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May 5, 2021 Project #18687

Mr. Thomas Wentland and Mr. Lee Delcore
Wisconsin Department of Natural Resources
1155 Pilgrim Rd, PO Box 408
Plymouth, WI 53073-0408

RE: **Scope of Work for Supplemental Site Investigation- PZ-03 Area**
Former Moss-American Facility, 8716 N. Granville Rd., Milwaukee, WI
FID # 241378280

Dear Mr. Wentland and Mr. Delcore:

The Sigma Group, Inc. (Sigma) is pleased to present this Scope of Work for additional site investigation for the above-referenced property (hereinafter "the site"). This Scope of Work presents services and estimated costs to determine the degree and extent of soil and groundwater contamination identified through additional investigation performed in March 2021 in the vicinity of monitoring well PZ-03.

BACKGROUND

Remedial activities were completed in the 1990s through 2000s, and in 2017 – 2018. Post-remediation quarterly groundwater monitoring is being performed in fulfillment of the Scope of Work prepared by the Wisconsin Department of Natural Resources (WDNR) in August 2019 and the Work Plan prepared by Sigma in September 2019. Quarterly monitoring began in October 2019 and is scheduled to continue through the summer of 2021. Between 36 and 46 monitoring wells have been sampled each quarter for benzene, toluene, ethylbenzene, xylenes (BTEX), and polycyclic aromatic hydrocarbons (PAHs). The sampling network overlaid on a historic aerial photograph base map is shown in **Figure 1,** and without an aerial base map in **Figure 2.**

Review of the quarterly groundwater monitoring data indicate contaminant concentrations within most of the monitoring wells are less than the limits of detection or at relatively low levels (less than the NR 140 Enforcement Standards [ESs] or Preventive Action Limits [PALs]). However, concentrations of naphthalene within three monitoring wells (MW-33S, PZ-02, and PZ-03) have been fluctuating or at persistently high concentrations. Concentrations of naphthalene within monitoring well PZ-03 has been found to exceed the NR 140 ES by a factor of 40, indicating the presence of contaminant mass (free phase product) in the vicinity. Concentrations of naphthalene within monitoring wells MW-33S and PZ-02 have fluctuated and exceeded the NR 140 PAL and ES. It is important to note that naphthalene is a fingerprint constituent of creosote historically used at the site.

Due to the high concentrations of naphthalene, additional investigation was proposed in December 2020 and completed in March 2021. A total of 26 soil borings were advanced, 39 soil samples were submitted for laboratory analysis, ten monitoring wells were installed, and ten groundwater samples were submitted for laboratory analysis. Results are detailed in a separate report (*Summary Report of Additional Site Investigation*, prepared by Sigma, May 4, 2021), and summarized on the attached **Figures 3** and **4**.

Results of the investigation in the vicinity of monitoring wells MW-33S and PZ-02 indicate impacted groundwater is limited in extent and that no free product was observed. Naphthalene impacts within soil are limited to four locations at concentrations slightly higher than the NR 720 groundwater pathway RCL. The naphthalene impacts within groundwater were identified at concentrations greater than the NR 140 PAL and ES but not indicative of free product.

In contrast, results of the investigation in the vicinity of monitoring well PZ-03 indicate high concentrations of naphthalene in both soil and groundwater, and free product was observed. The highest concentration of naphthalene within soil was reported at 1230 mg/kg, or 50 times higher than the industrial direct contact RCL. The highest concentration of naphthalene within groundwater was reported at 4100 µg/L, or 40 times higher than the NR 140 ES. Naphthalene impacts were identified based on soil sample results and the observed presence of free product at depths ranging from 7.5 to 13 feet bgs, with the highest concentrations detected at 8 to 10 feet bgs.

The degree and extent of naphthalene impacts within the vicinity of monitoring well PZ-03 is well defined within soil in all directions except to the east-southeast, and is well defined within groundwater in all directions except to the east-southeast and to the north, as presented in **Figures 3** and **4**. Additional soil boring and monitoring well installation is required to define the extent of the free product to the east, and to determine whether naphthalene groundwater impacts extend to the north of monitoring well PZ-03. Due to the high concentrations of naphthalene identified in the vicinity of monitoring well PZ-03, remedial action is required to meet the conditions of the EPA Record of Decision (ROD). The additional investigation will facilitate the development of appropriate remedial action options.

SCOPE OF WORK

Sigma proposes to conduct the following site investigation activities to determine the degree and extent of naphthalene impacts (specifically free product) in the vicinity of monitoring well PZ-03.

Soil Boring Installation – Advance a total of eight direct-push soil borings with an ATV-mounted hydraulic Geoprobe® rig at the approximate location shown in **Figure 5**. Seven direct-push soil borings will be installed to the east of monitoring well PZ-03E, and one direct-push soil boring will be installed to the north of monitoring well PZ-03B. Each soil boring will be installed to a depth of 15 feet below ground surface (bgs) and continuously

sampled. Final locations of the soil borings will be field determined based on visible presence of free product.

Soil Sampling – Collect soil samples continuously to the termination depth of each boring, visually inspect each sample for the presence of free product or an oily sheen, log samples in general accordance with the Unified Soil Classification System, and screen samples in the field with a calibrated photoionization detector (PID) to determine if volatile organic vapors are present. Collect two samples per boring for laboratory analysis based on visual inspection and/or elevated PID readings. Submit soil samples for laboratory analysis of BTEX and PAHs. For QA/QC purposes, one methanol blank sample will be analyzed for BTEX. Additionally, six samples will be submitted for laboratory analysis of gasoline range organics (GRO), diesel range organics (DRO), and total petroleum hydrocarbons (TPH) to facilitate the evaluation of the remedial action options.

Monitoring Well Installation – Install three NR 141-compliant monitoring wells at select locations of completed direct-push soil borings. Two monitoring wells will be installed at select soil borings to the east of monitoring well PZ-03E, and one monitoring wells will be installed to the north of monitoring well PZ-03B. The specific soil borings selected for monitoring wells east of monitoring well PZ-03B will be based on field assessment of PID readings or visual evidence of free product or an oily sheen.

The monitoring wells will be installed by over drilling the selected soil borings with an ATV-mounted rotary drill rig and hollow stem augers. Each hollow stem auger soil boring will be drilled to a depth of 15 feet bgs. Each borehole will be completed as a NR 141-compliant groundwater monitoring well with a two-inch casing. The monitoring wells will be protected with stickup metal protective casings. The construction details of the monitoring wells will be documented on WDNR form 4400-113A.

Monitoring Well Development - Develop the three monitoring wells in accordance with NR 141 regulations to remove fine sediment from the bottom of the well casing and establish a hydraulic connection with the saturated soils surrounding the well screen. The well development activities will be documented on the prescribed WDNR form.

Groundwater Sampling – Groundwater sampling will be performed following existing project protocols. The three newly installed monitoring wells will be measured for in situ parameters, purged, allowed to equilibrate for 24 hours, and then sampled for BTEX and PAHs. For QA/QC purposes, one duplicate sample will be analyzed for BTEX and PAHs, one equipment blank and one trip blank will be analyzed for BTEX.

Groundwater elevations at representative monitoring wells on site will be measured to determine the groundwater flow direction across the site. The monitoring wells will be selected from both the existing (installed in 2019 or prior) network and the newly installed wells and will be measured on the same day.

Survey – The soil boring and monitoring well locations and elevations will be surveyed with a Trimble® R8 GPS unit for the preparation of environmental figures for project documentation and groundwater elevation assessment.

Investigative Waste Disposal – Soil and groundwater investigative waste will be drummed and staged on site for pick up by Veolia, Inc. under the existing project contract.

Data Evaluation and Reporting – Sigma will tabulate, compile, and evaluate the data from the additional site investigation to determine the degree and extent of naphthalene contamination (specifically free product) in the vicinity of monitoring well PZ-03. The results will be compiled in a report including a narrative of findings, data tables, figures, soil boring logs, monitoring well construction and development forms, soil boring abandonment forms, and laboratory analytical reports. The report will include remedial action options to address the residual naphthalene contamination associated with the free product.

ESTIMATED COSTS

The total estimated cost to complete the scope of work described above is detailed on **Table 1** and summarized as follows:

Soil boring and monitoring well installation (drilling subcontractor):	$ 5,112
Laboratory fees:	$ 3,350
Investigative Waste Disposal (Veolia):	$ 6,369
In-field engineering services (oversight, sampling etc.):	$ 12,020
Data evaluation and report preparation:	$ 11,160
Total	**$ 38,011**

The estimated costs for the soil boring and monitoring well installation (subcontractor drilling and in-field engineering services) assumes that the drilling work takes two days to complete barring any inclement weather conditions. The fee for laboratory analysis assumes a normal (two week) turn around time. The cost estimate includes one round of groundwater sampling from the newly installed wells. Sigma's services will be billed on a time and materials basis and will not exceed the recommended budget without prior justification and authorization from WDNR.

PROJECT SCHEDULE

Sigma is prepared to begin work as soon as authorization is received. Due to the site complexities, Sigma will attempt to schedule the drilling during dry weather, and anticipates scheduling drilling in May. Typical laboratory turn around time is 14 days, and Sigma anticipates delivery of the investigation summary and remedial action options report approximately 6 to 8 weeks following receipt of laboratory reports.

We appreciate the opportunity to assist you with this project. Please call us at (414) 643-4200 if you have any questions about this proposal.

Sincerely,

THE SIGMA GROUP, INC.

Andrea Lorenz, P.E., P.G.
Project Engineer

Mafizul Islam, P.E.
Senior Project Manager

Attachments:

Figure 1	Monitoring Well Location Map on 1967 Historical Aerial Photo
Figure 2	Monitoring Well Location Map
Figure 3	Soil Quality Map – PZ-03 Area
Figure 4	Groundwater Quality Map
Figure 5	Proposed Soil Boring/Monitoring Well Map
Table 1	Estimated Costs

LEGEND

- CURRENT RIVER CHANNEL
- FORMER RIVER CHANNEL
- INTACT SHEET PILE
- SHEET PILE CUT 2 FT MIN BGS
- MONITORING WELL - 2 IN. DIA.
- MONITORING WELL - 1.5 IN. DIA.

MW-5S
PZ-02
MW-7S-WR
MW-7S
MW-33S
MW-34SR
MW-32SR
MW-38S
MW-39S
MW-30S
PZ-03
TG4-1
TG4-2
TG4-3
TG1-3
TG1-2
PZ-10
MW-35S
TG1-1R
Little Menomonee River
FORMER RIVER CHANNEL
SETTLING PONDS
DRAINING TO RIVER
TG3-1
TG3-2
TG3-3
TG5-1
TG5-2
TG5-3
PZ-01
PZ-09R
TG2-3
TG2-2
TG6-1
TG6-2
TG6-3
MW-9S
PZ-04
MW-31SR
PZ-06
MW-37S
PZ-05
TREATING FACILITY BUILDINGS

N

0 100
SCALE

1967 AERIAL FROM MILWAUKEE COUNTY's LIO WEBSITE

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MONITORING WELL LOCATION MAP ON 1967 HISTORIC AERIAL PHOTO

MOSS-AMERICAN SUPERFUND SITE
8716 N GRANVILLE RD, MILWAUKEE, WI

FIGURE
1

Project: 18687 | Directory: CAD/Environmental | Filename: 18687_Master_Map true north.ai | Created By: ASL | Date: 4/27/2021

LEGEND

- CURRENT RIVER CHANNEL
- FORMER RIVER CHANNEL
- INTACT SHEET PILE
- SHEET PILE CUT 2 FT MIN BGS
- MONITORING WELL - 2 IN. DIA.
- MONITORING WELL - 1.5 IN. DIA.

MW-5S
PZ-02
MW-7S-WR
MW-7S
MW-33S
MW-34SR
MW-38S
MW-32SR
MW-39S
MW-30S
PZ-03
TG4-1
TG4-2
TG4-3
TG1-3
TG1-2
PZ-10
MW-35S
TG1-1R
TG5-1
TG5-2
TG5-3
TG3-1
TG3-2
TG3-3
PZ-01
PZ-09R
TG2-3
TG2-2
MW-9S
PZ-04
TG6-1
TG6-2
TG6-3
MW-37S
MW-31SR
PZ-06
PZ-05
Little Menomonee River
FORMER RIVER CHANNEL

N

0 100
SCALE

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MONITORING WELL LOCATION MAP

MOSS-AMERICAN SUPERFUND SITE
8716 N GRANVILLE RD, MILWAUKEE, WI

FIGURE
2

Project: 18687 | Directory: CAD/Environmental | Filename: 18687_Master_Map true north.ai | Created By: ASL | Date: 4/27/2021

LEGEND

- MONITORING WELL - 2 IN. DIA.
- PIEZOMETER - 1.5 IN. DIA.
- GEOPROBE SOIL BORING
- CONCENTRATION OF PAHs GREATER THAN NR 720 INDUSTRIAL DIRECT CONTACT RCLs IN SOIL

KEY

CONCENTRATIONS in mg/kg (MILLIGRAMS PER KILOGRAM)

J = ANALYTE DETECTED BETWEEN LOD AND LOQ

BOLD = CONCENTRATION EXCEEDS GW PATHWAY RCL

[ ] = CONCENTRATION EXCEEDS NON-INDUSTRIAL DIRECT CONTACT RCL

{ } = CONCENTRATION EXCEEDS INDUSTRIAL DIRECT CONTACT RCL

MW-32S

MW-27S (ABANDONED)

MW-39S

MW-35S

TG1-3

GP-124 PZ-03b

GP-109 PZ-03a

GP-108 PZ-03c

GP-125 PZ-03d

GP-114 PZ-03e

PZ-03

GP-100

GP-101

GP-102

GP-103

GP-104

GP-105

GP-106

GP-107

GP-110

GP-111

GP-113

FENCE

GP-100	3/1/21	
	8-10	10-12
VOCs		
B	<0.025	<0.025
E	<0.025	<0.025
T	<0.025	<0.025
X	<0.075	<0.075
PAHs		
Anth	0.059	0.106
B(a)a	0.098	0.315
B(a)p	0.0303 J	0.111
B(b)f	0.043	0.162
B(k)f	0.0216 J	0.056
Chrys	0.075	**0.235**
Fluoran.	0.42	1.66
Fluor.	0.307	0.143
Indeno	<0.0126	0.042 J
Nap	0.52	0.45
Pyr.	0.288	1.17

GP-124	3/3/21	
	10-12	
VOCs		
B	<0.025	
E	<0.025	
T	<0.025	
X	<0.075	
PAHs		
Anth	0.0252 J	
B(a)a	0.048 J	
B(a)p	0.0168 J	
B(b)f	0.0263 J	
B(k)f	0.0123 J	
Chrys	0.039 J	
Fluoran.	0.258	
Fluor.	0.154	
Indeno	<0.0126	
Nap	0.26	
Pyr.	0.175	

GP-109	3/2/21	
	8-10	
VOCs		
B	<0.025	
E	<0.025	
T	<0.025	
X	<0.075	
PAHs		
Anth	<0.0073	
B(a)a	<0.0158	
B(a)p	<0.0142	
B(b)f	<0.0099	
B(k)f	<0.0091	
Chrys	<0.0124	
Fluoran.	0.0239 J	
Fluor.	0.083	
Indeno	<0.0126	
Nap	0.0297 J	
Pyr.	0.0123 J	

GP-105	3/1/21	
	6-8	8-10
VOCs		
B	<0.025	<0.025
E	<0.025	<0.025
T	<0.025	<0.025
X	<0.075	<0.075
PAHs		
Anth	<0.0073	<0.0073
B(a)a	<0.0158	<0.0158
B(a)p	<0.0142	<0.0142
B(b)f	<0.0099	<0.0099
B(k)f	<0.0091	<0.0091
Chrys	<0.0124	<0.0124
Fluoran.	<0.0091	0.094
Fluor.	<0.0094	0.086
Indeno	<0.0126	<0.0126
Nap	<0.0096	0.0302 J
Pyr.	<0.0091	0.065

GP-110	3/2/21
	8-10
VOCs	
B	<0.025
E	<0.025
T	<0.025
X	<0.075
PAHs	
Anth	<0.0073
B(a)a	<0.0158
B(a)p	<0.0142
B(b)f	<0.0099
B(k)f	<0.0091
Chrys	<0.0124
Fluoran.	<0.0091
Fluor.	<0.0094
Indeno	<0.0126
Nap	0.046
Pyr.	<0.0091

GP-104	3/1/21	
	10-12	12-14
VOCs		
B	<0.025	<1.25
E	<0.025	1.38 J
T	<0.025	<1.25
X	<0.075	2.21 J
PAHs		
Anth	0.251	32.0
B(a)a	0.141	[18.7]
B(a)p	0.043 J	{[**5.40**]}
B(b)f	0.066	[**8.40**]
B(k)f	0.0219 J	3.15
Chrys	**0.121**	**16.5**
Fluoran.	0.75	**117**
Fluor.	1.10	**87.0**
Indeno	0.0131 J	[1.63 J]
Nap	**1.05**	{[**186**]}
Pyr.	0.49	**80.0**

GP-106	3/1/21	
	8-10	10-12
VOCs		
B	<1.25	<0.025
E	**2.26 J**	0.103
T	<1.25	<0.025
X	1.53 J	0.195 J
PAHs		
Anth	90.0	4.30
B(a)a	{[54.0]}	[2.29]
B(a)p	{[**14.7**]}	[**0.60**]
B(b)f	{[**21.8**]}	**0.93**
B(k)f	9.80	0.37
Chrys	**46.0**	**1.96**
Fluoran.	**350**	14.6
Fluor.	**272**	12.3
Indeno	[3.60 J]	0.157 J
Nap	{[**610**]}	{[**25.1**]}
Pyr.	**235**	10.0

GP-108	3/1/21
	8-10
VOCs	
B	<0.025
E	<0.025
T	<0.025
X	<0.075
PAHs	
Anth	0.34
B(a)a	0.16
B(a)p	0.047 J
B(b)f	0.072
B(k)f	0.032 J
Chrys	**0.129**
Fluoran.	0.96
Fluor.	0.72
Indeno	0.0137 J
Nap	0.218
Pyr.	0.67

GP-107	3/1/21	
	8-10	10-12
VOCs		
B	<0.5	<0.025
E	**1.57**	0.309
T	<0.5	0.040 J
X	3.21 J	0.588
PAHs		
Anth	140	8.00
B(a)a	{[58.0]}	[4.20]
B(a)p	{[**16.0**]}	[**1.12**]
B(b)f	{[**24.7**]}	[**1.57**]
B(k)f	[11.5]	0.91
Chrys	**51.0**	**3.70**
Fluoran.	**380**	27.3
Fluor.	**308**	**23.8**
Indeno	[3.90 J]	0.269 J
Nap	{[**620**]}	{[**65.0**]}
Pyr.	**258**	18.7

GP-101	3/1/21	
	6-8	8-10
VOCs		
B	<0.025	<0.025
E	<0.025	<0.025
T	<0.025	<0.025
X	<0.075	<0.075
PAHs		
Anth	0.079	0.116
B(a)a	<0.0158	<0.0158
B(a)p	<0.0142	<0.0142
B(b)f	<0.0099	<0.0099
B(k)f	<0.0091	<0.0091
Chrys	<0.0124	<0.0124
Fluoran.	0.0294 J	0.11
Fluor.	0.56	0.62
Indeno	<0.0126	<0.0126
Nap	0.58	**0.73**
Pyr.	0.0214 J	0.053

GP-125	3/3/21
	8-10
VOCs	
B	<0.025
E	<0.025
T	<0.025
X	<0.075
PAHs	
Anth	3.20
B(a)a	[1.57]
B(a)p	[0.41]
B(b)f	**0.62**
B(k)f	0.259
Chrys	**1.40**
Fluoran.	10.6
Fluor.	8.10
Indeno	0.108 J
Nap	[**11.0**]
Pyr.	7.20

GP-114	3/2/21	
	8-10	10-12
VOCs		
B	<0.5	<0.025
E	1.39	0.047 J
T	<0.5	<0.025
X	2.09 J	0.035 J
PAHs		
Anth	65.0	12.5
B(a)a	{[29.8]}	[5.50]
B(a)p	{[**8.40**]}	[**1.59**]
B(b)f	[**13.0**]	[**2.40**]
B(k)f	5.40	1.11
Chrys	**28.1**	**5.30**
Fluoran.	**201**	38.0
Fluor.	**172**	**32.0**
Indeno	[2.03 J]	0.38 J
Nap	{[**330**]}	{[**58.0**]}
Pyr.	**137**	25.8

GP-103	3/1/21	
	8-10	10-12
VOCs		
B	<0.025	<0.025
E	<0.025	<0.025
T	<0.025	<0.025
X	<0.075	<0.075
PAHs		
Anth	0.0108 J	0.033
B(a)a	<0.0158	0.0252 J
B(a)p	<0.0142	<0.0142
B(b)f	<0.0099	0.0122 J
B(k)f	<0.0091	<0.0091
Chrys	<0.0124	0.0175 J
Fluoran.	0.0313 J	0.12
Fluor.	0.228	0.45
Indeno	<0.0126	<0.0126
Nap	0.191	0.33
Pyr.	0.0222 J	0.082

GP-111	3/2/21	
	8-10	10-12
VOCs		
B	<1.25	<0.5
E	**8.0**	1.06 J
T	**1.68 J**	<0.5
X	**13.8**	1.80 J
PAHs		
Anth	**217**	49.0
B(a)a	{[116]}	{[23.7]}
B(a)p	{[**32.0**]}	{[**6.60**]}
B(b)f	{[**50.0**]}	[**9.40**]
B(k)f	[17.8]	4.70
Chrys	**103**	**22.2**
Fluoran.	**760**	**158**
Fluor.	**650**	**137**
Indeno	[7.90 J]	[1.76 J]
Nap	{[**1230**]}	{[**276**]}
Pyr.	**520**	**108**

GP-113	3/2/21	
	6-8	8-10
VOCs		
B	<0.5	<0.5
E	1.36	**2.8**
T	<0.5	0.54 J
X	1.98 J	3.84 J
PAHs		
Anth	117	2.69
B(a)a	{[26.2]}	[1.36]
B(a)p	{[**7.40**]}	[0.35 J]
B(b)f	[**11.3**]	**0.56**
B(k)f	4.50	0.252 J
Chrys	**25.4**	**1.21**
Fluoran.	**177**	8.90
Fluor.	**163**	7.70
Indeno	[1.78 J]	<0.126
Nap	{[**192**]}	{[**28.7**]}
Pyr.	**120**	6.10

0 20 ft. 40 ft.

GRAPHIC SCALE

N

Project: 18687 | Directory: CAD/Environmental | Filename: 18687_PZ-03 Close up.ai | Created By: ASL | Date: 2021.5.4

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SOIL QUALITY MAP
PZ-03 AREA

MOSS-AMERICAN SUPERFUND SITE
8716 N GRANVILLE RD, MILWAUKEE, WI

FIGURE
3

PZ-02								
	4/4/13	10/4/19	1/7/20	3/31/20	7/8/20	10/9/20	1/8/21	4/2/21
Benzene	<0.27	<0.22	<0.22	<0.33	<0.33	<0.33	<0.33	<0.38
B(a)p	<0.36	<0.334	<0.334	<0.835	<0.167	**0.37 J**	<0.835	<0.334
B(b)f	<0.4	<0.32	<0.32	<0.8	<0.16	**0.69 J**	<0.8	<0.32
Chrysene	<0.36	<0.314	<0.314	<0.785	<0.157	**0.63 J**	<0.785	<0.314
Fluoran.	<0.52	<0.176	<0.176	<0.44	<0.088	1.62	<0.44	<0.176
Fluorene	3.6	29.8	43.0	51	14.8	48	59	48
Nap	1.79	*19.4*	*30.1*	*25.2*	0.84 J	*20.5*	*19.2*	9.7

PZ-02A	
	3/12/21
Benzene	<0.37
B(a)p	<0.334
B(b)f	<0.32
Chrysene	<0.314
Fluoran.	0.73
Fluorene	20.5
Nap	*17.8*

PZ-02B	
	3/12/21
Benzene	<0.37
B(a)p	**0.236 J**
B(b)f	**0.42 J**
Chrysene	**0.4 J**
Fluoran.	1.01
Fluorene	12.5
Nap	*14.6*

MW-33SA	
	3/12/21
Benzene	<0.37
B(a)p	<0.334
B(b)f	<0.32
Chrysene	<0.314
Fluoran.	0.43 J
Fluorene	39
Nap	*26.2*

MW-33SB	
	3/12/21
Benzene	<0.37
B(a)p	<0.835
B(b)f	<0.8
Chrysene	<0.785
Fluoran.	4.9
Fluorene	77
Nap	**270**

MW-33SC	
	3/12/21
Benzene	<0.37
B(a)p	0.0179 J
B(b)f	***0.0301 J***
Chrysene	***0.032 J***
Fluoran.	0.32
Fluorene	0.75
Nap	3.2

MW-33S									
	9/28/10	4/4/13	10/4/19	12/31/19	3/31/20	7/8/20	10/8/20	1/6/21	4/2/21
Benzene	<0.2	<0.27	<0.22	<0.22	<0.48	<0.33	<0.33	<0.33	0.38
B(a)p	<0.01	<0.018	<0.0167	<0.0167	<0.835	<0.0835	<0.835	<0.0167	<0.0167
B(b)f	<0.0081	<0.02	<0.016	*0.0241 J*	<0.8	<0.08	<0.8	<0.016	*0.0207 J*
Chrysene	<0.061	<0.018	<0.0157	0.0193 J	<0.785	<0.0785	<0.785	<0.0157	<0.0157
Fluoran.	0.028 J	<0.026	<0.0088	0.0173 J	<0.44	<0.044	<0.44	<0.0088	0.0262 J
Fluorene	49	0.251	0.045	0.044	55	1.51	53	0.0203 J	0.44
Nap	*100*	0.201	0.23	0.175	**226**	*17.8*	**199**	0.102	1

PZ-03A	
	3/12/21
Benzene	<0.37
B(a)p	***0.082 J***
B(b)f	***0.134***
Chrysene	**0.219**
Fluoran.	2.03
Fluorene	4.9
Nap	0.9

PZ-03B	
	3/12/21
Benzene	**0.95 J**
B(a)p	<0.835
B(b)f	<0.8
Chrysene	<0.785
Fluoran.	6.9
Fluorene	28.9
Nap	**113**

PZ-03E	
	3/12/21
Benzene	**1.68**
B(a)p	<8.35
B(b)f	**10.9 J**
Chrysene	**25.1**
Fluoran.	***188***
Fluorene	***320***
Nap	**4100**

PZ-03C	
	3/12/21
Benzene	<0.37
B(a)p	<0.835
B(b)f	<0.8
Chrysene	**1.18 J**
Fluoran.	20.5
Fluorene	***121***
Nap	**121**

PZ-03									
	4/4/13	10/9/19	1/8/20	3/31/20	7/14/20	10/9/20	10/29/20 *	1/8/21	4/2/21
Benzene	*0.44 J*	2.02	1.45	2.31	1.33	1.27	NT	<0.33	<0.38
B(a)p	**0.71 J**	<5.01	<10.02	<33.4	<16.7	**0.38 J**	<8.35	<0.835	<0.167
B(b)f	**1.45**	<4.8	<9.6	<32	<16	**1.22**	<8	<0.8	<0.16
Chrysene	**1.47**	<4.71	<9.42	<31.4	<15.7	**0.85 J**	<7.85	<0.785	<0.157
Fluoran.	10.7	<2.64	<5.28	<17.6	<8.8	1.64	<4.4	<0.44	0.43
Fluorene	33	57.0	*110*	*102*	*121*	34	62.0	29.6	18.5
Nap	*47*	**1620**	**4000**	**3600**	**3010**	*4.9*	**1680**	**360**	*13.3*

PZ-03D		
	3/12/21	DUP
Benzene	*0.43 J*	***0.55 J***
B(a)p	<3.34	**4 J**
B(b)f	<3.2	**6.9 J**
Chrysene	<3.14	**10.1**
Fluoran.	21.6	49
Fluorene	***136***	***160***
Nap	**1090**	**1190**

LEGEND

- INTACT SHEET PILE
- SHEET PILE CUT 2 FT MIN BGS
- MONITORING WELL - 2 IN. DIA.
- PIEZOMETER - 1.5 IN. DIA.
- TEMPORARY WELL - 1 IN. DIA.
- GEOPROBE SOIL BORING
- ABANDONED MONITORING WELL
- ABANDONED PIEZOMETER

- CONCENTRATION OF NAPHTHALENE GREATER THAN 1,000 µg/L
- CONCENTRATION OF NAPHTHALENE GREATER THAN NR 140 ES
- CONCENTRATION OF NAPHTHALENE GREATER THAN NR 140 PAL
- EXTENT OF FREE PRODUCT AS NOTED IN SOIL BORINGS ADVANCED IN MARCH 2021

KEY

CONCENTRATIONS in µg/L (micrograms per liter)
J = Analyte detected between LOD and LOQ
NT = Not Tested
BOLD = Concentration exceeds NR 140 ES
ITALICS = Concentration exceeds NR 140 PAL
BOLD = Concentration exceeds EPA ROD ES
ITALICS = Concentration exceeds EPA ROD PAL
B(a)p = Benzo(a)pyrene
B(b)f = Benzo(b)fluoranthene
Fluoran. = Fluoranthene
Nap = Naphthalene

NOTE: CONCENTRATIONS OF NAPHTHALENE AT REMAINING WELLS SAMPLED IN WINTER 2020/2021 WERE REPORTED LESS THAN NR 140 PAL

MW-5S
MW-7S-W
MW-7S-WR
PZ-02A
PZ-02
PZ-02B
MW-33SA
MW-33SC
MW-33S
MW-33SB
REMEDIAL EXCAVATIONS 2017-2018
MW-7S
MW-34SR
MW-34S
MW-34S-N
MW-38S Nap=0.41
MW-32SR Nap=0.06J
MW-32S
MW-39S Nap=ND
LITTLE MENOMONEE RIVER
FORMER RIVER CHANNEL
PZ-03B
PZ-03A
GP-104 FP: 12-13'
GP-106 FP: 9-12.5'
GP-107 FP: 9-10.5'
PZ-03
PZ-03C
GP-111 FP: 7.5-13'
GP-113 FP: 10-13'
PZ-03D
PZ-03E FP: 10-11'
MW-30S
Nap=2
MW-27S
MW-A
TG4-1 Nap=0.052J
TG4-2
TG4-3
GATE 4
GATE 5
TG5-1
TG5-2
TG5-3
TG3-1
GATE 3
TG3-2
PZ-10
TG1-3 Nap=0.065J
TG1-2 Nap=ND
(FORMER) GATE 1
TG1-1
TG1-1R
MW-35S Nap=0.062J
REMEDIAL EXCAVATION 2017-18
PZ-09
PZ-09R
TG2-3

N

0 50 ft. 100 ft.

GRAPHIC SCALE

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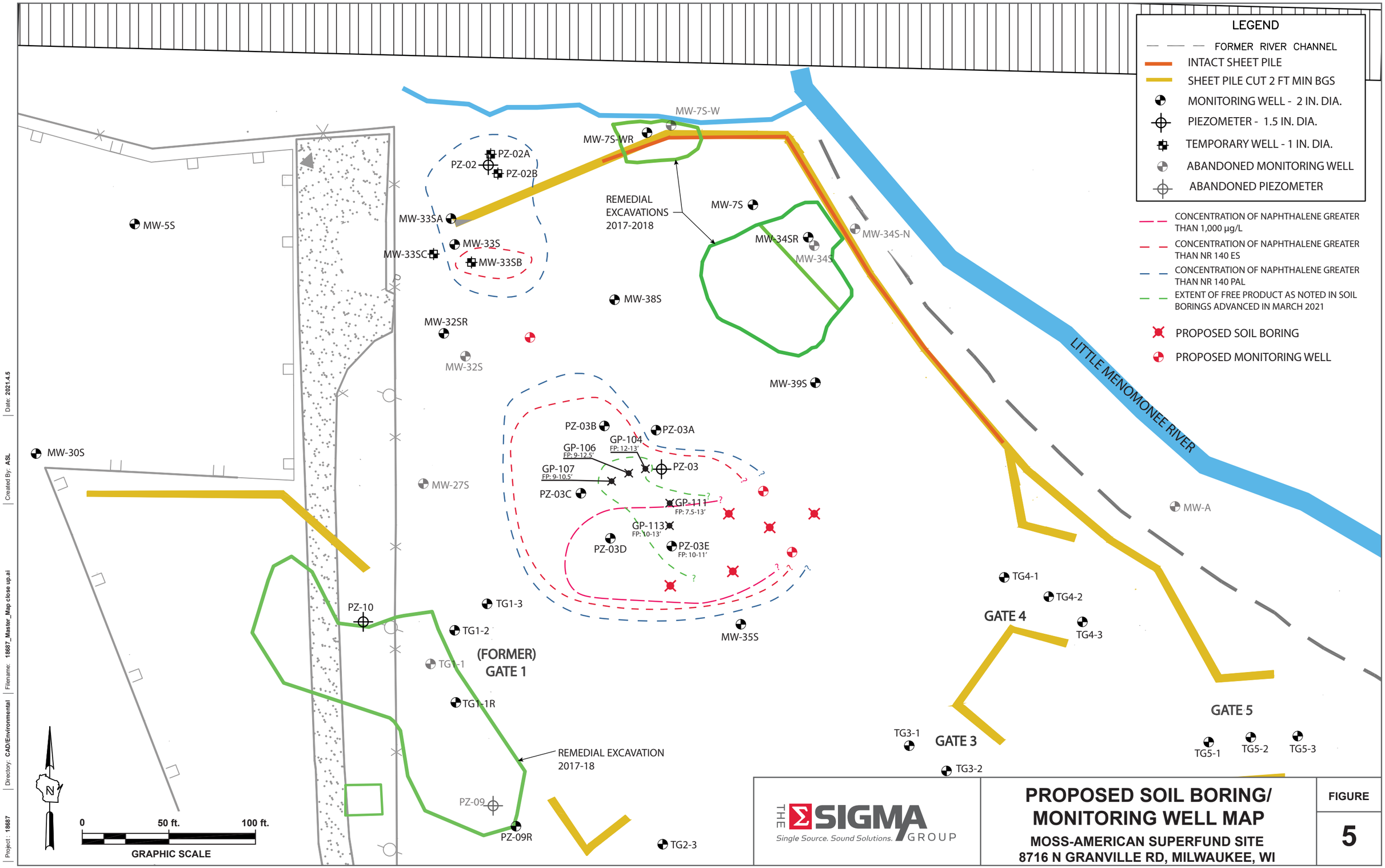
GROUNDWATER QUALITY MAP

MOSS-AMERICAN SUPERFUND SITE
8716 N GRANVILLE RD, MILWAUKEE, WI

FIGURE
4

Date: 2021.4.5
Created By: ASL
Filename: 18687_Master_Map close up.ai
Directory: CAD/Environmental
Project: 18687



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Single Source. Sound Solutions.

PROPOSED SOIL BORING/ MONITORING WELL MAP

MOSS-AMERICAN SUPERFUND SITE
8716 N GRANVILLE RD, MILWAUKEE, WI

FIGURE
5

Project: 18687 | Directory: CAD/Environmental | Filename: 18687_Master_Map close up.ai | Created By: ASL | Date: 2021.4.5

TABLE 1
Cost Estimate for Additional Site Investigation
(Vicinity of PZ-03)
Former Moss American Facility
Sigma Project #18687
4/29/2021

TASKS AND DETAILS					TOTALS
Engineering Services					
(Drilling coordination, installation oversight, surveying, sampling and project mgt.)					
8 GP, 3 MW Installation Oversight (2 days in-field)					
KK- QC	2 hrs @	$150 /hr		$300	
MI	8 hrs @	$150 /hr		$1,200	
ASL- coord, some field time	16 hrs @	$90 /hr		$1,440	
Staff- field	25 hrs @	$80 /hr		$2,000	
Staff- prep, logs, notes	20 hrs @	$90 /hr		$1,800	
Work truck mileage (34 mi/trip)	100 miles	$0.75 /mile		$75	
PID	2 days	$70 /day		$140	
GPS Survey unit	1 days	$100 /day		$100	
Gloves	50 pairs	$0.50 /pair		$25	
Ziploc Bags	100 each	$0.25 /each		$25	
			subtotal	*$7,105*	
Well Development and 1 Round of Sampling					
KK- QC	2 hrs @	$165 /hr		$330	
MI	4 hrs @	$150 /hr		$600	
ASL	8 hrs @	$90 /hr		$720	
Field tech - well dev	12 hrs @	$75 /hr		$900	
Field tech - water level measure	8 hrs @	$75 /hr		$600	
Field tech - well sampling	10 hrs @	$75 /hr		$750	
Work truck mileage	100 miles	$0.75 /mile		$75	
WLI	4 days	$25 /day		$100	
Bailer	6 bailers	$15 /each		$90	
Peristaltic Pump	3 days	$50 /day		$150	
Tubing	2 est	$25 /day		$50	
ph, redox, DO meters	1 days	$100 /day		$100	
Turbidity meter	1 days	$50 /day		$50	
Hach kits	3 wells	$5 /each		$15	
Drums	7 drums	$55 /each		$385	
			subtotal	*$4,915*	**$12,020.00**
Subcontractor Drilling Services					
Drilling Services (8 GPs to 15'; 3 MWs to 15')					
Mobilization - GPs	1 each @	$750 / each		$750	
Geoprobe Drilling	120 feet @	$7 / foot		$840	
Borehole Abandonment	75 feet @	$1.50 / foot		$113	
HSA Drilling	45 feet @	$18 / foot		$810	
NR 141-compliant Well Installation	45 feet @	$18 / foot		$810	
Well Protectors	3 each @	$200 / each		$600	
Decon	2 days @	$250 / day		$500	
Drums - soil	3 each @	$75 / each		$225	
Contingency	10 %			$465	
			subtotal	*$5,112*	**$5,112.25**
Subcontractor Laboratory Services					
Laboratory Services (Soil - Synergy)					
BTEX	17 @	$25 /sample		$425	
PAHs	17 @	$65 /sample		$1,105	
MeOH blank	1 @	$25 /sample		$25	
DRO	6 @	$25 /sample		$150	
GRO	6 @	$25 /sample		$150	
TPH	6 @	$100 /sample		$600	
Contingency	10 %			$246	
			subtotal	*$2,701*	
Laboratory Services (GW -Synergy) - 1 events					
BTEX	6 @	$25 /sample		$150	
PAHs	6 @	$65 /sample		$390	
Equip, trip	2 @	$25 /sample		$50	
Contingency	10 %			$59	
			subtotal	*$649*	**$3,349.50**
Investigative Waste Disposal					
ASL	8 hrs @	$90 /hr		$720	
Veolia - soil	3 @	$170 /drum		$510	
Veolia - groundwater (plus mob etc)	12 @	$380 /drum		$4,560	
Mark up	10 %			$579	
			subtotal	*$6,369*	**$6,369.00**
Summary Report, Data Evaluation, and Remedial Action Options Report					
Data Evaluation, report preparation, WDNR meeting					
KK	4 hrs @	$150 /hr		$600	
MI	24 hrs @	$150 /hr		$3,600	
ASL	60 hrs @	$90 /hr		$5,400	
CADD Technician	12 hrs @	$80 /hr		$960	
Admin Support	10 hrs @	$60 /hr		$600	
			subtotal	*$11,160*	**$11,160.00**
				TOTAL	**$38,010.75**