GIS REGISTRY INFORMATION

SITE NAME:	Linnwood Water Purification Plant		
BRRTS #:	03-41-004997	**FID #** (if appropriate):	
COMMERCE # (if appropriate):	53211-3462-00		
CLOSURE DATE:	March 14, 2006		
STREET ADDRESS:	3000 N Lincoln Memorial Dr		
CITY:	Milwaukee		

SOURCE PROPERTY GPS COORDINATES (meters in WTM91 projection):	X =	693785		Y =	291049	
CONTAMINATED MEDIA:	Groundwater		Soil		Both	X
OFF-SOURCE GW CONTAMINATION >ES:		Yes			No	X
• **IF YES, STREET ADDRESS:**						
• **GPS COORDINATES** (meters in WTM91 projection):	X =			Y =		
OFF-SOURCE SOIL CONTAMINATION >Generic or Site-Specific RCL (SSRCL):		Yes		No	X	
• **IF YES, STREET ADDRESS 1:**						
• **GPS COORDINATES** (meters in WTM91 projection):	X =			Y =		
CONTAMINATION IN RIGHT OF WAY:	Yes			No	X	

DOCUMENTS NEEDED

Closure Letter, and any conditional closure letter issued or denial letter issued.	X
Copy of most recent deed, including legal description, for all affected properties	X
Certified survey map or relevant portion of the recorded plat map (*if referenced in the legal description*) for all affected properties	X
County Parcel ID number, *if used for county*, for all affected properties	
Location Map which outlines all properties within contaminated site boundaries on USGS topographic map or plat map in sufficient detail to permit the parcels to be located easily (8.5x14" if paper copy). If groundwater standards are exceeded, the map must also include the location of all municipal and potable wells within 1200' of the site.	X
Detailed Site Map(s) for all affected properties, showing buildings, roads, property boundaries, contaminant sources, utility lines, monitoring wells and potable wells. (8.5x14", if paper copy) This map shall also show the location of all contaminated public streets, highway and railroad rights-of-way in relation to the source property and in relation to the boundaries of groundwater contamination exceeding ch. NR 140 ESs and soil contamination exceeding ch. NR 720 generic or SSRCLs.	X
Tables of Latest Groundwater Analytical Results (no shading or cross-hatching)	X
Tables of Latest Soil Analytical Results (no shading or cross-hatching)	X
Isoconcentration map(s), *if required for site investigation (SI)* (8.5x14" if paper copy). The isoconcentration map should have flow direction and extent of groundwater contamination defined. **If not available, include the latest extent of contaminant plume map.**	X
GW: Table of water level elevations, with sampling dates, and free product noted if present	X
GW: Latest groundwater flow direction/monitoring well location map (should be 2 maps if maximum variation in flow direction is greater than 20 degrees)	
SOIL: Latest horizontal extent of contamination exceeding generic or SSRCLs, with one contour	X
Geologic cross-sections, *if required for SI.* (8.5x14' if paper copy)	X
RP certified statement that legal descriptions are complete and accurate.	X
Copies of off-source notification letters (if applicable)	
Letter informing ROW owner of residual contamination (if applicable)(public, highway or railroad ROW)	
Copy of (soil or land use) deed restriction (s) or deed notice if any required as a condition of closure	
Copy of any maintenance plan referenced in the deed restriction	

commerce.wi.gov
Wisconsin
Department of Commerce

ENVIRONMENTAL & REGULATORY SERVICES DIVISION
BUREAU OF PECFA
101 West Pleasant Street, Suite 100A
Milwaukee, Wisconsin 53212-3963
TDD #: (608) 264-8777
Fax #: (414) 220-5374
Jim Doyle, Governor
Mary P. Burke, Secretary

March 14, 2006

Mr. Dennis Nelson
DPW-Operations Division
City of Milwaukee
841 North Broadway, Room 602
Milwaukee, WI 53202-3613

RE: **Final Closure**

Commerce # 53211-3462-00 DNR BRRTS # 03-41-004997
Linnwood Water Purification Plant, 3000 North Lincoln Memorial Drive, Milwaukee

Two heating oil underground storage tanks removed in 1995

Dear Mr. Nelson:

The Wisconsin Department of Commerce (Commerce) has received the monitoring well abandonment documentation required as a condition for closure of the site referenced above. This case is now listed as "closed" on the Commerce database and will be included on the Wisconsin Department of Natural Resources (DNR) Geographic Information System (GIS) Registry of Closed Remediation Sites to address residual soil and groundwater contamination. It is in your best interest to keep all documentation related to the environmental activities that were conducted.

If residual contamination is encountered in the future, it must be managed in accordance with all applicable state and federal regulations. If it is determined that any remaining contamination poses a threat, the case may be reopened and further investigation or remediation may be required.

Thank you for your efforts to bring this case to closure. If you have any questions, please contact me in writing at the letterhead address or by telephone at (414) 220-5376.

Sincerely,

Linda M. Michalets
Senior Hydrogeologist
Site Review Section

cc: Mr. Kevin Bugel, Giles Engineering Associates, Inc.

commerce.wi.gov
Wisconsin
Department of Commerce

ENVIRONMENTAL & REGULATORY SERVICES DIVISION
BUREAU OF PECFA
101 West Pleasant Street, Suite 100A
Milwaukee, Wisconsin 53212-3963
TDD #: (608) 264-8777
Fax #: (414) 220-5374
Jim Doyle, Governor
Mary P. Burke, Secretary

October 25, 2005

Mr. Dennis Nelson
DPW-Operations Division
City of Milwaukee
841 North Broadway, Room 602
Milwaukee, WI 53202-3613

RE: **Conditional Case Closure**

Commerce # 53211-3462-00 WDNR BRRTS # 03-41-004997
Linnwood Water Purification Plant, 3000 North Lincoln Memorial Drive, Milwaukee

Two heating oil underground storage tanks removed in 1995

Dear Mr. Nelson:

The Wisconsin Department of Commerce (Commerce) has reviewed the request for case closure prepared by your consultant, Giles Engineering Associates, Inc., for the site referenced above. It is understood that residual soil and groundwater contamination remains on site. Commerce has determined that this site does not pose a significant threat to the environment and human health. No further investigation or remedial action is necessary.

The following condition must be satisfied to obtain final closure:

- Monitoring well MW-2 must be properly abandoned and the appropriate documentation forwarded to me at the letterhead address.

Thank you for your efforts to protect Wisconsin's environment. If you have any questions, please contact me in writing at the letterhead address or by telephone at (414) 220-5376.

Sincerely,

L.M.

Linda M. Michalets
Hydrogeologist
Site Review Section

cc: Ms. Terrie Biles, Giles Engineering Associates, Inc.
Case File

Map created Tue Oct 25 11:04:00 CDT 2005

Legend

- Closed Remediation Sites
- Groundwater
- Soil
- Groundwater and Soil
- Offsource Contamination
- County Boundary
- 24K Open Water
- Municipalities

Scale: 1:2,283

DO NOT USE FOR NAVIGATION

& Mueller's Subd. No. 1 Ulrichs Subd. and Riedeburgs Subd.; in Lands in North East ¼ of South East ¼ Section 8 in the fourth Assessment District of the City of Milwaukee aforesaid, above described, together with the hereditaments and appurtenances, to the said Richard C. Knox and to his heirs and assigns, to their sole use and benefit forever.

IN TESTIMONY WHEREOF, I, John I. Drew, the Treasurer of the City of Milwaukee, have executed this deed pursuant to and in virtue of the authority in me vested by the Charter of the City of Milwaukee and the Statutes of the State of Wisconsin, and for and on behalf of said City of Milwaukee and State of Wisconsin, and have hereunto subscribed my name officially, and affixed the seal of the said City of Milwaukee, at the City of Milwaukee, in said County of Milwaukee, this fourth day of October, in the year of our Lord one thousand nine hundred and twenty-seven.

DONE IN PRESENCE OF

Nathan Kaufman
John F. Reiff

Imp. Corp. Seal

John I. Drew
City Treasurer of the City of Milwaukee.

STATE OF WISCONSIN,)
COUNTY OF MILWAUKEE) SS.

Personally came before me this 4th day of October, 1927, the above named John I. Drew, the Treasurer of the City of Milwaukee, in said State, to me known to be the person who executed the foregoing instrument, and acknowledged that he executed the same as such Treasurer, and as the act and deed of the said City of Milwaukee and State of Wisconsin.

Recorded Oct. 7, 1927)
At 4:30 o'clock P. M.) #1559389
Phillip C. Westfahl,)
Register.

Imp. Notary Seal

John F. Reiff, Notary Public,
Milwaukee County, Wis.
My commission expires April 29, 1928.

COMMISSIONERS OF PUBLIC LANDS TO CITY OF MILWAUKEE
PATENT

THE STATE OF WISCONSIN

Swamp Land Series No. 46442

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETING:-

WHEREAS, By an act of the Legislature under Chapter 307, Laws of 1921, approved June 2, 1921, entitled "An Act to grant to the city of Milwaukee a certain portion of submerged land lying along and adjacent to the shore of Lake Michigan, on the eastern frontage of the city of Milwaukee, northeasterly from the eastern line of Section 21, to the north-easterly line of section 15, in the 18th ward of the city of Milwaukee, for public park and boulevard purposes" the lands herein described were ceded, granted, quit-claimed and conveyed to the city of Milwaukee, and

WHEREAS, By said act the Commissioners of the Public Lands are authorized, empowered and directed to execute and deliver to the city of Milwaukee a patent for the following submerged land as described in said act, to-wit:-

All the right, title and interest of the state of Wisconsin in and to the following land along and adjacent to the shore of Lake Michigan, and partly submerged, constituting the bed of Lake Michigan, being on the southern and eastern frontage, in the eighteenth ward of the city of Milwaukee, described as follows, to-wit: A strip of land fifteen hundred feet in width, having for its westerly boundary the extended center line of lot fifteen, in block nine, of Glidden and Lockwood's addition, in the eighteenth ward of the city of Milwaukee, and lying southerly, southeasterly and easterly of a line commencing at a point in the said center line of said lot fifteen, four hundred feet south of the north line of said lot, running thence northeasterly parallel to the southerly line of LaFayette place, until the same intersects the low water mark; thence along the present low water mark of the shore of Lake Michigan to the north line of section fifteen, extended to the shore of Lake Michigan in the eighteenth ward of the city of Milwaukee, are hereby granted in fee to the said city of Milwaukee to be held and used by said city as a part of its system of public parks and boulevards:

NOW KNOW YE, That the State of Wisconsin, in consideration of the premises, and in conformity with law in such case made and provided, has quit-claimed, ceded, granted and conveyed, and by these presents does quit-claim, cede, grant and convey, unto the said city of

Milwaukee, and to its successors and assigns, the said tract of land above described, according to the conditions outlined in Chapter 307, Laws of 1921.

TO HAVE AND TO HOLD THE SAME, together with all the RIGHT, PRIVILEGES, IMMUNITIES and APPURTENANCES of whatsoever nature thereunto belonging, being all the right, title and interest of the State of Wisconsin thereto and nothing more.

IN TESTIMONY WHEREOF, We, Theodore Dammann, Secretary of State, Solomon Levitan, State Treasurer and John W. Reynolds, Attorney General, Commissioners of the Public Lands of the State of Wisconsin, have caused these Letters to be made patent and our Official Seal to be hereunto affixed.

GIVEN UNDER OUR HANDS, at the Capitol, in the City of Madison, this 19th day of September in the year of our Lord, one thousand nine hundred and twenty seven.

Recorded Sept. 28, 1927 (	Imp.	Theodore Dammann	Secretary of State
at 2:45 o'clock P. M.)#1556663	Official	Solomon Levitan	State Treasurer
Phillip C. Westfahl)	Seal	John W. Reynolds	Attorney General
Register		Commissioners of the Public Lands.	

AFFIDAVIT OF BEN BERLOWITZ

AFFIDAVIT.

STATE OF WISCONSIN)
MILWAUKEE COUNTY) SS.

Ben Berlowitz being first duly sworn on oath deposes and says that he entered into a contract for the purchase of real estate known and described as follows:

the north Sixty-two (62) feet of Lot Sixteen (16) and the north Sixty-two (62) feet of the west Fifteen (15) feet of Lot Seventeen in Block One Hundred Ninety-six (196), in in Geo. Smith's Subdivision of the North Fourteen and Four Hundred and Fifty-nine Thousandths (14.459) acres of the East Thirty-eight (38) acres of the North East Quarter (N.E.1/4) of Section numbered Thirty (30), in Township numbered Seven (7) North, of Range numbered Twenty-two (22) East, in the Second Ward of the City of Milwaukee,

that he entered in to said contract on the Second Day of August, 1927, as Purchaser of the above described property from Clara Torney for herself and by Amalia Torney by her Attorney in Fact Clara Torney, that the original contract is hereby annexed and marked exibit numbered One (1) for identification, that at the time of making the said contract he gave to said Clara Torney for herself and for Amalia Torney the Sum of One Hundred ($100.00) Dollars as earnest money, that this affidavit is for the purpose of making said contract a matter of public record and for giving notice to whom may be interested of the sale of the above described premises .

Ben Berlowitz (SEAL)

STATE OF WISCONSIN)
MILWAUKEE COUNTY) —

Subscribed and sworn to before me this Twenty-eighth day of September 1927, by Ben Berlowitz to me known to be the person who executed the foregoing instrument and acknowledged the same.

Imp. James Buchbinder Notary Public.
Notary Milwaukee County, Wisconsin
Seal My commission expires November 30th, 1927.

EXIBIT NUMBERED ONE. === 2, 1927.

Received of Ben Berlowitz the sum of One Hundred ($100.00) dollars as part purchase price on the following described property: The north 62 feet of Lots 16 and and the west 15 feet of the north 62 feet of lot 17 in Block (196) Geo. Smiths Subdivision of the City of Milwaukee, also known and described as the south east corner of 13 th. Street and Juneau Ave; Milwaukee, Wisconsin. Being seventy or more feet on Juneau Ave; and sixty or more feet on 13th street.

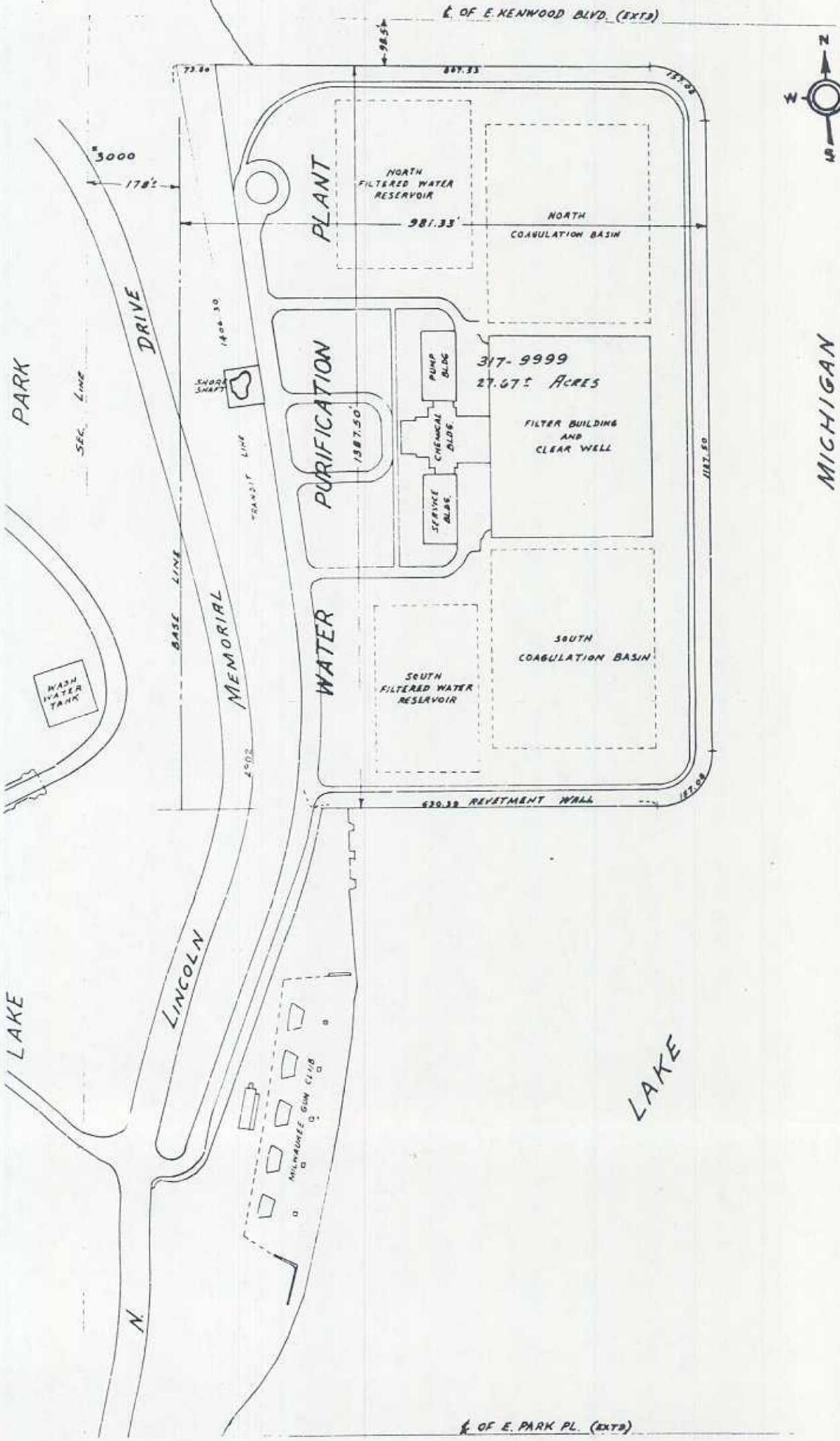
The total purchase price to be Thirty-Seven Hundred and Fifty ($3750) dollars payable as follows: The balance of Thirty-Six and Fifty ($3650) dollars to be paid on or before ninety days, at which time the undersigned agrees to convey the premises free and clear of all incumbrance by Warranty Deed, Twenty-Four Hundred ($2400) in cash at the time of the closing of the deal and the balance of Twelve Hundred and Fifty ($1250) by the undersigned taking a mortgage on said premises payable on or before Five Years with interest at the rate of Five Percent 5% payable semi-annually.

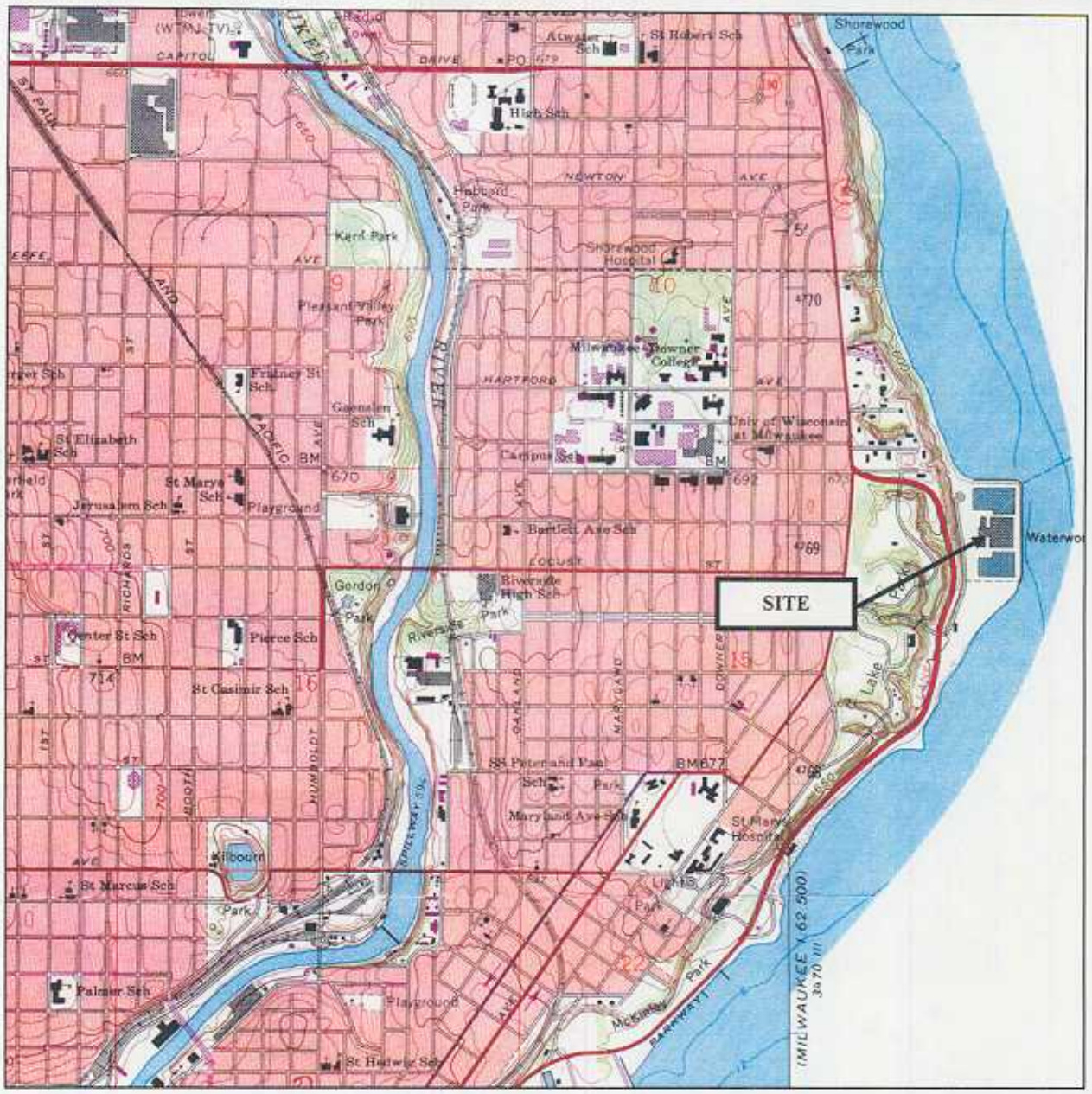
The undersigned herein covenants, promises and agrees to furnish an abstract of title from government time brought down to date showing good and marketable title and showing the

N.W. 14-7-22

317 LANDS

317-





Source: USGS Milwaukee, Wisconsin (1958; photorevised 1971) 7.5 Minute Series (topographic) Quadrangle Map

Scale: 1:24,000 (1"=2000')

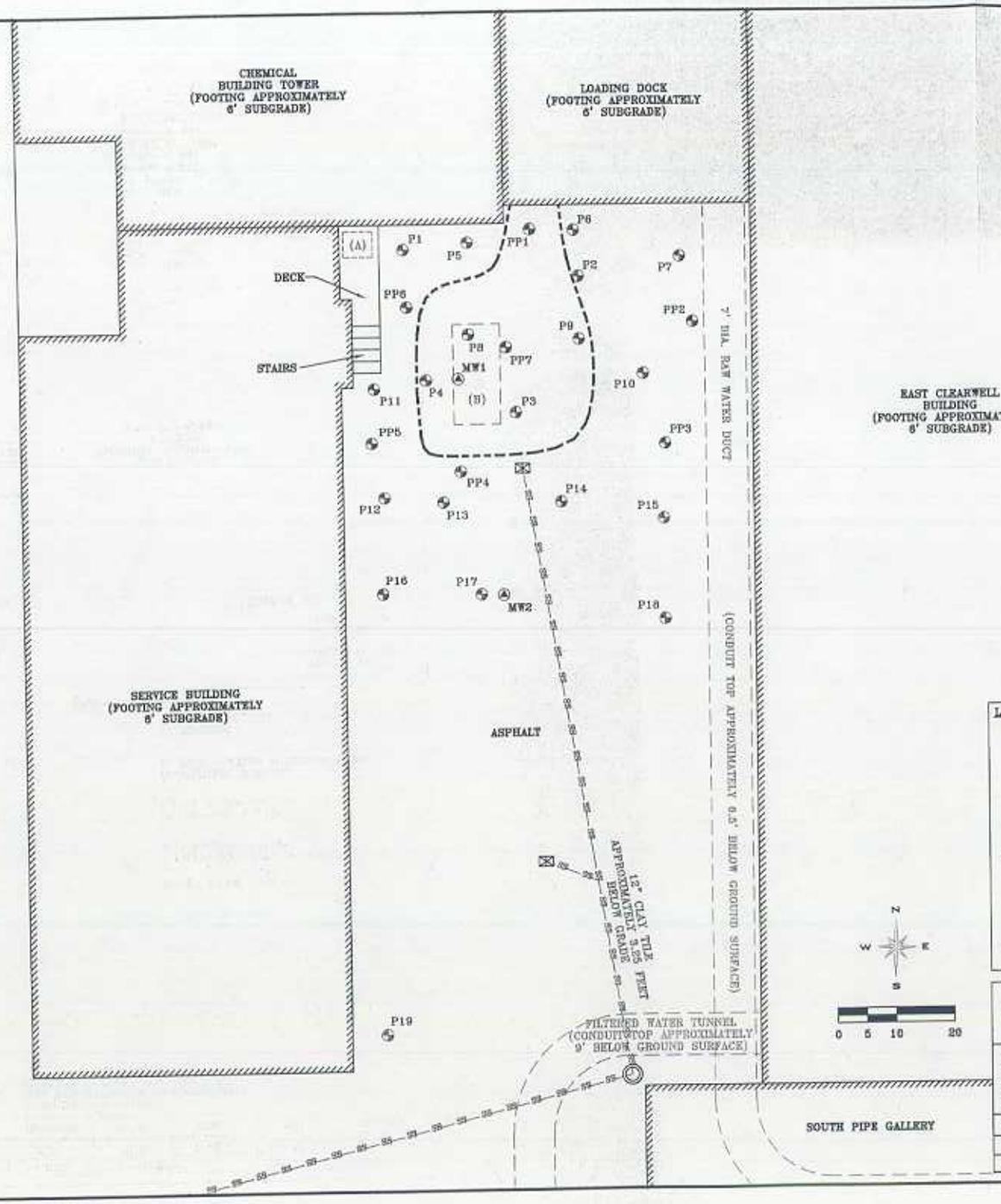
Contour Interval: 10 Feet

N
W E
S

Figure 1
Site Location

Linnwood Purification Plant
3000 N. Lincoln Memorial Drive
Milwaukee, Wisconsin
Project No. 1E-9508032

GILES
ENGINEERING ASSOCIATES, INC.



UST KEY:

(A)	FORMER 1,000 GALLON UST
(B)	FORMER 10,000 GALLON UST

LEGEND:

MW1	SI GROUNDWATER MONITORING WELL (COMPLETED 5/8/97)
PP1	PHASE II ESA GEOPROBE BORING (COMPLETED 3/8/96)
P1	SI GEOPROBE BORING (COMPLETED 11/16/99 AND 9/11/02)
	STORM SEWER LINE
	CATCH BASIN
	MANHOLE
	UST CLOSURE ASSESSMENT EXCAVATION LIMITS

GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON DRIVE, SUITE A1
WAUKESHA, WI, 53186 (262)-544-0118

FIGURE 2
SITE FEATURES AND BORING LOCATION MAP
LINNWOOD PURIFICATION PLANT
3000 NORTH LINCOLN MEMORIAL DRIVE
MILWAUKEE, WISCONSIN

DESIGNED	DRAWN	APPROVED	SCALE	DATE
ATE	JSZ	X	1"=20'	04-24-04
PROJECT NO.: 1E-9508032			CAD No. E508032D	

Table 4
Groundwater Sample Analytical Results (PAHs)
Linnwood Water Treatment Plant
3000 North Lincoln Drive
Milwaukee, Wisconsin
Project Number 1E-9608032

	WAC NR 140 PAL	WAC NR 140 ES	Sample Location					
			MW1			MW2		
Date Sampled			8/26/1997	10/27/1999	6/5/2000	8/26/1997	10/27/1999	6/5/2000
Detected PAHs (ug/l)								
1-Methylnaphthalene	NS	NS	27	<3.6	<3.6	<1.7	<3.6	<3.6
2-Methylnaphthalene	NS	NS	<1.7	<3.2	8.8 J	<1.7	<3.2	<3.2
Acenaphthene	NS	NS	50	11	<3.0	3.3 J	<3.0	<3.0
Acenaphthylene	NS	NS	<1.8	<4.6	<4.6	<1.8	<4.6	<4.6
Anthracene	600	3,000	1.1	0.4	2.0	0.3 J	<0.30	<0.30
Benzo (a) anthracene	NS	NS	0.2	<0.04	0.20	0.4	<0.04	<0.04
Benzo (a) pyrene	0.02	0.2	0.3	0.20	0.26	0.5	<0.04	<0.04
Benzo (b) fluoranthene	0.02	0.2	0.2	<0.07	<0.07	0.4	<0.07	<0.07
Benzo (g,h,i) perylene	NS	NS	0.1 J	<0.07	0.50	0.2	<0.07	<0.07
Benzo (k) fluoranthene	NS	NS	0.09	0.06	0.08	0.2	<0.01	<0.01
Chrysene	0.02	0.2	<0.3	<0.50	<0.50	<0.3	<0.50	<0.50
Dibenzo (a,h) anthracene	NS	NS	0.03 J	0.04 J	0.09 J	<0.02	<0.03	<0.03
Fluoranthrene	80	400	4.0	2.9 J	4.9	2.4	<1.2	<1.2
Fluorene	80	400	9.2	2.2 J	4.2	0.7	<0.80	<0.80
Indeno (1,2,3-cd) pyrene	NS	NS	0.7 J	<0.20	<0.20	<0.3	<0.20	<0.20
Napthalene	8	40	(31)	<3.1	<3.1	<1.8	<3.1	<3.1
Phenanthrene	NS	NS	8.0	<0.30	0.57 J	1.6	<0.30	<0.30
Pyrene	50	250	3.4	2.1	2.9	2.3	<0.60	<0.60

Notes:

WAC: Wisconsin Administrative Code

NA: Not Analyzed

NR: Natural Resources Chapter of the WAC

NS: No Established Standard

mg/l: Milligrams per liter; equivalent to parts per million (ppm)

ug/l: Micrograms per liter; equivalent to parts per billion (ppb)

J: The reported concentration for this analyte is an estimated value. The reported concentration is above the method detection limit, but below the limit of quantification.

Results indicated in green/parenthesis exceed the WAC NR 140.10 Table 1 Public Health Groundwater Quality Standards - Preventive Action Limit

Results indicated in red/underline exceed the WAC NR 140.10 Table 1 Public Health Groundwater Quality Standards - Enforcement Standard

Results indicated in brown/parenthesis exceed the sugggested WDNR Soil Cleanup Levels for PAHs Interim Guidance Industrial Direct Contact Pathway

Table 5
Groundwater Sample Analytical Results (VOCs and PVOCs)
Linnwood water Treatment Plant
Milwaukee, Wisconsin
Project Number 1E-9508032

	WAC NR 140 PAL	WAC NR 140 ES	Sample Location					
			PP1	PP3	MW1		MW2	
Date Sampled			10/10/1995	10/10/1995	8/26/1997	10/27/1999	8/26/1997	10/27/1999
Detected VOCs/PVOCs (ug/l)								
Ethylbenzene		700	<0.36	<0.25	<0.47	<0.66	<0.47	1.5 J
Isopropylbenzene	NS	NS	NA	NA	1 J	NA	0.81 J	NA
Methyl tert-butyl ether (MTBE)	12	60	NA	<2.6	3	<0.35	6.7	<0.35
Naphthalene	8	40	NA	NA	4.8	NA*	1.7 J	NA*
1,2,4-Trimethylbenzene	96	480	NA	<0.45	<0.65	<0.66	2.2	<0.66
Diesel Range Organics								
DRO ug/l	NS	NS	NA	0.17	2,500	NA	510	NA

Notes:

WAC: Wisconsin Administrative Code

NA: Not Analyzed

NR: Natural Resources Chapter of the WAC

NS: No Established Standard

mg/L: Milligrams per liter; equivalent to parts per million (ppm)

ug/l: Micrograms per liter; equivalent to parts per billion (ppb)

J: The reported concentration for this analyte is an estimated value. The reported concentration is above the method detection limit, but below the limit of quantification.

*: The naphthalene results presented i Table 4 are derived from EPA Method 8310 for PAH compounds and are considered mre accurate/reliable than EPA method 8260 for VOCs.

Results indicated in green/parenthesis exceed the WAC NR 140.10 Table 1 Public Health Groundwater Quality Standards - Preventive Action Limit

Results indicated in red/underline exceed the WAC NR 140.10 Table 1 Public Health Groundwater Quality Standards - Enforcement Standard

Results indicated in brown/parenthesis exceed the sugggested WDNR Soil Cleanup Levels for PAHs Interim Guidance Industrial Direct Contact Pathway

Table 3
Soil Sample Analytical Results (VOCs)
Linnwood Water Treatment Plant
3000 North Lincoln Memorial Drive
Milwaukee, Wisconsin
Project Number 1E-9508032

Sample Locations	Sample Depth (feet)	Sample Date	PID	Methyl-tert butyl ether	Naphthalene	1,2,4-Tri methylbenzen	1,3,5-Tri methylbenzen	Xylenes
PP1	10 - 12' bgs	10/10/1995	10	NA	NA	NA	NA	NA
	16 - 18' bgs	10/10/1995	BDL	<17	NA	<12	<25	<25
PP2	8 - 10' bgs	10/10/1995	BDL	<19	NA	<14	<28	<28
PP3	10 - 12' bgs	10/10/1995	BDL	<19	NA	<14	<29	<29
PP4	6 - 8' bgs	10/10/1995	BDL	<0.94	NA	<0.61	<0.60	<3.2
PP5	8 - 10' bgs	10/10/1995	5	<18	NA	1,800	<27	480
	12 - 14' bgs	10/10/1995	BDL	<0.97	NA	<0.64	<0.62	<3.3
PP6	4 - 6' bgs	10/10/1995	5	<18	NA	<13	<27	<27
	6 - 8'bgs	10/10/1995	5	NA	NA	NA	NA	NA
	12 - 14' bgs	10/10/1995	BDL	<0.96	NA	7.4	<0.62	<3.3
P1	4' bgs	11/16/1999	BDL	<25	NA	86	43	<58
P2	5' bgs	11/16/1999	BDL	<25	NA	<25	<25	<58
P3	3.5' bgs	11/16/1999	BDL	<25	NA	<25	<25	<58
P4	4' bgs	11/16/1999	BDL	<25	NA	<25	<25	<58
P5	2 - 4' bgs	9/11/2002	BDL	<21	<40	<16	<18	<41
P6	2 - 4' bgs	9/11/2002	BDL	<20	<39	<16	<18	<41
P7	2 - 4' bgs	9/11/2002	BDL	<22	726*	<17	<19	<44
P8	2 - 4' bgs	9/11/2002	BDL	<21	<40	<16	<18	<42
P9	2 - 4' bgs	9/11/2002	BDL	<21	66	<16	<18	<41
P10	2- 4' bgs	9/11/2002	22	<22	<43	<17	<20	<44
P11	2 - 4' bgs	9/11/2002	BDL	<26	<50	<20	<23	<52
P12	2 - 4 bgs	9/11/2002	BDL	<23	<44	<18	<20	<46
P13	2 - 4' bgs	9/11/2002	BDL	<23	<44	<18	<20	<46
P14	2 - 4' bgs	9/11/2002	BDL	<22	<43	<17	<20	<45
P15	2 - 4' bgs	9/11/2002	BDL	<23	<44	<17	<20	<45
P16	2 - 4' bgs	9/11/2002	BDL	<20	<39	<16	<18	<43
P17	2 - 4' bgs	9/11/2002	BDL	<22	<43	<17	<19	<44
P18	2 - 4' bgs	9/11/2002	BDL	<23	<44	<17	<20	<45
P19	2 - 4' bgs	9/11/2002	BDL	<23	<44	<18	<20	<46
NR 720.09 Generic RCLs based on groundwater protection				NS	400	NS	NS	4,100
WAC 746 Table 1 Residual Petroleum Product in Soil Pores (Product Indicator)				NS	2,700	83,000	11,000	42,000

NOTES:

NOTE: All Measurements are in ug/kg unless otherwise noted.

NA: Not Analyzed
PID: Photoionization Detector
VOCs: Volatile Organic Compounds
BDL: Below Detection Limit
NS: No Established Standard
ug/kg: milligrams per kilogram; equivalent to parts per billion (ppb)
WAC: Wisconsin Administrative Code
bgs: below ground surface
RCL: Residual Contaminant Level

J: The reported concentration for this analyte is an estimated value. The reported concentration is above the method detection limit, but below the limit of quantification.

*: The naphthalene results presented in Table 2 (Soil Sample Analytical Results (PAHs)) are derived from EPA Method 8310 for PAH compounds and are considered more accurate/reliable than EPA Method 8260for VOCs.

Results indicated in red/underlined exceed the WDNR RCL established in NR 720.09.

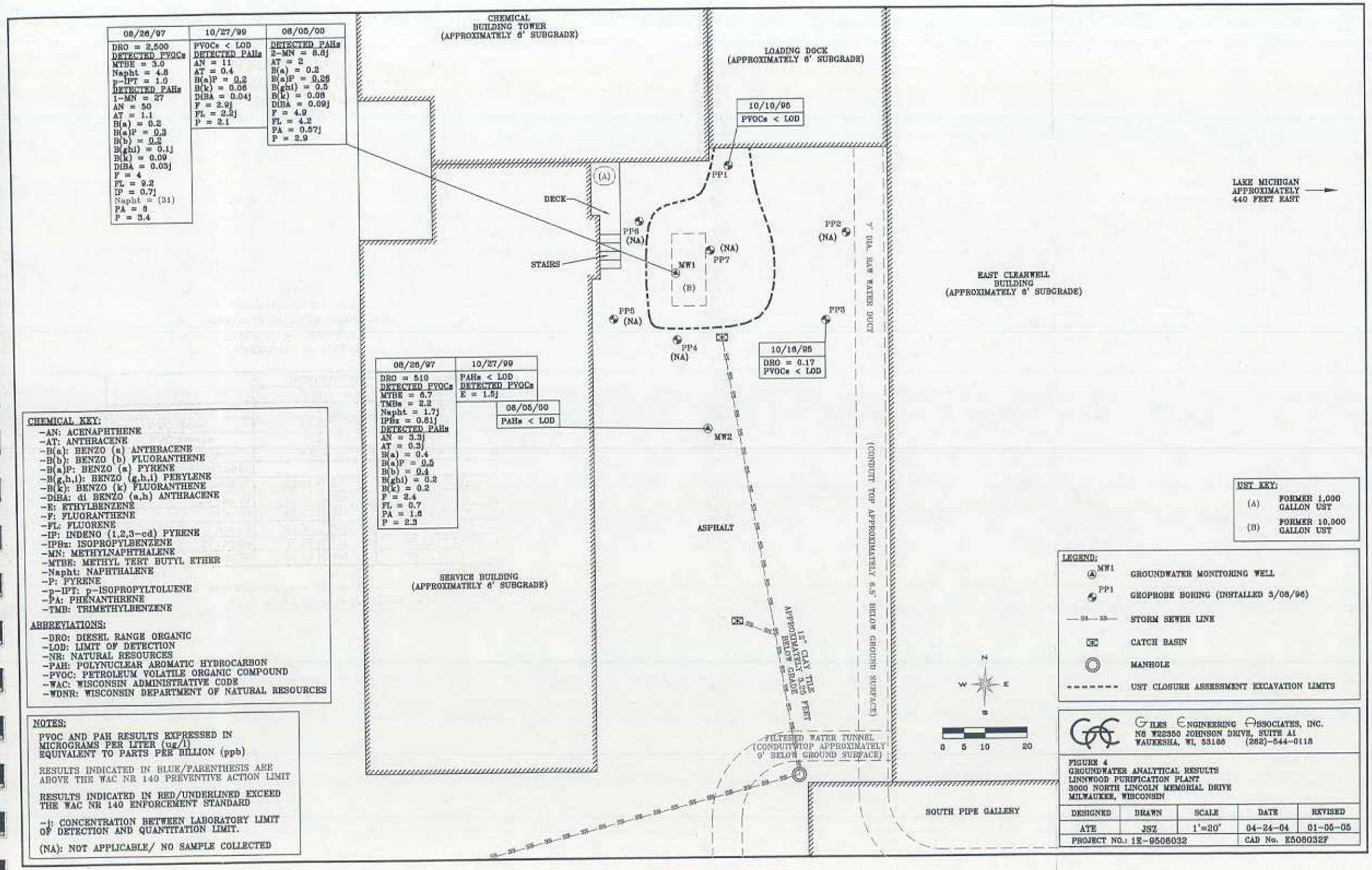
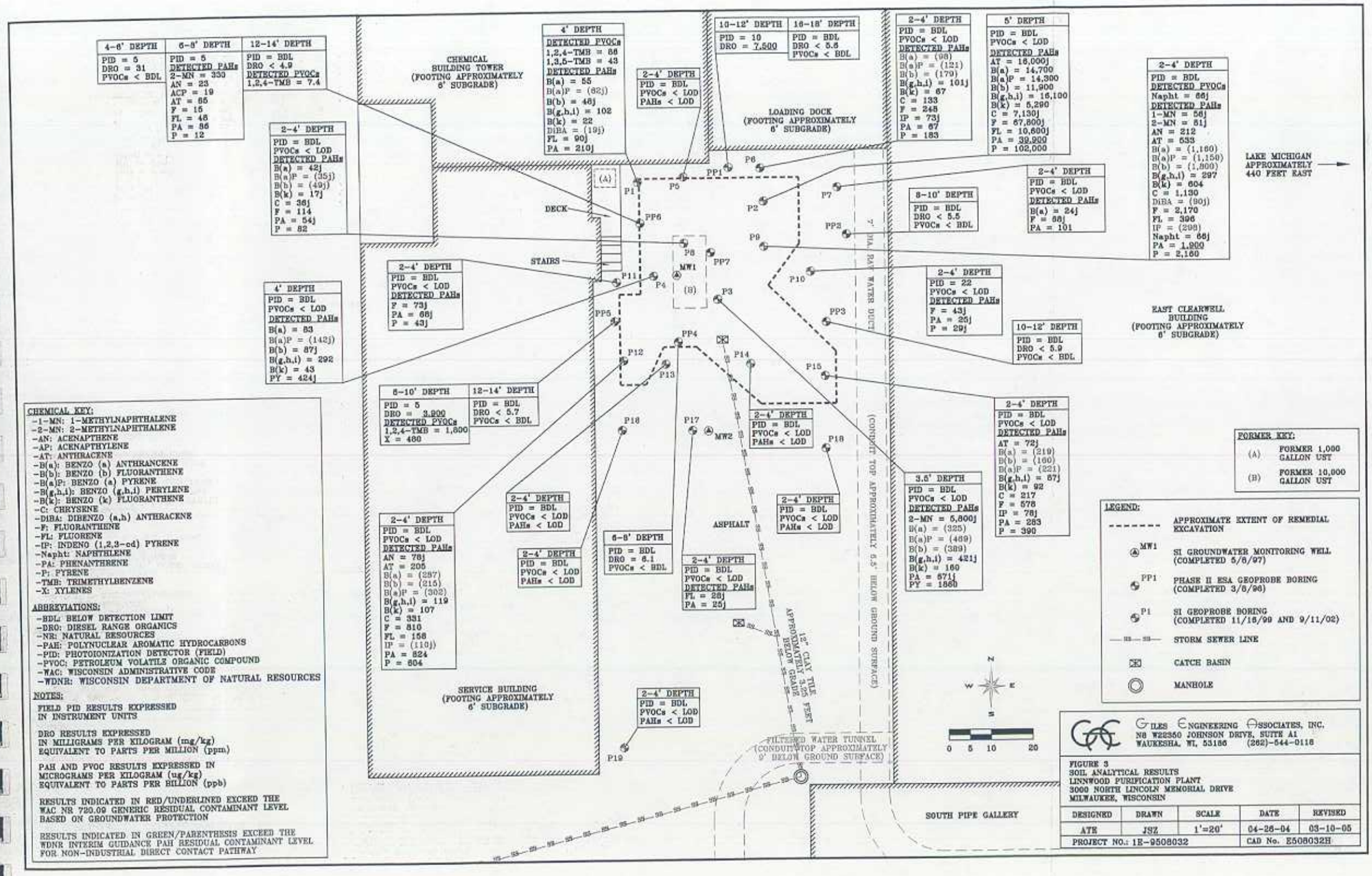

CHEMICAL BUILDING TOWER (APPROXIMATELY 6' SUBGRADE)
LOADING DOCK (APPROXIMATELY 6' SUBGRADE)
LAKE MICHIGAN APPROXIMATELY 440 FEET EAST
EAST CLEARWELL BUILDING (APPROXIMATELY 6' SUBGRADE)
7' DIA. RAW WATER DUCT
(CONDUIT TOP APPROXIMATELY 6.5' BELOW GROUND SURFACE)
SERVICE BUILDING (APPROXIMATELY 6' SUBGRADE)
ASPHALT
12" CLAY TILE APPROXIMATELY 3.25 FEET BELOW GRADE
FILTERED WATER TUNNEL (CONDUIT TOP APPROXIMATELY 9' BELOW GROUND SURFACE)
SOUTH PIPE GALLERY
DECK
STAIRS
(A)
(B)
MW1
MW2
PP1
PP2 (NA)
PP3
PP4 (NA)
PP5 (NA)
PP6 (NA)
PP7 (NA)
08/26/97
DRO = 2,500
DETECTED PVOCs
MTBE = 3.0
Napht = 4.8
p-IPT = 1.0
DETECTED PAHs
1-MN = 27
AN = 50
AT = 1.1
B(a) = 0.2
B(a)P = 0.3
B(b) = 0.2
B(ghi) = 0.1j
B(k) = 0.09
DiBA = 0.03j
F = 4
FL = 9.2
IP = 0.7j
Napht = (31)
PA = 8
P = 3.4
10/27/99
PVOCs < LOD
DETECTED PAHs
AN = 11
AT = 0.4
B(a)P = 0.2
B(k) = 0.06
DiBA = 0.04j
F = 2.9j
FL = 2.2j
P = 2.1
08/05/00
DETECTED PAHs
2-MN = 8.8j
AT = 2
B(a) = 0.2
B(a)P = 0.26
B(ghi) = 0.5
B(k) = 0.08
DiBA = 0.09j
F = 4.9
FL = 4.2
PA = 0.57j
P = 2.9
10/10/96
PVOCs < LOD
10/16/96
DRO = 0.17
PVOCs < LOD
08/26/97
DRO = 510
DETECTED PVOCs
MTBE = 6.7
TMBs = 2.2
Napht = 1.7j
IPBz = 0.61j
DETECTED PAHs
AN = 3.3j
AT = 0.3j
B(a) = 0.4
B(a)P = 0.5
B(b) = 0.4
B(ghi) = 0.2
B(k) = 0.2
F = 2.4
FL = 0.7
PA = 1.6
P = 2.3
10/27/99
PAHs < LOD
DETECTED PVOCs
E = 1.5j
08/05/00
PAHs < LOD
CHEMICAL KEY:
-AN: ACENAPHTHENE
-AT: ANTHRACENE
-B(a): BENZO (a) ANTHRACENE
-B(b): BENZO (b) FLUORANTHENE
-B(a)P: BENZO (a) PYRENE
-B(g,h,i): BENZO (g,h,i) PERYLENE
-B(k): BENZO (k) FLUORANTHENE
-DiBA: di BENZO (a,h) ANTHRACENE
-E: ETHYLBENZENE
-F: FLUORANTHENE
-FL: FLUORENE
-IP: INDENO (1,2,3-cd) PYRENE
-IPBz: ISOPROPYLBENZENE
-MN: METHYLNAPHTHALENE
-MTBE: METHYL TERT BUTYL ETHER
-Napht: NAPHTHALENE
-P: PYRENE
-p-IPT: p-ISOPROPYLTOLUENE
-PA: PHENANTHRENE
-TMB: TRIMETHYLBENZENE
ABBREVIATIONS:
-DRO: DIESEL RANGE ORGANIC
-LOD: LIMIT OF DETECTION
-NR: NATURAL RESOURCES
-PAH: POLYNUCLEAR AROMATIC HYDROCARBON
-PVOC: PETROLEUM VOLATILE ORGANIC COMPOUND
-WAC: WISCONSIN ADMINISTRATIVE CODE
-WDNR: WISCONSIN DEPARTMENT OF NATURAL RESOURCES
NOTES:
PVOC AND PAH RESULTS EXPRESSED IN MICROGRAMS PER LITER (ug/l) EQUIVALENT TO PARTS PER BILLION (ppb)
RESULTS INDICATED IN BLUE/PARENTHESIS ARE ABOVE THE WAC NR 140 PREVENTIVE ACTION LIMIT
RESULTS INDICATED IN RED/UNDERLINED EXCEED THE WAC NR 140 ENFORCEMENT STANDARD
-j: CONCENTRATION BETWEEN LABORATORY LIMIT OF DETECTION AND QUANTITATION LIMIT.
(NA): NOT APPLICABLE/ NO SAMPLE COLLECTED
UST KEY:
(A) FORMER 1,000 GALLON UST
(B) FORMER 10,000 GALLON UST
LEGEND:
MW1 GROUNDWATER MONITORING WELL
PP1 GEOPROBE BORING (INSTALLED 3/08/96)
STORM SEWER LINE
CATCH BASIN
MANHOLE
UST CLOSURE ASSESSMENT EXCAVATION LIMITS
N
W
E
S
0 5 10 20
GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON DRIVE, SUITE A1
WAUKESHA, WI, 53186 (262)-544-0118
FIGURE 4
GROUNDWATER ANALYTICAL RESULTS
LINNWOOD PURIFICATION PLANT
3000 NORTH LINCOLN MEMORIAL DRIVE
MILWAUKEE, WISCONSIN
DESIGNED ATE
DRAWN JSZ
SCALE 1"=20'
DATE 04-24-04
REVISED 01-05-05
PROJECT NO.: 1E-9508032
CAD No. E5080327

Table 1
Groundwater Elevations
3000 North Lincoln Memorial Drive
Milwaukee, Wisconsin
Project No. 1E-9508032

Table 1
Groundwater Elevations
3000 North Lincoln Memorial Drive
Milwaukee, Wisconsin
Project No. 1E-9508032

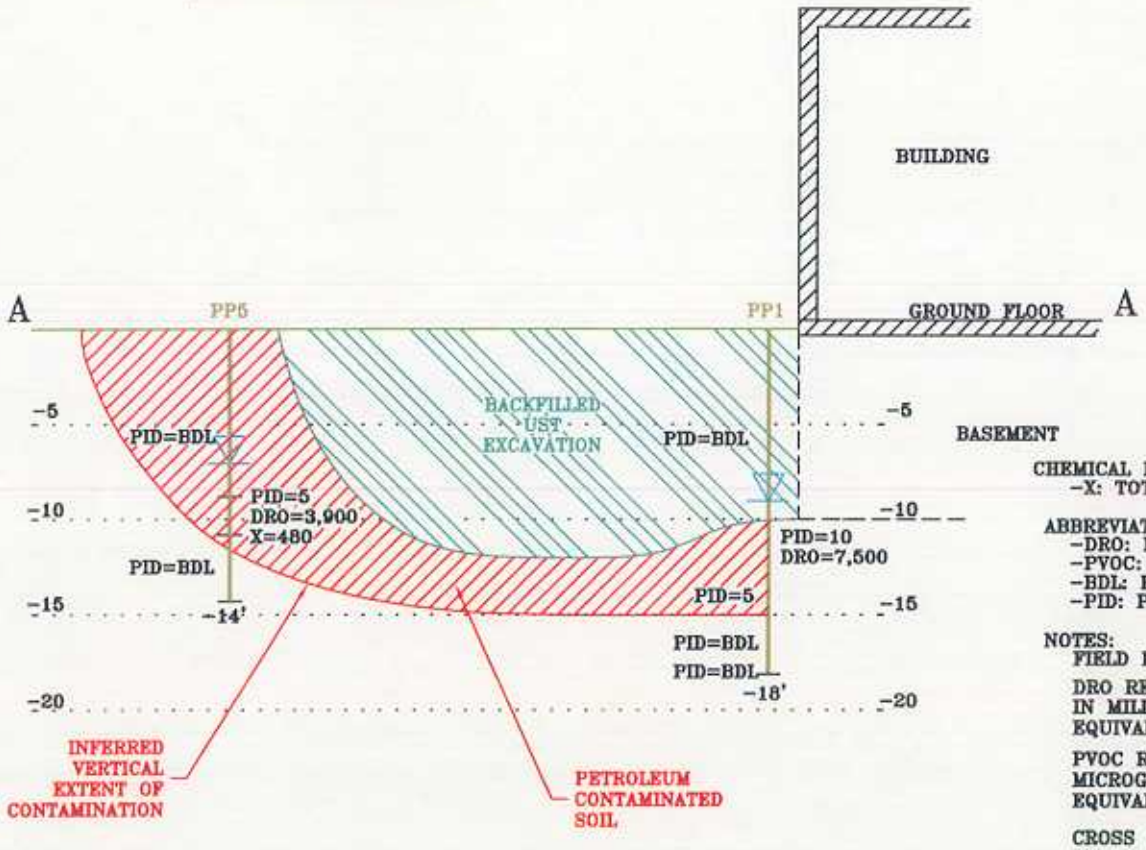
	Groundwater Monitoring Wells	
	MW1	MW2
Ground Elevation	99.24	99.47
Top of PVC Riser	98.92	99.05
Top of PVC Screen	94.24	94.47
Bottom of PVC Screen	84.24	84.47
Groundwater Elevations		
20-Aug-97	93.01 (5.91)	92.03 (7.02)
26-Aug-97	93.04 (5.88)	92.11 (6.94)
1-Oct-97	93.71 (5.21)	92.18 (6.87)
1-Jan-98	91.36 (7.56)	86.25 (12.80)
27-Oct-99	92.78 (6.14)	91.52 (7.53)
5-Jun-00	93.43 (5.49)	92.71 (6.34)

Benchmark: Southwest corner of bottom loading dock stair
( ): Depth to groundwater below the ground surface


4-6' DEPTH
PID = 5
DRO = 31
PVOCs < BDL
6-8' DEPTH
PID = 5
DETECTED PAHs
2-MN = 330
AN = 23
ACP = 19
AT = 65
F = 15
FL = 46
PA = 86
P = 12
12-14' DEPTH
PID = BDL
DRO < 4.9
DETECTED PVOCs
1,2,4-TMB = 7.4
2-4' DEPTH
PID = BDL
PVOCs < LOD
DETECTED PAHs
B(a) = 42j
B(a)P = (35j)
B(b) = (49j)
B(k) = 17j
C = 36j
F = 114
PA = 54j
P = 82
4' DEPTH
PID = BDL
PVOCs < LOD
DETECTED PAHs
B(a) = 83
B(a)P = (142j)
B(b) = 87j
B(g,h,i) = 292
B(k) = 43
PY = 424j
2-4' DEPTH
PID = BDL
PVOCs < LOD
DETECTED PAHs
F = 73j
PA = 66j
P = 43j
6-10' DEPTH
PID = 5
DRO = 3,900
DETECTED PVOCs
1,2,4-TMB = 1,600
X = 480
12-14' DEPTH
PID = BDL
DRO < 5.7
PVOCs < BDL
2-4' DEPTH
PID = BDL
PVOCs < LOD
DETECTED PAHs
AN = 76j
AT = 205
B(a) = (297)
B(b) = (215)
B(a)P = (302)
B(g,h,i) = 119
B(k) = 107
C = 331
F = 810
FL = 158
IP = (110j)
PA = 824
P = 604
2-4' DEPTH
PID = BDL
PVOCs < LOD
PAHs < LOD
6-8' DEPTH
PID = BDL
DRO = 6.1
PVOCs < BDL
2-4' DEPTH
PID = BDL
PVOCs < LOD
PAHs < LOD
2-4' DEPTH
PID = BDL
PVOCs < LOD
DETECTED PAHs
FL = 26j
PA = 25j
2-4' DEPTH
PID = BDL
PVOCs < LOD
PAHs < LOD
2-4' DEPTH
PID = BDL
PVOCs < LOD
PAHs < LOD
2-4' DEPTH
PID = BDL
PVOCs < LOD
PAHs < LOD
4' DEPTH
DETECTED PVOCs
1,2,4-TMB = 56
1,3,5-TMB = 43
DETECTED PAHs
B(a) = 55
B(a)P = (82j)
B(b) = 46j
B(g,h,i) = 102
B(k) = 22
DiBA = (19j)
FL = 90j
PA = 210j
2-4' DEPTH
PID = BDL
PVOCs < LOD
PAHs < LOD
10-12' DEPTH
PID = 10
DRO = 7,500
16-18' DEPTH
PID = BDL
DRO < 5.5
PVOCs < BDL
2-4' DEPTH
PID = BDL
PVOCs < LOD
DETECTED PAHs
B(a) = (98)
B(a)P = (121)
B(b) = (179)
B(g,h,i) = 101j
B(k) = 67
C = 133
F = 245
IP = 73j
PA = 67
P = 183
5' DEPTH
PID = BDL
PVOCs < LOD
DETECTED PAHs
AT = 16,000j
B(a) = 14,700
B(a)P = 14,300
B(b) = 11,900
B(g,h,i) = 16,100
B(k) = 5,290
C = 7,130j
F = 67,800j
FL = 10,600j
PA = 39,900
P = 102,000
2-4' DEPTH
PID = BDL
DETECTED PVOCs
Napht = 56j
DETECTED PAHs
1-MN = 56j
2-MN = 51j
AN = 212
AT = 533
B(a) = (1,160)
B(a)P = (1,150)
B(b) = (1,800)
B(g,h,i) = 297
B(k) = 604
C = 1,130
DiBA = (90j)
F = 2,170
FL = 396
IP = (298)
Napht = 66j
PA = 1,900
P = 2,160
2-4' DEPTH
PID = BDL
PVOCs < LOD
DETECTED PAHs
B(a) = 24j
F = 58j
PA = 101
8-10' DEPTH
PID = BDL
DRO < 5.5
PVOCs < BDL
2-4' DEPTH
PID = 22
PVOCs < LOD
DETECTED PAHs
F = 43j
PA = 25j
P = 29j
10-12' DEPTH
PID = BDL
DRO < 5.9
PVOCs < BDL
2-4' DEPTH
PID = BDL
PVOCs < LOD
DETECTED PAHs
AT = 72j
B(a) = (219)
B(b) = (160)
B(a)P = (221)
B(g,h,i) = 57j
B(k) = 92
C = 217
F = 578
IP = 76j
PA = 263
P = 390
3.5' DEPTH
PID = BDL
PVOCs < LOD
DETECTED PAHs
2-MN = 5,800j
B(a) = (325)
B(a)P = (469)
B(b) = (389)
B(g,h,i) = 421j
B(k) = 160
PA = 571j
PY = 186b
CHEMICAL BUILDING TOWER
(FOOTING APPROXIMATELY 6' SUBGRADE)
LOADING DOCK
(FOOTING APPROXIMATELY 6' SUBGRADE)
EAST CLEARWELL BUILDING
(FOOTING APPROXIMATELY 6' SUBGRADE)
SERVICE BUILDING
(FOOTING APPROXIMATELY 6' SUBGRADE)
LAKE MICHIGAN APPROXIMATELY 440 FEET EAST
DECK
STAIRS
(A)
(B)
MW1
MW2
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
P13
P14
P15
P16
P17
P18
P19
PP1
PP2
PP3
PP4
PP5
PP6
PP7
7' DIA. RAW WATER DUCT
(CONDUIT TOP APPROXIMATELY 5.5' BELOW GROUND SURFACE)
ASPHALT
12" CLAY TILE APPROXIMATELY 3.25 FEET BELOW GRADE
FILTERED WATER TUNNEL
(CONDUIT TOP APPROXIMATELY 9' BELOW GROUND SURFACE)
SOUTH PIPE GALLERY
N
W
E
S
0 5 10 20
CHEMICAL KEY:
-1-MN: 1-METHYLNAPHTHALENE
-2-MN: 2-METHYLNAPHTHALENE
-AN: ACENAPTHENE
-AP: ACENAPTHYLENE
-AT: ANTHRACENE
-B(a): BENZO (a) ANTHRANCENE
-B(b): BENZO (b) FLUORANTHENE
-B(a)P: BENZO (a) PYRENE
-B(g,h,i): BENZO (g,h,i) PERYLENE
-B(k): BENZO (k) FLUORANTHENE
-C: CHRYSENE
-DiBA: DIBENZO (a,h) ANTHRACENE
-F: FLUORANTHENE
-FL: FLUORENE
-IP: INDENO (1,2,3-cd) PYRENE
-Napht: NAPHTHLENE
-PA: PHENANTHRENE
-P: PYRENE
-TMB: TRIMETHYLBENZENE
-X: XYLENES
ABBREVIATIONS:
-BDL: BELOW DETECTION LIMIT
-DRO: DIESEL RANGE ORGANICS
-NR: NATURAL RESOURCES
-PAH: POLYNUCLEAR AROMATIC HYDROCARBONS
-PID: PHOTOIONIZATION DETECTOR (FIELD)
-PVOC: PETROLEUM VOLATILE ORGANIC COMPOUND
-WAC: WISCONSIN ADMINISTRATIVE CODE
-WDNR: WISCONSIN DEPARTMENT OF NATURAL RESOURCES
NOTES:
FIELD PID RESULTS EXPRESSED IN INSTRUMENT UNITS
DRO RESULTS EXPRESSED IN MILLIGRAMS PER KILOGRAM (mg/kg) EQUIVALENT TO PARTS PER MILLION (ppm)
PAH AND PVOC RESULTS EXPRESSED IN MICROGRAMS PER KILOGRAM (ug/kg) EQUIVALENT TO PARTS PER BILLION (ppb)
RESULTS INDICATED IN RED/UNDERLINED EXCEED THE WAC NR 720.09 GENERIC RESIDUAL CONTAMINANT LEVEL BASED ON GROUNDWATER PROTECTION
RESULTS INDICATED IN GREEN/PARENTHESIS EXCEED THE WDNR INTERIM GUIDANCE PAH RESIDUAL CONTAMINANT LEVEL FOR NON-INDUSTRIAL DIRECT CONTACT PATHWAY
FORMER KEY:
(A) FORMER 1,000 GALLON UST
(B) FORMER 10,000 GALLON UST
LEGEND:
APPROXIMATE EXTENT OF REMEDIAL EXCAVATION
MW1 SI GROUNDWATER MONITORING WELL (COMPLETED 5/6/97)
PP1 PHASE II ESA GEOPROBE BORING (COMPLETED 3/6/96)
P1 SI GEOPROBE BORING (COMPLETED 11/16/99 AND 9/11/02)
STORM SEWER LINE
CATCH BASIN
MANHOLE
GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON DRIVE, SUITE A1
WAUKESHA, WI, 53186 (262)-544-0118
FIGURE 3
SOIL ANALYTICAL RESULTS
LINNWOOD PURIFICATION PLANT
3000 NORTH LINCOLN MEMORIAL DRIVE
MILWAUKEE, WISCONSIN
DESIGNED ATE
DRAWN JSZ
SCALE 1'=20'
DATE 04-26-04
REVISED 03-10-05
PROJECT NO.: 1E-9508032
CAD No. E508032H

CROSS SECTION A-A

SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=10'
(LOOKING NORTH NORTHWEST)



CHEMICAL KEY:
- X: TOTAL XYLENES

ABBREVIATIONS:
- DRO: DIESEL RANGE ORGANICS
- PVOC: PETROLEUM VOLATILE ORGANIC COMPOUNDS
- BDL: BELOW DETECTION LIMIT
- PID: PHOTOIONIZATION DETECTOR (FIELD)

NOTES:
FIELD PID RESULTS EXPRESSED IN HNU UNITS

DRO RESULTS EXPRESSED IN MILLIGRAMS PER KILOGRAM (mg/kg) EQUIVALENT TO PARTS PER MILLION (ppm)

PVOC RESULTS EXPRESSED IN MICROGRAMS PER KILOGRAM (ug/kg) EQUIVALENT TO PARTS PER BILLION (ppb)

CROSS SECTION LINE SHOWN ON FIGURE 2

0 10 20 40
SCALE IN FEET

LEGEND:
PP5 PROBE LOCATION
INDICATES SURFACE OF GROUNDWATER

GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON RD.; WAUKESHA, WI. 53186
(414)-544-0118

FIGURE 4
CROSS SECTION
LINNWOOD PURIFICATION PLANT
3000 NORTH LINCOLN MEMORIAL DRIVE
MILWAUKEE, WISCONSIN

DESIGNED	DRAWN	APPROVED	SCALE	DATE
PJL	SDP	X	SEE SCALES	2-13-96
PROJECT NO.: 1E-9508032		CAD No.: E5050325		

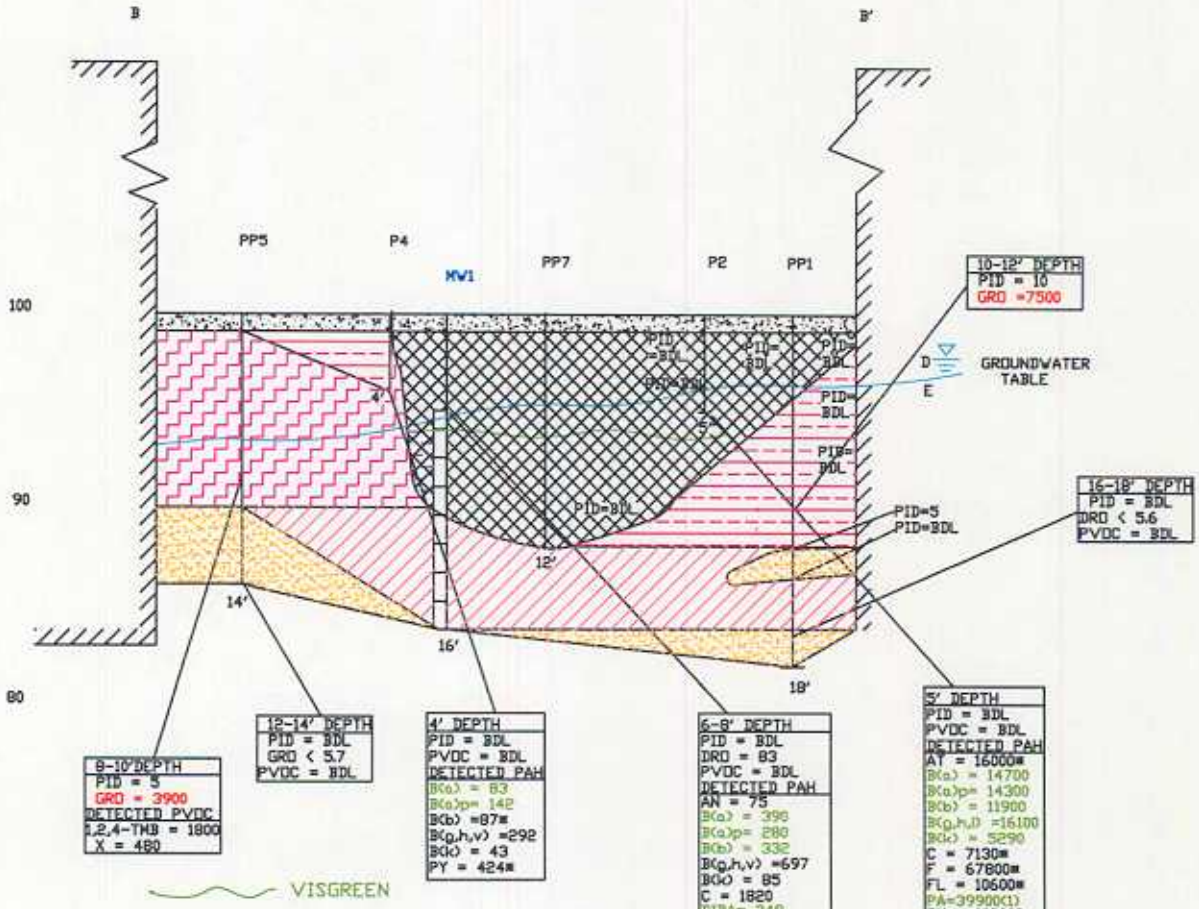
LEGEND:

- ASPHALT CONCERTE AND BASE COASE MATERIALS
- -CLAYEY FILL
- -SANDY FILL
- - SILTY CLAY
- - SILTY SAND
- - EXTENT OF UST EXCAVATION

CROSS SECTION B-B'

HORIZONTAL SCALE : 1"= 20'

VERTICAL SCALE : 1" = 10



ABBREVIATIONS:

- -PID: PHOTOIONZATION DETECTOR (FIELD)
- -DRO DIESEL RANGE ORGANICS
- -PAH POLYNUCLEAR AROMATIC HYDROCABONS

(1) RESULTS EXCEED RCLS FOR BOTH DIRECT CONTACT AND GROUNDWATER PATHWAY

NOTES:

- -PID EXPRESSED IN INSTRUMENT UNITS EQUIVALENT TO PPM
- -DRO EXPRESSED IN MILLIGRAM PER KILOGRAM, EQUIVALENT TO PPM
- -PAH EXPRESSED IN MICROGRAM PER KILOGRAM, EQUIVALENT TO PPb

RESULTS IN RED EXCEED NR720 GENERIC RCLS FOR GROUNDWATER PATHWAY

RESULTS IN GREEN EXCEED WDNR PAH GENERIC RCLS FOR DIRECT CINTACT

GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON RD.; WAUKESHA, WI, 53186
(414)-544-0118

FIGURE 6 CROSS SECTION B-B'
LINNWOOD PURIFICATION PLANT
3000 NORTH LINCOLN MEMORIAL DRIVE
MILWAUKEE, WISCONSIN

DESIGNED	DRAWN	APPROVED	SCALE	DATE
DOC	ALW	X	1"=20'	4/17/00
PROJECT NO.: 1E9508032			CAD No. E5080324B	

City of Milwaukee

Department of City Development

Housing Authority
Redevelopment Authority
City Plan Commission
Historic Preservation Commission
NIDC

Rocky Marcoux
Commissioner

Martha L. Brown
Deputy Commissioner

I, Elaine M. Miller, Special Deputy Commissioner of the Department of City Development, state that the City of Milwaukee is the owner of the Linnwood Water Purification Plant at 3000 North Lincoln Memorial Drive, Milwaukee, Wisconsin. The City acquired the property from the State of Wisconsin, Commission of Public Lands on September 19, 1927 and recorded with the Register of Deeds on September 28, 1927 on Volume 1220, Page 190, Document No. 1555663. The property is contaminated as identified in BRRTS No. 04-41-047858. The property is described on the attached document.

By: Elaine M. Miller

Elaine M. Miller
Special Deputy Commissioner
Department of City Development

Date: 8/8/05

809 North Broadway, Milwaukee, Wisconsin, Phone (414) 286-5900
Mailing Address: P.O. Box 324, Milwaukee, WI, 53201-0324, Web Site: www.mkedcd.org
T.D.D. Numbers: Rent Assistance 286-2921 and Community Services 286-3504