HRS DOCUMENTATION RECORD--REVIEW COVER SHEET

Name of Site: Dewey Loeffel Landfill

Date Prepared: March 2010

Contact Persons:

Site Investigation:
James Desir
U.S. Environmental Protection Agency
New York, NY

Documentation Record:
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New York, NY

Pathways, Components, or Threats Not Scored

Even though evidence of ground water contamination exists (see below), the Ground Water Migration, Soil Exposure, and Air Migration Pathways are not scored because the listing decision is not significantly affected by those pathways. The site score based solely on the Surface Water Migration Pathway is sufficient to list the site.

Some hazardous substances, in particular PCBs, have migrated from the facility to underlying aquifers, resulting in contamination of ground water [Ref. 6, pp. 7; 9, pp. 6, 15-17]. New York State Department of Health (NYSDOH) has conducted residential well monitoring in the vicinity of the facility since 1979 [Ref. 9, p. 10]. New York State Department of Environmental Conservation (NYSDEC) designated ground water contamination associated with the disposal facility as Operable Unit 2 (OU2) [Ref. 6, pp. 7, 10]. General Electric Company (GE) has conducted remedial investigations and remedial actions associated with OU2 since 1992, and has reported that Aroclor-1260 exists as a dense non-aqueous phase liquid (DNAPL) [Ref. 9, pp. 10-15; 10, pp. 9-10, 23]. In January 2001, NYSDEC issued a Record of Decision (ROD) for OU2 [Ref. 9, p. 1].

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HRS DOCUMENTATION RECORD

Name of Site:	Dewey Loeffel Landfill	Date Prepared:	March 2010
EPA ID No.:	NYD000512335		
EPA Region:	2		
Street Address of Site*:	Mead Road, Nassau, NY 12123		
County and State:	Rensselaer County, New York		
General Location in the State:	Capital District (eastern portion of state)		
Topographic Map:	Nassau, NY		
Latitude*:	42° 33′ 39.44” North (42.560957°)	Longitude*:	73° 33′ 37.78″ West (-73.560496°)
Site Reference Point:	Facility entrance		

[Figure 1; Ref. 3, p. 1; 4, p. 1; 5, pp. 1-2]

* The street address, coordinates, and contaminant locations presented in this Hazard Ranking System (HRS) documentation record identify the general area where the site is located. They represent one or more locations EPA considers to be part of the site based on the screening information EPA used to evaluate the site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

Scores

Ground Water Pathway	Not Scored
Surface Water Pathway	100.00
Soil Exposure Pathway	Not Scored
Air Pathway	Not Scored
HRS SITE SCORE	50.00

WORKSHEET FOR COMPUTING HRS SITE SCORE
DEWEY LOEFFEL LANDFILL

		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	Not Scored	
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	100.00	10,000.00
2b.	Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	Not Scored	
2c.	Surface Water Migration Pathway Score (S_{sw}) Enter the larger of lines 2a and 2b as the pathway score.	100.00	10,000.00
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	Not Scored	
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	Not Scored	
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$	10,000.00	
6.	**HRS Site Score** Divide the value on line 5 by 4 and take the square root	50.00	

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
DEWEY LOEFFEL LANDFILL

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	MAXIMUM VALUE	VALUE ASSIGNED
Likelihood of Release		
1. Observed Release	550	550
2. Potential to Release by Overland Flow		
2a. Containment	10	not scored
2b. Runoff	25	not scored
2c. Distance to Surface Water	25	not scored
2d. Potential to Release by Overland Flow (lines 2a [2b + 2c])	500	not scored
3. Potential to Release by Flood		
3a. Containment (Flood)	10	not scored
3b. Flood Frequency	50	not scored
3c. Potential to Release by Flood (lines 3a x 3b)	500	not scored
4. Potential to Release (lines 2d + 3c)	500	not scored
5. Likelihood of Release (higher of lines 1 and 4)	550	550
Waste Characteristics		
6. Toxicity/Persistence	*	not scored
7. Hazardous Waste Quantity	*	not scored
8. Waste Characteristics	100	not scored
Targets		
9. Nearest Intake	50	not scored
10. Population		
10a. Level I Concentrations	**	not scored
10b. Level II Concentrations	**	not scored
10c. Potential Contamination	**	not scored
10d. Population (lines 10a + 10b + 10c)	**	not scored
11. Resources	5	not scored
12. Targets (lines 9 + 10d + 11)	**	not scored
13. DRINKING WATER THREAT SCORE ([lines 5 x 8 x 12]/82,500)	100	not scored

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

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
DEWEY LOEFFEL LANDFILL

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	550
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	5.00E+08
16. Hazardous Waste Quantity	*	100
17. Waste Characteristics	1,000	320
Targets		
18. Food Chain Individual	50	45
19. Population		
19a. Level I Concentrations	**	0
19b. Level II Concentrations	**	0.03
19c. Potential Human Food Chain Contamination	**	0.0003
19d. Population (lines 19a + 19b + 19c)	**	0.0303
20. Targets (lines 18 + 19d)	**	45.0303
21. HUMAN FOOD CHAIN THREAT SCORE ([lines 14 x 17 x 20]/82,500)	100	96.06

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

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
DEWEY LOEFFEL LANDFILL

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	550
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioaccumulation	*	5.00E+08
24. Hazardous Waste Quantity	*	100
25. Waste Characteristics	1,000	320
Targets		
26. Sensitive Environments		
26a. Level I Concentrations	**	0
26b. Level II Concentrations	**	50
26c. Potential Contamination	**	not scored
26d. Sensitive Environments (lines 26a + 26b + 26c)	**	50
27. Targets (line 26d)	**	50
28. ENVIRONMENTAL THREAT SCORE ([lines 22 x 25 x 27]/82,500)	60	60.00
29. WATERSHED SCORE (lines 13 + 21 + 28)	100	100.00
30. SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE (S_{of})	100	100.00
SURFACE WATER MIGRATION PATHWAY SCORE (S_{sw})	100	100.00

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

REFERENCES

Reference Number	Description of the Reference
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2.	EPA. Superfund Chemical Data Matrix, SCDM Data Version: 1/27/2004, Appendices B-I (Hazardous Substances Factor Values) and B-II (Hazardous Substance Benchmarks); excerpts downloaded on March 30, 2009. A complete copy of SCDM is available at http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm. [8 pages]
3.	EPA. Superfund Information Systems, CERCLIS Database, Dewey Loeffel Landfill: Site Information and Actions. Downloaded from http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0201218 on September 16, 2009. [2 pages]
4.	U.S. Department of the Interior Geological Survey (USGS). Nassau Quadrangle, New York, 7.5-Minute Series (Topographic). 1978. [1 page]
5.	Gilliland, Gerry, Region 2 Site Assessment Team 2 (SAT 2), Weston Solutions, Inc. (WESTON). Project Note to Dewey Loeffel Landfill site file, Subject: Geographic Coordinates – Dewey Loeffel Landfill site; with Google Earth map attached. September 28, 2009. [2 pages]
6.	New York State Department of Environmental Conservation (NYSDEC). Record of Decision, Dewey Loeffel Inactive Hazardous Waste Disposal Site, Operable Unit 3, Towns of Nassau and Schodack, Rensselaer County, New York, Site No. 442006. January 2002. [129 pages]
7.	O'Brien & Gere Engineers, Inc. (OBG). Loeffel Site Engineering Report. Prepared for General Electric Company (GE). October 1981. [153 pages]
8.	Blasland, Bouck & Lee, Inc. (BBL). Loeffel Site Environs, Feasibility Study Report: Nassau lake Drainage Basin. Prepared for GE. May 13, 1998. [285 pages]
9.	NYSDEC. Record of Decision, Dewey Loeffel Site, Operable Unit 2, Town of Nassau, Rensselaer County, Site No. 4-42-006. January 2001. [87 pages]
10.	HSI GeoTrans. Phase II Hydrogeologic Report, Loeffel Site Environs Remedial Investigation. Prepared for GE. May 8, 1997. [496 pages]
11.	Brown, Mark P., BBL. Letter Report to James N. Ludlam, NYSDEC, Re: Post-Remedial Monitoring and Long-Term Monitoring Plan, Operable Unit 3, Loeffel Site Environs, Nassau, New York, 2004 Surface Water and Suspended Monitoring, 2004 Biota Sampling, Proposed 2005 Monitoring, BBl Project #: 10073.900. Prepared on behalf of GE. October 19, 2004. [151 pages]
12.	NYSDEC. Dewey Loeffel Landfill Fish Monitoring Update; with attached database from NYSDEC. February 2009. [646 pages]
13.	WESTON Region 2 SAT 2. Field Logbook, Dewey Loeffel Landfill, DCN # SAT2.20113.119.001; with Photo Logs attached. May 14, 2009 to August 10, 2009. [66 pages]
14.	Lucarino, Kelli, WESTON Region 2 SAT 2. Letter to James Desir, EPA, Subject: Sampling Trip Report, Work Assignment No.: 0119 Dewey Loeffel Landfill, Contract No.: EP-W-05-048, Document Control No. SAT2.20113.119.839. June 11, 2009. [19 pages]

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Reference Number	Description of the Reference
15.	Snyder, Scott T., WESTON Region 2 SAT 2. Letter to James Desir, EPA, Subject: Sampling Trip Report [Phase 2], Work Assignment No.: 0119 Dewey Loeffel Landfill, Contract No.: EP-W-05-048, Document Control No. SAT2.20113.119.867. August 12, 2009. [27 pages]
16.	Desir, James, EPA. Letter to Gerry Gilliland, WESTON, Subject: [Attached] Organic Data Validation (Phase 1), Hazardous Ranking System (HRS), Work Assignment No. 119, Dewey Loeffel LF Site. September 15, 2009. [43 pages]
17.	Desir, James, EPA. Letter to Gerry Gilliland, WESTON, Subject: [Attached] Organic Data Validation, Hazardous Ranking System (HRS), Work Assignment No. 119, Dewey Loeffel LF Site. September 10, 2009. [84 pages]
18.	Accutest Laboratories. Technical Report for: Weston Solutions, Inc., Dewey Loeffel Landfill, Mead Road, Nassau, NY, Project # 20113.111.00.0119.00, Accutest Job Number: JA20530, Sampling Dates: 06/08/09 – 06/09/09. June 23, 2009. [225 pages]
19.	Accutest Laboratories. Technical Report for: Weston Solutions, Inc., Dewey Loeffel Landfill, Mead Road, Nassau, NY, Project # 20113.111.002.0119.00, Accutest Job Number: JA25102, Sampling Dates: 08/05/09 – 08/06/09. August 25, 2009. [108 pages]
20.	Accutest Laboratories. Technical Report for: Weston Solutions, Inc., Dewey Loeffel Landfill, Mead Road, Nassau, NY, Project # 20113.111.00.0119.00, Accutest Job Number: JA25103, Sampling Date: 08/06/09. August 25, 2009. [94 pages]
21.	Accutest Laboratories. Technical Report for: Weston Solutions, Inc., Dewey Loeffel Landfill, Mead Road, Nassau, NY, Project # 20113.111.00.0119.00, Accutest Job Number: JA25211, Sampling Date: 08/07/09. August 24, 2009. [103 pages]
22.	Accutest Laboratories. Technical Report for: Weston Solutions, Inc., Dewey Loeffel Landfill, Mead Road, Nassau, NY, Project # 20113.111.00.0119.00, Accutest Job Number: JA25223, Sampling Dates: 08/07/09 – 08/08/09. August 26, 2009. [128 pages]
23.	New York State Department of Health (NYSDOH). Chemicals in Sportfish and Game, 2008-2009 Health Advisories. May 21, 2008. [30 pages]
24.	NYSDEC. NYSDEC Questionnaires for Fish Consumption from the Valatie Kill and Nassau Lake, Rensselaer County; completed by local residents. September 2009. [50 pages]
25.	WESTON. 15-Mile Surface Water Pathway Map, Dewey Loeffel Landfill, Town of Nassau, Rensselaer County, NY. October 1, 2009. [1 page]
26.	EPA. Quick Reference Fact Sheet EPA 540-F-94-028: Using Qualified Data to Document an Observed Release and Observed Contamination. Office of Emergency and Remedial Response. November 1996. [18 pages]
27.	EPA. Basic Information: Polychlorinated Biphenyl (PCB). Downloaded from http://www.epa.gov/waste/hazard/tsd/pcbs/pubs/about.htm, on July 13, 2009. [2 pages]

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Reference Number	Description of the Reference
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29.	NYSDEC and General Electric Company (GE). Administrative Consent Order ("Seven Sites Agreement"). September 1980. [34 pages]
30.	U.S. District Court, Northern District of New York. Stipulation and Order of Partial Settlement, Civil Action No. 89-CV-1135 (McAvoy), State of New York et al., Plaintiff, v. General Electric Company, Defendant. September 3, 1992. [29 pages]
31.	Armstrong, Shirley, Times-Union. Waste Lagoon to be Burned. May 21, 1970. [2 pages]
32.	Rensselaer County Health Department (RCHD). Memoranda from Mr. Furlong to File via Mr. Stefanik, Subject: Loeffel's Waste Oil, Town of Nassau, Restricted Burning and Inspection. May 25, 1970. [3 pages]
33.	C.T. Male Associates. Engineer's Report on Waste Water Disposal, Loeffel Refining Products, Inc., Town of Nassau, Rensselaer County, New York. October 26, 1970. [13 pages]
34.	Loeffel, Dewey, Loeffel Refining Products Inc. Letter to Andrew Weist, Water Pollution Control Eng., RE: Receipt of Letter and Agreement to Terms. August 5, 1970. [1 page]
35.	Camp Dresser & McKee (CDM). Final Engineering Report, Implementation of a Remedial Program at the Dewey Loeffel Hazardous Waste Site, Town of Nassau, Rensselaer County, New York. December 1985. [237 pages]
36.	Munro, David A., New York State Department of Law. Letter to James R. Bieke, Shea & Gardner, Re: New York v. General Electric Company; with attached Sampling and Analysis Plan, Volumes 1 and 2, Remedial Investigation, Loeffel Site Environs, Nassau, New York. June 24, 1992. [324 pages]
37.	Gilliland, Gerry, WESTON Region 2 SAT 2. Project Note to Dewey Loeffel Landfill site file, Subject: Sample Quantitation Limits – Dewey Loeffel Landfill site; with attached spreadsheets. December 29, 2009. [28 pages]
38.	Capriglione, Michele, WESTON Region 2 SAT 2. Project Note to Dewey Loeffel Landfill site file, Subject: HRS-eligible wetland frontage calculation – Dewey Loeffel Landfill site; with map attached. January 5, 2010. [2 pages]
39.	EPA. Envirofacts Warehouse, RCRAinfo Query Results, Handler Name: Dewey Loeffel Landfill. Downloaded from http://oaspub.epa.gov/enviro/rcris_web.report?pgm_sys_id=NYD000512335 on January 7, 2010. [2 pages]
40.	Torell, Christopher, BBL. Completion Report, Mead Road Pond Area Interim Remedial Measures, Loeffel Site Environs, Nassau, New York. Prepared for GE. February 2002. [230 pages]
41.	Torell, Christopher, BBL. Tributary T11A Completion Report, Loeffel Site Environs, Operable Unit 3, Nassau, New York. Prepared for GE. March 2003. [364 pages]

SITE SUMMARY

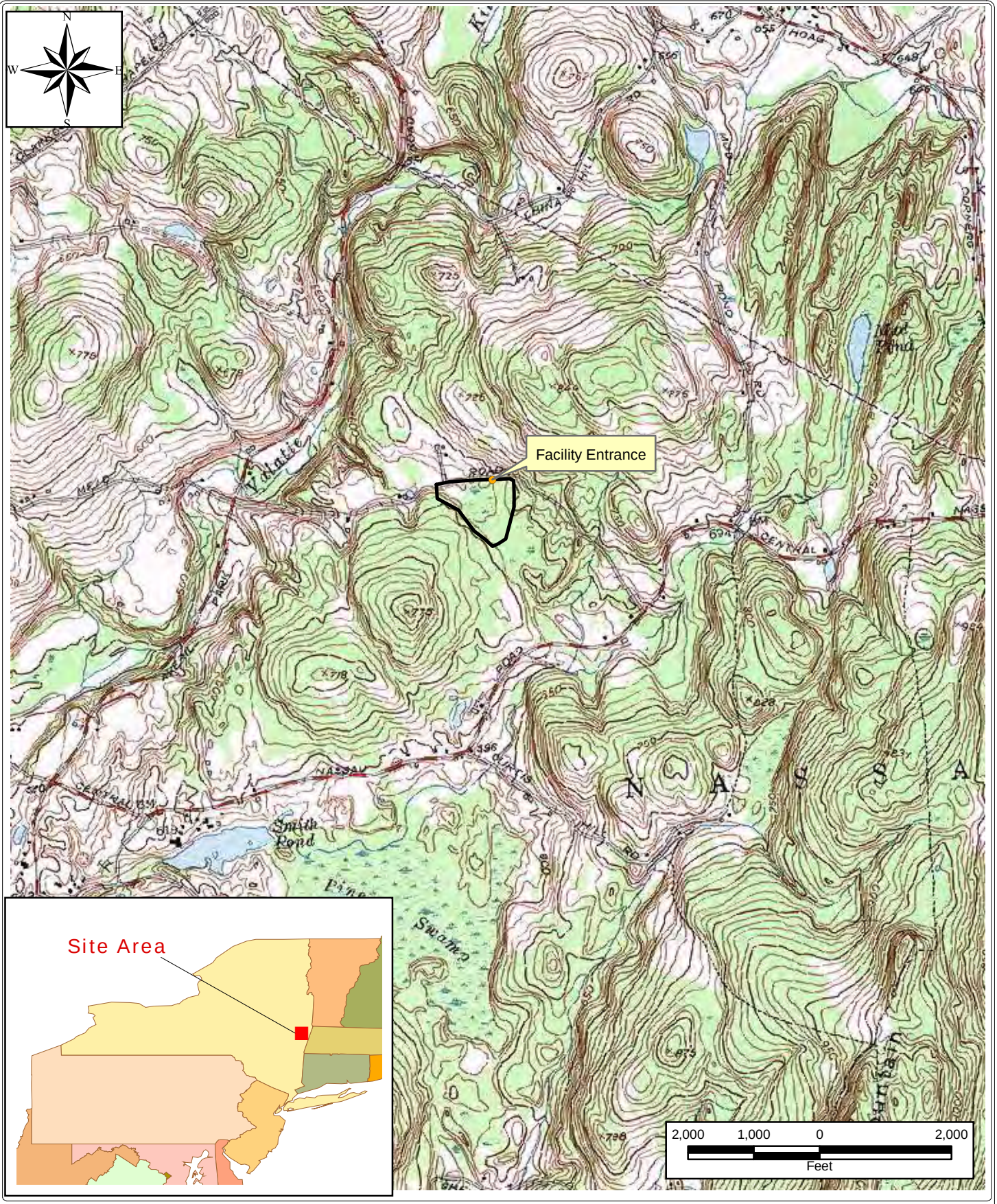
The Dewey Loeffel Landfill (DLL) site (CERCLIS ID No. NYD000512335) is composed of an inactive hazardous waste disposal area and the releases from it into the former Mead Road Pond, Tributary T11A, Valatie Kill, Valley Stream, Smith Pond, and Nassau Lake (Mead Road Pond is referred to as "former" due to remediation and excavation of Mead Road Pond in 2001[Ref. 40, p 25]). The DLL facility is located in southern Rensselaer County, New York and is located within a low-lying, 19.6-acre easement between two wooded hills [Ref. 3, p. 1; 4, p. 1; 6, pp. 5-6; 9, p. 7]. In the 1950s and 1960s, the property was used as a disposal facility for more than 46,000 tons of industrial hazardous wastes, including solvents, waste oils, polychlorinated biphenyls (PCB), scrap materials, sludges, and solids [Ref. 6, pp. 5, 8; 7, p. 7; 29, pp. 1, 28-30]. Some hazardous substances, in particular PCBs, have migrated from the facility to underlying aquifers and downstream surface water bodies, resulting in contamination of ground water, surface water, sediments, and several species of fish [Ref. 6, pp. 5-7, 12-17; 8, pp. 18-21; 9, pp. 6, 15-17]. The geographic coordinates of the DLL facility are 42° 33′ 39.44" north latitude (42.560957°) and 73° 33′ 37.78″ west longitude (-73.560496°) [Ref. 4, p. 1; 5, pp. 1-2]. Figure 1 presents the site location, and Figure 2 shows the extent of documented PCB contamination along the surface water migration pathway.

From 1952 to 1968, Loeffel Waste Oil Removal and Service Company ("Loeffel") operated the DLL property as a disposal facility for waste materials generated by several industries [Ref. 6, pp. 5, 8; 7, p. 7; 8, p. 16]. The General Electric Company (GE) reported that approximately 37,530 tons of waste materials from GE manufacturing facilities were deposited at the facility [Ref. 7, p. 7; 29, pp. 28-30]. New York State Department of Environmental Conservation (NYSDEC) reported that at least 8,790 tons of waste materials were deposited at the facility from other industrial sources, including Bendix Corporation and Schenectady Chemicals, Inc. [Ref. 6, p. 8; 7, p. 7; 8, p. 16; 29, p. 30; 30, pp. 4-5; 31, p. 2]. Waste materials were dumped into a lagoon area, oil pit, and drum burial area [Ref. 7, p. 8; 8, pp. 16, 17]. Some drum contents were pumped onto the ground surface, and waste materials were also burned during facility operations [Ref. 6, p. 8; 8, p. 16].

In 1968, after several years of citizen complaints, documented downstream fish and cattle kills, and uncontrolled fires at the facility, the State of New York ordered Loeffel to stop discharges from the disposal facility and perform remedial activities [Ref. 6, p. 8; 7, p. 7]. By 1974, Loeffel had covered and graded the disposal areas with soil and constructed drainage channels to control runoff [Ref. 6, p. 8; 7, pp. 7-8]. From 1974 to 1980, Loeffel continued to use four 30,000-gallon aboveground storage tanks (AST) at the facility for waste oil transfer [Ref. 6, p. 9; 7, p. 8]. In 1980, GE entered into an agreement with NYSDEC to perform additional investigation and remediation at the facility [Ref. 6, p. 9; 7, pp. 9-10; 29, pp. 1, 13-27]. From 1982 to 1984, GE removed approximately 500 surface drums and the 30,000-gallon ASTs from the property, and installed a NYSDEC-approved slurry wall, clay cap, and leachate collection system [Ref. 6, pp. 9-10; 8, p. 17; 35, pp. 10, 14, 17-22]. The encapsulated disposal area (i.e., landfill) is evaluated as the source for HRS scoring purposes [Ref. 1, pp. 51591]. The facility is not classified as a treatment, storage, or disposal facility (TSDF) under the Resource Conservation and Recovery Act (RCRA) and is not subject to RCRA Subtitle C corrective action authority [Ref. 39, p. 1]

Since 1985, NYSDEC has overseen operation, maintenance, and monitoring activities at the DLL facility [Ref. 6, p. 9]. NYSDEC designated three operable units (OU) at the facility: OU1, the encapsulated disposal area; OU2, ground water contamination associated with the facility; and OU3, surface water releases downgradient of the facility [Ref. 6, pp. 5-7, 10, 13]. In January 2001, NYSDEC issued a Record of Decision (ROD) for OU2, and in January 2002, NYSDEC issued a ROD for OU3 [Ref. 6, p. 1; 9, p. 1]. GE has conducted remedial investigations and remedial actions associated with OU2 and OU3 since 1992 [Ref. 8, pp. 7, 17-21; 9, pp. 10-15; 10, pp. 9-10; 11, pp. 1-2]. From 2001 to 2004, GE removed approximately 15,000 tons of PCB-contaminated soil and sediments from the drainage-way between the facility and Nassau Lake, including the area immediately adjacent to the disposal facility, Mead Road Pond, Tributary T11A, and Valatie Kill [Ref. 12, pp. 5-7; 40, p. 7; 41, p. 9].

In June and August 2009, EPA conducted sediment sampling along the surface water migration pathway downstream of the facility, including the former Mead Road Pond, Tributary T11A, Valatie Kill, Valley Stream, Smith Pond, and Nassau Lake [Ref. 13, pp. 8-48; 14, pp. 3-6, 9; 15, pp. 3-8, 11]. Samples were analyzed for Target Compound List (TCL) Aroclors, total organic carbon (TOC), and grain size [Ref. 16 through 22]. The analytical results indicated the continuing presence of PCBs in sediment samples from the former Mead Road Pond, Tributary T11A, Valatie Kill, and Nassau Lake [Ref. 16, pp. 30-32; 17, pp. 3-5, 17, 20-22, 24, 31-32, 45, 74]. Nassau Lake and the Valatie Kill between County Route 18 and Nassau Lake are fisheries that have been closed due to the site-related PCB contamination, and there are 1.7 miles of wetland frontage located within the zone of contamination [Figure 2; Ref. 8, pp. 21, 26; 23, pp. 13, 17, 21; 25, p. 1; 38, pp. 1-2].



LEGEND:

Facility Boundary
(11-acre encapsulated area)

National Geographic TOPO! U.S. Geologic Survey (USGS). 7.5 Minute Series (Topographic) Quadrangles: Nassau, NY 1992

TITLE:

Site Location Map
Dewey Loeffel Landfill
Town of Nassau
Rensselaer County, NY

PROJECT:
Dewey Loeffel Landfill

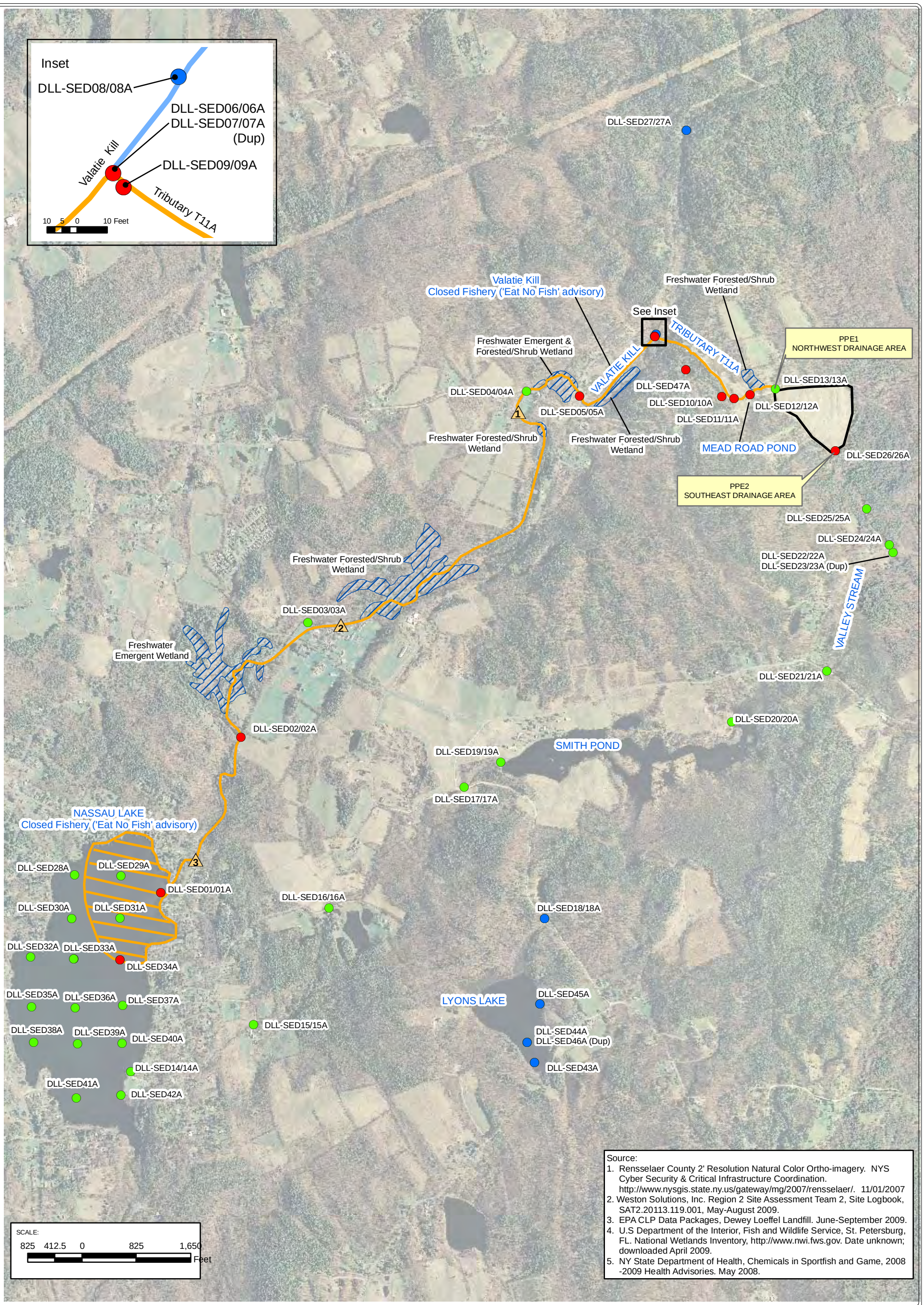
CLIENT NAME:
EPA

WESTON SOLUTIONS

DATE:
October 2009

FIGURE #:
1

P:/SAT2/Dewey_Loeffel_Landfill_HRS/MXD/Final/07117_DLL_Site_Location_Map.mxd



TITLE:

Figure 2
Sample Location Map
June-August 2009

PROJECT:

Dewey Loeffel Landfill HRS

CLIENT NAME:

US EPA

LEGEND:

- Sediment sample location with observed release concentration(s)
- Sediment sample location without observed release concentration(s)
- Background sediment sample locations
- Zone of contamination with mile marker
- HRS-Eligible Wetlands Along the Zone of Contamiantion

DRAWN BY: M. Capriglione

REVIEWED BY: G. Gilliland

PROJECT MANAGER: G. Gilliland

1" = 1,400 '

N W E S

DATE: October 2009

DRAWING NUMBER: 07118

FIGURE #: 2

SOURCE DESCRIPTION

2.2 SOURCE CHARACTERIZATION

2.2.1 Source Identification

Number of the source: Source No. 1

Name and description of the source: Operable Unit 1 (OU1)

Source Type: Landfill

Source 1 consists of Operable Unit 1, the encapsulated disposal area (i.e., landfill) at the DLL facility [Ref. 6, p. 10]. The condition of the source changed significantly due to response actions, as described below:

Source Prior to Response Actions:

From 1952 to 1968, Loeffel operated the subject property as a disposal facility for waste materials generated by several industries [Ref. 6, pp. 5, 8; 7, p. 7; 8, p. 16]. GE reported that approximately 37,530 tons of waste materials from GE manufacturing facilities were deposited at the facility [Ref. 7, p. 7; 29, pp. 28-30]. NYSDEC reported that at least 8,790 tons of waste materials were deposited at the facility from other industrial sources, including Bendix Corporation and Schenectady Chemicals, Inc. [Ref. 6, p. 8; 7, p. 7; 8, p. 16; 29, p. 30; 30, pp. 4-5; 31, p. 2]. The waste materials dumped at the facility included chlorinated solvents, solvents, waste oils, PCBs, acids and bases, other scrap materials (resins, paints, solids and liquid chemicals), heavy metal sludge, organic chemical sludge, paint sludge, wet dust collector residue, and PCB-contaminated solids [Ref. 6, pp. 5, 8; 7, p. 7; 29, pp. 1, 28-30]. In May 1970, Rensselaer County Health Department (RCHD) reported that trichloroethylene (TCE), methyl chloride, toluene, xylene, silicones, phenols, lead, and other chemicals were known to be present [Ref. 32, p. 2].

Before remedial action was initiated, the Loeffel disposal facility consisted of a 6-acre lagoon, a 25- by 150-foot oil pit, a 1- to 3-acre drum storage and disposal area, and four 30,000-gallon ASTs [Ref. 7, p. 8]. During disposal operations, liquid hazardous wastes were transported to the facility and emptied into the lagoon or oil pit, pumped onto the ground surface, or left at the facility in sealed drums [Ref. 8, p. 16; 33, p. 4]. Some wastes were reportedly burned during facility operations [Ref. 6, p. 8; 8, p. 16]. Drums were discarded on the lagoon perimeter or in a drum burial area, and were later covered with soil using a bulldozer [Ref. 8, p. 16]. The lagoon area was a natural swamp before Loeffel used it for liquid waste disposal [Ref. 33, p. 4]. A wastewater sample collected from the lagoon in July 1970 reportedly contained hydrocarbons including petroleum residues, sulfoxide organic compounds, and substituted aromatic organic compounds [Ref. 33, p. 6]. In October 1970, Loeffel indicated that the discharge of liquid industrial wastes over approximately 20 years had resulted in the former swamp being devoid of plant and animal life [Ref. 33, p. 5].

Source After Response Actions:

In 1968, after several years of citizen complaints, documented downstream fish and cattle kills, and uncontrolled fires at the facility, the State of New York ordered Loeffel to stop discharges from the disposal facility and perform remedial activities [Ref. 6, p. 8; 7, p. 7]. Remedial activities began in the summer of 1970, when Loeffel divided the lagoon into upper and lower areas with a 2- to 3-foot-high earthen dike and began to fill the lower area with gravel [Ref. 7, pp. 7-8; 33, p. 7]. The liquid wastes displaced by the filling operation were either pumped to the upper lagoon area or into a tank truck for salvage use [Ref. 33, p. 7]. In August 1970, Loeffel reported that "we have completely removed floating pollutants from lower lagoon and completed filling in lower lagoon" [Ref. 34, p. 1]. By 1974, Loeffel had covered and graded the disposal facility with soil and constructed drainage channels to control runoff [Ref. 6, p. 8; 7, pp. 7-8]. From 1974 to 1980, Loeffel continued to use the four 30,000-gallon ASTs at the facility for waste oil transfer [Ref. 6, p. 9; 7, p. 8].

In 1980, GE entered into an agreement with NYSDEC to perform additional investigation and remediation at the facility [Ref. 6, p. 9; 7, pp. 9-10; 29, pp. 1, 13-27]. From 1980 to 1984, GE installed a chain-link fence around the facility, removed approximately 500 surface drums and four 30,000-gallon ASTs from the property, and installed a NYSDEC-approved slurry wall, clay cap, and leachate collection system at the disposal facility [Ref. 6, pp. 9-10; 8, p. 17; 35, pp. 10, 14, 17-22]. Since 1985, NYSDEC has overseen operation, maintenance, and monitoring activities at the facility [Ref. 6, p. 9]. The encapsulated disposal area (i.e., landfill) is designated by NYSDEC as OU1 and is evaluated as the source for HRS scoring purposes [Ref. 6, p. 10].

In addition to OU1, NYSDEC designated ground water contamination associated with the facility as OU2 and surface water releases downgradient of the facility as OU3 [Ref. 6, pp. 5-7, 10, 13]. GE has conducted remedial investigations and remedial actions associated with OU2 and OU3 since 1992 [Ref. 8, pp. 7, 17-21; 9, pp. 10-15; 10, pp. 9-10; 11, pp. 1-2]. From 2001 to 2004, GE removed approximately 15,000 tons of PCB-contaminated soil and sediments from the drainage-way between the facility and Nassau Lake, including the area immediately adjacent to the disposal facility, Mead Road Pond, Tributary T11A, and Valatie Kill [Ref. 12, pp. 5-7; 40, p. 7; 41, p. 9].

Location of the source, with reference to a map of the site:

A November 7, 2007aerial photograph showing the boundary of the landfill (i.e., Source 1) is shown in Figure 2.

Containment

Release to surface water via overland migration and/or flood:

There is evidence that hazardous substances (i.e., PCBs) migrated from the disposal area into downstream surface waters [see Section 4.1.2.1]. However, NYSDEC has indicated that the contaminants migrated into the surface water pathway prior to the 1983-1984 remedial actions, which included the following containment measures: GE removed drums and tanks and installed a NYSDEC-approved slurry wall, clay cap, and leachate collection system at the disposal facility [Ref. 6, pp. 1, 9-10; 8, p. 17; 35, pp. 10, 14, 17-22]. Since 1985, NYSDEC has overseen operation, maintenance, and monitoring activities at the facility [Ref. 6, p. 9]. As evidenced by the Final Engineering Report for the remedial action and confirmed by wells installed within the encapsulated disposal area in 1996, there is no liner associated with the leachate control system [Ref. 35, pp. 14, 25, 71-72, 78-83].

Based on the above considerations (i.e., a maintained engineered cover and functioning, maintained run-on control and runoff management system are present, but a liner is not present), a surface water containment factor value of 7 is assigned for this source [Ref. 1, p. 51609, Table 4-2].

2.4.1 Hazardous Substances

The waste materials dumped at the facility included chlorinated solvents, solvents, waste oils, PCBs, acids and bases, other scrap materials (resins, paints, solids and liquid chemicals), heavy metal sludge, organic chemical sludge, paint sludge, wet dust collector residue, and PCB-contaminated solids [Ref. 6, pp. 5, 8; 7, p. 7; 29, pp. 1, 28-30]. GE reported that approximately 37,530 tons of waste materials from GE manufacturing facilities were deposited at the facility [Ref. 7, p. 7; 29, pp. 28-30]. NYSDEC reported that at least 8,790 tons of waste materials were deposited at the facility from other industrial sources, including Bendix Corporation and Schenectady Chemicals, Inc. [Ref. 6, p. 8; 7, p. 7; 8, p. 16; 29, p. 30; 30, p. 4; 31, p.2]. GE collected soil samples from the disposal area in 1981, prior to installation of the clay cap and slurry wall, and reported that concentrations of individual PCBs (Aroclor-1016, Aroclor-1254, and Aroclor-1260) ranged from 0.6 to 979 parts per million (ppm) [Ref. 7, pp. 37-38, 77]. GE collected landfill leachate sample PO4-1021 in 1996 and analyzed the sample for TCL volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and PCBs in accordance with EPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)", Third Edition, Revision 1 dated December 1987 [Ref. 10, pp. 74, 90-97; 36, pp. 27, 36, 58]. The analytical results for sample PO4-1021 indicated the presence of VOCs, SVOCs, and the PCB Aroclor-1260 [Ref. 10, pp. 23-24, 74, 90-97]. Based on the leachate results, GE reported that Aroclor-1260 exists as a dense non-aqueous phase liquid (DNAPL) at the site [Ref. 10, p. 23].

Hazardous Substance	Evidence	Reference(s)
Aroclor-1260	Leachate sample PO4-1021, GE, Oct-1996: 260,000 µg/L	10, p. 97
Chlorobenzene	Leachate sample PO4-1021, GE, Oct-1996: 89 µg/L	10, p. 91
1,2-Dichlorobenzene	Leachate sample PO4-1021, GE, Oct-1996: 4.7 µg/L	10, pp. 91, 95
1,3-Dichlorobenzene	Leachate sample PO4-1021, GE, Oct-1996: 19 µg/L	10, pp. 91, 95
1,4-Dichlorobenzene	Leachate sample PO4-1021, GE, Oct-1996: 80 µg/L	10, pp. 91, 95
2,4-Dimethylphenol	Leachate sample PO4-1021, GE, Oct-1996: 14 µg/L	10, p. 95

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

The information available is not sufficient to evaluate Tier A source hazardous waste quantity; therefore, hazardous constituent quantity is not scored (NS).

Hazardous Constituent Quantity (C) Value: NS

2.4.2.1.2 Hazardous Wastestream Quantity

GE reported that approximately 37,530 tons of waste materials from GE manufacturing facilities were deposited at the DLL facility [Ref. 7, p. 7; 29, pp. 28-30]. NYSDEC reported that at least 8,790 tons of waste materials from other industrial sources, including Bendix Corporation and Schenectady Chemicals, Inc., were deposited at the DLL facility [Ref. 6, p. 8; 7, p. 7; 8, p. 16; 29, p. 30; 30, pp. 4-5; 31, p. 2]. However, GE removed an unknown quantity of the hazardous materials, some of which had been stored in sealed drums and tanks, prior to the installation of the landfill cap [Ref. 6, pp. 9-10; 8, p. 17; 35, pp. 10, 14, 17-22]. In addition, the condition of the source changed significantly due to response actions [see Section 2.2.1]. Therefore, the information available is not sufficient to evaluate Tier B source hazardous waste quantity, and hazardous wastestream quantity is not scored (NS).

Hazardous Wastestream Quantity (W) Value: NS

2.4.2.1.3 Volume

The information available is not sufficient to evaluate Tier C source hazardous waste quantity; therefore, volume is not scored (NS).

Dimension of source (yd^3): NS
Volume (V) Assigned Value: NS

2.4.2.1.4 Area

GE reported that the encapsulated disposal area (i.e., landfill) covers an area of approximately 11 acres [Ref. 7, p. 8; 10, pp. 13-14]. However, there were multiple sources originally and it is unclear how much waste was removed prior to encapsulation. Therefore, the area value is assigned a value of greater than zero but the specific amount is unknown [Ref. 1, p. 51591, Section 2.4.2.1.4, Table 2-5].

Area (A) Assigned Value: > 0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The source hazardous waste quantity value for Source 1 is > 0 for Tier D - Area [Ref. 1, p. 51591].

Source Hazardous Waste Quantity Value: > 0

SITE SUMMARY OF SOURCE DESCRIPTIONS

Source Number	Source Hazardous Waste Quantity Value	Containment: Ground Water	Containment: Surface Water	Containment: Air Gas	Containment: Air Particulate
1	> 0	NS	7 *	NS	NS

NS = Not Scored

* The overland flow containment factor is 7 for the source [see Section 2.2.1].

Other Possible Sources (these former sources were subject to response actions, including removal and encapsulation; all that remains of them is within the encapsulated disposal area [Source No. 1]):

Before remedial action was initiated, the Loeffel disposal facility consisted of a 6-acre lagoon, a 25- by 150-foot oil pit, a 1- to 3-acre drum storage and disposal area, and four 30,000-gallon ASTs [Ref. 7, p. 8]. Hazardous substances deposited in these sources included chlorinated solvents, waste oils, PCBs, petroleum products, and aromatic organic compounds [Ref. 6, p. 8; 7, pp. 7-8; 8, p. 16; 33, pp. 4]. During disposal operations, liquid hazardous wastes were transported to the facility and emptied into the lagoon or oil pit, pumped onto the ground surface, or left at the facility in sealed drums [Ref. 8, p. 16; 33, p. 4]. Some wastes were reportedly burned during facility operations [Ref. 6, p. 8; 8, p. 16]. Drums were discarded on the lagoon perimeter or in a drum burial area, and were later covered with soil using a bulldozer [Ref. 8, p. 16]. The lagoon area was a natural swamp before Loeffel used it for liquid waste disposal [Ref. 33, p. 4]. A wastewater sample collected from the lagoon in July 1970 reportedly contained hydrocarbons including petroleum residues, sulfoxide organic compounds, and substituted aromatic organic compounds [Ref. 33, p. 6]. In October 1970, Loeffel indicated that the discharge of liquid industrial wastes over approximately 20 years had resulted in the former swamp being devoid of plant and animal life [Ref. 33, p. 5].

4.1 OVERLAND/FLOOD MIGRATION COMPONENT

4.1.1.1 Definition of Hazardous Substance Migration Path for Overland/Flood Component

The DLL facility is located in a low-lying area (elevation approximately 620 feet) between two wooded hills with peak elevations of 876 and 778 feet above mean sea level (MSL) [Figure 1; Ref. 4, p. 1; 6, p. 7; 9, p. 7]. Topography in the area generally slopes downward from east to west [Ref. 6, p. 7]. Surface drainage at the facility is controlled by a series of drainage swales built into and around the vegetated landfill cap, which was constructed in 1984 [Ref. 6, pp. 7, 10]. From the disposal facility, surface water flows into the Valatie Kill drainage basin [Ref. 6, p. 7]. There are two probable points of entry (PPE) to surface water from the DLL facility: northwest toward the former Mead Road Pond (PPE1) and southeast toward Valley Stream (PPE2) [Figure 2; Ref. 6, pp. 7, 48; Ref. 25, p. 1]. The majority of surface water drains northwest into an unnamed stream (the "northwest drainage ditch"; PPE1), through the former Mead Road Pond and into Tributary T11A, which in turn flows into Valatie Kill [Figure 2; Ref. 6, p. 7; 8, pp. 18-19, 105]. Valatie Kill flows southwest into Nassau Lake approximately 3.1 miles downstream of the facility, into Kinderhook Lake approximately 8.5 miles downstream, and to the end of the target distance limit (TDL) [Ref. 25, p. 1]. The secondary drainage system flows southeast into an unnamed tributary (the "southeast drainage ditch"; PPE2) and into Valley Stream, which flows through Smith Pond on its way to Nassau Lake 3.4 miles downstream [Figure 2; Ref. 6, pp. 7, 48]. PPE2 is not used in the site scoring because doing so would not change the site score, but contamination migrating from this location does pose a threat to downstream surface waters.

The northwest drainage ditch, former Mead Road Pond, Tributary T11A, and Valatie Kill are perennial streams, as illustrated in GE's Completion Report for the Mead Road Pond Area Interim Remedial Measures and confirmed by the presence of water at all times during the EPA investigation [Ref. 13, pp. 4-6, 10-13, 17-18, 23, 39-42, 45-46, 49-52, 55, 59-61; 14, pp. 4-5, 9; 40, pp. 8, 25, 43-51, 67-69]. Nassau Lake and the Valatie Kill between County Route 18 and Nassau Lake are fisheries that have been closed due to the site-related PCB contamination, and there are 1.7 miles of wetland frontage located within the zone of contamination [Figure 2; Ref. 8, pp. 21, 26; 23, pp. 13, 17, 21; 25, p. 1; 38, pp. 1-2].

The Dewey Loeffel Landfill site is scored by the following approach:

The threats being evaluated are the Surface Water Pathway Human Food Chain and Environmental Threats.

An observed release by chemical analysis is documented, and the hazardous substances present are PCBs [see Section 4.1.2.1].

The known zone of contamination extends from PPE1 at the northwest corner of the facility into Nassau Lake (sample DLL-SD34A), approximately 3.4 miles downstream [see Figure 2].

Targets subject to actual contamination include the Valatie Kill and Nassau Lake fisheries [see Section 4.1.3.3] and approximately 1.7 miles of wetland frontage [see Section 4.1.4.3].

As mentioned above, PPE2 is not used in the site scoring because it does not contribute to the site score, but it does pose a threat to downstream surface waters.

4.1.2.1 Likelihood of Release

4.1.2.1.1 Observed Release

Sampling and analysis by EPA in June and August 2009 showed the presence of PCBs at concentrations significantly above background concentrations in several sediment samples collected downstream of the DLL facility. Tables 1 and 2 present the background and observed release concentrations.

NYSDEC has designated surface water releases downgradient of the DLL facility as operable unit OU3 [Ref. 6, pp. 5-7, 13]. GE has conducted remedial investigations and remedial actions associated with OU3 since 1992, and NYSDEC issued its ROD for OU3 in January 2002 [Ref. 6, p. 1; 8, pp. 7, 17-21; 11, pp. 1-2]. From 2001 to 2004, GE removed approximately 15,000 tons of PCB-contaminated soil and sediments from the drainage-way between the facility and Nassau Lake, including the area immediately adjacent to the disposal facility, Mead Road Pond, Tributary T11A, and Valatie Kill [Ref. 12, pp. 5-7; 40, p. 7; 41, p. 9]. However, recent fish tissue data (2008) indicate that PCBs still affect several species in surface waters downstream of the facility [Ref. 12, pp. 20-91].

Direct Observation

An observed release by direct observation is not being scored.

Chemical Analysis

An observed release by chemical analysis is documented along the surface water migration pathway downstream of the Dewey Loeffel Landfill facility, between sample location DLL-SED12 in the former Mead Road Pond and sample location DLL-SED34A in Nassau Lake, approximately 3.4 miles downstream [Figure 2].

In June and August 2009, EPA conducted sediment sampling along the surface water migration pathway downstream of the facility, including the former Mead Road Pond, Tributary T11A, Valatie Kill, Valley Stream, Smith Pond, and Nassau Lake [Ref. 13, pp. 8-48; 14, pp. 3-6, 9; 15, pp. 3-8, 11]. Samples were analyzed for TCL Aroclors (i.e., PCBs), TOC, and grain size [Ref. 16 through 22]. The validated analytical results indicated the continuing presence of PCBs at concentrations significantly above background in sediment samples from the former Mead Road Pond, Tributary T11A, Valatie Kill, and Nassau Lake [See Tables 1 and 2; Ref. 16, pp. 17, 28, 30-32, 38; 17, pp. 3-5, 7, 17, 20-24, 31-32, 45, 50, 74]. The June and August 2009 sediment data document the observed release by chemical analysis to the surface water pathway. The background sample locations were chosen because they are representative of upgradient locations unaffected by site contamination [Ref. 14, pp. 4-6, 9; 15, pp. 5-8, 11].

Notes on Sample Similarity:

Figure 2 (Sample Location Map) shows the background and release sample locations for the DLL site. Background samples were collected upstream from influence by the source [Figure 2]. The release sample data from three different water body types (stream, lake, spring) were compared to samples from the only usable upgradient background locations, which came from stream samples [Tables 1 and 2] (i.e., there were no lakes or springs immediately upgradient of the release sample locations). The background and release samples were handled the same procedurally and were similar physically, as follows:

- Sampling Methods: The background and release sediment samples were all collected by EPA, using Standard Operating Procedures (SOP), during the June and August 2009 sampling events [Ref. 14, pp. 2-6; 15, pp. 2-8].
- Analytical Procedures: The background and release samples were all analyzed for TCL Aroclors through the Contract Laboratory Program (CLP) [Ref. 16, pp. 1-43; 17, pp. 1-84]. The samples were also analyzed for grain-size distribution according to Method ASTM D422-63 and for TOC according to Method CORP ENG 81M/SW9060M by Accutest Laboratories of Dayton, New Jersey [Ref. 18 through 22].
- Data Validation: The PCB analytical data were reviewed independently by EPA according to "SOP HW-37 (Revision 1), USEPA Region II Data Validation SOP for Statement of Work SOM01.2" dated August 2007 [Ref. 16, pp. 2-9; 17, pp. 8-11, 41-44, 69-72, 81-84]. The data reviewers found the results to be valid and acceptable with the following exception:

- The non-detect results for background samples DLL-SED43A, DLL-SED44A, DLL-SED45A, and DLL-SED46A, collected in August 2009, were found to be unusable because percent moisture content exceeded 90% [Ref. 15, pp. 7-8; 17, pp. 33-35, 41, 44, 73, 81, 84].

- Water Body Type: Background and release samples presented in Tables 1 and 2 were all collected from small streams, with the exception of sample DLL-SED34A, which was collected from Nassau Lake in August 2009. EPA collected background lake samples DLL-SED43A, DLL-SED44A, DLL-SED45A, and DLL-SED46A from Lyons Lake [see Figure 2] in August 2009, and Aroclors were not detected. However, the non-detect results for the Lyons Lake samples were found to be unusable because percent moisture content exceeded 90%. The percent moisture values ranged from 91% to 93%, whereas the percent moisture value for sample DLL-SED34A was 78% [Ref. 14, pp. 4-6, 9; 15, pp. 5-8, 11; 17, pp. 33-35, 41, 44, 73, 81, 84]. Based on these considerations, the results for sample DLL-SED34A are compared to the highest usable background value for significance above background [Table 2].
- Sampling Depth: Background and release samples were all collected from the 0- to 6-inch interval below top of sediment [Ref. 13, pp. 10-19, 21-47].
- Percent Moisture: The percent moisture in the background samples ranged from approximately 17% to 62%, while percent moisture in the release samples ranged from approximately 15% to 78% [Ref. 16, pp. 17, 28, 30-32, 38; 17, pp. 3-5, 7, 17, 20-24, 31-32, 44-45, 50, 74].
- Total Organic Carbon: The TOC levels in the background samples ranged from less than 1,300 milligrams per kilogram (mg/kg) to 33,000 mg/kg, while TOC levels in the release samples ranged from less than 1,200 mg/kg to 53,300 mg/kg [Ref. 18, pp. 14, 16-18, 24, 32; 20, p. 7, 14, 16; 21, pp. 6, 9, 12-15; 22, pp. 12-15, 17].
- Grain Size: The amount of fine-grained materials (silt, clay, and colloids) in the solid portion of the background samples ranged from 4.9% to 39.7%, with an average of 17.2%. The amount of fine-grained materials in the solid portion of the release samples ranged from 0.74% to 90.4%, with an average of 16.5% [Ref. 18, pp. 14, 16-18, 24, 32; 20, p. 7, 14, 16; 21, pp. 6, 9, 12-15; 22, pp. 12-15, 17].

Due to the similarities (i.e., same time frames, sampling and analytical methods, and sampling depths; overlapping ranges of percent moisture, TOC, and grain-size) among the background and release samples, the background and release analytical results are considered to be comparable.

Notes on significance above background:

EPA evaluated Phase 1 (June 2009) and Phase 2 (August 2009) samples separately, comparing observed release concentrations to the highest usable background values (i.e., highest SQLs) within each data set. Results for two of the June 2009 background samples were flagged "UJ" because the samples were associated with a %Difference that exceeded criteria [Table 1; Ref. 16, pp. 8, 28, 38].

The following criteria from the HRS were used to evaluate significance above background (i.e., observed release):

- If the maximum background concentration is not detected or is less than the detection limit, an observed release is established when the sample measurement equals or exceeds the SQL [Ref. 1, p. 51589].
- If the maximum background concentration equals or exceeds the detection limit, an observed release is established when the sample measurement equals or exceeds the SQL and is three times or more above the background concentration [Ref. 1, p. 51589, Table 2-3].
- The Aroclor-1260 result for sample DLL-SED34A (B5Q64) is qualified as positively identified but approximate ("J") because the percent moisture content is greater than 70% but less than or equal to 90%, which indicates an unknown direction of bias [Table 2; Ref. 17, pp. 32, 41, 44]. This J-flagged result has been adjusted in accordance with EPA's Quick Reference Fact Sheet "*Using Qualified Data to Document an Observed Release and Observed Contamination*" dated November 1996, thereby compensating for probable uncertainty in the analyses [Table 2; Ref. 26, pp. 1-8, 16].

Notes on Tables 1 and 2:

Italics denote the highest usable background value (i.e., highest SQL) for each hazardous substance.
Bold shaded indicates concentrations that meet the criteria for observed release.
Blank spaces indicate that the results do not meet observed release criteria.
Explanation of the Comments Row: "Background Sample" indicates a sample collected upstream from influence by the source. "Dup." means duplicate of the sample specified.

Table 1
Background and Observed Release Concentrations
Phase I Sediment Sampling - June 2009
Dewey Loeffel Landfill, Nassau, NY

	Background Concentrations						Observed Release Concentrations					
Field Sample No.	DLL-SED08		DLL-SED18		DLL-SED27		DLL-SED10		DLL-SED11		DLL-SED12	
EPA Sample No.	B5PE2		B5PF2		B5PG2		B5PE4		B5PE5		B5PE6	
Date	6/8/2009		6/8/2009		6/9/2009		6/9/2009		6/9/2009		6/9/2009	
Depth (inches)	0-6		0-6		0-6		0-6		0-6		0-6	
Comment	Background Sample - stream		Background Sample - stream		Background Sample - stream		stream		stream		stream	
References	Ref. 13, pp. 10-11; 14, pp. 4, 9, 11, 17		Ref. 13, pp. 10-11; 14, pp. 5, 9, 12, 18		Ref. 13, pp. 11, 19; 14, pp. 6, 9, 15, 19		Ref. 13, pp. 11, 17; 14, pp. 4, 9, 14, 17		Ref. 13, pp. 11, 17-18; 14, pp. 4, 9, 14,		Ref. 13, pp. 11, 17-18; 14, pp. 5, 9, 14,	
PCBs (µg/kg)	Result	SQL	Result	SQL	Result	SQL	Result	SQL	Result	SQL	Result	SQL
Aroclor-1260	42 UJ	42	44 UJ	44	*87 U*	*87*	**340**	41	**190**	45	**170**	59
% Moisture	22		25		62		19		27		44	
Reference	Ref. 16, pp. 6-9, 28; 37, p. 8		Ref. 16, pp. 6-9, 38; 37, p. 10		Ref. 16, pp. 2-5, 17; 37, p. 4		Ref. 16, pp. 6-9, 30; 37, p. 8		Ref. 16, pp. 6-9, 31; 37, p. 8		Ref. 16, pp. 6-9, 32; 37, p. 9	
Total Organic Carbon (mg/kg)	<1,300		5,430		33,000		1,620		8,190		10,800	
% Gravel	24.2		23.2		3.5		16.2		52.3		14.7	
% Sand	70.9		49.2		56.8		80.7		43		80.8	
% Silt, Clay, Colloids	4.9		27.7		39.7		3.1		4.8		4.6	
Reference	Ref. 18, p. 14		Ref. 18, p. 24		Ref. 18, p. 32		Ref. 18, p. 16		Ref. 18, p. 17		Ref. 18, p. 18	

µg/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
SQL - Sample quantitation limit
U - The substance was analyzed for, but no quantifiable concentration was found at or above the Contract Required Quantitation Limit (CRQL) [Ref. 26, p. 6].
UJ - The analyte was not quantifiable at or above the CRQL, and one or more QA/QC requirements did not meet acceptance criteria [Ref. 26, p. 6].

Notes:
* Maximum values (*italicized*) were used for determination of observed release.
Highlighted results indicate observed release concentrations.

Table 2
Background and Observed Release Concentrations
Phase II Sediment Sampling - August 2009
Dewey Loeffel Landfill, Nassau, NY

	Background Concentrations						Observed Release Concentrations									
Field Sample No.	DLL-SED08A		DLL-SED18A		DLL-SED27A		DLL-SED01A		DLL-SED02A		DLL-SED05A		DLL-SED06A		DLL-SED07A	
EPA Sample No.	B5Q38		B5Q48		B5Q57		B5Q31		B5Q32		B5Q35		B5Q36		B5Q37	
Date	8/7/2009		8/6/2009		8/8/2009		8/6/2009		8/7/2009		8/7/2009		8/7/2009		8/7/2009	
Depth (inches)	0-6		0-6		0-6		0-6		0-6		0-6		0-6		0-6	
Comment	Background Sample - stream		Background Sample - stream		Background Sample - stream		stream		stream		stream		stream		Dup. of DLL-SED06A	
References	Ref. 13, pp. 21, 41; 15, pp. 5, 11, 21, 23		Ref. 13, pp. 21, 33; 15, pp. 6, 11, 15, 17		Ref. 13, pp. 21, 47; 15, pp. 7, 11, 25, 27		Ref. 13, pp. 21, 29; 15, pp. 5, 11, 15, 17		Ref. 13, pp. 21, 36; 15, pp. 5, 11, 21, 23		Ref. 13, pp. 21, 40; 15, pp. 5, 11, 21, 23		Ref. 13, pp. 21, 40; 15, pp. 5, 11, 21, 23		Ref. 13, pp. 21, 40; 15, pp. 5, 11, 21	
PCBs (µg/kg)	Result	SQL	Result	SQL	Result	SQL	Result	SQL	Result	SQL	Result	SQL	Result	SQL	Result	SQL
Aroclor-1232	*47 U*	*47*	43 U	43	40 U	40										
Aroclor-1260	*47 U*	*47*	43 U	43	40 U	40	**65**	44	**280**	49	**940**	40	**1,000**	40	**1,300**	40
% Moisture	30		24		17		26		33		19		18		18	
Reference	Ref. 17, pp. 23, 41-44; 37, p. 17		Ref. 17, pp. 50, 69-72; 37, p. 22		Ref. 17, pp. 7-11; 37, p. 13		Ref. 17, pp. 45, 69-72; 37, p. 21		Ref. 17, pp. 17, 41-44; 37, p. 14		Ref. 17, pp. 20, 41-44; 37, p. 15		Ref. 17, pp. 21, 41-44; 37, p. 16		Ref. 17, pp. 22, 41-44; 37, p. 16	
Total Organic Carbon (mg/kg)	11,600		3,350		2,000		5,540		15,700		24,100		<1200		Duplicate sample not analyzed for TOC or Grain Size	
% Gravel	0.16		9.2		14.4		0.42		0.19		11.2		23.1			
% Sand	87		78.3		79.8		88.7		73.8		78.2		75.3			
% Silt, Clay, Colloids	12.9		12.5		5.7		10.9		26		10.6		1.5			
Reference	Ref. 21, p. 14		Ref. 20, p. 16		Ref. 22, p. 17		Ref. 20, p. 14		Ref. 21, p. 6		Ref. 21, p. 15		Ref. 21, p. 12			

µg/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
SQL - Sample quantitation limit
CRQL - Contract required quantitation limit
U - The substance was analyzed for, but no quantifiable concentration was found at or above the CRQL [Ref. 26, p. 6].
C - Result confirmed by GC/MS
J - The substance was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample [Ref. 26, p. 6].

Notes:

* Maximum values (*italicized*) were used for determination of observed release.
Highlighted results indicate observed release concentrations.

Table 2
Background and Observed Release Concentrations
Phase II Sediment Sampling - August 2009
Dewey Loeffel Landfill, Nassau, NY

	Background Concentrations						Observed Release Concentrations (continued)									
Field Sample No.	DLL-SED08A		DLL-SED18A		DLL-SED27A		DLL-SED09A		DLL-SED10A		DLL-SED11A		DLL-SED12A		DLL-SED26A	
EPA Sample No.	B5Q38		B5Q48		B5Q57		B5Q39		B5Q40		B5Q41		B5Q42		B5Q56	
Date	8/7/2009		8/6/2009		8/8/2009		8/7/2009		8/8/2009		8/8/2009		8/8/2009		8/7/2009	
Depth (inches)	0-6		0-6		0-6		0-6		0-6		0-6		0-6		0-6	
Comment	Background Sample - stream		Background Sample - stream		Background Sample - stream		stream		stream		stream		stream		stream	
References	Ref. 13, pp. 21, 41; 15, pp. 5, 11, 21, 23		Ref. 13, pp. 21, 33; 15, pp. 6, 11, 15, 17		Ref. 13, pp. 21, 47; 15, pp. 7, 11, 25, 27		Ref. 13, pp. 21, 41; 15, pp. 5, 11, 21, 23		Ref. 13, pp. 21, 45; 15, pp. 5, 11, 25, 27		Ref. 13, pp. 21, 46; 15, pp. 5, 11, 25, 27		Ref. 13, pp. 21, 46; 15, pp. 5, 11, 25, 27		Ref. 13, pp. 21, 39; 15, pp. 6, 11, 22, 27	
PCBs (µg/kg)	Result	SQL	Result	SQL	Result	SQL	Result	SQL	Result	SQL	Result	SQL	Result	SQL	Result	SQL
Aroclor-1232	*47 U*	*47*	43 U	43	40 U	40							**200**	83		
Aroclor-1260	*47 U*	*47*	43 U	43	40 U	40	**680**	39	**700**	39	**560**	39	**3,300 C**	83	**740**	68
% Moisture	30		24		17		16		15		15		21		52	
Reference	Ref. 17, pp. 23, 41-44; 37, p. 17		Ref. 17, pp. 50, 69-72; 37, p. 22		Ref. 17, pp. 7-11; 37, p. 13		Ref. 17, pp. 24, 41-44; 37, p. 17		Ref. 17, pp. 3, 8-11; 37, p. 11		Ref. 17, pp. 4, 8-11; 37, p. 12		Ref. 17, pp. 5, 8-11; 37, p. 12		Ref. 17, pp. 31, 41-44; 37, p. 19	
Total Organic Carbon (mg/kg)	11,600		3,350		2,000		1,460		<1200		<1200		<1200		35,500	
% Gravel	0.16		9.2		14.4		32.7		46.7		16.8		17.5		8.9	
% Sand	87		78.3		79.8		66.2		52.6		81.9		79.6		40.2	
% Silt, Clay, Colloids	12.9		12.5		5.7		1.1		0.74		1.4		2.9		50.9	
Reference	Ref. 21, p. 14		Ref. 20, p. 16		Ref. 22, p. 17		Ref. 21, p. 13		Ref. 22, p. 13		Ref. 22, p. 14		Ref. 22, p. 15		Ref. 22, p. 12	

µg/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
SQL - Sample quantitation limit
CRQL - Contract required quantitation limit
U - The substance was analyzed for, but no quantifiable concentration was found at or above the CRQL [Ref. 26, p. 6].
C - Result confirmed by GC/MS
J - The substance was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample [Ref. 26, p. 6].

Notes:

* Maximum values (*italicized*) were used for determination of observed release.
Highlighted results indicate observed release concentrations.

Table 2
Background and Observed Release Concentrations
Phase II Sediment Sampling - August 2009
Dewey Loeffel Landfill, Nassau, NY

	Background Concentrations						Observed Release Concentrations (concluded)							
Field Sample No.	DLL-SED08A		DLL-SED18A		DLL-SED27A		DLL-SED34A						DLL-SED47A	
EPA Sample No.	B5Q38		B5Q48		B5Q57		B5Q64						B5Q77	
Date	8/7/2009		8/6/2009		8/8/2009		8/6/2009						8/7/2009	
Depth (inches)	0-6		0-6		0-6		0-6						0-6	
Comment	Background Sample - stream		Background Sample - stream		Background Sample - stream		lake						spring	
References	Ref. 13, pp. 21, 41; 15, pp. 5, 11, 21, 23		Ref. 13, pp. 21, 33; 15, pp. 6, 11, 15, 17		Ref. 13, pp. 21, 47; 15, pp. 7, 11, 25, 27		Ref. 13, pp. 21, 27; 15, pp. 7, 11, 16-17						Ref. 13, pp. 21, 42; 15, pp. 8, 11, 22-23	
PCBs (µg/kg)	Result	SQL	Result	SQL	Result	SQL	Result	Bias	Adjustment Factor	Adjusted Result	CRQL	SQL	Result	SQL
Aroclor-1232	*47 U*	*47*	43 U	43	40 U	40								
Aroclor-1260	*47 U*	*47*	43 U	43	40 U	40	1,700 J	Unknown	Divide by 10	**170**	33	150	**1,000**	50
% Moisture	30		24		17		78						35	
Reference	Ref. 17, pp. 23, 41-44; 37, p. 17		Ref. 17, pp. 50, 69-72; 37, p. 22		Ref. 17, pp. 7-11; 37, p. 13		Ref. 17, pp. 32, 41-44; 37, p. 20						Ref. 17, pp. 74, 81-84; 37, pp. 27-28	
Total Organic Carbon (mg/kg)	11,600		3,350		2,000		53,300						17,300	
% Gravel	0.16		9.2		14.4		0						21.1	
% Sand	87		78.3		79.8		96						56.7	
% Silt, Clay, Colloids	12.9		12.5		5.7		90.4						22.1	
Reference	Ref. 21, p. 14		Ref. 20, p. 16		Ref. 22, p. 17		Ref. 20, p. 7						Ref. 21, p. 9	

µg/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
SQL - Sample quantitation limit
CRQL - Contract required quantitation limit
U - The substance was analyzed for, but no quantifiable concentration was found at or above the CRQL [Ref. 26, p. 6].
C - Result confirmed by GC/MS
J - The substance was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample [Ref. 26, p. 6].

Notes:

* Maximum values (*italicized*) were used for determination of observed release.
Highlighted results indicate observed release concentrations.

Attribution

From 1952 to 1968, Loeffel operated the DLL facility as a disposal facility for waste materials generated by several industries [Ref. 6, pp. 5, 8; 7, p. 7; 8, p. 16]. Waste materials were dumped into a lagoon area, oil pit, and drum burial area; drum contents were pumped onto the ground surface; and some waste materials were burned [Ref. 6, p. 8; 8, p. 16]. The waste materials dumped at the facility included solvents, waste oils, PCBs, scrap materials, sludges, and solids [Ref. 6, pp. 5, 8; 7, p. 7; 29, pp. 1, 28-30]. GE reported that approximately 37,530 tons of waste materials from GE manufacturing facilities were deposited at the facility [Ref. 7, p. 7; 29, pp. 28-30]. NYSDEC reported that at least 8,790 tons of waste materials were deposited at the facility from other industrial sources, including Bendix Corporation and Schenectady Chemicals, Inc. [Ref. 6, p. 8; 7, p. 7; 8, p. 16; 29, p. 30; 30, pp. 4-5; 31, p. 2].

GE collected soil samples from the disposal area in 1981, prior to installation of the clay cap and slurry wall, and reported that concentrations of individual PCBs (Aroclor-1016, Aroclor-1254, and Aroclor-1260) ranged from 0.6 ppm to 979 ppm [Ref. 7, pp. 37-38, 77]. A landfill leachate sample collected by GE in 1996 indicated the presence of the PCB Aroclor-1260, and GE reported that Aroclor-1260 exists as a DNAPL at the facility [Ref. 10, pp. 23-24, 74, 90-97].

From 2001 to 2004, GE removed approximately 15,000 tons of PCB-contaminated soil and sediments from the drainage-way between the facility and Nassau Lake, including the area immediately adjacent to the disposal facility, Mead Road Pond, Tributary T11A, and Valatie Kill [Ref. 12, pp. 5-7; 40, p. 7; 41, p. 9]. However, recent fish tissue data (2008) indicate that PCBs still affect several species in surface waters downstream of the facility [Ref. 12, pp. 20-91].

PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons [Ref. 27, p. 1]. PCBs were manufactured domestically from 1929 until their manufacture was banned in 1979 [Ref. 27, p. 1]. Once released, PCBs do not readily break down and therefore remain in the environment for long periods of time [Ref. 27, p. 2]. There are no other known PCB sites within 1 mile of the facility, including along the drainage pathways [Ref. 28, pp. 2-45].

Hazardous Substances Released:

PCBs (Aroclor-1232 and Aroclor-1260)

[Tables 1 and 2]

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Observed Release Factor Value: 550

4.1.3.2 Human Food Chain Threat - Waste Characteristics

4.1.3.2.1 Toxicity/Persistence/Bioaccumulation

Hazardous Substance	Toxicity Factor Value*	Persistence Factor Value**	Food Chain Bioaccumulation Factor Value*	Toxicity/Persistence/ Bioaccumulation Factor Value (Table 4-16)	Ref. 2 Page
PCBs [Aroclor-1232 and Aroclor-1260]	**10,000**	**1**	**50,000**	**5×10^8**	**BI-10**

* Fresh water values for toxicity and bioaccumulation are used [Ref. 2, p. BI-10].
** PCBs are assigned the same persistence factor value (i.e., 1.0000) for both water body types (river and lake) within the target distance limit [Ref. 2, p. BI-10].

PCBs are associated with the highest toxicity/persistence/bioaccumulation factor value of 5×10^8.

4.1.3.2.2 Hazardous Waste Quantity

Source Number	Source Hazardous Waste Quantity Value (HRS Section 2.4.2.1.5)	Is source hazardous constituent quantity data complete? (yes/no)
1	> 0	no
Sum of Values:	> 0	

The sum corresponds to a hazardous waste quantity factor value of 1 in Table 2-6 of the HRS [Ref. 1, p. 51591]. However, based on the fact that targets are subject to Level II concentrations [see Section 4.1.3.3.2.2], a hazardous waste quantity factor value of 100 is assigned if it is greater than the hazardous waste quantity value from Table 2-6 (i.e., 1) [Ref. 1, p. 51591-51592]. Therefore, a hazardous waste quantity factor value of 100 is assigned for the surface water pathway [Ref. 1, p. 51591-51592].

4.1.3.2.3 Calculation of Human Food Chain Threat - Waste Characteristics Factor Category Value

One hazardous substance [PCBs] associated with the waste source, which has a surface water pathway containment factor greater than 0 for the watershed, corresponds to a Toxicity/Persistence Factor Value of 10,000 and Bioaccumulation Potential Factor Value of 50,000, as shown previously [Ref. 1, pp. 51618, 51620; 2, p. BI-10].

(Toxicity/Persistence Factor Value) x (Hazardous Waste Quantity Factor Value) = $10{,}000 \times 100 = 1 \times 10^6$

(Toxicity/Persistence Factor Value x Hazardous Waste Quantity Factor Value)
x (Bioaccumulation Potential Factor Value) = $(1 \times 10^6) \times (50{,}000) = 5 \times 10^{10}$

The product of 5×10^{10} corresponds to an assigned Waste Characteristics Factor Category Value of 320 in Table 2-7 of the HRS [Ref. 1, p. 51592].

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Toxicity/Persistence/Bioaccumulation Factor Value: 5×10^8
Hazardous Waste Quantity Factor Value: 100
Waste Characteristics Factor Category Value: 320

4.1.3.3 Human Food Chain Threat - Targets

Nassau Lake and the Valatie Kill between County Route 18 and Nassau Lake are fisheries that have been closed due to the site-related PCB contamination; New York State Department of Health (NYSDOH) has issued "Eat No Fish" advisories [Figure 2; Ref. 8, pp. 21, 26; 23, pp. 13, 17, 21]. Local residents occasionally ate fish from both water bodies prior to implementation of the advisories, but stopped consumption due to the PCB contamination [Ref. 24, pp. 1-50]. These fisheries are both within the zone of contamination for the Dewey Loeffel Landfill site [Figure 2]. The HRS says to consider a closed fishery (or portion of a fishery) within the target distance limit (TDL) of the watershed to be subject to actual human food chain contamination if a hazardous substance for which the fishery has been closed has been documented in an observed release to the watershed from the site and at least a portion of the fishery is within the boundaries of the observed release [Ref. 1, p. 51620, Section 4.1.3.3]. Therefore, Actual Contamination is documented, and the target closed fishery is evaluated for Actual Human Food Chain Contamination. Level I targets were not established because doing so would not change the site score, so the target fishery is subject to Level II concentrations [Ref. 1, pp. 51592-51593, 51620-51621].

Sediment Samples for Observed Release

Sample ID	Distance from PPE	Hazardous Substance	Bioaccumulation Potential Factor Value	Reference(s)
DLL-SED26A	0 feet	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED12	400 feet	PCBs	50,000	Figure 2; Table 1; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED12A	400 feet	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED11	650 feet	PCBs	50,000	Figure 2; Table 1; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED11A	650 feet	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED10	850 feet	PCBs	50,000	Figure 2; Table 1; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED10A	850 feet	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED47A	1500 feet	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED09A	2000 feet	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED06A/7A	2000 feet	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED05A	4000 feet	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED02A	2.6 miles	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED01A	3.1 miles	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10
DLL-SED34A	3.4 miles	PCBs	50,000	Figure 2; Table 2; Ref. 1, p. 51620; 2, p. BI-10

4.1.3.3.1 Food Chain Individual

Sample ID: NC-SD34A
Hazardous Substance: PCBs
Bioaccumulation Potential: 50,000
References: Figure 2; Ref. 1, p. 51620; 2, p. BI-10

Identity of Fishery	Type of Surface Water Body	Dilution Weight	Reference(s)
Valatie Kill/Nassau Lake	Small to moderate stream	0.1	1, p. 51613; 8, p. 19

There is an observed release of a hazardous substance (i.e., PCBs) with a Bioaccumulation Potential Factor Value of 500 or greater and there is Level II Actual Contamination of the Valatie Kill and Nassau Lake closed fisheries [Figure 2, Tables 1 and 2; Ref. 1, pp. 51592-51593, 51620; 2, p. BI-10]. Therefore, a Food Chain Individual Factor Value of 45 is assigned [Ref. 1, p. 51620].

==========

Food Chain Individual Factor Value: 45

4.1.3.3.2 Population

4.1.3.3.2.1 Level I Concentrations

There are no fisheries subject to Level I concentrations and the Level I Concentrations Factor Value is 0 [Ref. 1, pp. 51592-51593, 51620-51621].

==========

Level I Concentrations Factor Value: 0

4.1.3.3.2.2 Level II Concentrations

Nassau Lake and the Valatie Kill between County Route 18 and Nassau Lake are fisheries that have been closed due to the site-related PCB contamination; New York State Department of Health (NYSDOH) has issued "Eat No Fish" advisories [8, pp. 21, 26; 23, pp. 13, 17, 21]. Local residents occasionally ate fish from both water bodies prior to implementation of the advisories, but stopped consumption due to the PCB contamination [Ref. 24, pp. 1-50]. These fisheries are both within the zone of contamination for the Dewey Loeffel Landfill site [Figure 2]. Level I targets were not established because doing so would not change the site score, so the target fishery is subject to Level II concentrations [Ref. 1, pp. 51592-51593, 51620-51621]. The fish consumption rate for the Valatie Kill and Nassau Lake fishery is not well-documented, so the fishery is assigned to the category "Greater than 0 to 100 pounds per year" [Ref. 1, p. 51621; 24, pp. 1-50]. The category corresponds to the assigned Human Food Chain Population Value of 0.03 in Table 4-18 of the HRS, which is assigned as the Level II Concentrations Factor Value [Ref. 1, p. 51621].

==========

Level II Concentrations Factor Value: 0.03

4.1.3.3.2.3 Potential Human Food Chain Contamination

The water bodies along the remainder of the 15-mile TDL (Valatie Kill downstream of Nassau Lake; Kinderhook Lake) are suitable for some fish consumption according to NYSDOH [Ref. 23, pp. 11, 17]. Local residents mention Kinderhook Lake as a fishing location [Ref. 24, pp. 1-50]. The fish consumption rate for the downstream fishery is not well-documented, so the fishery is assigned to the category "Greater than 0 to 100 pounds per year" , which corresponds to the assigned Human Food Chain Population Value of 0.03 in Table 4-18 of the HRS [Ref. 1, p. 51621].

Identity of Fishery	Annual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Population Value (P_i)	Dilution Weight (D_i)	$P_i \times D_i$
Valatie Kill	0-100	Small to mod. stream	11	0.03	0.1	0.003

Sum of $P_i \times D_i$: 0.003
(Sum of $P_i \times D_i$)/10: 0.0003

[Ref. 1, pp. 51613, 51621; 8, p. 19]

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Potential Human Food Chain Contamination Factor Value: 0.0003

4.1.4.2 Environmental Threat - Waste Characteristics

4.1.4.2.1 Ecosystem Toxicity/Persistence/Bioaccumulation

Hazardous Substance	Ecotoxicity Factor Value*	Persistence Factor Value**	Environment Bioaccumulation Factor Value*	Ecotoxicity/Persistence/ Bioaccumulation Factor Value (Table 4-21)	Ref. 2 Page
PCBs [Aroclor-1232 and Aroclor-1260]	**10,000**	**1**	**50,000**	**5×10^8**	**BI-10**

* Fresh water values for ecotoxicity and bioaccumulation are used [Ref. 2, p. BI-10].
** PCBs are assigned the same persistence factor value (i.e., 1.0000) for both water body types (river and lake) within the target distance limit [Ref. 2, p. BI-10].

PCBs are the hazardous substances associated with the highest ecotoxicity/persistence/ bioaccumulation factor value of 5×10^8.

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Ecosystem Toxicity/Persistence/Bioaccumulation Factor Value: 5×10^8

4.1.4.2.2 Hazardous Waste Quantity

Source Number	Source Hazardous Waste Quantity Value (HRS Section 2.4.2.1.5)	Is source hazardous constituent quantity data complete? (yes/no)
1	> 0	no
Sum of Values:	> 0	

The sum corresponds to a hazardous waste quantity factor value of 1 in Table 2-6 of the HRS [Ref. 1, p. 51591]. However, based on the fact that targets are subject to Level II concentrations [see Section 4.1.4.3.1.2], a hazardous waste quantity factor value of 100 is assigned if it is greater than the hazardous waste quantity value from Table 2-6 (i.e., 1) [Ref. 1, p. 51591-51592]. Therefore, a hazardous waste quantity factor value of 100 is assigned for the surface water pathway [Ref. 1, p. 51591-51592].

4.1.4.2.3 Calculation of Environmental Threat - Waste Characteristics Factor Category Value

A hazardous substance (i.e., PCBs) associated with the waste source, which has a surface water pathway containment factor greater than 0 for the watershed, corresponds to an Ecotoxicity/Persistence Factor Value of 10,000 and Bioaccumulation Potential Factor Value of 50,000, as shown previously [Ref. 1, pp. 51618, 51620, 51624; 2, p. BI-10].

(Ecotoxicity/Persistence Factor Value) x (Hazardous Waste Quantity Factor Value) = $10{,}000 \times 100 = 1 \times 10^6$

(Ecotoxicity/Persistence Factor Value x Hazardous Waste Quantity Factor Value)
x (Bioaccumulation Potential Factor Value) = $(1 \times 10^8) \times (50{,}000) = 5 \times 10^{10}$

The product of 5×10^{10} corresponds to an assigned Waste Characteristics Factor Category Value of 320 in Table 2-7 of the HRS [Ref. 1, p. 51592].

==========

Hazardous Waste Quantity Factor Value: 100
Waste Characteristics Factor Category Value: 320

4.1.4.3 Environmental Threat - Targets

There are 1.7 miles of wetland frontage located within the zone of contamination [Figure 2; Ref. 25, p. 1; 38, pp. 1-2]. Therefore, Actual Contamination is documented, and the target sensitive environment is evaluated for Actual Contamination. There are no media-specific benchmarks for sediment, so the target sensitive environment is subject to Level II concentrations [Ref. 1, pp. 51592-51593, 51624-51625].

4.1.4.3.1 Sensitive Environments

4.1.4.3.1.1 Level I Concentrations

There are no media-specific benchmarks for sediment. Therefore, there are no sensitive environments subject to Level I concentrations and the Level I Concentrations Factor Value is 0 [Ref. 1, pp. 51592-51593, 51624-51625].

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Level I Concentrations Factor Value: 0

4.1.4.3.1.2 Level II Concentrations

Sensitive Environments

There are approximately 1.7 miles of wetland frontage located along the contaminated portion of Valatie Kill [Figure 2; Ref. 25, p. 1; 38, pp. 1-2].

Sensitive Environment	Distance from PPE to Sensitive Environment	Reference	Sensitive Environment Value(s)
N/A	0.00 mile	1, pp. 51624-51625	0

Sum of Sensitive Environments Value: 0

Wetlands

Wetland	Wetland Frontage	Reference(s)
Valatie Kill	1.7 miles	Figure 2; Ref. 25, p. 1; 38, pp. 1-2

Total Wetland Frontage: 1.7
Wetland Value: 50

Sum of Sensitive Environments Value + Wetland Value: 50

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Level II Concentrations Factor Value: 50

4.1.4.3.1.3 Potential Contamination

Since a maximum score of 100.00 was achieved for the surface water migration pathway, the Potential Contamination Factor Value within Environmental Threat-Targets was not scored (NS) [Ref. 1, p. 51608, Table 4-1, Section 4.1.4.3.1.3].

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Potential Contamination Factor Value: NS