FID 241 218670
ERR/ERP

Village of Whitefish Bay

REPORT

Monitoring Well Installation and Sampling

Presidio

Whitefish Bay Demolition Landfill Site
Milwaukee, Wisconsin

STS Consultants Ltd.
Consulting Engineers

9/95

FID 241 218670
ERR/ERP

STS Letter of Transmittal

To: Pam Mylotta WDNR

From: STS Consultants, Ltd.

- [x] 11425 West Lake Park Drive, Milwaukee, WI, 414-359-3030, 414-359-0822(FAX)
- [ ] 111 Pfingsten Road, Northbrook, IL 60062, 708-272-6520, 708-498-2721(FAX)
- [ ] 1035 Kepler Drive, Green Bay, WI, 414-468-1978, 414-468-3312(FAX)
- [ ] 3340 Ranger Road, Lansing, MI 48906, 517-321-4964, 517-321-2132(FAX)
- [ ] 3650 Annapolis Lane, Minneapolis, MN 55447, 612-559-1900, 612-559-4507(FAX)
- [ ] 207 East Holly Avenue, Suite 208, Sterling, VA 22170, 703-406-0126, 703-406-0059(FAX)

Date: 9/21/95 STS Project No. 82149XA

Project: Whitefish Bay Landfill

Location: Milwaukee WI

We are Sending the Following Item(s):

- [x] Attached
- [ ] Via Fax
- [ ] Under Separate Cover

- [ ] Prints
- [x] Copy of Letter
- [ ] Proposal/Report
- [ ] Shop Drawings
- [ ] Test Results
- [ ] Samples
- [ ] Specifications
- [ ] Boring Logs
- [ ] Change Order
- [ ] Other

They are Transmitted as Indicated:

- [ ] For Approval
- [ ] As Requested
- [x] For Your Use
- [ ] For Review and Comment

Remarks: Pam,

Enclosed are copies of the latest report regarding work performed at the Whitefish Bay Landfill site for your use. Please direct comments and/or questions to Tom Kroeger of STS or Dennis Fische of Rheman and Tierney. We look forward to hearing from you

Sincerely
STS

Charles L Bartelt
STS Representative
CHARLES. L. BARTELT

September 18, 1995

Mr. Edmund Henschel
Village Manager
Village of Whitefish Bay
5300 Marlborough Drive
Whitefish Bay, WI 53217

RE: Monitoring Well Installation and Sampling at the Whitefish Bay Demolition Landfill Site in Milwaukee, Wisconsin -- STS Project No. 82149XA

Dear Mr. Henschel:

This letter summarizes the monitoring well installation and groundwater sampling recently performed in the area of the Whitefish Bay Landfill site on Good Hope Road in Milwaukee, Wisconsin. The site location is shown on Figure 1. STS Consultants, Ltd. (STS) was retained by Whitefish Bay (the Village) to further investigate the extent of affected groundwater in the vicinity of the site.

Site Background

The Village reported NR140 groundwater standard exceedances to the Wisconsin Department of Natural Resources (WDNR) in January, 1989 after a preliminary soil and groundwater investigation confirmed groundwater contamination. Additional on-site investigation, including borings, wells, and a soil gas survey, indicated chlorinated solvent impacts in the soil and groundwater, primarily in the southwest corner of the site. During the April, 1989 sampling round, groundwater impacts were in exceedance of the NR140 Wisconsin Administrative Code (WAC) Enforcement Standards for seven different volatile organic compounds (VOCs). The highest concentrations of VOCs were observed in MW-22, the well located very close to the southwest corner of the site. Groundwater gradients determined solely from on-site wells suggested groundwater flow was to the southwest, which together with the location of the most contaminated well, suggested that off-site contaminant migration was occurring.

In August 1992, the WDNR sent a letter to the Village requesting additional information regarding the site hydrogeology and potential off-site impacts. Through various discussions with Pam Mylotta of the WDNR, an investigative approach including a GeoProbe™ investigation followed by two monitoring well installations was agreed upon. The purpose of this investigative phase was to explore the possibility of off-site groundwater impacts southwest of the site (the apparent downgradient groundwater flow direction) by obtaining and field analyzing groundwater samples from the sand and gravel stratum in which impacts were observed on-site. The results of the GeoProbe™ groundwater samples were then used to direct the placement of the monitoring wells. As a second part of this phase, one additional round of groundwater sampling from all the wells was also conducted, on and off the site, to better define groundwater flow.

STS Consultants Ltd.
Consulting Engineers

11425 West Lake Park Drive
Milwaukee, Wisconsin 53224
414.359.3030/Fax 414.359.0822

The results of the GeoProbe™ investigation and groundwater sampling were presented in a report entitled "Geoprobe and Monitoring Well Investigation" dated May 3, 1994. The GeoProbe™ results indicated that NR140 Enforcement Standard (ES) exceedances for vinyl chloride and 1,2-dichloroethene and NR140 Preventative Action Limit (PAL) exceedances for 1,1,1-trichloroethane were present in the groundwater located to the west of the site. The magnitudes of the impacts indicated by these results, however, were several times smaller than those seen in the wells located in the southwest corner of the site. The results suggested that groundwater in the sand unit at that location did not appear to be significantly impacted in the quadrant located southwest of the site. In addition, the groundwater elevations in well MW-24D, located approximately 600 feet west-southwest of MW-22, were found to be up to 15 feet higher than those found in the southwest corner of the landfill site. This was the first indication of a possible easterly component to the groundwater flow.

In the same report, STS recommended the installation of three additional off-site groundwater monitoring wells in an approximate radius of 200 feet around the southwestern corner of the site to provide further information regarding the groundwater flow direction, hydrogeology and contaminant concentrations in that vicinity. The tasks associated with this latest phase were performed in June of 1995 and are summarized in the following Scope of Work section.

Scope of Work

The scope of work associated with the additional well installations was explained in detail in the recommendations section of the May 3, 1994 report. In summary, the original scope of work included the following:

- Obtain access from the adjacent property owners.
- Install and develop three groundwater monitoring wells.
- Sample the three new groundwater monitoring wells for VOCs.
- Obtain a full round of water levels from all on-site and off-site wells.
- Prepare this letter report summarizing the findings.

In addition to the scope of work outlined above, MW-22 was also purged and sampled for VOCs.

Site Access

Permission to access the adjacent properties for the placement of the off-site wells was obtained in writing from each of the three property owners. STS coordinated with Milwaukee County. Access to the Milwaukee Public School Property and Gritzmacher Realty and Investment properties was obtained through Village outside counsel. In addition, STS called Digger's Hotline and met with utility representatives to obtain utility clearance.

Soil Boring and Sampling

STS drilled three soil borings (MW-25, MW-26, and MW-27) with an STS truck-mounted drill rig using 4 1/4 inch hollow stem augers on June 7 and June 8, 1995. The locations of the borings are shown on Figure 2. The purpose of the borings was to provide additional information regarding the off-site hydrogeology and, in particular, the extent of the sand and gravel unit found at MW-22. Soil samples were collected continuously throughout the depth of each boring at 2-foot intervals using standard split spoon procedures. Soil samples were field classified in accordance with the Unified Soil Classification System by an on-site STS hydrogeologist. A portion of each sample was sealed in a laboratory supplied 4-ounce jar with a teflon lid and kept at 4° C in a cooler with ice for possible laboratory submittal. A second portion was placed in an 8-ounce field screening jar, covered with aluminum foil, and screened using headspace techniques with an HNu Model 101 Photoionization Detector (PID) equipped with a 10.2 eV lamp. The results of the field screening are summarized on the boring log documentation forms (WDNR 4400-122) included in appendix A.

The elevation of the sand unit observed in the off-site borings was generally similar to that encountered in the borings performed on the Whitefish Bay property and in particular, MW-22. The sand unit was encountered in boring MW-26 from 684 ft Mean Sea Level (MSL) to the terminus of the boring (elevation 670 ft MSL) and in boring MW-27 from 681 ft MSL to the terminus of the boring (elevation 678 ft MSL) (See cross-section A-A' on Figure 3). These elevations are consistent with the elevation of the sand unit encountered in MW-22 and suggest that this unit is continuous over this area.

Boring MW-27 also encountered a shallower sand layer from approximately 693 ft MSL to 691 ft MSL. Although this layer is not present at MW-22, it seems to be continuous with the shallow sand layers encountered in boring MW-25 (See cross-section B-B'on Figure 4). It is not known, however, if the upper sand layer and lower sand unit are hydraulically connected.

PID readings in this shallower sand strata in B-27 indicated the possibility of VOC impacts, and a soil sample was subsequently obtained. The sample was analyzed for VOCs using EPA method 8021. Three VOC impacts were detected including cis-1,2-dichloroethylene at 2,520 μg/kg, tetrachloroethylene at 824 μg/kg and trichloroethylene at 7,260 μg/kg. These results, however, may be more indicative of the groundwater conditions than soil conditions, as the sample originated from the apparent soil/groundwater interface. A copy of the analytical report is included in Appendix B.

Positive PID readings from borings MW-25 and MW-26 were not registered from the soil samples obtained from above the watertable. Positive readings were registered near the groundwater interface to the terminus of each boring.

Monitoring Well Installation and Development

Groundwater monitoring wells were installed in accordance with NR141 WAC upon the completion of each boring. Each well was constructed of flush-threaded Schedule 40 PVC riser, 10 foot, 0.010-inch slot screen, and sealing materials as per NR141 WAC. Either a steel protector pipe (MW-25 and MW-26) or a flush mount protector cover

(MW-27) was then installed, labeled and locked. The well installation activities were recorded on WDNR Form 4400-113A which are included in Appendix C. Upon completing the well installations, the top of the PVC well riser pipe (TPVC) and ground surface elevations at each well location were surveyed by STS and tied into the existing well network using the TPVC elevation at MW-22 as the vertical control.

Each newly installed monitoring well was developed in accordance with NR141 WAC by surging and purging each well with a new, disposable PVC bailer. A total of 10 well volumes were removed from both MW-25 and MW-26. Well MW-27 bailed dry after removing 2.5 gallons on two separate attempts and as a result sediment still remained in the bottom of the well. A small submersible centrifugal pump equipped with new teflon tubing was able to remove the sediment upon a third attempt. All water generated during the well developments was containerized in 55-gallon drums, labeled and stored on-site. Copies of the well development forms are included in Appendix D.

Groundwater Sampling

Groundwater samples were collected on June 27, 1995 from wells MW-22, MW-25, MW-26, and MW-27. Each of the groundwater samples was analyzed for VOCs using EPA Method 8021. The samples were analyzed by Enviroscan Laboratory in Rothschild, Wisconsin.

Water levels were obtained from each well prior to sampling. The wells were then purged with disposable PVC bailers by removing 4 well volumes and allowed to recover. Each well was sampled using a single-use disposable bailer with bottom discharge. A sample from each well was placed in three 40-ml VOC vials with hydrochloric acid (HCL) preservative. A duplicate sample was obtained from well MW-27. Once obtained, the samples were packed on ice and sent overnight to the laboratory. Chain-of-custody documentation was completed and forwarded to the laboratory with the samples. All purge water generated during the sampling procedures was also containerized in 55-gallon drums, labeled and stored on-site along with development water for disposal.

Groundwater Elevations

Depth to water measurements were obtained in all on-site and off-site wells on June 26, 1995. From this information, groundwater elevations were calculated. The results are presented on Figure 5.

The groundwater elevations in the previously existing older wells were generally consistent with prior rounds. The data obtained from the new wells have provided a new understanding of the hydrogeology of the southwest corner of the site. Based on current and past elevation data, the groundwater still appears to flow away from Lincoln Creek across the site to the west-southwest (elevations from MW-16 and MW-9 could not be obtained due to well damage). To the west of the site, off-site wells MW-25 and MW-27 showed water elevations 12 to 14 feet higher than on-site well MW-22 indicating a steep-sloping, west to east gradient exists along the site's western boundary. This evidence seems to strongly suggest that an easterly flow component does exist along the western boundary of the landfill and also suggests that impacts previously noted in the area of well MW-24 do not originate from the Village property. Overall, groundwater flow in the area appears to flow radially from the north, east and west towards the southwest corner of the site. From this point, the past and current data suggest groundwater flows to the south/southeast onto the property owned by Milwaukee Public Schools.

Groundwater Analytical Results

The following paragraphs summarize the findings of the groundwater analytical testing on the Village property and adjacent properties. The groundwater analytical results are presented on Tables 1 and 2. A copy of the analytical report is included in Appendix E.

1. MW-22 (Village Property) - Monitoring well MW-22 continues to have high concentrations of several chlorinated solvents and petroleum-derived VOCs, including cis-1,2-dichloroethylene, ethylbenzene, tetrachloroethylene, toluene, trichloroethylene, vinyl chloride and xylene. Concentrations of many of the parameters have increased significantly since the last sampling round (November, 1993).

2. MW-25 (Milwaukee County Property-southwest) - Monitoring well MW-25 contained cis-1,2-dichloroethylene and vinyl chloride in concentrations above the NR 140, WAC Enforcement Standard (ES). Both of these compounds are degradation products of trichloroethylene and tetrachloroethylene. Neither trichloroethylene or tetrachloroethylene, however, were detected in monitoring wells MW-24S nor MW-24 located further west on the County property, during the November 1993 sampling round.

3. MW-26 (Milwaukee Public Schools-south) - Monitoring well MW-26 also contained cis-1,2-dichloroethylene and vinyl chloride in concentrations above the NR 140, WAC ES, but not in concentrations as high as detected at wells MW-22 or MW-27.

4. MW-27 (Gritzmacher Property-west) - A total of thirteen VOCs were detected in monitoring well MW-27 including cis-1,2-dichloroethylene and vinyl chloride in the 4,000 μg/l range. In all, five of the thirteen detected parameters were reported in concentrations exceeding the respective NR 140, WAC ES. Many of these same parameters are also present downgradient in monitoring well MW-22 on the Village's property, and the two parameters with the highest concentrations are the two found in excess of the NR140 WAC ES further downgradient on the Milwaukee Public School grounds.

Discussion

1. Groundwater flow directions on site and to the west is toward the southwest corner of the site. Groundwater flow off-site from that point appears south to southeast.

2. Many of the same chlorinated compounds observed in groundwater samples from the Village site were observed in soil and groundwater samples from the Gritzmacher property to the east. Based on groundwater flow direction, it

appears that the Gritzmacher site is contributing to the groundwater impacts observed on the village property.

3. Degradation products of the trichloroethylene and tetrachloroethylene were observed on the county property southwest of the Village site. The groundwater elevation suggests that these contaminants are migrating to the east.

4. Groundwater samples from the Milwaukee Public School property to the south and east of the Village site also show degradation products of chlorinated solvents. Based on apparent groundwater flow direction, it appears that the Village's landfill property, the Gritzmacher property, and the County property could all be contributors to the impacts on the groundwater underlying the city's school property.

Recommendations

Based on the results of the latest round of investigation, it is evident that high levels of contamination still exist in the southwest corner of the site. STS, therefore, recommends the implementation of the groundwater extraction system proposed in the May 20, 1994 report entitled "Site Investigation Report". The extraction system configuration recommended in that report contained only one extraction well. By implementing the system, the spread of contamination will be slowed or arrested. The effectiveness of the system will be monitored through sampling of the on- and off-site wells.

Closing

STS appreciates the opportunity to be of service to you. If you have any questions or concerns regarding this letter, please contact us at (414) 359-3030.

Sincerely,

STS CONSULTANTS, LTD.

Charles L. Bartelt
Assistant Project Geologist

Kevin L. Brehm, P.E.
Project Engineer

Thomas W. Kroeger
Associate

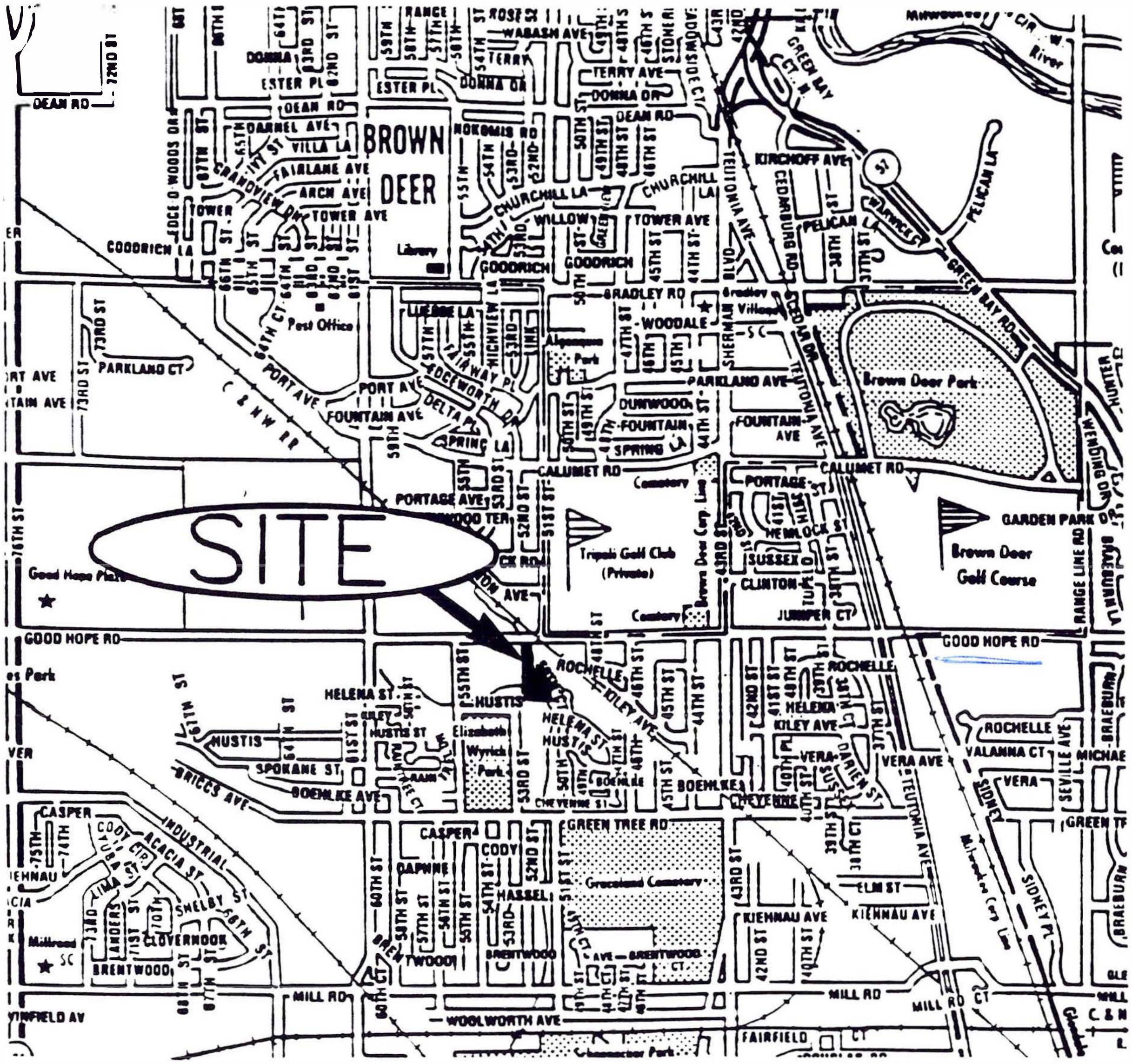
cc: Dennis Fisher
Meissner & Tierney

FIGURES

TABLES

APPENDICES

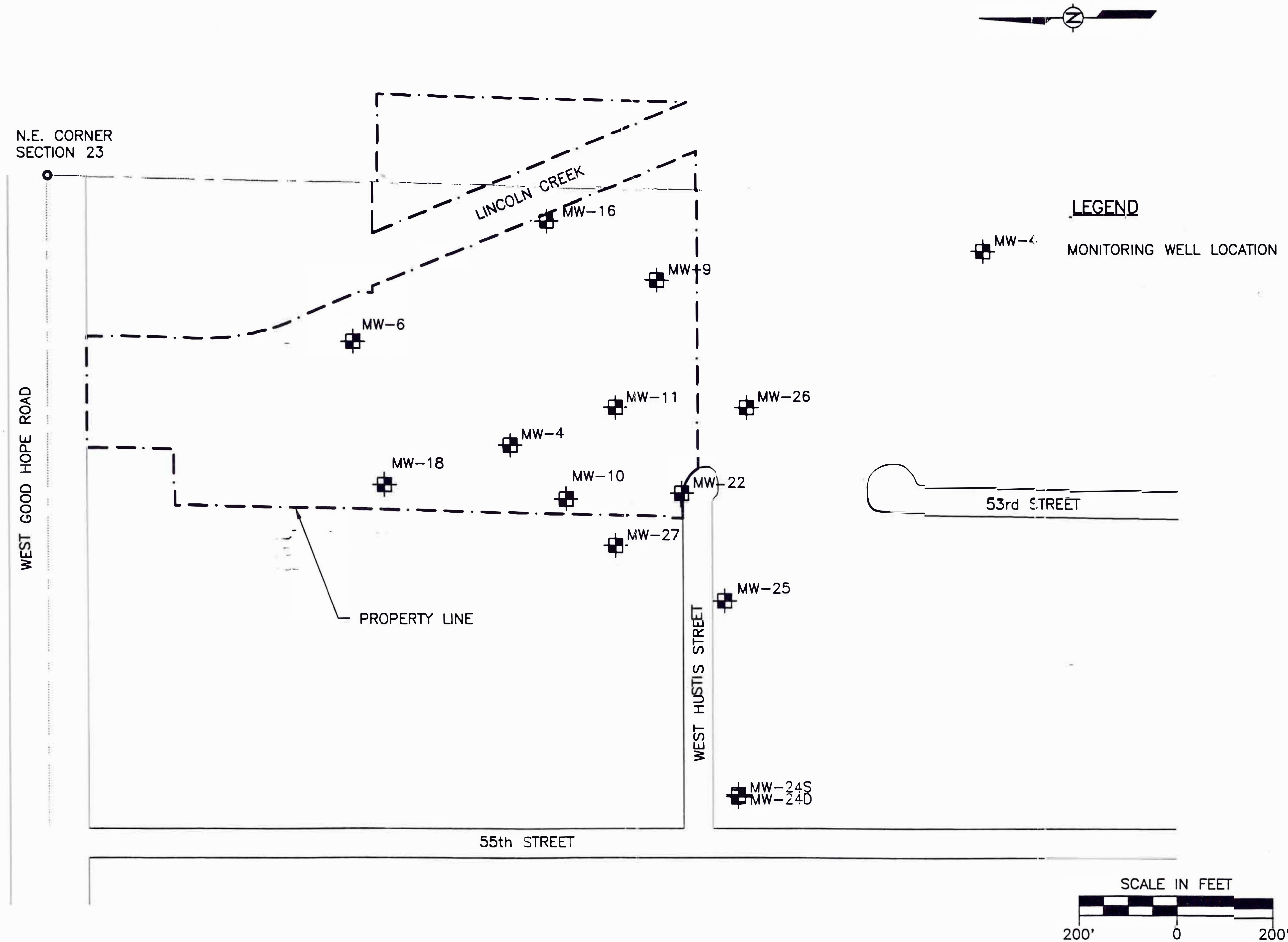
FIGURES



52nd St

SOURCE: GREATER MILWAUKEE STREET GUIDE

STS Consultants, Ltd.	PROJECT/CLIENT WHITEFISH BAY LANDFILL MILWAUKEE, WISCONSIN SITE LOCATION DIAGRAM	DRAWN BY	T.J.J. 4/24/92
		CHECKED BY	A.J.G. 4/24/92
		APPROVED BY	K.R.H. 4/24/92
		SCALE	FIGURE NO. 1
		CADFILE 49-1.DWG	STS PROJECT NO.
		PLOT DATE 4/24/92	82149XF

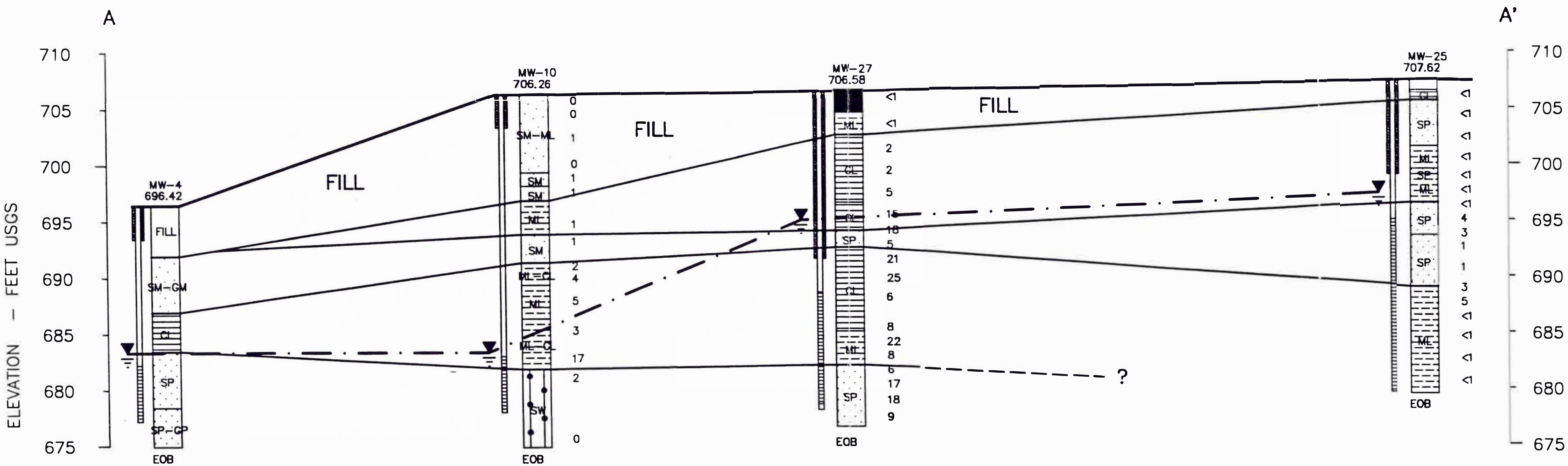


DRAWN BY	JMI\LMc	DATE	8-17-95
CHECKED BY	CLB	DATE	8-17-95
APPROVED BY	TWH	DATE	8-17-95
CADFILE	82149016		

WELL LOCATION DIAGRAM
WHITEFISH BAY LANDFILL
MILWAUKEE, WISCONSIN

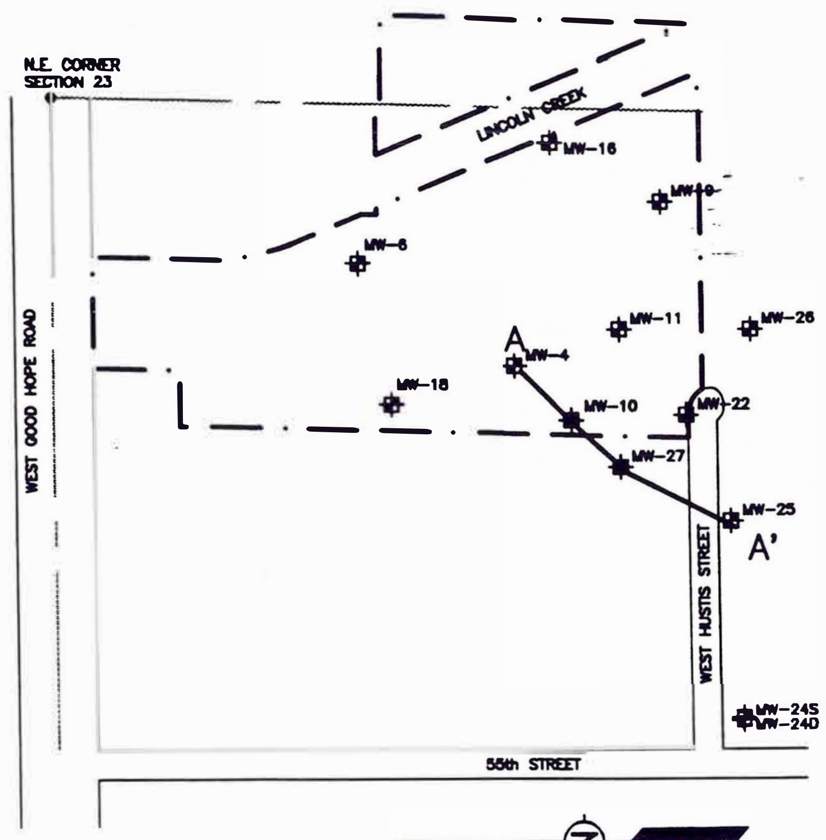
STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 82149XF
STS PROJECT FILE 82149XF
SCALE AS SHOWN
FIGURE NO. 2



(A–A' / 3) CROSS SECTION

HORIZONTAL: 1"=50'
VERTICAL: 1"=10'



CROSS SECTION INDEX

NOT TO SCALE

NOTE

PID READINGS NOT AVAILABLE FOR MW-4 BORING

LEGEND

- GROUNDWATER ELEVATION (6-26-95)
- ◁ PID READING
- SP USCS CLASSIFICATION
- WELL SEAL
- SAND FILTER PACK
- WELL SCREEN
- EOB END OF BORING

CROSS SECTION A-A'
WHITEFISH BAY LANDFILL
MILWAUKEE, WISCONSIN

DRAWN BY	JMI	DATE	9-5-95
CHECKED BY	CLB	DATE	9-5-95
APPROVED BY	TWK	DATE	9-5-95
CADFILE	..\PROJECTS\82149\82149017.DWG		

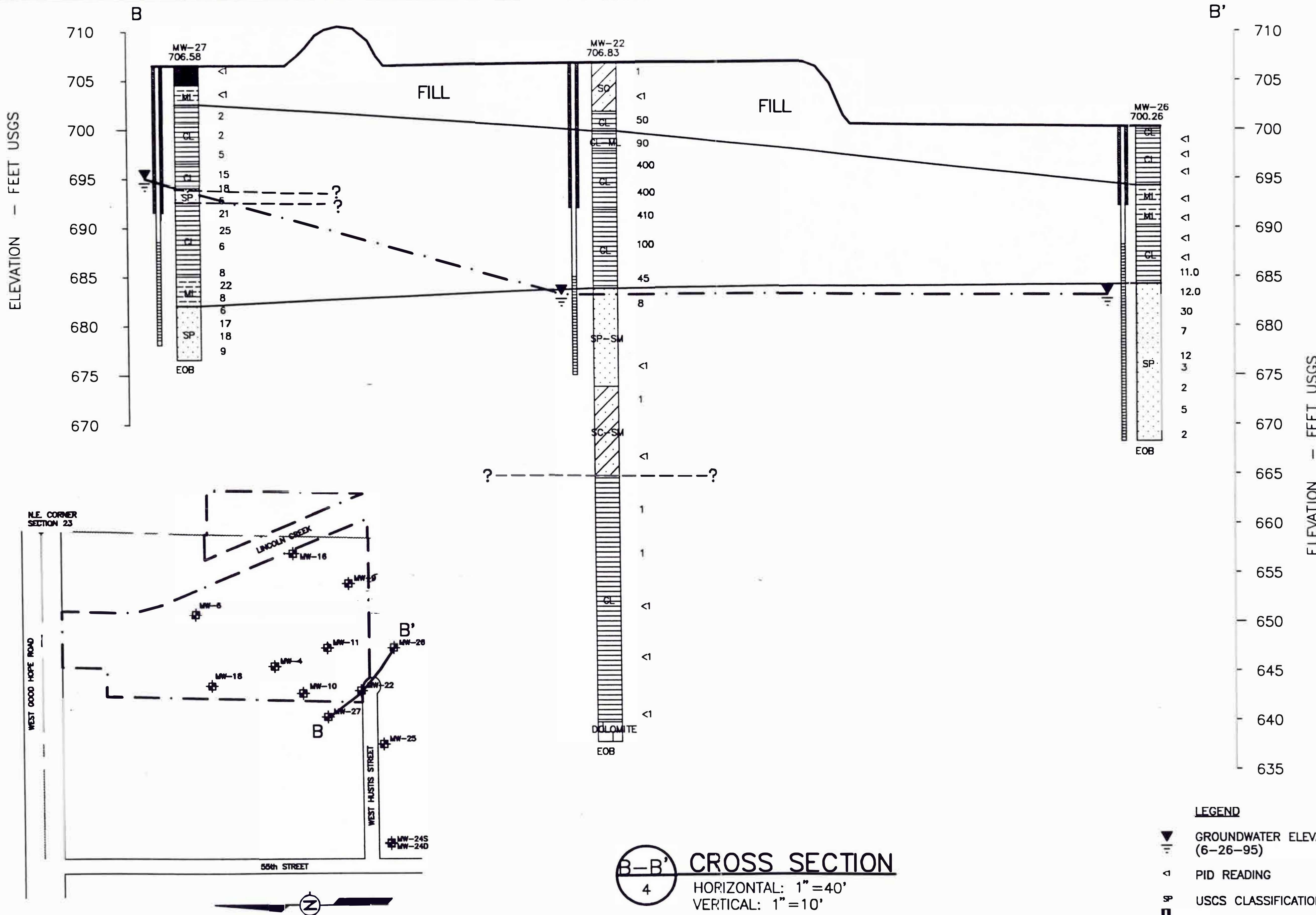
STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 82149XA

STS PROJECT FILE

SCALE AS SHOWN

FIGURE NO. 3



CROSS SECTION INDEX

NOT TO SCALE

B–B' 4 CROSS SECTION

HORIZONTAL: 1"=40'
VERTICAL: 1"=10'

LEGEND

- GROUNDWATER ELEVATION (6–26–95)
- <1 PID READING
- SP USCS CLASSIFICATION
- WELL SEAL
- SAND FILTER PACK
- WELL SCREEN
- EOB END OF BORING

DRAWN BY JMI	DATE 9–5–95
CHECKED BY CLB	DATE 9–5–95
APPROVED BY TWK	DATE 9–5–95
CADFILE ..\PROJECTS\82149\82149018.DWG	

CROSS SECTION B–B'
WHITEFISH BAY LANDFILL
MILWAUKEE, WISCONSIN

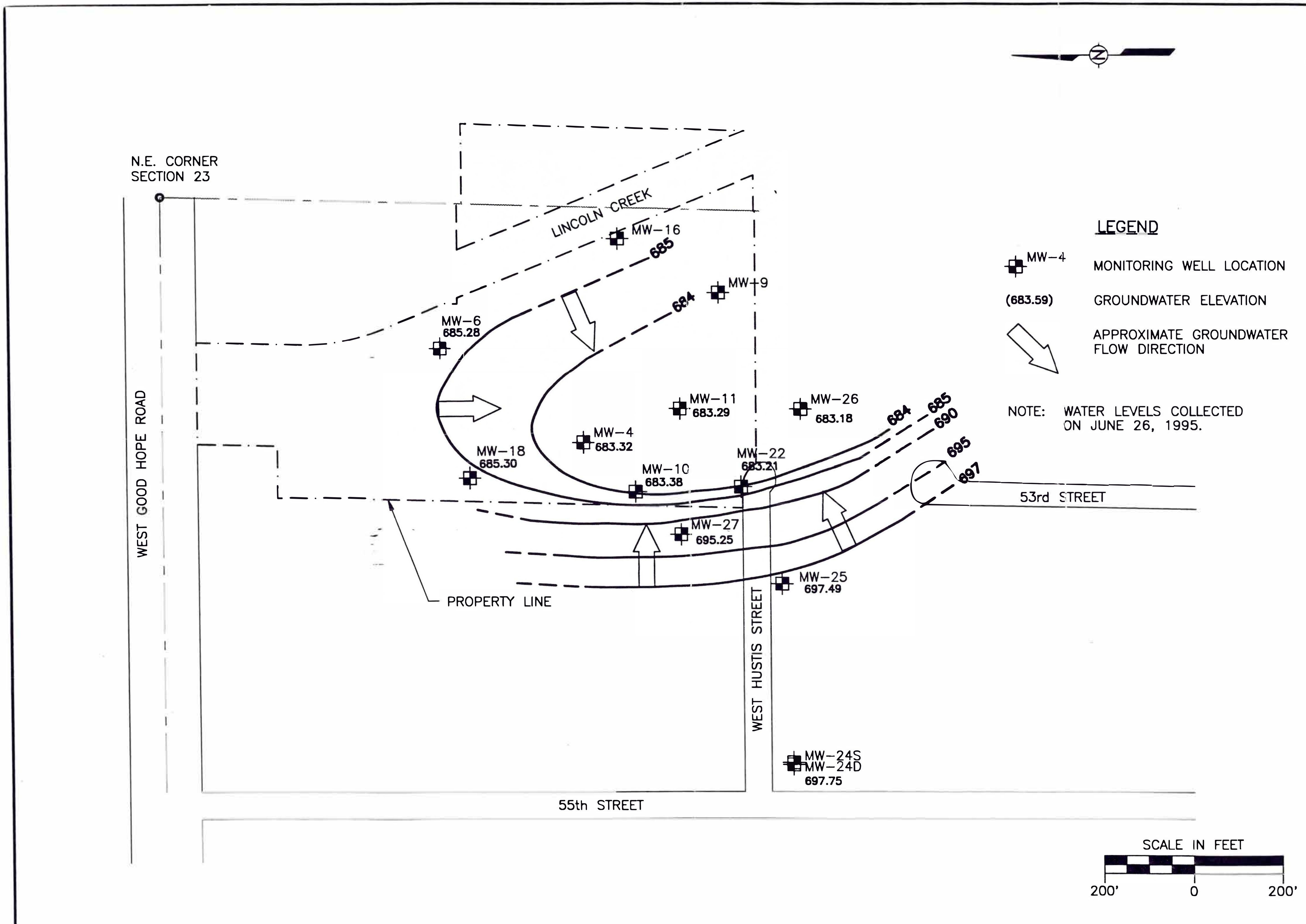
STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 82149XA

STS PROJECT FILE

SCALE AS SHOWN

FIGURE NO. 4



DRAWN BY	JM\LMc	DATE	9-5-95
CHECKED BY	CLB	DATE	9-5-95
APPROVED BY	TWK	DATE	9-5-95
CADFILE	82149015		

GROUNDWATER FLOW DIAGRAM
(JUNE 26, 1995)
WHITEFISH BAY LANDFILL
MILWAUKEE, WISCONSIN

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 82149XF

STS PROJECT FILE 82149XF

SCALE AS SHOWN

FIGURE NO. 5

TABLES

Table 1
Groundwater Analytical Results
Whitefish Bay Demolition Landfill
Milwaukee, Wisconsin
(concentrations in $\mu g/\ell$)

Parameters	ES	PAL	MW-22	MW-25	MW-26	MW-27	MW-27D
Benzene	5	0.5	<40	<4.0	<20	4.7	4.5
1,1-Dichloroethane	850	85	<100	<10	<50	40.8	37.2
1,1-Dichloroethene	7	0.7	<80	<8	<40	8.8	7.8
1,2-Dichloroethane	5	0.5	<100	<10	<50	3.9	7.0
cis-1,2-Dichloroethene	70	7	17.400	632	3,070	4,270	6,110
trans-1,2-Dichloroethene	100	20	<100	<10	<50	30.6	49.5
Ethylbenzene	700	140	12,600	<20	<100	<1.0	<1.0
Tetrachloroethene	5	0.5	7,290	<10	<50	7.5	6.8
Toluene	343	68.6	1,360	<40	<200	10.6	10.1
Trichloroethene	5	0.5	13,400	<4	<20	63.9	57.4
1,1,1-Trichloroethane	200	40	251	<10	<50	<0.5	<0.5
1,1,2-Trichloroethane	0.6	0.06	<100	<10	<50	<0.5	<0.5
Vinyl Chloride	0.2	0.02	3,460	59.5	712	4,100	4,110
Total Xylenes	620 [1]	124 [1]	53,400	<20	<100	<1.0	<1.0
1,2,4-Trimethylbenzene	--	--	204	<20	<100	<1.0	<1.0
Chlorobenzene	--	--	<400	<40	<200	6.8	2.9
Chloroethane	400	80	<400	<40	<200	6.4	4.6
Isopropyl Ether	--	--	<200	<20	<100	5.6	5.4

(1) - Standard is for xylene. Reported values are for total xylenes (i.e. m- & o&p-Xylene and Styrene)

-- Standard not established

ES - Enforcement standard as established in chapter NR 140 WAC

PAL - Preventive Action Limit as established in chapter NR 140 WAC

Samples collected on June 27, 1995.

Table 2
Historical Groundwater Analytical Results
Whitefish Bay Demolition Landfill
Milwaukee, Wisconsin
(concentrations in µg/l)

				Date Sampled				
	Parameters	ES	PAL	10-5-88	11-10-88	4-19-89	11-16-93	6-27-95
W-4	VOCs							
	Benzene	5	0.5	<1	<1	<1	<0.2	NA
	Bromodichloromethane	179	36	<1	<1	<1	<0.5	NA
	Carbon Tetrachloride	5	0.5	<1	<1	<1	<0.5	NA
	Dibromochloromethane	215	43	<1	<1	<1	<0.5	NA
	1,1-Dichloroethane	850	85	3.6	<1	6	2.3	NA
	1,1-Dichloroethene	7	0.7	<1	<1	2.3	1.0	NA
	1,2-Dichloroethane	5	0.5	1.3	<1	<1	<0.5	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	212	NA
	trans-1,2-Dichloroethene	100	20	<1	<1	229	2.2	NA
	Ethylbenzene	700	140	<1	<1	<1	<1	NA
	Methylene Chloride	150	15	<1	<1	<1	<2.5	NA
	Tetrachloroethene	5	0.5	400	223	110	87.1	NA
	Toluene	343	68.6	<1	<1	<1	<1	NA
	Trichloroethene	5	0.5	425	341	264	104	NA
	1,1,1-Trichloroethane	200	40	<1	<1	<1	<0.5	NA
	1,1,2-Trichloroethane	0.6	0.06	<1	<1	<1	<0.5	NA
	Vinyl Chloride	0.2	0.02	<1	<1	<1	38.7	NA
	Total Xylenes	620 (1)	124 (1)	<1	<1	<1	<1	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA
W-6	VOCs							
	Benzene	5	0.5	NA	NA	NA	0.3	NA
	Bromodichloromethane	179	36	NA	NA	NA	<0.5	NA
	Carbon Tetrachloride	5	0.5	NA	NA	NA	<0.5	NA
	Dibromochloromethane	215	43	NA	NA	NA	<0.5	NA
	1,1-Dichloroethane	850	85	NA	NA	NA	<0.5	NA
	1,1-Dichloroethene	7	0.7	NA	NA	NA	<0.4	NA
	1,2-Dichloroethane	5	0.5	NA	NA	NA	<0.5	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	0.9	NA
	trans-1,2-Dichloroethene	100	20	NA	NA	NA	<0.5	NA
	Ethylbenzene	700	140	NA	NA	NA	<1.0	NA
	Methylene Chloride	150	15	NA	NA	NA	<2.5	NA
	Tetrachloroethene	5	0.5	NA	NA	NA	<0.5	NA
	Toluene	343	68.6	NA	NA	NA	<2.0	NA
	Trichloroethene	5	0.5	NA	NA	NA	0.7	NA
	1,1,1-Trichloroethane	200	40	NA	NA	NA	<0.5	NA
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	NA	<0.5	NA
	Vinyl Chloride	0.2	0.02	NA	NA	NA	1.3	NA
	Total Xylenes	620 (1)	124 (1)	NA	NA	NA	1.0	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA

-- - Standard Not Established
NA - Not Analyzed
ES - Enforcement Standard as established in Chapter NR 140 WAC
PAL - Preventive Action Limit as established in Chapter NR 140 WAC
(1) - Standard is for xylene. Reported values are for total xylenes (i.e. m- and o&p-xylene and styrene).
(2) - Concentration of this compound is estimated because it exceed the highest standard used for calibration, but does not exceed the range of the instrument detector.
(3) - Concentration of this compound is estimated because it exceeds the range of the instrument detector.
* - Detection limit raised due to possible carry over.

Table 2
Historical Groundwater Analytical Results
Whitefish Bay Demolition Landfill
Milwaukee, Wisconsin
(concentrations in μg/l)

	Parameters	ES	PAL	Date Sampled				
				10-5-88	11-10-88	4-19-89	11-16-93	6-27-95
W-4	VOCs							
	Benzene	5	0.5	<1	<1	<1	<0.2	NA
	Bromodichloromethane	179	36	<1	<1	<1	<0.5	NA
	Carbon Tetrachloride	5	0.5	<1	<1	<1	<0.5	NA
	Dibromochloromethane	215	43	<1	<1	<1	<0.5	NA
	1,1-Dichloroethane	850	85	3.6	<1	6	2.3	NA
	1,1-Dichloroethene	7	0.7	<1	<1	2.3	1.0	NA
	1,2-Dichloroethane	5	0.5	1.3	<1	<1	<0.5	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	212	NA
	trans-1,2-Dichloroethene	100	20	<1	<1	229	2.2	NA
	Ethylbenzene	700	140	<1	<1	<1	<1	NA
	Methylene Chloride	150	15	<1	<1	<1	<2.5	NA
	Tetrachloroethene	5	0.5	400	223	110	87.1	NA
	Toluene	343	68.6	<1	<1	<1	<1	NA
	Trichloroethene	5	0.5	425	341	264	104	NA
	1,1,1-Trichloroethane	200	40	<1	<1	<1	<0.5	NA
	1,1,2-Trichloroethane	0.6	0.06	<1	<1	<1	<0.5	NA
	Vinyl Chloride	0.2	0.02	<1	<1	<1	38.7	NA
	Total Xylenes	620 (1)	124 (1)	<1	<1	<1	<1	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA
W-6	VOCs							
	Benzene	5	0.5	NA	NA	NA	0.3	NA
	Bromodichloromethane	179	36	NA	NA	NA	<0.5	NA
	Carbon Tetrachloride	5	0.5	NA	NA	NA	<0.5	NA
	Dibromochloromethane	215	43	NA	NA	NA	<0.5	NA
	1,1-Dichloroethane	850	85	NA	NA	NA	<0.5	NA
	1,1-Dichloroethene	7	0.7	NA	NA	NA	<0.4	NA
	1,2-Dichloroethane	5	0.5	NA	NA	NA	<0.5	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	0.9	NA
	trans-1,2-Dichloroethene	100	20	NA	NA	NA	<0.5	NA
	Ethylbenzene	700	140	NA	NA	NA	<1.0	NA
	Methylene Chloride	150	15	NA	NA	NA	<2.5	NA
	Tetrachloroethene	5	0.5	NA	NA	NA	<0.5	NA
	Toluene	343	68.6	NA	NA	NA	<2.0	NA
	Trichloroethene	5	0.5	NA	NA	NA	0.7	NA
	1,1,1-Trichloroethane	200	40	NA	NA	NA	<0.5	NA
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	NA	<0.5	NA
	Vinyl Chloride	0.2	0.02	NA	NA	NA	1.3	NA
	Total Xylenes	620 (1)	124 (1)	NA	NA	NA	1.0	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA

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Table 2 (cont'd)
Historical Groundwater Analytical Results
Whitefish Bay Demolition Landfill
Milwaukee, Wisconsin
(concentrations in μg/l)

	Parameters	ES	PAL	Date Sampled 10-5-88	11-10-88	4-19-89	11-16-93	6-27-95
W-9	VOCs							
	Benzene	5	0.5	<1	NA	0.1	<1	NA
	Bromodichloromethane	179	36	<1	NA	<1	<2.5	NA
	Carbon Tetrachloride	5	0.5	<1	NA	<1	<2.5	NA
	Dibromochloromethane	215	43	<1	NA	<1	<2.5	NA
	1,1-Dichloroethane	850	85	<1	NA	<1	<2.5	NA
	1,1-Dichloroethene	7	0.7	<1	NA	0.3	<2.0	NA
	1,2-Dichloroethane	5	0.5	3	NA	<1	<2.5	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	61.8	NA
	trans-1,2-Dichloroethene	100	20	<1	NA	136	<2.5	NA
	Ethylbenzene	700	140	<1	NA	<1	<5.0	NA
	Methylene Chloride	150	15	<1	NA	<1	<12.5	NA
	Tetrachloroethene	5	0.5	3.7	NA	<1	<2.5	NA
	Toluene	343	68.6	<1	NA	<1	<10.0	NA
	Trichloroethene	5	0.5	1.5	NA	0.5	<1	NA
	1,1,1-Trichloroethane	200	40	<1	NA	<1	<2.5	NA
	1,1,2-Trichloroethane	0.6	0.06	<1	NA	<1	<2.5	NA
	Vinyl Chloride	0.2	0.02	<1	NA	<1	64.7	NA
	Total Xylenes	620 (1)	124 (1)	<1	NA	<1	<5.0	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA
W-10	VOCs							
	Benzene	5	0.5	<1	3.9	<1	0.3	NA
	Bromodichloromethane	179	36	2	<1	<1	<0.5	NA
	Carbon Tetrachloride	5	0.5	<1	<1	<1	<0.5	NA
	Dibromochloromethane	215	43	<1	<1	<1	<0.5	NA
	1,1-Dichloroethane	850	85	23	31	18.8	2.4	NA
	1,1-Dichloroethene	7	0.7	46	54	35.6	2.3	NA
	1,2-Dichloroethane	5	0.5	<1	<1	<1	<0.5	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	1060	NA
	trans-1,2-Dichloroethene	100	20	<1	<1	10,400	20.2	NA
	Ethylbenzene	700	140	<1	<1	3.5	<1	NA
	Methylene Chloride	150	15	8.2	<1	<1	<2.5	NA
	Tetrachloroethene	5	0.5	138	34	477	751	NA
	Toluene	343	68.6	24	3.4	11.5	<2.1	NA
	Trichloroethene	5	0.5	2630	877	3400	2740 (2)	NA
	1,1,1-Trichloroethane	200	40	30	<1	<1	<0.5	NA
	1,1,2-Trichloroethane	0.6	0.06	<1	<1	<1	<0.5	NA
	Vinyl Chloride	0.2	0.02	<1	<1	3400	313	NA
	Total Xylenes	620 (1)	124 (1)	10	<1	<1	<1	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA

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Table 2 (cont'd)
Historical Groundwater Analytical Results
Whitefish Bay Demolition Landfill
Milwaukee, Wisconsin

(concentrations in $\mu g/l$)

	Parameters	ES	PAL	Date Sampled 10-5-88	11-10-88	4-19-89	11-16-93	6-27-95
W-11	VOCs							
	Benzene	5	0.5	<1	<1	3.6	1.1	NA
	Bromodichloromethane	179	36	5	<1	<1	<0.5	NA
	Carbon Tetrachloride	5	0.5	<1	<1	<1	<0.5	NA
	Dibromochloromethane	215	43	10.1	<1	<1	<0.5	NA
	1,1-Dichloroethane	850	85	19.4	20.6	30.2	22.9	NA
	1,1-Dichloroethene	7	0.7	18.7	20.8	26	7.0	NA
	1,2-Dichloroethane	5	0.5	9.1	<1	<1	1.1	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	2660 [3]	NA
	trans-1,2-Dichloroethene	100	20	<1	<1	9130	21.3	NA
	Ethylbenzene	700	140	<1	<1	0.7	39.8	NA
	Methylene Chloride	150	15	<1	<1	<1	<2.5	NA
	Tetrachloroethene	5	0.5	15.6	9.0	11.8	<0.5	NA
	Toluene	343	68.6	3.6	<1	2.2	30.4	NA
	Trichloroethene	5	0.5	<1	11.9	69	7.2	NA
	1,1,1-Trichloroethane	200	40	27.9	42.6	48.4	21.8	NA
	1,1,2-Trichloroethane	0.6	0.06	<1	<1	<1	<0.5	NA
	Vinyl Chloride	0.2	0.02	<1	<1	825	1750	NA
	Total Xylenes	620 [1]	124 [1]	<1	<1	<1	17.7	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA
W-16	VOCs							
	Benzene	5	0.5	<1	NA	NA	<0.2	NA
	Bromodichloromethane	179	36	<1	NA	NA	<0.5	NA
	Carbon Tetrachloride	5	0.5	<1	NA	NA	<0.5	NA
	Dibromochloromethane	215	43	<1	NA	NA	<0.5	NA
	1,1-Dichloroethane	850	85	<1	NA	NA	<0.5	NA
	1,1-Dichloroethene	7	0.7	<1	NA	NA	<0.4	NA
	1,2-Dichloroethane	5	0.5	<1	NA	NA	<0.5	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	<0.5	NA
	trans-1,2-Dichloroethene	100	20	<1	NA	NA	<0.5	NA
	Ethylbenzene	700	140	<1	NA	NA	<1	NA
	Methylene Chloride	150	15	<1	NA	NA	<2.5	NA
	Tetrachloroethene	5	0.5	<1	NA	NA	<0.5	NA
	Toluene	343	68.6	<1	NA	NA	<2.0	NA
	Trichloroethene	5	0.5	<1	NA	NA	<0.3	NA
	1,1,1-Trichloroethane	200	40	<1	NA	NA	<0.5	NA
	1,1,2-Trichloroethane	0.6	0.06	<1	NA	NA	<0.5	NA
	Vinyl Chloride	0.2	0.02	<1	NA	NA	<0.2	NA
	Total Xylenes	620 [1]	124 [1]	<1	NA	NA	<1	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA

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Table 2 (cont'd)
Historical Groundwater Analytical Results
Whitefish Bay Demolition Landfill
Milwaukee, Wisconsin

(concentrations in $\mu g/l$)

	Parameters	ES	PAL	Date Sampled 10-5-88	11-10-88	4-19-89	11-16-93	6-27-95
W-18	VOCs							
	Benzene	5	0.5	NA	NA	<1	0.2	NA
	Bromodichloromethane	179	36	NA	NA	<1	<0.5	NA
	Carbon Tetrachloride	5	0.5	NA	NA	<1	<0.5	NA
	Dibromochloromethane	215	43	NA	NA	<1	<0.5	NA
	1,1-Dichloroethane	850	85	NA	NA	4.8	2.5	NA
	1,1-Dichloroethene	7	0.7	NA	NA	0.4	<0.4	NA
	1,2-Dichloroethane	5	0.5	NA	NA	<1	<0.5	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	111	NA
	trans-1,2-Dichloroethene	100	20	NA	NA	106	1.8	NA
	Ethylbenzene	700	140	NA	NA	<1	<1	NA
	Methylene Chloride	150	15	NA	NA	<1	<2.5	NA
	Tetrachloroethene	5	0.5	NA	NA	<1	<0.5	NA
	Toluene	343	68.6	NA	NA	<1	<2.0	NA
	Trichloroethene	5	0.5	NA	NA	9.4	3.2	NA
	1,1,1-Trichloroethane	200	40	NA	NA	<1	<0.5	NA
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	<1	<0.5	NA
	Vinyl Chloride	0.2	0.02	NA	NA	<1	30.5	NA
	Total Xylenes	620 (1)	124 (1)	NA	NA	<1	<1	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA
W-22	VOCs							
	Benzene	5	0.5	NA	NA	16.8	13.8	<40
	Bromodichloromethane	179	36	NA	NA	<1	<2.5	NA
	Carbon Tetrachloride	5	0.5	NA	NA	<1	20.1	NA
	Dibromochloromethane	215	43	NA	NA	<1	<2.5	NA
	1,1-Dichloroethane	850	85	NA	NA	165	153	<100
	1,1-Dichloroethene	7	0.7	NA	NA	82.3	58.7	<30
	1,2-Dichloroethane	5	0.5	NA	NA	132	29.6	<100
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	1,830 (3)	17,400
	trans-1,2-Dichloroethene	100	20	NA	NA	22,200	195	<100
	Ethylbenzene	700	140	NA	NA	24.7	3,680 (3)	12,600
	Methylene Chloride	150	15	NA	NA	<1	<12.5	NA
	Tetrachloroethene	5	0.5	NA	NA	36.4	823 (3)	7,290
	Toluene	343	68.6	NA	NA	25.3	2,310 (3)	1,360
	Trichloroethene	5	0.5	NA	NA	1,180	1,720 (3)	13,400
	1,1,1-Trichloroethane	200	40	NA	NA	<1	468 (3)	251
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	<1	3.4	<100
	Vinyl Chloride	0.2	0.02	NA	NA	2,490	770 (3)	3,460
	Total Xylenes	620 (1)	124 (1)	NA	NA	41.3	8,300	53,400
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	204
	Chlorobenzene	--	--	NA	NA	NA	NA	<400
	Chloroethane	400	80	NA	NA	NA	NA	<400
	Isopropyl Ether	--	--	NA	NA	NA	NA	<200

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Table 2 (cont'd)
Historical Groundwater Analytical Results
Whitefish Bay Demolition Landfill
Milwaukee, Wisconsin
(concentrations in μg/l)

	Parameters	ES	PAL	Date Sampled 10-5-88	11-10-88	4-19-89	11-16-93	6-27-95
W-24S	VOCs							
	Benzene	5	0.5	NA	NA	NA	<0.2	NA
	Bromodichloromethane	179	36	NA	NA	NA	<0.5	NA
	Carbon Tetrachloride	5	0.5	NA	NA	NA	<0.5	NA
	Dibromochloromethane	215	43	NA	NA	NA	<0.5	NA
	1,1-Dichloroethane	850	85	NA	NA	NA	<0.5	NA
	1,1-Dichloroethene	7	0.7	NA	NA	NA	<0.4	NA
	1,2-Dichloroethane	5	0.5	NA	NA	NA	<0.5	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	<0.5	NA
	trans-1,2-Dichloroethene	100	20	NA	NA	NA	<0.5	NA
	Ethylbenzene	700	140	NA	NA	NA	<1.0	NA
	Methylene Chloride	150	15	NA	NA	NA	<2.5	NA
	Tetrachloroethene	5	0.5	NA	NA	NA	<0.5	NA
	Toluene	343	68.6	NA	NA	NA	<2.0	NA
	Trichloroethene	5	0.5	NA	NA	NA	0.5	NA
	1,1,1-Trichloroethane	200	40	NA	NA	NA	<0.5	NA
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	NA	<0.5	NA
	Vinyl Chloride	0.2	0.02	NA	NA	NA	<0.2	NA
	Total Xylenes	620 (1)	124 (1)	NA	NA	NA	<1.0	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA
W-22	VOCs							
Dupe	Benzene	5	0.5	NA	NA	NA	15.4	NA
	Bromodichloromethane	179	36	NA	NA	NA	<5.0	NA
	Carbon Tetrachloride	5	0.5	NA	NA	NA	28.2	NA
	Dibromochloromethane	215	43	NA	NA	NA	<5.0	NA
	1,1-Dichloroethane	850	85	NA	NA	NA	110	NA
	1,1-Dichloroethene	7	0.7	NA	NA	NA	45.9	NA
	1,2-Dichloroethane	5	0.5	NA	NA	NA	16.3	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	12,500 (3)	NA
	trans-1,2-Dichloroethene	100	20	NA	NA	NA	151	NA
	Ethylbenzene	700	140	NA	NA	NA	14,000 (2)	NA
	Methylene Chloride	150	15	NA	NA	NA	<25	NA
	Tetrachloroethene	5	0.5	NA	NA	NA	5,840 (3)	NA
	Toluene	343	68.6	NA	NA	NA	3,330	NA
	Trichloroethene	5	0.5	NA	NA	NA	10,900 (3)	NA
	1,1,1-Trichloroethane	200	40	NA	NA	NA	818	NA
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	NA	<5.0	NA
	Vinyl Chloride	0.2	0.02	NA	NA	NA	2,960	NA
	Total Xylenes	620 (1)	124 (1)	NA	NA	NA	55,300 (2)	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA

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Table 2 (cont'd)
Historical Groundwater Analytical Results
Whitefish Bay Demolition Landfill
Milwaukee, Wisconsin
(concentrations in μg/l)

				Date Sampled				
	Parameters	ES	PAL	10-5-88	11-10-88	4-19-89	11-16-93	6-27-95
W-24D	VOCs							
	Benzene	5	0.5	NA	NA	NA	<0.2	NA
	Bromodichloromethane	179	36	NA	NA	NA	<0.5	NA
	Carbon Tetrachloride	5	0.5	NA	NA	NA	<0.5	NA
	Dibromochloromethane	215	43	NA	NA	NA	<0.5	NA
	1,1-Dichloroethane	850	85	NA	NA	NA	<0.5	NA
	1,1-Dichloroethene	7	0.7	NA	NA	NA	<0.4	NA
	1,2-Dichloroethane	5	0.5	NA	NA	NA	<0.5	NA
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	<0.5	NA
	trans-1,2-Dichloroethene	100	20	NA	NA	NA	<0.5	NA
	Ethylbenzene	700	140	NA	NA	NA	<1.0	NA
	Methylene Chloride	150	15	NA	NA	NA	<2.5	NA
	Tetrachloroethene	5	0.5	NA	NA	NA	<0.5	NA
	Toluene	343	68.6	NA	NA	NA	5.9	NA
	Trichloroethene	5	0.5	NA	NA	NA	<0.3*	NA
	1,1,1-Trichloroethane	200	40	NA	NA	NA	<0.5	NA
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	NA	<0.5	NA
	Vinyl Chloride	0.2	0.02	NA	NA	NA	<0.2	NA
	Total Xylenes	620 (1)	124 (1)	NA	NA	NA	<1.0	NA
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	NA
	Chlorobenzene	--	--	NA	NA	NA	NA	NA
	Chloroethane	400	80	NA	NA	NA	NA	NA
	Isopropyl Ether	--	--	NA	NA	NA	NA	NA
W-25	VOCs							
	Benzene	5	0.5	NA	NA	NA	NA	<4.0
	Bromodichloromethane	179	36	NA	NA	NA	NA	<10
	Carbon Tetrachloride	5	0.5	NA	NA	NA	NA	<10
	Dibromochloromethane	215	43	NA	NA	NA	NA	NA
	1,1-Dichloroethane	850	85	NA	NA	NA	NA	<10
	1,1-Dichloroethene	7	0.7	NA	NA	NA	NA	<8
	1,2-Dichloroethane	5	0.5	NA	NA	NA	NA	<10
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	NA	632
	trans-1,2-Dichloroethene	100	20	NA	NA	NA	NA	<10
	Ethylbenzene	700	140	NA	NA	NA	NA	<20
	Methylene Chloride	150	15	NA	NA	NA	NA	<50
	Tetrachloroethene	5	0.5	NA	NA	NA	NA	<10
	Toluene	343	68.6	NA	NA	NA	NA	<40
	Trichloroethene	5	0.5	NA	NA	NA	NA	<4
	1,1,1-Trichloroethane	200	40	NA	NA	NA	NA	<10
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	NA	NA	<10
	Vinyl Chloride	0.2	0.02	NA	NA	NA	NA	59.5
	Total Xylenes	620 (1)	124 (1)	NA	NA	NA	NA	<20
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	<20
	Chlorobenzene	--	--	NA	NA	NA	NA	<40
	Chloroethane	400	80	NA	NA	NA	NA	<40
	Isopropyl Ether	--	--	NA	NA	NA	NA	<20

-- - Standard not established
NA - Not Analyzed
ES - Enforcement Standard as established in Chapter NR 140 WAC
PAL - Preventive Action Limit as established in Chapter NR 140 WAC
(1) - Standard is for xylene. Reported values are for total xylenes (i.e. m- and o&p-xylene and styrene)
(2) - Concentration of this compound is estimated because it exceed the highest standard used for calibration, but does not exceed the range of the instrument detector.
(3) - Concentration of this compound is estimated because it exceeds the range of the instrument detector.
* - Detection limit raised due to possible carry over.

Table 2 (cont'd)
Historical Groundwater Analytical Results
Whitefish Bay Demolition Landfill
Milwaukee, Wisconsin
(concentrations in μg/l)

				Date Sampled				
	Parameters	ES	PAL	10-5-88	11-10-88	4-19-89	11-16-93	6-27-95
W-26	VOCs							
	Benzene	5	0.5	NA	NA	NA	NA	<20
	Bromodichloromethane	179	36	NA	NA	NA	NA	<50
	Carbon Tetrachloride	5	0.5	NA	NA	NA	NA	<50
	Dibromochloromethane	215	43	NA	NA	NA	NA	NA
	1,1-Dichloroethane	850	85	NA	NA	NA	NA	<50
	1,1-Dichloroethene	7	0.7	NA	NA	NA	NA	<40
	1,2-Dichloroethane	5	0.5	NA	NA	NA	NA	<50
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	NA	3,070
	trans-1,2-Dichloroethene	100	20	NA	NA	NA	NA	<50
	Ethylbenzene	700	140	NA	NA	NA	NA	<100
	Methylene Chloride	150	15	NA	NA	NA	NA	<250
	Tetrachloroethene	5	0.5	NA	NA	NA	NA	<50
	Toluene	343	68.6	NA	NA	NA	NA	<200
	Trichloroethene	5	0.5	NA	NA	NA	NA	<20
	1,1,1-Trichloroethane	200	40	NA	NA	NA	NA	<50
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	NA	NA	<50
	Vinyl Chloride	0.2	0.02	NA	NA	NA	NA	712
	Total Xylenes	620 [1]	124 [1]	NA	NA	NA	NA	<100
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	<100
	Chlorobenzene	--	--	NA	NA	NA	NA	<200
	Chloroethane	400	80	NA	NA	NA	NA	<200
	Isopropyl Ether	--	--	NA	NA	NA	NA	<100
W-27	VOCs							
	Benzene	5	0.5	NA	NA	NA	NA	4.7
	Bromodichloromethane	179	36	NA	NA	NA	NA	<0.5
	Carbon Tetrachloride	5	0.5	NA	NA	NA	NA	<0.5
	Dibromochloromethane	215	43	NA	NA	NA	NA	NA
	1,1-Dichloroethane	850	85	NA	NA	NA	NA	40.8
	1,1-Dichloroethene	7	0.7	NA	NA	NA	NA	8.8
	1,2-Dichloroethane	5	0.5	NA	NA	NA	NA	3.9
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	NA	4,270
	trans-1,2-Dichloroethene	100	20	NA	NA	NA	NA	80.6
	Ethylbenzene	700	140	NA	NA	NA	NA	<1.0
	Methylene Chloride	150	15	NA	NA	NA	NA	<2.5
	Tetrachloroethene	5	0.5	NA	NA	NA	NA	7.5
	Toluene	343	68.6	NA	NA	NA	NA	10.6
	Trichloroethene	5	0.5	NA	NA	NA	NA	63.9
	1,1,1-Trichloroethane	200	40	NA	NA	NA	NA	<0.5
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	NA	NA	<0.5
	Vinyl Chloride	0.2	0.02	NA	NA	NA	NA	4,100
	Total Xylenes	620 [1]	124 [1]	NA	NA	NA	NA	<1.0
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	<1.0
	Chlorobenzene	--	--	NA	NA	NA	NA	6.8
	Chloroethane	400	80	NA	NA	NA	NA	6.4
	Isopropyl Ether	--	--	NA	NA	NA	NA	5.6

-- - Standard not established
NA - Not Analyzed
ES - Enforcement Standard as established in Chapter NR 140 WAC
PAL - Preventive Action Limit as established in Chapter NR 140 WAC
(1) - Standard is for xylene. Reported values are for total xylenes (i.e. m- and o&p-xylene and styrene)
(2) - Concentration of this compound is estimated because it exceed the highest standard used for calibration, but does not exceed the range of the instrument detector.
(3) - Concentration of this compound is estimated because it exceeds the range of the instrument detector.
* - Detection limit raised due to possible carry over.

Table 2 (cont'd)
Historical Groundwater Analytical Results
Whitefish Bay Demolition Landfill
Milwaukee, Wisconsin
(concentrations in $\mu g/l$)

	Parameters	ES	PAL	Date Sampled				
				10-5-88	11-10-88	4-19-89	11-16-93	6-27-95
W-27D	VOCs							
	Benzene	5	0.5	NA	NA	NA	NA	4.5
	Bromodichloromethane	179	36	NA	NA	NA	NA	<0.5
	Carbon Tetrachloride	5	0.5	NA	NA	NA	NA	<0.5
	Dibromochloromethane	215	43	NA	NA	NA	NA	NA
	1,1-Dichloroethane	850	85	NA	NA	NA	NA	37.2
	1,1-Dichloroethene	7	0.7	NA	NA	NA	NA	7.8
	1,2-Dichloroethane	5	0.5	NA	NA	NA	NA	7.0
	cis-1,2-Dichloroethene	70	7	NA	NA	NA	NA	6,110
	trans-1,2-Dichloroethene	100	20	NA	NA	NA	NA	49.5
	Ethylbenzene	700	140	NA	NA	NA	NA	<1.0
	Methylene Chloride	150	15	NA	NA	NA	NA	<2.5
	Tetrachloroethene	5	0.5	NA	NA	NA	NA	6.8
	Toluene	343	68.6	NA	NA	NA	NA	10.1
	Trichloroethene	5	0.5	NA	NA	NA	NA	57.4
	1,1,1-Trichloroethane	200	40	NA	NA	NA	NA	<0.5
	1,1,2-Trichloroethane	0.6	0.06	NA	NA	NA	NA	<0.5
	Vinyl Chloride	0.2	0.02	NA	NA	NA	NA	4,110
	Total Xylenes	620 (1)	124 (1)	NA	NA	NA	NA	<1.0
	1,2,4-Trimethlybenzene	--	--	NA	NA	NA	NA	<1.0
	Chlorobenzene	--	--	NA	NA	NA	NA	2.9
	Chloroethane	400	80	NA	NA	NA	NA	4.6
	Isopropyl Ether	--	--	NA	NA	NA	NA	5.4

-- - Standard not established
NA - Not Analyzed
ES - Enforcement Standard as established in Chapter NR 140 WAC
PAL - Preventive Action Limit as established in Chapter NR 140 WAC
(1) - Standard is for xylene. Reported values are for total xylenes (i.e. m- and o&p-xylene and styrene)
(2) - Concentration of this compound is estimated because it exceed the highest standard used for calibration, but does not exceed the range of the instrument detector.
(3) - Concentration of this compound is estimated because it exceeds the range of the instrument detector.
* - Detection limit raised due to possible carry over.

APPENDIX A

Soil Boring Logs

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 7-91

82149XA

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Whitefish Bay Landfill		*B-25*

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
STS Consultants, Ltd. *B. Zakowski*	*06/07/95*	*06/07/95*	*4 1/4 Hollow Stem Auger*

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Water Level	Surface Elevation	Borehole Diameter
		MW-25		*707.62 Feet MSL*	*8 inches*

Boring Location	Grid of Origin	Local Grid Location (if applicable)	
State Plane *1/4 of NW 1/4 of Section 23, T 8 N, R 21 E*	Lat Long	*Feet S*	*Feet W*

County	DNR County Code	Civil Town/City/ or Village
Milwaukee County	*41*	*Milwaukee, Wisconsin*

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
1	23	8		Topsoil: Silty clay, trace fine sand, trace roots-black-moist-very stiff				<1						
2	18	35	2	Possible Fill: Silty clay, trace fine to coarse sand, trace roots-black-moist-very stiff	CL			<1						
3	19	31	4	Fine to coarse sand, trace fine gravel, trace silt-light brown-moist-dense-glacialfluvial	SP			<1						
4	14	50/1"	6	Silt, trace fine to coarse sand, trace clayey inclusions-light brown-moist-stiff-glacialfluvial Note: Push rock at 7.5 feet	ML			<1	1.0					
5	5	10	8	Fine to coarse sand, little fine gravel, trace silt-light brown-wet-medium dense-glaciofluvial	SP			<1						
5A	15	10			ML			<1	3.5					
6	10	12	10					<1	1.5					
6A	10	46		Clayey silt, trace fine to coarse sand-light brown to gray-moist to wet-stiff to very stiff-glacialfluvial				4						
7	7	120	12	Fine to coarse sand, trace fine gravel-gray-moist-extremely dense-glacialfluvial	SP			3						
8	13	38	14	Fine to coarse sand, trace fine gravel, trace silt-light brown-wet-medium dense to dense-glacialfluvial				1						
9	13	24	16		SP			1						
10	5	20	18					3						
10A	15	33		Clayey silt, trace fine sand-gray-moist-very stiff to hard-glacial lacustrine				5	3.5					
11	12	88/1"	20		ML			<1	2.5					
12	12	95/3"	22					<1	4.5					

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
[signature]	STS CONSULTANTS

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
13	12	73/3"		Clayey silt, trace fine sand-gray-moist-very stiff to hard-glacial lacustrine	ML			<1	>4.5					
14	12	100	26					<1	>4.5					
			28	END OF BORING Boring advanced to 26' by hollow stem auger. Groundwater monitoring well installed to 20' on 6-7-95.										

Depth in Feet scale: 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62

State of Wisconsin
Department of Natural Resources

Route To:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 7-91

82149XA

Facility/Project Name	*Whitefish Bay Landfill*
License/Permit/Monitoring Number	
Boring Number	*B-26*
Boring Drilled By (Firm name and name of crew chief)	*STS Consultants, Ltd.* *B. Zakowski*
Date Drilling Started	*06/07/95*
Date Drilling Completed	*06/08/95*
Drilling Method	*4 1/4" Hollow Stem Auger*
DNR Facility Well No.	
WI Unique Well No.	
Common Well Name	*MW-26*
Water Level	
Surface Elevation	*700.26 Feet MSL*
Borehole Diameter	*8 inches*
Boring Location State Plane	*1/4 of NW 1/4 of Section 23, T 8 N, R 21 E*
Grid of Origin Lat / Long	
Local Grid Location (if applicable)	*Feet S* *Feet W*
County	*Milwaukee County*
DNR County Code	*41*
Civil Town/City/ or Village	*Milwaukee, Wisconsin*

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
1	4	3	0	Topsoil: Silty clay, trace organics, trace roots-brown-moist-firm	CL		.5					
1A	10	4		Possible Fill: Silty clay, trace fine gravel, trace fine to coarse sand-moist to wet-soft to firm	CL	<1						
2	11	4	2			<1	.5					
3	6	11	4			<1	.25					
4	24	9	6	Clayey silt, trace to little fine to medium sand-light brown-wet-soft-glacial till	ML	<1	.25					
			8	Note: Light gray mottling at 8.0 to 9.0 feet.								
5	23	18	8	Clayey silt, trace fine gravel, trace fine to coarse sand, light brown-moist to wet-stiff-glacial till (Note: 1/2" silt seam at 8.5 feet, 1" silty clay seam at 9.0 feet)	ML	<1	1.75					
6	24	26	10			<1	>4.5					
7	24	32	12	Silty clay, trace fine gravel, trace fine to coarse sand-light brown to gray-moist to wet-hard-glacial till Note: 2" clayey silt seam at 11.0 feet. 2" silt seam at 13.0 feet.	CL	<1	>4.5					
8	12	50/1"	14			11.0	>4.5					
9	12	75	16	Fine to coarse sand, trace to little fine to medium gravel-gray to brown-moist-very dense-glacialfluvial Note: 3" fine sand seam at 22.5 feet.	SP	12.0						
10	12	24	18			30						
11	12	18	20			7						
12	24	41	22			12						

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature]

Firm STS Consultants

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
13	6	39	26	Fine to coarse sand, trace to little fine to medium gravel-gray to brown-moist-very dense-glacialfluvial Note: 3" fine sand seam at 22.5 feet.	SP			3						
14	6	8	28					2						
15	12	24	30					5						
16	24	55/2"	32					2						
			34	END OF BORING Boring advanced to 30.0 feet by hollow stem auger. Groundwater monitoring well installed to 22.0 feet on 6-8-95.										
			36											
			38											
			40											
			42											
			44											
			46											
			48											
			50											
			52											
			54											
			56											
			58											
			60											
			62											

Soil Properties: Compressive Strength, Moisture Content, Liquid Limit, Plastic Limit, P 200

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste
☐ Emergency Response
☐ Wastewater
☐ Haz. Waste
☐ Underground Tanks
☐ Water Resources
☐ Other:

SOIL BORING LOG INFORMATION

Form 4400-122 7-91

82149XA

Facility/Project Name *Whitefish Bay Landfill*

License/Permit/Monitoring Number *82149XA*

Boring Number *B-27*

Boring Drilled By (Firm name and name of crew chief) *STS Consultants, Ltd.* *B. Zakowski*

Date Drilling Started *06/08/95*

Date Drilling Completed *06/08/95*

Drilling Method *4 1/4" Hollow Stem Auger*

DNR Facility Well No.

WI Unique Well No.

Common Well Name *MW-27*

Water Level

Surface Elevation *706.58 Feet MSL*

Borehole Diameter *8 inches*

Boring Location
State Plane
1/4 of NW 1/4 of Section 23, T 8 N, R 21 E

Grid of Origin
Lat
Long

Local Grid Location (if applicable) *Feet S* *Feet W*

County *Milwaukee County*

DNR County Code *41*

Civil Town/City/ or Village *Milwaukee, Wisconsin*

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
1	4	20		Asphalt and base coarse				<1						
2	14	10	2	Fill: Clayey silt, trace fine to medium sand-bronw to light brown-moist-firm	ML			<1	.75					
3	19	11	4	Silty clay, trace fine to coarse sand-light brown-moist to wet-very stiff-glacial till				2	2.5					
4	18	18	6	Note: Little gray mottling at 5.5 feet.	CL			2	2.75					
5	17	11	8					5	3.0					
6	17	8	10	Silty clay, trace fine sand-gray-moist to wet-firm-glacial till	CL			15	.5					
7	3	4	12					18	.75					
7A	9	15		Fine to coarse sand, trace gravel, trace silt-gray-wet-dense-glacialfluvial	SP			5						
8	12	20	14	Silty clay, trace fine to coarse sand-gray to brown-wet-very stiff-glacial till				21	3.0					
9	10	26	16					25	2.25					
10	1	40	18		CL			6	2.0					
11	17	43	20					8	3.8					
11A	5	25						22	>4.5					
12	23	57	22	Clayey silt, trace fine to coarse sand, trace fine gravel-gray to brown-wet-hard-glacial till	ML			8	>4.5					

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature]

Firm STS CONSULTANTS

Sample Number	Sample Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
13	5	12		Clayey silt, trace fine to coarse sand, trace fine gravel-gray to brown-wet-hard-glacial till	ML			6	>4.5					
13A	12	75	26					17						
14	17	69		Fine to coarse sand, trace silt-wet-very dense-glacialfluvial	SP			18						
			28	Note: Slight chemical odor.										
15	17	52		Note: 6" silt layer at 27.5 feet.				9						
			30	END OF BORING Boring advanced to 28.5 feet by hollow stem auger. Groundwater monitoring well installed to 28.0 feet on 6-8-95.										
			32											
			34											
			36											
			38											
			40											
			42											
			44											
			46											
			48											
			50											
			52											
			54											
			56											
			58											
			60											
			62											

APPENDIX B

Soil Analytical Results

ENVIROSCAN

ENVIRONMENTAL AND
ANALYTICAL SERVICES

June 27, 1995

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

Attn: Chuck Bartelt

Re: 82149XA

Please find enclosed the analytical results for the sample we received June 9, 1995.

All analyses were completed in accordance with appropriate EPA methodologies. Methods and dates of analysis are included in the report tables.

The chain of custody document is enclosed.

If you have any questions about the results, please call. Thank you for using Enviroscan Corp. for your analytical needs.

Sincerely,

Enviroscan Corp.

Eric P. Martin
Analytical Chemist

303 West Military Road Rothschild, WI 54474 (715) 359-7226
An Affiliate of the Black Clawson Co.

ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 82149XA
SAMPLED BY: Client
DATE REC'D: 06/09/95
REPORT DATE: 06/27/95
PREPARED BY: EPM
REVIEWED BY:

Attn: Chuck Bartelt

	Units	Reporting Limit	B-27 S-7A 06/08/95	Qualifiers	Date Analyzed
EPA 160.3					
Total Solids	%	-	87.4		06/12/95
EPA 8021					
Benzene	mg/kg	0.09	X		06/21/95
Bromobenzene	mg/kg	0.23	X		06/21/95
Bromodichloromethane	mg/kg	0.23	X		06/21/95
n-Butylbenzene	mg/kg	0.45	X	CSH	06/21/95
sec-Butylbenzene	mg/kg	0.45	X		06/21/95
tert-Butylbenzene	mg/kg	0.45	X		06/21/95
Carbon Tetrachloride	mg/kg	0.23	X		06/21/95
Chlorobenzene	mg/kg	0.9	X		06/21/95
Chlorodibromomethane	mg/kg	0.23	X		06/21/95
Chloroethane	mg/kg	0.9	X		06/21/95
Chloroform	mg/kg	0.23	X		06/21/95
Chloromethane	mg/kg	0.9	X	DUP	06/21/95
o-Chlorotoluene	mg/kg	0.45	X		06/21/95
p-Chlorotoluene	mg/kg	0.45	X		06/21/95
1,2-Dibromo-3-chloropropane	mg/kg	6.0	X	CSH SPH	06/21/95
1,2-Dibromoethane	mg/kg	0.45	X		06/21/95
1,2-Dichlorobenzene	mg/kg	0.45	X		06/21/95
1,3-Dichlorobenzene	mg/kg	0.45	X		06/21/95
1,4-Dichlorobenzene	mg/kg	0.23	X		06/21/95
Dichlorodifluoromethane	mg/kg	0.9	X	SPL DUP CSL	06/21/95
1,1-Dichloroethane	mg/kg	0.23	X		06/21/95
1,2-Dichloroethane	mg/kg	0.23	X		06/21/95
1,1-Dichloroethylene	mg/kg	0.18	X	CSL SPL	06/21/95
cis-1,2-Dichloroethylene	mg/kg	0.23	2.52		06/21/95
trans-1,2-Dichloroethylene	mg/kg	0.23	X		06/21/95
1,2-Dichloropropane	mg/kg	0.23	X		06/21/95
1,3-Dichloropropane	mg/kg	0.23	X		06/21/95
2,2-Dichloropropane	mg/kg	0.9	X		06/21/95
Ethylbenzene	mg/kg	0.45	X		06/21/95
Hexachlorobutadiene	mg/kg	0.45	X	CSH SPH	06/21/95
Isopropylbenzene	mg/kg	0.45	X		06/21/95
Isopropyl Ether	mg/kg	0.45	X		06/21/95
p-Isopropyltoluene	mg/kg	0.45	X		06/21/95
Methyl tert Butyl Ether	mg/kg	0.9	X		06/21/95
Methylene Chloride	mg/kg	1.1	X	CSL	06/21/95
Naphthalene	mg/kg	0.45	X	CSH	06/21/95
n-Propylbenzene	mg/kg	0.45	X		06/21/95
Tetrachloroethylene	mg/kg	0.23	0.824		06/21/95
1,1,2,2-Tetrachloroethane	mg/kg	0.45	X		06/21/95
Toluene	mg/kg	0.9	X		06/21/95
1,2,3-Trichlorobenzene	mg/kg	0.45	X	CSH	06/21/95
1,2,4-Trichlorobenzene	mg/kg	0.45	X	CSH	06/21/95
Analytical No.:			42181		

X = Analyzed but not detected.
Results calculated on a dry weight basis.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 82149XA
SAMPLED BY: Client
DATE REC'D: 06/09/95
REPORT DATE: 06/27/95
PREPARED BY: EPM
REVIEWED BY:

Attn: Chuck Bartelt

	Units	Reporting Limit	B-27 S-7A 06/08/95	Qualifiers	Date Analyzed
1,1,1-Trichloroethane	mg/kg	0.23	X		06/21/95
1,1,2-Trichloroethane	mg/kg	0.23	X		06/21/95
Trichloroethylene	mg/kg	0.09	7.26		06/21/95
Trichlorofluoromethane	mg/kg	0.45	X	SPL DUP	06/21/95
1,2,4-Trimethylbenzene	mg/kg	0.45	X		06/21/95
1,3,5-Trimethylbenzene	mg/kg	0.45	X		06/21/95
Vinyl Chloride	mg/kg	0.09	X	SPL DUP	06/21/95
m- & p-Xylene	mg/kg	0.45	X		06/21/95
o-Xylene	mg/kg	0.45	X		06/21/95
Analytical No.:			42181		

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 82149XA
SAMPLED BY: Client
DATE REC'D: 06/09/95
REPORT DATE: 06/27/95
PREPARED BY: EPM
REVIEWED BY:

Attn: Chuck Bartelt

Qualifier Descriptions

CSH	Check standard for this analyte exhibited a high bias. Sample results may also be biased high. Non-detects were verified by comparison with a low standard.
DUP	Result of duplicate analysis in this quality assurance batch exceeds the limits for precision. Sample results may also show a degree of variability.
SPH	The matrix spike included with this analytical batch had a high recovery. Since that sample matrix appears similar to your sample, your result may also be high.
SPL	The matrix spike included with this analytical batch had a low recovery. Since that sample matrix appears similar to your sample, your result may also be low.
CSL	Check standard for this analyte exhibited a low bias. Sample results may also be biased low. Non-detects were verified by comparison with a low standard.

CHAIN OF CUSTODY RECORD

№ 29282

STS

Contact Person	Chuck Bartelt
Phone No.	359-3030
Office	Mil
Project No.	
PO No.	82149XA
Project Name	Whitefish Bay LF

Special Handling Request

- ☐ Rush
- ☐ Verbal
- ☐ Other

RECORD NUMBER ______ THROUGH ______

Laboratory	Enviroscan
Contact Person	Linda Bassenbusk
Phone No.	359-7226 (715)
Results Due	

Sample I.D.	Date	Time	Grab	Composite	No. of Containers	Sample Type (Water, soil, air, sludge, etc.)	Preservation Y	Preservation N	Field Data PID/FID Ambient	Field Data PID/FID Sample	Field Data PH	Field Data Special Cond.	Analysis Request	Comments on Sample (Include Major Contaminants)
B-27, S-7A	6/8	3:30	✓		2	SOIL		✓	✓				VOC, Tot. Solids	
~~B-27,~~														
TEMP BLNK					1									

Collected by: Chuck Bartelt	Date 6/8/95	Time 5:30	Delivery by:	Date	Time
Received by:	Date	Time	Relinquished by:	Date	Time
Received by:	Date	Time	Relinquished by:	Date	Time
Received by:	Date	Time	Relinquished by:	Date	Time
Received for lab by: [illegible signature]	Date 6/9/95	Time 10:45	Relinquished by:	Date	Time

Laboratory Comments Only: Seals Intact Upon Receipt? ☒ Yes ☐ No ☐ N/A [illegible]

Final Disposition:

18042181

Comments (Weather Conditions, Precautions, Hazards):

Distribution: Original and Green - Laboratory Yellow - As needed Pink - Transporter Goldenrod - STS Project File
Instructions to Laboratory: Forward completed original to STS with analytical results. Retain green copy.

9/94cp10k

STS Consultants Ltd.
Consulting Engineers

APPENDIX C

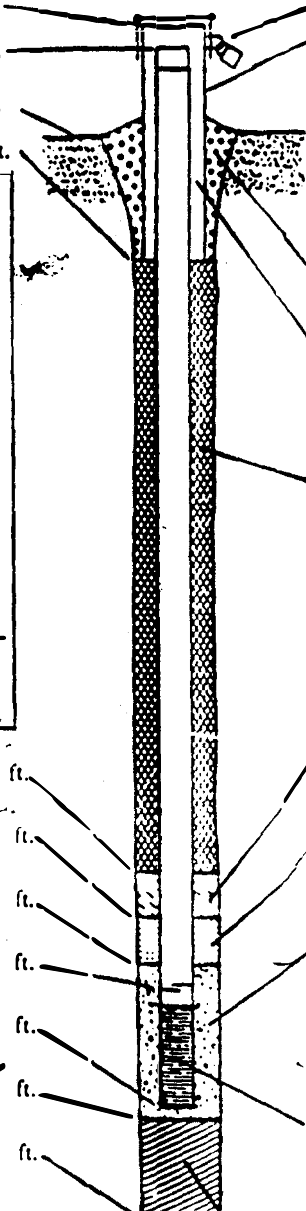
Monitoring Well Construction Forms

State of Wisconsin
Department of Natural Resources

Route to: Solid Waste ☐ Haz. Waste ☐ Wastewater ☐
Env. Response & Repair ☐ Underground Tanks ☐ Other ☐ ______

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 4-90

Facility/Project Name: WHITEFISH BAY LF	Local Grid Location of Well ______ ft. ☐N. ☐S. ______ ft. ☐E. ☐W.	Well Name: MW-25
Facility License, Permit or Monitoring Number: ________	Grid Origin Location: Lat. ______ Long. ______ or	Wis. Unique Well Number ______ DNR Well Number ______
Type of Well: Water Table Observation Well ☐ 11; Piezometer ☐ 12	St. Plane ______ ft. N. ______ ft. E.	Date Well Installed: 06/07/95 (mm dd yy)
Distance Well Is From Waste/Source Boundary ______ ft.	Section Location of Waste/Source: ___1/4 of NW 1/4 of Sec. 23, T. 8 N, R. 21 ■E. ☐W.	Well Installed By: (Person's Name and Firm) STS CONSULTANTS Bill ZAKOWSKI
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No	Location of Well Relative to Waste/Source: u ☐ Upgradient; s ☐ Sidegradient; d ☐ Downgradient; n ☐ Not Known	



A. Protective pipe, top elevation ________ ft. MSL
B. Well casing, top elevation ________ ft. MSL
C. Land surface elevation 707.6 ft. MSL
D. Surface seal, bottom 702.6 ft. MSL or 5.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ■
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ■ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ■ 41; — Other ☐ __

15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ■ 99

16. Drilling additives used? ☐ Yes ■ No

Describe —

17. Source of water (attach analysis): —

E. Bentonite seal, top 700.6 ft. MSL or 7.0 ft.
F. Fine sand, top 700.6 ft. MSL or 7.0 ft.
G. Filter pack, top 699.6 ft. MSL or 8.0 ft.
H. Screen joint, top 697.6 ft. MSL or 10.0 ft.
I. Well bottom 687.6 ft. MSL or 20.0 ft.
J. Filter pack, bottom 687.1 ft. MSL or 20.5 ft.
K. Borehole, bottom 681.6 ft. MSL or 26.0 ft.
L. Borehole, diameter 8.0 in.
M. O.D. well casing 2.36 in.
N. I.D. well casing 2.20 in.

1. Cap and lock? ☐ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 5.0 in.
b. Length: 7.0 ft.
c. Material: Steel ■ 04; Other ☐ __
d. Additional protection? ☐ Yes ■ No
If yes, describe: —
3. Surface seal: Bentonite ■ 30; Concrete ☐ 01; — Other ☐ __
4. Material between well casing and protective pipe: Bentonite ☐ 30; Annular space seal ☐ __; — Other ☐ __
5. Annular space seal: a. ~~Granular~~ Bentonite ■ 33
b. — Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. — Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. — % Bentonite . . . . . . Bentonite-cement grout ☐ 50
e. 2 Bg Ft³ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☐ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☐3/8 in. ☐1/2 in. Bentonite pellets ☐ 32
c. — Other ☐ __
7. Fine sand material: Manufacturer, product name & mesh size
a. BADGER 40/60 __
b. Volume added 0.5 ft³
8. Filter pack material: Manufacturer, product name and mesh size
a. RED FLINT 20/40 __
b. Volume added 3.6 ft³
9. Well casing: Flush threaded PVC schedule 40 ■ 23; Flush threaded PVC schedule 80 ☐ 24; — Other ☐ __
10. Screen material: SCH 40 PVC __
a. Screen type: Factory cut ■ 11; Continuous slot ☐ 01; — Other ☐ __
b. Manufacturer TIMCO
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☐ 14; BENTONITE CHIP - 3/8" Other ■ __

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
(signature)	STS CONSULTANTS

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than $5000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Solid Waste ☐ Haz. Waste ☐ Wastewater ☐
Env. Response & Repair ☐ Underground Tanks ☐ Other ☐ ______

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 4-90

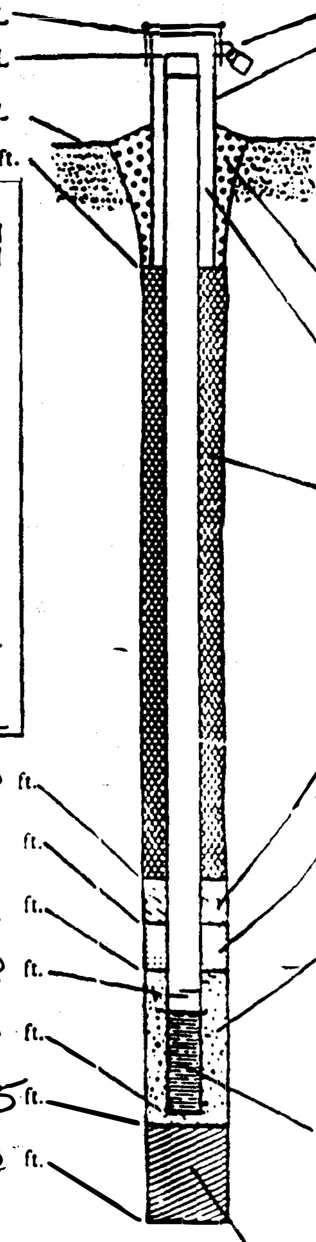
Facility/Project Name: WHITEFISH BAY LF
Local Grid Location of Well: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.
Well Name: MW-26

Facility License, Permit or Monitoring Number: ______
Grid Origin Location: Lat. ______ Long. ______ or St. Plane ______ ft. N. ______ ft. E.
Wis. Unique Well Number: ______ DNR Well Number: ______

Type of Well: Water Table Observation Well ■ 11; Piezometer ☐ 12
Date Well Installed: 06/08/95 (m m d d y y)

Distance Well Is From Waste/Source Boundary: ______ ft.
Section Location of Waste/Source: ___1/4 of NW 1/4 of Sec. 23, T. 8 N. R. 21 ■E. ☐W.
Well Installed By: (Person's Name and Firm): STS CONSULTANTS — Bill Zakoleski

Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No
Location of Well Relative to Waste/Source: u ☐ Upgradient; s ☐ Sidegradient; d ☐ Downgradient; n ☐ Not Known



A. Protective pipe, top elevation ______ ft. MSL
B. Well casing, top elevation ______ ft. MSL
C. Land surface elevation 700.2 ft. MSL
D. Surface seal, bottom 695.2 ft. MSL or 5.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ■
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ■ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ■ 41; — Other ☐ __

15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ■ 99

16. Drilling additives used? ☐ Yes ■ No
Describe —

17. Source of water (attach analysis): —

E. Bentonite seal, top 692.2 ft. MSL or 8.0 ft.
F. Fine sand, top 692.2 ft. MSL or 8.0 ft.
G. Filter pack, top 690.2 ft. MSL or 10.0 ft.
H. Screen joint, top 688.2 ft. MSL or 12.0 ft.
I. Well bottom 678.2 ft. MSL or 22.0 ft.
J. Filter pack, bottom 677.7 ft. MSL or 22.5 ft.
K. Borehole, bottom 670.2 ft. MSL or 30.0 ft.
L. Borehole, diameter 8.0 in.
M. O.D. well casing 2.36 in.
N. I.D. well casing 2.20 in.

1. Cap and lock? ■ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 7.0 ft.
c. Material: Steel ■ 04; Other ☐ __
d. Additional protection? ☐ Yes ■ No
If yes, describe: —
3. Surface seal: Bentonite ■ 30; Concrete ☐ 01; — Other ☐ __
4. Material between well casing and protective pipe: Bentonite ☐ 30; Annular space seal ☐ __; NONE Other ☐ __
5. Annular space seal: a. Granular Bentonite ☐ 33
b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ___ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ___ % Bentonite . . . . . . Bentonite-cement grout ☐ 50
e. 2.5 Bg. Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☐ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☐3/8 in. ☐1/2 in. Bentonite pellets ☐ 32
c. ______ Other ☐ __
7. Fine sand material: Manufacturer, product name & mesh size
a. BADGER 40/60 __
b. Volume added 0.5 ft^3
8. Filter pack material: Manufacturer, product name and mesh size
a. RED FLINT 20/40 __
b. Volume added 6.0 ft^3
9. Well casing: Flush threaded PVC schedule 40 ■ 23; Flush threaded PVC schedule 80 ☐ 24; — Other ☐ __
10. Screen material: SCH 40 PVC __
a. Screen type: Factory cut ■ 11; Continuous slot ☐ 01; — Other ☐ __
b. Manufacturer TIMCO
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☐ 14; BENTONITE Other ☐ __

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [signature] Firm: STS CONSULTANTS

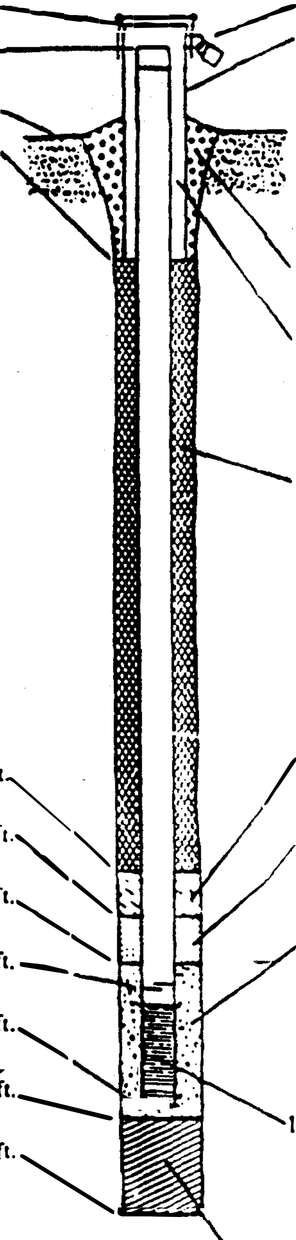
Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than $5000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Solid Waste ☐ Haz. Waste ☐ Wastewater ☐
Env. Response & Repair ☐ Underground Tanks ☐ Other ☐ ________

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 4-90

Facility/Project Name: WHITEFISH BAY L.F.	Local Grid Location of Well: ______ ft. ☐ N. ☐ S. ______ ft. ☐ E. ☐ W.	Well Name: MW-27
Facility License, Permit or Monitoring Number: — — — — — — —	Grid Origin Location: Lat. ______ Long. ______ or St. Plane ______ ft. N. ______ ft. E.	Wis. Unique Well Number: — — — — DNR Well Number: — — —
Type of Well: Water Table Observation Well ☐ 11; Piezometer ☐ 12	Section Location of Waste/Source: __1/4 of NW 1/4 of Sec. 23, T. 8 N, R. 21 ■ E. ☐ W.	Date Well Installed: 06/08/95 (m m d d y y)
Distance Well Is From Waste/Source Boundary ______ ft.	Location of Well Relative to Waste/Source: u ☐ Upgradient; s ☐ Sidegradient; d ☐ Downgradient; n ☐ Not Known	Well Installed By: (Person's Name and Firm) B. ZAKOWSKI, STS CONSULTANTS
[redacted]s Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		



- A. Protective pipe, top elevation _ _ _ _ _ _ _ ft. MSL
- B. Well casing, top elevation _ _ _ _ _ _ _ ft. MSL
- C. Land surface elevation 706.58 ft. MSL
- D. Surface seal, bottom 705.0 ft. MSL or 1.5 ft.
- 12. USCS classification of soil near screen:
  GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ■
  [redacted] SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
  Bedrock ☐
- 13. Sieve analysis attached? ☐ Yes ■ No
- 14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ■ 41; Other ☐ __ —
- 15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ■ 99
- [redacted]16. Drilling additives used? ☐ Yes ■ No
  Describe —
- 17. Source of water (attach analysis): —

- E. Bentonite seal, top 691.5 ft. MSL or 15.0 ft.
- F. Fine sand, top 691.5 ft. MSL or 15.0 ft.
- G. Filter pack, top 689.5 ft. MSL or 17.0 ft.
- H. Screen joint, top 688.5 ft. MSL or 18.0 ft.
- [redacted] Well bottom 678.5 ft. MSL or 28.0 ft.
- J. Filter pack, bottom 678.0 ft. MSL or 28.5 ft.
- K. Borehole, bottom 678.0 ft. MSL or 28.5 ft.
- L. Borehole, diameter 8.0 in.
- M. O.D. well casing 2.36 in.
- N. I.D. well casing 2.20 in.

1. Cap and lock? ■ Yes ☐ No
2. Protective cover pipe:
   a. Inside diameter: 12.0 in.
   b. Length: 1.5 ft.
   c. Material: Steel ☐ 04; Other ■ __ ALUMINUM FLUSH MNT
   d. Additional protection? ☐ Yes ■ No
   If yes, describe: —
3. Surface seal: Bentonite ☐ 30; Concrete ■ 01; Other ☐ __ —
4. Material between well casing and protective pipe: Bentonite ☐ 30; Annular space seal ☐ __; Other ☐ __ —
5. Annular space seal: a. Granular Bentonite ■ 33
   b. — Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
   c. — Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
   d. — % Bentonite . . . . . . Bentonite-cement grout ☐ 50
   e. 5.0 Ft^3 volume added for any of the above
   f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ■ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
   b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
   c. — Other ☐ __
7. Fine sand material: Manufacturer, product name & mesh size
   a. BADGER 40/60 __
   b. Volume added .52 ft^3
8. Filter pack material: Manufacturer, product name and mesh size
   a. RED FLINT #30 __
   b. Volume added 4.08 ft^3
9. Well casing: Flush threaded PVC schedule 40 ■ 23; Flush threaded PVC schedule 80 ☐ 24; — Other ☐ __
10. Screen material: SCH 40 PVC
   a. Screen type: Factory cut ■ 11; Continuous slot ☐ 01; — Other ☐ __
   b. Manufacturer TIMCO
   c. Slot size: 0.010 in.
   d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☐ 14; Other ■ __ BENTONITE

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
[redacted] (signature)	STS CONSULTANTS

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than [redacted]000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each [redacted] of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

APPENDIX D

Monitoring Well Development Forms

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT
Form 4400-113B Rev. 4-90

Route to: Solid Waste ☐ Haz. Waste ☐ Wastewater ☐
Env. Response & Repair ☐ Underground Tanks ☐ Other ☐ ______

Facility/Project Name	County Name	Well Name	
WHITEFISH BAY LF	MILWAUKEE	25	
Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number

1. Can this well be purged dry? ☐ Yes ■ No

2. Well development method
   - surged with bailer and bailed ■ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☒ 51
   - pumped slowly ☐ 50
   - Other ______ ☐ --

3. Time spent developing well 200 min.

4. Depth of well (from top of well casisng) 19.6 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 7.6 gal.

7. Volume of water removed from well 165.0 gal.

8. Volume of water added (if any) 0.0 gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☐ No
    (If yes, attach results) N/A

	Before Development	After Development
11. Depth to Water (from top of well casing) a.	12.05 ft.	12.00 ft.
Date b. (mm dd yy)	06/26/95	06/26/95
Time c.	11:20 ■ a.m. ☐ p.m.	1:00 ☐ a.m. ■ p.m.
12. Sediment in well bottom	__.__ inches	0.8 inches
13. Water clarity	Clear ☐ 10 Turbid ■ 15	Clear ☐ 20 Turbid ■ 25
(Describe)	SILTY GRAY	SILTY GRAY

Fill in if drilling fluids were used and well is at solid waste facility:

	Before Development	After Development
14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l

16. Additional comments on development:
26 11:20-1:00 PURGED & BAILED 110 GALS.
DEPTH OF WELL AFTER DEVELOPMENT 20.4'
27 Pumped Additional 55 gallons 8:30-9:30
Depth of well After Pumping - 22.0' / (19.6' Before)

Well developed by: Person's Name and Firm

Name: DAVE MARKELZ

Firm: STS CONSULTANTS

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: ______

Print Initials: DLM

Firm: STS CONSULTANTS

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT
Form 4400-113B Rev. 4-90

Route to: Solid Waste ☐ Haz. Waste ☐ Wastewater ☐
Env. Response & Repair ☐ Underground Tanks ☐ Other ☐ ________

Facility/Project Name	County Name	Well Name	
WHITEFISH BAY LF	MILWAUKEE	26	
Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
________	__	______	___

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method
   - surged with bailer and bailed ☒ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☐ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other ________ ☐ __

3. Time spent developing well 60 min.

4. Depth of well (from top of well casisng) 24.6 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 5.2 gal.

7. Volume of water removed from well 55.0 gal.

8. Volume of water added (if any) 0.0 gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results) N/A

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 18.91 ft.	18.91 ft.
Date	b. 06/26/95 (mm dd yy)	06/26/95 (mm dd yy)
Time	c. 2:00 ☐ a.m. ☒ p.m.	3:00 ☐ a.m. ☒ p.m.
12. Sediment in well bottom	0.0 inches	0.0 inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15	Clear ☐ 20 Turbid ☒ 25
(Describe)	SILTY GRAY	SILTY GRAY

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	____._ mg/l	____._ mg/l
15. COD	____._ mg/l	____._ mg/l

16. Additional comments on development:
2:00-3:00 PURGED & BAILED 55 GALS.

Well developed by: Person's Name and Firm

Name: DAVE MARKELZ

Firm: STS CONSULTANTS

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: ________

Print Initials: DLM

Firm: STS CONSULTANTS

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT
Form 4400-113B Rev. 4-90

Route to: Solid Waste ☐ Haz. Waste ☐ Wastewater ☐
Env. Response & Repair ☐ Underground Tanks ☐ Other ☐ ______

Facility/Project Name	County Name	Well Name	
WHITEFISH BAY LF	MILWAUKEE	27	
Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
_ _ _ _ _ _ _ _	_ _	_ _ _ _ _ _ _	_ _ _

1. Can this well be purged dry? ■ Yes ☐ No

2. Well development method
- surged with bailer and bailed ■ 41
- surged with bailer and pumped ☐ 61
- surged with block and bailed ☐ 42
- surged with block and pumped ☐ 62
- surged with block, bailed and pumped ☐ 70
- compressed air ☐ 20
- bailed only ☐ 10
- pumped only ☐ 51
- pumped slowly ☐ 50
- Other ______ ☐ --

3. Time spent developing well 30 min.

4. Depth of well (from top of well casisng) 25.1 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 13.2 gal.

7. Volume of water removed from well 5.0 gal.

8. Volume of water added (if any) 0.0 gal.

9. Source of water added N/A

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results) N/A

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 11.00 ft.	24.50 ft.
Date	b. 06/26/95 (mm dd yy)	06/26/95 (mm dd yy)
Time	c. 10:40 ■ a.m. ☐ p.m.	4:30 ☐ a.m. ■ p.m.
12. Sediment in well bottom	1.0 inches	0.0 inches
13. Water clarity	Clear ☐ 10 Turbid ■ 15 (Describe) SILTY BROWN ALMOST GRAY	Clear ☐ 20 Turbid ■ 25 (Describe) SILTY GRAY

Fill in if drilling fluids were used and well is at solid waste facility:

	Before Development	After Development
14. Total suspended solids	_____._ mg/l	_____._ mg/l
15. COD	_____._ mg/l	_____._ mg/l

16. Additional comments on development:
10:45-11:00 PURGED & BAILED 2.5 GALS. DRY
4:30-4:45 PURGED & BAILED 2.5 GALS. DRY

Well developed by: Person's Name and Firm

Name: DAVE MARKELZ

Firm: STS CONSULTANTS

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: ______

Print Initials: DLM

Firm: STS CONSULTANTS

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

APPENDIX E

Groundwater Analytical Results

ENVIROSCAN

ENVIRONMENTAL AND
ANALYTICAL SERVICES

July 18, 1995

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

Attn: Kevin Brehm

Re: 84129XF

Please find enclosed the analytical results for the samples received June 28, 1995.

All analyses were completed in accordance with appropriate EPA and Wisconsin methodologies. Methods and dates of analysis are included in the report tables.

The chain of custody document is enclosed. If you have any questions about the results, please call. Thank you for using Enviroscan Corp. for your analytical needs.

Sincerely,

Enviroscan Corp.

Jay C. Hunger

Jay C. Hunger
Analytical Chemist

303 West Military Road Rothschild, WI 54474 (715) 359-7226
An Affiliate of the Black Clawson Co.

ANALYTICAL REPORT ENVIROSCAN

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

	Units	Reporting Limit	MW 27 06/27/95	Qualifiers	Date Analyzed
EPA 8021					
Benzene	µg/l	0.2	4.7		07/10/95
Bromobenzene	µg/l	0.5	X		07/10/95
Bromodichloromethane	µg/l	0.5	X		07/10/95
n-Butylbenzene	µg/l	1.0	X		07/10/95
sec-Butylbenzene	µg/l	1.0	X		07/10/95
tert-Butylbenzene	µg/l	1.0	X		07/10/95
Carbon Tetrachloride	µg/l	0.5	X		07/10/95
Chlorobenzene	µg/l	2.0	6.8		07/10/95
Chlorodibromomethane	µg/l	0.5	X		07/10/95
Chloroethane	µg/l	2.0	6.4	CSH	07/10/95
Chloroform	µg/l	0.5	X		07/10/95
Chloromethane	µg/l	2.0	X	CSH	07/10/95
o-Chlorotoluene	µg/l	1.0	X		07/10/95
p-Chlorotoluene	µg/l	1.0	X		07/10/95
1,2-Dibromo-3-chloropropane	µg/l	13.3	X		07/10/95
1,2-Dibromoethane	µg/l	1.0	X		07/10/95
1,2-Dichlorobenzene	µg/l	1.0	X		07/10/95
1,3-Dichlorobenzene	µg/l	1.0	X		07/10/95
1,4-Dichlorobenzene	µg/l	0.5	X		07/10/95
Dichlorodifluoromethane	µg/l	2.0	X	CSH	07/10/95
1,1-Dichloroethane	µg/l	0.5	40.8	CAL	07/10/95
1,2-Dichloroethane	µg/l	0.5	3.9		07/10/95
1,1-Dichloroethylene	µg/l	0.4	8.8		07/10/95
cis-1,2-Dichloroethylene & 2,2-Dichloropropane	µg/l	0.5	4,270.		07/11/95
trans-1,2-Dichloroethylene	µg/l	0.5	80.6	CSL CAL	07/10/95
1,2-Dichloropropane	µg/l	0.5	X		07/10/95
1,3-Dichloropropane	µg/l	0.5	X		07/10/95
Ethylbenzene	µg/l	1.0	X		07/10/95
Hexachlorobutadiene	µg/l	1.0	X		07/10/95
Isopropylbenzene	µg/l	1.0	X		07/10/95
Isopropyl Ether	µg/l	1.0	5.6		07/10/95
p-Isopropyltoluene	µg/l	1.0	X	CSH	07/10/95
Methyl tert Butyl Ether	µg/l	2.0	X		07/10/95
Methylene Chloride	µg/l	2.5	X		07/10/95
Naphthalene	µg/l	1.0	X	CSH	07/10/95
n-Propylbenzene	µg/l	1.0	X		07/10/95
Tetrachloroethylene	µg/l	0.5	7.5		07/10/95
1,1,2,2-Tetrachloroethane	µg/l	1.0	X	CSL	07/10/95
Toluene	µg/l	2.0	10.6		07/10/95
1,2,3-Trichlorobenzene	µg/l	1.0	X		07/10/95
1,2,4-Trichlorobenzene	µg/l	1.0	X		07/10/95
1,1,1-Trichloroethane	µg/l	0.5	X		07/10/95
1,1,2-Trichloroethane	µg/l	0.5	X		07/10/95
Trichloroethylene	µg/l	0.2	63.9	CAL	07/10/95
Analytical No.:			43333		

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ENVIROSCAN

ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

	Units	Reporting Limit	MW 27 06/27/95	Qualifiers	Date Analyzed
EPA 8021					
Trichlorofluoromethane	µg/l	1.0	X		07/10/95
1,2,4-Trimethylbenzene	µg/l	1.0	X		07/10/95
1,3,5-Trimethylbenzene	µg/l	1.0	X		07/10/95
Vinyl Chloride	µg/l	0.2	4,100.	CSH	07/11/95
m- & p-Xylene	µg/l	1.0	X		07/10/95
o-Xylene	µg/l	1.0	X		07/10/95
Analytical No.:			43333		

X = Analyzed but not detected.

ENVIROSCAN

ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

EPA 8021	Units	Reporting Limit	MW 27D 06/27/95	Qualifiers	Date Analyzed
Benzene	µg/l	0.2	4.5		07/10/95
Bromobenzene	µg/l	0.5	X		07/10/95
Bromodichloromethane	µg/l	0.5	X		07/10/95
n-Butylbenzene	µg/l	1.0	X		07/10/95
sec-Butylbenzene	µg/l	1.0	X		07/10/95
tert-Butylbenzene	µg/l	1.0	X		07/10/95
Carbon Tetrachloride	µg/l	0.5	X		07/10/95
Chlorobenzene	µg/l	2.0	2.9		07/10/95
Chlorodibromomethane	µg/l	0.5	X		07/10/95
Chloroethane	µg/l	2.0	4.6	CSH	07/10/95
Chloroform	µg/l	0.5	X		07/10/95
Chloromethane	µg/l	2.0	X	CSH	07/10/95
o-Chlorotoluene	µg/l	1.0	X		07/10/95
p-Chlorotoluene	µg/l	1.0	X		07/10/95
1,2-Dibromo-3-chloropropane	µg/l	13.3	X		07/10/95
1,2-Dibromoethane	µg/l	1.0	X		07/10/95
1,2-Dichlorobenzene	µg/l	1.0	X		07/10/95
1,3-Dichlorobenzene	µg/l	1.0	X		07/10/95
1,4-Dichlorobenzene	µg/l	0.5	X		07/10/95
Dichlorodifluoromethane	µg/l	2.0	X	CSH	07/10/95
1,1-Dichloroethane	µg/l	0.5	37.2		07/10/95
1,2-Dichloroethane	µg/l	0.5	7.0		07/10/95
1,1-Dichloroethylene	µg/l	0.4	7.8		07/10/95
cis-1,2-Dichloroethylene & 2,2-Dichloropropane	µg/l	0.5	6,110.		07/11/95
trans-1,2-Dichloroethylene	µg/l	0.5	49.5	CSL CAL	07/10/95
1,2-Dichloropropane	µg/l	0.5	X		07/10/95
1,3-Dichloropropane	µg/l	0.5	X		07/10/95
Ethylbenzene	µg/l	1.0	X		07/10/95
Hexachlorobutadiene	µg/l	1.0	X		07/10/95
Isopropylbenzene	µg/l	1.0	X		07/10/95
Isopropyl Ether	µg/l	1.0	5.4		07/10/95
p-Isopropyltoluene	µg/l	1.0	X	CSH	07/10/95
Methyl tert Butyl Ether	µg/l	2.0	X		07/10/95
Methylene Chloride	µg/l	2.5	X		07/10/95
Naphthalene	µg/l	1.0	X	CSH	07/10/95
n-Propylbenzene	µg/l	1.0	X		07/10/95
Tetrachloroethylene	µg/l	0.5	6.8		07/10/95
1,1,2,2-Tetrachloroethane	µg/l	1.0	X	CSL	07/10/95
Toluene	µg/l	2.0	10.1		07/10/95
1,2,3-Trichlorobenzene	µg/l	1.0	X		07/10/95
1,2,4-Trichlorobenzene	µg/l	1.0	X		07/10/95
1,1,1-Trichloroethane	µg/l	0.5	X		07/10/95
1,1,2-Trichloroethane	µg/l	0.5	X		07/10/95
Trichloroethylene	µg/l	0.2	57.4	CAL	07/10/95
Trichlorofluoromethane	µg/l	1.0	X		07/10/95
1,2,4-Trimethylbenzene	µg/l	1.0	X		07/10/95
Analytical No.:			43334		

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ENVIROSCAN ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

	Units	Reporting Limit	MW 27D 06/27/95	Qualifiers	Date Analyzed
EPA 8021					
1,3,5-Trimethylbenzene	µg/l	1.0	X		07/10/95
Vinyl Chloride	µg/l	0.2	4,110.	CSH	07/11/95
m- & p-Xylene	µg/l	1.0	X		07/10/95
o-Xylene	µg/l	1.0	X		07/10/95
Analytical No.:			43334		

X = Analyzed but not detected.

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ENVIROSCAN

ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

EPA 8021	Units	Reporting Limit	MW 26 06/27/95	Qualifiers	Date Analyzed
Benzene	µg/l	20.0	X		07/11/95
Bromobenzene	µg/l	50.0	X		07/11/95
Bromodichloromethane	µg/l	50.0	X		07/11/95
n-Butylbenzene	µg/l	100.0	X	CSH	07/11/95
sec-Butylbenzene	µg/l	100.0	X	CSH	07/11/95
tert-Butylbenzene	µg/l	100.0	X		07/11/95
Carbon Tetrachloride	µg/l	50.0	X		07/11/95
Chlorobenzene	µg/l	200.0	X		07/11/95
Chlorodibromomethane	µg/l	50.0	X		07/11/95
Chloroethane	µg/l	200.0	X	CSH	07/11/95
Chloroform	µg/l	50.0	X		07/11/95
Chloromethane	µg/l	200.0	X	CSH	07/11/95
o-Chlorotoluene	µg/l	100.0	X		07/11/95
p-Chlorotoluene	µg/l	100.0	X		07/11/95
1,2-Dibromo-3-chloropropane	µg/l	1330.0	X		07/11/95
1,2-Dibromoethane	µg/l	100.0	X		07/11/95
1,2-Dichlorobenzene	µg/l	100.0	X		07/11/95
1,3-Dichlorobenzene	µg/l	100.0	X		07/11/95
1,4-Dichlorobenzene	µg/l	50.0	X		07/11/95
Dichlorodifluoromethane	µg/l	200.0	X	CSH	07/11/95
1,1-Dichloroethane	µg/l	50.0	X		07/11/95
1,2-Dichloroethane	µg/l	50.0	X		07/11/95
1,1-Dichloroethylene	µg/l	40.0	X		07/11/95
cis-1,2-Dichloroethylene & 2,2-Dichloropropane	µg/l	50.0	3,070.		07/11/95
trans-1,2-Dichloroethylene	µg/l	50.0	X		07/11/95
1,2-Dichloropropane	µg/l	50.0	X		07/11/95
1,3-Dichloropropane	µg/l	50.0	X		07/11/95
Ethylbenzene	µg/l	100.0	X		07/11/95
Hexachlorobutadiene	µg/l	100.0	X		07/11/95
Isopropylbenzene	µg/l	100.0	X	CSH	07/11/95
Isopropyl Ether	µg/l	100.0	X	CSH	07/11/95
p-Isopropyltoluene	µg/l	100.0	X	CSH	07/11/95
Methyl tert Butyl Ether	µg/l	200.0	X		07/11/95
Methylene Chloride	µg/l	250.0	X		07/11/95
Naphthalene	µg/l	100.0	X	CSH	07/11/95
n-Propylbenzene	µg/l	100.0	X		07/11/95
Tetrachloroethylene	µg/l	50.0	X		07/11/95
1,1,2,2-Tetrachloroethane	µg/l	100.0	X	CSL	07/11/95
Toluene	µg/l	200.0	X	CSH	07/11/95
1,2,3-Trichlorobenzene	µg/l	100.0	X	DUP	07/11/95
1,2,4-Trichlorobenzene	µg/l	100.0	X	DUP	07/11/95
1,1,1-Trichloroethane	µg/l	50.0	X		07/11/95
1,1,2-Trichloroethane	µg/l	50.0	X		07/11/95
Trichloroethylene	µg/l	20.0	X		07/11/95
Trichlorofluoromethane	µg/l	100.0	X		07/11/95
1,2,4-Trimethylbenzene	µg/l	100.0	X		07/11/95
Analytical No.:			43335		

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ENVIROSCAN
ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

	Units	Reporting Limit	MW 26 06/27/95	Qualifiers	Date Analyzed
EPA 8021					
1,3,5-Trimethylbenzene	µg/l	100.0	X		07/11/95
Vinyl Chloride	µg/l	20.0	712.	CSH	07/11/95
m- & p-Xylene	µg/l	100.0	X		07/11/95
o-Xylene	µg/l	100.0	X		07/11/95
Analytical No.:			43335		

X = Analyzed but not detected.

ANALYTICAL REPORT ENVIROSCAN

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

EPA 8021	Units	Reporting Limit	MW 25 06/27/95	Qualifiers	Date Analyzed
Benzene	µg/l	4.0	X		07/11/95
Bromobenzene	µg/l	10.0	X		07/11/95
Bromodichloromethane	µg/l	10.0	X		07/11/95
n-Butylbenzene	µg/l	20.0	X	CSH	07/11/95
sec-Butylbenzene	µg/l	20.0	X	CSH	07/11/95
tert-Butylbenzene	µg/l	20.0	X		07/11/95
Carbon Tetrachloride	µg/l	10.0	X		07/11/95
Chlorobenzene	µg/l	40.0	X		07/11/95
Chlorodibromomethane	µg/l	10.0	X		07/11/95
Chloroethane	µg/l	40.0	X	CSH	07/11/95
Chloroform	µg/l	10.0	X		07/11/95
Chloromethane	µg/l	40.0	X	CSH	07/11/95
o-Chlorotoluene	µg/l	20.0	X		07/11/95
p-Chlorotoluene	µg/l	20.0	X		07/11/95
1,2-Dibromo-3-chloropropane	µg/l	266.0	X		07/11/95
1,2-Dibromoethane	µg/l	20.0	X		07/11/95
1,2-Dichlorobenzene	µg/l	20.0	X		07/11/95
1,3-Dichlorobenzene	µg/l	20.0	X		07/11/95
1,4-Dichlorobenzene	µg/l	10.0	X		07/11/95
Dichlorodifluoromethane	µg/l	40.0	X	CSH	07/11/95
1,1-Dichloroethane	µg/l	10.0	X		07/11/95
1,2-Dichloroethane	µg/l	10.0	X		07/11/95
1,1-Dichloroethylene	µg/l	8.0	X		07/11/95
cis-1,2-Dichloroethylene & 2,2-Dichloropropane	µg/l	10.0	632.		07/11/95
trans-1,2-Dichloroethylene	µg/l	10.0	X		07/11/95
1,2-Dichloropropane	µg/l	10.0	X		07/11/95
1,3-Dichloropropane	µg/l	10.0	X		07/11/95
Ethylbenzene	µg/l	20.0	X		07/11/95
Hexachlorobutadiene	µg/l	20.0	X		07/11/95
Isopropylbenzene	µg/l	20.0	X	CSH	07/11/95
Isopropyl Ether	µg/l	20.0	X	CSH	07/11/95
p-Isopropyltoluene	µg/l	20.0	X	CSH	07/11/95
Methyl tert Butyl Ether	µg/l	40.0	X		07/11/95
Methylene Chloride	µg/l	50.0	X		07/11/95
Naphthalene	µg/l	20.0	X	CSH	07/11/95
n-Propylbenzene	µg/l	20.0	X		07/11/95
Tetrachloroethylene	µg/l	10.0	X		07/11/95
1,1,2,2-Tetrachloroethane	µg/l	20.0	X	CSL	07/11/95
Toluene	µg/l	40.0	X	CSH	07/11/95
1,2,3-Trichlorobenzene	µg/l	20.0	X	DUP	07/11/95
1,2,4-Trichlorobenzene	µg/l	20.0	X	DUP	07/11/95
1,1,1-Trichloroethane	µg/l	10.0	X		07/11/95
1,1,2-Trichloroethane	µg/l	10.0	X		07/11/95
Trichloroethylene	µg/l	4.0	X		07/11/95
Trichlorofluoromethane	µg/l	20.0	X		07/11/95
1,2,4-Trimethylbenzene	µg/l	20.0	X		07/11/95
Analytical No.:			43336		

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ENVIROSCAN ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

	Units	Reporting Limit	MW 25 06/27/95	Qualifiers	Date Analyzed
EPA 8021					
1,3,5-Trimethylbenzene	µg/l	20.0	X		07/11/95
Vinyl Chloride	µg/l	4.0	59.5	CSH	07/11/95
m- & p-Xylene	µg/l	20.0	X		07/11/95
o-Xylene	µg/l	20.0	X		07/11/95
Analytical No.:			43336		

X = Analyzed but not detected.

ENVIROSCAN ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

EPA 8021	Units	Reporting Limit	MW 22 06/27/95	Qualifiers	Date Analyzed
Benzene	µg/l	40.0	X		07/11/95
Bromobenzene	µg/l	100.0	X		07/11/95
Bromodichloromethane	µg/l	100.0	X		07/11/95
n-Butylbenzene	µg/l	200.0	X	CSH	07/11/95
sec-Butylbenzene	µg/l	200.0	X	CSH	07/11/95
tert-Butylbenzene	µg/l	200.0	X		07/11/95
Carbon Tetrachloride	µg/l	100.0	X		07/11/95
Chlorobenzene	µg/l	400.0	X		07/11/95
Chlorodibromomethane	µg/l	100.0	X		07/11/95
Chloroethane	µg/l	400.0	X	CSH	07/11/95
Chloroform	µg/l	100.0	X		07/11/95
Chloromethane	µg/l	400.0	X	CSH	07/11/95
o-Chlorotoluene	µg/l	200.0	X		07/11/95
p-Chlorotoluene	µg/l	200.0	X		07/11/95
1,2-Dibromo-3-chloropropane	µg/l	2660.0	X		07/11/95
1,2-Dibromoethane	µg/l	200.0	X		07/11/95
1,2-Dichlorobenzene	µg/l	200.0	X		07/11/95
1,3-Dichlorobenzene	µg/l	200.0	X		07/11/95
1,4-Dichlorobenzene	µg/l	100.0	X		07/11/95
Dichlorodifluoromethane	µg/l	400.0	X	CSH	07/11/95
1,1-Dichloroethane	µg/l	100.0	X		07/11/95
1,2-Dichloroethane	µg/l	100.0	X		07/11/95
1,1-Dichloroethylene	µg/l	80.0	X		07/11/95
cis-1,2-Dichloroethylene & 2,2-Dichloropropane	µg/l	100.0	17,400.	CAL	07/11/95
trans-1,2-Dichloroethylene	µg/l	100.0	X		07/11/95
1,2-Dichloropropane	µg/l	100.0	X		07/11/95
1,3-Dichloropropane	µg/l	100.0	X		07/11/95
Ethylbenzene	µg/l	200.0	12,600.	CAL	07/11/95
Hexachlorobutadiene	µg/l	200.0	X		07/11/95
Isopropylbenzene	µg/l	200.0	X	CSH	07/11/95
Isopropyl Ether	µg/l	200.0	X	CSH	07/11/95
p-Isopropyltoluene	µg/l	200.0	X	CSH	07/11/95
Methyl tert Butyl Ether	µg/l	400.0	X		07/11/95
Methylene Chloride	µg/l	500.0	X		07/11/95
Naphthalene	µg/l	200.0	X	CSH	07/11/95
n-Propylbenzene	µg/l	200.0	X		07/11/95
Tetrachloroethylene	µg/l	100.0	7,290.		07/11/95
1,1,2,2-Tetrachloroethane	µg/l	200.0	X	CSL	07/11/95
Toluene	µg/l	400.0	1,360.	CSH	07/11/95
1,2,3-Trichlorobenzene	µg/l	200.0	X	DUP	07/11/95
1,2,4-Trichlorobenzene	µg/l	200.0	X	DUP	07/11/95
1,1,1-Trichloroethane	µg/l	100.0	251.		07/11/95
1,1,2-Trichloroethane	µg/l	100.0	X		07/11/95
Trichloroethylene	µg/l	40.0	13,400.	CAL	07/11/95
Trichlorofluoromethane	µg/l	200.0	X		07/11/95
1,2,4-Trimethylbenzene	µg/l	200.0	204.		07/11/95
Analytical No.:			43337		

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ENVIROSCAN ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

	Units	Reporting Limit	MW 22 06/27/95	Qualifiers	Date Analyzed
EPA 8021					
1,3,5-Trimethylbenzene	µg/l	200.0	X		07/11/95
Vinyl Chloride	µg/l	40.0	3,460.	CSH	07/11/95
m- & p-Xylene	µg/l	200.0	41,200.	CAL	07/11/95
o-Xylene & Styrene	µg/l	200.0	12,200.	CAL	07/11/95
Analytical No.:			43337		

ANALYTICAL REPORT

ENVIROSCAN

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

EPA 8021	Units	Reporting Limit	TRIP BLANK-SS 06/27/95	Qualifiers	Date Analyzed
Benzene	µg/l	0.2	X		07/08/95
Bromobenzene	µg/l	0.5	X		07/08/95
Bromodichloromethane	µg/l	0.5	X		07/08/95
n-Butylbenzene	µg/l	1.0	X		07/08/95
sec-Butylbenzene	µg/l	1.0	X		07/08/95
tert-Butylbenzene	µg/l	1.0	X		07/08/95
Carbon Tetrachloride	µg/l	0.5	X		07/08/95
Chlorobenzene	µg/l	2.0	X		07/08/95
Chlorodibromomethane	µg/l	0.5	X		07/08/95
Chloroethane	µg/l	2.0	X	CSH	07/08/95
Chloroform	µg/l	0.5	X		07/08/95
Chloromethane	µg/l	2.0	X	CSH	07/08/95
o-Chlorotoluene	µg/l	1.0	X		07/08/95
p-Chlorotoluene	µg/l	1.0	X		07/08/95
1,2-Dibromo-3-chloropropane	µg/l	13.3	X		07/08/95
1,2-Dibromoethane	µg/l	1.0	X		07/08/95
1,2-Dichlorobenzene	µg/l	1.0	X		07/08/95
1,3-Dichlorobenzene	µg/l	1.0	X		07/08/95
1,4-Dichlorobenzene	µg/l	0.5	X		07/08/95
Dichlorodifluoromethane	µg/l	2.0	X	CSH	07/08/95
1,1-Dichloroethane	µg/l	0.5	X		07/08/95
1,2-Dichloroethane	µg/l	0.5	X		07/08/95
1,1-Dichloroethylene	µg/l	0.4	X		07/08/95
cis-1,2-Dichloroethylene	µg/l	0.5	X		07/08/95
trans-1,2-Dichloroethylene	µg/l	0.5	X	CSL	07/08/95
1,2-Dichloropropane	µg/l	0.5	X		07/08/95
1,3-Dichloropropane	µg/l	0.5	X		07/08/95
2,2-Dichloropropane	µg/l	2.0	X		07/08/95
Ethylbenzene	µg/l	1.0	X		07/08/95
Hexachlorobutadiene	µg/l	1.0	X		07/08/95
Isopropylbenzene	µg/l	1.0	X		07/08/95
Isopropyl Ether	µg/l	1.0	X	SPH	07/08/95
p-Isopropyltoluene	µg/l	1.0	X		07/08/95
Methyl tert Butyl Ether	µg/l	2.0	X		07/08/95
Methylene Chloride	µg/l	2.5	X		07/08/95
Naphthalene	µg/l	1.0	X	CSH	07/08/95
n-Propylbenzene	µg/l	1.0	X		07/08/95
Tetrachloroethylene	µg/l	0.5	X		07/08/95
1,1,2,2-Tetrachloroethane	µg/l	1.0	X		07/08/95
Toluene	µg/l	2.0	X		07/08/95
1,2,3-Trichlorobenzene	µg/l	1.0	X	CSH	07/08/95
1,2,4-Trichlorobenzene	µg/l	1.0	X		07/08/95
1,1,1-Trichloroethane	µg/l	0.5	X		07/08/95
1,1,2-Trichloroethane	µg/l	0.5	X		07/08/95
Trichloroethylene	µg/l	0.2	X		07/08/95
Trichlorofluoromethane	µg/l	1.0	X		07/08/95
1,2,4-Trimethylbenzene	µg/l	1.0	X		07/08/95
Analytical No.:			43338		

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ENVIROSCAN

ANALYTICAL REPORT

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
DATE REC'D: 06/28/95
REPORT DATE: 07/18/95
PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

	Units	Reporting Limit	TRIP BLANK-SS 06/27/95	Qualifiers	Date Analyzed
EPA 8021					
1,3,5-Trimethylbenzene	µg/l	1.0	X		07/08/95
Vinyl Chloride	µg/l	0.2	X	CSH	07/08/95
m- & p-Xylene	µg/l	1.0	X		07/08/95
o-Xylene	µg/l	1.0	X		07/08/95
Analytical No.:			43338		

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ANALYTICAL REPORT ENVIROSCAN

STS Consultants
11425 W. Lake Park Dr.
Milwaukee, WI 53224

CUST NUMBER: 84129XF
SAMPLED BY: Client
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PREPARED BY: JCH
REVIEWED BY:

Attn: Kevin Brehm

Qualifier Descriptions

CSH	Check standard for this analyte exhibited a high bias. Sample results may also be biased high. Non-detects were verified by comparison with a low standard.
CAL	Estimated concentration beyond the calibration range, but within the detector range of the instrument.
CSL	Check standard for this analyte exhibited a low bias. Sample results may also be biased low. Non-detects were verified by comparison with a low standard.
DUP	Result of duplicate analysis in this quality assurance batch exceeds the limits for precision. Sample results may also show a degree of variability.
SPH	The matrix spike included with this analytical batch had a high recovery. Since that sample matrix appears similar to your sample, your result may also be high.

CHAIN OF CUSTODY RECORD

№ 29368

STS

RECORD NUMBER 1 THROUGH 1

Contact Person: Kevin Brehm	Laboratory: Enviroscan
Phone No. (414) 359 3030 Office: Milwaukee	Contact Person: Linda Bachhuber
Project No. 84129XF PO No.	Phone No. 800 338 7226
Project Name: Whitefish Bay LF	Results Due: STD

Special Handling Request

- ☐ Rush
- ☐ Verbal
- ☐ Other

Sample I.D.	Date	Time	Grab	Composite	No. of Containers	Sample Type (Water, soil, air, sludge, etc.)	Preservation Y	Preservation N	Field Data PID/FID Ambient	Field Data PID/FID Sample	Field Data PH	Field Data Special Cond.	Analysis Request	Comments on Sample (Include Major Contaminants)
mw 27	6/27	11:00	X		3	Water	X						VOC's 8021	
mw 27D	6/27	11:05	X		3	Water	X						VOC'S 8021	
mw 26	6/27	11:40	X		3	Water	X						VOC'S 8021	
mw 25	6/27	12:00	X		3	Water	X						VOC'S 8021	
~~[illegible]~~														
mw 22	6/27	12:55	X		3	Water	X						VOC'S 8021	
TEMP BLANK														
TRIP BLANK					3	WATER	X						VOC 8021	

Collected by: David Marken	Date 6/27/95	Time AM/pm	Delivery by: Sutton	Date 6/27/95	Time pm
Received by:	Date	Time	Relinquished by:	Date	Time
Received by:	Date	Time	Relinquished by:	Date	Time
Received by:	Date	Time	Relinquished by:	Date	Time
Received for lab by: [signature]	Date 6/28/95	Time 8:30am	Relinquished by:	Date	Time

Laboratory Comments Only: Seals Intact Upon Receipt? ☒ Yes ☐ No ☐ N/A Rec'd on ice

Final Disposition: 11043333 ~~11043337~~ 11043338

Comments (Weather Conditions, Precautions, Hazards):

Distribution: Original and Green - Laboratory Yellow - As needed Pink - Transporter Goldenrod - STS Project File
Instructions to Laboratory: Forward completed original to STS with analytical results. Retain green copy.

9/94cp10k

STS Consultants Ltd.
Consulting Engineers