lowest Bismuth^{210m} value was the sample specific MDA at 0.1088 pCi/g from boring X-5, sample 000139. The highest Bismuth^{210m} value was the sample specific MDA at 0.1992 pCi/g from boring X-10, sample 000149 The "m" in "^{210m}" needs to be explained.

19. Page 3-15, Section 3.2.8 Cesium^{137} Analytical Results - Please add the following text. The lowest Cesium^{137} value was at 0.0872 pCi/g from boring X-8, sample 000159. The highest Cesium^{137} value was the sample specific MDA at 0.2186 pCi/g from boring X-10 sample 000149.

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Specific Comments

20. Page 3-15, Section 3.3 Data Validation

A What other information can be placed into this section to help the reader understand why the sample results are usable even though laboratory problems were noted during the validation process Is there additional information on the Validation Summary Reports? This is important because the Core Team will need to make a decision based on the J Qualified data.

B. Why are the samples listed in Table 3.3 and Table 3.4 not in Table 3.6?

C. In Table 3.4, a sample identification number of 315141 is first in the table. What is this?

21. Section 3.2 Radiological Analytical Results - Please add a section on Radium^{226}.

22 Appendix D. Mound On-Site Screening Results

A On the Soil Analysis Reports the MDAs for Plutonium^{238} range from 31.30 to 169 6 pCi/g. Table 5.1, page 11 of the SAP defines the detection limit of 25 pCi/g. Page 10 of the SAP indicates that screening of Plutonium^{238} will be conducted by Sodium Iodide Detector. Was this detection method used in the onsite lab? Explain why the actual MDAs are well above the SAP detection limit. The MDAs need to meet the objectives outline in the SAP. After discussing this problem with BWO and DOE, It is our understanding the available samples are being reran to obtain the objectives of the SAP. The data with the lower detection limits need to be reported in the report

B On the Soil Analysis Reports the MDAs for Thorium^{230} range from 2.62 to 15.97 pCi/g. Table 5.1, page 11 of the SAP defines the detection limit of 1 pCi/g. Page 10 of the SAP indicates that screening of Thorium^{230} will be conducted by Sodium Iodide Detector. Was this detection method used in the onsite lab? Explain why the actual MDAs are well above the SAP detection limit. The MDAs need to meet the objectives outline in the SAP After discussing this problem with BWO and DOE, It is our understanding the available samples are being reran to obtain the objectives of the SAP. The data with the lower detection limits need to be reported in the report

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22 Appendix D. Mound On-site Screening Results continued

C. Soil Analysis Report (SAR) for PRS99/100 0000111, 000096 and 000097 are missing from the Draft Final Revision 1. The reports were included in the "unofficial draft" given to the Ohio EPA prior to the bound version What happened to these SARs?

D. A result for boring C-5, sample 000015 is missing from Table 3 1 Inorganic Analytical Results. A Soil Analysis Report exists. According to the Field Entry Form, a sample was submitted for chemical analysis. Please reconcile.

E Why are there three Soil Analysis Reports labeled 000017?

F. A result for boring G-3, sample 000057 is missing from Table 3.1 Inorganic Analytical Results. A Soil Analysis Report exists According to the Field Entry Form, a sample was submitted for chemical analysis. Please reconcile.

23. Appendix E Mound Re-Analysis and Release Screening Results - Please give further descriptions on the Soil Analysis Reports labeled GRID 99-40-09-5-1, GRID 99-40-09-5-2, GRID 99-40-09-5-3, PS#1 99-PS-11, PS#2 99-PS-11 and PS#3 99-PS-11

24 Appendix F Field Entry Form - Please add references to the letters and numbers used in the Matrix and QC Type columns.

25 Appendix G & H - Please add the applicable data to these sections.

April 17, 2000

Response to Ohio EPA Comments on PRS 99 EE/CA Report (April 2000)

General Comment Responses

1). OK

2). OK/Core Team

3). OK/We would like to setup procol to look at a generic outline and added to the action list. Action Joe G. (Also a D:-L Nyff to do)

4). OK/Cost Table Added

5). OK/But PRS 99 Addendum1, has not been binned yet, is this an appropriate statement. Rewrite as "Under Review for Binning" Change, get from Karen A.

Specific Comments Responses

1). OK

2). OK

3). OK

4). OK

5). Reworded (explain the different in the 106pCi/g (onsite # :gamma spectroscopy) and 297pCi/g (offsite #: isotopic analysis) Make change

6). Reworded /OK

7). Not OK, Mound Plant's was not change to Plants being place

8). OK

9). OK

10). OK

11). OK

12). OK

13). OK

14). Cleanup Objective: 55 pCi/g–add footnote a, 3.0 Ci/g-- change to 3.0 pCi/g (Original Comment), 3.0 pCi/g–add footnote c

15). **To be consistant with the PRS 99/100 Addendum 1, take out the non-disposal area on the Figure 2.1 Coming for Kan.

16). **The Thorium-230 is not 44 pCi/g (only considering Th-230) or is it the calculated to 3.2 pCi/g (refer to: PRS 407 On Scene Coordinator Report, page 7).

Response to OEPA Comments on
Potential Release Site 99
Action Memorandum Engineering Evaluation/Cost Analysis
(Draft Rev 0)

General Comments:

1. This needs to be rewritten so that it is consistent throughout that the removal action has been completed. In some places it sounds like this is still a pending action and in others it is described in the past tense. For example, on page 5-1 in the paragraph entitled "Excavation" it states: "Progression and extent of excavation will be determined in the field.." Then the next paragraph, entitled "Verification" states: "Since this removal action was prompted by discoveries during a sampling event, and to afford continued field work with minimum interruptions the verification sampling approach was negotiated in the field with the regulators."

Examples:

a) *Page 5-4: Paragraph 5.1.3.2: last sentence:* "A Removal Action is warranted" sounds like the removal action hasn't taken place yet

b) *Page 9-1:* The recommendation is written as if the removal action hasn't taken place yet.

Response:
The document was edited to better communicate the fact that the removal action has been performed.

2. *Cover and Title Page:* Why is this called an "Engineering Evaluation/Cost Analysis?" This document does not appear to reflect an analysis of alternatives. In addition, it states on page 5-4 in 5.1.4 that an EE/CA is not required because there was less than 6 months planning time. Should we remove EE/CA from the title?

Response
In designing Mound 2000, the Core Team considered the similarity in the material presented in an Engineering Evaluation/Cost Analysis and an Action Memo for a typical PRS removal. In addition, the Core Team realized that typically less than six months would be required to plan a PRS removal but more than six months would be available because of the binning process. After some deliberation, the Core Team decided to issue, for a typical PRS removal, a single document that addresses the intent of both.

3. In accordance with the Superfund Removal Procedures on Action Memorandum Guidance, the Purpose section is not properly defined. It appears the purpose is in the Physical Location section on page 2-1. It also appears that the information required in the Removal Site Evaluation section (which should be in Action Memorandum's Site Description section, but is in the Threat to Public Health or Welfare or the Environment

section) is in the Site Characteristics section on page 2-1.

Response
A comparison of the example language in EPA/540/P-90/004 indicates the comment has merit. However, this guidance was developed for EPA-lead removals and in that case the primary purpose of the Action Memo is different from its main purpose in Mound 2000. The placement of these items in this Action Memo/EE/CA is consistent with the documents issued for previous PRS removals under Mound 2000. The format has evolved to reflect the purpose of the combined AM and EE/CA. The Core Team believes it is proper to improve on generic guidance documents, and the public is familiar with this format.

4. The Superfund Removal Procedures on Action Memorandum Guidance require placing costs into certain categories. More detail should be provided. See EPA/540/P-90/004, Superfund Removal Procedures, Action Memorandum Guidance (pages 20-22).

   Response
   The guidance was intended for EPA lead removals. In that case, the action memo is used to authorize spending funds. Under Mound 2000, the action memo is used more to engage the public in the removal process. The guidance identifies extramural and intramural costs. These terms from the guidance document do not apply to a DOE lead removal.

5. Since there has been so many changes on Potential Release Site 99/100, a flow chart should be added to show how it has followed the Mound 2000 Process.

   Response
   The same flowchart added to the PRS 100 Addendum was added to this document as Appendix B.

Specific Comments:

1. *In the Table of Contents, under List of Tables on page I:* Table 5.2 should read "Schedule Summary."

   Response
   The title of the table was changed to "Schedule Summary".

2. *Page iii under Acronyms:* CERCLA and NCP descriptions are truncated.

   Response
   The missing words were added.

3. *Page 2-1; Paragraph 2.1.1; first sentence:* What does "GH" mean or stand for? Include

it in the text.

Response
GH stands for Guard House. This has been added to the text.

4. *Page 2-3; Paragraph 2.2; first sentence:* It should be "among" not "between". "Between" is used for 2 parties; "among" is used for more than 2.

Response
Between was changed to among.

5. *Page 2-3, Section 2.2 Paragraph 5:* One sample was mentioned having elevated levels, indicating a fixed level of 106 pCi/g of PU^{238} and removable of 70 dpm/100cm2 of Pu^{238}. In PRS 100 Potential Release Site Package, it appears the same sample is referenced at 297 pCi/g (Page 2). This same sample is mentioned in Appendix A as 106 pCi/g and does not mention fixed or removable. These references need to be consistent or am explanation needs to be provided in the text to reconcile the various levels. Also, "fixed"needs to deleted. It is not appropriate for soil analysis.

Please explain within the comment response why the same sample had an offsite laboratory measurement almost 3 times the on site laboratory measurement, specifically the 106 pCi/g versus 297 pCi/g referenced in the PRS 100 Package.

Response
A similar comment was received for the PRS 100 package. That response is reproduced here in part.

"The 106 pCi/g is from onsite screening, the 297 pCi/g was reported from the offsite lab. The PRS Package shows the higher number and highlights it in Reference 4 (offsite lab results) page 21 of 21. Again, the PRS Package is clear to report the highest value and obvious that it is from offsite analysis. Both onsite and offsite results should be presented in the Data Report for use. NO FURTHER ACTION REQUIRED."

The reference to fixed and removable has been deleted from the paragraph.

6. *Page 2-3, Section 2.2:* The 839 pCi/g pf Pu^{238} referenced in Appendix A should be included in the wording when the phase II sampling is being presented. In addition, include in this section more description of the debris (e.g. tank) found in PRS 99 before it was changed to Response Action.

Response
Reference to the 839pCi/g value was added to the Phase II sampling discussion. Also more information about the debris is provided in the same section.

7. *Page 2-4, Section 2.3.1, First Sentence:* Suggest we change the wording to, "In 1989, as a result of the Mound Plant being placed onto the NPL, Department Of Energy and United State Environmental Protection Agency entering into a Federal Facilities Agreement (FFA) which specified the manner in which the CERCLA program was to be implemented at Mound." This eliminates the need for Mound Plant to be possessive, which is a strange way to word the paragraph.

   Response
   Changed "Plant's placement" to "Plant being placed"

8. *Page 3-2; Table 3.1; Section (vi):* What does "fire or explosion hazard material" mean? Do you mean "flammable and explosive material?"

   Response
   Replaced "fire or explosion hazard" with "flammable and explosive"

9. *Page 3-2, Under Criteria ii Evaluation:* The potential for contaminating drinking water is described as remote. What is the basis for determining that the potential is remote?

   Response
   The basis for determining the potential was remote was the fact that PRS 99 is located on the Main Hill over a bedrock aquifer. Drinking water is extracted from the Buried Valley Aquifer by production wells across the Main Hill and on the other side of the plant site.

10. *Page 4-1; Paragraph 4:* Again, this sounds like the removal hasn't taken place yet.

    Response
    Tense was changed to past tense.

11. *Page 5-1 under Section 5.1:* ***"Since the proposed action is within the site boundaries, it is not expected to have a disproportionate impact on low income or minority populations".*** Is this wording a requirement? In a 1996 PRS 111 Action Memorandum, this wording is not used.

    Response
    This sentence was added to indicate the issue of environmental justice was considered. This practice was initiated in 1998. It is not a requirement of the NCP.

12. *Page 5-1; Paragraph 5.1.1:* Why is "Public Notification" under the proposed action description? Isn't this part of "community relations" in accordance with Section 300.415 (m) of the NCP? In addition, the NCP requires a public comment period and a "responsiveness summary" pursuant to Section 300.820. These aren't mentioned here.

Response
Public Notification is part of community relations. We have developed the practice of including this step in the Proposed Action Description to highlight our commitment to communicate with stakeholders about each removal action. As indicated in the Mound 2000 Work Plan, the Action Memo/EE/CA does go through a 30 day public review and response are provided in the Final version of the document. A sentence was added "Responses to comments received will be published in the final version of the Action Memorandum."

13. *Page 5-2; Paragraph 5.1.1.5:* What post removal site control is needed for this site and why? Please make it clear in the text that the property has been clean up based on industrial reuse and that institutional controls, i.e. deed restrictions, will be used to restrict the future use of the property.

Response
The initial reference to post removal site control in the text was meant to indicate that there is an active owner on site with a managing contractor presence. This is essentially a restricted access facility. In the near future, ownership for Parcel 3 will change. The last sentence was changed to read "to ensure future protection of human health and the environment under industrial reuse".

14. *Page 5-2 under Table 5.1*: Why is fixed and removable referenced. It is not applicable to the 55 pCi/g. Where is the ALARA value for Thorium 228 referenced? Please use the updated 10^{-6} value in the table and the most recently used clean up value of 3pCi/g,. Also, include the isotope Thorium ^{232} and "d" after "Thorium^{228} (Thorium $^{228\&232}$). In addition, the units on Thorium ^{228} should be pCi/g not Ci/g.

(Note: The clean up value for Thorium $^{228\&232}$ plus daughters was negotiated for the clean up of PRS 304. The 3pCi/g value was derived from addition of the 10-5 risk value plus background (1.0pCi/g + 1.4 pCi/g = 2.4) and rounding up during the negotiations. The 10-5 risk level concentration of 1.0 pCi/g is taken from the RB H TPR Guideline Value calculation. Also, we would like to see Table 5.1 modified. See table below)

EXAMPLE TABLE:

Contaminant	Risk Base Guideline Values (10^{-5})	Risk Base Guideline Values (10^{-6})	Back-Ground Values	Clean-up Objective
Plutonium ^{238}	**55 pCi/g**	5.5 pCi/g	0.13 pCi/g	**55 pCi/g**
Cobalt ^{60}	1.0 pCi/g	**0.10 pCi/g**	N/A	**0.10 pCi/g**
Thorium ^{228} + D	1.0 pCi/g	0.1 pCi/g	1.5 pCi/g	**3.0 pCi/g**
*Thorium ^{232}	1.0 pCi/g	0.1 pCi/g	1.4	**3.0 pCi/g (ALARA Value)**

>> Bold print indicates values used for action criteria
>> (*), Th^{232} values are based off of (Th^{228} +D) criteria

Response
The Table was replaced as requested.

15. *Page 6-1; "Expect Change in the Situation Should Action Be Delayed Or Not Taken":* They state that the potential is there for contamination to migrate or to have migrated. I am concerned about the extent of possible migration, and would like to know what assessment has been made or will be made regarding the extent of migration in soil.

Response
The text was changed to reflect the fact that the removal has occurred and is complete. This section is not applicable to the PRS 99 removal. The contaminants can no longer migrate; they have been removed. The extent of the contamination was established in the field, in consultation with OEPA, confirmed through sampling, and documented by the OSC report.

Original
XC: JG - FYI
Working Copy

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State of Ohio Environmental Protection Agency
Southwest District Office

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Bob Taft, Governor
Maureen O'Connor, Lt. Governor
Christopher Jones, Director

February 24, 2000

Mr. Arthur Kleinrath
U.S. DOE MEMP
P.O. Box 66
Miamisburg, Ohio 45343-0066

Review of the Action Memorandum Engineering Evaluation/Cost Analysis for Potential Release Site 99

Dear Mr. Kleinrath:

The Ohio Environmental Protection Agency and The Department of Health has completed our review of the Action Memorandum Engineering Evaluation/Cost Analysis for Potential Release Site 99. Please refer to the attached comments on the document. Should there be any question concerning the above, please feel free to contact Mr. Anthony T. Campbell at (937) 285-6456 or me at (937) 285-6468.

Sincerely,

Mr. Brian Nickel
OEPA/Mound Project Manager
Office of Federal Facilities Oversight

cc: Tim Fischer, USEPA Region V
D. Rakel, BWO
R. Vandegrift, ODH
J. Price, BWO

ACTION MEMORANDUM ENGINEERING EVALUATION/COST ANALYSIS
POTENTIAL RELEASE SITE 99
13 DECEMBER 1999 (DRAFT REVISION 0)
DOE MOUND
OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS

General Comments :

1. This needs to be rewritten so that it is consistent throughout that the removal action has been completed. In some places it sounds like this is still a pending action and in others it is described in the past tense. For example, on page 5-1 in the paragraph entitled "Excavation" it states: "Progression and extent of excavation will be determined in the field.." Then the next paragraph, entitled "Verification" states: "Since this removal action was prompted by discoveries during a sampling event, and to afford continued field work with minimum interruption, the verification sampling approach was negotiated in the field with the regulators."

   Examples: a). *Page 5-4; Paragraph 5.1.3.2; last sentence:* "A Removal Action is warranted" sounds like the removal action hasn't taken place yet

   b). *Page 9-1:* The recommendation is written as if the removal action hasn't taken place yet.

2. *Cover and Title Page:* Why is this called an "Engineering Evaluation/Cost Analysis?" This document does not appear to reflect an analysis of alternatives. In addition, it states on page 5-4 in 5.1.4 that an EE/CA is not required because there was less than 6 months planning time. Should we remove EE/CA from the title?

3. In accordance with the Superfund Removal Procedures on Action Memorandum Guidance, the Purpose section is not properly defined. It appears the purpose is in the Physical Location section on page 2-1. It also appears that the information required in the Removal Site Evaluation section (which should be in Action Memorandum's Site Description section, but is in the Threat to Public Health or Welfare or the Environment section) is in the Site Characteristics section on page 2-1.

4. The Superfund Removal Procedures on Action Memorandum Guidance require placing costs into certain categories. More detail should be provided. See EPA/540/P-90/004, Superfund Removal Procedures, Action Memorandum Guidance (pages 20-22).

5. Since there has been so many changes in Potential Release Site 99/100, a flow chart should be added to show how it has followed the Mound 2000 Process.

Specific Comments:

1. *In the Table of Contents, under List of Tables on page i:* Table 5.2 should read "Schedule Summary."

2. *Page iii under the Acronyms:* CERCLA and NCP descriptions are truncated.

3. *Page 2-1; Paragraph 2.1.1:* What does "GH" mean or stand for? Include it in the text.

4. *Page 2-3; Paragraph 2.2; first sentence:* It should be "among" not "between." "Between" is used for 2 parties; "among" is used for more than 2.

5. *Page 2-3, Section 2.2 Paragraph 5:* One sample was mentioned having elevated levels, indicating a fixed level of 106 pCi/g of Pu^{238} and removable of 70dpm/100cm2 of Pu^{238}. In PRS 100 Potential Release Site Package, it appears the same sample is referenced at 297 pCi/g (Page 2). This same sample is mentioned in Appendix A as 106 pCi/g and does not mention fixed or removable. These references need to be consistent or an explanation needs to be provided in the text to reconcile the various levels. Also, "fixed" needs to deleted. It is not appropriate for soil analysis.

   Please explain within the comment response why the same sample had an offsite laboratory measurement almost 3 times the on site laboratory measurement, specifically the 106 pCi/g versus 297 pCi/g referenced in the PRS 100 package.

6. *Page 2-3, Section 2.2:* The 839 pCi/g of Pu^{238} referenced in Appendix A should be included in the wording when the phase II sampling is being presented. In addition, include in this section more description of the debris (e.g. tank) found in PRS 99 before it was changed to Response Action.

7. *Page 2-4, Section 2.3.1, First Sentence:* Suggest we change the wording to, "In 1989, as a result of the Mound Plant being placed onto the NPL, Department Of Energy and United State Environmental Protection Agency entering into a Federal Facilities Agreement (FFA) which specified the manner in which the CERCLA program was to be implemented at Mound". This eliminates the need for Mound Plant to be possessive, which is a strange way to word the paragraph.

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