

**DISTRICT QUALITY REVIEW  
SIGNATURE FORM**

**DATE:** February 24, 1999

**SITE NAME:** Linden Road Landfill

**SITE ADDRESS:** Linden Road, Flint MI

**COUNTY:** Genesee

**IS THE SITE ON THE 307 LIST?** YES X NO    IF YES, SITE SCORE: 29

**PURPOSE OF PRESENTATION** Groundwater migration exemption

**BRIEF SUMMARY OF SITE INFORMATION**

Two distinct and separate zones of groundwater have been identified at the Linden Road Landfill. The shallow water-bearing zone lies between 5 and 10 feet below the ground surface. Beneath the shallow zone is a clay layer that ranges between 8 and 13 feet in thickness. Glacial deposits composed of low permeability silty clay underlie this clay unit.

Contained within this silty clay are thin (.5-2.5') isolated lenses of saturated sand. The quantity of water in these lenses is insufficient to service a water supply well. Water wells in the surrounding area are screened in the bedrock, at depths ranging from 55 to 140'. Deep monitoring wells at the site have not shown reproducible impact to the lower water bearing unit. The gradient of the shallow water-bearing zone is shown in Figure 1. MW-1s, located up gradient of Linden Road Landfill and down gradient of the adjacent Dye Road Dump is the only well that has had consistent concentrations of contaminants significantly above generic residential drinking water criteria. (Tables 5-15, 5-16, 1, and pages 2 & 3 of 21 April 1995 report) NOTE: Generic Residential Drinking Water Criteria does not apply to MW-3s, as the groundwater sampled at this location is not considered to be in an aquifer (see Geological Review Attached).

**CONCLUSION OF THE REVIEW PANEL** Review of the available data shows the contamination found in the groundwater at the west property line is migrating onto the site from an upgradient source. Grant Linden Road Landfill a groundwater migration exemption.

**DATE, SOURCE, AND IDENTIFICATION OF DOCUMENTATION:**

March 1992, Roy F. Weston, Interim Remedial Measures Evaluation and Site Investigation Report

February 1993, Roy F. Weston, Groundwater Sampling Results – Round III – December 1992

April 1995, Roy F. Weston, Additional Monitoring Well Installation and Groundwater Sampling

February 1997, Roy F. Weston, Follow Up Information

February 1999; MDEQ; Request for Geological Review

APPROVAL SIGNATURES





PROJECT MANAGER:	James Innes		2-24-99
DISTRICT GEOLOGIST	Cheryl Stanfield		2/24/99
DISTRICT EQM:	Kathy Shirey		2/24/99
DISTRICT SUPERVISOR:	Rod Mosier		2/24/99



Table 5-15

Summary of Volatile Organic Compound Analyses  
Groundwater Samples - Round I (May/June, 1991)

Site Investigation  
Linden Road Landfill

(All Values in mg/L)

Sample No.	MW-01S	MW-01S-DP	MW-01D	MW-02S	MW-02D	MW-03S	MW-03D	MW-04S	TB-02	TB-03	MW-03S-FB	Detectable Limit (Range)
Sample Depth (ft.)												
Date Collected	05/31/91	05/31/91	05/31/91	06/01/91	05/31/91	06/01/91	06/01/91	06/02/91	05/31/91	06/01/91	06/01/91	
Methylene chloride	—	—	—	(0.007)	—	—	—	—	—	(0.007)	(0.010)	0.005
Acetone	(0.006) BJ	—	(0.013) BJ	—	(0.009) BJ	—	—	—	(0.004) BJ	—	—	0.010
Carbon disulfide	—	—	—	—	—	—	—	—	—	—	(0.022)	0.005
1,1-Dichloroethane	—	—	—	—	—	0.012	—	—	—	—	—	0.005
1,2-Dichloroethene (total)	0.036	0.037	—	—	—	—	—	—	—	—	—	0.005
Trichloroethene	0.300	0.380	—	—	—	0.010	—	—	—	—	—	0.005

## NOTES:

- - Compound was analyzed for but not detected.
- J - Indicates an estimated value.
- B - Indicates the compound was found in the associated blank and the sample.
- ( ) - Detection attributed to laboratory contamination.
- DP - Indicates a duplicate sample was collected at that location for QA/QC purposes.
- FB - Field blank.
- TB - Trip blank.
- S - Shallow well.
- D - Deep well.

Table 5-16  
 Summary of Volatile Organic Compound Analyses  
 Groundwater Samples - Round II (September 1991)  
 Site Investigation  
 Linden Road Landfill  
 (All Values in mg/L)

Sample No.	MW-01S	MW-01D	MW-01D-DP	MW-02S	MW-02D	MW-03S	MW-03D	MW-04S	PZ-01	PZ-02	Trip Blank	MW-01S-FB	Detection Lin (Ran)
Sample Depth (ft.)													
Date Collected	09/11/91	09/11/91	09/11/91	09/12/91	09/12/91	09/12/91	09/12/91	09/13/91	09/12/91	09/12/91	09/09/91	09/11/91	
Methylene chloride	(0.010) JB	(0.007) JB	(0.008) JB	(0.009) JB	(0.011) JB	(0.009) JB	(0.013) JB	(0.015) JB	(0.012) JB	(0.014) JB	(0.009) B	(0.007) JB	0.005
Acetone	(0.017) JB	(0.006) JB	(0.007) JB	(0.009) JB	(0.012) JB	(0.024) B	(0.013) JB	(0.011) B	(0.014) B	(0.012) B	(0.010) JB	(0.015) JB	0.010
Carbon disulfide	---	---	---	---	---	---	---	---	---	---	---	---	0.005
1,1-Dichloroethane	---	---	---	---	---	---	---	---	---	---	---	---	0.005
1,2-Dichloroethene (total)	0.061 J	---	---	---	---	0.014 J	---	---	0.020	---	---	---	0.005
1,2-Dichloroethane	---	---	---	---	---	---	---	---	0.009	---	---	---	0.005
2-Butanone	---	---	---	---	---	---	---	0.001 J	0.001 J	0.002 J	---	---	0.010
1,2-Dichloropropane	---	---	---	---	---	---	---	---	0.190	---	---	---	0.005
Trichloroethene	0.320	---	---	---	---	---	---	---	0.003 J	---	---	---	0.005
Benzene	---	---	---	---	---	---	---	---	---	0.006	---	---	0.005
4-Methyl-2-pentanone	---	---	---	---	---	---	---	---	---	0.073	---	---	0.010
Toluene	---	---	---	---	---	---	---	0.002 J	0.002 J	0.010	---	---	0.005
Chlorobenzene	---	---	---	---	---	---	---	---	---	0.003 J	---	---	0.005
Ethylbenzene	---	---	---	---	---	---	---	---	---	0.068	---	---	0.005
Xylenes (total)	---	---	---	---	---	---	---	---	---	0.310	---	---	0.005

NOTES:

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- DP - Indicates a duplicate sample was collected at that location for QA/QC purposes.
- FB - Field blank.
- TB - Trip blank.
- S - Shallow well.
- D - Deep well.
- All prefixes to sample numbers are not shown for Table clarity purposes.

Table 1

Summary of Volatile Organic Compound Analyses  
 Groundwater Samples - Round III (December 1993)  
 Site Investigation  
 Linden Road Landfill  
 (All Values in mg/L)

Sample No.	MW-01S	MW-01S-DP	MW-01D	MW-02S	MW-02D	MW-03S	MW-03D	MW-04S	PZ-01	PZ-02	Trip Blank	Quantitation Limit (Range)
Date Collected	12/1/92	12/1/92	12/1/92	12/1/92	12/1/92	12/1/92	12/1/92	12/1/92	12/1/92	12/1/92	12/1/92	
Methylene chloride	--	--	--	--	--	--	--	--	--	0.061	--	0.005
1,1-Dichloroethene	0.004 J	0.003 J	--	--	--	--	--	--	--	--	--	0.005
1,1-Dichloroethane	--	--	--	--	--	0.006	--	--	--	0.006	--	0.005
1,2-Dichloroethene (total)	0.035 J	0.029	--	--	--	0.003 J	--	--	--	--	--	0.005
2-Butanone	--	--	--	--	0.008 J	0.022	--	--	--	0.013	--	0.010
1,2-Dichloropropane	--	--	--	--	--	--	--	--	0.009 J	--	--	0.005
Trichloroethene	0.210	0.280 J	--	--	--	0.005 J	--	--	--	--	--	0.005-0.010
4-Methyl-2-pentanone	--	--	--	--	--	0.006 J	--	--	--	0.006 J	--	0.010
Toluene	0.009 J	0.003 J	--	0.004 J	--	0.014	--	--	--	--	--	0.005
Chlorobenzene	--	--	--	--	--	--	--	--	--	0.003 J	--	0.005
Ethylbenzene	--	--	--	--	--	0.003 J	--	--	--	--	--	0.005
Xylenes (total)	--	--	--	--	--	0.003 J	--	--	--	--	--	0.005

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