PHASE I

REMEDIAL INVESTIGATION/ FEASIBILITY STUDY

HAZARD RANKING SYSTEM SCORE

VOLUME II

US EPA RECORDS CENTER REGION 5
426340

Prepared for:

NASA Lewis Research Center Cleveland, Ohio

February 2, 1996

Prepared by:

R&R International, Inc.
1234 S. Cleve-Mass Rd.
Akron, OH 44321

R&R INTERNATIONAL, INC.

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PHASE I

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PMU 7

NPL Characteristics Data Collection Form
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Record Information

1. Site Name: NASA LeRC PMU7 - North Perimeter Area
   (as entered in CERCLIS)

2. Site CERCLIS Number:

3. Site Reviewer:

4. Date: 10/21/95

5. Site Location: Cleveland/Cuyahoga/OH
   (City/County,State)

6. Congressional District:

7. Site Coordinates: Single

   Latitude: 41 24'45. Longitude: 81

Site Description

1. Setting: Urban

2. Current Owner: Federal

3. Current Site Status: Active

4. Years of Operation: Active Site , from and to dates: Since 1941

5. How Initially Identified: Other - Preliminary Assessment

6. Entity Responsible for Waste Generation:

   - Federal Facility
   - Other

7. Site Activities/Waste Deposition:

   - Waste Piles
   - Tanks - Below Ground

Waste Description

8. Wastes Deposited or Detected Onsite:

- Organic Chemicals
- Inorganic Chemicals
- Metals
- Oily Waste
- PCBs

Response Actions

9. Response/Removal Actions:

RCRA Information

10. For All Active Facilities, RCRA Site Status:

- Not Applicable

Demographic Information

11. Workers Present Onsite: Yes

12. Distance to Nearest Non-Worker Individual: > 10 Feet - 1/4 Mile

13. Residential Population Within 1 Mile: 4000.0

14. Residential Population Within 4 Miles: 10000.0

Water Use Information

15. Local Drinking Water Supply Source:

- Ground Water (within 4 mile distance limit)
- Surface Water (within 15 mile distance limit)

16. Total Population Served by Local Drinking Water Supply Source: 1500000.0

17. Drinking Water Supply System Type for Local Drinking Water Supply Sources:

    - Municipal (Services over 25 People)

18. Surface Water Adjacent to/Draining Site:

    - Stream

HRS DOCUMENTATION RECORD

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

1. Site Name: NASA LeRC PMU7 - North Perimeter Area
   (as entered in CERCLIS)

2. Site CERCLIS Number:

3. Site Reviewer:

4. Date: 10/21/95

5. Site Location: Cleveland/Cuyahoga/OH
   (City/County,State)

6. Congressional District:

7. Site Coordinates: Single

   Latitude: 41 24'45. Longitude: 81

	Score
Ground Water Migration Pathway Score (Sgw)	0.00
Surface Water Migration Pathway Score (Ssw)	0.00
Soil Exposure Pathway Score (Ss)	3.60
Air Migration Pathway Score (Sa)	0.00

Site Score	1.80

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

GROUND WATER MIGRATION PATHWAY SCORESHEET
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

GROUND WATER MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release to an Aquifer Aquifer: Shale Bedrock Aquife		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	0
2b. Net Precipitation	10	3
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	0
3. Likelihood of Release	550	0
Waste Characteristics		
4. Toxicity/Mobility	*	0.00E+00
5. Hazardous Waste Quantity	*	0
6. Waste Characteristics	100	0
Targets		
7. Nearest Well	50	5.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	1.00E+00
8d. Population (lines 8a+8b+8c)	**	1.00E+00
9. Resources	5	0.00E+00
10. Wellhead Protection Area	20	0.00E+00
11. Targets (lines 7+8d+9+10)	**	6.00E+00
12. Targets (including overlaying aquifers)	**	6.00E+00
13. Aquifer Score	100	0.00
GROUND WATER MIGRATION PATHWAY SCORE (Sgw)	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release by Overland Flow		
2a. Containment	10	0
2b. Runoff	25	1
2c. Distance to Surface Water	25	25
2d. Potential to Release by Overland Flow [lines 2a(2b+2c)]	500	0
3. Potential to Release by Flood		
3a. Containment (Flood)	10	0
3b. Flood Frequency	50	0
3c. Potential to Release by Flood (lines 3a x 3b)	500	0
4. Potential to Release (lines 2d+3c)	500	0
5. Likelihood of Release	550	0
Waste Characteristics		
6. Toxicity/Persistence	*	0.00E+00
7. Hazardous Waste Quantity	*	0
8. Waste Characteristics	100	0
Targets		
9. Nearest Intake	50	0.00E+00
10. Population		
10a. Level I Concentrations	**	0.00E+00
10b. Level II Concentrations	**	0.00E+00
10c. Potential Contamination	**	2.00E+00
10d. Population (lines 10a+10b+10c)	**	2.00E+00
11. Resources	5	5.00E+00
12. Targets (lines 9+10d+11)	**	7.00E+00
13. DRINKING WATER THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	0
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	0.00E+00
16. Hazardous Waste Quantity	*	0
17. Waste Characteristics	1000	0
Targets		
18. Food Chain Individual	50	0.00E+00
19. Population		
19a. Level I Concentrations	**	0.00E+00
19b. Level II Concentrations	**	0.00E+00
19c. Pot. Human Food Chain Contamination	**	0.00E+00
19d. Population (lines 19a+19b+19c)	**	0.00E+00
20. Targets (lines 18+19d)	**	0.00E+00
21. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	0
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioacc.	*	0.00E+00
24. Hazardous Waste Quantity	*	0
25. Waste Characteristics	1000	0
Targets		
26. Sensitive Environments		
26a. Level I Concentrations	**	0.00E+00
26b. Level II Concentrations	**	0.00E+00
26c. Potential Contamination	**	5.00E-02
26d. Sensitive Environments (lines 26a+26b+26c)	**	5.00E-02
27. Targets (line 26d)	**	5.00E-02
28. ENVIRONMENTAL THREAT SCORE	60	0.00
29. WATERSHED SCORE	100	0.00
30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof)	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release to Aquifer Aquifer: Shale Bedrock Aquife		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	0
2b. Net Precipitation	10	3
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	0
3. Likelihood of Release	550	0
Waste Characteristics		
4. Toxicity/Mobility/Persistence	*	0.00E+00
5. Hazardous Waste Quantity	*	0
6. Waste Characteristics	100	0
Targets		
7. Nearest Intake	50	0.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	4.80E-01
8d. Population (lines 8a+8b+8c)	**	4.80E-01
9. Resources	5	5.00E+00
10. Targets (lines 7+8d+9)	**	5.48E+00
11. DRINKING WATER THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
12. Likelihood of Release (same as line 3)	550	0
Waste Characteristics		
13. Toxicity/Mobility/Persistence/Bioacc.	*	0.00E+00
14. Hazardous Waste Quantity	*	0
15. Waste Characteristics	1000	0
Targets		
16. Food Chain Individual	50	0.00E+00
17. Population		
17a. Level I Concentrations	**	0.00E+00
17b. Level II Concentrations	**	0.00E+00
17c. Pot. Human Food Chain Contamination	**	0.00E+00
17d. Population (lines 17a+17b+17c)	**	0.00E+00
18. Targets (lines 16+17d)	**	0.00E+00
19. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
20. Likelihood of Release (same as line 3)	550	0
Waste Characteristics		
21. Ecosystem Tox./Mobility/Persist./Bioacc.	*	0.00E+00
22. Hazardous Waste Quantity	*	0
23. Waste Characteristics	1000	0
Targets		
24. Sensitive Environments		
24a. Level I Concentrations	**	0.00E+00
24b. Level II Concentrations	**	0.00E+00
24c. Potential Contamination	**	1.50E-02
24d. Sensitive Environments (lines 24a+24b+24c)	**	1.50E-02
25. Targets (line 24d)	**	1.50E-02
26. ENVIRONMENTAL THREAT SCORE	60	0.00
27. WATERSHED SCORE	100	0.00
28. SW: GW to SW COMPONENT SCORE (Sgs)	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SOIL EXPOSURE PATHWAY SCORESHEET
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

SOIL EXPOSURE PATHWAY Factor Categories & Factors RESIDENT POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
1. Likelihood of Exposure	550	550
Waste Characteristics		
2. Toxicity	*	1.00E+04
3. Hazardous Waste Quantity	*	10
4. Waste Characteristics	100	18
Targets		
5. Resident Individual	50	0.00E+00
6. Resident Population		
6a. Level I Concentrations	**	0.00E+00
6b. Level II Concentrations	**	0.00E+00
6c. Resident Population (lines 6a+6b)	**	0.00E+00
7. Workers	15	5.00E+00
8. Resources	5	0.00E+00
9. Terrestrial Sensitive Environments	***	2.50E+01
10. Targets (lines 5+6c+7+8+9)	**	3.00E+01
11. RESIDENT POPULATION THREAT SCORE	**	2.97E+05

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

SOIL EXPOSURE PATHWAY SCORESHEET
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

SOIL EXPOSURE PATHWAY Factor Categories & Factors NEARBY POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
12. Attractiveness/Accessibility	100	0.00E+00
13. Area of Contamination	100	0.00E+00
14. Likelihood of Exposure	500	0.00E+00
Waste Characteristics		
15. Toxicity	*	0.00E+00
16. Hazardous Waste Quantity	*	0
17. Waste Characteristics	100	0
Targets		
18. Nearby Individual	1	1.00E+00
19. Population Within 1 Mile	**	3.00E+01
20. Targets (lines 18+19)	**	3.10E+01
21. NEARBY POPULATION THREAT SCORE	**	0.00E+00
SOIL EXPOSURE PATHWAY SCORE (Ss)	100	3.60

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

AIR PATHWAY SCORESHEET

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

AIR MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release		
2a. Gas Potential to Release	500	0
2b. Particulate Potential to Release	500	0
2c. Potential to Release	500	0
3. Likelihood of Release	550	0
Waste Characteristics		
4. Toxicity/Mobility	*	0.00E+00
5. Hazardous Waste Quantity	*	0
6. Waste Characteristics	100	0
Targets		
7. Nearest Individual	50	7.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	2.72E+02
8d. Population (lines 8a+8b+8c)	**	2.72E+02
9. Resources	5	5.00E+00
10. Sensitive Environments		
10a. Actual Contamination	***	0.00E+00
10b. Potential Contamination	***	0.00E+00
10c. Sens. Environments(lines 10a+10b)	***	0.00E+00
11. Targets (lines 7+8d+9+10c)	**	2.84E+02
AIR MIGRATION PATHWAY SCORE (Sa)	100	0.00E+00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 77

a. Wastestream ID	Contam Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Documentation for Constituents:

Mass of contaminanted materials unknown

Reference: 2,3

Documentation for Wastestream Quantity:

Volume unknown

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 77
b. Source Type	Contaminated Soil
c. Secondary Source Type	N.A.
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00 | 18400.00
e. Source Volume/Area Value	5.41E-01
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	5.41E-01

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Cadmium	> 2	NO	7.4E+00	ppm
Methyl Napthalene, 2-	< 2	NO	1.0E+00	ppm
Methylene chloride	> 2	NO	1.4E-01	ppm
Naphthalene	> 2	NO	5.6E-01	ppm
Selenium	> 2	NO	7.0E+00	ppm
Thallium	> 2	NO	5.3E+00	ppm
Toluene	> 2	NO	2.4E-02	ppm
Xylene, m-	> 2	NO	1.9E-02	ppm
Zinc	> 2	NO	2.9E+02	ppm

Documentation for Source Hazardous Substances:

See Table 5-37 of the RI/FS Report for analytical data and Table 7-1 of the HRS Report for concentrations significantly above background values.

Reference: 2,3

Documentation for Source Area:

Area measured from Figure 4-1 of the RI/FS Report.

Reference: 2

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 21

a. Wastestream ID	Contam Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Documentation for Constituents:

Mass unknown

Reference: 2,3

Documentation for Wastestream Quantity:

Volume unknown

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 21	
b. Source Type	Contaminated Soil	
c. Secondary Source Type	N.A.	
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00	6400.00
e. Source Volume/Area Value	1.88E-01	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	1.88E-01	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Acenaphthene	< 2	NO	9.6E-01	ppm
Anthracene	< 2	NO	1.2E+00	ppm
Barium	< 2	NO	3.2E+02	ppm
Benz(a)anthracene	< 2	NO	5.0E+00	ppm
Benzo(a)pyrene	< 2	NO	4.1E+00	ppm
Benzo(g,h,i)perylene	< 2	NO	2.3E+00	ppm
Benzo(j,k)fluorene	> 2	NO	1.1E+01	ppm
Benzofluoranthene, 3,4-	< 2	NO	6.1E+00	ppm
Beryllium	< 2	NO	4.9E+00	ppm
Butylbenzyl phthalate	< 2	NO	3.3E-01	ppm
Chlordane	< 2	NO	6.7E-03	ppm
Chrysene	> 2	NO	4.5E+00	ppm
Di-n-butyl phthalate	> 2	NO	6.2E-01	ppm
Dieldrin	< 2	NO	3.9E-02	ppm
Lead	< 2	NO	5.9E+01	ppm
Magnesium	< 2	NO	2.4E+04	ppm
Manganese	< 2	NO	5.1E+03	ppm
Mercury	< 2	NO	6.5E-01	ppm
Phenanthrene	> 2	NO	6.9E+00	ppm
Pyrene	> 2	NO	7.9E+00	ppm
Selenium	< 2	NO	2.1E+00	ppm

Zinc	< 2	NO	7.2E+02	ppm

Documentation for Source Hazardous Substances:

See Table 5-35 of the RI/FS Report for analytical data and Table PMU7-5 of the HRS Report for concentrations significantly above background values.

Reference: 2,3

Documentation for Source Area:

Area measured from Figure 4-1 of the RI/FS Report.

Reference: 2

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No.	Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1	Building 77		5.41E-01	0.00E+00	5.41E-01
2	Building 21		1.88E-01	0.00E+00	1.88E-01

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values		HWQVs*	WCVs**
Ground Water	Toxicity/Mobility	0.00E+00	0	0
SW: Overland Flow, DW	Tox./Persistence	0.00E+00	0	0
SW: Overland Flow, HFC	Tox./Persis./Bioacc.	0.00E+00	0	0
SW: Overland Flow, Env	Etox./Persis./Bioacc.	0.00E+00	0	0
SW: GW to SW, DW	Tox./Persistence	0.00E+00	0	0
SW: GW to SW, HFC	Tox./Persis./Bioacc.	0.00E+00	0	0
SW: GW to SW, Env	Etox./Persis./Bioacc.	0.00E+00	0	0
Soil Exposure:Resident	Toxicity	1.00E+04	10	18
Soil Exposure: Nearby	Toxicity	0.00E+00	0	0
Air	Toxicity/Mobility	0.00E+00	0	0

* Hazardous Waste Quantity Factor Values
** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

GROUND WATER PATHWAY AQUIFER SUMMARY
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

No.	Aquifer ID	Type	Overlaying No.	Inter-Connected with	Likelihood of Release	Targets
1	Shale Bedrock Aquife	Non K	0	0	0	6.00E+00

Containment

No.	Source ID	HWQ Value	Containment Value
-	N/A and/or data not specified		

Containment Factor 0

Documentation for Ground Water Containment, Source Building 77:

Contaminated soil beneath asphalt/concrete

Reference: 2

Documentation for Ground Water Containment, Source Building 21:

Contaminated soil beneath asphalt/concrete

Reference: 2

Net Precipitation

Net Precipitation (inches) N.A.

Aquifer: Shale Bedrock Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Shale Bedrock Aquifer Aquifer:

Lithological information contained in the drilling logs included in Appendix C indicate the aquifer to be the shale bedrock. The other aquifers are perched water zones which are laterally discontinuous and not significant for HRS purposes.

Reference: 2

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Observed Release Factor 0

Documentation for Well 07-MW004:

See Figure 4-1 and Table 2-2 of the RI/FS Report for location of monitoring wells.

Reference: 2

POTENTIAL TO RELEASE

Containment

Containment Factor	0	

Net Precipitation

Net Precipitation Factor	3	

Depth to Aquifer

A. Depth of Hazardous Substances	26.00	feet

Documentation for Depth of Hazardous Substances:

Deepest contamination encountered in sample bh023-013 at 26 feet level. See Table 7-1 of the HRS Report.

Reference: 3

B. Depth to Aquifer from Surface	26.00	feet

Documentation for Depth to Aquifer from Surface :

Drilling logs included in Appendix C of the RI/FS Report indicate the shale bedrock was encountered at depths ranging from 20 to 33 feet.(Averaged 26 feet). Deepest contamination was also encountered at 26 feet level. Hence depth to bedrock aquifer considered 0 feet.

Reference: 2

C. Depth to Aquifer (B - A)	0.00	feet
Depth to Aquifer Factor	5	

Travel Time

Are All Layers Karst?	NO	
Thickness of Layer(s) with Lowest Conductivity	0.00	feet

Documentation for Thickness of Layers with Lowest Conductivity:

Drilling logs indicate clay, silt and silty clay layers with very little sand extend to depths ranging from 20 feet to 33 feet. Thickness averaged to 26 feet.

Reference: 2

Hydraulic Conductivity (cm/sec)	1.0E-06

Documentation for Hydraulic Conductivity:

See Table 3-6 of the HRS Report.

Reference: 1

Travel Time Factor	35

==========

Potential to Release Factor 0

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value

Hazardous Substances Found in an Observed Release

Well No.	Observed Release Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value

- N/A and/or data not specified

- N/A and/or data not specified

Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	0.00E+00
Sum of Source Hazardous Waste Quantity Values:	0.00E+00
Hazardous Waste Quantity Factor:	0
Waste Characteristics Factor Category:	0

Population by Well

No.	Well ID	Sample Type	Distance (miles)	Level of Contamination	Population

- N/A and/or data not specified

Level I Population Factor: 0.00

Level II Population Factor: 0.00

Potential Contamination by Distance Category

Distance Category (miles)	Population	Value
> 0 to 1/4	0.0	0.00E+00
> 1/4 to 1/2	0.0	0.00E+00
> 1/2 to 1	0.0	0.00E+00
> 1 to 2	50.0	1.00E+00
> 2 to 3	0.0	0.00E+00
> 3 to 4	0.0	0.00E+00

Potential Contamination Factor: 1.000

Nearest Well

Level of Contamination: Potential
Distance in miles: 1.50

Nearest Well Factor: 5.00E+00

Documentation for Nearest Well:

The closest water well on record with the Ohio Division of Water is located 1/4 mile west of the LeRC Site boundary on Cleveland Hopkins International Airport Property. This is inactive. Only 7 permitted drinking water wells were identified within 4 miles of LeRC. These wells are located between 1.5 and 3 miles south and southeast of LeRC and serve an estimated 50 individuals. See Section 3.3 and 3.8.2 of RI/FS Report.

Reference: 2

Resources

Resource Use: NO

Resource Factor: 0.00E+00

Documentation for Resources:

Groundwater is not a primary drinking source in this area. See section 3.3 of the RI/FS Report.

Reference: 2

Wellhead Protection Area

No wellhead protection area

Wellhead Protection Area Factor: 0.00E+00

Documentation for Wellhead Protection Area:

Criteria specified in Section 3.3.4 of the HRS Guidance Manual does not apply.

Reference: 1

SURFACE WATER PATHWAY SEGMENT SUMMARY
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

No.	Segment ID	Segment Type	Water Type	Start Point (mi)	End Point (mi)	Average Flow (cfs)
1	Rocky River	River	Fresh	0.00	9.70	112
2	Lake Erie	Moderate D	Fresh	9.70	15.00	N.A.

Documentation for segment: Rocky River:

see Section 3.0, Phase I RI/FS

Reference:

SURFACE WATER PATHWAY OVERLAND FLOW/FLOOD COMPONENT LIKELIHOOD OF RELEASE

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

OBSERVED RELEASE

No.	Sample ID	Sample Type	Distance (miles)	Level of Contamination DW	HFC	Env

- N/A and/or data not specified

==========

Observed Release Factor 0

POTENTIAL TO RELEASE

Potential to Release by Overland Flow

Containment

No.	Source ID	HWQ Value	Containment Value

- N/A and/or data not specified

==========

Containment Factor: 0

Documentation for Overland Flow Containment, Source Building 77:

Contaminated soil detected beneath asphalt/concrete

Reference:

Documentation for Overland Flow Containment, Source Building 21:

Contaminated soil beneath asphalt

Reference:

Distance to Surface Water

Distance to Surface Water:	0.0 feet
Distance to Surface Water Factor:	25

Runoff

A. Drainage Area:	5.0 acres
B. 2-year, 24-hour Rainfall:	2.8 inches

Documentation for Rainfall:

See Section 3.5 of the RI/FS Report for the precipitation information.

Reference: 2

C. Soil Group:	C

Moderately-fine textured soils with low infiltration rates

Documentation for Soil Group:

Drilling logs included in Appendix C of the RI/FS Report indicate the soils to be silt, clay and silty clay with very little mixtures of sand.

Reference: 2

Runoff Factor:	1

==========

SURFACE WATER PATHWAY OVERLAND FLOW/FLOOD COMPONENT LIKELIHOOD OF RELEASE
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Potential to Release by Overland Flow Factor: 0

Potential to Release by Flood

No.	Source ID	HWQ Value	Flood Containment Value	Flood Frequency Value	Potential to Release by Flood

- N/A and/or data not specified

==========

Potential to Release by Flood Factor: 0

SW PATHWAY: OVERLAND/FLOOD DRINKING WATER THREAT WASTE CHARACTERISTICS
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value

- N/A and/or data not specified

- N/A and/or data not specified

Toxicity/Persistence Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Persistence Factor:	0.00E+00
Sum of Source Hazardous Waste Quantity Values:	0.00E+00
Hazardous Waste Quantity Factor:	0
Waste Characteristics Factor Category:	0

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT DRINKING WATER THREAT TARGETS

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served
1 Crown Intake Crib	0	375000.0
2 Division Intake	0	375000.0
3 Kirtland Intake	0	375000.0
4 Nottingham Intake	0	375000.0

Documentation for Intake Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report. Total population served 1.5 million divided equally among 4 intakes.

Reference: 2

Type of Surface Water Body	Total Population	Dilution-Weighted Population
Moderate Ocean Zone or Great Lake	1125000.0	16.0

Dilution-Weighted Population Served by Potentially Contaminated Intakes: 16.0

Potential Contamination Factor: 2.0

Nearest Intake

Location of Nearest Drinking Water Intake: Crown Intake Crib
Distance from the Probable Point of Entry: 12.60 miles
Type of Surface Water Body: Moderate D
Dilution Weight: 0.0000100
Highest Level of Contamination: Potential

Nearest Intake Factor: 0.00

Documentation for Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report. Total population served 1.5 million divided equally among 4 intakes.

Reference: 2

Resources

Resource Use: YES

Resource Value: 5.00E+00

Documentation for Resources:

See Section 3.8.1 of the RI/FS Report

Reference: 2

SW PATHWAY: OVERLAND/FLOOD HUMAN FOOD CHAIN THREAT WASTE CHARACTERISTICS
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Toxicity/Persistence/Bioaccumulation Value from Source Hazardous
- N/A and/or data not specified

Toxicity/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Persistence/Bioaccumulation Factor:	0.00E+00
Sum of Source Hazardous Waste Quantity Values:	0.00E+00
Hazardous Waste Quantity Factor:	0
Waste Characteristics Factor Category:	0

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT HUMAN FOOD CHAIN THREAT TARGETS

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Potential Contamination

Fishery	Annnual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di
- N/A and/or data not specified						

Sum of (Pi*Di): 0.00E+00

Potential Human Food Chain Contamination Factor: 0.00E+00

Food Chain Individual

Location of Nearest Fishery: N.A.

Food Chain Individual Factor: 0.00

Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Ecotoxicity/Persistence/Bioaccummulation Value from Source
- N/A and/or data not specified

Ecotoxicity/Persistence/Bioaccummulation Value from Observed Release Hazardous Substances:	0.00E+00
Ecotoxicity/Persistence/Bioaccummulation Factor:	0.00E+00
Sum of Source Hazardous Waste Quantity Values:	0.00E+00
Hazardous Waste Quantity Factor:	0
Waste Characteristics Factor Category:	0

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT ENVIRONMENTAL THREAT TARGETS

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Sensitive Environment Value
River	1 Rocky River Reservn	50

Wetlands

Type of Surface Water Body	Sensitive Environment	Wetlands Frontage	Wetlands Value
- N/A and/or data not specified			

Documentation for Sensitive Environment Rocky River Reservn:

See Table 4-23 of the HRS Guidance Manual

Reference: 1

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)
Moderate to Large Stream	50	0	1.00E-02	5.00E-01

Sum of Dj(Wj+Sj): 5.00E-01
Sum of Dj(Wj+Sj)/10: 5.00E-02

==========

Potential Contamination Sensitive Environment Factor: 5.00E-02

Containment

No.	Source ID	HWQ Value	Containment Value

- N/A and/or data not specified

==========

Containment Factor 0

Documentation for Ground Water Containment, Source Building 77:

Contaminated soil beneath asphalt/concrete

Reference: 2

Documentation for Ground Water Containment, Source Building 21:

Contaminated soil beneath asphalt/concrete

Reference: 2

Net Precipitation

Net Precipitation (inches) 0.00

Aquifer: Shale Bedrock Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Shale Bedrock Aquifer Aquifer:

Lithological information contained in the drilling logs included in Appendix C indicate the aquifer to be the shale bedrock. The other aquifers are perched water zones which are laterally discontinuous and not significant for HRS purposes.

Reference: 2

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Observed Release Factor 0

Documentation for Well 07-MW004:

See Figure 4-1 and Table 2-2 of the RI/FS Report for location of monitoring wells.

Reference: 2

POTENTIAL TO RELEASE

Ground Water to Surface Water Angle

Probable Point of Entry	0.04	miles
Angle Theta	120	

Containment

Containment Factor	0

Net Precipitation

Net Precipitation Factor	3

Depth to Aquifer

A. Depth of Hazardous Substances	26.00	feet

Documentation for Depth of Hazardous Substances:

Deepest contamination encountered in sample bh023-013 at 26 feet level. See Table 7-1 of the HRS Report.

Reference: 3

B. Depth to Aquifer from Surface	26.00	feet

Documentation for Depth to Aquifer from Surface :

Drilling logs included in Appendix C of the RI/FS Report indicate the shale bedrock was encountered at depths ranging from 20 to 33 feet.(Averaged 26 feet). Deepest contamination was also encountered at 26 feet level. Hence depth to bedrock aquifer considered 0 feet.

Reference: 2

C. Depth to Aquifer (B - A)	0.00	feet
Depth to Aquifer Factor	5	

Travel Time

Are All Layers Karst?	NO	
Thickness of Layer(s) with Lowest Conductivity	0.00	feet

Documentation for Thickness of Layers with Lowest Conductivity:

Drilling logs indicate clay, silt and silty clay layers with very little sand extend to depths ranging from 20 feet to 33 feet. Thickness averaged to 26 feet.

Reference: 2

Hydraulic Conductivity (cm/sec)	1.0E-06

Documentation for Hydraulic Conductivity:

See Table 3-6 of the HRS Report.

Reference: 1

Travel Time Factor	35

==========

Potential to Release Factor 0

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobililty/ Persistence

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Toxicity Factor Value	Persist. Value	Toxicity/ Persistence

- N/A and/or data not specified

Toxicity/Mobility/Persistence Value from Source Hazardous
- N/A and/or data not specified

Toxicity/Mobility/Persistence Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility/Persistence Factor:	0.00E+00
Sum of Source Hazardous Waste Quantity Values:	0.00E+00
Hazardous Waste Quantity Factor:	0
Waste Characteristics Factor Category:	0

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT TARGETS

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served
1 Crown Intake Crib	0	375000.0
2 Division Intake	0	375000.0
3 Kirtland Intake	0	375000.0
4 Nottingham Intake	0	375000.0

Documentation for Intake Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report. Total population served 1.5 million divided equally among 4 intakes.

Reference: 2

Type of Surface Water Body	Total Population	Dilution-Weighted Population
Moderate Ocean Zone or Great Lake	1125000.0	16.0

Dilution-Weighted Population Served by Potentially Contaminated Intakes: 16.0

Potential Contamination Factor: 0.5

Nearest Intake

Location of Nearest Drinking Water Intake: Crown Intake Crib
Distance from the Probable Point of Entry: 12.60 miles
Type of Surface Water Body: Moderate D
Dilution Weight: 0.0000030
Highest Level of Contamination: Potential

Nearest Intake Factor: 0.00

Documentation for Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report. Total population served 1.5 million divided equally among 4 intakes.

Reference: 2

Resources

Resource Use: YES

Resource Value: 5.00E+00

Documentation for Resources:

See Section 3.8.1 of the RI/FS Report

Reference: 2

SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio-accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Toxicity Value	Persist. Value	Bio-accum. Value	Toxicity/ Persistence Bioaccum. Value

- N/A and/or data not specified

Toxicity/Mobility/Persistence/Bioaccumulation Value from Source
- N/A and/or data not specified

Toxicity/Mobility/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility/Persistence/Bioaccumulation Factor:	0.00E+00
Sum of Source Hazardous Waste Quantity Values:	0.00E+00
Hazardous Waste Quantity Factor:	0
Waste Characteristics Factor Category:	0

SW PATHWAY: GW TO SW COMPONENT HUMAN FOOD CHAIN THREAT TARGETS

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Potential Contamination

Fishery	Annnual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di

- N/A and/or data not specified

Sum of (Pi*Di): 0.00E+00

Potential Human Food Chain Contamination Factor: 0.00E+00

Food Chain Individual

Location of Nearest Fishery: N.A.

Food Chain Individual Factor: 0.00

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Hazardous Substance	Eco-toxicity Value	Persist. Value	Mob. Value	Bio-accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Eco-toxicity Value	Persist. Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Ecotoxicity/Mobility/Persistence/Bioaccummulation Value from
- N/A and/or data not specified

Ecotoxicity/Mobility/Persistence/Bioaccummulation Value from Observed Hazardous Substances:	0.00E+00
Ecotoxicity/Mobility/Persistence/Bioaccummulation Factor:	0.00E+00
Sum of Source Hazardous Waste Quantity Values:	0.00E+00
Hazardous Waste Quantity Factor:	0
Waste Characteristics Factor Category:	0

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT TARGETS

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Sensitive Environment Value
River	1 Rocky River Reservn	50

Wetlands

Type of Surface Water Body	Sensitive Environment	Wetlands Frontage	Wetlands Value
- N/A and/or data not specified			

Documentation for Sensitive Environment Rocky River Reservn:

See Table 4-23 of the HRS Guidance Manual

Reference: 1

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)
Moderate to Large Stream	50	0	3.00E-03	1.50E-01

Sum of Dj(Wj+Sj): 1.50E-01
Sum of Dj(Wj+Sj)/10: 1.50E-02

==========

Potential Contamination Sensitive Environment Factor: 1.50E-02

Likelihood of Exposure

No.	Source ID	Level of Contamination
1	Building 77	Level II
2	Building 21	Level I

Likelihood of Exposure Factor: 550

Documentation for Area of Contamination, Source Building 77:

Area measured from Figure 4-1 of the RI/FS Report

Reference: 2

Documentation for Area of Contamination, Source Building 21:

Area measured from Figure 4-1 of the RI/FS Report.

Reference: 2

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Cadmium	> 2	7.4E+00	0.0E+00	0.0E+00	ppm
1	Methyl Napthalene, 2-	< 2	1.0E+00	0.0E+00	0.0E+00	ppm
1	Methylene chloride	> 2	1.4E-01	0.0E+00	0.0E+00	ppm
1	Naphthalene	> 2	5.6E-01	0.0E+00	0.0E+00	ppm
1	Selenium	> 2	7.0E+00	0.0E+00	0.0E+00	ppm
1	Thallium	> 2	5.3E+00	0.0E+00	0.0E+00	ppm
1	Toluene	> 2	2.4E-02	0.0E+00	0.0E+00	ppm
1	Xylene, m-	> 2	1.9E-02	0.0E+00	0.0E+00	ppm
1	Zinc	> 2	2.9E+02	0.0E+00	0.0E+00	ppm
2	Acenaphthene	< 2	9.6E-01	0.0E+00	3.5E+04	ppm
2	Anthracene	< 2	1.2E+00	0.0E+00	1.7E+05	ppm
2	Barium	< 2	3.2E+02	0.0E+00	4.1E+04	ppm
2	Benz(a)anthracene	< 2	5.0E+00	0.0E+00	0.0E+00	ppm
2	Benzo(a)pyrene	< 2	4.1E+00	8.0E-02	0.0E+00	ppm
2	Benzo(g,h,i)perylene	< 2	2.3E+00	0.0E+00	0.0E+00	ppm

2	Benzo(j,k)fluorene	> 2	1.1E+01	0.0E+00	0.0E+00	ppm
2	Benzofluoranthene, 3,4-	< 2	6.1E+00	0.0E+00	0.0E+00	ppm
2	Beryllium	< 2	4.9E+00	1.4E-01	2.9E+03	ppm
2	Butylbenzyl phthalate	< 2	3.3E-01	0.0E+00	1.2E+05	ppm
2	Chlordane	< 2	6.7E-03	4.5E-01	3.5E+01	ppm
2	Chrysene	> 2	4.5E+00	0.0E+00	0.0E+00	ppm
2	Di-n-butyl phthalate	> 2	6.2E-01	0.0E+00	0.0E+00	ppm
2	Dieldrin	< 2	3.9E-02	3.6E-02	2.9E+01	ppm
2	Lead	< 2	5.9E+01	0.0E+00	0.0E+00	ppm
2	Magnesium	< 2	2.4E+04	0.0E+00	0.0E+00	ppm
2	Manganese	< 2	5.1E+03	0.0E+00	2.9E+03	ppm
2	Mercury	< 2	6.5E-01	0.0E+00	1.7E+02	ppm
2	Phenanthrene	> 2	6.9E+00	0.0E+00	0.0E+00	ppm
2	Pyrene	> 2	7.9E+00	0.0E+00	0.0E+00	ppm
2	Selenium	< 2	2.1E+00	0.0E+00	2.9E+03	ppm
2	Zinc	< 2	7.2E+02	0.0E+00	1.7E+05	ppm

Documentation for Source Building 77, Contaminants:

See Table 5-37 of the RI/FS Report for analytical data and Table 7-1 of the HRS Report for concentrations significantly above background values.

Reference: 2,3

Documentation for Source Building 21, Contaminants:

See Table 5-35 of the RI/FS Report for analytical data and Table PMU7-5 of the HRS Report for concentrations significantly above background values.

Reference: 2,3

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Source: 1 Building 77

Source Hazardous Waste Quantity Value: 0.54

Hazardous Substance	Toxicity Value
Methyl Napthalene, 2-	0

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Source: 2 Building 21

Source Hazardous Waste Quantity Value: 0.19

Hazardous Substance	Toxicity Value
Acenaphthene	10
Anthracene	10
Barium	10000
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(g,h,i)perylene	0
Benzofluoranthene, 3,4-	10000
Beryllium	10000
Butylbenzyl phthalate	10
Chlordane	10000
Dieldrin	10000
Lead	10000
Magnesium	0
Manganese	10000
Mercury	10000
Selenium	100
Zinc	10

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	7.29E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Targets

Level I Population:	0.0	Value:	0.00

Documentation for Level I Population:

No residents, students, or daycare attendees within 200 ft of sites

Reference:

Level II Population:	0.0	Value:	0.00
Workers:	50.0	Value:	5.00
Resident Individual:	Potentia	Value:	0.00
Resources:	NO	Value:	0.00

Terrestial Sensitive Environment	Value
State lands	25

Terrestrial Sensitive Environments Factor: 25.00

Documentation for Terrestrial Environment State lands:

See Table 5-5 of the HRS Guidance Manual

Reference: 1

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT LIKELIHOOD OF EXPOSURE
NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Likelihood of Exposure

No.	Source ID	Level of Contamination	Attractiveness/ Accessibility	Area of Contam. (sq. feet)
- N/A and/or data not specified				

Highest Attractiveness/Accessibility Value: 0
Sum of Eligible Areas Of Contamination (sq. feet): 0
Area of Contamination Value: 0

Likelihood of Exposure Factor Category: 0

Source: 1 Building 77

Source Hazardous Waste Quantity Value: 0.54

Hazardous Substance	Toxicity Value
Methyl Napthalene, 2-	0

Source: 2 Building 21

Source Hazardous Waste Quantity Value: 0.19

Hazardous Substance	Toxicity Value
Acenaphthene	10
Anthracene	10
Barium	10000
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(g,h,i)perylene	0
Benzofluoranthene, 3,4-	10000
Beryllium	10000
Butylbenzyl phthalate	10
Chlordane	10000
Dieldrin	10000
Lead	10000
Magnesium	0
Manganese	10000
Mercury	10000
Selenium	100
Zinc	10

Toxicity Factor:	0.00E+00
Sum of Source Hazardous Waste Quantity Values:	0.00E+00
Hazardous Waste Quantity Factor:	0
Waste Characteristics Factor Category:	0

Targets

Level I Population: 5875.0 Value: 5.8082047553480231800000

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Level II Population: 5875.0 Value: 13.00

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Workers: 19800.0 Value: 10.20

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Documentation for Population > 0 to 1/4 mile Distance Category:

See Table 3-5 of the RI/FS Report for summary of demographic estimates

Reference: 2

AIR PATHWAY LIKELIHOOD OF RELEASE

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

OBSERVED RELEASE

No.	Sample ID	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Observed Release Factor: 0

Gas Migration Potential

GAS POTENTIAL TO RELEASE

Source ID	Source Type	Gas Contain. Value (A)	Gas Source Type Value (B)	Gas Migrtn. Potent. Value (C)	Sum (B+C)	Gas Potential to Rel. Value A(B+C)
- N/A and/or data not specified						

Gas Potential to Release Factor: 0

Documentation for Gas Containment, Source Building 77:

Contaminated soil beneath concrete/asphalt

Reference:

Documentation for Gas Containment, Source Building 21:

Contaminated soil beneath asphalt

Reference:

AIR PATHWAY LIKELIHOOD OF RELEASE

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Source: Building 77

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Methyl Napthalene, 2-	11
Methylene chloride	17
Naphthalene	11
Toluene	17
Xylene, m-	17

Average of Gas Migration Potential Value for 3 Hazardous Substances: 17.000

Gas Migration Potential Value From Table 6-7: 17

Source: Building 21

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Acenaphthene	11
Anthracene	6
Benz(a)anthracene	6
Benzo(a)pyrene	6
Benzo(j,k)fluorene	6
Benzofluoranthene, 3,4-	6
Butylbenzyl phthalate	6
Chlordane	6
Chrysene	6
Di-n-butyl phthalate	6
Dieldrin	6
Mercury	11
Phenanthrene	11
Pyrene	6

Average of Gas Migration Potential Value for 3 Hazardous Substances: 11.000

Gas Migration Potential Value From Table 6-7: 11

Particulate Migration Potential

PARTICULATE POTENTIAL TO RELEASE

Source ID	Source Type	Partic. Contain. Value (A)	Partic. Source Type Value (B)	Partic. Migrtn. Potent. Value (C)	Sum (B+C)	Partic. Potential to Rel. Value A(B+C)
- N/A and/or data not specified						

Particulate Potential to Release Factor: 0

Documentation for Particulate Containment, Source Building 77:

Contaminated soil beneath asphalt/concrete

Reference:

Documentation for Particulate Containment, Source Building 21:

Contaminated soil beneath asphalt

Reference:

Documentation for Particulate Migration Potential:

See Table 6-2 of the HRS Guidance Manual.

Reference: 1

Source: Building 77

Particulate Hazardous Substance
Cadmium
Methyl Napthalene, 2-
Naphthalene
Selenium
Thallium
Zinc

Source: Building 21

Particulate Hazardous Substance
Acenaphthene
Anthracene
Barium
Benz(a)anthracene
Benzo(a)pyrene
Benzo(g,h,i)perylene
Benzo(j,k)fluorene
Benzofluoranthene, 3,4-
Beryllium
Butylbenzyl phthalate
Chlordane
Chrysene
Di-n-butyl phthalate
Dieldrin
Lead
Magnesium
Manganese
Mercury
Phenanthrene
Pyrene
Selenium
Zinc

AIR PATHWAY WASTE CHARACTERISTICS

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value

Hazardous Substances Found in an Observed Release

Sample ID	Observed Release Hazardous Substance	Particulate Toxicity/ Mobility Value	Gas Toxicity/ Mobility Value
- N/A and/or data not specified			

- N/A and/or data not specified

Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	0.00E+00
Sum of Source Hazardous Waste Quantity Values:	0.00E+00
Hazardous Waste Quantity Factor:	0
Waste Characteristics Factor Category:	0

AIR PATHWAY TARGETS

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

Actual Contamination

No.	Sample ID	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Potential Contamination

Distance Categories Subject to Potential Contamination	Population	Value
	Potential Contaminantion Factor:	0.0000
	Potential Contaminantion Factor:	0.0000
	Potential Contaminantion Factor:	0.0000
	Potential Contaminantion Factor:	0.0000
	Potential Contaminantion Factor:	0.0000
	Potential Contaminantion Factor:	0.0000
	Potential Contaminantion Factor:	0.0000

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Nearest Individual Factor

Distance in miles: Potentia

Nearest Individual Value: 4.935386679159909180000000000000000000000e+257

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Resources

Resource Value: 4.935386679149294770000000000000000000000e+257

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Actual Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value

Documentation for Resources:

Rocky River Reservation is located within the proximity

Reference:

- N/A and/or data not specified

Actual Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value

- N/A and/or data not specified

==========
(Sum of Sensitive Environments + Wetlands Values)

Potential Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value	Distance Weight	Weighted Value/10
(null)	4.935385843404746150000000000000000000000e+257			

Sum of Sensitive Environments Weighted Values/10: 0.000

Potential Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value	Distance Weight	Weighted Value/10

- N/A and/or data not specified

doc here

REFERENCES

NASA LeRC PMU7 - North Perimeter Area - 12/15/95

1. HRS Guidance Manual: 40CFR300 Appendix A to Part 300 The Hazard Ranking System 1993 and The Hazard Ranking System Guidance Manual - Interim Final, USEPA, Washington, D.C.

2. Phase I Remedial Investigation/Feasibility Study Report. Prepared by R&R International Inc. for NASA Lewis Research Center, Cleveland, OH. October 1995.

3. HRS Report. Prepared by R&R International Inc. for NASA Lewis Research Center, Cleveland, OH. October 1995

TABLE 7-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 7 - NORTH PERIMETER
BUILDING 77 (UPR-07-22)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
1,1,1-Trichloroethane	0.010	0.005	BH023-201	*	0.007	N	n/a	
2-Butanone	0.010	0.006	BH024-010		0 021	Y	Y	
Acetone	0.010	0.007	BH023-013	*	0.008	N	n/a	
Benzene	0.010	0.005	BH023-013	*	0.010	N	n/a	
Ethylbenzene	0.010	0.005	BH023-013	*	0.004	N	n/a	
Methlylene Chloride	0.010	0.004	BH023-013		0.140	Y	Y	
Toluene	0.010	0.005	BH023-013		0.024	Y	Y	
Total Xylenes	0.010	0.005	BH023-013		0 019	Y	Y	
SVOCs								
1,4-Dichlorobenzene	0.330	0.165	BH023-001	*	0.054	N	n/a	
2-Methylnaphthalene	0.330	0.139	BH023-001		1.000	Y	Y	
Benzo(a)Pyrene	0.330	0.158	BH023-001	*	0.055	N	n/a	
Benzo(a)anthracene	0.330	0.164	BH023-001	*	0.055	N	n/a	
Benzo(b)floranthene	0.330	0.175	BH023-001	*	0.092	N	n/a	
Chrysene	0.330	0.171	BH023-001	*	0.063	N	n/a	
Di-n-Butyl Phthalate	0.330	0.137	BH023-001	*	0.210	N	n/a	
Fluoranthene	0.330	0.204	BH023-001	*	0.130	N	n/a	
Ideno(1,2,3-cd)pyrene	0.330	0.160	BH023-001	*	0.049	N	n/a	
Naphthalene	0 330	0.139	BH023-013		0.560	Y	Y	
Phenanthrene	0.330	0.186	BH023-013	*	0.120	N	n/a	
Pyrene	0.330	0.188	BH023-001	*	0.096	N	n/a	
Pesticides / PCBs								
None Detected						N	n/a	

TABLE 7-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 7 - NORTH PERIMETER
BUILDING 77 (UPR-07-22)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Metals								
Aluminum		12820	BH023-001	*	16000	N	n/a	
Antimony	12	4.453	BH024-010	*	3	N	n/a	
Arsenic		16.240	BH023-013	*	29.80	N	n/a	
Barium		78.26	BH023-001		69.800	N	n/a	
Beryllium		0.72	BH023-001	#	0.9500	N	n/a	
Cadmium	1	0.737	BH023-013		7.400	Y	Y	
Calcium		20450	BH024-007		51400.0	N	n/a	
Chromium		17.78	BH023-001	*	18.50	N	n/a	
Cobalt		13.81	BH023-107		13.100	N	n/a	
Copper		26.13	BH023-013		38.50	N	n/a	
Iron		27440	BH023-007		32800.000	N	n/a	
Lead		13.81	BH023-013	*	13.600	N	n/a	
Magnesium		5576	BH024-001		14800.000	N	n/a	
Manganese		321.9	BH023-007	*	736.0	N	n/a	
Nickel		35.37	BH023013	*	86.10	N	n/a	
Potassium		1621.27	BH023-001		2390.00	N	n/a	
Selenium	1	0.6	BH023-013	*	7.00	Y	Y	
Sodium		145	BH023-001	#	1050.000	Y	Y	
Thallium		0.612	BH023-013		5.300	Y	Y	
Vanadium		20.04	BH024-010		52.500	N	n/a	
Zinc		92.07	BH024-010		294.0000	Y	Y	
Radioactivity								
Alpha Particle Radioactivity					16	N	n/a	
Beta Particle Radioactivity					27	N	n/a	

TABLE 7-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 7 - NORTH PERIMETER
BUILDING 77 (UPR-07-22)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments

Notes:
mean of background samples collected from shallow upland was used as background for shallow samples
and deep upland was used for deep samples (10 feet and more)
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL

TABLE 7-2
SIGNIFICANCE ABOVE BACKGROUND

PMU 7 - NORTH PERIMETER
BUILDING 21 / 8 (UST-07-20)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
Toluene	0.010	0.005	SS002-001	*	0.002	N	n/a	
SVOCs								
Benzo(a)anthracene	0.330	0.164	SS001-001		5.000	Y	Y	
Benzo(b)fluoranthene	0 330	0.175	SS001-001		6.100	Y	Y	
Benzo(a)Pyrene	0.330	0.158	SS001-001		4.100	Y	Y	
Benzo(g,h,i)Perylene	0.330	0.167	SS001-001		2.300	Y	Y	
Butyl Benzyl Phthalate	0.330	0.15	SS001-001	*	0.330	N	n/a	
Carbazole	0.330	0.15	SS001-001	*	1.200	Y	Y	
Dichlorobenzene	0.330	0.165	SS001-001	*	0.250	N	n/a	
Methylnaphthalene	0.330	0.165	SS003-001	*	0.300	N	n/a	
Acenaphthene	0.330	0.165	SS001-001	*	0.960	Y	Y	
Anthracene	0.330	0.152	SS001-001	*	1.200	Y	Y	
Chrysene	0.330	0.171	SS001-001		4.500	Y	Y	
Di-n-Butyl Phthalate	0.330	0.137	SS001-001		0.620	Y	Y	
Fluoranthene	0.330	0.204	SS001-001		11.000	Y	Y	
Phenanthrene	0.330	0.188	SS001-001		6.900	Y	Y	
Pyrene	0.330	0.188	SS001-001		7.900	Y	Y	
Pesticides / PCBs								
Aldrin	0.0017	0.00085	SS001-001	*	0.001400	N	n/a	
Aroclor-1254			SS003-001	*	0.190000	N	n/a	
Dieldrin	0.0033	0.00763	SS003-001	*	0.039000	Y	Y	
Methoxychlor	0.017	0.0085	SS001-001	*	0.012000	N	n/a	
alpha-Chlordane	0.0017	0.00493	SS003-001	*	0.009300	N	n/a	

TABLE 7-2
SIGNIFICANCE ABOVE BACKGROUND

PMU 7 - NORTH PERIMETER
BUILDING 21 / 8 (UST-07-20)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
gamma-Chlordane	0.0017	0.00085	SS003-001	*	0.006700	Y	Y	
Metals								
Aluminum		12820	SS001-001		32600.00	N	n/a	
Antimony	12	5.28	SS001-001			N	n/a	
Arsenic		12.040	SS002-001		9.9000	N	n/a	
Barium		78.26	SS001-001		323.000	Y	Y	
Beryllium		0.72	SS001-001		4.9000	Y	Y	
Calcium		17475.33	SS001-001		140000.0	Y	Y	
Chromium		17.78	SS001-001		22.90	N	n/a	
Cobalt		13.56	SS002-001	#	8.100	N	n/a	
Copper		23.07	SS002-001		21.40	N	n/a	
Cyanide			SS001-001		3.80	N	n/a	
Iron		26100	SS002-001		16400.000	N	n/a	
Lead		17.12	SS001-001		58.800	Y	Y	
Magnesium		5576	SS001-001		24200.000	Y	Y	
Manganese		423.53	SS001-001		5130.0	Y	Y	
Mercury	0.1	0.05	SS001-001		0.65	Y	Y	
Nickel		28.87	SS002-001		20.30	N	n/a	
PotaSSium		1621.27	SS001-001		2720.00	N	n/a	
Selenium	0.1	0.23	SS001-001		2.10	Y	Y	
Sodium		145	SS003-001		1430.000	Y	Y	
Vanadium		24.14	SS001-001		13.900	N	n/a	
Zinc		75.01	SS001-001		716.0000	Y	Y	
Radioactivity								
Alpha Particle Radioactivity			SS001-001		20.3	N	n/a	

TABLE 7-2
SIGNIFICANCE ABOVE BACKGROUND

PMU 7 - NORTH PERIMETER
BUILDING 21 / 8 (UST-07-20)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Beta Particle Radioactivity			SS002-001		27.7	N	n/a	

Notes:
mean of background samples collected from shallow upland was used as background
all conc's. in ppm * J-flagged release sample data . blank SQLs imply that Sample Conc. > Sample SQL

PMU 8

NPL Characteristics Data Collection Form
NASA LeRC PMU 8 - North Central Area - 11/25/95

Record Information

1. Site Name: NASA LeRC PMU 8 - North Central Area
   (as entered in CERCLIS)

2. Site CERCLIS Number:

3. Site Reviewer:

4. Date: 10/17/95

5. Site Location: Cleveland/Cuyahoga/OH
   (City/County,State)

6. Congressional District:

7. Site Coordinates: Single

   Latitude: 41 24'45.0" Longitude: 81

Site Description

1. Setting: Urban

2. Current Owner: Federal

3. Current Site Status: Active

4. Years of Operation: Active Site , from and to dates: Since 1941

5. How Initially Identified: Other - Preliminary Assessment

6. Entity Responsible for Waste Generation:

   - Federal Facility
   - Other

7. Site Activities/Waste Deposition:

   - Other - Transformer,Cooling Tower
   - Discharge to Sewer/Surface Water
   - Spill

Waste Description

8. Wastes Deposited or Detected Onsite:

- Organic Chemicals
- Inorganic Chemicals
- Solvents
- Metals
- Radioactive Waste
- Lead
- Asbestos
- PCBs

Response Actions

9. Response/Removal Actions:

RCRA Information

10. For All Active Facilities, RCRA Site Status:

- Not Applicable

Demographic Information

11. Workers Present Onsite: Yes

12. Distance to Nearest Non-Worker Individual: > 1/4 - 1/2 Mile

13. Residential Population Within 1 Mile: 4000.0

14. Residential Population Within 4 Miles: 10000.0

Water Use Information

15. Local Drinking Water Supply Source:

- Ground Water (within 4 mile distance limit)
- Surface Water (within 15 mile distance limit)

16. Total Population Served by Local Drinking Water Supply Source: 1500000.0

17. Drinking Water Supply System Type for Local Drinking Water Supply Sources:

    - Municipal (Services over 25 People)

18. Surface Water Adjacent to/Draining Site:

    - Stream

HRS DOCUMENTATION RECORD

NASA LeRC PMU 8 - North Central Area - 11/25/95

1. Site Name: NASA LeRC PMU 8 - North Central Area
   (as entered in CERCLIS)

2. Site CERCLIS Number:

3. Site Reviewer:

4. Date: 10/17/95

5. Site Location: Cleveland/Cuyahoga/OH
   (City/County,State)

6. Congressional District:

7. Site Coordinates: Single

   Latitude: 41 24'45.0" Longitude: 81

	Score
Ground Water Migration Pathway Score (Sgw)	0.31
Surface Water Migration Pathway Score (Ssw)	0.31
Soil Exposure Pathway Score (Ss)	6.63
Air Migration Pathway Score (Sa)	3.13

Site Score	3.67

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

GROUND WATER MIGRATION PATHWAY SCORESHEET
NASA LeRC PMU 8 - North Central Area - 11/25/95

GROUND WATER MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release to an Aquifer Aquifer: Shale Bedrock Aquife		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	3
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	430
3. Likelihood of Release	550	430
Waste Characteristics		
4. Toxicity/Mobility	*	2.00E+03
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	10
Targets		
7. Nearest Well	50	5.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	1.00E+00
8d. Population (lines 8a+8b+8c)	**	1.00E+00
9. Resources	5	0.00E+00
10. Wellhead Protection Area	20	0.00E+00
11. Targets (lines 7+8d+9+10)	**	6.00E+00
12. Targets (including overlaying aquifers)	**	6.00E+00
13. Aquifer Score	100	0.31
GROUND WATER MIGRATION PATHWAY SCORE (Sgw)	100	0.31

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU 8 - North Central Area - 11/25/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release by Overland Flow		
2a. Containment	10	9
2b. Runoff	25	1
2c. Distance to Surface Water	25	20
2d. Potential to Release by Overland Flow [lines 2a(2b+2c)]	500	189
3. Potential to Release by Flood		
3a. Containment (Flood)	10	0
3b. Flood Frequency	50	0
3c. Potential to Release by Flood (lines 3a x 3b)	500	0
4. Potential to Release (lines 2d+3c)	500	189
5. Likelihood of Release	550	189
Waste Characteristics		
6. Toxicity/Persistence	*	1.00E+04
7. Hazardous Waste Quantity	*	10
8. Waste Characteristics	100	18
Targets		
9. Nearest Intake	50	0.00E+00
10. Population		
10a. Level I Concentrations	**	0.00E+00
10b. Level II Concentrations	**	0.00E+00
10c. Potential Contamination	**	2.00E+00
10d. Population (lines 10a+10b+10c)	**	2.00E+00
11. Resources	5	5.00E+00
12. Targets (lines 9+10d+11)	**	7.00E+00
13. DRINKING WATER THREAT SCORE	100	0.29

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU 8 - North Central Area - 11/25/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	189
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	5.00E+08
16. Hazardous Waste Quantity	*	10
17. Waste Characteristics	1000	180
Targets		
18. Food Chain Individual	50	0.00E+00
19. Population		
19a. Level I Concentrations	**	0.00E+00
19b. Level II Concentrations	**	0.00E+00
19c. Pot. Human Food Chain Contamination	**	3.31E-03
19d. Population (lines 19a+19b+19c)	**	3.31E-03
20. Targets (lines 18+19d)	**	3.31E-03
21. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU 8 - North Central Area - 11/25/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	189
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioacc.	*	5.00E+08
24. Hazardous Waste Quantity	*	10
25. Waste Characteristics	1000	180
Targets		
26. Sensitive Environments		
26a. Level I Concentrations	**	0.00E+00
26b. Level II Concentrations	**	0.00E+00
26c. Potential Contamination	**	5.00E-02
26d. Sensitive Environments (lines 26a+26b+26c)	**	5.00E-02
27. Targets (line 26d)	**	5.00E-02
28. ENVIRONMENTAL THREAT SCORE	60	0.02
29. WATERSHED SCORE	100	0.31
30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof)	100	0.31

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU 8 - North Central Area - 11/25/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release to Aquifer Aquifer: Shale Bedrock Aquife		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	3
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	430
3. Likelihood of Release	550	430
Waste Characteristics		
4. Toxicity/Mobility/Persistence	*	2.00E+03
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	10
Targets		
7. Nearest Intake	50	0.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	0.00E+00
8d. Population (lines 8a+8b+8c)	**	0.00E+00
9. Resources	5	5.00E+00
10. Targets (lines 7+8d+9)	**	5.00E+00
11. DRINKING WATER THREAT SCORE	100	0.26

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU 8 - North Central Area - 11/25/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
12. Likelihood of Release (same as line 3)	550	430
Waste Characteristics		
13. Toxicity/Mobility/Persistence/Bioacc.	*	1.00E+07
14. Hazardous Waste Quantity	*	10
15. Waste Characteristics	1000	100
Targets		
16. Food Chain Individual	50	0.00E+00
17. Population		
17a. Level I Concentrations	**	0.00E+00
17b. Level II Concentrations	**	0.00E+00
17c. Pot. Human Food Chain Contamination	**	0.00E+00
17d. Population (lines 17a+17b+17c)	**	0.00E+00
18. Targets (lines 16+17d)	**	0.00E+00
19. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC PMU 8 - North Central Area - 11/25/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
20. Likelihood of Release (same as line 3)	550	430
Waste Characteristics		
21. Ecosystem Tox./Mobility/Persist./Bioacc.	*	1.00E+06
22. Hazardous Waste Quantity	*	10
23. Waste Characteristics	1000	56
Targets		
24. Sensitive Environments		
24a. Level I Concentrations	**	0.00E+00
24b. Level II Concentrations	**	0.00E+00
24c. Potential Contamination	**	0.00E+00
24d. Sensitive Environments (lines 24a+24b+24c)	**	0.00E+00
25. Targets (line 24d)	**	0.00E+00
26. ENVIRONMENTAL THREAT SCORE	60	0.00
27. WATERSHED SCORE	100	0.26
28. SW: GW to SW COMPONENT SCORE (Sgs)	100	0.26

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SOIL EXPOSURE PATHWAY SCORESHEET
NASA LeRC PMU 8 - North Central Area - 11/25/95

SOIL EXPOSURE PATHWAY Factor Categories & Factors RESIDENT POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
1. Likelihood of Exposure	550	550
Waste Characteristics		
2. Toxicity	*	1.00E+04
3. Hazardous Waste Quantity	*	10
4. Waste Characteristics	100	18
Targets		
5. Resident Individual	50	0.00E+00
6. Resident Population		
6a. Level I Concentrations	**	0.00E+00
6b. Level II Concentrations	**	0.00E+00
6c. Resident Population (lines 6a+6b)	**	0.00E+00
7. Workers	15	5.00E+00
8. Resources	5	0.00E+00
9. Terrestrial Sensitive Environments	***	5.00E+01
10. Targets (lines 5+6c+7+8+9)	**	5.50E+01
11. RESIDENT POPULATION THREAT SCORE	**	5.44E+05

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

SOIL EXPOSURE PATHWAY SCORESHEET
NASA LeRC PMU 8 - North Central Area - 11/25/95

SOIL EXPOSURE PATHWAY Factor Categories & Factors NEARBY POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
12. Attractiveness/Accessibility	100	5.00E+00
13. Area of Contamination	100	4.00E+01
14. Likelihood of Exposure	500	5.00E+00
Waste Characteristics		
15. Toxicity	*	1.00E+04
16. Hazardous Waste Quantity	*	10
17. Waste Characteristics	100	18
Targets		
18. Nearby Individual	1	1.00E+00
19. Population Within 1 Mile	**	3.00E+01
20. Targets (lines 18+19)	**	3.10E+01
21. NEARBY POPULATION THREAT SCORE	**	2.79E+03
SOIL EXPOSURE PATHWAY SCORE (Ss)	100	6.63

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

AIR PATHWAY SCORESHEET

NASA LeRC PMU 8 - North Central Area - 11/25/95

AIR MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release		
2a. Gas Potential to Release	500	90
2b. Particulate Potential to Release	500	84
2c. Potential to Release	500	90
3. Likelihood of Release	550	90
Waste Characteristics		
4. Toxicity/Mobility	*	2.00E+03
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	10
Targets		
7. Nearest Individual	50	7.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	2.72E+02
8d. Population (lines 8a+8b+8c)	**	2.72E+02
9. Resources	5	5.00E+00
10. Sensitive Environments		
10a. Actual Contamination	***	0.00E+00
10b. Potential Contamination	***	3.00E+00
10c. Sens. Environments(lines 10a+10b)	***	3.00E+00
11. Targets (lines 7+8d+9+10c)	**	2.87E+02
AIR MIGRATION PATHWAY SCORE (Sa)	100	3.13E+00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 9 / Subs E

a. Wastestream ID	Cnt.Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Documentation for Constituents:

Reference: 2

Documentation for Wastestream Quantity:

Mass of contamination unknown

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 9 / Subs E
b. Source Type	Contaminated Soil
c. Secondary Source Type	N.A.
d. Source Vol.(yd3/gal) | Source Area (ft2)	3733.00 | 0.00
e. Source Volume/Area Value	1.49E+00
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	1.49E+00

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Arsenic	< 2	NO	6.1E+01	ppm
Benz(a)anthracene	< 2	NO	4.7E-01	ppm
Benzo(a)pyrene	< 2	NO	4.5E-01	ppm
Benzo(j,k)fluorene	< 2	NO	5.8E-01	ppm
Benzofluoranthene, 3,4-	< 2	NO	6.5E-01	ppm
Chrysene	< 2	NO	5.2E-01	ppm
Cyanide	< 2	NO	5.6E+00	ppm
Di-n-butyl phthalate	< 2	NO	5.4E-01	ppm
Endrin	< 2	NO	1.3E-01	ppm
Fluorene	< 2	NO	6.6E-01	ppm
Manganese	< 2	NO	1.4E+03	ppm
Mercury	< 2	NO	1.3E-01	ppm
Phenanthrene	< 2	NO	4.3E-01	ppm
Pyrene	< 2	NO	4.8E-01	ppm
Selenium	< 2	NO	7.9E-01	ppm

Documentation for Source Hazardous Substances:

See Table 5-40 of RI/FS Report for concentrations.

Reference: 2

Documentation for Source Volume:

5600 Sq.Ft. of area assumed to be contaminated upto 2 feet thickness. Volume calculated for the entire area upto 2 feet thickness.

Reference:

Documentation for Source Area:

Source Area measured from the map for calculation of volume. See Figure 4-1 of the RI/FS Report. Per Section 2.4.2.1.3 of HRS Guidance Manual, area was assigned 0.0 value since volume has been calculated

Reference: 1,2

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 5

a. Wastestream ID	Cnt Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Benz(a)anthracene	7.9E-01	ppm	NO	
Benzo(a)pyrene	6.6E-01	ppm	NO	J
Benzo(j,k)fluorene	1.4E+00	ppm	NO	J
Benzo(k)fluoranthene	3.8E-01	ppm	NO	
Benzofluoranthene, 3,4-	1.1E+00	ppm	NO	J
Cadmium	1.7E+01	ppm	NO	
Chrysene	7.1E-01	ppm	NO	
Naphthalene	9.2E-01	ppm	NO	
Phenanthrene	1.1E+00	ppm	NO	J
Pyrene	1.3E+00	ppm	NO	J
Selenium	7.3E+00	ppm	NO	
Thallium	5.3E+00	ppm	NO	
Vanadium	7.5E+01	ppm	NO	
Zinc	6.2E+02	ppm	NO	

Documentation for Constituents:

See Table 5-41 of the RI/FS Report

Reference: 2

Documentation for Wastestream Quantity:

Mass unknown

Reference:

a. Wastestream ID	Groundwater
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Aluminum	1.2E+01	ppm	NO	
Antimony	4.0E-02	ppm	NO	#
Arsenic	1.6E-01	ppm	NO	#
Cobalt	1.7E-02	ppm	NO	
Iron	2.7E+01	ppm	NO	#
Magnesium	2.8E+01	ppm	NO	
Manganese	2.7E-01	ppm	NO	
Naphthalene	2.0E-03	ppm	NO	
Vanadium	1.3E-01	ppm	NO	

Documentation for Constituents:

See Table 5-41 of the RI/FS Report for the analytical data.

Reference: 2

Documentation for Wastestream Quantity:

Mass unknown

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 5	
b. Source Type	Contaminated Soil	
c. Secondary Source Type	N.A.	
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00	134400.00
e. Source Volume/Area Value	3.95E+00	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	3.95E+00	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Benz(a)anthracene	< 2	NO	7.9E-01	ppm
Benzo(a)pyrene	< 2	NO	6.6E-01	ppm
Benzo(j,k)fluorene	< 2	NO	1.4E+00	ppm
Benzo(k)fluoranthene	< 2	NO	3.8E-01	ppm
Benzofluoranthene, 3,4-	< 2	NO	1.1E+00	ppm
Cadmium	> 2	NO	1.7E+01	ppm
Chrysene	< 2	NO	7.1E-01	ppm
Naphthalene	> 2	NO	9.2E-01	ppm
Phenanthrene	< 2	NO	1.1E+00	ppm
Pyrene	< 2	NO	1.3E+00	ppm
Selenium	> 2	NO	7.3E+00	ppm
Thallium	> 2	NO	5.3E+00	ppm
Vanadium	> 2	NO	7.5E+01	ppm
Zinc	> 2	NO	6.2E+02	ppm

Documentation for Source Hazardous Substances:

See Table 5-41 for concentrations in RI/FS Report.

Reference: 2

Documentation for Source Volume:

Contamination observed both in top 2 feet and also in the borehole samples at about 30 feet level. Volume was not determined per Section 2.4.2.1.3 of the HRS Guidance Manual

Reference: 1

Documentation for Source Area:

See Figure 4-1 of the RI/FS Report for the Area of Concern Location Map. Area was measured from the map.

Reference: 2

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 64

a. Wastestream ID	Cnt Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Benzo(j,k)fluorene	4.1E-01	ppm	NO	J
Cadmium	5.7E+00	ppm	NO	J
Di-n-butyl phthalate	3.4E-01	ppm	NO	J
Selenium	4.0E+00	ppm	NO	
Thallium	3.3E+00	ppm	NO	
Zinc	2.8E+02	ppm	NO	

Documentation for Constituents:

See Table 5-43 of the RI/FS Report for analytical data

Reference: 2

Documentation for Wastestream Quantity:

Mass unknown

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 64	
b. Source Type	Contaminated Soil	
c. Secondary Source Type	N.A.	
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00	84000.00
e. Source Volume/Area Value	2.47E+00	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	2.47E+00	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Benzo(j,k)fluorene	< 2	NO	4.1E-01	ppm
Cadmium	> 2	NO	5.7E+00	ppm
Di-n-butyl phthalate	> 2	NO	3.4E-01	ppm
Selenium	> 2	NO	4.0E+00	ppm
Thallium	> 2	NO	3.3E+00	ppm
Zinc	> 2	NO	2.8E+02	ppm

Documentation for Source Type:

Contamination ascertained in Borehole samples.

Reference:

Documentation for Source Hazardous Substances:

See Table 5-43 for analytical data

Reference: 2

Documentation for Source Volume:

Contamination encountered in deeper levels. Volume could not be ascertained. See Section 2.4.2.1.3 of HRS Guidance Manual.

Reference: 1

Documentation for Source Area:

Area has been measured from Figure 4-1 of the RI/FS Report

Reference: 2

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 16

a. Wastestream ID	Cnt Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Acetone	2.7E-02	ppm	NO	
Anthracene	3.7E-01	ppm	NO	
Benz(a)anthracene	7.0E-01	ppm	NO	
Benzo(a)pyrene	4.0E-01	ppm	NO	
Benzofluoranthene, 3,4-	5.8E-01	ppm	NO	J
Cadmium	5.7E+00	ppm	NO	J
Chrysene	6.1E-01	ppm	NO	J
Cobalt	1.1E+02	ppm	NO	
Mercury	2.0E-01	ppm	NO	
Methylene chloride	1.0E-01	ppm	NO	
Phenanthrene	1.5E+00	ppm	NO	J
Pyrene	1.2E+00	ppm	NO	J
Selenium	6.9E+00	ppm	NO	
Thallium	4.9E+00	ppm	NO	
Vanadium	7.9E+01	ppm	NO	
Zinc	3.0E+02	ppm	NO	

Documentation for Constituents:

See Table 5-46 of the RI/FS Report for analytical data.

Reference: 2

Documentation for Wastestream Quantity:

Mass unknown

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 16	
b. Source Type	Contaminated Soil	
c. Secondary Source Type	N.A.	
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00	90000.00
e. Source Volume/Area Value	2.65E+00	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	2.65E+00	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Acetone	> 2	NO	2.7E-02	ppm
Anthracene	> 2	NO	3.7E-01	ppm
Benz(a)anthracene	> 2	NO	7.0E-01	ppm
Benzo(a)pyrene	> 2	NO	4.0E-01	ppm
Benzofluoranthene, 3,4-	> 2	NO	5.8E-01	ppm
Cadmium	> 2	NO	5.7E+00	ppm
Chrysene	> 2	NO	6.1E-01	ppm
Cobalt	> 2	NO	1.1E+02	ppm
Mercury	> 2	NO	2.0E-01	ppm
Methylene chloride	> 2	NO	1.0E-01	ppm
Phenanthrene	> 2	NO	1.5E+00	ppm
Pyrene	> 2	NO	1.2E+00	ppm
Selenium	> 2	NO	6.9E+00	ppm
Thallium	> 2	NO	6.1E-01	ppm
Vanadium	> 2	NO	7.9E+01	ppm
Zinc	> 2	NO	3.0E+02	ppm

Documentation for Source Type:

Contamination ascertained from borehole soil samples.

Reference:

Documentation for Source Hazardous Substances:

See Table 5-46 of the RI/FS Report for analytical data

Reference: 2

Documentation for Source Volume:

Contamination encountered in deeper borehole levels. Volume could not be ascertained and hence assigned a value of 0.0 per HRS Section 2.4.2.1.3.

Reference: 1

Documentation for Source Area:

Area was calculated from Figure 4-1 of the RI/FS Report.

Reference: 2

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 66

a. Wastestream ID	Cnt Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Acetone	3.7E-02	ppm	NO	
Cadmium	2.8E+00	ppm	NO	J
Chloromethane	1.2E-02	ppm	NO	J
Mercury	2.6E-01	ppm	NO	
Selenium	9.9E+00	ppm	NO	
Thallium	3.9E+00	ppm	NO	J
Toluene	1.1E-02	ppm	NO	J
Vanadium	8.1E+01	ppm	NO	J
Vinyl chloride	1.2E-02	ppm	NO	J

Documentation for Constituents:

See Table 5-49 of the RI/FS Report for analytical data.

Reference: 2

Documentation for Wastestream Quantity:

Mass unknown

Reference:

a. Wastestream ID	Groundwater
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Aluminum	2.9E+01	ppm	NO	
Cadmium	3.6E-02	ppm	NO	
Cobalt	1.0E-01	ppm	NO	
Iron	1.0E+02	ppm	NO	
Manganese	2.5E+00	ppm	NO	
Methyl Napthalene, 2-	2.0E-03	ppm	NO	J
Naphthalene	1.0E-03	ppm	NO	
Nickel	3.7E-01	ppm	NO	
Thallium	9.7E-03	ppm	NO	#
Vanadium	3.0E-01	ppm	NO	

Documentation for Constituents:

See Table 5-49 of the RI/FS Report for analytical data.

Reference: 2

Documentation for Wastestream Quantity:

Mass unknown

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 66
b. Source Type	Contaminated Soil
c. Secondary Source Type	N.A.
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00 | 89600.00
e. Source Volume/Area Value	2.64E+00
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	2.64E+00

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Acetone	> 2	NO	3.7E-02	ppm
Cadmium	> 2	NO	2.8E+00	ppm
Chloromethane	< 2	NO	1.2E-02	ppm
Mercury	< 2	NO	2.6E-01	ppm
Selenium	> 2	NO	9.9E+00	ppm
Thallium	> 2	NO	3.9E+00	ppm
Toluene	> 2	NO	1.1E-02	ppm
Vanadium	> 2	NO	8.1E+01	ppm
Vinyl chloride	> 2	NO	1.2E-02	ppm

Documentation for Source Hazardous Substances:

See Table 5-49 of the RI/FS Report for analytical data.

Reference: 2

Documentation for Source Volume:

Contamination encountered in deeper levels. Volume could not be ascertained and hence assigned a value of 0.0 per HRS Section 2.4.2.1.3

Reference: 1

Documentation for Source Area:

Area has been calculated from Figure 4-1 of the RI/FS Report

Reference: 2

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 12

a. Wastestream ID	Cnt Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Mercury	2.0E-01	ppm	NO	J
Methylene chloride	4.5E-02	ppm	NO	

Documentation for Constituents:

See Table 5-55 of the RI/FS Report for analytical data

Reference: 2

Documentation for Wastestream Quantity:

Mass unknown

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 12
b. Source Type	Contaminated Soil
c. Secondary Source Type	N.A.
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00 | 7200.00
e. Source Volume/Area Value	2.12E-01
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	2.12E-01

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Mercury	> 2	NO	2.0E-01	ppm
Methylene chloride	> 2	NO	4.5E-02	ppm

Documentation for Source Type:

Contamination ascertained based on borehole samples.

Reference:

Documentation for Source Hazardous Substances:

See Table 5-55 of the RI/FS Report for analytical data.

Reference: 2

Documentation for Source Volume:

Contamination encountered in deeper levels of the borehole. Volume could not be ascertained and hence assigned a value of 0.0 per HRS Section 2.4.2.1.3.

Reference: 1

Documentation for Source Area:

Area has been calculated from Figure 4-1 of the RI/FS Report.

Reference: 2

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No.	Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1	Building 9 / Subs E	GW-SW-SE-A	1.49E+00	0.00E+00	1.49E+00
2	Building 5	GW-SW-SE-A	3.95E+00	0.00E+00	3.95E+00
3	Building 64		2.47E+00	0.00E+00	2.47E+00
4	Building 16		2.65E+00	0.00E+00	2.65E+00
5	Building 66		2.64E+00	0.00E+00	2.64E+00
6	Building 12	GW-SW-SE-A	2.12E-01	0.00E+00	2.12E-01

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values		HWQVs*	WCVs**
Ground Water	Toxicity/Mobility	2.00E+03	10	10
SW: Overland Flow, DW	Tox./Persistence	1.00E+04	10	18
SW: Overland Flow, HFC	Tox./Persis./Bioacc.	5.00E+08	10	180
SW: Overland Flow, Env	Etox./Persis./Bioacc.	5.00E+08	10	180
SW: GW to SW, DW	Tox./Persistence	2.00E+03	10	10
SW: GW to SW, HFC	Tox./Persis./Bioacc.	1.00E+07	10	100
SW: GW to SW, Env	Etox./Persis./Bioacc.	1.00E+06	10	56
Soil Exposure:Resident	Toxicity	1.00E+04	10	18
Soil Exposure: Nearby	Toxicity	1.00E+04	10	18
Air	Toxicity/Mobility	2.00E+03	10	10

* Hazardous Waste Quantity Factor Values
** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

GROUND WATER PATHWAY AQUIFER SUMMARY
NASA LeRC PMU 8 - North Central Area - 11/25/95

No.	Aquifer ID	Type	Overlaying No.	Inter-Connected with	Likelihood of Release	Targets
1	Shale Bedrock Aquife	Non K	0	0	430	6.00E+00

Containment

No.	Source ID	HWQ Value	Containment Value
1	Building 9 / Subs E	1.49E+00	10
2	Building 5	3.95E+00	10
6	Building 12	2.12E-01	10

Containment Factor 10

Documentation for Ground Water Containment, Source Building 9 / Subs E:

Transformer oil and other releases have been documented. See Section 4.8.1 of the RI/FS Report.

Reference: 2

Documentation for Ground Water Containment, Source Building 5:

Site has a history of releases. See Section 4.8.2 of the RI/FS Report

Reference: 2

Documentation for Ground Water Containment, Source Building 64:

Contaminated soil has concrete/asphalt cover.

Reference: 2

Documentation for Ground Water Containment, Source Building 16:

Unplanned releases are suspected. Contaminated soil beneath asphalt/concrete.

Reference: 2

Documentation for Ground Water Containment, Source Building 66:

Unplanned releases are suspected. Contaminated soil is located beneath parking lot; asphalt/concrete cover.

Reference: 2

Documentation for Ground Water Containment, Source Building 12:

Unplanned release possible. See Section 4.8.18 of the RI/FS Report.

Reference: 2

Net Precipitation

Net Precipitation (inches)	N.A.

Aquifer: Shale Bedrock Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Shale Bedrock Aquifer Aquifer:

Lithological information contained in the drilling logs indicate the aquifer to be the shale bedrock. The only other aquifers known in this area are localized, laterally discontinuous perched lenses within the overlying unconsolidated soil materials. For HRS purposes the perched zones are considered non-significant in view of the localized nature. See Section 3.3 of the RI/FS Report.

Reference: 2

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination

- N/A and/or data not specified

==========

Observed Release Factor 0

Documentation for Well 08-MW009:

Four monitoring wells are included within PMU8 area. See Figure 2-6 of Volume I of the RI/FS Report.

Reference: 2

Documentation for Well 08-MW017:

MW017 is one of the four monitoring wells included in PMU8 area. See Figure 2-6 of Volume I of the RI/FS Report.

Reference: 2

Documentation for Well 08-MW018:

MW018 is one of the four monitoring wells included within PMU8 area. See Figure 2-6 of Volume I of the RI/FS Report.

Reference: 2

Documentation for Well 08-MW019:

MW019 is one of the four monitoring wells located within PMU8 area. See Figure 2-6 of the Volume I of the RI/FS Report.

Reference: 2

POTENTIAL TO RELEASE

Containment

Containment Factor	10	

Net Precipitation

Net Precipitation Factor	3	

Depth to Aquifer

A. Depth of Hazardous Substances	38.00	feet

Documentation for Depth of Hazardous Substances:

Sample # bh028-19 indicated the contamination at greatest depth, significant above background in case of Cadmium, Selenium, and Thallium. This sample was obtained at 38 feet level. Bedrock shale was encountered at 31 feet level at this borehole. See RI/FS Report Volume IV Part I Appendix C for the drilling logs and Vol II Table 5-42 for analytical data.

Reference: 2

B. Depth to Aquifer from Surface	31.00	feet

Documentation for Depth to Aquifer from Surface :

Average depth to weathered shale bedrock is 31 feet, based on Table 2-2, Phase I RI/FS Report.

Reference: 2

C. Depth to Aquifer (B - A)	0.00	feet
Depth to Aquifer Factor	5	

Travel Time

Are All Layers Karst?	NO

Documentation for Karst Layers:

No Karst/Limestone formations encountered during drilling. See drilling logs in Volume IV, Part I Appendix C of the RI/FS Report.

Reference: 2

Thickness of Layer(s) with Lowest Conductivity	0.00	feet

Documentation for Thickness of Layers with Lowest Conductivity:

Average thickness clay/silt (low hydralic conductivity layers) ascertained from drilling logs ranges from 12 to 30 feet. See Drilling logs in Volume IV Part I, Appendix C of the RI/FS Report. Based on litholigical description contained in the drilling logs hydraulic conductivity and travel time factor values were selected from Tables 3-6 and 3-7 of the HRS Guidance Manual.

Reference: 1 and 2

Hydraulic Conductivity (cm/sec)	1.0E-06

Documentation for Hydraulic Conductivity:

Slug Test data discussed in Section 3.3 of the RI/FS Report used in evaluating the hydraulic conductivity for the aquifer.

Reference: 2

Travel Time Factor	35

==========

Potential to Release Factor	430

Source: 1 Building 9 / Subs E

Source Hazardous Waste Quantity Value: 1.49

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Arsenic	10000	1.00E-02	1.00E+02
Benz(a)anthracene	1000	2.00E-09	2.00E-06
Benzo(a)pyrene	10000	2.00E-09	2.00E-05
Benzo(j,k)fluorene	100	2.00E-07	2.00E-05
Benzofluoranthene, 3,4-	10000	2.00E-09	2.00E-05
Chrysene	100	2.00E-09	2.00E-07
Cyanide	100	2.00E-05	2.00E-03
Di-n-butyl phthalate	10	2.00E-03	2.00E-02
Endrin	10000	2.00E-03	2.00E+01
Fluorene	100	2.00E-03	2.00E-01
Manganese	10000	1.00E-02	1.00E+02
Mercury	10000	2.00E-05	2.00E-01
Phenanthrene	100	2.00E-05	2.00E-03
Pyrene	100	2.00E-09	2.00E-07
Selenium	100	1.00E-02	1.00E+00

Source: 2 Building 5

Source Hazardous Waste Quantity Value: 3.95

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Aluminum	100	2.00E-05	2.00E-03
Antimony	10000	1.00E-02	1.00E+02
Arsenic	10000	1.00E-02	1.00E+02
Benz(a)anthracene	1000	2.00E-09	2.00E-06
Benzo(a)pyrene	10000	2.00E-09	2.00E-05
Benzo(j,k)fluorene	100	2.00E-07	2.00E-05
Benzo(k)fluoranthene	100	2.00E-09	2.00E-07
Benzofluoranthene, 3,4-	10000	2.00E-09	2.00E-05
Cadmium	10000	2.00E-01	2.00E+03
Chrysene	100	2.00E-09	2.00E-07
Cobalt	1	1.00E-02	1.00E-02
Iron	100	1.00E-02	1.00E+00
Magnesium	100	2.00E-05	2.00E-03
Manganese	10000	1.00E-02	1.00E+02
Naphthalene	1	2.00E-03	2.00E-03
Phenanthrene	100	2.00E-05	2.00E-03
Pyrene	100	2.00E-09	2.00E-07
Selenium	100	1.00E-02	1.00E+00
Thallium	1000	1.00E-04	1.00E-01
Vanadium	100	2.00E-07	2.00E-05
Zinc	10	2.00E-03	2.00E-02

Source: 6 Building 12

Source Hazardous Waste Quantity Value: 0.21

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Mercury	10000	2.00E-05	2.00E-01
Methylene chloride	10	1.00E+00	1.00E+01

Hazardous Substances Found in an Observed Release

Well No.	Observed Release Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value

- N/A and/or data not specified

Toxicity/Mobility Value from Source Hazardous Substances:	2.00E+03
Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	2.00E+03
Sum of Source Hazardous Waste Quantity Values:	5.66E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	10

Population by Well

No.	Well ID	Sample Type	Distance (miles)	Level of Contamination	Population

- N/A and/or data not specified

Level I Population Factor: 0.00

Level II Population Factor: 0.00

Potential Contamination by Distance Category

Distance Category (miles)	Population	Value
> 0 to 1/4	0.0	0.00E+00
> 1/4 to 1/2	0.0	0.00E+00
> 1/2 to 1	0.0	0.00E+00
> 1 to 2	50.0	1.00E+00
> 2 to 3	0.0	0.00E+00
> 3 to 4	0.0	0.00E+00

Potential Contamination Factor: 1.000

Documentation for Target Population > 1/4 to 1/2 mile Distance Category:

An inactive well is reported be located about 1/4 mile west of the LeRC site boundary (greater that 1/4 mile from PMU8 site). See Section 3.3 of the RI/FS Report.

Reference: 2

Documentation for Target Population > 1 to 2 miles Distance Category:

See Section 3.8.2 of the RI/FS Report.

Reference: 2

Nearest Well

Level of Contamination: Potential
Distance in miles: 1.50

Nearest Well Factor: 5.00E+00

Documentation for Nearest Well:

The closest water well on record with the Ohio Division of Water is located 1/4 mile west of the LeRC site boundary on Cleveland Hopkins International Airport Property. This is inactive. Only seven permitted drinking water wells were identified within four miles of LeRC. These wells are located between 1.5 and 3 miles south and southeast of LeRC and serve an estimated 50 individuals. See Section 3.3 and 3.8.2 of the RI/FS Report.

Reference: 2

Resources

Resource Use: NO

Resource Factor: 0.00E+00

Documentation for Resources:

Groundwater is not a primary drinking source in this area. See Section 3.3 of the RI/FS Report.

Reference: 2

Wellhead Protection Area

No wellhead protection area

Wellhead Protection Area Factor: 0.00E+00

Documentation for Wellhead Protection Area:

Criteria specified in Section 3.3.4 of the HRS Guidance Manual does not apply.

Reference: 1

SURFACE WATER PATHWAY SEGMENT SUMMARY

NASA LeRC PMU 8 - North Central Area - 11/25/95

No.	Segment ID	Segment Type	Water Type	Start Point (mi)	End Point (mi)	Average Flow (cfs)
1	Abram Creek	River	Fresh	0.00	0.10	12
2	Rocky River	River	Fresh	0.10	9.60	122
3	Lake Erie	Moderate D	Fresh	9.60	15.00	N.A.

SURFACE WATER PATHWAY OVERLAND FLOW/FLOOD COMPONENT LIKELIHOOD OF RELEASE

NASA LeRC PMU 8 - North Central Area - 11/25/95

OBSERVED RELEASE

No.	Sample ID	Sample Type	Distance (miles)	Level of Contamination DW	HFC	Env

- N/A and/or data not specified

==========

Observed Release Factor 0

POTENTIAL TO RELEASE

Potential to Release by Overland Flow

Containment

No.	Source ID	HWQ Value	Containment Value
1	Building 9 / Subs E	1.49E+00	9
2	Building 5	3.95E+00	9
6	Building 12	2.12E-01	10

==========

Containment Factor: 9

Documentation for Overland Flow Containment, Source Building 9 / Subs E:

See Section 3.4 of the RI/FS Report. The storm sewer system at LeRc collects stormwater from surface water runoff. Most of the surface water runoff from PMU8 (North Central) area is collected by natural swales and the storm sewer system is diverted to outfalls along Abram Creek.

Reference: 2

Documentation for Overland Flow Containment, Source Building 64:

Soil covered by concrete/asphalt

Reference:

Documentation for Overland Flow Containment, Source Building 16:

Contaminated soils covered by asphalt

Reference:

Documentation for Overland Flow Containment, Source Building 66:

Contaminated soils covered with asphalt

Reference:

Distance to Surface Water

Distance to Surface Water:	200.0 feet
Distance to Surface Water Factor:	20

Documentation for Distance to Surface Water:

Minimum distance; Building 16

Reference:

Runoff

A. Drainage Area:	5.0 acres
B. 2-year, 24-hour Rainfall:	2.8 inches

Documentation for Rainfall:

See Section 3.5 of the RI/FS Report for the Precipitation information

Reference: 2

C. Soil Group: C
Moderately-fine textured soils with low infiltration rates

Documentation for Soil Group:

Drilling logs included in Appendix C of Volume IV Part I of the RI/FS Report indicate the top soils are generally clay and silt or silty clay.

Reference: 2

Runoff Factor: 1

==========

Potential to Release by Overland Flow Factor: 189

Potential to Release by Flood

No.	Source ID	HWQ Value	Flood Containment Value	Flood Frequency Value	Potential to Release by Flood

- N/A and/or data not specified

==========

Potential to Release by Flood Factor: 0

Documentation for Flood Containment, Source Building 9 / Subs E:

See Section 3.4 of the RI/FS Report

Reference: 2

Documentation for Flood Frequency, Source Building 9 / Subs E:

See Section 3.4 of the RI/FS Report

Reference: 2

Source: 1 Building 9 / Subs E

Source Hazardous Waste Quantity Value: 1.49

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Arsenic	10000	1.00E+00	1.00E+04
Benz(a)anthracene	1000	1.00E+00	1.00E+03
Benzo(a)pyrene	10000	1.00E+00	1.00E+04
Benzo(j,k)fluorene	100	1.00E+00	1.00E+02
Benzofluoranthene, 3,4-	10000	1.00E+00	1.00E+04
Chrysene	0	1.00E+00	0.00E+00
Cyanide	100	4.00E-01	4.00E+01
Di-n-butyl phthalate	10	1.00E+00	1.00E+01
Endrin	10000	1.00E+00	1.00E+04
Fluorene	100	1.00E+00	1.00E+02
Manganese	10000	1.00E+00	1.00E+04
Mercury	10000	1.00E+00	1.00E+04
Phenanthrene	0	4.00E-01	0.00E+00
Pyrene	100	1.00E+00	1.00E+02
Selenium	100	1.00E+00	1.00E+02

Source: 2 Building 5

Source Hazardous Waste Quantity Value: 3.95

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Aluminum	0	1.00E+00	0.00E+00
Antimony	10000	1.00E+00	1.00E+04
Arsenic	10000	1.00E+00	1.00E+04
Benz(a)anthracene	1000	1.00E+00	1.00E+03
Benzo(a)pyrene	10000	1.00E+00	1.00E+04
Benzo(j,k)fluorene	100	1.00E+00	1.00E+02
Benzo(k)fluoranthene	0	1.00E+00	0.00E+00
Benzofluoranthene, 3,4-	10000	1.00E+00	1.00E+04
Cadmium	10000	1.00E+00	1.00E+04
Chrysene	0	1.00E+00	0.00E+00
Cobalt	1	1.00E+00	1.00E+00
Iron	0	1.00E+00	0.00E+00
Magnesium	0	1.00E+00	0.00E+00
Manganese	10000	1.00E+00	1.00E+04
Naphthalene	1	4.00E-01	4.00E-01
Phenanthrene	0	4.00E-01	0.00E+00
Pyrene	100	1.00E+00	1.00E+02
Selenium	100	1.00E+00	1.00E+02
Thallium	1000	1.00E+00	1.00E+03
Vanadium	100	1.00E+00	1.00E+02
Zinc	10	1.00E+00	1.00E+01

Source: 6 Building 12

Source Hazardous Waste Quantity Value: 0.21

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Mercury	10000	1.00E+00	1.00E+04
Methylene chloride	10	4.00E-01	4.00E+00

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value

- N/A and/or data not specified

Toxicity/Persistence Value from Source Hazardous Substances:	1.00E+04
Toxicity/Persistence Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Persistence Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	5.66E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population

- N/A and/or data not specified

==========

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population

- N/A and/or data not specified

==========

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served
1 Crown Intake Crib	0	375000.0
2 Division Intake Cri	0	375000.0
3 Kirtland Intake Cri	0	375000.0
4 Nottingham Intake C	0	375000.0

Documentation for Intake Crown Intake Crib:

The Cleveland System draws its water from Lake Erie through four intakes. Three of the four intakes are within a 15-mile radius of LeRC. The system serves 1.5 million people. It is presumed that the four intakes equally share the serving population.
See Section 3.8.1 of the RI/FS Report.

Reference: 2

Type of Surface Water Body	Total Population	Dilution-Weighted Population
Moderate Ocean Zone or Great Lake	1125000.0	16.0

Dilution-Weighted Population Served
by Potentially Contaminated Intakes: 16.0

Potential Contamination Factor: 2.0

Nearest Intake

Location of Nearest Drinking Water Intake: Crown Intake Crib
Distance from the Probable Point of Entry: 12.60 miles
Type of Surface Water Body: Moderate D
Dilution Weight: 0.0000100
Highest Level of Contamination: Potential

Nearest Intake Factor: 0.00

Documentation for Crown Intake Crib:

The Cleveland System draws its water from Lake Erie through four intakes. Three of the four intakes are within a 15-mile radius of LeRC. The system serves 1.5 million people. It is presumed that the four intakes equally share the serving population.
See Section 3.8.1 of the RI/FS Report.

Reference: 2

Resources

Resource Use: YES

Resource Value: 5.00E+00

Source: 1 Building 9 / Subs E

Source Hazardous Waste Quantity Value: 1.49

Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Arsenic	10000	1.00E+00	5.00E+00	5.00E+04
Benz(a)anthracene	1000	1.00E+00	5.00E+04	5.00E+07
Benzo(a)pyrene	10000	1.00E+00	5.00E+04	5.00E+08
Benzo(j,k)fluorene	100	1.00E+00	5.00E+03	5.00E+05
Benzofluoranthene, 3,4-	10000	1.00E+00	5.00E+04	5.00E+08
Chrysene	0	1.00E+00	5.00E+02	0.00E+00
Cyanide	100	4.00E-01	5.00E-01	2.00E+01
Di-n-butyl phthalate	10	1.00E+00	5.00E+03	5.00E+04
Endrin	10000	1.00E+00	5.00E+03	5.00E+07
Fluorene	100	1.00E+00	5.00E+03	5.00E+05
Manganese	10000	1.00E+00	5.00E-01	5.00E+03
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Phenanthrene	0	4.00E-01	5.00E+01	0.00E+00
Pyrene	100	1.00E+00	5.00E+01	5.00E+03
Selenium	100	1.00E+00	5.00E+03	5.00E+05

Source: 2 Building 5

Source Hazardous Waste Quantity Value: 3.95

Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Aluminum	0	1.00E+00	5.00E+01	0.00E+00
Antimony	10000	1.00E+00	5.00E-01	5.00E+03
Arsenic	10000	1.00E+00	5.00E+00	5.00E+04
Benz(a)anthracene	1000	1.00E+00	5.00E+04	5.00E+07
Benzo(a)pyrene	10000	1.00E+00	5.00E+04	5.00E+08
Benzo(j,k)fluorene	100	1.00E+00	5.00E+03	5.00E+05
Benzo(k)fluoranthene	0	1.00E+00	5.00E+04	0.00E+00
Benzofluoranthene, 3,4-	10000	1.00E+00	5.00E+04	5.00E+08
Cadmium	10000	1.00E+00	5.00E+03	5.00E+07
Chrysene	0	1.00E+00	5.00E+02	0.00E+00
Cobalt	1	1.00E+00	5.00E-01	5.00E-01
Iron	0	1.00E+00	5.00E-01	0.00E+00
Magnesium	0	1.00E+00	5.00E-01	0.00E+00
Manganese	10000	1.00E+00	5.00E-01	5.00E+03
Naphthalene	1	4.00E-01	5.00E+02	2.00E+02
Phenanthrene	0	4.00E-01	5.00E+01	0.00E+00
Pyrene	100	1.00E+00	5.00E+01	5.00E+03
Selenium	100	1.00E+00	5.00E+03	5.00E+05
Thallium	1000	1.00E+00	5.00E+02	5.00E+05
Vanadium	100	1.00E+00	5.00E-01	5.00E+01
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 6 Building 12

Source Hazardous Waste Quantity Value: 0.21

Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Methylene chloride	10	4.00E-01	5.00E+00	2.00E+01

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Toxicity/Persistence/Bioaccumulation Value from Source Hazardous Substances:	5.00E+08
Toxicity/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Persistence/Bioaccumulation Factor:	5.00E+08
Sum of Source Hazardous Waste Quantity Values:	5.66E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	180

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Fishery	Annnual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di
2 Rocky River	3000.0	River	122	3.0	1.00E-02	3.00E-02
3 Lake Erie	500000.0	Moderate	0	310.0	1.00E-05	3.10E-03

Sum of (Pi*Di): 3.31E-02

Potential Human Food Chain Contamination Factor: 3.31E-03

Food Chain Individual

Location of Nearest Fishery: Rocky River
Distance from the Probable Point of Entry: 0.10 miles
Type of Surface Water Body: River
Dilution Weight: 0.0100000
Level of Contamination: Potential

Food Chain Individual Factor: 0.00

Source: 1 Building 9 / Subs E

Source Hazardous Waste Quantity Value: 1.49

Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Arsenic	10	1.00E+00	5.00E+01	5.00E+02
Benz(a)anthracene	10000	1.00E+00	5.00E+04	5.00E+08
Benzo(a)pyrene	10000	1.00E+00	5.00E+04	5.00E+08
Benzo(j,k)fluorene	10000	1.00E+00	5.00E+03	5.00E+07
Benzofluoranthene, 3,4-	0	1.00E+00	5.00E+04	0.00E+00
Chrysene	1000	1.00E+00	5.00E+03	5.00E+06
Cyanide	1000	4.00E-01	5.00E-01	2.00E+02
Di-n-butyl phthalate	1000	1.00E+00	5.00E+03	5.00E+06
Endrin	10000	1.00E+00	5.00E+04	5.00E+08
Fluorene	1000	1.00E+00	5.00E+03	5.00E+06
Manganese	0	1.00E+00	5.00E+04	0.00E+00
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Phenanthrene	1000	4.00E-01	5.00E+03	2.00E+06
Pyrene	0	1.00E+00	5.00E+01	0.00E+00
Selenium	100	1.00E+00	5.00E+03	5.00E+05

Source: 2 Building 5

Source Hazardous Waste Quantity Value: 3.95

Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Aluminum	0	1.00E+00	5.00E+01	0.00E+00
Antimony	0	1.00E+00	5.00E-01	0.00E+00
Arsenic	10	1.00E+00	5.00E+01	5.00E+02
Benz(a)anthracene	10000	1.00E+00	5.00E+04	5.00E+08
Benzo(a)pyrene	10000	1.00E+00	5.00E+04	5.00E+08
Benzo(j,k)fluorene	10000	1.00E+00	5.00E+03	5.00E+07
Benzo(k)fluoranthene	0	1.00E+00	5.00E+04	0.00E+00
Benzofluoranthene, 3,4-	0	1.00E+00	5.00E+04	0.00E+00
Cadmium	1000	1.00E+00	5.00E+03	5.00E+06
Chrysene	1000	1.00E+00	5.00E+03	5.00E+06
Cobalt	0	1.00E+00	5.00E+03	0.00E+00
Iron	10	1.00E+00	5.00E-01	5.00E+00
Magnesium	0	1.00E+00	5.00E-01	0.00E+00
Manganese	0	1.00E+00	5.00E+04	0.00E+00
Naphthalene	1000	4.00E-01	5.00E+02	2.00E+05
Phenanthrene	1000	4.00E-01	5.00E+03	2.00E+06
Pyrene	0	1.00E+00	5.00E+01	0.00E+00
Selenium	100	1.00E+00	5.00E+03	5.00E+05
Thallium	0	1.00E+00	5.00E+02	0.00E+00
Vanadium	0	1.00E+00	5.00E-01	0.00E+00
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 6 Building 12

Source Hazardous Waste Quantity Value: 0.21

Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Methylene chloride	1	4.00E-01	5.00E+00	2.00E+00

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Ecotoxicity/Persistence/Bioaccummulation Value from Source Hazardous Substances:	5.00E+08
Ecotoxicity/Persistence/Bioaccummulation Value from Observed Release Hazardous Substances:	0.00E+00
Ecotoxicity/Persistence/Bioaccummulation Factor:	5.00E+08
Sum of Source Hazardous Waste Quantity Values:	5.66E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	180

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Sensitive Environment Value
River	1 Rocky Rvr Reservn	50

Wetlands

Type of Surface Water Body	Sensitive Environment	Wetlands Frontage	Wetlands Value

- N/A and/or data not specified

Documentation for Sensitive Environment Rocky Rvr Reservn:

The area immediately adjacent to LeRC is dominated by Cleveland Hopkins International Airport and the Rocky River Reservation. See Section 3.7 of the RI/FS Report.

Sensitive Environments Rating Value assigned from Table 4-23 of HRS Guidance Manual.

Reference: 2,1

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT ENVIRONMENTAL THREAT TARGETS
NASA LeRC PMU 8 - North Central Area - 11/25/95

Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)
Moderate to Large Stream	50	0	1.00E-02	5.00E-01

Sum of Dj(Wj+Sj): 5.00E-01
Sum of Dj(Wj+Sj)/10: 5.00E-02

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Potential Contamination Sensitive Environment Factor: 5.00E-02

Containment

No.	Source ID	HWQ Value	Containment Value
1	Building 9 / Subs E	1.49E+00	10
2	Building 5	3.95E+00	10
6	Building 12	2.12E-01	10

Containment Factor 10

Documentation for Ground Water Containment, Source Building 9 / Subs E:

Transformer oil and other releases have been documented. See Section 4.8.1 of the RI/FS Report.

Reference: 2

Documentation for Ground Water Containment, Source Building 5:

Site has a history of releases. See Section 4.8.2 of the RI/FS Report

Reference: 2

Documentation for Ground Water Containment, Source Building 64:

Contaminated soil has concrete/asphalt cover.

Reference: 2

Documentation for Ground Water Containment, Source Building 16:

Unplanned releases are suspected. Contaminated soil beneath asphalt/concrete.

Reference: 2

Documentation for Ground Water Containment, Source Building 66:

Unplanned releases are suspected. Contaminated soil is located beneath parking lot; asphalt/concrete cover.

Reference: 2

Documentation for Ground Water Containment, Source Building 12:

Unplanned release possible. See Section 4.8.18 of the RI/FS Report.

Reference: 2

Net Precipitation

Net Precipitation (inches)	0.00

Aquifer: Shale Bedrock Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Shale Bedrock Aquifer Aquifer:

Lithological information contained in the drilling logs indicate the aquifer to be the shale bedrock. The only other aquifers known in this area are localized, laterally discontinuous perched lenses within the overlying unconsolidated soil materials. For HRS purposes the perched zones are considered non-significant in view of the localized nature. See Section 3.3 of the RI/FS Report.

Reference: 2

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Observed Release Factor 0

Documentation for Well 08-MW009:

Four monitoring wells are included within PMU8 area. See Figure 2-6 of Volume I of the RI/FS Report.

Reference: 2

Documentation for Well 08-MW017:

MW017 is one of the four monitoring wells included in PMU8 area. See Figure 2-6 of Volume I of the RI/FS Report.

Reference: 2

Documentation for Well 08-MW018:

MW018 is one of the four monitoring wells included within PMU8 area. See Figure 2-6 of Volume I of the RI/FS Report.

Reference: 2

Documentation for Well 08-MW019:

MW019 is one of the four monitoring wells located within PMU8 area. See Figure 2-6 of the Volume I of the RI/FS Report.

Reference: 2

POTENTIAL TO RELEASE

Ground Water to Surface Water Angle

Probable Point of Entry	200.00	miles
Angle Theta	90	

Containment

Containment Factor	10

Net Precipitation

Net Precipitation Factor	3

Depth to Aquifer

A. Depth of Hazardous Substances	38.00	feet

Documentation for Depth of Hazardous Substances:

Sample # bh028-19 indicated the contamination at greatest depth, significant above background in case of Cadmium, Selenium, and Thallium. This sample was obtained at 38 feet level. Bedrock shale was encountered at 31 feet level at this borehole. See RI/FS Report Volume IV Part I Appendix C for the drilling logs and Vol II Table 5-42 for analytical data.

Reference: 2

B. Depth to Aquifer from Surface	31.00	feet

Documentation for Depth to Aquifer from Surface :

Average depth to weathered shale bedrock is 31 feet, based on Table 2-2, Phase I RI/FS Report.

Reference: 2

C. Depth to Aquifer (B - A)	0.00	feet
Depth to Aquifer Factor	5	

Travel Time

Are All Layers Karst?	NO

Documentation for Karst Layers:

No Karst/Limestone formations encountered during drilling. See drilling logs in Volume IV, Part I Appendix C of the RI/FS Report.

Reference: 2

Thickness of Layer(s) with Lowest Conductivity	0.00	feet

Documentation for Thickness of Layers with Lowest Conductivity:

Average thickness clay/silt (low hydralic conductivity layers) ascertained from drilling logs ranges from 12 to 30 feet. See Drilling logs in Volume IV Part I, Appendix C of the RI/FS Report. Based on litholigical description contained in the drilling logs hydraulic conductivity and travel time factor values were selected from Tables 3-6 and 3-7 of the HRS Guidance Manual.

Reference: 1 and 2

Hydraulic Conductivity (cm/sec) 1.0E-06

Documentation for Hydraulic Conductivity:

Slug Test data discussed in Section 3.3 of the RI/FS Report used in evaluating the hydraulic conductivity for the aquifer.

Reference: 2

Travel Time Factor 35

==========

Potential to Release Factor 430

Source: 1 Building 9 / Subs E

Source Hazardous Waste Quantity Value: 1.49

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobililty/ Persistence
Arsenic	10000	1.00E+00	1.00E-02	1.00E+02
Benz(a)anthracene	1000	1.00E+00	2.00E-09	2.00E-06
Benzo(a)pyrene	10000	1.00E+00	2.00E-09	2.00E-05
Benzo(j,k)fluorene	100	1.00E+00	2.00E-07	2.00E-05
Benzofluoranthene, 3,4-	10000	1.00E+00	2.00E-09	2.00E-05
Chrysene	0	1.00E+00	2.00E-09	0.00E+00
Cyanide	100	4.00E-01	2.00E-05	8.00E-04
Di-n-butyl phthalate	10	1.00E+00	2.00E-03	2.00E-02
Endrin	10000	1.00E+00	2.00E-03	2.00E+01
Fluorene	100	1.00E+00	2.00E-03	2.00E-01
Manganese	10000	1.00E+00	1.00E-02	1.00E+02
Mercury	10000	1.00E+00	2.00E-05	2.00E-01
Phenanthrene	0	4.00E-01	2.00E-05	0.00E+00
Pyrene	100	1.00E+00	2.00E-09	2.00E-07
Selenium	100	1.00E+00	1.00E-02	1.00E+00

Source: 2 Building 5

Source Hazardous Waste Quantity Value: 3.95

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobililty/ Persistence
Aluminum	0	1.00E+00	2.00E-05	0.00E+00
Antimony	10000	1.00E+00	1.00E-02	1.00E+02
Arsenic	10000	1.00E+00	1.00E-02	1.00E+02
Benz(a)anthracene	1000	1.00E+00	2.00E-09	2.00E-06
Benzo(a)pyrene	10000	1.00E+00	2.00E-09	2.00E-05
Benzo(j,k)fluorene	100	1.00E+00	2.00E-07	2.00E-05
Benzo(k)fluoranthene	0	1.00E+00	2.00E-09	0.00E+00
Benzofluoranthene, 3,4-	10000	1.00E+00	2.00E-09	2.00E-05
Cadmium	10000	1.00E+00	2.00E-01	2.00E+03
Chrysene	0	1.00E+00	2.00E-09	0.00E+00
Cobalt	1	1.00E+00	1.00E-02	1.00E-02
Iron	0	1.00E+00	1.00E-02	0.00E+00
Magnesium	0	1.00E+00	2.00E-05	0.00E+00
Manganese	10000	1.00E+00	1.00E-02	1.00E+02
Naphthalene	1	4.00E-01	2.00E-03	8.00E-04
Phenanthrene	0	4.00E-01	2.00E-05	0.00E+00
Pyrene	100	1.00E+00	2.00E-09	2.00E-07
Selenium	100	1.00E+00	1.00E-02	1.00E+00
Thallium	1000	1.00E+00	1.00E-04	1.00E-01
Vanadium	100	1.00E+00	2.00E-07	2.00E-05
Zinc	10	1.00E+00	2.00E-03	2.00E-02

Source: 6 Building 12

Source Hazardous Waste Quantity Value: 0.21

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobililty/ Persistence
Mercury	10000	1.00E+00	2.00E-05	2.00E-01
Methylene chloride	10	4.00E-01	1.00E+00	4.00E+00

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Toxicity Factor Value	Persist. Value	Toxicity/ Persistence

- N/A and/or data not specified

Toxicity/Mobility/Persistence Value from Source Hazardous Substances:	2.00E+03
Toxicity/Mobility/Persistence Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility/Persistence Factor:	2.00E+03
Sum of Source Hazardous Waste Quantity Values:	5.66E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	10

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

==========

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population

- N/A and/or data not specified

==========

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served
1 Crown Intake Crib	0	375000.0
2 Division Intake Cri	0	375000.0
3 Kirtland Intake Cri	0	375000.0
4 Nottingham Intake C	0	375000.0

Documentation for Intake Crown Intake Crib:

The Cleveland System draws its water from Lake Erie through four intakes. Three of the four intakes are within a 15-mile radius of LeRC. The system serves 1.5 million people. It is presumed that the four intakes equally share the serving population.
See Section 3.8.1 of the RI/FS Report.

Reference: 2

Type of Surface Water Body	Total Population	Dilution-Weighted Population
Moderate Ocean Zone or Great Lake	1125000.0	16.0

Dilution-Weighted Population Served
by Potentially Contaminated Intakes: 16.0

Potential Contamination Factor: 0.0

Nearest Intake

Location of Nearest Drinking Water Intake: N.A.

Nearest Intake Factor: 0.00

Resources

Resource Use: YES

Resource Value: 5.00E+00

SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS
NASA LeRC PMU 8 - North Central Area - 11/25/95

Source: 1 Building 9 / Subs E

Source Hazardous Waste Quantity Value: 1.49

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio-accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value
Arsenic	10000	1.00E+00	1.00E-02	5.00E+02	5.00E+04
Benz(a)anthracene	1000	1.00E+00	2.00E-09	5.00E+04	1.00E-01
Benzo(a)pyrene	10000	1.00E+00	2.00E-09	5.00E+02	1.00E-02
Benzo(j,k)fluorene	100	1.00E+00	2.00E-07	5.00E+03	1.00E-01
Benzofluoranthene, 3,4-	10000	1.00E+00	2.00E-09	5.00E+04	1.00E+00
Chrysene	0	1.00E+00	2.00E-09	5.00E+02	0.00E+00
Cyanide	100	4.00E-01	2.00E-05	5.00E-01	4.00E-04
Di-n-butyl phthalate	10	1.00E+00	2.00E-03	5.00E+03	1.00E+02
Endrin	10000	1.00E+00	2.00E-03	5.00E+03	1.00E+05
Fluorene	100	1.00E+00	2.00E-03	5.00E+03	1.00E+03
Manganese	10000	1.00E+00	1.00E-02	5.00E-01	5.00E+01
Mercury	10000	1.00E+00	2.00E-05	5.00E+04	1.00E+04
Phenanthrene	0	4.00E-01	2.00E-05	5.00E+01	0.00E+00
Pyrene	100	1.00E+00	2.00E-09	5.00E+01	1.00E-05
Selenium	100	1.00E+00	1.00E-02	5.00E+01	5.00E+01

Source: 2 Building 5

Source Hazardous Waste Quantity Value: 3.95

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio-accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value
Aluminum	0	1.00E+00	2.00E-05	5.00E+01	0.00E+00
Antimony	10000	1.00E+00	1.00E-02	5.00E-01	5.00E+01
Arsenic	10000	1.00E+00	1.00E-02	5.00E+02	5.00E+04
Benz(a)anthracene	1000	1.00E+00	2.00E-09	5.00E+04	1.00E-01
Benzo(a)pyrene	10000	1.00E+00	2.00E-09	5.00E+02	1.00E-02
Benzo(j,k)fluorene	100	1.00E+00	2.00E-07	5.00E+03	1.00E-01
Benzo(k)fluoranthene	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Benzofluoranthene, 3,4-	10000	1.00E+00	2.00E-09	5.00E+04	1.00E+00
Cadmium	10000	1.00E+00	2.00E-01	5.00E+03	1.00E+07
Chrysene	0	1.00E+00	2.00E-09	5.00E+02	0.00E+00
Cobalt	1	1.00E+00	1.00E-02	5.00E-01	5.00E-03
Iron	0	1.00E+00	1.00E-02	5.00E-01	0.00E+00
Magnesium	0	1.00E+00	2.00E-05	5.00E-01	0.00E+00
Manganese	10000	1.00E+00	1.00E-02	5.00E-01	5.00E+01
Naphthalene	1	4.00E-01	2.00E-03	5.00E+00	4.00E-03
Phenanthrene	0	4.00E-01	2.00E-05	5.00E+01	0.00E+00
Pyrene	100	1.00E+00	2.00E-09	5.00E+01	1.00E-05
Selenium	100	1.00E+00	1.00E-02	5.00E+01	5.00E+01
Thallium	1000	1.00E+00	1.00E-04	5.00E+01	5.00E+00
Vanadium	100	1.00E+00	2.00E-07	5.00E-01	1.00E-05
Zinc	10	1.00E+00	2.00E-03	5.00E+04	1.00E+03

Source: 6 Building 12

Source Hazardous Waste Quantity Value: 0.21

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio-accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value
Mercury	10000	1.00E+00	2.00E-05	5.00E+04	1.00E+04
Methylene chloride	10	4.00E-01	1.00E+00	5.00E+00	2.00E+01

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Toxicity Value	Persist. Value	Bio-accum. Value	Toxicity/ Persistence Bioaccum. Value

- N/A and/or data not specified

Toxicity/Mobility/Persistence/Bioaccumulation Value from Source Hazardous Substances:	1.00E+07
Toxicity/Mobility/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility/Persistence/Bioaccumulation Factor:	1.00E+07
Sum of Source Hazardous Waste Quantity Values:	5.66E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	100

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Fishery	Annnual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di
- N/A and/or data not specified						

Sum of (Pi*Di): 0.00E+00

Potential Human Food Chain Contamination Factor: 0.00E+00

Food Chain Individual

Location of Nearest Fishery: N.A.

Food Chain Individual Factor: 0.00

Source: 1 Building 9 / Subs E

Source Hazardous Waste Quantity Value: 1.49

Hazardous Substance	Eco-toxicity Value	Persist. Value	Mob. Value	Bio-accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value
Arsenic	100	1.00E+00	1.00E-02	5.00E+02	5.00E+02
Benz(a)anthracene	10000	1.00E+00	2.00E-09	5.00E+04	1.00E+00
Benzo(a)pyrene	1000	1.00E+00	2.00E-09	5.00E+02	1.00E-03
Benzo(j,k)fluorene	1000	1.00E+00	2.00E-07	5.00E+03	1.00E+00
Benzofluoranthene, 3,4-	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Chrysene	1000	1.00E+00	2.00E-09	5.00E+02	1.00E-03
Cyanide	1000	4.00E-01	2.00E-05	5.00E-01	4.00E-03
Di-n-butyl phthalate	10000	1.00E+00	2.00E-03	5.00E+03	1.00E+05
Endrin	10000	1.00E+00	2.00E-03	5.00E+03	1.00E+05
Fluorene	1000	1.00E+00	2.00E-03	5.00E+03	1.00E+04
Manganese	0	1.00E+00	1.00E-02	5.00E+04	0.00E+00
Mercury	10000	1.00E+00	2.00E-05	5.00E+04	1.00E+04
Phenanthrene	1000	4.00E-01	2.00E-05	5.00E+01	4.00E-01
Pyrene	0	1.00E+00	2.00E-09	5.00E+01	0.00E+00
Selenium	100	1.00E+00	1.00E-02	5.00E+01	5.00E+01

Source: 2 Building 5

Source Hazardous Waste Quantity Value: 3.95

Hazardous Substance	Eco-toxicity Value	Persist. Value	Mob. Value	Bio-accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value
Aluminum	0	1.00E+00	2.00E-05	5.00E+01	0.00E+00
Antimony	0	1.00E+00	1.00E-02	5.00E-01	0.00E+00
Arsenic	100	1.00E+00	1.00E-02	5.00E+02	5.00E+02
Benz(a)anthracene	10000	1.00E+00	2.00E-09	5.00E+04	1.00E+00
Benzo(a)pyrene	1000	1.00E+00	2.00E-09	5.00E+02	1.00E-03
Benzo(j,k)fluorene	1000	1.00E+00	2.00E-07	5.00E+03	1.00E+00
Benzo(k)fluoranthene	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Benzofluoranthene, 3,4-	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Cadmium	1000	1.00E+00	2.00E-01	5.00E+03	1.00E+06
Chrysene	1000	1.00E+00	2.00E-09	5.00E+02	1.00E-03
Cobalt	0	1.00E+00	1.00E-02	5.00E+03	0.00E+00
Iron	10	1.00E+00	1.00E-02	5.00E-01	5.00E-02
Magnesium	0	1.00E+00	2.00E-05	5.00E-01	0.00E+00
Manganese	0	1.00E+00	1.00E-02	5.00E+04	0.00E+00
Naphthalene	1000	4.00E-01	2.00E-03	5.00E+03	4.00E+03
Phenanthrene	1000	4.00E-01	2.00E-05	5.00E+01	4.00E-01
Pyrene	0	1.00E+00	2.00E-09	5.00E+01	0.00E+00
Selenium	100	1.00E+00	1.00E-02	5.00E+01	5.00E+01
Thallium	0	1.00E+00	1.00E-04	5.00E+01	0.00E+00
Vanadium	0	1.00E+00	2.00E-07	5.00E-01	0.00E+00
Zinc	100	1.00E+00	2.00E-03	5.00E+04	1.00E+04

Source: 6 Building 12

Source Hazardous Waste Quantity Value: 0.21

Hazardous Substance	Eco-toxicity Value	Persist. Value	Mob. Value	Bio-accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value
Mercury	10000	1.00E+00	2.00E-05	5.00E+04	1.00E+04
Methylene chloride	10	4.00E-01	1.00E+00	5.00E+00	2.00E+01

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Eco-toxicity Value	Persist. Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Ecotoxicity/Mobility/Persistence/Bioaccummulation Value from Source Substances:	1.00E+06
Ecotoxicity/Mobility/Persistence/Bioaccummulation Value from Observed Hazardous Substances:	0.00E+00
Ecotoxicity/Mobility/Persistence/Bioaccummulation Factor:	1.00E+06
Sum of Source Hazardous Waste Quantity Values:	5.66E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	56

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Sensitive Environment Value

Wetlands

Type of Surface Water Body	Sensitive Environment	Wetlands Frontage	Wetlands Value

- N/A and/or data not specified

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT TARGETS

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Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)

- N/A and/or data not specified

Sum of Dj(Wj+Sj): 0.00E+00

Sum of Dj(Wj+Sj)/10: 0.00E+00

==========

Potential Contamination Sensitive Environment Factor: 0.00E+00

Likelihood of Exposure

No.	Source ID	Level of Contamination
1	Building 9 / Subs E	Level I
2	Building 5	Level I
3	Building 64	Level II
5	Building 66	Level II

Likelihood of Exposure Factor: 550

Documentation for Area of Contamination, Source Building 9 / Subs E:

See Figure 4-1 of the RI/FS Report- Area of Concern Location Map. Area was measured from the map.

Reference: 2

Documentation for Area of Contamination, Source Building 5:

See Figure 4-1 of the RI/FS Report for the Area of Concern Location Map. Area was measured from the map.

Reference: 2

Documentation for Area of Contamination, Source Building 64:

See Figure 4-1 of the RI/FS Report for the Area of Concern Location Map. Area was measured from the map.

Reference: 2

Documentation for Area of Contamination, Source Building 16:

See Figure 4-1 of the RI/FS Report for the Area of Concern Location Map. Area was measured from the map.

Reference: 2

Documentation for Area of Contamination, Source Building 66:

See Figure 4-1 of the RI/FS Report for the Area of Concern Location Map. Area was measured from the map.

Reference: 2

Documentation for Area of Contamination, Source Building 12:

See Figure 4-1 of the RI/FS Report for the Area of Concern Location Map. Area was measured from the map.

Reference: 2

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Arsenic	< 2	6.1E+01	3.3E-01	1.7E+02	ppm
1	Benz(a)anthracene	< 2	4.7E-01	0.0E+00	0.0E+00	ppm
1	Benzo(a)pyrene	< 2	4.5E-01	8.0E-02	0.0E+00	ppm
1	Benzo(j,k)fluorene	< 2	5.8E-01	0.0E+00	2.3E+04	ppm
1	Benzofluoranthene, 3,4-	< 2	6.5E-01	0.0E+00	0.0E+00	ppm
1	Chrysene	< 2	5.2E-01	0.0E+00	0.0E+00	ppm
1	Cyanide	< 2	5.6E+00	0.0E+00	1.2E+04	ppm
1	Di-n-butyl phthalate	< 2	5.4E-01	0.0E+00	5.8E+04	ppm
1	Endrin	< 2	1.3E-01	0.0E+00	1.7E+02	ppm
1	Fluorene	< 2	6.6E-01	0.0E+00	2.3E+04	ppm
1	Manganese	< 2	1.4E+03	0.0E+00	2.9E+03	ppm
1	Mercury	< 2	1.3E-01	0.0E+00	1.7E+02	ppm
1	Phenanthrene	< 2	4.3E-01	0.0E+00	0.0E+00	ppm
1	Pyrene	< 2	4.8E-01	0.0E+00	1.7E+04	ppm

1	Selenium	< 2	7.9E-01	0.0E+00	2.9E+03	ppm
2	Benz(a)anthracene	< 2	7.9E-01	0.0E+00	0.0E+00	ppm
2	Benzo(a)pyrene	< 2	6.6E-01	8.0E-02	0.0E+00	ppm
2	Benzo(j,k)fluorene	< 2	1.4E+00	0.0E+00	2.3E+04	ppm
2	Benzo(k)fluoranthene	< 2	3.8E-01	0.0E+00	0.0E+00	ppm
2	Benzofluoranthene, 3,4-	< 2	1.1E+00	0.0E+00	0.0E+00	ppm
2	Cadmium	> 2	1.7E+01	0.0E+00	0.0E+00	ppm
2	Chrysene	< 2	7.1E-01	0.0E+00	0.0E+00	ppm
2	Naphthalene	> 2	9.2E-01	0.0E+00	0.0E+00	ppm
2	Phenanthrene	< 2	1.1E+00	0.0E+00	0.0E+00	ppm
2	Pyrene	< 2	1.3E+00	0.0E+00	1.7E+04	ppm
2	Selenium	> 2	7.3E+00	0.0E+00	0.0E+00	ppm
2	Thallium	> 2	5.3E+00	0.0E+00	0.0E+00	ppm
2	Vanadium	> 2	7.5E+01	0.0E+00	0.0E+00	ppm
2	Zinc	> 2	6.2E+02	0.0E+00	0.0E+00	ppm
3	Benzo(j,k)fluorene	< 2	4.1E-01	0.0E+00	2.3E+04	ppm
3	Cadmium	> 2	5.7E+00	0.0E+00	0.0E+00	ppm
3	Di-n-butyl phthalate	> 2	3.4E-01	0.0E+00	0.0E+00	ppm
3	Selenium	> 2	4.0E+00	0.0E+00	0.0E+00	ppm
3	Thallium	> 2	3.3E+00	0.0E+00	0.0E+00	ppm
3	Zinc	> 2	2.8E+02	0.0E+00	0.0E+00	ppm
5	Acetone	> 2	3.7E-02	0.0E+00	0.0E+00	ppm
5	Cadmium	> 2	2.8E+00	0.0E+00	0.0E+00	ppm
5	Chloromethane	< 2	1.2E-02	4.5E+01	0.0E+00	ppm
5	Mercury	< 2	2.6E-01	0.0E+00	1.7E+02	ppm
5	Selenium	> 2	9.9E+00	0.0E+00	0.0E+00	ppm
5	Thallium	> 2	3.9E+00	0.0E+00	0.0E+00	ppm
5	Toluene	> 2	1.1E-02	0.0E+00	0.0E+00	ppm
5	Vanadium	> 2	8.1E+01	0.0E+00	0.0E+00	ppm
5	Vinyl chloride	> 2	1.2E-02	0.0E+00	0.0E+00	ppm

Documentation for Source Building 9 / Subs E, Contaminants:

See Table 5-40 of RI/FS Report for concentrations.

Reference: 2

Documentation for Source Building 5, Contaminants:

See Table 5-41 for concentrations in RI/FS Report.

Reference: 2

Documentation for Source Building 64, Contaminants:

See Table 5-43 for analytical data

Reference: 2

Documentation for Source Building 16, Contaminants:

See Table 5-46 of the RI/FS Report for analytical data

Reference: 2

Documentation for Source Building 66, Contaminants:

See Table 5-49 of the RI/FS Report for analytical data.

Reference: 2

Documentation for Source Building 12, Contaminants:

See Table 5-55 of the RI/FS Report for analytical data.

Reference: 2

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC PMU 8 - North Central Area - 11/25/95

Source: 1 Building 9 / Subs E

Source Hazardous Waste Quantity Value: 0.00

Hazardous Substance	Toxicity Value
Arsenic	10000
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(j,k)fluorene	100
Benzofluoranthene, 3,4-	10000
Chrysene	0
Cyanide	100
Di-n-butyl phthalate	10
Endrin	10000
Fluorene	100
Manganese	10000
Mercury	10000
Phenanthrene	0
Pyrene	100
Selenium	100

Source: 2 Building 5

Source Hazardous Waste Quantity Value: 3.95

Hazardous Substance	Toxicity Value
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(j,k)fluorene	100
Benzo(k)fluoranthene	0
Benzofluoranthene, 3,4-	10000
Chrysene	0
Phenanthrene	0
Pyrene	100

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC PMU 8 - North Central Area - 11/25/95

Source: 3 Building 64

Source Hazardous Waste Quantity Value: 2.47

Hazardous Substance	Toxicity Value
Benzo(j,k)fluorene	100

Source: 5 Building 66

Source Hazardous Waste Quantity Value: 2.64

Hazardous Substance	Toxicity Value
Chloromethane	10
Mercury	10000

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS

NASA LeRC PMU 8 - North Central Area - 11/25/95

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	9.06E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Targets

Level I Population:	0.0	Value:	0.00

Documentation for Level I Population:

No presence of resident, student, or daycare population within 200 ft. of contamination.

Reference:

Level II Population:	0.0	Value:	0.00
Workers:	50.0	Value:	5.00
Resident Individual:	Potentia	Value:	0.00
Resources:	NO	Value:	0.00

Documentation for Resources:

No significant commercial agricultural activities occur within four miles of the site. See Section 3.7 of the RI/FS Report.

Reference: 2

Terrestial Sensitive Environment	Value
Terrestrial Habitat	50

Terrestrial Sensitive Environments Factor: 50.00

Documentation for Terrestrial Environment Terrestrial Habitat:

Terrestrial Sensitive Environments Rating Value based on Table 5-5 of the HRS Guidance Manual.

Reference: 1

Likelihood of Exposure

No.	Source ID	Level of Contamination	Attractiveness/ Accessibility	Area of Contam. (sq. feet)
1	Building 9 / Subs E	Level I	5	5600
2	Building 5	Level I	5	134400

Highest Attractiveness/Accessibility Value: 5
Sum of Eligible Areas Of Contamination (sq. feet): 140000
Area of Contamination Value: 40

Likelihood of Exposure Factor Category: 5

Documentation for Attractiveness/Accessibility, Source Building 9 / Subs E:

NASA a federal facility with limited access (fenced, guarded gate) by the general public.

Reference:

Documentation for Attractiveness/Accessibility, Source Building 5:

AOC covered by asphalt/concrete or maintained lawn.
Facility is fenced.

Reference:

Documentation for Attractiveness/Accessibility, Source Building 64:

Soil beneath concrete/asphalt; facility is fenced

Reference:

Documentation for Attractiveness/Accessibility, Source Building 16:

Contaminated soils covered by asphalt; fenced facility

Reference:

Documentation for Attractiveness/Accessibility, Source Building 66:

Contaminated soil beneath asphalt/concrete.

Reference:

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Arsenic	< 2	6.1E+01	3.3E-01	1.7E+02	ppm
1	Benz(a)anthracene	< 2	4.7E-01	0.0E+00	0.0E+00	ppm
1	Benzo(a)pyrene	< 2	4.5E-01	8.0E-02	0.0E+00	ppm
1	Benzo(j,k)fluorene	< 2	5.8E-01	0.0E+00	2.3E+04	ppm
1	Benzofluoranthene, 3,4-	< 2	6.5E-01	0.0E+00	0.0E+00	ppm
1	Chrysene	< 2	5.2E-01	0.0E+00	0.0E+00	ppm
1	Cyanide	< 2	5.6E+00	0.0E+00	1.2E+04	ppm
1	Di-n-butyl phthalate	< 2	5.4E-01	0.0E+00	5.8E+04	ppm
1	Endrin	< 2	1.3E-01	0.0E+00	1.7E+02	ppm
1	Fluorene	< 2	6.6E-01	0.0E+00	2.3E+04	ppm
1	Manganese	< 2	1.4E+03	0.0E+00	2.9E+03	ppm
1	Mercury	< 2	1.3E-01	0.0E+00	1.7E+02	ppm
1	Phenanthrene	< 2	4.3E-01	0.0E+00	0.0E+00	ppm
1	Pyrene	< 2	4.8E-01	0.0E+00	1.7E+04	ppm
1	Selenium	< 2	7.9E-01	0.0E+00	2.9E+03	ppm
2	Benz(a)anthracene	< 2	7.9E-01	0.0E+00	0.0E+00	ppm
2	Benzo(a)pyrene	< 2	6.6E-01	8.0E-02	0.0E+00	ppm
2	Benzo(j,k)fluorene	< 2	1.4E+00	0.0E+00	2.3E+04	ppm
2	Benzo(k)fluoranthene	< 2	3.8E-01	0.0E+00	0.0E+00	ppm
2	Benzofluoranthene, 3,4-	< 2	1.1E+00	0.0E+00	0.0E+00	ppm
2	Cadmium	> 2	1.7E+01	0.0E+00	0.0E+00	ppm
2	Chrysene	< 2	7.1E-01	0.0E+00	0.0E+00	ppm
2	Naphthalene	> 2	9.2E-01	0.0E+00	0.0E+00	ppm
2	Phenanthrene	< 2	1.1E+00	0.0E+00	0.0E+00	ppm
2	Pyrene	< 2	1.3E+00	0.0E+00	1.7E+04	ppm
2	Selenium	> 2	7.3E+00	0.0E+00	0.0E+00	ppm
2	Thallium	> 2	5.3E+00	0.0E+00	0.0E+00	ppm
2	Vanadium	> 2	7.5E+01	0.0E+00	0.0E+00	ppm

2	Zinc	> 2	6.2E+02	0.0E+00	0.0E+00	ppm

Documentation for Source Building 9 / Subs E, Contaminants:

See Table 5-40 of RI/FS Report for concentrations.

Reference: 2

Documentation for Source Building 5, Contaminants:

See Table 5-41 for concentrations in RI/FS Report.

Reference: 2

Documentation for Source Building 64, Contaminants:

See Table 5-43 for analytical data

Reference: 2

Documentation for Source Building 16, Contaminants:

See Table 5-46 of the RI/FS Report for analytical data

Reference: 2

Documentation for Source Building 66, Contaminants:

See Table 5-49 of the RI/FS Report for analytical data.

Reference: 2

Documentation for Source Building 12, Contaminants:

See Table 5-55 of the RI/FS Report for analytical data.

Reference: 2

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC PMU 8 - North Central Area - 11/25/95

Source: 1 Building 9 / Subs E

Source Hazardous Waste Quantity Value: 0.00

Hazardous Substance	Toxicity Value
Arsenic	10000
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(j,k)fluorene	100
Benzofluoranthene, 3,4-	10000
Chrysene	0
Cyanide	100
Di-n-butyl phthalate	10
Endrin	10000
Fluorene	100
Manganese	10000
Mercury	10000
Phenanthrene	0
Pyrene	100
Selenium	100

Source: 2 Building 5

Source Hazardous Waste Quantity Value: 3.95

Hazardous Substance	Toxicity Value
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(j,k)fluorene	100
Benzo(k)fluoranthene	0
Benzofluoranthene, 3,4-	10000
Chrysene	0
Phenanthrene	0
Pyrene	100

Source: 3 Building 64

Source Hazardous Waste Quantity Value: 2.47

Hazardous Substance	Toxicity Value
Benzo(j,k)fluorene	100

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC PMU 8 - North Central Area - 11/25/95

Source: 5 Building 66

Source Hazardous Waste Quantity Value: 2.64

Hazardous Substance	Toxicity Value
Chloromethane	10
Mercury	10000

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC PMU 8 - North Central Area - 11/25/95

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	3.95E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Nearby Individual

Population within 1/4 mile: 5875.0

Nearby Individual Value: 1.0

Population Within 1 Mile

Travel Distance Category	Number of People	Value
> 0 to 1/4 mile	5875.0	13.0
> 1/4 to 1/2 mile	5775.0	6.5
> 1/2 to 1 mile	19800.0	10.2

Population Within 1 Mile Factor: 30.0

Documentation for Population > 0 to 1/4 mile Distance Category:

See Table 3-5 of Section 3.7 for the Summary of Demographic Estimates in the RI/FS Report.

Reference: 2

OBSERVED RELEASE

No.	Sample ID	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Observed Release Factor: 0

Gas Migration Potential

GAS POTENTIAL TO RELEASE

Source ID	Source Type	Gas Contain. Value (A)	Gas Source Type Value (B)	Gas Migrtn. Potent. Value (C)	Sum (B+C)	Gas Potential to Rel. Value A(B+C)
Building 9 / Subs E	Contaminated Soil	3	19	11	30	90
Building 5	Contaminated Soil	3	19	11	30	90
Building 12	Contaminated Soil	3	0	17	17	51

Gas Potential to Release Factor: 90

Documentation for Gas Containment, Source Building 9 / Subs E:

Source moderately vegetated and soils not well exposed or soil beneath concrete/asphalt. Soils consist of clays, silty clays.

Reference:

Documentation for Gas Containment, Source Building 5:

Site is covered by asphalt/concrete or maintained grass lawn. As per section 3.0 of Phase I RI/FS report, soils are clay and silty clay.

Reference:

Documentation for Gas Containment, Source Building 64:

Clayey soils covered by asphalt/concrete.

Reference:

Documentation for Source Type, Source Building 64:

Contamination ascertained in Borehole samples.

Reference:

Documentation for Gas Containment, Source Building 16:

Conatminated clayey soil covered with asphalt

Reference:

Documentation for Source Type, Source Building 16:

Contamination ascertained from borehole soil samples.

Reference:

Documentation for Gas Containment, Source Building 66:

Contaminated clays / silty clays beneath asphalt/concrete

Reference:

Documentation for Gas Containment, Source Building 12:

Clayey soil is moderately vegetated with little exposed soil; remaining soils covered with concrete/asphalt

Reference:

Documentation for Source Type, Source Building 12:

Contamination ascertained based on borehole samples.

Reference:

Source: Building 9 / Subs E

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Benz(a)anthracene	6
Benzo(a)pyrene	6
Benzo(j,k)fluorene	6
Benzofluoranthene, 3,4-	6
Chrysene	6
Di-n-butyl phthalate	6
Endrin	6
Fluorene	11
Mercury	11
Phenanthrene	11
Pyrene	6

Average of Gas Migration Potential Value for 3 Hazardous Substances: 11.000

Gas Migration Potential Value From Table 6-7: 11

Source: Building 5

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Benz(a)anthracene	6
Benzo(a)pyrene	6
Benzo(j,k)fluorene	6
Benzo(k)fluoranthene	6
Benzofluoranthene, 3,4-	6
Chrysene	6
Naphthalene	11
Phenanthrene	11
Pyrene	6

Average of Gas Migration Potential Value for 3 Hazardous Substances: 9.333

Gas Migration Potential Value From Table 6-7: 11

Source: Building 64

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Benzo(j,k)fluorene	6
Di-n-butyl phthalate	6

Average of Gas Migration Potential Value for 3 Hazardous Substances: 6.000

Gas Migration Potential Value From Table 6-7: 6

Source: Building 16

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Acetone	17
Anthracene	6
Benz(a)anthracene	6
Benzo(a)pyrene	6
Benzofluoranthene, 3,4-	6
Chrysene	6
Mercury	11
Methylene chloride	17
Phenanthrene	11
Pyrene	6

Average of Gas Migration Potential Value for 3 Hazardous Substances: 15.000

Gas Migration Potential Value From Table 6-7: 17

Source: Building 66

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Acetone	17
Chloromethane	17
Mercury	11
Methyl Napthalene, 2-	11
Naphthalene	11
Toluene	17
Vinyl chloride	17

Average of Gas Migration Potential Value for 3 Hazardous Substances: 17.000

Gas Migration Potential Value From Table 6-7: 17

Source: Building 12

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Mercury	11
Methylene chloride	17

Average of Gas Migration Potential Value for 3 Hazardous Substances: 14.000

Gas Migration Potential Value From Table 6-7: 17

Particulate Migration Potential

PARTICULATE POTENTIAL TO RELEASE

Source ID	Source Type	Partic. Contain. Value (A)	Partic. Source Type Value (B)	Partic. Migrtn. Potent. Value (C)	Sum (B+C)	Partic. Potential to Rel. Value A(B+C)
Building 9 / Subs E	Contaminated Soil	3	22	6	28	84
Building 5	Contaminated Soil	3	22	6	28	84
Building 12	Contaminated Soil	3	0	6	6	18

Particulate Potential to Release Factor: 84

Documentation for Particulate Containment, Source Building 9 / Subs E:

Source moderately covered with vegetation or covered with concrete/asphalt.

Reference:

Documentation for Particulate Containment, Source Building 5:

Site covered by concrete/asphalt or maintained grass lawn.

Reference:

Documentation for Particulate Containment, Source Building 64:

Clayey soils covered with asphalt/concrete.

Reference:

Documentation for Source Type, Source Building 64:

Contamination ascertained in Borehole samples.

Reference:

Documentation for Particulate Containment, Source Building 16:

Clayey contaminated soils covered with asphalt.

Reference:

Documentation for Source Type, Source Building 16:

Contamination ascertained from borehole soil samples.

Reference:

Documentation for Particulate Containment, Source Building 66:

Contaminated soils beneath asphalt/concrete

Reference:

Documentation for Particulate Containment, Source Building 12:

Soils covered with asphalt/concrete or moderate vegetation

Reference:

Documentation for Source Type, Source Building 12:

Contamination ascertained based on borehole samples.

Reference:

Documentation for Particulate Migration Potential:

See Figure 6-2 of HRS Guidance Manual.

Reference: 1

Source: Building 9 / Subs E

Particulate Hazardous Substance
Arsenic
Benz(a)anthracene
Benzo(a)pyrene
Benzo(j,k)fluorene
Benzofluoranthene, 3,4-
Chrysene
Cyanide
Di-n-butyl phthalate
Endrin
Fluorene
Manganese
Mercury
Phenanthrene
Pyrene
Selenium

Source: Building 5

Particulate Hazardous Substance
Aluminum
Antimony
Arsenic
Benz(a)anthracene
Benzo(a)pyrene
Benzo(j,k)fluorene
Benzo(k)fluoranthene
Benzofluoranthene, 3,4-
Cadmium
Chrysene
Cobalt
Iron
Magnesium
Manganese
Naphthalene
Phenanthrene
Pyrene
Selenium
Thallium
Vanadium
Zinc

Source: Building 64

Particulate Hazardous Substance
Benzo(j,k)fluorene
Cadmium
Di-n-butyl phthalate
Selenium
Thallium
Zinc

Source: Building 16

Particulate Hazardous Substance
Anthracene
Benz(a)anthracene
Benzo(a)pyrene
Benzofluoranthene, 3,4-
Cadmium
Chrysene
Cobalt
Mercury
Phenanthrene
Pyrene
Selenium
Thallium
Vanadium
Zinc

Source: Building 66

Particulate Hazardous Substance
Aluminum
Cadmium
Cobalt
Iron
Manganese
Mercury
Methyl Napthalene, 2-
Naphthalene
Nickel
Selenium
Thallium
Vanadium

Source: Building 12

Particulate Hazardous Substance

Mercury

Source: 1 Building 9 / Subs E

Source Hazardous Waste Quantity Value: 1.49

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Arsenic	10000	NA	2.00E-05	2.00E-01
Benz(a)anthracene	1000	2.00E-04	2.00E-05	2.00E-01
Benzo(a)pyrene	10000	2.00E-04	2.00E-05	2.00E+00
Benzo(j,k)fluorene	100	2.00E-04	2.00E-05	2.00E-02
Benzofluoranthene, 3,4-	10000	2.00E-03	2.00E-05	2.00E+01
Chrysene	100	2.00E-04	2.00E-05	2.00E-02
Cyanide	100	NA	2.00E-05	2.00E-03
Di-n-butyl phthalate	10	2.00E-02	2.00E-05	2.00E-01
Endrin	10000	2.00E-03	2.00E-05	2.00E+01
Fluorene	100	2.00E-01	2.00E-05	2.00E+01
Manganese	10000	NA	2.00E-05	2.00E-01
Mercury	10000	2.00E-01	2.00E-05	2.00E+03
Phenanthrene	100	2.00E-02	2.00E-05	2.00E+00
Pyrene	100	2.00E-03	2.00E-05	2.00E-01
Selenium	100	NA	2.00E-05	2.00E-03

AIR PATHWAY WASTE CHARACTERISTICS
NASA LeRC PMU 8 - North Central Area - 11/25/95

Source: 2 Building 5

Source Hazardous Waste Quantity Value: 3.95

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Aluminum	100	NA	2.00E-05	2.00E-03
Antimony	10000	NA	2.00E-05	2.00E-01
Arsenic	10000	NA	2.00E-05	2.00E-01
Benz(a)anthracene	1000	2.00E-04	2.00E-05	2.00E-01
Benzo(a)pyrene	10000	2.00E-04	2.00E-05	2.00E+00
Benzo(j,k)fluorene	100	2.00E-04	2.00E-05	2.00E-02
Benzo(k)fluoranthene	100	2.00E-04	2.00E-05	2.00E-02
Benzofluoranthene, 3,4-	10000	2.00E-03	2.00E-05	2.00E+01
Cadmium	10000	NA	2.00E-05	2.00E-01
Chrysene	100	2.00E-04	2.00E-05	2.00E-02
Cobalt	1	NA	2.00E-05	2.00E-05
Iron	100	NA	2.00E-05	2.00E-03
Magnesium	100	NA	2.00E-05	2.00E-03
Manganese	10000	NA	2.00E-05	2.00E-01
Naphthalene	1	2.00E-01	2.00E-05	2.00E-01
Phenanthrene	100	2.00E-02	2.00E-05	2.00E+00
Pyrene	100	2.00E-03	2.00E-05	2.00E-01
Selenium	100	NA	2.00E-05	2.00E-03
Thallium	1000	NA	2.00E-05	2.00E-02
Vanadium	100	NA	2.00E-05	2.00E-03
Zinc	10	NA	2.00E-05	2.00E-04

Source: 6 Building 12

Source Hazardous Waste Quantity Value: 0.21

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Mercury	10000	2.00E-01	2.00E-05	2.00E+03
Methylene chloride	10	1.00E+00	NA	1.00E+01

Hazardous Substances Found in an Observed Release

Sample ID	Observed Release Hazardous Substance	Particulate Toxicity/ Mobility Value	Gas Toxicity/ Mobility Value

- N/A and/or data not specified

Toxicity/Mobility Value from Source Hazardous Substances:	2.00E+03
Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	2.00E+03
Sum of Source Hazardous Waste Quantity Values:	5.66E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	10

Actual Contamination

No.	Sample ID	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Potential Contamination

Distance Categories Subject to Potential Contamination	Population	Value
Onsite	0.0	0.0000
> 0 to 1/4 mile	5875.0	130.4000
> 1/4 to 1/2 mile	5775.0	28.2000
> 1/2 to 1 mile	19800.0	26.1000
> 1 to 2 miles	58000.0	26.6000
> 2 to 3 miles	164000.0	37.5000
> 3 to 4 miles	188000.0	22.9000
	Potential Contaminantion Factor:	272.0000

Documentation for Population > 0 to 1/4 mile Distance Category:

See Table 3-5 of the RI/FS Report for summary of demographic estimates.

Reference: 2

Nearest Individual Factor

Level of Contamination: Potential
Distance in miles: > 0 to 1

Nearest Individual Value: 7

Resources

Resource Use: YES

Resource Value: 5

Documentation for Resources:

Rocky River Reservation is located in the proximity of LeRC.

Reference:

Actual Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Actual Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value
- N/A and/or data not specified		

==========
Sensitive Environments Actual Contamination Factor: 0.000
(Sum of Sensitive Environments + Wetlands Values)

Potential Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value	Distance Weight	Weighted Value/10
State lands	0.000	25	1.0000	2.500
Sum of Sensitive Environments Weighted Values/10:				2.500

Potential Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value	Distance Weight	Weighted Value/10
- N/A and/or data not specified				

Sensitive Environment Potential Contamination Factor: 3.000

Documentation for Sensitive Environment State lands:

Table 4-23 of the HRS Guidance Manual.

Reference: 1

REFERENCES

1. HRS Guidance Manual: 40 CFR300 Appendix A to Part 300 The Hazard Ranking System 1993 and The Hazard Ranking System Guidance Manual - Interim Final, USEPA Washington D.C.

2. Phase I Remedial Investigation/Feasibility Study, Prepared by R&R International Inc. for NASA Lewis Research Center, Cleveland, OH October 1995

3. HRS Report. Prepared by R&R International Inc. for NASA Lewis Research Center, Cleveland, OH. October 1995

TABLE 8-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 9 / SUBSTATION E (UPR-08-35)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
Tetrachloroethene	0.010	0.005	SS023-001		0.008	N	n/a	
SVOCs								
1,4-Dichlorobenzene	0 330	0.165	SS022-001		0.100	N	n/a	
2-Methylnaphthalene	0.300	0.139	BH055-105	*	0.072	N	n/a	
Acenapthene	0.330	0.165	SS023-001		6.071	Y	Y	suspected local release
Anthracene	0 330	0.152	SS023-001		0.110	N	n/a	
Benzo(a)Pyrene	0.330	0.158	SS022-001		0.450	Y	Y	suspected local release
Benzo(a)anthracene	0.330	0.164	SS022-001		0.470	Y	Y	suspected local release
Benzo(b)fluoranthene	0.330	0.175	SS022-001	*	0.650	Y	Y	suspected local release
Benzo(g,h,l)Perylene	0.330	0.167	SS022-001	*	0.150	N	n/a	
Benzo(k)fluoranthene	0.330	0.146	SS022-001	*	0.290	N	n/a	
Butyl Benzyl Phthalate	0.330	0.184	SS022-001	*	0.240	N	n/a	
Carbazole	0.330	0.165	BH055-005	*	0.100	N	n/a	
Chrysene	0.330	0.171	SS022-001	*	0.520	Y	Y	suspected local release
Di-n-Butyl Phthalate	0.330	0.137	SS022-001	*	0.540	Y	Y	suspected local release
Fluoranthene	0.330	0.153	BH055-005		0.620	Y	Y	suspected local release
Fluorene	0.330	0.157	SS023-001	*	0.660	Y	Y	suspected local release
Ideno(1,2,3-cd)pyrene	0.330	0.16	SS022-001	*	0.170	N	n/a	
Phenanthrene	0.330	0.188	SS023-001	*	0.430	Y	Y	suspected local release
Pyrene	0 330	0.188	SS022-001	*	0.480	Y	Y	suspected local release
bis(2)-Ethylhexyl)Phthalate	0.330	0.123	SS023-001	*	0.130	N	n/a	
Pesticides / PCBs								
Endrin Ketone	0.003	0.00165	SS022-001		0 130	Y	Y	suspected local release

TABLE 8-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 9 / SUBSTATION E (UPR-08-35)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Aroclor-1260	0.0033	0.00763	SS022-001	*	0.025000	Y	Y	suspected local release
Metals								
Aluminum		12820	BH055-001		31300	N	n/a	
Antimony	12	5.28	SS023-001	*	4.600	N	n/a	
Arsenic		12.040	SS023-001	*	60.6000	Y	Y	suspected local release
Barium		78.26	BH055-001		320.000	Y	n/a	suspected local release
Beryllium		0.72	BH055-001		3.4000	Y	n/a	suspected local release
Cadmium		0.51	SS023-001	*	0.690	N	n/a	
Calcium		17475.33	BH055-001		141000	Y	Y	suspected local release
Chromium		19.48	SS023-001		28.50	N	n/a	
Cobalt		13.56	SS022-001		13.000	N	n/a	
Copper		23.07	SS023-001		27.10	N	n/a	
Cyanide	0.5	0.25	BH055-001		14.8000	Y	Y	suspected local release
Iron		26100	SS022-001		24000	N	n/a	
Lead		17.12	SS023-001		29.800	N	n/a	
Magnesium		5576	BH055-001		22200.000	Y	n/a	suspected local release
Manganese		423.53	BH055-001		4520.0	Y	Y	suspected local release
Mercury	0.1	0.05	SS022-001		0.13000	Y	Y	suspected local release
Nickel		28.87	SS022-001		28.10	N	n/a	
Potassium		1621.27	BH055-001		2690.00	N	n/a	
Selenium	0.1	0.23	BH055-001		2.10	Y	Y	suspected local release
Sodium		145	BH055-001	#	899.000	Y	n/a	suspected local release
Vanadium		20.04	BH055-005		19.900	N	n/a	
Zinc		75.01	SS023-001		143.0000	N	n/a	
Radioactivity								

TABLE 8-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 9 / SUBSTATION E (UPR-08-35)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Alpha Particle Radioactivity			SS022-001		16			
Beta Particle Radioactivity			SS023-001		27.20			

Notes:
mean of background samples collected from shallow upland was used as background
all conc's. in ppm nd=0 * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL

TABLE 8-2
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 5 (UPR-08-25)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
1,2-Dichloroethane	0.010	0.005	BH032-301		0.010	N	n/a	
Benzene	0.010	0.005	BH032-015		0.002	N	n/a	
Chloromethane	0.010	0.005	BH032-301		0.010	N	n/a	
Total Xylenes	0.010	0.005	BH032-301		0.004	N	n/a	
Vinyl Chloride	0.010	0.005	BH032-301		0.010	N	n/a	
SVOCs								
1,4-Dichlorobenzene	0.330	0.165	BH032-001		0.072	N	n/a	
2-Methylnaphthalene	0.330	0.139	BH032-011		0.260	N	n/a	
Acenapthene	0.330	0.165	BH032-001		0.051	N	n/a	
Acenaphthylene	0.330	0.165	BH032-001		0.062	N	n/a	
Anthracene	0.330	0.138	BH032-001		0.260	N	n/a	
Benzo(a)Pyrene	0.330	0.165	BH032-001		0.660	Y	Y	site has a history of releases
Benzo(a)anthracene	0.330	0.137	BH032-001		0.790	Y	Y	site has a history of releases
Benzo(b)fluoranthene	0.330	0.137	BH032-001	*	1.100	Y	Y	site has a history of releases
Benzo(g,h,l)Perylene	0.330	0.137	BH032-001	*	0.120	N	n/a	
Benzo(k)fluoranthene	0.330	0.137	BH032-001	*	0.380	Y	Y	site has a history of releases
Carbazole	0.330	0.137	BH032-001	*	0.140	N	n/a	
Chrysene	0.330	0 137	BH032-001	*	0.710	Y	Y	site has a history of releases
Dibenzofuran	0.330	0.137	BH032-001	*	0.065	N	n/a	
Fluoranthene	0.330	0.137	BH032-001	*	1.400	Y	Y	site has a history of releases
Fluorene	0.330	0.137	BH032-001	*	0.130	N	n/a	
Ideno(1,2,3-cd)pyrene	0.330	0.137	BH032-001	*	0.240	N	n/a	
Naphthalene	0.330	0.139	BH032-015		0.920	Y	Y	site has a history of releases

TABLE 8-2
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 5 (UPR-08-25)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Phenanthrene	0.330	0.086	BH032-001	*	1.100	Y	Y	site has a history of releases
Pyrene	0.330	0.137	BH032-001	*	1.300	Y	Y	site has a history of releases
Pesticides / PCBs								
4,4-DDT	0.0033	0.00763	BH032-001	*	0.003800	N	n/a	
Dieldrin	0.0033	0.00763	BH032-001	*	0.011000	N	n/a	
Metals								
Aluminum		12820	BH032-001		8090	N	n/a	
Antimony	12	4.453	BH032-015	*	4.900	N	n/a	
Arsenic		16.240	BH032-011	*	25.1000	N	n/a	
Barium		78.26	BH032-001		63.400	N	n/a	
Beryllium		0.72	BH032-001		0.5100	N	n/a	
Cadmium		0.737	BH032-015	*	16.800	Y	Y	site has a history of releases
Calcium		17475.33	BH032-001		31000	N	n/a	
Chromium		16.15	BH032-015		16.90	N	n/a	
Cobalt		13.56	BH032-001		12.200	N	n/a	
Copper		26.13	BH032-015		44.90	N	n/a	
Iron		27440	BH032-011		26,2	Y	Y	site has a history of releases
Lead		17.12	BH032-001		16.500	N	n/a	
Magnesium		5576	BH032-001		7000.000	N	n/a	
Manganese		423 53	BH032-001	*	422.0	N	n/a	
Nickel		35 37	BH032-015		92.80	N	n/a	
Potassium		2574	BH032-015	*	2060.00	N	n/a	
Selenium	1	0.6	BH032-015		7.30	Y	Y	site has a history of releases
Sodium		212 7	BH032-015	#	306.000	N	n/a	
Thallium	1.00	0.612	BH032-015		5.300	Y	Y	site has a history of releases

TABLE 8-2
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 5 (UPR-08-25)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Vanadium		20.04	BH032-015		75.000	Y	Y	site has a history of releases
Zinc		92.07	BH032-015		618.0000	Y	Y	site has a history of releases
Radioactivity								
Alpha Particle Radioactivity					16	N	n/a	
Beta Particle Radioactivity					27.20	N	n/a	
Groundwater								
VOC								
None Detected						N	n/a	
SVOC								
2-Methylnaphthalene			GW018-001	*	0.00	Y	Y	
Naphthalene			GW018-001	*	0.002	Y	Y	
bis(2-Ethylhexyl)Phthalate		0.006	GW018-001	*	0.001	N	n/a	
Metals								
Aluminum		0.210	GW018-001		12.00	Y	Y	
Antimony		0.006	GW018-001	#	0.04	Y	Y	
Arsenic		0.050	GW018-001	#	0.164	Y	Y	
Barium		2.000	GW018-001	#	0.101	N	n/a	
Cadmium		0.005	GW018-001		0.0077	N	n/a	
Calcium			GW018-001	*	47.000	Y	Y	
Chromium		0.100	GW018-001		0.0537	N	n/a	
Cobalt			GW018-001	#	0 0173	Y	Y	
Copper		1.300	GW018-001	#	0.0559	N	n/a	
Iron		0.300	GW018-001	#	27.30	Y	Y	
Lead		0.015	GW018-001		0 0191	N	n/a	
Magnesium			GW018-001		28.00	Y	Y	

TABLE 8-2
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 5 (UPR-08-25)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Manganese		0.050	GW018-001		0.267	Y	Y	
Nickel		0.100	GW018-001		0.151	N	n/a	
Potassium			GW018-001		31.00	Y	Y	
Selenium		0.050	GW018-001		0.029	N	n/a	
Sodium		20.000	GW018-001		334.00	Y	Y	
Thallium		0.002	GW018-001	#	0.0024	N	n/a	
Vanadium			GW018-001		0.1270	Y	Y	
Zinc		5.000	GW018-001	#	0.294	N	n/a	
General Chemistry								
Bromide			GW018-001		4.00	Y	Y	
Chloride		250.000	GW018-001		54.000	N	n/a	
Fluoride		4	GW018-001		0.4	N	n/a	
Nitrate/Nitrite		10.0000	GW018-001		0.070	N	n/a	
Sulfate		250.0	GW018-001		260	N	n/a	
Total Dissolved Solids		500	GW018-001		1100.0000	N	n/a	

Notes:
mean of background samples collected from shallow upland was used as background for shallow samples
and deep upland was used for deep samples (10 feet and more)
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL
MCLs for water used as background

TABLE 8-3
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 64 (UPR-08-28)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
2-Butanone	0.010	0.005	BH052-009		0.011	Y	Y	Suspected local release
Acetone	0.010	0.007	BH052-009		0.010	N	Y	Suspected local release
Toluene	0.010	0.005	BH052-007		0.005	N	n/a	
Total Xylenes	0.010	0.005	BH052-007		0.003	N	n/a	
SVOCs								
1,4-Dichlorobenzene	0.330	0.165	BH052-007		0.200	N	n/a	
2-Methylnaphthalene	0.330	0.139	BH052-007		0.110	N	n/a	
Acenapthene	0.330	0.165	BH052-001		0.130	N	n/a	
Anthracene	0.330	0.138	BH052-001		0.120	N	n/a	
Benzo(a)Pyrene	0.330	0.165	BH052-001		0.110	N	n/a	
Benzo(a)anthracene	0.330	0.165	BH052-001		0.160	N	n/a	
Benzo(b)fluoranthene	0.330	0.151	BH052-001	*	0.160	N	n/a	
Benzo(k)fluoranthene	0.330	0.165	BH052-001		0.048	N	n/a	
Carbazole	0.330	0.165	BH052-001	*	0.074	N	n/a	
Chrysene	0.330	0.153	BH052-001	*	0.140	N	n/a	
Di-n-Butyl Phthalate	0.330	0.165	BH052-009	*	0.340	Y	Y	Suspected local release
Dibenzofuran	0.330	0.165	BH052-001		0.100	N	n/a	
Fluoranthene	0.330	0.153	BH052-001	*	0.410	Y	Y	Suspected local release
Fluorene	0.330	0.165	BH052-001	*	0.120	N	n/a	
Ideno(1,2,3-cd)pyrene	0.330	0.165	BH052-001	*	0.067	N	n/a	
Naphthalene	0.330	0.139	BH052-007		0.069	N	n/a	
Phenanthrene	0.330	0.086	BH052-001	*	0.330	N	n/a	
Pyrene	0.330	0.115	BH052-001	*	0.300	N	n/a	

TABLE 8-3
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 64 (UPR-08-28)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Metals								
Aluminum		10681	BH052-001		11700	N	n/a	
Antimony	12	4.453	BH052-001	*	3.800	N	n/a	
Arsenic		16.240	BH052-007	*	31.9000	N	n/a	
Barium		51.37	BH052-001		65.400	N	n/a	
Beryllium		0.601	BH052-001		0.6200	N	n/a	
Cadmium		0.737	BH052-007	*	5.700	Y	Y	Suspected local release
Calcium		20450	BH052-001		12100	N	n/a	
Chromium		16.15	BH052-001		15.80	N	n/a	
Cobalt		13.81	BH052-001		15.000	N	n/a	
Copper		26.13	BH052-007		27.40	N	n/a	
Iron		27440	BH052-007		29500	N	n/a	
Lead		13.81	BH052-001		18.900	N	n/a	
Magnesium		8001.3	BH052-001		5940.000	N	n/a	
Manganese		321.9	BH052-001	*	550.0	N	n/a	
Nickel		35.37	BH052-007		62.90	N	n/a	
Potassium		2574	BH052-001	*	1680.00	N	n/a	
Selenium	1	0.6	BH052-009		4.00	Y	Y	Suspected local release
Sodium		212.7	BH052-001	#	300.000	N	n/a	
Thallium		0.612	BH052-007		3.300	Y	Y	Suspected local release
Vanadium		20.04	BH052-009		16.000	N	n/a	
Zinc		92.07	BH052-009		275.0000	N	n/a	
Radioactivity								
Alpha Particle Radioactivity			BH052-009		11.9	N	n/a	
Beta Particle Radioactivity			BH052-007		24.40	N	n/a	

TABLE 8-3
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 64 (UPR-08-28)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

	Background Sample		Release Sample					
Compound	SQL	Conc	Sample#	SQL	Conc	Signif.?	Attrib. to Site?	Comments

Notes:
mean of background samples collected from shallow upland was used as background for shallow samples
and deep upland was used for deep samples (10 feet and more)
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL

TABLE 8-4
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 16 (UPR-08-31)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
1,1,1-Trichloroethane	0.010	0.005	BH033-006		0.004	N	n/a	
Acetone	0.010	0.007	BH034-003		0.027	Y	Y	Suspected local release
Ethylbenzene	0.010	0.005	BH034-003		0.003	N	n/a	
Methylene Chloride	0.010	0.004	BH033-006		0.100	Y	Y	Suspected local release
Total Xylenes	0.010	0.005	BH034-003		0.009	N	n/a	
SVOCs								
1,4-Dichlorobenzene	0.330	0.165	BH034-003		0.078	N	n/a	
Acenapthene	0.330	0.165	BH033-106		0.160	N	n/a	
Anthracene	0.330	0.138	BH033-106		0.370	Y	Y	Suspected local release
Benzo(a)Pyrene	0.330	0.165	BH033-106		0.400	Y	Y	Suspected local release
Benzo(a)anthracene	0.330	0.165	BH033-106		0.700	Y	Y	Suspected local release
Benzo(b)fluoranthene	0 330	0.151	BH033-106	*	0.580	Y	Y	Suspected local release
Benzo(g,h,l)Perylene	0.330	0.165	BH033-106	*	0.130	N	n/a	
Benzo(k)fluoranthene	0.330	0.165	BH033-106	*	0.160	N	n/a	
Carbazole	0.330	0.165	BH033-106	*	0.320	N	n/a	
Chrysene	0.330	0.153	BH033-106	*	0.610	Y	Y	Suspected local release
Dibenzofuran	0.330	0.165	BH033-106	*	0.072	N	n/a	
Fluoranthene	0.330	0.153	BH034-001	*	0.220	N	n/a	
Fluorene	0.330	0.165	BH033-106	*	0.160	N	n/a	
Ideno(1,2,3-cd)pyrene	0.330	0.165	BH033-106	*	0.170	N	n/a	
Naphthalene	0 330	0.139	BH033-106		0.060	N	n/a	
Phenanthrene	0.330	0.086	BH033-106	*	1.500	Y	Y	Suspected local release
Pyrene	0.330	0.115	BH033-106	*	1.200	Y	Y	Suspected local release

TABLE 8-4
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 16 (UPR-08-31)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Pesticides / PCBs								
None Detected								
Metals								
Aluminum		10681	BH034-001		11900	N	n/a	
Antimony	12	4.453	BH033-106	*	4.100	N	n/a	
Arsenic		16.240	BH033-107	*	31.2000	N	n/a	
Barium		51.37	BH034-001		70.400	N	n/a	
Beryllium		0.72	BH034-001		0.8500	N	n/a	
Cadmium		0.737	BH034-006	*	5.700	Y	Y	Suspected local release
Calcium		17475.33	BH034-001		33500	N	n/a	
Chromium		16.15	BH033-007		17.70	N	n/a	
Cobalt		13 81	BH033-006		114.700	Y	Y	Suspected local release
Copper		26.13	BH034-006		48.30	N	n/a	
Iron		27440	BH033-007		33200.000	N	n/a	
Lead		13.81	BH034-003		17.600	N	n/a	
Magnesium		5576	BH033-001		15000.000	N	n/a	
Manganese		423.53	BH034-001	*	676.0	N	n/a	
Mercury		0.05	BH033-006		0.2	Y	Y	Suspected local release
Nickel		35.37	BH033-006		77.30	N	n/a	
Potassium		2574	BH033-007	*	1900.00	N	n/a	
Selenium		0.6	BH033-007		6.90	Y	Y	Suspected local release
Sodium		145	BH034-001	#	809.000	Y	Y	Suspected local release
Thallium		0.612	BH033-007		4.900	Y	Y	Suspected local release
Vanadium		20.04	BH033-007		78.600	Y	Y	Suspected local release
Zinc		92.07	BH033-007		305.0000	Y	Y	Suspected local release

TABLE 8-4
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 16 (UPR-08-31)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Radioactivity								
Alpha Particle Radioactivity			BH033-007		33	N	n/a	
Beta Particle Radioactivity			BH033-007		45.10	N	n/a	

Notes:
mean of background samples collected from shallow upland was used as background for shallow samples
and deep upland was used for deep samples (10 feet and more)
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL

TABLE 8-5
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 66 (UPR-08-34)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
Acetone	0.010	0.007	BH051-009		0.037	Y	Y	Suspected local release
Chloromethane	0.010	0.005	BH051-001	*	0.012	Y	Y	Suspected local release
Ethylbenzene	0.010	0.005	BH051-010	*	0.002	N	n/a	
Toluene	0.010	0.005	BH051-010	*	0.011	Y	Y	Suspected local release
Total Xylenes	0.010	0.005	BH051-010	*	0.006	N	n/a	
Vinyl Chloride	0.010	0.005	BH051-010	*	0.012	Y	Y	Suspected local release
SVOCs								
1,4-Dichlorobenzene	0.330	0.165	BH051-001	*	0.061	N	n/a	
2-Methylnaphthalene	0.330	0.139	BH051-010	*	0.220	N	n/a	
Naphthalene	0.330	0.139	BH051-010	*	0.014	N	n/a	
bis(2-Ethylhexyl) Phthalate	0.330	0.148	BH051-001	*	0.068	N	n/a	
Phenanthrene	0.330	0.086	BH051-010	*	0.038	N	n/a	
Pesticides / PCBs								
None Detected								
Metals								
Aluminum		12820	BH051-001		14700	N	n/a	
Arsenic		16.240	BH051-009	*	29.2000	N	n/a	
Barium		78.26	BH051-001		78.500	N	n/a	
Beryllium		0.72	BH051-001	#	0.5600	N	n/a	
Cadmium		0.737	BH051-010	*	2.800	Y	Y	Suspected local release
Calcium		17475.33	BH051-001		20400	N	n/a	
Chromium		16.15	BH051-010		18.40	N	n/a	
Cobalt		13.56	BH050-001		12.200	N	n/a	

TABLE 8-5
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 66 (UPR-08-34)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Copper		26.13	BH051-010		40.20	N	n/a	
Iron		27440	BH051-009	*	31800.000	N	n/a	
Lead		17.12	BH051-001	*	29.100	N	n/a	
Magnesium		5576	BH051-001		5290.000	N	n/a	
Manganese		423.53	BH051-001		615.0	N	n/a	
Mercury	0.1	0.05	BH051-001		0.26	Y	Y	Suspected local release
Nickel		35.37	BH051-010		27.10	N	n/a	
Potassium		2574	BH051-010		2540.00	N	n/a	
Selenium	1	0.6	BH051-009		9.90	Y	Y	Suspected local release
Sodium		212.7	BH051-010	#	130.000	N	n/a	
Thallium	1.00	0.612	BH051-010	*	3.900	Y	Y	Suspected local release
Vanadium		20.04	BH051-010	*	80.700	Y	Y	Suspected local release
Zinc		92.07	BH051-009		190.0000	N	n/a	
Radioactivity								
Alpha Particle Radioactivity					16	N	n/a	
Beta Particle Radioactivity					27.20	N	n/a	
Groundwater								
SVOC								
2-Methylnaphthalene			GW017-001	*	0.0020	Y	Y	Suspected local release
Naphthalene			GW017-001	*	0.001	Y	Y	Suspected local release
Butyl Benzyl Phthalate		0.100	GW017-001	*	0.002	N	n/a	
VOCS								
Benzene		0.005	GW017-001	*	0.001	N	n/a	
Toluene		1.000	GW017-001	*	0.003	N	n/a	
Total Xylenes		10.000	GW017-001		0.001	N	n/a	

TABLE 8-5
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 66 (UPR-08-34)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Metals								
Aluminum		0.210	GW017-001		28.90	Y	Y	Suspected local release
Antimony		0.006	GW017-001			N	n/a	
Arsenic		0.050	GW017-001		0.01220	N	n/a	
Barium		2.000	GW017-001	#	0.0918	N	n/a	
Cadmium		0.005	GW017-001		0.0364	Y	Y	Suspected local release
Calcium			GW017-001		80.100	Y	Y	Suspected local release
Chromium		0.100	GW017-001		0.0521	N	n/a	
Cobalt			GW017-001		0.1050	Y	Y	Suspected local release
Copper		1.300	GW017-001	#	0.1070	N	n/a	
Iron		0.300	GW017-001		102.00	Y	Y	Suspected local release
Lead		0.015	GW017-001		0.0214	N	n/a	
Magnesium			GW017-001		46.00	Y	Y	Suspected local release
Manganese		0.050	GW017-001		2.470	Y	Y	Suspected local release
Nickel		0.100	GW017-001		0.374	Y	Y	Suspected local release
Potassium			GW017-001		15.00	Y	Y	Suspected local release
Selenium		0.050	GW017-001		0.005	N	n/a	
Sodium		20.000	GW017-001		60.00	Y	Y	Suspected local release
Thallium		0.002	GW017-001	#	0.0097	Y	Y	Suspected local release
Vanadium			GW017-001		0.2970	Y	Y	Suspected local release
Zinc		5.000	GW017-001	#	2.470	N	n/a	
General Chemistry								
Chloride		250.000	GW017-001		250.000	N	n/a	
Fluoride		4	GW017-001		0.1	N	n/a	
Nitrate/Nitrite		10 0000	GW017-001		0.020	N	n/a	

TABLE 8-5
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 66 (UPR-08-34)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Sulfate		250.0	GW017-001		280	N	n/a	
Total Dissolved Solids		500	GW017-001		780.0000	N	n/a	

Notes:
mean of background samples collected from shallow upland was used as background for shallow samples
and deep upland was used for deep samples (10 feet and more)
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL

TABLE 8-6
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 99 (UPR-08-37)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
Not Detected						N	n/a	
SVOCs								
1,4-Dichlorobenzene	0.330	0.165	BH054-001	*	0.200	N	n/a	
Di-n-Butyl Phthalate	0.330	0.137	BH054-001	*	0.210	N	n/a	
bis(2)-Ethylhexyl)Phthalate	0.330	0.123	BH054-001	*	0.077	N	n/a	
Pesticides / PCBs								
None Detected								
Metals								
Aluminum		12820	BH054-005	*	12600	N	n/a	
Arsenic		12.040	BH054-005		17.2000	N	n/a	
Barium		78.26	BH054-005		94.900	N	n/a	
Beryllium		0.72	BH054-005	#	0.9000	N	n/a	
Calcium		17475.33	BH054-001		45900	N	n/a	
Chromium		17.78	BH054-005	*	17.20	N	n/a	
Cobalt		13.56	BH054-005		15.100	N	n/a	
Copper		23.07	BH054-001		25.30	N	n/a	
Iron		26100	BH054-005	*	28200.00	N	n/a	
Lead		17.12	BH054-005		13.600	N	n/a	
Magnesium		5576	BH054-001		10100.000	N	n/a	
Manganese		423.53	BH054-005		1210.0	N	n/a	
Nickel		28.87	BH054-001		28.70	N	n/a	
Potassium		1621.27	BH054-005		2114.00	N	n/a	
Selenium			BH054-001	#	0.36	N	n/a	

TABLE 8-6
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 99 (UPR-08-37)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Sodium		145	BH054-005	#	186.000	N	n/a	
Vanadium		24.14	BH054-001		17.800	N	n/a	
Zinc		75.01	BH054-005		66.4000	N	n/a	
Radioactivity								
Alpha Particle Radioactivity			BH054-001		7.34	N	n/a	
Beta Particle Radioactivity			BH054-001		32.10	N	n/a	

Notes:
mean of background samples collected from shallow upland was used as background for shallow samples
and deep upland was used for deep samples (10 feet and more)
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL

TABLE 8-7
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 12 (UST-08-07)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
1,1,1-Trichloroethane	0.010	0.005	BH029-003	*	0.002	N	n/a	
2-Butanone	0.010	0.006	BH029-003	*	0.002	N	n/a	
Acetone	0.010	0.004	BH029-003	*	0.001	N	n/a	
Methylene Chloride	0.010	0.005	BH029-003		0.045	Y	Y	Suspected local release
SVOCs								
Benzo(a)anthracene	0.330	0.164	BH029-003	*	0.054	N	n/a	
Benzo(b)fluoranthene	0.330	0.175	BH029-003	*	0.062	N	n/a	
Chrysene	0.330	0.171	BH029-003	*	0.062	N	n/a	
Di-n-Butyl Phthalate	0.330	0.137	BH029-003	*	0.067	N	n/a	
Fluoranthene	0.330	0.204	BH029-003	*	0.120	N	n/a	
Phenanthrene	0.330	0.188	BH029-003	*	0.089	N	n/a	
Pyrene	0.330	0.188	BH029-003	*	0.099	N	n/a	
Pesticides / PCBs								
None Detected								
Metals								
Aluminum		12820	BH029-003		9480	N	n/a	
Arsenic		12.040	BH029-003		22.7000	N	n/a	
Barium		78.26	BH029-003		60.500	N	n/a	
Beryllium		0.72	BH029-003	#	0.4900	N	n/a	
Calcium		17475.33	BH029-003		27900	N	n/a	
Chromium		17.78	BH029-003		14.70	N	n/a	
Cobalt		13.56	BH029-003		12.500	N	n/a	
Copper		23.07	BH029-003		25.50	N	n/a	

TABLE 8-7
SIGNIFICANCE ABOVE BACKGROUND

PMU 8 - NORTH CENTRAL
BUILDING 12 (UST-08-07)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Iron		26100	BH029-003		24300.000	N	n/a	
Lead		17.12	BH029-003	*	13.000	N	n/a	
Magnesium		5576	BH029-003		8630.000	N	n/a	
Manganese		423.53	BH029-003	*	479.0	N	n/a	
Mercury	0.1	0.05	BH029-003	*	0.2	Y	Y	Suspected local release
Nickel		28.87	BH029-003		26.80	N	n/a	
Potassium		1621.27	BH029-003		1600.00	N	n/a	
Selenium	1	0.23	BH029-003	#	0.47	N	n/a	
Sodium		145	BH029-003	#	150.000	N	n/a	
Thallium	2.00	0.39	BH029-003	#	0.430	N	n/a	
Vanadium		24.14	BH029-003		15.800	N	n/a	
Zinc		75.01	BH029-003		69.5000	N	n/a	
Radioactivity								
Alpha Particle Radioactivity			BH029-003		9	N	n/a	
Beta Particle Radioactivity			BH029-003		20.30	N	n/a	

Notes:
mean of background samples collected from shallow upland was used as background
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL

PMU 9

Record Information

1. Site Name: NASA LeRC - South Central Area
   (as entered in CERCLIS)

2. Site CERCLIS Number:

3. Site Reviewer:

4. Date: 10/21/95

5. Site Location: Cleveland/Cuyahoga/OH
   (City/County,State)

6. Congressional District:

7. Site Coordinates: Single

   Latitude: 41 24'45.0" Longitude: 81

Site Description

1. Setting: Urban

2. Current Owner: Federal

3. Current Site Status: Active

4. Years of Operation: Active Site , from and to dates: Since 1941

5. How Initially Identified: Other - Preliminary Assessment

6. Entity Responsible for Waste Generation:

   - Federal Facility
   - Other

7. Site Activities/Waste Deposition:

   - Waste Piles

Waste Description

8. Wastes Deposited or Detected Onsite:

- Organic Chemicals
- Inorganic Chemicals
- Metals
- Radioactive Waste
- Oily Waste
- Lead

Response Actions

9. Response/Removal Actions:

RCRA Information

10. For All Active Facilities, RCRA Site Status:

- Not Applicable

Demographic Information

11. Workers Present Onsite: Yes

12. Distance to Nearest Non-Worker Individual: > 10 Feet - 1/4 Mile

13. Residential Population Within 1 Mile: 4000.0

14. Residential Population Within 4 Miles: 10000.0

Water Use Information

15. Local Drinking Water Supply Source:

- Ground Water (within 4 mile distance limit)
- Surface Water (within 15 mile distance limit)

16. Total Population Served by Local Drinking Water Supply Source: 1500000.0

17. Drinking Water Supply System Type for Local Drinking Water Supply Sources:

    - Municipal (Services over 25 People)

18. Surface Water Adjacent to/Draining Site:

    - Stream

HRS DOCUMENTATION RECORD

NASA LeRC - South Central Area - 11/27/95

1. Site Name: NASA LeRC - South Central Area
   (as entered in CERCLIS)

2. Site CERCLIS Number:

3. Site Reviewer:

4. Date: 10/21/95

5. Site Location: Cleveland/Cuyahoga/OH
   (City/County,State)

6. Congressional District:

7. Site Coordinates: Single

   Latitude: 41 24'45.0" Longitude: 81

	Score
Ground Water Migration Pathway Score (Sgw)	0.10
Surface Water Migration Pathway Score (Ssw)	0.12
Soil Exposure Pathway Score (Ss)	3.63
Air Migration Pathway Score (Sa)	0.29

Site Score	1.82

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

GROUND WATER MIGRATION PATHWAY SCORESHEET
NASA LeRC - South Central Area - 11/27/95

GROUND WATER MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release to an Aquifer Aquifer: Shale Bedrock Aquife		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	3
2c. Depth to Aquifer	5	5
2d. Travel Time	35	15
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	230
3. Likelihood of Release	550	230
Waste Characteristics		
4. Toxicity/Mobility	*	1.00E+02
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	6
Targets		
7. Nearest Well	50	5.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	1.00E+00
8d. Population (lines 8a+8b+8c)	**	1.00E+00
9. Resources	5	0.00E+00
10. Wellhead Protection Area	20	0.00E+00
11. Targets (lines 7+8d+9+10)	**	6.00E+00
12. Targets (including overlaying aquifers)	**	6.00E+00
13. Aquifer Score	100	0.10
GROUND WATER MIGRATION PATHWAY SCORE (Sgw)	100	0.10

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC - South Central Area - 11/27/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release by Overland Flow		
2a. Containment	10	3
2b. Runoff	25	1
2c. Distance to Surface Water	25	25
2d. Potential to Release by Overland Flow [lines 2a(2b+2c)]	500	78
3. Potential to Release by Flood		
3a. Containment (Flood)	10	0
3b. Flood Frequency	50	0
3c. Potential to Release by Flood (lines 3a x 3b)	500	0
4. Potential to Release (lines 2d+3c)	500	78
5. Likelihood of Release	550	78
Waste Characteristics		
6. Toxicity/Persistence	*	1.00E+04
7. Hazardous Waste Quantity	*	10
8. Waste Characteristics	100	18
Targets		
9. Nearest Intake	50	0.00E+00
10. Population		
10a. Level I Concentrations	**	0.00E+00
10b. Level II Concentrations	**	0.00E+00
10c. Potential Contamination	**	2.00E+00
10d. Population (lines 10a+10b+10c)	**	2.00E+00
11. Resources	5	5.00E+00
12. Targets (lines 9+10d+11)	**	7.00E+00
13. DRINKING WATER THREAT SCORE	100	0.12

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC - South Central Area - 11/27/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	78
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	5.00E+05
16. Hazardous Waste Quantity	*	10
17. Waste Characteristics	1000	32
Targets		
18. Food Chain Individual	50	0.00E+00
19. Population		
19a. Level I Concentrations	**	0.00E+00
19b. Level II Concentrations	**	0.00E+00
19c. Pot. Human Food Chain Contamination	**	3.31E-03
19d. Population (lines 19a+19b+19c)	**	3.31E-03
20. Targets (lines 18+19d)	**	3.31E-03
21. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC - South Central Area - 11/27/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	78
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioacc.	*	5.00E+06
24. Hazardous Waste Quantity	*	10
25. Waste Characteristics	1000	56
Targets		
26. Sensitive Environments		
26a. Level I Concentrations	**	0.00E+00
26b. Level II Concentrations	**	0.00E+00
26c. Potential Contamination	**	5.00E-02
26d. Sensitive Environments (lines 26a+26b+26c)	**	5.00E-02
27. Targets (line 26d)	**	5.00E-02
28. ENVIRONMENTAL THREAT SCORE	60	0.00
29. WATERSHED SCORE	100	0.12
30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof)	100	0.12

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC - South Central Area - 11/27/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release to Aquifer Aquifer: Shale Bedrock Aquife		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	3
2c. Depth to Aquifer	5	5
2d. Travel Time	35	15
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	230
3. Likelihood of Release	550	230
Waste Characteristics		
4. Toxicity/Mobility/Persistence	*	1.00E+02
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	6
Targets		
7. Nearest Intake	50	0.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	8.00E-01
8d. Population (lines 8a+8b+8c)	**	8.00E-01
9. Resources	5	5.00E+00
10. Targets (lines 7+8d+9)	**	5.80E+00
11. DRINKING WATER THREAT SCORE	100	0.10

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC - South Central Area - 11/27/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
12. Likelihood of Release (same as line 3)	550	230
Waste Characteristics		
13. Toxicity/Mobility/Persistence/Bioacc.	*	5.00E+03
14. Hazardous Waste Quantity	*	10
15. Waste Characteristics	1000	10
Targets		
16. Food Chain Individual	50	0.00E+00
17. Population		
17a. Level I Concentrations	**	0.00E+00
17b. Level II Concentrations	**	0.00E+00
17c. Pot. Human Food Chain Contamination	**	1.66E-03
17d. Population (lines 17a+17b+17c)	**	1.66E-03
18. Targets (lines 16+17d)	**	1.66E-03
19. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC - South Central Area - 11/27/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
20. Likelihood of Release (same as line 3)	550	230
Waste Characteristics		
21. Ecosystem Tox./Mobility/Persist./Bioacc.	*	5.00E+04
22. Hazardous Waste Quantity	*	10
23. Waste Characteristics	1000	18
Targets		
24. Sensitive Environments		
24a. Level I Concentrations	**	0.00E+00
24b. Level II Concentrations	**	0.00E+00
24c. Potential Contamination	**	2.50E-02
24d. Sensitive Environments (lines 24a+24b+24c)	**	2.50E-02
25. Targets (line 24d)	**	2.50E-02
26. ENVIRONMENTAL THREAT SCORE	60	0.00
27. WATERSHED SCORE	100	0.10
28. SW: GW to SW COMPONENT SCORE (Sgs)	100	0.10

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SOIL EXPOSURE PATHWAY SCORESHEET
NASA LeRC - South Central Area - 11/27/95

SOIL EXPOSURE PATHWAY Factor Categories & Factors RESIDENT POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
1. Likelihood of Exposure	550	550
Waste Characteristics		
2. Toxicity	*	1.00E+04
3. Hazardous Waste Quantity	*	10
4. Waste Characteristics	100	18
Targets		
5. Resident Individual	50	0.00E+00
6. Resident Population		
6a. Level I Concentrations	**	0.00E+00
6b. Level II Concentrations	**	0.00E+00
6c. Resident Population (lines 6a+6b)	**	0.00E+00
7. Workers	15	5.00E+00
8. Resources	5	0.00E+00
9. Terrestrial Sensitive Environments	***	2.50E+01
10. Targets (lines 5+6c+7+8+9)	**	3.00E+01
11. RESIDENT POPULATION THREAT SCORE	**	2.97E+05

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

SOIL EXPOSURE PATHWAY SCORESHEET
NASA LeRC - South Central Area - 11/27/95

SOIL EXPOSURE PATHWAY Factor Categories & Factors NEARBY POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
12. Attractiveness/Accessibility	100	5.00E+00
13. Area of Contamination	100	2.00E+01
14. Likelihood of Exposure	500	5.00E+00
Waste Characteristics		
15. Toxicity	*	1.00E+04
16. Hazardous Waste Quantity	*	10
17. Waste Characteristics	100	18
Targets		
18. Nearby Individual	1	1.00E+00
19. Population Within 1 Mile	**	3.00E+01
20. Targets (lines 18+19)	**	3.10E+01
21. NEARBY POPULATION THREAT SCORE	**	2.79E+03
SOIL EXPOSURE PATHWAY SCORE (Ss)	100	3.63

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

AIR PATHWAY SCORESHEET
NASA LeRC - South Central Area - 11/27/95

AIR MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release		
2a. Gas Potential to Release	500	0
2b. Particulate Potential to Release	500	84
2c. Potential to Release	500	84
3. Likelihood of Release	550	84
Waste Characteristics		
4. Toxicity/Mobility	*	2.00E-01
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	1
Targets		
7. Nearest Individual	50	7.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	2.72E+02
8d. Population (lines 8a+8b+8c)	**	2.72E+02
9. Resources	5	5.00E+00
10. Sensitive Environments		
10a. Actual Contamination	***	0.00E+00
10b. Potential Contamination	***	0.00E+00
10c. Sens. Environments(lines 10a+10b)	***	0.00E+00
11. Targets (lines 7+8d+9+10c)	**	2.84E+02
AIR MIGRATION PATHWAY SCORE (Sa)	100	2.89E-01

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 49

a. Wastestream ID	Contam Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Beryllium	2.8E+00	ppm	NO	J
Copper	1.3E+02	ppm	NO	
Magnesium	2.0E+04	ppm	NO	
Manganese	3.5E+03	ppm	NO	

Documentation for Constituents:

See Table 5-61 of the RI/FS Report and Table PMU9-5 of the HRS Report for concentrations significantly above background

Reference: 2,3

Documentation for Wastestream Quantity:

Mass of contaminated soil unknown

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 49
b. Source Type	Contaminated Soil
c. Secondary Source Type	N.A.
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00 | 30000.00
e. Source Volume/Area Value	8.82E-01
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	8.82E-01

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Beryllium	< 2	NO	2.8E+00	ppm
Copper	> 2	NO	1.3E+02	ppm
Magnesium	< 2	NO	2.0E+04	ppm
Manganese	< 2	NO	3.5E+03	ppm

Documentation for Source Hazardous Substances:

See Table 5-61 of the RI/FS Report and Table PMU9-5 of the HRS Report for concentrations significantly above background

Reference: 2,3

Documentation for Source Area:

Estimated area of grass covered lawn area

Reference: 2

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Bldg 87 Wind Tunnel

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Bldg 87 Wind Tunnel
b. Source Type	Contaminated Soil
c. Secondary Source Type	N.A.
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00 | 0.00
e. Source Volume/Area Value	0.00E+00
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	0.00E+00

Documentation for Source Hazardous Substances:

Suspected lead contamination from rain runoff of lead paint covered wind tunnel

Reference:

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No.	Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1	Building 49	GW-SW-SE-A	8.82E-01	0.00E+00	8.82E-01
2	Bldg 87 Wind Tunnel	GW-SE-A	0.00E+00	0.00E+00	0.00E+00

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values		HWQVs*	WCVs**
Ground Water	Toxicity/Mobility	1.00E+02	10	6
SW: Overland Flow, DW	Tox./Persistence	1.00E+04	10	18
SW: Overland Flow, HFC	Tox./Persis./Bioacc.	5.00E+05	10	32
SW: Overland Flow, Env	Etox./Persis./Bioacc.	5.00E+06	10	56
SW: GW to SW, DW	Tox./Persistence	1.00E+02	10	6
SW: GW to SW, HFC	Tox./Persis./Bioacc.	5.00E+03	10	10
SW: GW to SW, Env	Etox./Persis./Bioacc.	5.00E+04	10	18
Soil Exposure:Resident	Toxicity	1.00E+04	10	18
Soil Exposure: Nearby	Toxicity	1.00E+04	10	18
Air	Toxicity/Mobility	2.00E-01	10	1

* Hazardous Waste Quantity Factor Values
** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

No.	Aquifer ID	Type	Overlaying No.	Inter-Connected with	Likelihood of Release	Targets
1	Shale Bedrock Aquife	Non K	0	0	230	6.00E+00

Containment

No.	Source ID	HWQ Value	Containment Value
1	Building 49	8.82E-01	10
2	Bldg 87 Wind Tunnel	0.00E+00	9

Containment Factor 10

Documentation for Ground Water Containment, Source Building 49:

Unplanned releases have been suspected. See Section 4.9.5 of the RI/FS Report.

Reference: 2

Documentation for Ground Water Containment, Source Bldg 87 Wind Tunnel:

50% area asphalt, remainder bare soil to moderate vegetated soil

Reference:

Net Precipitation

Net Precipitation (inches) N.A.

Aquifer: Shale Bedrock Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Shale Bedrock Aquifer Aquifer:

Lithological information available from drilling logs indicate the bedrock to be shale. The only other aquifers in this area are perched water tables which are laterally discontinuous and localized. For HRS purposes, these perched water zones are not considered. See Section 3.3 of the RI/FS Report.

Reference: 2

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination
- N/A and/or data not specified				

Observed Release Factor 0

Documentation for Well 09-MW009:

See Figure 2-6 of the RI/FS Report for location of monitoring wells and Table 2-2 of the RI/FS Report for list of wells. 2 monitoring wells have been installed in PMU9.

Reference: 2

Documentation for Well 09-MW014:

See Table 2-2 and Figure 2-6 of the RI/FS Report.

Reference: 2

POTENTIAL TO RELEASE

Containment

Containment Factor	10	

Net Precipitation

Net Precipitation Factor	3	

Depth to Aquifer

A. Depth of Hazardous Substances	20.00	feet

Documentation for Depth of Hazardous Substances:

Deepest contamination was encountered in sample bh056-010 at 20 feet level. See Tables PMU9-1 through PMU9-5 of the HRS Report for concentrations significantly above background.

Reference: 3

B. Depth to Aquifer from Surface	32.00	feet

Documentation for Depth to Aquifer from Surface :

Drilling logs included in Appendix C of the RI/FS Report indicate shale bedrock aquifer at 20-55 feet (average 32 feet).
Deepest contamination encountered at 20 feet level (bh056-010, See Table 9-1 of the HRS Report).

Reference: 2,3

C. Depth to Aquifer (B - A)	12.00	feet
Depth to Aquifer Factor	5	

Travel Time

Are All Layers Karst?	NO	
Thickness of Layer(s) with Lowest Conductivity	12.00	feet

Documentation for Thickness of Layers with Lowest Conductivity:

Drilling logs included in Appendix C of the RI/FS Report indicate the layers above shale bedrock range consist of clay, and silty clay.

Reference: 2

Hydraulic Conductivity (cm/sec)	1.0E-06

Documentation for Hydraulic Conductivity:

See Table 3-6 of the HRS Guidance Manual.

Reference: 1

Travel Time Factor	15

==========

Potential to Release Factor 230

Source: 1 Building 49

Source Hazardous Waste Quantity Value: 0.88

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Beryllium	10000	1.00E-02	1.00E+02
Copper	100	1.00E-02	1.00E+00
Magnesium	100	2.00E-05	2.00E-03
Manganese	10000	1.00E-02	1.00E+02

Source: 2 Bldg 87 Wind Tunnel

Source Hazardous Waste Quantity Value: 0.00

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value

Hazardous Substances Found in an Observed Release

Well No.	Observed Release Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value

- N/A and/or data not specified

Toxicity/Mobility Value from Source Hazardous Substances:	1.00E+02
Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	1.00E+02
Sum of Source Hazardous Waste Quantity Values:	8.82E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	6

Population by Well

No.	Well ID	Sample Type	Distance (miles)	Level of Contamination	Population

- N/A and/or data not specified

Level I Population Factor: 0.00

Level II Population Factor: 0.00

Potential Contamination by Distance Category

Distance Category (miles)	Population	Value
> 0 to 1/4	0.0	0.00E+00
> 1/4 to 1/2	0.0	0.00E+00
> 1/2 to 1	0.0	0.00E+00
> 1 to 2	50.0	1.00E+00
> 2 to 3	0.0	0.00E+00
> 3 to 4	0.0	0.00E+00

Potential Contamination Factor: 1.000

Nearest Well

Level of Contamination: Potential
Distance in miles: 1.50

Nearest Well Factor: 5.00E+00

Documentation for Nearest Well:

The closest water well on record with the Ohio Division of Water is located 1/4 mile west of the LeRC site boundary on Cleveland Hopkins International Airport property. This is inactive. Only 7 permitted drinking water wells were identified within 4 miles of LeRC. These wells are located between 1.5 and 3 miles south and southeast of LeRC and serve an estimated 50 individuals. See Section 3.3 and 3.8.2 of the RI/FS Report.

Reference: 2

Resources

Resource Use: NO

Resource Factor: 0.00E+00

Documentation for Resources:

Groundwater is not a primary drinking source in this area. See Section 3.3 of the RI/FS Report.

Reference: 2

Wellhead Protection Area

No wellhead protection area

Wellhead Protection Area Factor: 0.00E+00

Documentation for Wellhead Protection Area:

Criteria specified in Section 3.3.4 of the HRS Guidance Manual does not apply.

Reference: 1

SURFACE WATER PATHWAY SEGMENT SUMMARY
NASA LeRC - South Central Area - 11/27/95

No.	Segment ID	Segment Type	Water Type	Start Point (mi)	End Point (mi)	Average Flow (cfs)
1	Abram Creek	River	Fresh	0.00	0.45	6
2	Rocky River	River	Fresh	0.45	9.60	113
3	Lake Erie	Moderate D	Fresh	9.60	15.00	N.A.

Documentation for segment: Abram Creek:

See section 3.8.1 of the RI/FS Report. Flow calculated based on Table 3-3.

Reference: 2

Documentation for segment: Rocky River:

See Section 3.8.1 of the RI/FS Report. Flow calculated based on Table 3-3 of the RI/FS Report

Reference:

OBSERVED RELEASE

No.	Sample ID	Sample Type	Distance (miles)	Level of Contamination DW	HFC	Env

- N/A and/or data not specified

==========

Observed Release Factor 0

POTENTIAL TO RELEASE

Potential to Release by Overland Flow

Containment

No.	Source ID	HWQ Value	Containment Value
1	Building 49	8.82E-01	3

Containment Factor: 3

Documentation for Overland Flow Containment, Source Building 49:

Contaminated soil beneath asphalt; remainder of site beneath Building 49 or maintained grass lawn; site surfaces drained by storm sewer system

Reference:

Documentation for Overland Flow Containment, Source Bldg 87 Wind Tunnel:

All runoff will be controlled by storm sewer system

Reference:

Distance to Surface Water

Distance to Surface Water:	0.0 feet
Distance to Surface Water Factor:	25

Runoff

A. Drainage Area:	5.0 acres
B. 2-year, 24-hour Rainfall:	2.8 inches

Documentation for Rainfall:

See Section 3.5 of the RI/FS Report for precipitation information.

Reference: 2

C. Soil Group:	C

Moderately-fine textured soils with low infiltration rates

Documentation for Soil Group:

Drilling logs included in Appendix C of the RI/FS Report indicate the soils to be silt, silty clay, and clay.

Reference: 2

Runoff Factor:	1

==========

Potential to Release by Overland Flow Factor:	78

Potential to Release by Flood

No.	Source ID	HWQ Value	Flood Containment Value	Flood Frequency Value	Potential to Release by Flood

- N/A and/or data not specified

==========

Potential to Release by Flood Factor: 0

Source: 1 Building 49

Source Hazardous Waste Quantity Value: 0.88

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Beryllium	10000	1.00E+00	1.00E+04
Copper	0	1.00E+00	0.00E+00
Magnesium	0	1.00E+00	0.00E+00
Manganese	10000	1.00E+00	1.00E+04

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value

- N/A and/or data not specified

Toxicity/Persistence Value from Source Hazardous Substances:	1.00E+04
Toxicity/Persistence Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Persistence Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	8.82E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

==========

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

==========

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served
1 Crown Intake Crib	0	375000.0
2 Division Intake Cri	0	375000.0
3 Kirtland Intake Cri	0	375000.0
4 Nottingham Intake C	0	375000.0

Documentation for Intake Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report. Total population served (1.5 million equally split among the four intakes.

Reference: 2

Type of Surface Water Body	Total Population	Dilution-Weighted Population
Moderate Ocean Zone or Great Lake	1125000.0	16.0

Dilution-Weighted Population Served
by Potentially Contaminated Intakes: 16.0

Potential Contamination Factor: 2.0

Nearest Intake

Location of Nearest Drinking Water Intake: Crown Intake Crib
Distance from the Probable Point of Entry: 12.60 miles
Type of Surface Water Body: Moderate D
Dilution Weight: 0.0000100
Highest Level of Contamination: Potential

Nearest Intake Factor: 0.00

Documentation for Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report. Total population served (1.5 million equally split among the four intakes.

Reference: 2

Resources

Resource Use: YES

Resource Value: 5.00E+00

Source: 1 Building 49

Source Hazardous Waste Quantity Value: 0.88

Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Beryllium	10000	1.00E+00	5.00E+01	5.00E+05
Copper	0	1.00E+00	5.00E+04	0.00E+00
Magnesium	0	1.00E+00	5.00E-01	0.00E+00
Manganese	10000	1.00E+00	5.00E-01	5.00E+03

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Toxicity/Persistence/Bioaccumulation Value from Source Hazardous Substances:	5.00E+05
Toxicity/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Persistence/Bioaccumulation Factor:	5.00E+05
Sum of Source Hazardous Waste Quantity Values:	8.82E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	32

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Fishery	Annnual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di
2 Rocky River	3000.0	River	113	3.0	1.00E-02	3.00E-02
3 Lake Erie	500000.0	Moderate	0	310.0	1.00E-05	3.10E-03

Sum of (Pi*Di): 3.31E-02

Potential Human Food Chain Contamination Factor: 3.31E-03

Food Chain Individual

Location of Nearest Fishery: Rocky River
Distance from the Probable Point of Entry: 0.45 miles
Type of Surface Water Body: River
Dilution Weight: 0.0100000
Level of Contamination: Potential

Food Chain Individual Factor: 0.00

Documentation for Rocky River:

See Section 3.8.1 of the RI/FS Report. Flow calculated based on Table 3-3 of the RI/FS Report

Reference:

Source: 1 Building 49

Source Hazardous Waste Quantity Value: 0.88

Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Beryllium	0	1.00E+00	5.00E+01	0.00E+00
Copper	100	1.00E+00	5.00E+04	5.00E+06
Magnesium	0	1.00E+00	5.00E-01	0.00E+00
Manganese	0	1.00E+00	5.00E+04	0.00E+00

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Ecotoxicity/Persistence/Bioaccummulation Value from Source Hazardous Substances:	5.00E+06
Ecotoxicity/Persistence/Bioaccummulation Value from Observed Release Hazardous Substances:	0.00E+00
Ecotoxicity/Persistence/Bioaccummulation Factor:	5.00E+06
Sum of Source Hazardous Waste Quantity Values:	8.82E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	56

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Sensitive Environment Value
River	1 Rocky River Reservn	50

Wetlands

Type of Surface Water Body	Sensitive Environment	Wetlands Frontage	Wetlands Value

- N/A and/or data not specified

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT ENVIRONMENTAL THREAT TARGETS
NASA LeRC - South Central Area - 11/27/95

Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)
Moderate to Large Stream	50	0	1.00E-02	5.00E-01

Sum of Dj(Wj+Sj): 5.00E-01
Sum of Dj(Wj+Sj)/10: 5.00E-02

==========

Potential Contamination Sensitive Environment Factor: 5.00E-02

Containment

No.	Source ID	HWQ Value	Containment Value
1	Building 49	8.82E-01	10
2	Bldg 87 Wind Tunnel	0.00E+00	9

Containment Factor 10

Documentation for Ground Water Containment, Source Building 49:

Unplanned releases have been suspected. See Section 4.9.5 of the RI/FS Report.

Reference: 2

Documentation for Ground Water Containment, Source Bldg 87 Wind Tunnel:

50% area asphalt, remainder bare soil to moderate vegetated soil

Reference:

Net Precipitation

Net Precipitation (inches) 0.00

Aquifer: Shale Bedrock Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Shale Bedrock Aquifer Aquifer:

Lithological information available from drilling logs indicate the bedrock to be shale. The only other aquifers in this area are perched water tables which are laterally discontinuous and localized. For HRS purposes, these perched water zones are not considered. See Section 3.3 of the RI/FS Report.

Reference: 2

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination

- N/A and/or data not specified

==========

Observed Release Factor 0

Documentation for Well 09-MW009:

See Figure 2-6 of the RI/FS Report for location of monitoring wells and Table 2-2 of the RI/FS Report for list of wells. 2 monitoring wells have been installed in PMU9.

Reference: 2

Documentation for Well 09-MW014:

See Table 2-2 and Figure 2-6 of the RI/FS Report.

Reference: 2

POTENTIAL TO RELEASE

Ground Water to Surface Water Angle

Probable Point of Entry	0.18	miles
Angle Theta	180	

Containment

Containment Factor	10

Net Precipitation

Net Precipitation Factor	3

Depth to Aquifer

A. Depth of Hazardous Substances	20.00	feet

Documentation for Depth of Hazardous Substances:

Deepest contamination was encountered in sample bh056-010 at 20 feet level. See Tables PMU9-1 through PMU9-5 of the HRS Report for concentrations significantly above background.

Reference: 3

B. Depth to Aquifer from Surface	32.00	feet

Documentation for Depth to Aquifer from Surface :

Drilling logs included in Appendix C of the RI/FS Report indicate shale bedrock aquifer at 20-55 feet (average 32 feet). Deepest contamination encountered at 20 feet level (bh056-010, See Table 9-1 of the HRS Report).

Reference: 2,3

C. Depth to Aquifer (B - A)	12.00	feet
Depth to Aquifer Factor	5	

Travel Time

Are All Layers Karst?	NO	
Thickness of Layer(s) with Lowest Conductivity	12.00	feet

Documentation for Thickness of Layers with Lowest Conductivity:

Drilling logs included in Appendix C of the RI/FS Report indicate the layers above shale bedrock range consist of clay, and silty clay.

Reference: 2

Hydraulic Conductivity (cm/sec)	1.0E-06

Documentation for Hydraulic Conductivity:

See Table 3-6 of the HRS Guidance Manual.

Reference: 1

Travel Time Factor	15

==========

Potential to Release Factor	230

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
NASA LeRC - South Central Area - 11/27/95

Source: 1 Building 49

Source Hazardous Waste Quantity Value: 0.88

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobililty/ Persistence
Beryllium	10000	1.00E+00	1.00E-02	1.00E+02
Copper	0	1.00E+00	1.00E-02	0.00E+00
Magnesium	0	1.00E+00	2.00E-05	0.00E+00
Manganese	10000	1.00E+00	1.00E-02	1.00E+02

Source: 2 Bldg 87 Wind Tunnel

Source Hazardous Waste Quantity Value: 0.00

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobililty/ Persistence

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Toxicity Factor Value	Persist. Value	Toxicity/ Persistence

- N/A and/or data not specified

Toxicity/Mobility/Persistence Value from Source Hazardous Substances:	1.00E+02
Toxicity/Mobility/Persistence Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility/Persistence Factor:	1.00E+02
Sum of Source Hazardous Waste Quantity Values:	8.82E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	6

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

==========

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population

- N/A and/or data not specified

==========

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served
1 Crown Intake Crib	0	375000.0
2 Division Intake Cri	0	375000.0
3 Kirtland Intake Cri	0	375000.0
4 Nottingham Intake C	0	375000.0

Documentation for Intake Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report. Total population served (1.5 million equally split among the four intakes.

Reference: 2

Type of Surface Water Body	Total Population	Dilution-Weighted Population
Moderate Ocean Zone or Great Lake	1125000.0	16.0

Dilution-Weighted Population Served
by Potentially Contaminated Intakes: 16.0

Potential Contamination Factor: 0.8

Nearest Intake

Location of Nearest Drinking Water Intake: Crown Intake Crib
Distance from the Probable Point of Entry: 12.60 miles
Type of Surface Water Body: Moderate D
Dilution Weight: 0.0000050
Highest Level of Contamination: Potential

Nearest Intake Factor: 0.00

Documentation for Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report. Total population served (1.5 million equally split among the four intakes.

Reference: 2

Resources

Resource Use: YES

Resource Value: 5.00E+00

Source: 1 Building 49

Source Hazardous Waste Quantity Value: 0.88

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio-accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value
Beryllium	10000	1.00E+00	1.00E-02	5.00E+01	5.00E+03
Copper	0	1.00E+00	1.00E-02	5.00E+04	0.00E+00
Magnesium	0	1.00E+00	2.00E-05	5.00E-01	0.00E+00
Manganese	10000	1.00E+00	1.00E-02	5.00E-01	5.00E+01

SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS
NASA LeRC - South Central Area - 11/27/95

Source: 2 Bldg 87 Wind Tunnel

Source Hazardous Waste Quantity Value: 0.00

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio-accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Toxicity Value	Persist. Value	Bio-accum. Value	Toxicity/ Persistence Bioaccum. Value

- N/A and/or data not specified

Toxicity/Mobility/Persistence/Bioaccumulation Value from Source Hazardous Substances:	5.00E+03
Toxicity/Mobility/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility/Persistence/Bioaccumulation Factor:	5.00E+03
Sum of Source Hazardous Waste Quantity Values:	8.82E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	10

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Fishery	Annnual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di
2 Rocky River	3000.0	River	113	3.0	5.00E-03	1.50E-02
3 Lake Erie	500000.0	Moderate	0	310.0	5.00E-06	1.55E-03

Sum of (Pi*Di): 1.65E-02

Potential Human Food Chain Contamination Factor: 1.66E-03

Food Chain Individual

Location of Nearest Fishery: Rocky River
Distance from the Probable Point of Entry: 0.45 miles
Type of Surface Water Body: River
Dilution Weight: 0.0050000
Level of Contamination: Potential

Food Chain Individual Factor: 0.00

Documentation for Rocky River:

See Section 3.8.1 of the RI/FS Report. Flow calculated based on Table 3-3 of the RI/FS Report

Reference:

Source: 1 Building 49

Source Hazardous Waste Quantity Value: 0.88

Hazardous Substance	Eco-toxicity Value	Persist. Value	Mob. Value	Bio-accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value
Beryllium	0	1.00E+00	1.00E-02	5.00E+01	0.00E+00
Copper	100	1.00E+00	1.00E-02	5.00E+04	5.00E+04
Magnesium	0	1.00E+00	2.00E-05	5.00E-01	0.00E+00
Manganese	0	1.00E+00	1.00E-02	5.00E+04	0.00E+00

Source: 2 Bldg 87 Wind Tunnel

Source Hazardous Waste Quantity Value: 0.00

Hazardous Substance	Eco-toxicity Value	Persist. Value	Mob. Value	Bio-accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Eco-toxicity Value	Persist. Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Ecotoxicity/Mobility/Persistence/Bioaccummulation Value from Source Substances:	5.00E+04
Ecotoxicity/Mobility/Persistence/Bioaccummulation Value from Observed Hazardous Substances:	0.00E+00
Ecotoxicity/Mobility/Persistence/Bioaccummulation Factor:	5.00E+04
Sum of Source Hazardous Waste Quantity Values:	8.82E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Sensitive Environment Value
River	1 Rocky River Reservn	50

Wetlands

Type of Surface Water Body	Sensitive Environment	Wetlands Frontage	Wetlands Value

- N/A and/or data not specified

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT TARGETS
NASA LeRC - South Central Area - 11/27/95

Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)
Moderate to Large Stream	50	0	5.00E-03	2.50E-01

Sum of Dj(Wj+Sj): 2.50E-01
Sum of Dj(Wj+Sj)/10: 2.50E-02

==========

Potential Contamination Sensitive Environment Factor: 2.50E-02

Likelihood of Exposure

No.	Source ID	Level of Contamination
1	Building 49	Level I

Likelihood of Exposure Factor: 550

Documentation for Area of Contamination, Source Building 49:

Estimated area of accessible lawn area = 30,000 sq ft

Reference: 2

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Beryllium	< 2	2.8E+00	1.4E-01	2.9E+03	ppm
1	Copper	> 2	1.3E+02	0.0E+00	0.0E+00	ppm
1	Magnesium	< 2	2.0E+04	0.0E+00	0.0E+00	ppm
1	Manganese	< 2	3.5E+03	0.0E+00	2.9E+03	ppm

Documentation for Source Building 49, Contaminants:

See Table 5-61 of the RI/FS Report and Table PMU9-5 of the HRS Report for concentrations significantly above background

Reference: 2,3

Documentation for Source Bldg 87 Wind Tunnel, Contaminants:

Suspected lead contamination from rain runoff of lead paint covered wind tunnel

Reference:

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC - South Central Area - 11/27/95

Source: 1 Building 49

Source Hazardous Waste Quantity Value: 0.88

Hazardous Substance	Toxicity Value
Beryllium	10000
Magnesium	0
Manganese	10000

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	8.82E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Targets

Level I Population: 0.0 Value: 0.00

Documentation for Level I Population:

No resident, student, or daycare population within 200 feet of the contamination.

Reference:

Level II Population: 0.0 Value: 0.00

Workers: 50.0 Value: 5.00

Resident Individual: Potentia Value: 0.00

Resources: NO Value: 0.00

Terrestial Sensitive Environment	Value
State land	25

Terrestrial Sensitive Environments Factor: 25.00

Documentation for Terrestrial Environment State land:

See Table 5-5 of the HRS Guidance Manual

Reference: 1

Likelihood of Exposure

No.	Source ID	Level of Contamination	Attractiveness/ Accessibility	Area of Contam. (sq. feet)
1	Building 49	Level I	5	30000

Highest Attractiveness/Accessibility Value: 5
Sum of Eligible Areas Of Contamination (sq. feet): 30000
Area of Contamination Value: 20

Likelihood of Exposure Factor Category: 5

Documentation for Attractiveness/Accessibility, Source Building 49:

NASA LeRC facilities are maintained by a fence and have restricted public access; contaminated soil beneath asphalt; potential radionuclides in shallow soils beneath maintained grass lawn

Reference:

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Beryllium	< 2	2.8E+00	1.4E-01	2.9E+03	ppm
1	Copper	> 2	1.3E+02	0.0E+00	0.0E+00	ppm
1	Magnesium	< 2	2.0E+04	0.0E+00	0.0E+00	ppm
1	Manganese	< 2	3.5E+03	0.0E+00	2.9E+03	ppm

Documentation for Source Building 49, Contaminants:

See Table 5-61 of the RI/FS Report and Table PMU9-5 of the HRS Report for concentrations significantly above background

Reference: 2,3

Documentation for Source Bldg 87 Wind Tunnel, Contaminants:

Suspected lead contamination from rain runoff of lead paint covered wind tunnel

Reference:

Source: 1 Building 49

Source Hazardous Waste Quantity Value: 0.88

Hazardous Substance	Toxicity Value
Beryllium	10000
Magnesium	0
Manganese	10000

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC - South Central Area - 11/27/95

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	8.82E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Nearby Individual

Population within 1/4 mile: 5875.0

Nearby Individual Value: 1.0

Population Within 1 Mile

Travel Distance Category	Number of People	Value
> 0 to 1/4 mile	5875.0	13.0
> 1/4 to 1/2 mile	5775.0	6.5
> 1/2 to 1 mile	19800.0	10.2

Population Within 1 Mile Factor: 30.0

Documentation for Population > 0 to 1/4 mile Distance Category:

See Table 3-5 of the RI/FS Report for demographic summary.

Reference:

OBSERVED RELEASE

No.	Sample ID	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Observed Release Factor: 0

Gas Migration Potential

GAS POTENTIAL TO RELEASE

Source ID	Source Type	Gas Contain. Value (A)	Gas Source Type Value (B)	Gas Migrtn. Potent. Value (C)	Sum (B+C)	Gas Potential to Rel. Value A(B+C)
- N/A and/or data not specified						

Gas Potential to Release Factor: 0

Documentation for Gas Containment, Source Building 49:

Clay rich shallow soils; contaminated soils beneath asphalt; remaining soil with maintained grass lawn

Reference:

Documentation for Gas Containment, Source Bldg 87 Wind Tunnel:

Lead is potential contaminant

Reference:

Source: Building 49

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value

Average of Gas Migration Potential Value for 3 Hazardous Substances: 0.000

Gas Migration Potential Value From Table 6-7: 0

Source: Bldg 87 Wind Tunnel

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value

Average of Gas Migration Potential Value for 3 Hazardous Substances: 0.000

Gas Migration Potential Value From Table 6-7: 0

Particulate Migration Potential

PARTICULATE POTENTIAL TO RELEASE

Source ID	Source Type	Partic. Contain. Value (A)	Partic. Source Type Value (B)	Partic. Migrtn. Potent. Value (C)	Sum (B+C)	Partic. Potential to Rel. Value A(B+C)
Building 49	Contaminated Soil	3	22	6	28	84

Particulate Potential to Release Factor: 84

Documentation for Particulate Containment, Source Building 49:

Contaminated soil beneath asphalt; other soils beneath maintained grass lawn; no exposed soils

Reference:

Documentation for Particulate Containment, Source Bldg 87 Wind Tunnel:

Bare soil present, impact of lead to soils expected to be shallow

Reference:

Documentation for Particulate Migration Potential:

See Figure 6-2 of the HRS Guidance Manual.

Reference: 1

Source: Building 49

Particulate Hazardous Substance
Beryllium
Copper
Magnesium
Manganese

Source: Bldg 87 Wind Tunnel

Particulate Hazardous Substance

AIR PATHWAY WASTE CHARACTERISTICS
NASA LeRC - South Central Area - 11/27/95

Source: 1 Building 49

Source Hazardous Waste Quantity Value: 0.88

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Beryllium	10000	NA	2.00E-05	2.00E-01
Copper	100	NA	2.00E-05	2.00E-03
Magnesium	100	NA	2.00E-05	2.00E-03
Manganese	10000	NA	2.00E-05	2.00E-01

Source: 2 Bldg 87 Wind Tunnel

Source Hazardous Waste Quantity Value: 0.00

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value

Hazardous Substances Found in an Observed Release

Sample ID	Observed Release Hazardous Substance	Particulate Toxicity/ Mobility Value	Gas Toxicity/ Mobility Value

- N/A and/or data not specified

Toxicity/Mobility Value from Source Hazardous Substances:	2.00E-01
Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	2.00E-01
Sum of Source Hazardous Waste Quantity Values:	8.82E-01
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	1

Actual Contamination

No.	Sample ID	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Potential Contamination

Distance Categories Subject to Potential Contamination	Population	Value
Onsite	0.0	0.0000
> 0 to 1/4 mile	5375.0	130.4000
> 1/4 to 1/2 mile	5775.0	28.2000
> 1/2 to 1 mile	19800.0	26.1000
> 1 to 2 miles	58000.0	26.6000
> 2 to 3 miles	164000.0	37.5000
> 3 to 4 miles	188000.0	22.9000
	Potential Contaminantion Factor:	272.0000

Documentation for Population > 0 to 1/4 mile Distance Category:

See Table 3-5 of the RI/FS Report

Reference: 2

Nearest Individual Factor

Level of Contamination: Potential
Distance in miles: > 0 to 1

Nearest Individual Value: 7

Resources

Resource Use: YES

Resource Value: 5

Actual Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Actual Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value
- N/A and/or data not specified		

==========
Sensitive Environments Actual Contamination Factor: 0.000
(Sum of Sensitive Environments + Wetlands Values)

Potential Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value	Distance Weight	Weighted Value/10
	0.000	0	1.0000	0.000

Potential Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value	Distance Weight	Weighted Value/10
- N/A and/or data not specified				

Sensitive Environment Potential Contamination Factor: 0.000

REFERENCES

1. HRS Guidance Manual:40CFR300 Appendix A to Part 300 The Hazard Ranking System 1993, and THe Hazard Ranking System Guidance Manual - Interim Final, USEPA, Washington, D.C.

2. Phase I Remedial Investigation/Feasibility Study Report. Prepared by R&R International Inc. for NASA Lewis Research Center, Cleveland, OH. October 1995

3. HRS Report. Prepared by R&R International Inc. for NASA Lewis Research Center, Cleveland, OH. October 1995

TABLE 9-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 9 - SOUTH CENTRAL
BUILDING 49 (UPR-09-44)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
2-Butanone	0.010	0.005	BH035-010	*	0.007	N	n/a	
Toluene	0.010	0.005	BH036-109	*	0.001	N	n/a	
SVOCs								
Di-n-Butyl Phthalate	0.330	0.165	BH059-005	*	0.083	N	n/a	
Metals								
Aluminum		12820.000	BH035-001	*	23300.00	N	n/a	
Arsenic		16.240	BH035-010	*	19.60	N	n/a	
Barium		78.26	BH035-001		209.000	N	n/a	
Beryllium		0.72	BH035-001	*	2.8000	Y	Y	
Calcium		17475.33	BH035-001		114000	Y	Y	
Chromium		17.78	BH035-001	*	20.20	N	n/a	
Cobalt		13.81	BH035-009		12.800	N	n/a	
Copper		26.13	BH035-010		132.00	Y	Y	
Iron		27,440	BH036-109	*	29100.000	N	n/a	
Lead		13.81	BH035-010		13.700	N	n/a	
Magnesium		5576	BH035-001		20200.000	Y	Y	
Manganese		423.53	BH035-001		3490.0	Y	Y	
Nickel		35.37	BH036-009	*	30.50	N	n/a	
Potassium		2574	BH036-009		2550.00	N	n/a	
Selenium	1	0.23	BH035-001	#	1.00	N	n/a	
Sodium		145	BH035-001		1000.000	Y	Y	
Thallium		0.612	BH035-009	#*	0.290	N	n/a	
Vanadium		24.14	BH035-001		16.200	N	n/a	

TABLE 9-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 9 - SOUTH CENTRAL
BUILDING 49 (UPR-09-44)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Zinc		92.07	BH035-010		71.9000	N	n/a	
Radioactivity								
Alpha Particle Radioactivity			BH035-009		13.2	N	n/a	
Beta Particle Radioactivity			BH035-001		34.4	N	n/a	

Notes:
mean of background samples collected from shallow upland was used as background for shallow samples
and deep upland was used for deep samples (10 feet and more)
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL

PMU 10

Record Information

1. Site Name: NASA LeRC - West Area
   (as entered in CERCLIS)

2. Site CERCLIS Number:

3. Site Reviewer:

4. Date: 10/21/95

5. Site Location: Cleveland/Cuyahoga/OH
   (City/County,State)

6. Congressional District:

7. Site Coordinates: Single

   Latitude: 41 24'45.0" Longitude: 81

Site Description

1. Setting: Urban

2. Current Owner: Federal

3. Current Site Status: Active

4. Years of Operation: Active Site , from and to dates: Since 1941

5. How Initially Identified: Other - Preliminary Assessment

6. Entity Responsible for Waste Generation:

   - Federal Facility
   - Other

7. Site Activities/Waste Deposition:

   - Waste Piles

Waste Description

8. Wastes Deposited or Detected Onsite:

- Organic Chemicals
- Inorganic Chemicals
- Metals
- Oily Waste

Response Actions

9. Response/Removal Actions:

RCRA Information

10. For All Active Facilities, RCRA Site Status:

- Not Applicable

Demographic Information

11. Workers Present Onsite: Yes

12. Distance to Nearest Non-Worker Individual: > 10 Feet - 1/4 Mile

13. Residential Population Within 1 Mile: 4000.0

14. Residential Population Within 4 Miles: 10000.0

Water Use Information

15. Local Drinking Water Supply Source:

- Ground Water (within 4 mile distance limit)
- Surface Water (within 15 mile distance limit)

16. Total Population Served by Local Drinking Water Supply Source: 1500000.0

17. Drinking Water Supply System Type for Local Drinking

Water Supply Sources:

- Municipal (Services over 25 People)

18. Surface Water Adjacent to/Draining Site:

- Stream

HRS DOCUMENTATION RECORD
NASA LeRC - West Area - 11/27/95

1. Site Name: NASA LeRC - West Area
   (as entered in CERCLIS)

2. Site CERCLIS Number:

3. Site Reviewer:

4. Date: 10/21/95

5. Site Location: Cleveland/Cuyahoga/OH
   (City/County,State)

6. Congressional District:

7. Site Coordinates: Single

   Latitude: 41 24'45.0" Longitude: 81

	Score
Ground Water Migration Pathway Score (Sgw)	0.05
Surface Water Migration Pathway Score (Ssw)	0.80
Soil Exposure Pathway Score (Ss)	33.74
Air Migration Pathway Score (Sa)	7.00

Site Score	17.23

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

GROUND WATER MIGRATION PATHWAY SCORESHEET
NASA LeRC - West Area - 11/27/95

GROUND WATER MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release to an Aquifer Aquifer: Shale Bedrock Aquife		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	3
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	430
3. Likelihood of Release	550	430
Waste Characteristics		
4. Toxicity/Mobility	*	2.00E+03
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	10
Targets		
7. Nearest Well	50	0.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	1.00E+00
8d. Population (lines 8a+8b+8c)	**	1.00E+00
9. Resources	5	0.00E+00
10. Wellhead Protection Area	20	0.00E+00
11. Targets (lines 7+8d+9+10)	**	1.00E+00
12. Targets (including overlaying aquifers)	**	1.00E+00
13. Aquifer Score	100	0.05
GROUND WATER MIGRATION PATHWAY SCORE (Sgw)	100	0.05

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC - West Area - 11/27/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release by Overland Flow		
2a. Containment	10	9
2b. Runoff	25	1
2c. Distance to Surface Water	25	25
2d. Potential to Release by Overland Flow [lines 2a(2b+2c)]	500	234
3. Potential to Release by Flood		
3a. Containment (Flood)	10	10
3b. Flood Frequency	50	7
3c. Potential to Release by Flood (lines 3a x 3b)	500	70
4. Potential to Release (lines 2d+3c)	500	304
5. Likelihood of Release	550	304
Waste Characteristics		
6. Toxicity/Persistence	*	1.00E+04
7. Hazardous Waste Quantity	*	10
8. Waste Characteristics	100	18
Targets		
9. Nearest Intake	50	0.00E+00
10. Population		
10a. Level I Concentrations	**	0.00E+00
10b. Level II Concentrations	**	0.00E+00
10c. Potential Contamination	**	2.00E+00
10d. Population (lines 10a+10b+10c)	**	2.00E+00
11. Resources	5	5.00E+00
12. Targets (lines 9+10d+11)	**	7.00E+00
13. DRINKING WATER THREAT SCORE	100	0.46

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC - West Area - 11/27/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	304
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	5.00E+08
16. Hazardous Waste Quantity	*	10
17. Waste Characteristics	1000	180
Targets		
18. Food Chain Individual	50	0.00E+00
19. Population		
19a. Level I Concentrations	**	0.00E+00
19b. Level II Concentrations	**	0.00E+00
19c. Pot. Human Food Chain Contamination	**	0.00E+00
19d. Population (lines 19a+19b+19c)	**	0.00E+00
20. Targets (lines 18+19d)	**	0.00E+00
21. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
NASA LeRC - West Area - 11/27/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	304
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioacc.	*	5.00E+08
24. Hazardous Waste Quantity	*	10
25. Waste Characteristics	1000	180
Targets		
26. Sensitive Environments		
26a. Level I Concentrations	**	0.00E+00
26b. Level II Concentrations	**	0.00E+00
26c. Potential Contamination	**	5.00E-01
26d. Sensitive Environments (lines 26a+26b+26c)	**	5.00E-01
27. Targets (line 26d)	**	5.00E-01
28. ENVIRONMENTAL THREAT SCORE	60	0.33
29. WATERSHED SCORE	100	0.80
30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof)	100	0.80

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC - West Area - 11/27/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release to Aquifer Aquifer: Shale Bedrock Aquife		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	3
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	430
3. Likelihood of Release	550	430
Waste Characteristics		
4. Toxicity/Mobility/Persistence	*	2.00E+03
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	10
Targets		
7. Nearest Intake	50	0.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	8.00E-01
8d. Population (lines 8a+8b+8c)	**	8.00E-01
9. Resources	5	5.00E+00
10. Targets (lines 7+8d+9)	**	5.80E+00
11. DRINKING WATER THREAT SCORE	100	0.30

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC - West Area - 11/27/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
12. Likelihood of Release (same as line 3)	550	430
Waste Characteristics		
13. Toxicity/Mobility/Persistence/Bioacc.	*	1.00E+07
14. Hazardous Waste Quantity	*	10
15. Waste Characteristics	1000	100
Targets		
16. Food Chain Individual	50	0.00E+00
17. Population		
17a. Level I Concentrations	**	0.00E+00
17b. Level II Concentrations	**	0.00E+00
17c. Pot. Human Food Chain Contamination	**	0.00E+00
17d. Population (lines 17a+17b+17c)	**	0.00E+00
18. Targets (lines 16+17d)	**	0.00E+00
19. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
NASA LeRC - West Area - 11/27/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
20. Likelihood of Release (same as line 3)	550	430
Waste Characteristics		
21. Ecosystem Tox./Mobility/Persist./Bioacc.	*	1.00E+06
22. Hazardous Waste Quantity	*	10
23. Waste Characteristics	1000	56
Targets		
24. Sensitive Environments		
24a. Level I Concentrations	**	0.00E+00
24b. Level II Concentrations	**	0.00E+00
24c. Potential Contamination	**	2.50E-01
24d. Sensitive Environments (lines 24a+24b+24c)	**	2.50E-01
25. Targets (line 24d)	**	2.50E-01
26. ENVIRONMENTAL THREAT SCORE	60	0.07
27. WATERSHED SCORE	100	0.38
28. SW: GW to SW COMPONENT SCORE (Sgs)	100	0.38

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SOIL EXPOSURE PATHWAY SCORESHEET
NASA LeRC - West Area - 11/27/95

SOIL EXPOSURE PATHWAY Factor Categories & Factors RESIDENT POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
1. Likelihood of Exposure	550	550
Waste Characteristics		
2. Toxicity	*	1.00E+04
3. Hazardous Waste Quantity	*	10
4. Waste Characteristics	100	18
Targets		
5. Resident Individual	50	5.00E+01
6. Resident Population		
6a. Level I Concentrations	**	2.00E+02
6b. Level II Concentrations	**	0.00E+00
6c. Resident Population (lines 6a+6b)	**	2.00E+02
7. Workers	15	5.00E+00
8. Resources	5	0.00E+00
9. Terrestrial Sensitive Environments	***	2.50E+01
10. Targets (lines 5+6c+7+8+9)	**	2.80E+02
11. RESIDENT POPULATION THREAT SCORE	**	2.77E+06

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

SOIL EXPOSURE PATHWAY SCORESHEET
NASA LeRC - West Area - 11/27/95

SOIL EXPOSURE PATHWAY Factor Categories & Factors NEARBY POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
12. Attractiveness/Accessibility	100	1.00E+02
13. Area of Contamination	100	2.00E+01
14. Likelihood of Exposure	500	1.25E+02
Waste Characteristics		
15. Toxicity	*	1.00E+04
16. Hazardous Waste Quantity	*	10
17. Waste Characteristics	100	18
Targets		
18. Nearby Individual	1	0.00E+00
19. Population Within 1 Mile	**	5.00E+00
20. Targets (lines 18+19)	**	5.00E+00
21. NEARBY POPULATION THREAT SCORE	**	1.12E+04
SOIL EXPOSURE PATHWAY SCORE (Ss)	100	33.74

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

AIR PATHWAY SCORESHEET
NASA LeRC - West Area - 11/27/95

AIR MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release		
2a. Gas Potential to Release	500	108
2b. Particulate Potential to Release	500	84
2c. Potential to Release	500	108
3. Likelihood of Release	550	108
Waste Characteristics		
4. Toxicity/Mobility	*	1.00E+04
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	18
Targets		
7. Nearest Individual	50	2.00E+01
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	2.72E+02
8d. Population (lines 8a+8b+8c)	**	2.72E+02
9. Resources	5	5.00E+00
10. Sensitive Environments		
10a. Actual Contamination	***	0.00E+00
10b. Potential Contamination	***	0.00E+00
10c. Sens. Environments(lines 10a+10b)	***	0.00E+00
11. Targets (lines 7+8d+9+10c)	**	2.97E+02
AIR MIGRATION PATHWAY SCORE (Sa)	100	7.00E+00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Duct Bank Road

a. Wastestream ID	Contam Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Cadmium	4.9E+00	ppm	NO	J
Chloromethane	1.3E-02	ppm	NO	J
Hexachlorocyclopentadiene	3.9E-01	ppm	NO	J
Mercury	1.0E-01	ppm	NO	
Selenium	6.3E+00	ppm	NO	
Thallium	3.0E+00	ppm	NO	J
Vanadium	6.6E+01	ppm	NO	J
Vinyl chloride	1.3E-02	ppm	NO	J

Documentation for Constituents:

See Table 5-65 of the RI/FS Report for analytical data and Table PMU10-1 for concentrations significantly above background.

Reference: 2,3

WASTE QUANTITY
NASA LeRC - West Area - 11/27/95

Documentation for Wastestream Quantity:

Mass of contamination not known

Reference:

a. Wastestream ID	Groundwater
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Aluminum	4.4E+01	ppm	NO	
Antimony	2.9E-02	ppm	NO	#
Cadmium	2.5E-02	ppm	NO	
Cobalt	5.8E-02	ppm	NO	#
Iron	1.2E+02	ppm	NO	
Magnesium	6.4E+01	ppm	NO	
Manganese	1.1E+00	ppm	NO	
Nickel	3.1E-01	ppm	NO	
Thallium	1.3E-02	ppm	NO	J
Vanadium	4.6E-01	ppm	NO	J

Documentation for Constituents:

See Table 5-65 of the RI/FS Report for analytical data and Table PMU10-1 of the HRS Report for concentrations significantly above background.

Reference: 2,3

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Duct Bank Road
b. Source Type	Contaminated Soil
c. Secondary Source Type	N.A.
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00 | 17600.00
e. Source Volume/Area Value	5.18E-01
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	5.18E-01

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Cadmium	> 2	NO	4.9E+00	ppm
Chloromethane	< 2	NO	1.3E-02	ppm
Hexachlorocyclopentadiene	< 2	NO	3.9E-01	ppm
Mercury	< 2	NO	1.0E-01	ppm
Selenium	> 2	NO	6.3E+00	ppm
Thallium	> 2	NO	3.0E+00	ppm
Vanadium	> 2	NO	6.6E+01	ppm
Vinyl chloride	< 2	NO	1.3E-02	ppm

Documentation for Source Hazardous Substances:

See Table 5-65 of the RI/FS Report for analytical data and Table 10-1 of the HRS Report for concentrations significantly above background.

Reference: 2,3

Documentation for Source Area:

Area measured from Figure 4-1 of the RI/FS Report.

Reference: 2

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 398

a. Wastestream ID	Contam Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Benz(a)anthracene	1.5E+00	ppm	NO	J
Benzo(a)pyrene	1.4E+00	ppm	NO	J
Benzo(g,h,i)perylene	6.9E-01	ppm	NO	J
Benzo(j,k)fluorene	4.2E+00	ppm	NO	J
Benzofluoranthene, 3,4-	2.0E+00	ppm	NO	J
Chrysene	1.8E+00	ppm	NO	J
Indeno(1,2,3-CD)pyrene	7.9E-01	ppm	NO	J
Manganese	1.4E+03	ppm	NO	
Mercury	2.0E-01	ppm	NO	
Methylene chloride	1.7E-02	ppm	NO	
Phenanthrene	2.1E+00	ppm	NO	J
Pyrene	2.9E+00	ppm	NO	J

Documentation for Constituents:

See Table 5-68 of the RI/FS Report and Table PMU10-4 of the HRS Report for concentrations significantly above background.

Reference: 2,3

WASTE QUANTITY

NASA LeRC - West Area - 11/27/95

Documentation for Wastestream Quantity:

Area 67200 sq. ft multiplied by 2' (deepest level contamination encountered) = 134400/27 = 4978 cu yd

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 398	
b. Source Type	Contaminated Soil	
c. Secondary Source Type	N.A.	
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00	67200.00
e. Source Volume/Area Value	1.98E+00	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	1.98E+00	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Benz(a)anthracene	< 2	NO	1.5E+00	ppm
Benzo(a)pyrene	< 2	NO	1.4E+00	ppm
Benzo(g,h,i)perylene	< 2	NO	6.9E-01	ppm
Benzo(j,k)fluorene	< 2	NO	4.2E+00	ppm
Benzofluoranthene, 3,4-	< 2	NO	2.0E+00	ppm
Chrysene	< 2	NO	1.8E+00	ppm
Indeno(1,2,3-CD)pyrene	< 2	NO	7.9E-01	ppm
Manganese	< 2	NO	1.4E+03	ppm
Mercury	< 2	NO	2.0E-01	ppm
Methylene chloride	< 2	NO	1.7E-02	ppm
Phenanthrene	< 2	NO	2.1E+00	ppm
Pyrene	< 2	NO	2.9E+00	ppm

Documentation for Source Hazardous Substances:

See Table 5-68 of the RI/FS Report for analytical data and Table 10-2 of the HRS Report for concentrations significantly above background.

Reference: 2,3

Documentation for Source Area:

Area measured from figure 4-1 of the RI/FS Report.

Reference: 2

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 301

a. Wastestream ID	Contam SOil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Cadmium	5.2E+00	ppm	NO	J
Selenium	1.6E+00	ppm	NO	J
Thallium	2.7E+00	ppm	NO	

Documentation for Constituents:

See Table 5-69 of the RI/FS Report for analytical data and Table PMU10-5 of the HRS Report for concentrations significantly above background.

Reference: 2,3

Documentation for Wastestream Quantity:

Mass of contaminated soil not known

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 301	
b. Source Type	Contaminated Soil	
c. Secondary Source Type	N.A.	
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00	226800.00
e. Source Volume/Area Value	6.67E+00	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	6.67E+00	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Cadmium	> 2	NO	5.2E+00	ppm
Selenium	> 2	NO	1.6E+00	ppm
Thallium	> 2	NO	2.7E+00	ppm

Documentation for Source Hazardous Substances:

See Table 5-69 of the RI/FS Report for analytical data and Table PMU10-5 of the HRS Report for concentrations significantly above background values.

Reference: 2,3

Documentation for Source Area:

Area measured from Figure 4-1 of the RI/FS Report.

Reference: 2

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Building 322

a. Wastestream ID	Contam Soil
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Di-n-butyl phthalate	1.2E+00	ppm	NO	J

Documentation for Constituents:

See Table 5-71 of the RI/FS Report for analytical data and Table PMU10-7 of the HRS Report for concentrations significantly above background.

Reference: 2,3

Documentation for Wastestream Quantity:

Mass of contaminated soil unknown

Reference:

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Building 322	
b. Source Type	Contaminated Soil	
c. Secondary Source Type	N.A.	
d. Source Vol.(yd3/gal) | Source Area (ft2)	0.00	13600.00
e. Source Volume/Area Value	4.00E-01	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	4.00E-01	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Di-n-butyl phthalate	> 2	NO	1.2E+00	ppm

Documentation for Source Hazardous Substances:

See Table 5-71 of the RI/FS Report for analytical data and Table PMU10-7 of the HRS Report for concentrations significantly above background.

Reference: 2,3

Documentation for Source Area:

Area measured from Figure 4-1 of the RI/FS Report.

Reference: 2

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No.	Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1	Duct Bank Road	GW-SW-SE-A	5.18E-01	0.00E+00	5.18E-01
2	Building 398	GW-SW-SE-A	1.98E+00	0.00E+00	1.98E+00
3	Building 301	GW-SW-SE-A	6.67E+00	0.00E+00	6.67E+00
4	Building 322	GW-SW-SE-A	4.00E-01	0.00E+00	4.00E-01

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values		HWQVs*	WCVs**
Ground Water	Toxicity/Mobility	2.00E+03	10	10
SW: Overland Flow, DW	Tox./Persistence	1.00E+04	10	18
SW: Overland Flow, HFC	Tox./Persis./Bioacc.	5.00E+08	10	180
SW: Overland Flow, Env	Etox./Persis./Bioacc.	5.00E+08	10	180
SW: GW to SW, DW	Tox./Persistence	2.00E+03	10	10
SW: GW to SW, HFC	Tox./Persis./Bioacc.	1.00E+07	10	100
SW: GW to SW, Env	Etox./Persis./Bioacc.	1.00E+06	10	56
Soil Exposure:Resident	Toxicity	1.00E+04	10	18
Soil Exposure: Nearby	Toxicity	1.00E+04	10	18
Air	Toxicity/Mobility	1.00E+04	10	18

* Hazardous Waste Quantity Factor Values
** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

GROUND WATER PATHWAY AQUIFER SUMMARY
NASA LeRC - West Area - 11/27/95

No.	Aquifer ID	Type	Overlaying No.	Inter-Connected with	Likelihood of Release	Targets
1	Shale Bedrock Aquife	Non K	0	0	430	1.00E+00

Containment

No.	Source ID	HWQ Value	Containment Value
1	Duct Bank Road	5.18E-01	10
2	Building 398	1.98E+00	10
3	Building 301	6.67E+00	10
4	Building 322	4.00E-01	10

Containment Factor 10

Documentation for Ground Water Containment, Source Building 398:

See Section 4.10.3 of the RI/FS Report. No containment reported.

Reference: 2

Documentation for Ground Water Containment, Source Building 301:

Site has a history of releases. See Section 4.10.4 of the RI/FS Report.

Reference: 2

Documentation for Ground Water Containment, Source Building 322:

No containment reported. See Section 4.10.6 of the RI/FS Report.

Reference: 2

Net Precipitation

Net Precipitation (inches)	N.A.

Aquifer: Shale Bedrock Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Shale Bedrock Aquifer Aquifer:

Drilling logs included in Appendix C of the RI/FS Report indicate shale to be the bedrock aquifer.

Reference: 2

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Observed Release Factor 0

Documentation for Well 10-MW002:

Three monitoring wells are installed in this area. See Figure 2-6 of the RI/FS Report.

Reference: 2

Documentation for Well 10-MW015:

See Figure 2-6 and Table 2-2 of the RI/FS Report.

Reference: 2

Documentation for Well 10-MW016:

See Figure 2-6 and Table 2-2 of the RI/FS Report.

Reference: 2

POTENTIAL TO RELEASE

Containment

Containment Factor	10	

Net Precipitation

Net Precipitation Factor	3	

Depth to Aquifer

A. Depth of Hazardous Substances	28.00	feet

Documentation for Depth of Hazardous Substances:

Deepest contamination encountered in sample bh050-014 at 28 feet level. See Tables PMU10-1 through PMU10-7 of the HRS Report.

Reference: 3

B. Depth to Aquifer from Surface	20.00	feet

Documentation for Depth to Aquifer from Surface :

Depth to aquifer ascertained from Deepest level of contamination (28 feet) minus the top of the aquifer (average 20 feet from drilling logs)

Reference: 2,3

C. Depth to Aquifer (B - A)	0.00	feet

Depth to Aquifer Factor 5

Travel Time

Are All Layers Karst? NO

Thickness of Layer(s) with Lowest Conductivity 0.00 feet

Documentation for Thickness of Layers with Lowest Conductivity:

The drilling logs included in Appendix C of the RI/FS Report indicate silt, silty clay, and clay to range in thickness from 10 feet to 28 feet below which is the shale bedrock. The thickness is averaged and considered to be 20 feet.

Reference: 2

Hydraulic Conductivity (cm/sec) 1.0E-06

Documentation for Hydraulic Conductivity:

See Table 3-6 of the HRS Guidance Manual.

Reference: 1

Travel Time Factor 35

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Potential to Release Factor 430

Source: 1 Duct Bank Road

Source Hazardous Waste Quantity Value: 0.52

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Aluminum	100	2.00E-05	2.00E-03
Antimony	10000	1.00E-02	1.00E+02
Cadmium	10000	2.00E-01	2.00E+03
Chloromethane	10	1.00E+00	1.00E+01
Cobalt	1	1.00E-02	1.00E-02
Hexachlorocyclopentadiene	10000	2.00E-03	2.00E+01
Iron	100	1.00E-02	1.00E+00
Magnesium	100	2.00E-05	2.00E-03
Manganese	10000	1.00E-02	1.00E+02
Mercury	10000	2.00E-05	2.00E-01
Nickel	100	2.00E-05	2.00E-03
Selenium	100	1.00E-02	1.00E+00
Thallium	1000	1.00E-04	1.00E-01
Vanadium	100	2.00E-07	2.00E-05
Vinyl chloride	10000	1.00E-02	1.00E+02

Source: 2 Building 398

Source Hazardous Waste Quantity Value: 1.98

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Benz(a)anthracene	1000	2.00E-09	2.00E-06
Benzo(a)pyrene	10000	2.00E-09	2.00E-05
Benzo(g,h,i)perylene	100	2.00E-09	2.00E-07
Benzo(j,k)fluorene	100	2.00E-07	2.00E-05
Benzofluoranthene, 3,4-	10000	2.00E-09	2.00E-05
Chrysene	100	2.00E-09	2.00E-07
Indeno(1,2,3-CD)pyrene	100	2.00E-09	2.00E-07
Manganese	10000	1.00E-02	1.00E+02
Mercury	10000	2.00E-05	2.00E-01
Methylene chloride	10	1.00E+00	1.00E+01
Phenanthrene	100	2.00E-05	2.00E-03
Pyrene	100	2.00E-09	2.00E-07

Source: 3 Building 301

Source Hazardous Waste Quantity Value: 6.67

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Cadmium	10000	2.00E-01	2.00E+03
Selenium	100	1.00E-02	1.00E+00
Thallium	1000	1.00E-04	1.00E-01

Source: 4 Building 322

Source Hazardous Waste Quantity Value: 0.40

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Di-n-butyl phthalate	10	2.00E-03	2.00E-02

Hazardous Substances Found in an Observed Release

Well No.	Observed Release Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value

- N/A and/or data not specified

Toxicity/Mobility Value from Source Hazardous Substances:	2.00E+03
Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	2.00E+03
Sum of Source Hazardous Waste Quantity Values:	9.56E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	10

Population by Well

No.	Well ID	Sample Type	Distance (miles)	Level of Contamination	Population

- N/A and/or data not specified

Level I Population Factor: 0.00

Level II Population Factor: 0.00

Potential Contamination by Distance Category

Distance Category (miles)	Population	Value
> 0 to 1/4	0.0	0.00E+00
> 1/4 to 1/2	0.0	0.00E+00
> 1/2 to 1	0.0	0.00E+00
> 1 to 2	50.0	1.00E+00
> 2 to 3	0.0	0.00E+00
> 3 to 4	0.0	0.00E+00

Potential Contamination Factor: 1.000

Nearest Well

Level of Contamination: Potential
Distance in miles: 5.00

Nearest Well Factor: 0.00E+00

Documentation for Nearest Well:

The closest water well on record with the Ohio Division of Water is located 1/4 mile west of the LeRC site boundary on Cleveland Hopkins International Airport property. This is inactive. Only 7 wells are located between 1.5 and 3 miles south and southeast of LeRC. These wells are located between 1.5 and 3 miles south and southeast of LeRC and serve 50 individuals. See Section 3.3 and 3.8.2 of the RI/FS Report.

Reference: 2

Resources

Resource Use: NO

Resource Factor: 0.00E+00

Documentation for Resources:

Groundwater is not a primary drinking source in this area. See section 3.3 of the RI/FS Report.

Reference: 2

Wellhead Protection Area

No wellhead protection area

Wellhead Protection Area Factor: 0.00E+00

Documentation for Wellhead Protection Area:

Crieria specified in Section 3.3.4 of the HRS Guidance Manual does not apply.

Reference: 1

SURFACE WATER PATHWAY SEGMENT SUMMARY
NASA LeRC - West Area - 11/27/95

No.	Segment ID	Segment Type	Water Type	Start Point (mi)	End Point (mi)	Average Flow (cfs)
1	Abram Creek	River	Fresh	0.00	0.50	6
2	Rocky River	River	Fresh	0.50	9.60	12
3	Lake Erie	Moderate D	Fresh	9.60	15.00	N.A.

OBSERVED RELEASE

No.	Sample ID	Sample Type	Distance (miles)	Level of Contamination DW	HFC	Env

- N/A and/or data not specified

==========

Observed Release Factor 0

POTENTIAL TO RELEASE

Potential to Release by Overland Flow

Containment

No.	Source ID	HWQ Value	Containment Value
1	Duct Bank Road	5.18E-01	9
2	Building 398	1.98E+00	9
3	Building 301	6.67E+00	9
4	Building 322	4.00E-01	9

==========

Containment Factor: 9

Documentation for Overland Flow Containment, Source Duct Bank Road:

See Section 3.4 of the RI/FS Report. The storm sewer system at LeRC collects stormwater from surface water runoff. Most of the surface water runoff from PMU10 area is collected by natural swales and the storm sewer system is diverted to outfalls along Abram Creek.

Reference: 2

Distance to Surface Water

Distance to Surface Water:	0.0 feet
Distance to Surface Water Factor:	25

Runoff

A. Drainage Area:	5.0 acres

Documentation for Drainage Area:

Area estimated from the Area of Concern Location Map (Figure 4-1 ofRI/FS Report.

Reference: 2

B. 2-year, 24-hour Rainfall:	2.8 inches

Documentation for Rainfall:

See Section 3.5 of the RI/FS Report for the precipitation information.

Reference: 2

C. Soil Group:	C

Moderately-fine textured soils with low infiltration rates

Documentation for Soil Group:

Drilling logs included in Appendix C of the RI/FS Report indicate the soils to be mostly silt, silty clay, and clay with very little mixtures of sand.

Reference: 2

Runoff Factor: 1

==========

Potential to Release by Overland Flow Factor: 234

Potential to Release by Flood

No.	Source ID	HWQ Value	Flood Containment Value	Flood Frequency Value	Potential to Release by Flood
2	Building 398	1.98E+00	10	7	70
3	Building 301	6.67E+00	10	7	70
4	Building 322	4.00E-01	10	7	70

Potential to Release by Flood Factor: 70

Documentation for Flood Containment, Source Duct Bank Road:

See Section 3.4 of RI/FS Report.

Reference: 2

Documentation for Flood Frequency, Source Duct Bank Road:

See Section 3.4 of the RI/FS Report.

Reference:

Source: 1 Duct Bank Road

Source Hazardous Waste Quantity Value: 0.52

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Aluminum	0	1.00E+00	0.00E+00
Antimony	10000	1.00E+00	1.00E+04
Cadmium	10000	1.00E+00	1.00E+04
Chloromethane	10	7.00E-04	7.00E-03
Cobalt	1	1.00E+00	1.00E+00
Hexachlorocyclopentadiene	10000	1.00E+00	1.00E+04
Iron	0	1.00E+00	0.00E+00
Magnesium	0	1.00E+00	0.00E+00
Manganese	10000	1.00E+00	1.00E+04
Mercury	10000	1.00E+00	1.00E+04
Nickel	100	1.00E+00	1.00E+02
Selenium	100	1.00E+00	1.00E+02
Thallium	1000	1.00E+00	1.00E+03
Vanadium	100	1.00E+00	1.00E+02
Vinyl chloride	10000	7.00E-04	7.00E+00

Source: 2 Building 398

Source Hazardous Waste Quantity Value: 1.98

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Benz(a)anthracene	1000	1.00E+00	1.00E+03
Benzo(a)pyrene	10000	1.00E+00	1.00E+04
Benzo(g,h,i)perylene	0	1.00E+00	0.00E+00
Benzo(j,k)fluorene	100	1.00E+00	1.00E+02
Benzofluoranthene, 3,4-	10000	1.00E+00	1.00E+04
Chrysene	0	1.00E+00	0.00E+00
Indeno(1,2,3-CD)pyrene	0	1.00E+00	0.00E+00
Manganese	10000	1.00E+00	1.00E+04
Mercury	10000	1.00E+00	1.00E+04
Methylene chloride	10	4.00E-01	4.00E+00
Phenanthrene	0	4.00E-01	0.00E+00
Pyrene	100	1.00E+00	1.00E+02

Source: 3 Building 301

Source Hazardous Waste Quantity Value: 6.67

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Cadmium	10000	1.00E+00	1.00E+04
Selenium	100	1.00E+00	1.00E+02
Thallium	1000	1.00E+00	1.00E+03

Source: 4 Building 322

Source Hazardous Waste Quantity Value: 0.40

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Di-n-butyl phthalate	10	1.00E+00	1.00E+01

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value

- N/A and/or data not specified

Toxicity/Persistence Value from Source Hazardous Substances:	1.00E+04
Toxicity/Persistence Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Persistence Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	9.56E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

==========

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population

- N/A and/or data not specified

==========

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served
1 Crown Intake Crib	0	375000.0
2 Division Intake Cr	0	375000.0
3 Kirtland Intake Cr	0	375000.0
4 Nottingham Intake C	0	375000.0

Documentation for Intake Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report.

Reference: 2

Type of Surface Water Body	Total Population	Dilution-Weighted Population
Moderate Ocean Zone or Great Lake	1125000.0	16.0

Dilution-Weighted Population Served
by Potentially Contaminated Intakes: 16.0

Potential Contamination Factor: 2.0

Nearest Intake

Location of Nearest Drinking Water Intake: Crown Intake Crib
Distance from the Probable Point of Entry: 12.60 miles
Type of Surface Water Body: Moderate D
Dilution Weight: 0.0000100
Highest Level of Contamination: Potential

Nearest Intake Factor: 0.00

Documentation for Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report.

Reference: 2

Resources

Resource Use: YES

Resource Value: 5.00E+00

Documentation for Resources:

See Section 3.8.1 of the RI/FS Report

Reference: 2

Source: 1 Duct Bank Road

Source Hazardous Waste Quantity Value: 0.52

Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Aluminum	0	1.00E+00	5.00E+01	0.00E+00
Antimony	10000	1.00E+00	5.00E-01	5.00E+03
Cadmium	10000	1.00E+00	5.00E+03	5.00E+07
Chloromethane	10	7.00E-04	5.00E+00	3.50E-02
Cobalt	1	1.00E+00	5.00E-01	5.00E-01
Hexachlorocyclopentadiene	10000	1.00E+00	5.00E+03	5.00E+07
Iron	0	1.00E+00	5.00E-01	0.00E+00
Magnesium	0	1.00E+00	5.00E-01	0.00E+00
Manganese	10000	1.00E+00	5.00E-01	5.00E+03
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	100	1.00E+00	5.00E+02	5.00E+04
Selenium	100	1.00E+00	5.00E+01	5.00E+03
Thallium	1000	1.00E+00	5.00E+01	5.00E+04
Vanadium	100	1.00E+00	5.00E-01	5.00E+01
Vinyl chloride	10000	7.00E-04	5.00E+00	3.50E+01

Source: 2 Building 398

Source Hazardous Waste Quantity Value: 1.98

Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Benz(a)anthracene	1000	1.00E+00	5.00E+04	5.00E+07
Benzo(a)pyrene	10000	1.00E+00	5.00E+02	5.00E+06
Benzo(g,h,i)perylene	0	1.00E+00	5.00E+04	0.00E+00
Benzo(j,k)fluorene	100	1.00E+00	5.00E+03	5.00E+05
Benzofluoranthene, 3,4-	10000	1.00E+00	5.00E+04	5.00E+08
Chrysene	0	1.00E+00	5.00E+02	0.00E+00
Indeno(1,2,3-CD)pyrene	0	1.00E+00	5.00E+04	0.00E+00
Manganese	10000	1.00E+00	5.00E-01	5.00E+03
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Methylene chloride	10	4.00E-01	5.00E+00	2.00E+01
Phenanthrene	0	4.00E-01	5.00E+01	0.00E+00
Pyrene	100	1.00E+00	5.00E+01	5.00E+03

Source: 3 Building 301

Source Hazardous Waste Quantity Value: 6.67

Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Cadmium	10000	1.00E+00	5.00E+03	5.00E+07
Selenium	100	1.00E+00	5.00E+01	5.00E+03
Thallium	1000	1.00E+00	5.00E+01	5.00E+04

Source: 4 Building 322

Source Hazardous Waste Quantity Value: 0.40

Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Di-n-butyl phthalate	10	1.00E+00	5.00E+03	5.00E+04

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Toxicity/Persistence/Bioaccumulation Value from Source Hazardous Substances:	5.00E+08
Toxicity/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Persistence/Bioaccumulation Factor:	5.00E+08
Sum of Source Hazardous Waste Quantity Values:	9.56E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	180

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Fishery	Annnual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di

- N/A and/or data not specified

Sum of (Pi*Di): 0.00E+00

Potential Human Food Chain Contamination Factor: 0.00E+00

Food Chain Individual

Location of Nearest Fishery: N.A.

Food Chain Individual Factor: 0.00

Source: 1 Duct Bank Road

Source Hazardous Waste Quantity Value: 0.52

Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Aluminum	0	1.00E+00	5.00E+01	0.00E+00
Antimony	0	1.00E+00	5.00E-01	0.00E+00
Cadmium	1000	1.00E+00	5.00E+03	5.00E+06
Chloromethane	1	7.00E-04	5.00E+00	3.50E-03
Cobalt	0	1.00E+00	5.00E+03	0.00E+00
Hexachlorocyclopentadiene	10000	1.00E+00	5.00E+01	5.00E+05
Iron	10	1.00E+00	5.00E-01	5.00E+00
Magnesium	0	1.00E+00	5.00E-01	0.00E+00
Manganese	0	1.00E+00	5.00E+04	0.00E+00
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10	1.00E+00	5.00E+02	5.00E+03
Selenium	100	1.00E+00	5.00E+03	5.00E+05
Thallium	0	1.00E+00	5.00E+02	0.00E+00
Vanadium	0	1.00E+00	5.00E-01	0.00E+00
Vinyl chloride	0	7.00E-04	5.00E+00	0.00E+00

SW PATHWAY: OVERLAND FLOW/FLOOD ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 2 Building 398

Source Hazardous Waste Quantity Value: 1.98

Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Benz(a)anthracene	10000	1.00E+00	5.00E+04	5.00E+08
Benzo(a)pyrene	10000	1.00E+00	5.00E+04	5.00E+08
Benzo(g,h,i)perylene	0	1.00E+00	5.00E+04	0.00E+00
Benzo(j,k)fluorene	10000	1.00E+00	5.00E+03	5.00E+07
Benzofluoranthene, 3,4-	0	1.00E+00	5.00E+04	0.00E+00
Chrysene	1000	1.00E+00	5.00E+03	5.00E+06
Indeno(1,2,3-CD)pyrene	0	1.00E+00	5.00E+04	0.00E+00
Manganese	0	1.00E+00	5.00E+04	0.00E+00
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Methylene chloride	1	4.00E-01	5.00E+00	2.00E+00
Phenanthrene	1000	4.00E-01	5.00E+03	2.00E+06
Pyrene	0	1.00E+00	5.00E+01	0.00E+00

Source: 3 Building 301

Source Hazardous Waste Quantity Value: 6.67

Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Cadmium	1000	1.00E+00	5.00E+03	5.00E+06
Selenium	100	1.00E+00	5.00E+03	5.00E+05
Thallium	0	1.00E+00	5.00E+02	0.00E+00

Source: 4 Building 322

Source Hazardous Waste Quantity Value: 0.40

Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Di-n-butyl phthalate	1000	1.00E+00	5.00E+03	5.00E+06

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

Ecotoxicity/Persistence/Bioaccummulation Value from Source Hazardous Substances:	5.00E+08
Ecotoxicity/Persistence/Bioaccummulation Value from Observed Release Hazardous Substances:	0.00E+00
Ecotoxicity/Persistence/Bioaccummulation Factor:	5.00E+08
Sum of Source Hazardous Waste Quantity Values:	9.56E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	180

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Sensitive Environment Value
River	1 Rocky Rvr Reservn	50

Wetlands

Type of Surface Water Body	Sensitive Environment	Wetlands Frontage	Wetlands Value

- N/A and/or data not specified

Documentation for Sensitive Environment Rocky Rvr Reservn:

See Section 3.6 of the RI/FS Report.

Reference: 2

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT ENVIRONMENTAL THREAT TARGETS
NASA LeRC - West Area - 11/27/95

Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)
Small to Moderate Stream	50	0	1.00E-01	5.00E+00

Sum of Dj(Wj+Sj): 5.00E+00
Sum of Dj(Wj+Sj)/10: 5.00E-01

==========

Potential Contamination Sensitive Environment Factor: 5.00E-01

Containment

No.	Source ID	HWQ Value	Containment Value
1	Duct Bank Road	5.18E-01	10
2	Building 398	1.98E+00	10
3	Building 301	6.67E+00	10
4	Building 322	4.00E-01	10

Containment Factor 10

Documentation for Ground Water Containment, Source Building 398:

See Section 4.10.3 of the RI/FS Report. No containment reported.

Reference: 2

Documentation for Ground Water Containment, Source Building 301:

Site has a history of releases. See Section 4.10.4 of the RI/FS Report.

Reference: 2

Documentation for Ground Water Containment, Source Building 322:

No containment reported. See Section 4.10.6 of the RI/FS Report.

Reference: 2

Net Precipitation

Net Precipitation (inches) 0.00

SURFACE WATER PATHWAY GW TO SW CONTAINMENT SUMMARY

NASA LeRC - West Area - 11/27/95

Aquifer: Shale Bedrock Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Shale Bedrock Aquifer Aquifer:

Drilling logs included in Appendix C of the RI/FS Report indicate shale to be the bedrock aquifer.

Reference: 2

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Observed Release Factor 0

Documentation for Well 10-MW002:

Three monitoring wells are installed in this area. See Figure 2-6 of the RI/FS Report.

Reference: 2

Documentation for Well 10-MW015:

See Figure 2-6 and Table 2-2 of the RI/FS Report.

Reference: 2

Documentation for Well 10-MW016:

See Figure 2-6 and Table 2-2 of the RI/FS Report.

Reference: 2

POTENTIAL TO RELEASE

Ground Water to Surface Water Angle

Probable Point of Entry	0.10	miles
Angle Theta	180	

Containment

Containment Factor	10

Net Precipitation

Net Precipitation Factor	3

Depth to Aquifer

A. Depth of Hazardous Substances	28.00	feet

Documentation for Depth of Hazardous Substances:

Deepest contamination encountered in sample bh050-014 at 28 feet level. See Tables PMU10-1 through PMU10-7 of the HRS Report.

Reference: 3

B. Depth to Aquifer from Surface	20.00	feet

Documentation for Depth to Aquifer from Surface :

Depth to aquifer ascertained from Deepest level of contamination (28 feet) minus the top of the aquifer (average 20 feet from drilling logs)

Reference: 2,3

C. Depth to Aquifer (B - A)	0.00	feet
Depth to Aquifer Factor	5	

Travel Time

Are All Layers Karst?	NO	
Thickness of Layer(s) with Lowest Conductivity	0.00	feet

Documentation for Thickness of Layers with Lowest Conductivity:

The drilling logs included in Appendix C of the RI/FS Report indicate silt, silty clay, and clay to range in thickness from 10 feet to 28 feet below which is the shale bedrock. The thickness is averaged and considered to be 20 feet.

Reference: 2

Hydraulic Conductivity (cm/sec)	1.0E-06

Documentation for Hydraulic Conductivity:

See Table 3-6 of the HRS Guidance Manual.

Reference: 1

Travel Time Factor	35

==========

Potential to Release Factor	430

Source: 1 Duct Bank Road

Source Hazardous Waste Quantity Value: 0.52

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobililty/ Persistence
Aluminum	0	1.00E+00	2.00E-05	0.00E+00
Antimony	10000	1.00E+00	1.00E-02	1.00E+02
Cadmium	10000	1.00E+00	2.00E-01	2.00E+03
Chloromethane	10	7.00E-04	1.00E+00	7.00E-03
Cobalt	1	1.00E+00	1.00E-02	1.00E-02
Hexachlorocyclopentadiene	10000	1.00E+00	2.00E-03	2.00E+01
Iron	0	1.00E+00	1.00E-02	0.00E+00
Magnesium	0	1.00E+00	2.00E-05	0.00E+00
Manganese	10000	1.00E+00	1.00E-02	1.00E+02
Mercury	10000	1.00E+00	2.00E-05	2.00E-01
Nickel	100	1.00E+00	2.00E-05	2.00E-03
Selenium	100	1.00E+00	1.00E-02	1.00E+00
Thallium	1000	1.00E+00	1.00E-04	1.00E-01
Vanadium	100	1.00E+00	2.00E-07	2.00E-05
Vinyl chloride	10000	7.00E-04	1.00E-02	7.00E-02

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 2 Building 398

Source Hazardous Waste Quantity Value: 1.98

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobililty/ Persistence
Benz(a)anthracene	1000	1.00E+00	2.00E-09	2.00E-06
Benzo(a)pyrene	10000	1.00E+00	2.00E-09	2.00E-05
Benzo(g,h,i)perylene	0	1.00E+00	2.00E-09	0.00E+00
Benzo(j,k)fluorene	100	1.00E+00	2.00E-07	2.00E-05
Benzofluoranthene, 3,4-	10000	1.00E+00	2.00E-09	2.00E-05
Chrysene	0	1.00E+00	2.00E-09	0.00E+00
Indeno(1,2,3-CD)pyrene	0	1.00E+00	2.00E-09	0.00E+00
Manganese	10000	1.00E+00	1.00E-02	1.00E+02
Mercury	10000	1.00E+00	2.00E-05	2.00E-01
Methylene chloride	10	4.00E-01	1.00E+00	4.00E+00
Phenanthrene	0	4.00E-01	2.00E-05	0.00E+00
Pyrene	100	1.00E+00	2.00E-09	2.00E-07

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 3 Building 301

Source Hazardous Waste Quantity Value: 6.67

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobililty/ Persistence
Cadmium	10000	1.00E+00	2.00E-01	2.00E+03
Selenium	100	1.00E+00	1.00E-02	1.00E+00
Thallium	1000	1.00E+00	1.00E-04	1.00E-01

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 4 Building 322

Source Hazardous Waste Quantity Value: 0.40

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobililty/ Persistence
Di-n-butyl phthalate	10	1.00E+00	2.00E-03	2.00E-02

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Toxicity Factor Value	Persist. Value	Toxicity/ Persistence

- N/A and/or data not specified

Toxicity/Mobility/Persistence Value from Source Hazardous Substances:	2.00E+03
Toxicity/Mobility/Persistence Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility/Persistence Factor:	2.00E+03
Sum of Source Hazardous Waste Quantity Values:	9.56E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	10

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

==========

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
- N/A and/or data not specified		

==========

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served
1 Crown Intake Crib	0	375000.0
2 Division Intake Cr	0	375000.0
3 Kirtland Intake Cr	0	375000.0
4 Nottingham Intake C	0	375000.0

Documentation for Intake Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report.

Reference: 2

Type of Surface Water Body	Total Population	Dilution-Weighted Population
Moderate Ocean Zone or Great Lake	1125000.0	16.0

Dilution-Weighted Population Served
by Potentially Contaminated Intakes: 16.0

Potential Contamination Factor: 0.8

Nearest Intake

Location of Nearest Drinking Water Intake: Crown Intake Crib
Distance from the Probable Point of Entry: 12.60 miles
Type of Surface Water Body: Moderate D
Dilution Weight: 0.0000050
Highest Level of Contamination: Potential

Nearest Intake Factor: 0.00

Documentation for Crown Intake Crib:

See Section 3.8.1 of the RI/FS Report.

Reference: 2

Resources

Resource Use: YES

Resource Value: 5.00E+00

Documentation for Resources:

See Section 3.8.1 of the RI/FS Report

Reference: 2

SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 1 Duct Bank Road

Source Hazardous Waste Quantity Value: 0.52

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio-accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value
Aluminum	0	1.00E+00	2.00E-05	5.00E+01	0.00E+00
Antimony	10000	1.00E+00	1.00E-02	5.00E-01	5.00E+01
Cadmium	10000	1.00E+00	2.00E-01	5.00E+03	1.00E+07
Chloromethane	10	7.00E-04	1.00E+00	5.00E+00	3.50E-02
Cobalt	1	1.00E+00	1.00E-02	5.00E-01	5.00E-03
Hexachlorocyclopentadiene	10000	1.00E+00	2.00E-03	5.00E+03	1.00E+05
Iron	0	1.00E+00	1.00E-02	5.00E-01	0.00E+00
Magnesium	0	1.00E+00	2.00E-05	5.00E-01	0.00E+00
Manganese	10000	1.00E+00	1.00E-02	5.00E-01	5.00E+01
Mercury	10000	1.00E+00	2.00E-05	5.00E+04	1.00E+04
Nickel	100	1.00E+00	2.00E-05	5.00E+02	1.00E+00
Selenium	100	1.00E+00	1.00E-02	5.00E+01	5.00E+01
Thallium	1000	1.00E+00	1.00E-04	5.00E+01	5.00E+00
Vanadium	100	1.00E+00	2.00E-07	5.00E-01	1.00E-05
Vinyl chloride	10000	7.00E-04	1.00E-02	5.00E+00	3.50E-01

Source: 2 Building 398

Source Hazardous Waste Quantity Value: 1.98

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio-accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value
Benz(a)anthracene	1000	1.00E+00	2.00E-09	5.00E+04	1.00E-01
Benzo(a)pyrene	10000	1.00E+00	2.00E-09	5.00E+02	1.00E-02
Benzo(g,h,i)perylene	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Benzo(j,k)fluorene	100	1.00E+00	2.00E-07	5.00E+03	1.00E-01
Benzofluoranthene, 3,4-	10000	1.00E+00	2.00E-09	5.00E+04	1.00E+00
Chrysene	0	1.00E+00	2.00E-09	5.00E+02	0.00E+00
Indeno(1,2,3-CD)pyrene	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Manganese	10000	1.00E+00	1.00E-02	5.00E-01	5.00E+01
Mercury	10000	1.00E+00	2.00E-05	5.00E+04	1.00E+04
Methylene chloride	10	4.00E-01	1.00E+00	5.00E+00	2.00E+01
Phenanthrene	0	4.00E-01	2.00E-05	5.00E+01	0.00E+00
Pyrene	100	1.00E+00	2.00E-09	5.00E+01	1.00E-05

Source: 3 Building 301

Source Hazardous Waste Quantity Value: 6.67

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio-accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value
Cadmium	10000	1.00E+00	2.00E-01	5.00E+03	1.00E+07
Selenium	100	1.00E+00	1.00E-02	5.00E+01	5.00E+01
Thallium	1000	1.00E+00	1.00E-04	5.00E+01	5.00E+00

Source: 4 Building 322

Source Hazardous Waste Quantity Value: 0.40

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio-accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value
Di-n-butyl phthalate	10	1.00E+00	2.00E-03	5.00E+03	1.00E+02

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Toxicity Value	Persist. Value	Bio-accum. Value	Toxicity/ Persistence Bioaccum. Value

- N/A and/or data not specified

Toxicity/Mobility/Persistence/Bioaccumulation Value from Source Hazardous Substances:	1.00E+07
Toxicity/Mobility/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility/Persistence/Bioaccumulation Factor:	1.00E+07
Sum of Source Hazardous Waste Quantity Values:	9.56E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	100

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
- N/A and/or data not specified		

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Fishery	Annnual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di

- N/A and/or data not specified

Sum of (Pi*Di): 0.00E+00

Potential Human Food Chain Contamination Factor: 0.00E+00

Food Chain Individual

Location of Nearest Fishery: N.A.

Food Chain Individual Factor: 0.00

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 1 Duct Bank Road

Source Hazardous Waste Quantity Value: 0.52

Hazardous Substance	Eco-toxicity Value	Persist. Value	Mob. Value	Bio-accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value
Aluminum	0	1.00E+00	2.00E-05	5.00E+01	0.00E+00
Antimony	0	1.00E+00	1.00E-02	5.00E-01	0.00E+00
Cadmium	1000	1.00E+00	2.00E-01	5.00E+03	1.00E+06
Chloromethane	1	7.00E-04	1.00E+00	5.00E+00	3.50E-03
Cobalt	0	1.00E+00	1.00E-02	5.00E+03	0.00E+00
Hexachlorocyclopentadiene	10000	1.00E+00	2.00E-03	5.00E+01	1.00E+03
Iron	10	1.00E+00	1.00E-02	5.00E-01	5.00E-02
Magnesium	0	1.00E+00	2.00E-05	5.00E-01	0.00E+00
Manganese	0	1.00E+00	1.00E-02	5.00E+04	0.00E+00
Mercury	10000	1.00E+00	2.00E-05	5.00E+04	1.00E+04
Nickel	10	1.00E+00	2.00E-05	5.00E+02	1.00E-01
Selenium	100	1.00E+00	1.00E-02	5.00E+03	5.00E+03
Thallium	0	1.00E+00	1.00E-04	5.00E+02	0.00E+00
Vanadium	0	1.00E+00	2.00E-07	5.00E-01	0.00E+00
Vinyl chloride	0	7.00E-04	1.00E-02	5.00E+00	0.00E+00

Source: 2 Building 398

Source Hazardous Waste Quantity Value: 1.98

Hazardous Substance	Eco-toxicity Value	Persist. Value	Mob. Value	Bio-accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value
Benz(a)anthracene	10000	1.00E+00	2.00E-09	5.00E+04	1.00E+00
Benzo(a)pyrene	10000	1.00E+00	2.00E-09	5.00E+04	1.00E+00
Benzo(g,h,i)perylene	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Benzo(j,k)fluorene	10000	1.00E+00	2.00E-07	5.00E+03	1.00E+01
Benzofluoranthene, 3,4-	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Chrysene	1000	1.00E+00	2.00E-09	5.00E+03	1.00E-02
Indeno(1,2,3-CD)pyrene	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Manganese	0	1.00E+00	1.00E-02	5.00E+04	0.00E+00
Mercury	10000	1.00E+00	2.00E-05	5.00E+04	1.00E+04
Methylene chloride	1	4.00E-01	1.00E+00	5.00E+00	2.00E+00
Phenanthrene	1000	4.00E-01	2.00E-05	5.00E+03	4.00E+01
Pyrene	0	1.00E+00	2.00E-09	5.00E+01	0.00E+00

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 3 Building 301

Source Hazardous Waste Quantity Value: 6.67

Hazardous Substance	Eco-toxicity Value	Persist. Value	Mob. Value	Bio-accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value
Cadmium	1000	1.00E+00	2.00E-01	5.00E+03	1.00E+06
Selenium	100	1.00E+00	1.00E-02	5.00E+03	5.00E+03
Thallium	0	1.00E+00	1.00E-04	5.00E+02	0.00E+00

Source: 4 Building 322

Source Hazardous Waste Quantity Value: 0.40

Hazardous Substance	Eco-toxicity Value	Persist. Value	Mob. Value	Bio-accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value
Di-n-butyl phthalate	1000	1.00E+00	2.00E-03	5.00E+03	1.00E+04

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Eco-toxicity Value	Persist. Value	Bio-accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value

- N/A and/or data not specified

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Ecotoxicity/Mobility/Persistence/Bioaccummulation Value from Source Substances:	1.00E+06
Ecotoxicity/Mobility/Persistence/Bioaccummulation Value from Observed Hazardous Substances:	0.00E+00
Ecotoxicity/Mobility/Persistence/Bioaccummulation Factor:	1.00E+06
Sum of Source Hazardous Waste Quantity Values:	9.56E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	56

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT TARGETS
NASA LeRC - West Area - 11/27/95

Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Sensitive Environment Value
River	1 Rocky Rvr Reservn	50

Wetlands

Type of Surface Water Body	Sensitive Environment	Wetlands Frontage	Wetlands Value
- N/A and/or data not specified			

Documentation for Sensitive Environment Rocky Rvr Reservn:

See Section 3.6 of the RI/FS Report.

Reference: 2

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT TARGETS
NASA LeRC - West Area - 11/27/95

Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)
Small to Moderate Stream	50	0	5.00E-02	2.50E+00

Sum of Dj(Wj+Sj): 2.50E+00
Sum of Dj(Wj+Sj)/10: 2.50E-01

==========

Potential Contamination Sensitive Environment Factor: 2.50E-01

Likelihood of Exposure

No.	Source ID	Level of Contamination
1	Duct Bank Road	Level II
2	Building 398	Level I

Likelihood of Exposure Factor: 550

Documentation for Area of Contamination, Source Duct Bank Road:

Area measured from Figure 4-1 of the RI/FS Report. New AOC has been designated at the location of bh049.
220'x80' = 17600 sq. ft.

Reference: 2

Documentation for Area of Contamination, Source Building 398:

Area has been measured from Figure 4-1 of the RI/FS Report.
280' x 240' = 67200 sq. ft.

Reference: 2

Documentation for Area of Contamination, Source Building 301:

Area has been measured from Figure 4-1 of the RI/FS Report.
540' 420' = 226800 sq. ft.

Reference: 2

Documentation for Area of Contamination, Source Building 322:

Area has been measured from Figure 4-1 of the RI/FS Report.
340'x40' = 13600 sq. ft.

Reference: 2

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Cadmium	> 2	4.9E+00	0.0E+00	0.0E+00	ppm
1	Chloromethane	< 2	1.3E-02	4.5E+01	0.0E+00	ppm
1	Hexachlorocyclopentadiene	< 2	3.9E-01	0.0E+00	4.1E+03	ppm
1	Mercury	< 2	1.0E-01	0.0E+00	1.7E+02	ppm
1	Selenium	> 2	6.3E+00	0.0E+00	0.0E+00	ppm
1	Thallium	> 2	3.0E+00	0.0E+00	0.0E+00	ppm
1	Vanadium	> 2	6.6E+01	0.0E+00	0.0E+00	ppm
1	Vinyl chloride	< 2	1.3E-02	3.1E-01	0.0E+00	ppm
2	Benz(a)anthracene	< 2	1.5E+00	0.0E+00	0.0E+00	ppm
2	Benzo(a)pyrene	< 2	1.4E+00	8.0E-02	0.0E+00	ppm
2	Benzo(g,h,i)perylene	< 2	6.9E-01	0.0E+00	0.0E+00	ppm
2	Benzo(j,k)fluorene	< 2	4.2E+00	0.0E+00	2.3E+04	ppm
2	Benzofluoranthene, 3,4-	< 2	2.0E+00	0.0E+00	0.0E+00	ppm
2	Chrysene	< 2	1.8E+00	0.0E+00	0.0E+00	ppm
2	Indeno(1,2,3-CD)pyrene	< 2	7.9E-01	0.0E+00	0.0E+00	ppm
2	Manganese	< 2	1.4E+03	0.0E+00	2.9E+03	ppm
2	Mercury	< 2	2.0E-01	0.0E+00	1.7E+02	ppm
2	Methylene chloride	< 2	1.7E-02	7.8E+01	3.5E+04	ppm
2	Phenanthrene	< 2	2.1E+00	0.0E+00	0.0E+00	ppm
2	Pyrene	< 2	2.9E+00	0.0E+00	1.7E+04	ppm

Documentation for Source Duct Bank Road, Contaminants:

See Table 5-65 of the RI/FS Report for analytical data and
Table 10-1 of the HRS Report for concentrations significantly above
background.

Reference: 2,3

Documentation for Source Building 398, Contaminants:

See Table 5-68 of the RI/FS Report for analytical data and Table 10-2 of the HRS Report for concentrations significantly above background.

Reference: 2,3

Documentation for Source Building 301, Contaminants:

See Table 5-69 of the RI/FS Report for analytical data and Table PMU10-5 of the HRS Report for concentrations significantly above background values.

Reference: 2,3

Documentation for Source Building 322, Contaminants:

See Table 5-71 of the RI/FS Report for analytical data and Table PMU10-7 of the HRS Report for concentrations significantly above background.

Reference: 2,3

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 1 Duct Bank Road

Source Hazardous Waste Quantity Value: 0.52

Hazardous Substance	Toxicity Value
Chloromethane	10
Hexachlorocyclopentadiene	10000
Mercury	10000
Vinyl chloride	10000

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 2 Building 398

Source Hazardous Waste Quantity Value: 1.98

Hazardous Substance	Toxicity Value
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(g,h,i)perylene	0
Benzo(j,k)fluorene	100
Benzofluoranthene, 3,4-	10000
Chrysene	0
Indeno(1,2,3-CD)pyrene	0
Manganese	10000
Mercury	10000
Methylene chloride	10
Phenanthrene	0
Pyrene	100

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	2.49E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Targets

Level I Population: 20.0 Value: 200.00

Documentation for Level I Population:

One of the PMU 10 areas of concern includes a day care center at which the contaminants were detected in the shallow soils within and long the perimeter of the outdoor recreation area.

Reference: 2

Level II Population: 0.0 Value: 0.00

Documentation for Level II Population:

No resident, school, or daycare workers within 200 feet of observed Level II contamination.

Reference: 2

Workers: 5.0 Value: 5.00

Resident Individual: Level I Value: 50.00

Resources: NO Value: 0.00

Terrestial Sensitive Environment	Value
State lands	25

Terrestrial Sensitive Environments Factor: 25.00

Documentation for Terrestrial Environment State lands:

Value from Table 5-5 of the HRS Guidance Manual. See Section 3.6 of the RI/FS Report.

Reference: 1,2

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT LIKELIHOOD OF EXPOSURE
NASA LeRC - West Area - 11/27/95

Likelihood of Exposure

No.	Source ID	Level of Contamination	Attractiveness/ Accessibility	Area of Contam. (sq. feet)
1	Duct Bank Road	Level II	5	17600
2	Building 398	Level I	100	67200

Highest Attractiveness/Accessibility Value: 100
Sum of Eligible Areas Of Contamination (sq. feet): 84800
Area of Contamination Value: 20

Likelihood of Exposure Factor Category: 125

Documentation for Attractiveness/Accessibility, Source Duct Bank Road:

NASA LeRC facilities are maintained by a fence and have restricted public access.

Reference:

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Cadmium	> 2	4.9E+00	0.0E+00	0.0E+00	ppm
1	Chloromethane	< 2	1.3E-02	4.5E+01	0.0E+00	ppm
1	Hexachlorocyclopentadiene	< 2	3.9E-01	0.0E+00	4.1E+03	ppm
1	Mercury	< 2	1.0E-01	0.0E+00	1.7E+02	ppm
1	Selenium	> 2	6.3E+00	0.0E+00	0.0E+00	ppm
1	Thallium	> 2	3.0E+00	0.0E+00	0.0E+00	ppm
1	Vanadium	> 2	6.6E+01	0.0E+00	0.0E+00	ppm
1	Vinyl chloride	< 2	1.3E-02	3.1E-01	0.0E+00	ppm
2	Benz(a)anthracene	< 2	1.5E+00	0.0E+00	0.0E+00	ppm
2	Benzo(a)pyrene	< 2	1.4E+00	8.0E-02	0.0E+00	ppm
2	Benzo(g,h,i)perylene	< 2	6.9E-01	0.0E+00	0.0E+00	ppm
2	Benzo(j,k)fluorene	< 2	4.2E+00	0.0E+00	2.3E+04	ppm
2	Benzofluoranthene, 3,4-	< 2	2.0E+00	0.0E+00	0.0E+00	ppm
2	Chrysene	< 2	1.8E+00	0.0E+00	0.0E+00	ppm
2	Indeno(1,2,3-CD)pyrene	< 2	7.9E-01	0.0E+00	0.0E+00	ppm
2	Manganese	< 2	1.4E+03	0.0E+00	2.9E+03	ppm
2	Mercury	< 2	2.0E-01	0.0E+00	1.7E+02	ppm
2	Methylene chloride	< 2	1.7E-02	7.8E+01	3.5E+04	ppm
2	Phenanthrene	< 2	2.1E+00	0.0E+00	0.0E+00	ppm
2	Pyrene	< 2	2.9E+00	0.0E+00	1.7E+04	ppm

Documentation for Source Duct Bank Road, Contaminants:

See Table 5-65 of the RI/FS Report for analytical data and Table 10-1 of the HRS Report for concentrations significantly above background.

Reference: 2,3

Documentation for Source Building 398, Contaminants:

See Table 5-68 of the RI/FS Report for analytical data and Table 10-2 of the HRS Report for concentrations significantly above background.

Reference: 2,3

Documentation for Source Building 301, Contaminants:

See Table 5-69 of the RI/FS Report for analytical data and Table PMU10-5 of the HRS Report for concentrations significantly above background values.

Reference: 2,3

Documentation for Source Building 322, Contaminants:

See Table 5-71 of the RI/FS Report for analytical data and Table PMU10-7 of the HRS Report for concentrations significantly above background.

Reference: 2,3

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 1 Duct Bank Road

Source Hazardous Waste Quantity Value: 0.52

Hazardous Substance	Toxicity Value
Chloromethane	10
Hexachlorocyclopentadiene	10000
Mercury	10000
Vinyl chloride	10000

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 2 Building 398

Source Hazardous Waste Quantity Value: 1.98

Hazardous Substance	Toxicity Value
Benz(a)anthracene	1000
Benzo(a)pyrene	10000
Benzo(g,h,i)perylene	0
Benzo(j,k)fluorene	100
Benzofluoranthene, 3,4-	10000
Chrysene	0
Indeno(1,2,3-CD)pyrene	0
Manganese	10000
Mercury	10000
Methylene chloride	10
Phenanthrene	0
Pyrene	100

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	2.49E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT TARGETS
NASA LeRC - West Area - 11/27/95

Nearby Individual

Population within 1/4 mile: 375.0

Nearby Individual Value: 0.0

Population Within 1 Mile

Travel Distance Category	Number of People	Value
> 0 to 1/4 mile	375.0	1.3
> 1/4 to 1/2 mile	775.0	0.7
> 1/2 to 1 mile	4800.0	3.3
	Population Within 1 Mile Factor:	5.0

Documentation for Population > 0 to 1/4 mile Distance Category:

See Table 3-5 of the RI/FS Report.

Reference: 2

OBSERVED RELEASE

No.	Sample ID	Distance (miles)	Level of Contamination

- N/A and/or data not specified

==========

Observed Release Factor: 0

Gas Migration Potential

GAS POTENTIAL TO RELEASE

Source ID	Source Type	Gas Contain. Value (A)	Gas Source Type Value (B)	Gas Migrtn. Potent. Value (C)	Sum (B+C)	Gas Potential to Rel. Value A(B+C)
Duct Bank Road	Contaminated Soil	3	19	17	36	108
Building 398	Contaminated Soil	3	19	11	30	90
Building 322	Contaminated Soil	3	0	6	6	18

Gas Potential to Release Factor: 108

Documentation for Gas Containment, Source Duct Bank Road:

Soil moderately covered with vegetation.

Reference:

Source: Duct Bank Road

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Chloromethane	17
Hexachlorocyclopentadiene	17
Mercury	11
Vinyl chloride	17

Average of Gas Migration Potential Value for 3 Hazardous Substances: 17.000

Gas Migration Potential Value From Table 6-7: 17

Source: Building 398

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Benz(a)anthracene	6
Benzo(a)pyrene	6
Benzo(j,k)fluorene	6
Benzofluoranthene, 3,4-	6
Chrysene	6
Mercury	11
Methylene chloride	17
Phenanthrene	11
Pyrene	6

Average of Gas Migration Potential Value for 3 Hazardous Substances: 13.000

Gas Migration Potential Value From Table 6-7: 11

Source: Building 301

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value

Average of Gas Migration Potential Value for 3 Hazardous Substances: 0.000

Gas Migration Potential Value From Table 6-7: 0

Source: Building 322

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Di-n-butyl phthalate	6

Average of Gas Migration Potential Value for 3 Hazardous Substances: 6.000

Gas Migration Potential Value From Table 6-7: 6

Particulate Migration Potential

PARTICULATE POTENTIAL TO RELEASE

Source ID	Source Type	Partic. Contain. Value (A)	Partic. Source Type Value (B)	Partic. Migrtn. Potent. Value (C)	Sum (B+C)	Partic. Potential to Rel. Value A(B+C)
Duct Bank Road	Contaminated Soil	3	22	6	28	84
Building 398	Contaminated Soil	3	22	6	28	84
Building 301	Contaminated Soil	3	22	6	28	84
Building 322	Contaminated Soil	3	0	6	6	18

Particulate Potential to Release Factor: 84

Documentation for Particulate Containment, Source Duct Bank Road:

Soil moderately covered with vegetaion

Reference:

Documentation for Particulate Migration Potential:

See Table 6-2 of the HRS Guidance Manual.

Reference: 1

Source: Duct Bank Road

Particulate Hazardous Substance
Aluminum
Antimony
Cadmium
Cobalt
Hexachlorocyclopentadiene
Iron
Magnesium
Manganese
Mercury
Nickel
Selenium
Thallium
Vanadium

Source: Building 398

Particulate Hazardous Substance
Benz(a)anthracene
Benzo(a)pyrene
Benzo(g,h,i)perylene
Benzo(j,k)fluorene
Benzofluoranthene, 3,4-
Chrysene
Indeno(1,2,3-CD)pyrene
Manganese
Mercury
Phenanthrene
Pyrene

Source: Building 301

Particulate Hazardous Substance
Cadmium
Selenium
Thallium

Source: Building 322

Particulate Hazardous Substance

Di-n-butyl phthalate

AIR PATHWAY WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 1 Duct Bank Road

Source Hazardous Waste Quantity Value: 0.52

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Aluminum	100	NA	2.00E-05	2.00E-03
Antimony	10000	NA	2.00E-05	2.00E-01
Cadmium	10000	NA	2.00E-05	2.00E-01
Chloromethane	10	1.00E+00	NA	1.00E+01
Cobalt	1	NA	2.00E-05	2.00E-05
Hexachlorocyclopentadiene	10000	2.00E-01	2.00E-05	2.00E+03
Iron	100	NA	2.00E-05	2.00E-03
Magnesium	100	NA	2.00E-05	2.00E-03
Manganese	10000	NA	2.00E-05	2.00E-01
Mercury	10000	2.00E-01	2.00E-05	2.00E+03
Nickel	100	NA	2.00E-05	2.00E-03
Selenium	100	NA	2.00E-05	2.00E-03
Thallium	1000	NA	2.00E-05	2.00E-02
Vanadium	100	NA	2.00E-05	2.00E-03
Vinyl chloride	10000	1.00E+00	NA	1.00E+04

Source: 2 Building 398

Source Hazardous Waste Quantity Value: 1.98

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Benz(a)anthracene	1000	2.00E-04	2.00E-05	2.00E-01
Benzo(a)pyrene	10000	2.00E-04	2.00E-05	2.00E+00
Benzo(g,h,i)perylene	100	NA	2.00E-05	2.00E-03
Benzo(j,k)fluorene	100	2.00E-04	2.00E-05	2.00E-02
Benzofluoranthene, 3,4-	10000	2.00E-03	2.00E-05	2.00E+01
Chrysene	100	2.00E-04	2.00E-05	2.00E-02
Indeno(1,2,3-CD)pyrene	100	NA	2.00E-05	2.00E-03
Manganese	10000	NA	2.00E-05	2.00E-01
Mercury	10000	2.00E-01	2.00E-05	2.00E+03
Methylene chloride	10	1.00E+00	NA	1.00E+01
Phenanthrene	100	2.00E-02	2.00E-05	2.00E+00
Pyrene	100	2.00E-03	2.00E-05	2.00E-01

AIR PATHWAY WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 3 Building 301

Source Hazardous Waste Quantity Value: 6.67

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Cadmium	10000	NA	2.00E-05	2.00E-01
Selenium	100	NA	2.00E-05	2.00E-03
Thallium	1000	NA	2.00E-05	2.00E-02

AIR PATHWAY WASTE CHARACTERISTICS
NASA LeRC - West Area - 11/27/95

Source: 4 Building 322

Source Hazardous Waste Quantity Value: 0.40

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Di-n-butyl phthalate	10	2.00E-02	2.00E-05	2.00E-01

Hazardous Substances Found in an Observed Release

Sample ID	Observed Release Hazardous Substance	Particulate Toxicity/ Mobility Value	Gas Toxicity/ Mobility Value

- N/A and/or data not specified

Toxicity/Mobility Value from Source Hazardous Substances:	1.00E+04
Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	9.56E+00
Hazardous Waste Quantity Factor:	10
Waste Characteristics Factor Category:	18

Actual Contamination

No.	Sample ID	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Potential Contamination

Distance Categories Subject to Potential Contamination	Population	Value
Onsite	0.0	0.0000
> 0 to 1/4 mile	5875.0	130.4000
> 1/4 to 1/2 mile	5775.0	28.2000
> 1/2 to 1 mile	19800.0	26.1000
> 1 to 2 miles	58000.0	26.6000
> 2 to 3 miles	164000.0	37.5000
> 3 to 4 miles	188000.0	22.9000
	Potential Contaminantion Factor:	272.0000

Documentation for Population > 0 to 1/4 mile Distance Category:

See Table 3-5 of the RI/FS Report for summary of demographic estimates

Reference: 2

Nearest Individual Factor

Level of Contamination: Potential
Distance in miles: 0 to 1/8

Nearest Individual Value: 20

Resources

Resource Use: YES

Resource Value: 5

Documentation for Resources:

Rocky River Reservation is located within the proximity.

Reference:

Actual Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Actual Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value
- N/A and/or data not specified		

==========
Sensitive Environments Actual Contamination Factor: 0.000
(Sum of Sensitive Environments + Wetlands Values)

Potential Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value	Distance Weight	Weighted Value/10
	0.000	0	1.0000	0.000

Potential Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value	Distance Weight	Weighted Value/10
- N/A and/or data not specified				

Sensitive Environment Potential Contamination Factor: 0.000

REFERENCES

NASA LeRC - West Area - 11/27/95

1. HRS Guidance Manual: 40CFR300 Appendix A to Part 300 The Hazard Ranking System 1993 and The Hazard Ranking System Guidance Manual - Interim Final, USEPA, Washington D.C.

2. Phase I Remedial Investigation/Feasibility Study Report. Prepared by R&R International Inc. for NASA lewis Research Center, Cleveland, OH. October 1995.

3. HRS Report. Prepared by R&R International Inc. for NASA Lewis Research Center, Cleveland, OH. October 1995.

TABLE 10-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
DUCT BANK ROAD (UPR-10-56)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
1,2-Dichloroethane	0.010	0.005	BH049-301	*	0.010	N	n/a	
Acetone	0.010	0.004	BH049-001	*	0.004	N	n/a	
Chloromethane	0.010	0.005	BH049-001	*	0.013	Y	Y	
Toluene	0 010	0.005	BH049-001	*	0.007	N	n/a	
Total Xylenes	0.010	0.005	BH049-001	*	0.003	N	n/a	
Vinyl Chloride	0.010	0.005	BH049-001	*	0 013	Y	Y	
SVOCs								
1,4-Dichlorobenzene	0.330	0.165	BH049-006	*	0.100	N	n/a	
2-Methylnaphthalene	0.330	0.139	BH049-006	*	0.310	N	n/a	
4-Nitrophenol	0.330	0.4	BH049-001	*	0.950	N	n/a	
Benzo(a)Pyrene	0.330	0.158	BH049-001	*	0.061	N	n/a	
Benzo(a)anthracene	0 330	0.164	BH049-001	*	0.084	N	n/a	
Benzo(b)fluoranthene	0.330	0.175	BH049-001	*	0.100	N	n/a	
Chrysene	0.330	0.171	BH049-001	*	0.078	N	n/a	
Fluoranthene	0.330	0.204	BH049-001	*	0.210	N	n/a	
Hexachlorocyclopentadiene	0.330	0.165	BH049-001	*	0.390	Y	Y	
Naphthalene	0.330	0.139	BH049-006	*	0.190	N	n/a	
Pentachlorophenol	0.330	0.4	BH049-001	*	0.004	N	n/a	
Phenanthrene	0.330	0.188	BH049-001	*	0 170	N	n/a	
Pyrene	0.330	0 188	BH049-001	*	0.150	N	n/a	
Metals								
Aluminum		12820.000	BH049-001		12200.00	N	n/a	
Arsenic		16.240	BH049-007	*	24.00	N	n/a	

TABLE 10-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
DUCT BANK ROAD (UPR-10-56)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Barium		78.26	BH049-001		88.500	N	n/a	
Beryllium		0.72	BH049-001	#	0.7400	N	n/a	
Cadmium	1	0.737	BH049-007	*	4.9000	Y	Y	
Calcium		17475.33	BH049-001		9310	N	n/a	
Chromium		17.78	BH049-001		20.20	N	n/a	
Cobalt		13.56	BH049-001		14.900	N	n/a	
Copper		26.13	BH049-007		41.80	N	n/a	
Iron		26,100	BH049-001	*	29300.000	N	n/a	
Lead		17.12	BH049-001	*	22.200	N	n/a	
Magnesium		5576	BH049-001		5140.000	N	n/a	
Manganese		423.53	BH049-001		570.0	N	n/a	
Mercury	0.1	0.05	BH049-001		0.1	Y	Y	
Nickel		35.37	BH049-006		66 10	N	n/a	
Potassium		1621.27	BH049-001		2210.00	N	n/a	
Selenium	1	0.6	BH049-006		6.30	Y	Y	
Sodium		145	BH049-001	#	118.000	N	n/a	
Thallium		0.612	BH049-006	*	3.000	Y	Y	
Vanadium		20.04	BH049-006	*	65.800	Y	Y	
Zinc		92.07	BH049-006		217.0000	N	n/a	
GROUNDWATER								
VOCs								
None Detected						N	n/a	
SVOCs								
2-Methylnaphthalene			GW015-001	*	0 002	N	n/a	
Naphthalene			GW015-001	*	0.001	N	n/a	

TABLE 10-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
DUCT BANK ROAD (UPR-10-56)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
bis(2-Ethylhexyl)Phthalate		0.006	GW015-001	*	0.004	N	n/a	
Metals								
Aluminum		0.210	GW015-001		43.60000	Y	Y	
Antimony		0.006	GW015-001	#	0.02850	Y	Y	
Arsenic		0.050	GW015-001		0.07180	N	n/a	
Barium		2	GW015-001	#	0.18600	N	n/a	
Beryllium		0.004	GW015-001	#	0.00270	N	n/a	
Cadmium		0.005	GW015-001		0.02520	Y	Y	
Calcium			GW015-001		150.0	N	n/a	
Chromium		0.1	GW015-001		0 09440	N	n/a	
Cobalt			GW015-001		0.05820	N	n/a	
Copper		1.3	GW015-001		0.1910	N	n/a	
Iron		0.3	GW015-001		115.000	Y	Y	
Lead		0.015	GW015-001		0.05720	Y	Y	
Magnesium			GW015-001		63.5000	N	n/a	
Manganese		0.05	GW015-001		1.110	Y	Y	
Nickel		0.1	GW015-001		0.30900	Y	Y	
Potassium			GW015-001		25.60	N	n/a	
Selenium		0.05	GW015-001		0.02820	N	n/a	
Sodium		20	GW015-001		18.300	N	n/a	
Thallium		0.002	GW015-001		0.01270	Y	Y	
Vanadium			GW015-001		0 4560	N	n/a	
Zinc		5	GW015-001		0.1000	N	n/a	
General Chemistry								
Bromide			GW015-001			N	n/a	

TABLE 10-1
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
DUCT BANK ROAD (UPR-10-56)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Chloride			GW015-001		12.0000	N	n/a	
Fluoride			GW015-001		0.2000	N	n/a	
Nitrate / Nitrite			GW015-001		0.0200	N	n/a	
Sulfate			GW015-001		100.0000	N	n/a	
Total Dissolved Solids			GW015-001		890 0000	N	n/a	

Notes:
mean of background samples collected from shallow upland was used as background for shallow samples
and deep upland was used for deep samples (10 feet and more)
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL
MCLs for water used as background

TABLE 10-2
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
BUILDING 398 (UPR-10-49)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
Methylene Chloride	0.010	0.005	SS041-001		0.017	Y	Y	
SVOCs								
1,4-Dichlorobenzene	0.330	0.165	SS041-001	*	0.097	N	n/a	
Acenaphthene	0.330	0.165	SS041-001	*	0 060	N	n/a	
Acenaphthylene	0 330	0.165	SS041-001	*	0.270	N	n/a	
Anthracene	0.330	0.152	SS041-001	*	0.330	N	n/a	
Benzo(a)Pyrene	0.330	0.158	SS041-001	*	1.400	Y	Y	
Benzo(a)anthracene	0.330	0.164	SS041-001	*	1.500	Y	Y	
Benzo(b)fluoranthene	0.330	0.175	SS041-001	*	2.000	Y	Y	
Benzo(g,h,i)Perylene	0.330	0.167	SS041-001	*	0.690	Y	Y	
Benzo(k)fluoranthene	0.330	0.146	SS041-001	*	0.800	Y	Y	
Carbazone	0.330	0.15	SS041-001	*	0.300	N	n/a	
Chrysene	0.330	0.171	SS041-001	*	1.800	Y	Y	
Di-n-Butyl Phthalate	0.330	0.137	SS039-001	*	0.340	Y	Y	
Dibenzofuran	0.330	0.165	SS041-001	*	0.090	N	n/a	
Fluoranthene	0.330	0.204	SS041-001	*	4.200	Y	Y	
Fluorene	0.330	0 157	SS041-001	*	0.240	N	n/a	
Ideno(1,2,3-cd)pyrene	0.330	0.16	SS041-001	*	0.790	Y	Y	
Phenanthrene	0.330	0.188	SS041-001	*	2.100	Y	Y	
Pyrene	0.330	0.188	SS041-001	*	2.900	Y	Y	
bis(2-Ethylhexyl)Phthalate	0.330	0.123	SS041-001	*	0.160	N	n/a	
Metals								
Aluminum		12820.000	SS039-001	*	12600.00	N	n/a	

TABLE 10-2
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
BUILDING 398 (UPR-10-49)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Antimony	12	5.280	SS040-001	#*	4.60	N	n/a	
Arsenic		12.040	SS041-001	*	11.60	N	n/a	
Barium		78.26	SS039-001	*	150.000	N	n/a	
Beryllium		0.72	SS039-001	#	0.6200	N	n/a	
Cadmium	1	0.51	SS041-001	#	1.0000	N	n/a	
Calcium		17475.33	SS040-001	*	17700	N	n/a	
Chromium		17.78	SS039-001		17.70	N	n/a	
Cobalt		13.56	SS041-001	#	12.500	N	n/a	
Copper		23.07	SS040-001		23.80	N	n/a	
Iron		26,100	SS039-001	*	34500.000	N	n/a	
Lead		17.12	SS041-001	*	31.300	N	n/a	
Magnesium		5576	SS040-001		5430.000	N	n/a	
Manganese		423.53	SS039-001		1390.0	Y	Y	
Mercury		0.05	SS039-001		0.2	Y	Y	
Nickel		28.87	SS040-001		28 40	N	n/a	
PotaSSium		1621.27	SS039-001		1400.00	N	n/a	
Selenium		0.23	SS041-001	#	0.51	N	n/a	
Sodium		145	SS039-001	#	122.000	N	n/a	
Thallium		0.39	SS040-001	#	0.600	N	n/a	
Vanadium		24.14	SS039-001		25.400	N	n/a	
Zinc		75.01	SS040-001	*	93.6000	N	n/a	

Notes:
mean of background samples collected from shallow upland was used as background for shallow samples
and deep upland was used for deep samples (10 feet and more)
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc > Sample SQL

TABLE 10-2
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
BUILDING 398 (UPR-10-49)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

	Background Sample		Release Sample					
Compound	SQL	Conc	Sample#	SQL	Conc	Signif.?	Attrib. to Site?	Comments

MCLs for water used as background

TABLE 10-3
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
BUILDING 301 (UPR-10-50)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
Toluene	0.010	0.005	BH044-004	*	0.002	N	n/a	
1,2-Dichloroethane	0.010	0.005	BH044-301	*	0.010	N	n/a	
Chloromethane	0.010	0.005	BH044-301	*	0.010	N	n/a	
Vinyl Chloride	0.010	0.005	BH044-301	*	0.010	N	n/a	
SVOCs								
1,4-Dichlorobenzene	0.330	0.165	BH044-004	*	0.088	N	n/a	
Benzo(a)Pyrene	0.330	0.158	BH044-001	*	0 110	N	n/a	
Benzo(a)anthracene	0.330	0.164	BH044-001	*	0.120	N	n/a	
Benzo(b)fluoranthene	0.330	0.175	BH044-001	*	0.170	N	n/a	
Benzo(k)fluoranthene	0.330	0.146	BH044-001	*	0.063	N	n/a	
Chrysene	0.330	0.171	BH044-001	*	0.120	N	n/a	
Fluoranthene	0.330	0.204	BH044-001	*	0.280	N	n/a	
Ideno(1,2,3-cd)pyrene	0.330	0.160	BH044-001	*	0 045	N	n/a	
Phenanthrene	0.330	0.188	BH044-001	*	0.150	N	n/a	
Pyrene	0.330	0.188	BH044-001	*	0.230	N	n/a	
Metals								
Aluminum		12820.000	BH044-001	*	13100.00	N	n/a	
Antimony	12	5.280	BH044-004	#*	5.80	N	n/a	
Arsenic		12.040	BH044-004	*	22.30	N	n/a	
Barium		78.26	BH044-001		106.000	N	n/a	
Beryllium		0.72	BH044-001		1.4000	N	n/a	
Cadmium		0.51	BH044-004	*	5.2000	Y	Y	
Calcium		17475 33	BH044-001		55100	Y	Y	

TABLE 10-3
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
BUILDING 301 (UPR-10-50)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL		Release Sample Conc	Signif.?	Attrib. to Site?	Comments
Chromium		17.78	BH044-004		*	15.70	N	n/a	
Cobalt		13.56	BH044-004			21.500	N	n/a	
Copper		23.07	BH044-004			35.30	N	n/a	
Iron		26,100	BH044-004			30500.000	N	n/a	
Lead		17.12	BH044-004			19.700	N	n/a	
Magnesium		5576	BH044-001			16600.000	N	n/a	
Manganese		423.53	BH044-001			889.0	N	n/a	
Nickel		28.87	BH044-004			64.80	N	n/a	
Potassium		1621.27	BH044-004		*	1310.00	N	n/a	
Selenium		0.23	BH044-004		*	1.60	Y	Y	
Sodium		145	BH044-001		*	464.000	Y	Y	
Thallium	2.00	0.39	BH044-004			2.700	Y	Y	
Vanadium		24.14	BH044-004		*	38.100	N	n/a	
Zinc		75.01	BH044-004		*	205.0000	N	n/a	

Notes:
mean of background samples collected from shallow upland was used as background
all conc's. in ppm * J-flagged release sample data blank SQLs imply that Sample Conc. > Sample SQL

TABLE 10-4
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
BUILDING 332 (UPR-10-52)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments
SOIL								
VOCs								
None Detected						N	n/a	
SVOCs								
Di-n-Butyl Phthalate	0.330	0.137	BH048-003	*	1.200	Y	Y	
Metals								
Aluminum		12820.000	BH048-003		15500 00	N	n/a	
Arsenic		12.040	BH048-003		12.40	N	n/a	
Barium		78.26	BH048-003		123.000	N	n/a	
Beryllium		0.72	BH048-003	#	1.0000	N	n/a	
Calcium		17475.33	BH048-003		2750	N	n/a	
Chromium		17.78	BH048-003		22.60	N	n/a	
Cobalt		13.5	BH048-003		18.400	N	n/a	
Copper		23.07	BH048-003		28.80	N	n/a	
Iron		2,610,000	BH048-003		33400.000	N	n/a	
Lead		17.12	BH048-003		12.100	N	n/a	
Magnesium		5576	BH048-003		4680.000	N	n/a	
Manganese	1	423.53	BH048-003	*	628.00	N	n/a	
Nickel		28.87	BH048-003		46.30	N	n/a	
Potassium		1621.27	BH048-003		2430.00	N	n/a	
Sodium		145	BH048-003	#	217.00	N	n/a	
Vanadium		24.14	BH048-003		29.50	N	n/a	
Zinc		95 01	BH048-003	*	102.00	N	n/a	

Notes.
mean of background samples collected from shallow upland was used as background

TABLE 10-4
SIGNIFICANCE ABOVE BACKGROUND

PMU 10 - WEST AREA
BUILDING 332 (UPR-10-52)
NASA LEWIS RESEARCH CENTER
PHASE I RI/FS

Compound	Background Sample SQL	Background Sample Conc	Release Sample Sample#	Release Sample SQL	Release Sample Conc	Signif.?	Attrib. to Site?	Comments

all conc's. in ppm

* J-flagged release sample data

blank SQLs imply that Sample Conc. > Sample SQL