APPENDIX C

Soil Boring Logs

2008 SOIL BORING LOGS

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-01	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 398.37 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 9/24/08	DATE FINISHED: 9/25/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 15.9 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon, macocore 4'		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 398.37 fmsl	
0					Asphalt	
1			N/A	1.5	**FILL** - grey fine to coarse Sand and fine Gravel slightly moist, mild sweet odor	* very slow drilling, refusal at 1.8'
2						* macrocore used 0-2' only, no blowcounts recorded
3	1		1 2 3	.3		* added water at 2' to aid drilling, moved north ~3'
4			2		**FILL** - brown fine to coarse Sand, some fine Gravel and trace Silt from 4-6' moist	
5	2		2 2	.2		* background PID = ~0.3ppm (possibly from rig exhaust)
6			1 1		**FILL** - brown to yellow brown fine to med. Sand, trace Silt, fine Gravel and occasional piece of brick	
7	3		2 1	.2		* collected 5-8' sample for lab analysis
8			1 2		**FILL** - fine to coarse Sand with little fine Gravel, trace Silt, occasional piece of brick moist to wet	
9	4		1 2	.2		
10			4 3		**FILL** - fine to coarse Sand and some fine Gravel moist to wet	
11	5		3 2	0		
12			3 2		**FILL** - brown fine to coarse Sand and fine Gravel wet, mild sweet odor	* water in spoon
13	6		4 9	0		
14			12		**NATIVE ALLUVIUM** - tan and some grey Clayey Silt (ML) and little fine Sand dry to moist, thinly laminated	
15	7		20 17	0		
16			21 40		weathered Bedrock (possible Rochester Shale)	* auger refusal at 15.9'
17			50/.3		no MGP impacts identifed	
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SB-1 (5-8')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-02	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 397.34 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 9/25/08	DATE FINISHED: 9/25/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 16.0 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION	DRILLING REMARKS
					Surface Elevation: 397.34 fmsl	
1	1		35	0.0	Asphalt	
2			17		**FILL**- grey to brown fine to coarse Sand, fine Gravel with red brick fragments dry, moist to wet at 3.75'	
3	2		10	0.0		
4			11			
5	3		8	0.0	**FILL** - brown to black fine to coarse Sand, little Silt, Clay and fine Gravel moist to wet	* collected 4-8' sample for lab analysis
6			7			
7	4		5	0.0		
8			8			
9	5		3	0.0	**FILL** - brown to light brown fine Sand, Silt, Clay, some fine Gravel moist to wet at 9'	
10			1			
11	6		2	0.0	**FILL** - dark brown to red brown fine to coarse Sand, little Silt, Clay and some fine Gravel	
12			3			
13	7		3	0.0	**NATIVE ALLUVIUM** - grey brown to green brown Silt (ML) with weathered Shale pieces thickly laminated	
14			2			
15	8		3	0.0	green/olive brown Silt (ML) some Clay and weathered Shale wet, thinly laminated	
16			13		weathered Bedrock	
17			10			
18			8			
19			6			
20			6			
21			5			
22			6			
23			8			
24			9			
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28			28			
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			10			

SB-2 (4-8')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site	Log of Boring No. SB-03	
BORING LOCATION: See Site Plan for SB locations	ELEVATION: 400.77 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company	DATE STARTED: 9/25/08	DATE FINISHED: 9/25/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers	TOTAL DEPTH: 12.9 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig	DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon	LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb / DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 400.77 fmsl	
1	1		13	0.0	Asphalt **FILL** - dark brown to black fine to coarse Sand, some fine Gravel and brick moist, no odors	* collected 4-8' sample for lab analysis
2			7			* hit something hard at 5.5' (possibly cobble)
3	2		7 4 2	0.0	**FILL** - dark brown to red brown fine to coarse Sand, some fine Gravel and Silt moist to wet, no odors	* augered, then breached through with spoon
4			3			
5	3		3 12	0.0		
6			1 4		**FILL** - broken grey piece of rock (possibly dolomite) dry	* refusal at 6.25'; moved south 3'
7	4		WOH	0.0	(resample of sample 4 at new boring location): **FILL** - reddish brown to black fine to coarse Sand and trace Silt moist	* spoon fell 6-7' under weight of hammer
8			WOH 1			
9	5		1 2	4.3	**FILL** - brown to black med. to coarse Sand, little fine Gravel moist	
10			2 2			
11	6		8 2	4.5	**FILL** - brown to black med. to coarse Sand, some fine Gravel, trace Silt and some coal tar-like material moist to wet, black staining, slight coal tar-like odor	* collected 10-12.5' sample for lab analysis
12			11 6			
13	7		13 1 100/4"	200+	grey to green-grey Shale bedrock fragments coal tar-like material present in fractures moist to wet, strong coal tar-like odor and black staining	
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SB-2 (4-8')

SB-3 (10-12.5)

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-04	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 398.68 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 9/26/08	DATE FINISHED: 9/26/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 15.0 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION	DRILLING REMARKS
					Surface Elevation: 398.68 fmsl	
0					Asphalt	
1	1		22	1.2	**FILL** - brown med. to coarse Sand, little fine Gravel	* PID background due to rig exhaust: <0.5ppm
2			11		dry, slight petrol-like odor	
3	2		8	0.5		* headspace OVM = 1.5ppm
4			6		**FILL** - same fill as above	
5	3		5	0.0	moist, no odors or staining	* collected 2-4' and 6-8' samples for lab analysis
6			6			
7	4		5	0.3	**FILL** - same as above in addition to trace Silt	
8			5		moist to wet, no odors, sand particles slightly more fine	
9	5		2	0.0	**FILL** - brown fine to coarse Sand, fine Gravel and little Silt	
10			3		moist	
11	6		2	0.1	**FILL** - brown med. to coarse Sand with fine angular grey Gravel (possibly dolomite) and Clayey Silt	* PID background = 0.2ppm
12			3		wet, no odors	
13	7		1		NO RECOVERY	
14			1			* spoon wet; water in hole at approx. 14'
15	8		1	0.0	**NATIVE ALLUVIUM** - olive brown Clayey Silt (ML) and pieces of weathered rock	
16			2		wet to moist, no odors	
17			3		**Bedrock**	
18			2			
19			18			
20			17			
21			6			
22			12			
23			11			
24			10			
25			22			
26			9			
27			5			
28			4			
29			3			
30			100/.4'			

SB-4 (2-4')

SB-4 (6-8')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-05a	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 390.92 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 9/30/08	DATE FINISHED: 9/30/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 6.3 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" & 3" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 390.92 fmsl	
1	1		7	0.0	**FILL** - grey fine angular Gravel, some med. to coarse Sand moist	* 3" spoon used only at 4-4.8'
2			9 6			
3	2		3 3	1.5	**FILL** - brown to black fine Gravel, little med. to coarse Sand	* possibly hit concrete at 4.8'
4			13 10			
5	3		10 N/A	4.4	**FILL** - brown to black Silt, fine Gravel, little fine Sand moist, no odors **FILL** - appears to be concrete	* augered to 6.3' * could not breach with spoon, moved 5' south for SB-5b
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PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-05b	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 390.92 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 9/30/08	DATE FINISHED: 9/30/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 24.0 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" & 3" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION	DRILLING REMARKS
					Surface Elevation: 390.92 fmsl	
1						* SB-5b is 5' south of SB-5a
2						* augered to 4'bgs without sampling (0'-4' sampling is on SB-5a)
3						
4				550	**FILL** - black coarse Sand with coal tar-like residual	* collected 4-6' sample for lab analysis, include MS/MSD
5	3		N/A	10.0	**FILL** - brown to black Silt, fine Gravel and little fine Sand moist, moderate coal tar-like odor	* 3" spoon only for 4-6', no blow count
6					**FILL** - fine Gravel and med. to coarse black Sand - moist	
7	4		3 5 7 7	12.1	**FILL** - brown to yellow brown and occasional black fine Sand, little Silt and fine Gravel moist	
8						
9	5		3 3 4 5	19.9		
10					**FILL** - brown to black fine Gravel, little Silt and Sand moist, strong coal tar-like odor	
11	6		2 4 7 10	29.9		
12				5.1	**FILL** - brown fine Sand, Silt and some fine Gravel black staining	
13	7		2 3 5 5	0.8	**FILL** - black and tan Clayey Silt, little fine Sand and occasional pieces of wood moist	
14						
15	8		2 2 2 4	1.4	**FILL** - brown to black fine to coarse Sand, Clayey Silt, some fine Gravel very slight coal tar-like odor	* appears to be alluvium yet disturbed material is found at 20'
16						
17	9		7 8 13 14	0.4	**NATIVE ALLUVIUM** - weathered pieces of Shale (GP) , some Clay and Silt wet, thinly laminated	
18						
19	10		7 7 10 13	0.6	light brown/tan weathered Shale (GW) occasional coarse grey Sand and fine Gravel wet to moist, slight coal tar-like odor	
20						* spoon bouncing at 21.9'
21	11		2 5 11 19	1.2	dark grey, black and tan med. to coarse Sand (SW) some Clay and little fine Gravel wet, slight coal tar-like odor, all disturbed	
22				25	brown weathered Shale Bedrock thinly laminated	* collected 22-23' sample for lab analysis, VOCs only
23	12		6 37 39 50	108	layers of lightly weathered Limestone or Dolomite strong coal tar-like odor, strong oily sheen, NAPL present	
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SB-5 (4-6')

SB-5 (22-23')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-06	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 399.16 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/1/08	DATE FINISHED: 10/1/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 14.4 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" & 3" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 399.16 fmsl	
0					Concrete	
1	1		2 2 5	0.0	**FILL** - brown med. coarse Sand and fine Gravel dry	
2					**FILL** - black to dark grey fine Sand and Silt wet, no odors	
3	2		2 3 8	0.0		
4			12		**FILL** - brown fine med. Gravel, fine to coarse Sand with occasional black mottling dry, very slight coal tar-like odor	
5	3		N/A	0.0		
6					**FILL** - brown fine Gravel and fine to coarse Sand dry to moist, no odors	
7	4		11 23	5.2		SB-6 (6-8') * collected 6-8' sample for lab analysis
8			17 13		**FILL** - brown fine Gravel and fine to coarse Sand, coal tar-like residual at 9.5' moist, strong coal tar-like odor	
9	5		20 40	300		
10			5 5		**FILL** - brown fine Gravel, little Clay and some med. to fine Sand moist, slight coal tar-like odor	
11	6		4 6	20		
12			8 9		**NATIVE ALLUVIUM** - brown Silt (ML) with partings of grey possible weathered limestone and occasional coal tar-like material thinly laminated, strong coal tar-like odor	SB-6 (12-14') * collected 12-14' sample for lab analysis
13	7		10 15	225		
14			18 34	70		
15					weathered rock (GP) and coal tar-like material wet, strong coal tar-like odor	
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PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-07	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 399.48 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/1/08	DATE FINISHED: 10/1/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 16.4 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 399.48 fmsl	
0					Concrete	
1	1		8	0.0	**FILL** - dark grey to black very fine Sand and Silt wet, no odors	
2			3 3			
3	2		3	0.0	**FILL** - brown fine Gravel, fine to coarse Sand and Silt dry to moist, no odors	
4			3 14			
5	3		15 7	0.2	**FILL** - brown fine Gravel, med. to coarse Sand, trace Silt dry to moist, slight coal tar-like odor	
6			17 24			
7	4		28 18	1.6	**FILL** - brown, grey, black fine Gravel, med. to coarse Sand and pieces of red brick	SB-7 (6-8') * collected 6-8' sample for lab analysis
8			34 16		**FILL** - black med. to coarse Sand, fine Gravel dry to moist, very slight coal tar-like odor	
9	5		10 2	0.0		
10			2 3		**FILL** - black med. to coarse Sand, fine Gravel, glass, coal moist, no odors	
11	6		5 1	0.0	**FILL** - brown and black Silt, some fine Sand and trace fine Gravel moist, consistent	* possible alluvium
12			2 2			
13	7		2 1	0.0	**FILL** - brown Silt, some fine Sand and trace fine Gravel moist, no odors	
14			1 2			
15	8		1 2	0.0	weathered Shale bedrock some brown silt, saturated	
16	9		1 2	0.0		
17			3 100/.4'			
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PROJECT: Former West Station Plant Area MGP Site	Log of Boring No. SB-08	
BORING LOCATION: See Site Plan for SB locations	ELEVATION: 398.99 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company	DATE STARTED: 10/1/08	DATE FINISHED: 10/1/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers	TOTAL DEPTH: 17.1 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig	DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon	LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb / DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 398.99 fmsl	
1	1		9	2.5	**FILL**- brown med. to coarse Sand moist	
2			9		**FILL** - brown and grey med. to fine Sand and fine Gravel moist, no odors	
3	2		9 10	5.0	**FILL** - brown and grey fine Gravel and coarse to fine Sand moist, no odors	
4			19 10			
5	3		8 3	9.7	**FILL** - brown coarse to fine Sand and fine Gravel moist, slight sweet odor at bottom	* collected 4-6' and 16-18' samples for lab analysis
6			5 3			
7	4		3 7	0.1		
8			11 5			
9	5		6 2	0.0	**FILL** - black fine to med. Sand moist to wet at 9'-11', no odors	
10			2 3			
11	6		5 2	0.0		* augered 11.2-12' to break through old concrete
12	7		2 100/.2		old concrete	* drilled 12.2-12.5'
13	8		100/.2 7	0.5	**FILL** - tan and brown Silt, little fine Sand no odors	
14			11 12		**FILL** - brown and grey fine Gravel, fine Sand and trace Silt	
15	9		14	0.2	moist, no odors	
16			15 12			
17	10		12 20	1.1	brown to grey weathered shale bedrock dry, very slight coal tar-like odor	
18			27 100/.1			
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SB-8 (4-6')

SB-6 (16-17')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-09	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 399.01 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 9/29/08	DATE FINISHED: 9/29/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 15.8 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" & 3" Split Spoons		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 399.01 fmsl	
1	1		N/A	0.1	**FILL** - brown to brown/grey fine Sand, Silt and some some fine Gravel dry	* raining
2						* stripped threads on 3" split spoon; used only for 0-2'
3	2		6 12	45	**FILL** - tan to black Silt, fine Sand, some fine Gravel, pieces of coke and hard tar-like material moist, strong coal tar-like odor	* collected 2-4' sample for lab analysis
4			8 14			
5	3		5 4	0.0	NO RECOVERY	* driller states 4-6' seems like nothing but cobble, concrete and voids, nothing in or on spoon.
6			2 1			
7	4		WOH WOR	15	**FILL** - black fine med. to coarse Sand moist to wet at 12', light coal tar-like odor until 12'.	
8			WOR WOR			
9	5		WOH WOH	15		* spoon fell 6-12' under only weight of rod or hammer
10			WOH WOH			
11	6		WOH WOR	1.0	**FILL** - same as above	
12			WOR WOH			
13	7		WOH 2	0.0		
14			1 1			* collected 12-16' sample for lab analysis
15	8		1 1	0.2		
16			1 1		**FILL** - brown fine Sand, Silt, and some fine Gravel wet, no odors Shale Bedrock	* refusal at 15.8'
17			100/.3			
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SB-9 (2-4')

SB-9 (12-16')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-10	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 399.13 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 9/26/08	DATE FINISHED: 9/26/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 15.5 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST 15 feet	COMPL.
SAMPLING METHOD: 2" and 3" Split Spoons		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 399.13 fmsl	
1	1		6	.5	**FILL** - brown and grey med. to coarse Sand and fine Gravel dry, no odors	SB-10 (0-2') * collected 0-2' sample for lab analysis
2			11 15			
3	2		18 12	.3	**FILL** - black med. to coarse Sand and fine Gravel dry, slight odor	* 2" split spoon until 4', 3" spoon used after
4			9 9			
5	3		5 N/A	.2	**FILL** - black med. to coarse Sand, pieces of brick and coke dry to moist, no odors	* no blow counts for 3" spoon
6						
7	4		N/A	0		
8					**FILL** - black and grey med. to coarse Sand moist	
9	5		N/A	0		
10						
11	6		N/A	0		
12					**FILL** - same fill as above including pieces of brick cobble in shoe, moist, no odors	
13	7		N/A	0		
14					**FILL** - med. to coarse Sand, Silt, Clay, fine to med. Gravel and brick wet	SB-10 (14-15.8') * auger refusal @ 15.5' (building foundation)
15	8		N/A	1.7		
16					possible old foundation	* moved ~20' east to SB-10a
17						
18						* collected sample 14-15.5' for lab analysis (later discarded when replaced by SB-10a sample)
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PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-10a**	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 399.13 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 9/26/08	DATE FINISHED: 9/26/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 15.8 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST 15 feet	COMPL.
SAMPLING METHOD: 3" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 399.13 fmsl	
1–30					**Advance 4 1/4" dia. auger to 14' without sampling**	* SB-10a is ~20' east of SB-10 * drilled to 14' * began SB-10A at 14' (no sampling 0-14')
14–15	9		N/A	6.2	**FILL** - dark brown and black coarse Sand and fine Gravel wet, coal tar-like odor, sheen on outside of spoon	* refusal again at 15.8' (possible foundation)
16					**possible old foundation**	* collected 14-15.8' sample for lab analysis

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-11	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 400.39 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/2/08	DATE FINISHED: 10/2/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 15.9 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" and 3" Split Spoons		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 400.39 fmsl	
1	1		2	0.0	**FILL** - dark brown Silt, fine Gravel and some fine to coarse Sand moist	* raining heavily
2			3 9		**FILL** - black and brown fine Gravel, fine to coarse Sand and pieces of coal, coke and red brick moist, no odors	
3	2		50/2"	0.0		
4			4 6		**FILL** - pieces of concrete moist, old concrete odor	
5	3		5 4 1	0.0	**FILL** - black fine to med. Sand and possible pieces of coke moist, no odors	
6			3 3			* 3" spoon used only 6-8'; no blow count
7	4		6 N/A	0.0	**FILL** - black to brown fine med. Gravel, little Silt and fine to coarse Sand moist, no odors	
8						* collected 6-8' sample for lab. analysis
9	5		2	0.0	**FILL** - Silt and Gravel moist, no odors	
10			3 3			
11	6		3	0.0		
12			3 2		**FILL** - brown fine to med. Sand, parts of coal, some weathered rock at bottom	
13	7		3	0.0	moist, no odors	
14			2 1			
15	8		2 12	0.0	brown weathered angular shale bedrock dry	
16			47 49			
17			50/.4			
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SB-11 (6-8')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-12	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 401.39 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/15/08	DATE FINISHED: 10/15/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 14.0 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 401.39 fmsl	
0					Asphalt	
1	1		10 7	0.0	**FILL** - grey dark brown fine Gravel, coarse to fine Sand and little Silt dry to moist, no odors	
2			16 43		**FILL** - black med. to coarse Sand with coal and coke dry, no odor	
3	2		45 8	0.0		
4			12 15	19	**FILL** - black fine Sand and Silt, coal tar-like material at 5-6' moist, strong coal tar-like odor	SB-12 (4-6')
5	3		2 11	83		* collected 4-6' sample for lab analysis
6			13 20		**FILL** - black fine Sand and Silt, some tar-like material moist, coal tar-like odor	
7	4		6 4	7.5		
8			2 2		**FILL** - brown Silt, some fine Sand wet, coal tar-like odor, black staining	
9	5		4 4	3.2		
10			4 4		**FILL** - olive brown Silt, some fine Sand and trace fine Gravel wet, coal tar-like odor, black staining	
11	6		4 4	1.7		
12			11 51			SB-12 (12-14')
13	7		12 5	155	weathered shale bedrock with coal tar-like material until 13' strong coal tar-like odor, black staining 12-13', no staining 13-14'	* high PID readings at 13' * collected 12-14' sample for lab analysis
14			15 15			
15			35			
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PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-13a**	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 378.40 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 9/29/08	DATE FINISHED: 9/30/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 6.0 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 378.40 fmsl	
1	1		4 50/.4'	0.3	**FILL** - dark brown fine to med. Sand, little Silt, trace Gravel and pieces of asphalt shingles at 2' moist	* background PID ~.3-.4ppm * augered to 2'
2						
3	2		4 4	1.6	**FILL** - brown, grey and black fine to coarse Sand, fine Gravel moist, no odors	* hit piece of steel * hard drilling, teeth wore off bit, had to change lead auger
4	3		4 4	0.3	**FILL** - brown to black med. to coarse Sand, fine Gravel and piece of steel no odors	
5			4 100/.2'			
6					**see log of SB-13b for deeper lithology**	* broke 2nd bit, stopped work on SB-13a
7						
8						* boring resumed 2' west on SB-13b
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PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-13b	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 378.40 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 9/30/08	DATE FINISHED: 9/30/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 35.3 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 378.40 fmsl	
1						* SB-13a ceased due to repeated auger problems
2					0-4' sampling is on SB-13a	* SB-13b is 2' west of SB-13a
3						* augered to 4' without sampling
4						
5	3a		7	0.0	**FILL** - brown to black med. coarse Sand, fine Gravel and pieces of brick moist, no odor	
6			25 12 6			
7	4		3	0.0	**FILL** - red brown and grey to black fine Sand, Silt, some fine Gravel and pieces of brick moist	* collected 4-8' sample for lab analysis
8			4 3			
9	5		2 3	0.1	**FILL** - brown to black Silt, fine Sand, some fine Gravel and bricks moist, very slight coal tar-like odor at bottom	
10			4 6			
11	6		8 3	0.3		
12			3 4		**FILL** - dark brown to black Silt, fine Sand, fine Gravel, pieces of brick and occasional wood	* background PID ~0-0.5ppm
13	7		4 4	0.2	moist to wet, very slight coal tar-like odor	
14			4 4		**FILL** - same as above but with coal and no brick or wood	
15	8		5 3	0.1		* unsure if alluvium
16			5 4			
17	9		5 4	1.2		
18			9 9			
19	10		3 2	0.2		
20			2 2		**FILL** - dark brown and black Silt, fine Sand, trace fine Gravel, pieces of coal and brick	
21	11		2 WOH	0.3	wet to saturated below 18', very slight coal tar-like odor	* spoon fell 20-23' under weight or hammer and/or rod
22			WOH WOH			
23	12		2 WOR	0.3		* possible alluvium
24			WOH 1			
25	13		2 1	1.2		* collected 24-26' sample for lab analysis
26			1 2		**NATIVE ALLUVIUM -**	
27	14		3 13	N/A	black fine Sand (SP-SM) little Silt and fine Gravel saturated, very light coal tar-like or natural organic odor	
28			11 17			* rain affecting PID readings; PID not taken 26-35.3'
29	15		37 14	N/A	brown to black fine Gravel (GM) little Silt saturated, reduced natural organic odor	
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SB-13 (4-8')

SB-13 (24-26')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site

Log of Boring No. SB-13b (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
31	16		14 10 8	N/A		
32			8 10			* composition is evidence of platy structure
33	17		7 7	N/A	**buff to brown Silt, Clay** some fine weathered Shale wet, firm, thinly laminated, possibly disturbed, no odors	
34			5 11			* rounded gravel may indicate fracture infilling
35	18		15	N/A		
36			15 10		**Shale bedrock**	
37			11 100/.3			
38						
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PROJECT: Former West Station Plant Area MGP Site	Log of Boring No. SB-14	
BORING LOCATION: See Site Plan for SB locations	ELEVATION: 387.80 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company	DATE STARTED: 9/29/08	DATE FINISHED: 9/29/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers	TOTAL DEPTH: 27.7 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig	DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon	LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb / DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	Sample	Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.		DRILLING REMARKS
					Surface Elevation: 387.80 fmsl		
1	1		3	N/A	**FILL** - yellow brown fine to coarse Sand and fine Gravel dry		* raining; too wet for PID readings
2			11 8		**FILL** - black fine Sand moist, no odors		
3	2		9 8	N/A	**FILL** - black fine and med. to coarse Sand with pieces of brick and wood moist, no odors		
4			10 13				
5	3		14 6	N/A	**FILL** - black and little brown med. to coarse Sand, fine Gravel, Silt, pieces of brick and coke, tar-like material moist, strong coal tar-like odor	SB-14 (4-6')	* collected 4-6' sample for lab analysis
6			5 23				* pounded through brick
7	4		26 8	N/A	**FILL** - dark grey to black Silt, fine to coarse Sand, some fine Gravel, pieces of coke, coal, brick and wood, tar-like material moist, strong coal tar-like odor		
8			19 14				
9	5		15 10	N/A	**FILL** - dark grey and little black Silt, fine Sand, little fine Gravel and pieces of brick moist to wet, strong coal tar-like odor		
10			7 7				* brick making drilling hard at 9.7'
11	6		50/.3 67	N/A			
12			12 7				
13	7		6 3	N/A	**FILL** - black Silt, Clay, fine coarse Sand and trace fine Gravel (ML-SM) wet to saturated, strong coal tar-like odor		
14			3 3				
15	8		3 6	N/A	**FILL** - black and brown fine to coarse Sand, fine Gravel wet, minor amount of NAPL, very strong coal tar-like odor, strong sheens	SB-14 (14-16')	* collected 14-16' sample for lab analysis; headspace OVM = 116ppm
16			3 5				
17	9		2 7	N/A	**FILL** - black fine Gravel, little fine to coarse Sand wet to saturated, heavy sheen NAPL, strong coal tar-like odor, no tar		
18			22 3				
19	10		13 19	N/A	**FILL** - black and grey fine Gravel, little fine to coarse Sand wet to saturated, heavy sheens		
20			12 7				
21	11		5 5	N/A	**FILL** - black fine Gravel, little Silt and fine to coarse Sand coal tar-like material, heavy oily sheen		* harder at 22.7'
22			7 6		**NATIVE ALLUVIUM** - green to grey fine Sand (SW-SP), trace fine Gravel		* collected 24-26' sample for lab analysis, VOC's only; headspace OVM = 1.6ppm
23	12		4 2	N/A	wet NO RECOVERY		
24			4 32			SB-14 (24-26')	
25	13		17 22	N/A	green-grey med. to coarse Sand (SP) little Silt and fine Gravel wet to saturated, occasional black staining, slight coal tar-like odor, no sheens or NAPL		* collected 26-27.7' sample for lab analysis, VOC's only; headspace OVM = 0.3ppm
26			7 13				
27	14		13 10	N/A	tan to brown Clayey Silt (ML) weathered shale with occasional grey limestone interbeds. Moist, thinly laminated, no odors or staining	SB-14 (26-27.7')	
28			25 25		**Bedrock**		* spoon bouncing at 27.7'
29			49 50/.2				
30							

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-15	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 386.70 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/3/08	DATE FINISHED: 10/3/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 29.6 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST 18 feet	COMPL.
SAMPLING METHOD: 2" and 3" Split Spoons		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 386.70 fmsl	
1	1		6 12	0.0	**FILL** - dark brown to black Gravel, some Silt, some Sand, pieces of brick, wood, roots and coal moist, no odors	
2			30 19		**FILL** - brown to grey and black Gravel, some Sand, some Silt dry to moist, no odors	
3	2		9 14	0.0		
4			23 40		**FILL** - red black to grey and black med. to fine Sand and fine Gravel dry to moist, no odors	
5	3		5 13	5.0		
6			17 12		**FILL** - black and brown fine to med. Sand, fine Gravel and pieces of coal moist	* 3" split spoon used only for 6-8'; no blow count
7	4		N/A	3.6		
8						
9	5		3 5	3.1		
10			4 5			* collected 6-8' and 18-20' samples for lab. analysis
11	6		2 4	5.2	**FILL** - black coarse to fine Sand, some fine Gravel, occasional pieces of coal, coke and brick moist, no odors	
12			5 5			
13	7		5 2	0.0		
14			3 3		**FILL** - pieces of red brick and Gravel, little brown Silt and fine Sand moist to wet, no odors	
15	8		5 5	0.0		
16			3 3			
17	9		4 2	0.0	**FILL** - grey brown fine Gravel, coarse to fine Sand and trace Silt saturated, light coal tar-like and reduced organic odors	
18			3 5			
19	10		5 6	41.8		
20			5 8		**NATIVE ALLUVIUM** - black fine Sand (SP) little fine Gravel saturated, stronger odor (somewhat coal tar-like), light oily sheen at bottom	
21	11		2 4	24		
22			1 3		black fine Sand (SM-SP) some Silt, little fine Gravel, pieces of wood and glass saturated, light sheen, strong organic/septic-like odors	
23	12		5 4	0.8		
24			1 4		green grey Silt layer (ML) - saturated	
25	13		6 37	12.1	black fine Sand (SP-SM) some Silt, little fine Gravel wet, light sheens, strong septic odor	
26			5 7		green grey Silt layer (ML) - wet	
27	14		4 5	0.0	green brown Silt (ML-GM) with weathered bedrock moist, no odors	
28			5 5		brown weathered shale bedrock thinly laminated	
29	15		12 16	0.0		
30			8			

SB-15 (6-8')
SB-15 (18-20')
SB-15 (28-29.6')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site

Log of Boring No. SB-15 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
31			12 40 50/.1			
32						
33						
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PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-16	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 385.18 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/2/08	DATE FINISHED: 10/2/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 32.4 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" and 3" Split Spoons		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 385.18 fmsl	
1	1		23 10	0.3	**FILL** - road bedding, fine Gravel and coarse to fine Sand dry, no odors	* asphalt surface
2			8			
3	2		8 5	0.0		* 3" split spoon used at 6-8', 12-14', 14-16' and 26-28'; no blow counts at these depths
4			4 2		**FILL** - black fine Sand moist, no odors	
5	3		1 3	0.0		
6			3			
7	4		2 2 N/A	0.0	**FILL** - brown fine Gravel, Silt and fine Sand moist, no odors	SB-16 (6-8')
8						
9	5		6	0.0	**FILL** - brown and some black Silt, fine Gravel and little fine Sand moist to wet, no odors	
10			6 3			* collected 6-8', 16-18' and 28-30' samples for lab. analysis
11	6		3 2	0.0		
12			2 4			
13	7		N/A	0.0	**FILL** - green grey to black med. to coarse Sand, some fine Gravel, trace Silt, pieces of black coal moist	
14						
15	8		N/A	0.0	**FILL** - grey to brown grey fine to med. Gravel and coarse to fine Sand, pieces of Limestone dry to moist, angular gravel, no odors	
16						
17	9		4	46.0	**FILL** - weathered Gravel wet, light sheen, oily odor	SB-16 (16-18')
18			8			
19	10		8 5 2	10.2	**NATIVE ALLUVIUM** - black Silt (ML) and fine Gravel presence of NAPL, heavy sheens, coal tar-like odor	
20			2 6			* no PID readings due to rain after 20'
21	11		7 9	N/A	black fine Gravel (GM) some Silt presence of NAPL, strong coal tar-like odor	
22			9 8			
23	12		11 2	N/A	black Silt (ML) pieces of weathered Shale saturated, soft, presence of NAPL and sheens, coal tar-like odor	
24			2 6			
25	13		6 3	N/A	Gravel, Sand and flowing Silt (GM) presence of NAPL, coal tar-like odor	
26			5 12			
27	14		18 N/A	N/A	flowing Silt and Sand (ML) some fine angular Gravel, pushed cobble	
28						SB-16 (28-30')
29	15		7 12	N/A	pieces of weathered Shale bedrock	
30						

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site

Log of Boring No. SB-16 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
31	16		10 8 12	N/A	presence of NAPL **weathered Shale bedrock** including some Sand and Silt	
32	17		12 16	N/A	**Competent bedrock**	
33			22 100/.4			
34						
35						
36						
37						
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PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-17**	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: '-- fmsl	DATUM:
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/13/08	DATE FINISHED: 10/13/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 6.0 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: '-- fmsl	
1	1		16	0.0	**Asphalt**	
2			8 7		**FILL** - brown coarse to fine Sand, trace fine Gravel moist, no odors or staining	
3	2		6 5	0.0		* hit live electric wire @ 4.5'
4			3 2		**NO RECOVERY/BORING TERMINATED**	
5	3		2 4			* halted boring; called PM to inform of electric line
6			37 27			* RG&E crew arrives, places cones & caution tape around boring hole
7			19			
8						
9						
10						
11						
12						
13						
14						
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PROJECT: Former West Station Plant Area MGP Site	Log of Boring No. SB-18	
BORING LOCATION: See Site Plan for SB locations	ELEVATION: 393.49 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company	DATE STARTED: 10/6/08	DATE FINISHED: 10/6/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers	TOTAL DEPTH: 21.3 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig	DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" and 3" Split Spoons	LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb / DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 393.49 fmsl	
0					Asphalt	
1	1		65	0.0	**FILL** - grey fine Gravel, little coarse to fine Sand dry, no odors	
2			9 10		**FILL** - black fine Sand moist, no odors	
3	2		10	0.0	**FILL** - grey/brown and black fine to med. Sand, little fine Gravel moist	
4			10 11 11		**FILL** - grey brown Silt, little fine Sand	* 3" spoon used for 6-8', 10-12' and 12-14'
5	3		11	0.0	dry to moist, no odors	
6			4 2 2		**FILL** - grey/brown Silt, fine Gravel and fine to coarse Sand dry to moist, no odors, no impact identified	
7	4		3 N/A	0.0	NO RECOVERY	
8						* very hard drilling
9	5		5	0.0	**FILL** - fine Gravel, little fine to coarse Sand and pieces of concrete moist, no odors, no impact	
10			6 9			
11	6		50/.3' N/A	0.0	**FILL** - grey/brown fine to med. Gravel, little med. to coarse Sand, some Silt moist, no odors, no impact	
12						* collected 12-14' sample for lab analysis
13	7		N/A	214	**FILL** - red/black med. to coarse Sand and fine med. Gravel moist, slight sweet odor	* appears to be slag and foundry sands; possibly just below old foundation
14						
15	8		8	21.7		
16			15 10		**FILL** - red/black med. to coarse Sand, some fine Gravel, pieces of brick, coal, coke, glass and possible slag moist, slight sweet odor	
17	9		10 4	11.8		
18			3 3			
19	10		19 14	7.9	**FILL** - red black fine to med. Gravel, little med. to coarse Sand wet, slight sweet and coal tar-like odors	
20			15 19			
21	11		34 33	220	**FILL** - black fine to coarse Sand and fine Gravel with pieces of dry weathered rock, coal and coke wet, light sheen, coal tar-like odor	* collected 20-21.3' sample for lab analysis
22			4 100/.3'		weathered **Bedrock**	
23						
24						
25						
26						
27						
28						
29						
30						

SB-18 (12-14')

SB-18 (20-21.3')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-19	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 395.13 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/3/08	DATE FINISHED: 10/3/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 20.4 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" and 3" Split Spoons		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 395.13 fmsl	
1	1		8	0.0	**FILL** - grey to black fine to coarse Sand, fine Gravel, pieces of coal and coke moist, no odors	* asphalt surface
2			10 9			
3	2		5 5	0.0		
4			5 4		**FILL** - black and grey fine Gravel, yellow med. to coarse Sand, pieces of coal, coke and brick moist, no odors	
5	3		4 4	0.0		
6			4 4			* 3" split spoon only used 6-8'; no blow count
7	4		5 18/2'	0.0		
8						
9	5		3 4	0.0		
10			3 3		**FILL** - grey fine Gravel and med. to coarse Sand moist, no odors	
11	6		2 1	0.0		
12			1 1			* collected 6-8', 14-16' and 18-20.4' samples for lab. analysis
13	7		1 3	0.0		
14			4 6			
15	8		8 8	0.0		
16			8 16		**FILL** - black, yellow and brown med. to fine Sand, fine Gravel, pieces of coke wet, no odors	
17	9		17 10	0.0		
18			6 7		**NATIVE ALLUVIUM** -	
19	10		11 6	5.2	pieces of weathered Gravel (GP) some blue/green and black Sand coal tar-like odor	* augered 19.2-20'
20	11		17 50/.2	5.6	**Shale Bedrock** and some pieces of coal	
21			100/5"			
22						
23						
24						
25						
26						
27						
28						
29						
30						

SB-19 (6-8')
SB-19 (14-16')
SB-19 (18-20.4')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site	Log of Boring No. SB-20	
BORING LOCATION: See Site Plan for SB locations	ELEVATION: 391.77 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company	DATE STARTED: 10/8/08	DATE FINISHED: 10/8/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers	TOTAL DEPTH: 22.9 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig	DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" and 3" Split Spoons	LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb / DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 391.77 fmsl	
1	1		18 18	0.0	**Asphalt** **FILL** - grey fine Gravel and black med. to coarse Sand - dry	
2			26 34		**FILL** - hard foam like yellow waste material, brown fine Sand, fine Gravel/pieces of concrete - dry	* augered (2.8'-6.4') possible foundation
3	2		17 50/.3	0.0		* hit piece of steel in concrete, stopped to assess damage
4						
5	N/A		N/A		**Concrete** (possibly foundation)	* 3" split spoon used only at 6.5-8' (possible old concrete)
6						
7	3		19/18"	0.0	**FILL** - fine to med. Gravel and fine to coarse Sand dry	* more erratic hard drilling
8						
9	4			0.0	**FILL** - brown fine Sand, some black Silt, occasional fine Gravel dry, very little black staining	* dropped through apparent void at 8'
10						
11	5		3 1 1 1	0.0	**FILL** - brown fine Sand, little fine Gravel, some Silt, black and yellow pieces of coke, some yellow waste moist, no odors	
12						
13	6		3 2	0.0	**FILL** - pieces of concrete, black fine Sand, fine Gravel, pieces of coke and coal moist, no odor	
14			3 6		**FILL** - brown to yellow brown Silt and Clay, little fine Sand and fine Gravel	* appears to be alluvium yet there are concrete pieces at 21'
15	7		2 3	0.0	wet, no odors	
16			5 6			
17	8		2/24'	0.0	**FILL** - brown Silt and Clay, little fine Sand, occasional fine Gravel wet, no odors	* spoon dropped through possible void at 16'
18						
19	9		1 15	0.0	**FILL** - grey fine angular Gravel and fine to coarse Sand moist to dry, no odors	* collected 18-20' sample for lab. analysis, VOC's only
20			11 7		**FILL** - brown Silt and Clay, little fine Sand, occasional fine Gravel wet, no odors	
21	10		3 5	0.0	**FILL** - pieces of concrete, med. to coarse Sand and fine Gravel moist to dry, no odors	
22	11		19 23	0.0		* collected 22-22.5' sample for lab. analysis, VOC's only
23			34 100/.4		**NATIVE ALLUVIUM** - brown Silt and Clay (ML) some fine to coarse Sand, fine Gravel - no odors	
24					brown weathered **Shale Bedrock**	
25						
26						
27						
28						
29						
30						

SB-20 (18-20')

SB-20 (22-22.5')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-21	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 396.10 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/8/08	DATE FINISHED: 10/8/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 20.0 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" and 3" Split Spoons		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 396.10 fmsl	
1	1		3	0.0	**FILL** - brown fine coarse Sand, fine to med. Gravel, some Silt, pieces of brick and coal moist, no odors, black staining from coal	
2			5			* 3" spoon only used 4'-6'
3	2		5	0.0	**FILL** - fine med. Gravel, brown fine to coarse Sand, pieces of brick, coal and coke moist, no odors	
4			5			* collected 4'-6' sample for lab. analysis; only enough for one 4oz & one 8oz sample
5	3		4	0.0	**FILL** - fine med. Gravel, brown fine to coarse Sand, pieces of brick, coal and coke wet, no odors	
6			4			
7	4		2	0.0	**FILL** - green brown fine Gravel, some fine to coarse Sand and Silt moist, no odors	
8			4			
9	5		3/1'	0.0	**FILL** - dark green and brown fine angular Gravel, some Silt and fine Sand moist	
10			4			
11	6		3	0.0		
12			3			
13	7		3	0.0	**FILL** - grey and black med. to fine Sand, little fine Gravel, light grey coal, coke, possible ash and slag moist, no odors	
14			2			
15	8		2	0.0		
16			2			
17	9		2	0.0	**FILL** - black, little brown med. to coarse Sand, fine Gravel, pieces of coal with ash, brick and slag wet	
18			1			
19	10		1	0.0	brown weathered **Shale Bedrock** dry	
20			1			
21			1			
22			1			
23			3			
24			2			
25			1			
26			3			
27			4			
28			4			
29			7			
30			14			
			16			
			19			
			37			
			41			

SB-21 (4-6')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-22	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 387.86 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/7/08	DATE FINISHED: 10/7/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 26.4 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" and 3" Split Spoons		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 387.86 fmsl	
1	1		9	0.0	**FILL** - grey fine Gravel, some fine and med. to coarse Sand moist	
2			18		**FILL** - black fine to med. Sand, little fine Gravel, pieces of coal moist, very slight coal tar-like odor	
3	2		18 15 8	0.0	**FILL** - brown fine Sand and occasional rounded fine Gravel moist, very slight coal tar-like odor	
4			8 5			
5	3		5 17/2'	0.0	**FILL** - black fine to coarse Sand, trace fine Gravel and pieces of coal moist, slight coal tar-like odor	* 3" spoon used only for 4'-8'
6						
7	4		17/2'	0.0	**FILL** - brown fine Sand and pieces of concrete moist, very slight coal tar like odor	SB-22(6-8') * collected 6-8' sample for lab. analysis
8						
9	5		4 7	0.0		
10			16 5		**FILL** - brown fine Sand, trace fine Gravel	
11	6		2 2	0.0	moist, no odors, uniform	
12			3 3			
13	7		2 2	0.0	**FILL** - brown fine Sand, occasional fine Gravel no odors, uniform	
14			2 3			
15	8		1 1	0.0	**FILL** - brown fine Sand **FILL** - brown Silt, little fine Sand **FILL** - reddish black med. to coarse Sand, pieces of coal	
16			2 4		moist, no odors	
17	9		3 3	0.0	**FILL** - black med. to coarse Sand, little fine Gravel, pieces of coal moist to wet, no odors	
18			2 3			
19	10		7 4	0.0	**FILL** - brown and black fine Gravel, some fine to coarse Sand, trace Silt, pieces of coal moist to wet at bottom, mixed/disturbed, no odors	
20			2			
21	11		7 2	0.0	**NATIVE ALLUVIUM** - grey-brown fine angular Gravel (GP) trace fine Sand, little Silt saturated, no odors, no impact noticed	
22			8 15			
23	12		15 9	0.0		
24			10 5		grey to grey-brown fine angular Shale Gravel (GP) some Silty Sand saturated	SB-22 (24-25.9')
25	13		4 18	0.0		* collected 24-25.9' sample for lab. analysis
26	14		20 7		weathered **Shale Bedrock**	
27			100/.4' 100/.4'			
28						
29						
30						

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-23	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 388.27 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/7/08	DATE FINISHED: 10/7/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 34.4 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" and 3" Split Spoons		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 388.27 fmsl	
1	1		3	0.0	**FILL** - brown fine Gravel, some fine Sand and Silt moist	
2			5 18		**FILL** - grey and black fine gravel, fine to coarse Sand and pieces of old concrete no odor	
3	2		15 15	0.0	**FILL** - yellow to black fine to med. angular Gravel, pieces of brick and coke moist to dry, no odors	
4			8 7			* 3" spoon used only for 4'-6'
5	3		4 20/2'	0.0		
6					**FILL** - brown fine to coarse Sand, occasional pieces of coal moist to wet at bottom, very uniform, no odors, minor black staining	* collected 4-6' sample for lab. analysis
7	4		3	0.0		
8			2 3			
9	5		4 4	0.0	**FILL** - brown fine Sand with pieces of brick moist to wet, no odors, some black staining	
10			15 13			
11	6		13 6	0.0	**FILL** - grey fine Gravel, some fine to coarse Sand, pieces of brick moist, no odors	
12			6 4			
13	7		3 1	47.7	**FILL** - brown, black and grey fine Sand, little fine Gravel, trace Silt, tar-like material moist to wet, coal tar-like odor	* collected 12-14' sample for lab. analysis (VOC's only)
14			2 1		**FILL** - brown, black and grey fine Sand, little fine Gravel, trace Silt (SP) wet, very slight coal tar-like odor	
15	8		1 3	0.0		
16			3 2			
17	9		4 1	0.0	**FILL** - dark brown to black med. to coarse Sand, fine Gravel, trace Clay, pieces of brick, coke and coal wet, no odors	
18			1 1			
19	10		1 3	0.0	**FILL** - green brown fine Sand, little Silt and occasional fine Gravel wet, no odors, slight black staining	
20			2 3		**FILL** - parts of black wood or compressed paper no odors	
21	11		6 4 30/2'	0.0	**FILL** - Sand, Gravel, black pieces of either wood, compressed paper or tar paper wet, coal tar-like odor	
22					**NATIVE ALLUVIUM** - grey brown angular Gravel (GP) little fine to coarse Sand and Clay saturated, no odors	
23	12		7	0.0		
24			4 7			
25	13		6 3	0.0	green grey fine angular Gravel (GP) little fine to coarse Sand, Clay, and pieces of weathered shale wet to saturated, no odors	
26			3 4			
27	14		3 11	0.0	weathered angular bedrock consisting of Limestone and Shale saturated to wet, various degrees of weathering, no odors	
28			11 11			
29	15		11 16	0.0		
30			18			

SB-23 (4-6')
SB-23 (12-14')
SB-23 (20-22')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site

Log of Boring No. SB-23 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
31	16		6 5 8	0.0		
32			5 4		fine weathered/rounded bedrock gravel and fine Silty Sand matrix	
33	17		10 5	0.0	**grey weathered Shale Bedrock**	
34			100/.4' 100/.4'	0.0		
35						
36						
37						
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PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-24	
BORING LOCATION:		ELEVATION:	DATUM:
DRILLING CONTRACTOR:		DATE STARTED:	DATE FINISHED:
DRILLING METHOD:		TOTAL DEPTH:	MEASURING POINT:
DRILLING EQUIPMENT:		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD:		LOGGED BY:	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL:	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation:	
1–30					Soil boring SB-24 not installed.	

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site	Log of Boring No. SB-25	
BORING LOCATION: See Site Plan for SB locations	ELEVATION: 386.26 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company	DATE STARTED: 10/14/08	DATE FINISHED: 10/14/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers	TOTAL DEPTH: 11.6 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig	DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon	LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb / DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 386.26 fmsl	
1	1		1 9 11	0.0	**FILL** - brown fine Sand moist **FILL** - grey fine Gravel and coarse to fine Sand	
2			17		**FILL** - black and dark grey fine to coarse Sand, little fine Gravel, pieces of coal, coke and fabric	SB-25 (1.7-2.0') SB-25 (2-4') * collected 1.7-2' and 2-4' samples for lab analysis
3	2		7 9 16	2.4	septic odor (not coal tar-like) **FILL** - black fine to coarse Sand and Silt, trace fine Gravel, black fibrous material	
4			4			
5	3		1 2 1	4.0	wet, strong coal tar-like odor **FILL** - black Silt and fine Sand	* PID = 4ppm at cuttings
6			2		saturated, strong coal tar-like odor	
7	4		3 7 10	10.8	**FILL** - black fibrous material with coal tar-like material wet	
8			14		**FILL** - yellow brown fine Gravel, little med. to coarse Sand and bits of coal	
9	5		7 13	0.4	wet **FILL** - brown to black fine Gravel, little coarse to fine Sand, some Silt, some fibrous material	
10			8		saturated, slight coal tar-like odor	
11	6		5 1 3	0.6	**FILL** - same as above without fibrous material	
12			9		weathered **Shale Bedrock** black coal tar-like material on bedding planes	
13			100/.1		saturated	
14						
15						
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PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-26	
BORING LOCATION:		ELEVATION:	DATUM:
DRILLING CONTRACTOR:		DATE STARTED:	DATE FINISHED:
DRILLING METHOD:		TOTAL DEPTH:	MEASURING POINT:
DRILLING EQUIPMENT:		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD:		LOGGED BY:	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL:	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation:	
1–30					Soil boring SB-26 not installed.	

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site	Log of Boring No. SB-27	
BORING LOCATION: See Site Plan for SB locations	ELEVATION: 392.82 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company	DATE STARTED: 10/15/08	DATE FINISHED: 10/15/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers	TOTAL DEPTH: 22.9 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig	DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon	LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb / DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION	DRILLING REMARKS
					Surface Elevation: 392.82 fmsl	
1	1		8	0.0	**FILL** - brown to grey brown fine Gravel, little fine to coarse Sand dry	
2			9 6		**FILL** - black fine Sand and Silt moist	
3	2		8 9 50/.4	0.0	**FILL** - black very fine Sand and Silt, pieces of brick and coal moist	* grinding at 3-4'
4						
5	3		6 5	0.0	**FILL** - brown to black fine to coarse Sand, some fine Gravel, little Silt coal and brick moist	
6			4 3			
7	4		3 2	0.0	**FILL** - brown fine Sand, some Silt and little fine Gravel, pieces of brick and glass moist, no odors	SB-27 (6-8')
8			3 4			
9	5		5 5	0.0	**FILL** - grey red, black and yellow black coarse to fine Sand, fine Gravel, pieces of brick and wood moist to saturated at bottom	
10			3 6			
11	6		6 5	0.0	**FILL** - grey brown fine to coarse Sand and Silt, some black med. Sand, little fine Gravel moist to wet	
12			2 3			
13	7		1 1	0.0	**FILL** - brown to black at 11' fine Sand and Silt, some fine Gravel, pieces of brick and occasional coal wet, moderate to quick dilatency	
14			13			
15	8		10 9	0.0	**FILL** - black and red med. to coarse Sand, little fine Gravel with pieces of coal, coke and brick wet, no odors	
16			50/.4			
17	9		7 6	0.0	**FILL** - interbedded grey med. to coarse Sand, fine Gravel, brown Silt and fine Sand wet to saturated, no odors	
18			6 5			
19	10		19	0.0	**NATIVE ALLUVIUM** - grey fine Shale Gravel (GP) angular pieces of dolomite saturated, no odors	
20			9 5			SB-27 (20-22')
21	11		7 4	0.0	same as above (GP) with some brown Silt wet, thinly laminated, no odors, black staining	* collected 20-22' sample for lab. analysis
22			15 15		weathered **Shale Bedrock** blebs of NAPL present moist, strong coal tar-like odor, black staining along fracture	* collected 22-22.9' sample for lab. analysis (VOC's only)
23	12		20 11	10.1		SB-27 (22-24')
24			100/.4			
25						
26						
27						
28						
29						
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*sample ID SB-27(22-24') represents sample volume collected from 22-22.9' interval

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-28	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 385.32 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/15/08	DATE FINISHED: 10/15/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 29.3 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 385.32 fmsl	
1	1		6	0.0	**FILL** - brown and red fine Gravel, some fine to coarse Sand and little Silt dry	* soil & gravel surface
2			9 8		**FILL** - black with little brown Silt and fine Sand, trace fine Gravel moist, slight coal tar-like odor	
3	2		6 12	0.0	**FILL** - black, yellow, brown and red fine Gravel, fine to coarse Sand, some Silt, pieces of coal, brick and glass moist, slight coal tar-like odor	
4			14 14		**FILL** - grey to black fine Gravel, some coarse to fine Sand, pieces of wood, coal and coke	
5	3		14 13	0.0	moist, very slight coal tar-like odor	
6			8 6		**FILL** - dark grey, black and red fine Gravel, Silt, some fine to coarse Sand, pieces of coal and brick moist, no odors	SB-28 (6-8')
7	4		4 6	0.0		* collected 6-8' sample for lab analysis
8			7 4		**FILL** - dark grey and red fine Gravel, fine Sand, Silt, pieces of brick and coal moist, no odors	
9	5		6 3	0.0		
10			5 4		**FILL** - dark brown fine Sand and Silt, trace fine Gravel, pieces of brick and coal moist to wet at bottom, occasional black staining	
11	6		4 2	0.0		
12			3 7			
13	7		9 3	0.0	**FILL** - dark brown to green brown fine Sand, little Silt, trace fine Gravel, pieces of brick, coal and wood moist, no odors, occasional black staining	
14			4 4			
15	8		5 3	0.0		
16			3 6		**FILL** - black coarse Sand, trace fine Gravel, pieces of coal and coke wet, no odors	
17	9		18 4	0.0	FILL - black and some red fine Gravel, med. to coarse Sand, some black fine Sand and Silt saturated, no odors	
18			3 7		**FILL** - dark grey fine to med. Sand, some Silt, trace fine Gravel saturated, uniform, no odors	
19	10		3 3	0.0		
20			1 7		**FILL** - olive brown fine to med. Sand, some fine Gravel and weathered Shale saturated, uniform, no odors	
21	11		4 1	0.0		
22			1 2		**FILL** - dark grey to black fine Sand and Silt, trace fine Gravel saturated, uniform, slight septic odor	
23	12		3 WOH	0.0		
24			2 2		**FILL** - dark grey, dark brown, olive brown, red and yellow green very fine Sand, Silt, little fine Gravel and pieces of brick saturated, slight septic odor	
25	13		2 3	0.0		
26			5 15			SB-28 (26-28')
27	14		16 7	0.0	**NATIVE ALLUVIUM** - olive brown Silt (ML Clay, very fine Sand, cobble in shoe saturated, no odors	* collected 26-28' sample for lab analysis
28			14			
29	15		21 25	0.0	olive brown weathered **Shale Bedrock**	
30			10			

PROJECT: Former West Station Plant Area MGP Site

Log of Boring No. SB-28 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
31			17 100/.3		moist, no odors	
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PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-29	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 386.71 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/15/08	DATE FINISHED: 10/15/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 12.4 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-85 Rotary Drill Rig		DEPTH TO WATER: FIRST 6.5 feet	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: MAC	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 386.71 fmsl	
1	1		3	0.0	**FILL** - brown fine Sand, Silt, little black Sand and trace pieces of brick dry, no odors or staining	
2			7			* 12ppm reading on piece of wood
3	2		9 15 8	4.3	**FILL** - brown to black Sand, Gravel, pieces of brick and wood, some dry tar-like material slight coal tar-like odor	* PID reading coming from sand, odor coming from tar-like material
4			12 17			
5	3		22 8	3.8	**FILL** - brown to black Sand, Gravel and pieces of brick slight coal tar-like odor	SB-29 (4-6')
6			4 3		**NATIVE ALLUVIUM** -	* collected 4-6' sample for lab analysis
7	4		3 1	0.0	brown fine Sand (SM) some Silt, saturated, soft laminations no odors, staining or sheens	
8			2 1			SB-29 (8-10')
9	5		2 1	0.0		* collected 8-10' sample for lab analysis
10			1 1		grey to grey black Sand (SP)trace soft/low plasticity fines saturated, moderate septic odor from decaying organics, no staining or sheens	
11	6		1 6	0.0		
12	7		7 4	0.0		* auger refusal at 12.4'
13			5 100/.4		grey **Shale Bedrock**	
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PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-30	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 392.61 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/16/08	DATE FINISHED: 10/16/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 22.2 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION	DRILLING REMARKS
					Surface Elevation: 392.61 fmsl	
1	1		3 5	0.0	**FILL** - brown to dark grey coarse to fine Sand, fine Gravel, trace Silt, pieces of coal and coke moist	* raining during boring
2			7 8		**FILL** - brown fine to coarse Sand and fine Gravel moist, no odors	SB-30 (2-4') * collected 2-4' sample for lab analysis
3	2		5 3	0.0		
4			2 2		**FILL** - dark brown fine to coarse Sand, trace fine Gravel, pieces of coal and coke moist, no odor	
5	3		4 3	0.0		
6			3 3		**FILL** - dark brown to black fine Gravel and fine to coarse Sand, little Silt, coal tar-like material at bottom moist	SB-30 (6-8') * collected 6-8' sample for lab analysis (VOCs only)
7	4		3 3	21.1		
8			11 6		**FILL** - brown fine Sand and Silt moist, no odors	
9	5		6 6	0.0		
10			9 5		**FILL** - brown fine Gravel and fine to coarse Sand, little Silt moist, no odors	
11	6		16 32	0.0		
12			7 9		**FILL** - brown to buff Silt, Clay, little fine Shale Gravel, some fine Sand wet, no odors	
13	7		10 1	0.0		
14			3 18		**FILL** - grey and brown fine angular Gravel, some fine to coarse Sand, trace Silt moist, no odors	
15	8		20 5	0.0		
16			12 12		**FILL** - brown to red brown subangular fine Gravel, little fine Sand and Clay saturated, no odors	* water on spoon
17	9		9 5	0.0		
18			6 8		**NATIVE ALLUVIUM** - green brown fine angular and rounded Gravel (GP) some fine Sand, Clay saturated, no odors	SB-30 (18-20') * collected 18-20' sample for lab analysis
19	10		13 7	0.0		
20			17 16		green brown rounded fine Gravel (GP) Clayey Silt and fine to med. Sand layers saturated	
21	11		25 10	0.0		
22	12		28 50/.3		grey **Shale Bedrock**	
23			100/.2			
24						
25						
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BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-31	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 385.70 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/16/08	DATE FINISHED: 10/16/08
DRILLING METHOD: 4 1/4" dia. Hollow Stem Augers		TOTAL DEPTH: 27.8 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME-75 Rotary Drill Rig		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" Split Spoon		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 385.70 fmsl	
0					Asphalt	* used air knife auger to 4' to clear for utilities
2			N/A	0.0	**FILL** - grey to brown fine Gravel and coarse to fine Sand with pieces of brick and concrete dry to moist	* hit hard concrete @ 4-5', moved south 10'
4						* 2nd hole had hard drilling 1-3', moved south again
5	1		11	0.0	**FILL** - yellow, brown, grey and red fine Gravel and fine to med. Sand, some Clay	* ground through concrete
6			8 5			* hole 3 on geophysics grid line 600N
7	2		3 2	0.0	**FILL** - yellow brown fine Sand, occasional pieces of brick and coal moist, no odors	* collected 4-6' sample for lab analysis
8			2 2			
9	3		3 5	0.0	**FILL** - yellow brown to black fine Sand and fine grey angular Gravel moist, no odor	
10			3 3			
11	4		4 3	0.0	**FILL** - black, brown and red fine to coarse Sand, little fine Gravel, trace Silt, pieces of coal and coke moist	
12			4 3		**FILL** - brown, green/black and grey fine to coarse Sand, some Silt and fine Gravel	
13	5		4 4	0.0	**FILL** - black, green grey Clayey Silt, little fine Sand, wet	
14			4 3		**FILL** - brown, grey and black fine Sand and Clay, Silt and fine Gravel	
15	6		7 1	27.1	wet, strong fuel/oil odor	
16			3 6			
17	7		10 3	10.2	**FILL** - black, grey brown fine Gravel, Clayey Silt, some fine Sand wet fuel/oil odor	
18			5 7			
19	8		15 3	95	**FILL** - grey brown fine to med. Sand, Clayey Silt, piece of wood wet to saturated, cedar odor from wood	* PID reading coming from wood
20			6 4			
21	9		3 2	0.0	**FILL** - green brown and black fine coarse Sand and fine Gravel, some Clayey Silt, occasional piece of wood, pushed cobble saturated to wet	
22			3 3			* collected 22-24' sample for lab analysis
23	10		4 1	0.0	**FILL** - black Silt, little fine Sand saturated, flowing	
24			3 4		NO RECOVERY	* spoon fell 24-26' under weight of hammer
25	11		1 WOH	0.0		
26			WOH WOH		**NATIVE ALLUVIUM** - soft dark grey Silt (SP)little fine Sand saturated, flowing, no odors	* possible alluvium
27	12		WOH WOR	0.0		
28			2 3		grey **Shale Bedrock**	
29			100/.3			
30						

SB-31 (4-6')

SB-31 (22-24')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-32	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 386.01 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/23/08	DATE FINISHED: 10/23/08
DRILLING METHOD: Direct Push		TOTAL DEPTH: 27.0 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: GEOPROBE 6610 DT		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 4' Direct Push Acetate Sleeves		LOGGED BY: G. Combes	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 386.01 fmsl	
1					**FILL** - black fine med. Gravel, trace fine to coarse Sand moist	* hand cleared 0-3'
2	1		N/A	0.0	**FILL** - brown coarse to fine Sand, fine Gravel, little Clayey Silt and piece of coal - moist, no odors	
3					**FILL** - brown Clayey Silt, some fine to med. Sand, little fine Gravel moist, no odors	
4						
5						
6	2		N/A	0.0	**FILL** - black, brown and yellow brown fine Gravel, coarse fine Sand, some Silt, moist, no odors	* collected 4-8' sample for lab analysis
7						
8						
9						
10	3		N/A	0.0		
11						
12						
13						
14	4		N/A	0.0	**FILL** - brown to black fine Sand, Silt, trace fine rounded Gravel moist to wet at 10' and saturated at 14' - slight septic odors, no staining	
15						
16						
17						
18	5		N/A	0.0		
19						
20						
21						* collected 20-22' sample for lab analysis
22	6		N/A	0.0	**FILL** - black fine to med. Sand, trace fine Gravel saturated	
23						
24						
25					**FILL** - black coarse and med. Sand, fine weathered shale Gravel and some Silt, saturated, septic odor	* 2" of weathered shale in shoe
26	7		N/A	0.0		
27					gray **Shale Bedrock**	* auger refusal @ 27'
28						
29						
30						

SB-32 (4-8')

SB-31 (20-22')

BORING ALL SOIL BORINGS.GPJ (5/09)

PROJECT: Former West Station Plant Area MGP Site		Log of Boring No. SB-33	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: 392.17 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/28/08	DATE FINISHED: 10/28/08
DRILLING METHOD:		TOTAL DEPTH: 3.0 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: Backhoe		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD:		LOGGED BY: MAC	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 392.17	
1					**NATIVE ALLUVIUM** - fine brown Sand (SP) with Silt and angular bedrock cobbles	* collected 2-3' sample for lab analysis
2					same as above (SP) with significant staining, sheens and brown separate NAPL phase, strong petroleum hydrocarbon like odor	* boring terminated at 3' due to close proximity of river and to eliminate possibility of sheens on surface water
3					SB-33 (2-3')	
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PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-34**	
BORING LOCATION: See Site Plan for SB locations		ELEVATION: fmsl	DATUM:
DRILLING CONTRACTOR: Nothnagle Drilling Company		DATE STARTED: 10/28/08	DATE FINISHED: 10/28/08
DRILLING METHOD:		TOTAL DEPTH: 6.0 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: Backhoe		DEPTH TO WATER: FIRST 5 feet	COMPL.
SAMPLING METHOD:		LOGGED BY: MAC	
HAMMER WEIGHT: 140lb	DROP: 30" (auto)	RESPONSIBLE PROFESSIONAL: R. Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: fmsl	
1–30					**FILL** - black Sand, Silt, Gravel, abundant large cobble, brick, concrete, slight sheen on water, septic odor throughout	* no samples collected ▽ * excavator refusal at ~6'

BORING ALL SOIL BORINGS.GPJ (5/09)

2009 SOIL BORING LOGS

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-35**	
BORING LOCATION: See Site Map		ELEVATION: 413.55 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/5/09	DATE FINISHED: 11/5/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 16.6 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 413.55 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
5	1		3 3 4 4	0.0	**FILL** Fine brown sand with silt, little masonry and refractory brick. Firm, moist.	
7	2		2 4 5 9	0.0		
9	3		5 5 4 7	1.1	Slight musty and coal tar-like odor. No staining or sheens.	
10–11	4		6 6 7 7	0.2	**FILL** Fine brown sand with silt, little masonry and refractory brick. Firm, moist. No odor, staining or sheens.	
13	5		5 5 9 6	0.1		
14–15	6		1 1 2 5 1 2	0.0	Gray to black silt with light brown mottling. SB-35(14-16')	* collected 14-16' for lab analysis
16	7		50/0.1	NA		
17					**Bedrock**	
18–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-36**	
BORING LOCATION: See Site Map		ELEVATION: 413.09 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/6/09	DATE FINISHED: 11/6/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 14.1 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 10 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 413.09 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
5	1		4 4 4 5	0.0	**FILL** Gray to brown/black silt with coarse sand, little gravel, coal dust and fragments.	
7	2		3 7 9 8	0.0	**FILL** Gray-green fine sand, trace silt, little coarse sand to fine gravel. Firm, moist. No staining or odors.	
9	3		1 2 4 6	0.0	**FILL** Black-brown fine to coarse sand with little subrounded, trace silt, brick fragments.	
10					Musty, septic-like odor. Saturated.	
11	4		2 5 6 6	0.2		
12					**FILL** Fine to coarse sand with little silt. Saturated and loose. SB-36(12-14')	* collected 12-14' for lab analysis
13	5		3 4 7 15	0.0		
14	6		50/0.1	0.0	**Bedrock**	
15–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-37**	
BORING LOCATION: See Site Map		ELEVATION: 413.74 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/5/09	DATE FINISHED: 11/5/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 14.5 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 11 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 413.74 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
4–8	1		1 5 7 9	0.0	**FILL** Black sand with brick, concrete, little clinker. Dry, loose. No odors.	
7–8	2		3 4 6 9	0.0		
8–12	3		2 2 8 6	0.0	**NATIVE ALLUVIUM** Yellow-brown fine sand with silt, little angular gravel. Saturated, soft. Becoming hard with increasing silt content.	
11–12	4		2 3 6 7	0.0		
12–13					SB-37(12-14')	* collected 12-14' for lab analysis
13–14	5		6 11 15 21	0.0		
14	6		40/0.3	0.0	**Bedrock** No staining or odors.	
15–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site	Log of Boring No. SB-38	
BORING LOCATION: See Site Map	ELEVATION: 413.58 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling	DATE STARTED: 11/5/09	DATE FINISHED: 11/5/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers	TOTAL DEPTH: 13.7 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75	DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons	LOGGED BY: MAC	
HAMMER WEIGHT: 140 / DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION (NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.)	DRILLING REMARKS
					Surface Elevation: 413.58 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
5	1		3 4 4 4	0.0	**FILL** Brown fine sand with silt, little brick, trace coal. Firm, moist. No staining or odors.	
7	2		3 3 6 9	0.0		
9	3		5 9 6 5	0.0		
11	4		1 4 7 5	0.0	**NATIVE ALLUVIUM** Brown fine sand with silt. No staining or odors. Soft throughout. SB-38(11-13')	* collected 11-13' for lab analysis
13	5		1 1 12 50/0.2	0.0		
14					**Bedrock**	
15–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-39**	
BORING LOCATION: See Site Map		ELEVATION: 415.28 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/5/09	DATE FINISHED: 11/5/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 21.1 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 14 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION (NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.)	DRILLING REMARKS
					Surface Elevation: 415.28 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
5	1		4 15 16 17	0.0	**FILL** Brown fine sand, trace masonry brick and coal dust. Soft to loose.	
7	2		18 13 15 17	0.2	**FILL** Gray limestone, little silt and coarse sand with some brick pieces. Loose. No odors.	
9	3		7 8 5 8	0.1	**FILL** Brown fine sand with silt, brick, concrete, few coal pieces. No staining or odors.	
10					Slight light odor (not coal tar-like).	
11	4		11 8 9 7	3.0		
12					No odors.	
13	5		7 10 6 8	0.6		
14–16	6		2 5 5 9	0.5	**FILL** Tan-brown fine sand with little coarse sand and trace subrounded gravel. Loose to soft, saturated. No odors. SB-39(14-16')	* collected 14-16' for lab analysis
17	7		13 13 8 13	0.0		
18						
19	8		3 3 5 4	0.0	Loose, little recovery.	
20–21	9		11 37 50/0.1	0.0		
22					**Bedrock**	
23–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-40**	
BORING LOCATION: See Site Map		ELEVATION: 414.19 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/5/09	DATE FINISHED: 11/6/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 15.4 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 12 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION (NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.)	DRILLING REMARKS
					Surface Elevation: 414.19 fmsl	
1–5					*hand excavate to 4.0' bgs with backhoe.	
6					*drove cobble ahead of sampler	
7–8	1		2 2 4 7	0.0		
8–9	2		8 16 7 8	0.0	**FILL** Brown fine sand with silt, trace coarse subangular gravel. Firm, moist. No staining or odor.	
10–11	3		5 22 19 10	0.0	As above, with little shale bedrock.	
12–13	4		3 4 7 12	0.0	**FILL** Brown fine sand with silt, trace coarse subangular gravel, little shale bedrock. Low plasticity fines. Firm, moist. No staining or odor. SB-40(12-14')	* collected 12-14' for lab analysis
14–15	5		2 12 50/0.4	0.0		
15–16					**Bedrock**	
16–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-41**	
BORING LOCATION: See Site Map		ELEVATION: 414.20 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 10/29/09	DATE FINISHED: 10/29/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 22.7 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 11 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 414.20 fmsl	
1	1		1 1 1 1	0	**FILL** Light brown coarse sand with little gravel. Loose, moist. No odors.	
2						
3	2		1 1 3 4	0		
4					As above, with increasing fine, angular limestone gravel.	
5	3		4 3 4 4	1.1		
6					**FILL** Medium angular limestone gravel with fine to medium sand. Loose, moist. No staining or odors.	
7	4		4 4 3 5	1.4		
8						
9	5		3 2 1 3	1.0		
10						
11	6		1 2 4 4	1.5		
12					**FILL** Brown fine sand with silt, trace brick and trace rounded gravel. Soft. SB-41(12-14')	* collected 12-14' for lab analysis
13	7		7 6 6 7	1.1		
14						
15	8		11 8 4 4	NA		
16						
17	9		13 3 9 11	1.0	**NATIVE ALLUVIUM** Weathered Rochester shale bedrock, gravel with fine to medium sand. Soft. No staining or odors.	
18						
19	10		5 4 3 3	NA		
20					As above, bedrock locally weathered to clay. SB-41(20-22')	* collected 20-22' for lab analysis
21	11		11 11 12 12	0.7		
22	12		12 50/0.2	NA		
23					**Native Alluvium** Unweathered shale bedrock, visible platey structure, locally weathered to silt/clay.	
24						
25						
26						
27						
28						
29						
30						

PROJECT: Former West Station Plant Area MGP Site	Log of Boring No. SB-42	
BORING LOCATION: See Site Map	ELEVATION: 413.94 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling	DATE STARTED: 10/29/09	DATE FINISHED: 10/29/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers	TOTAL DEPTH: 13.4 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75	DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons	LOGGED BY: MAC	
HAMMER WEIGHT: 140 / DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION (NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.)	DRILLING REMARKS
					Surface Elevation: 413.94 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
5	1		5 4 5 8	0.1	**FILL** Fine sand with silt, gravel, trace brick and asphalt pieces. Loose, moist. No staining or odor.	
7	2		4 2 2 2	8.5	**FILL** Brown-black fine sand with brick pieces, coal fragments. No staining or odor.	
9	3		3 2 1 2	3.7		
10					SB-42(10-10.3')	* collected 10-10.3' for lab analysis
11	4		2 4 4 5	60.0		
12					**Bedrock**	
13	5		7 9 50/0.4	38.0	Slight coal tar-like odor in uppermost weathered bedrock. Locally dry.	
14–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-43**	
BORING LOCATION: See Site Map		ELEVATION: 414.50 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 10/29/09	DATE FINISHED: 10/30/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 26.8 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 16.5 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 414.50 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
4					**FILL** Loose limestone gravel with fine to medium sand, little silt. Moist.	
5	1		5 7 9 9	7.1		
6–7	2		8 8 8 8	8.3	**FILL** Loose limestone gravel with fine to medium sand, little silt and organic silt between 7' and 8' bgs. Moist. No odors or staining present.	
8–9	3		8 3 2 2	11.4	**FILL** Black foundry sand mixed with little silt/gravel and sand. Dry throughout. No staining or odors.	
10–11	4		4 3 2 3	5.7	As above, with little coal slag, trace paper (tar paper appearance). Slight coal tar-like odor at 11.5-12.0'	
12–13				NA		
14–15	5		2 2 2 2	0	**FILL** Black foundry sand. Moist. Slight coal tar-like odor.	
16–17	6		1 1 1 1	65	As above, with sheen on water on spoon. Strong coal tar-like odor.	
18–19	7		4 6 9 8	49/123	**FILL** Fine sand with silt and coarse gravel, little wood fiber. Heavy sheen. Strong coal tar-like odor. Highest PID reading (123 ppm) at wood fiber. SB-43(18-20')	* collected 18-20' for lab analysis
20–21	8		4 8 8 9	20		
22–23	9		8 8 4 3	25		
24–25	10		11 7 9 9	4.5	As above, loose with minimal sheen. Slight coal tar-like and slight septic-like odor throughout.	
26	11		15 50/0.3	1.2		
27–30					**Bedrock** No staining or odors.	

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-45**	
BORING LOCATION: See Site Map		ELEVATION: 414.25 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/2/09	DATE FINISHED: 11/2/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 20.7 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 8.5 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION (NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.)	DRILLING REMARKS
					Surface Elevation: 414.25 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
5	1		3 3 4 6	0.1	**FILL** Gray fine sand with silt, little brick, coal fragments. Moist throughout.	
6–7	2		4 4 4 4	0.3	As above, looser.	
8–9	3		5 4 3 2	0.2	**FILL** Black coarse sand with fine gravel, brick, trace concrete. Saturated. Loose. No odors.	
10–11	4		2 3 4 4	1.0	**FILL** Gray limestone gravel with coarse sand.	
12–13	5		3 2 2 2	NA		
14–15	6		2 3 3 2	0.3	**FILL** Refractory brick with trace limestone gravel. Dry.	
16–17	7		2 1 2 2	0.5	**FILL** Limestone gravel with trace coal. Gray silt in bottom 0.1'. Firm.	
18–19	8		2 2 2 2	0	**FILL** Gray fine to medium sand, some black mottling. No staining or odors.	SB-45(18-19.5') * collected 18-19.5' for lab analysis
20	9		10 5 50/0.2	0.7	**Bedrock**	
21–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-46**	
BORING LOCATION: See Site Map		ELEVATION: 414.99 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/2/09	DATE FINISHED: 11/2/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 16.9 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 14.5 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 414.99 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
5–6	1		1 4 5 12	0.2	**FILL** Topsoil, brown fine sand with little silt, trace coal and brick, some weathered shale bedrock gravel. Moist, firm.	
7–8	2		6 6 3 8	0.0	**FILL** Brick with some fine sand and silt, trace coarse angular limestone gravel.	
9–10	3		3 3 2 2	0.4	**FILL** Gray-brown fine sand with silt, some angular coarse limestone gravel. Dry. No staining or odors.	
11–12	4		3 2 3 7	0.2		
13–14	5		4 4 3 3	0.0		SB-46(12-14') * collected 12-14' for lab analysis
15–16	6		1 2 2 1	0.0	As above saturated.	
17	7		3 50/0.4	0.0	**Bedrock**	
18–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-47**	
BORING LOCATION: See Site Map		ELEVATION: 414.75 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/2/09	DATE FINISHED: 11/2/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 18.9 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 11 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION (NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.)	DRILLING REMARKS
					Surface Elevation: 414.75 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
4–5					**FILL** Asphalt, brick, coarse limestone gravel with concrete fragments. Loose, moist.	
5–6	1		4 5 6 5	0.1		
6–7						
7–8	2		5 4 4 3	0.2		
8–9					As above, with refractory brick. Dry. No staining or odors.	
9–10	3		5 7 5 5	0.1		
10–11					As above, becoming wet.	
11–12	4		2 3 4 4	0.6		
12–13						
13–14	5		1 3 4 4	1.8		
14–15					**FILL** Brown fine sand with silt, brick, little coal. Moist.	
15–16	6		6 5 1 3	0.0		
16–17						
17–18	7		5 29.36 40	0.6	**NATIVE ALLUVIUM** Gray-brown weathered shale bedrock. Locally weathered to clay and silt.	
18–19	8		11 50/0.4	0.7		
19–20					**Bedrock**	
20–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-48**	
BORING LOCATION: See Site Map		ELEVATION: 414.65 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/3/09	DATE FINISHED: 11/3/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 26.7 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 18.5 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 414.65 fmsl	
1–5					*hand excavate to 4.0' bgs with air knife.	
6–8	1		1 1 1 2	0.0	**FILL** Concrete with little refractory brick. Loose. No staining or odors.	
9–10	2		3 1 1 3	0.0	**FILL** Coarse limestone gravel with some refractory brick, red masonry brick and coal fragments. Loose, dry. No odors.	
11–12	3		2 2 1 1	0.2	**FILL** Gray-brown fine sand with silt, woven cloth, brick and coal fragments. Soft, moist. No odor.	
13–14	4		2 3 5 7	0.1		
15–16	5		30 6 6 4	0.0		
17–18	6		3 4 8 9	0.1	**FILL** Red-brown fine sand with silt, little coarse limestone gravel, trace brick and concrete. Soft, moist. No odor.	
19–20	7		3 4 3 10	0.0	**NATIVE ALLUVIUM** Fine sand with silt, little red-brown clay. Medium plasticity. Saturated.	
21–22	8		1 6 6 25	0.0	Fine to medium gravel with little coarse sand. Loose, saturated.	
23–24	9		8 8 12 22	0.0	As above, with some silt and clay. Saturated.	
25–26	10		2 10 7 15	0.0	SB-48(24-26')	* collected 24-26' for lab analysis
26–27	11		12 50/0.3	0.0	**Weathered Shale Bedrock**	
27–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-49**	
BORING LOCATION: See Site Map		ELEVATION: 413.96 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/3/09	DATE FINISHED: 11/3/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 25.7 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter. Surface Elevation: 413.96 fmsl	DRILLING REMARKS
1–4					*hand excavate to 4.0' bgs with air knife.	
5	1		4 4 4 3	0.0	**FILL** Coal dust and fragments, brown silt and fine sand, trace of limestone gravel. Loose. No staining or odor.	
6–7	2		3 4 4 4	0.5	As above, with some red brick fragments. No odors.	
8–9	3		5 6 7 6	0.0		
10–11	4		5 6 4 4	0.1	Moist. No staining or odors.	
12–13	5		11 18 5 7	NA		
14–15	6		4 4 4 4	0.2	**NATIVE ALLUVIUM** Brown fine sand with silt, well graded, exhibiting layering. Mixed with brick, gravel and some coal. Loose, moist.	
16–17	7		11 13 7 5	0.0	Shale bedrock gravel with some clinker. Little red brick. Dry.	
18–19	8		2 2 3 5	0.0	**NATIVE ALLUVIUM** Brown fine sand with silt, little fine gravel. Soft, saturated. No staining or odors.	
20–21	9		2 3 9 10	0.0	SB-49(20-22')	* collected 20-22' for lab analysis
22–23	10		7 4 6 9	0.0		
24–25	11		2 15 50/0.2	0.0	**Bedrock** No staining or odors.	
26–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-50**	
BORING LOCATION: See Site Map		ELEVATION: 414.61 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/3/09	DATE FINISHED: 11/4/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 23.9 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 14.8 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 414.61 fmsl	
1–10					*Reinforced concrete between 2 and 10' bgs	
10–11	1		2 3 3 4	0.0	**FILL** Refractory brick and concrete, trace coal.	
11–12					As above, with trace black silt. No odors.	
12–13	2		3 4 6 6	0.0	Weathered shale bedrock, little sand and gravel. Moist. Black-brown fine sand with silt. Saturated. No staining or odors.	
13–15	3		5 3 3 2	0.0		
15–17	4		1 2 10 10	0.1	SB-50(16-18')	* collected 16-18' for lab analysis
17–19	5		4 4 4 5	0.0	Weathered shale bedrock gravel, with little sand. Loose, moist.	
19–21	6		5 5 18 20	0.0	As above, trace sand.	
21–23	7		18 43 17 50/0.4	0.0	**Bedrock** No staining or odors.	
23–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-51**	
BORING LOCATION: See Site Map		ELEVATION: 414.00 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/4/09	DATE FINISHED: 11/4/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 24.3 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 16 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 414.00 fmsl	
1–3					*hand excavate to 4.0' bgs with air knife.	
4					**FILL** Brick, limestone gravel, refractory brick. Loose, dry to wet.	
5	1		2 4 2 4	0.0		
6					As above, some coal fragments.	
7	2		3 5 6 2	0.1		
8						
9	3		4 2 9 4	0.0		
10					**FILL** Light brown, well graded. Loose, no odors or staining.	
11	4		3 3 3 2	0.0		
12					As above, with some red brick and coal fragments. Loose.	
13	5		3 3 5 6	NA		
14						
15	6		77 9 9 10	0.2	**FILL** Black fine sand with some silt, some shale bedrock fragments. Loose, moist. No staining or odors.	
16					As above, with black silt 17-18' bgs. No staining or odors. Saturated.	
17	7		5 3 3 6	0.3	SB-51(16-18')	* collected 16-18' for lab analysis
18						
19	8		2 2 3 9	1.6		
20					**FILL** Loose, coarse limestone shale gravel.	
21	9		2 2 4 4	0.0		
22						
23	10		7 8 13 12	0.0	**FILL** Weathered shale bedrock gravel with some sand. Locally weathered to clay and silt. Firm. No Staining or odor.	
24	11		50/0.3	NA		
25					**Bedrock**	
26–30						

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-52**	
BORING LOCATION: See Site Map		ELEVATION: 412.13 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/4/09	DATE FINISHED: 11/4/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 25.2 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 18 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION (NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.)	DRILLING REMARKS
					Surface Elevation: 412.13 fmsl	
1–4					*hand excavate to 4.0' bgs with air knife.	
4–5					**FILL** Black slag and coal dust. Loose and moist. No staining or odors.	
5	1		7 4 3 2	0.0		
7	2		2 2 2 2	0.0		
9	3		2 3 5 4	0.0		
11	4		1 4 5 6	0.0	As above.	
13	5		2 5 3 4	0.0		
15	6		3 2 1 2	0.0		
16–17					**FILL** Red sandstone cobble with little concrete. No staining or odors.	
17	7		2 4 5 6	0.0		
18–19					**FILL** Masonry brick with some coarse sand. Loose and saturated. No staining or odors.	
19	8		5 4 5 5	0.0		
20–21					**NATIVE ALLUVIUM** Black silt with little fine sand. Slight septic-like odor.	
21	9		8 5 3 4	0.3		
22					SB-52(21-23')	* collected 21-23' for lab analysis
23	10		1 2 10 7	0.5		
24–25					**Weathered Shale Bedrock**	
25	11		4 6 50/0.2	0.0		

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-53**	
BORING LOCATION: See Site Map		ELEVATION: 414.28 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/4/09	DATE FINISHED: 11/4/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 34.5 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST 16 feet	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	Sample No.	Sample	Blows/ foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 414.28 fmsl	
1					*hand excavate to 4.0' bgs with air knife.	
2						
3						
4					**FILL** Crushed limestone gravel. Loose and dry. No staining or odors.	
5	1		9 9 5 4	0.7		
6					**FILL** Brown fine sand with silt, little coarse subrounded gravel. Little coal and brick fragments. No staining or odors.	
7	2		4 4 3 3	0.0		
8						
9	3		6 2 2 2	1.0		
10					As above, little coal dust and sand sized coal fragments.	
11	4		4 4 3 6	0.5		
12					As above, with slag.	
13	5		4 9 4 4	0.0		
14						
15	6		3 3 2 2	0.2	**NATIVE ALLUVIUM** Fine sand with silt. Brown. Firm. No staining or odors.	
16					Saturated	
17	7		2 2 2 2	0.0		
18					As above, with fine sand with silt, trace coarse sand. Soft, fast dilatency.	
19	8		1 1 1 1	0.5		
20						
21	9		1 1 2 3	NA		
22						
23	10		4 1 4 8	0.8	Loose black coarse sand and gravel with septic-like odor.	
24					Loose silt, fine sand with little fine dark gray-black gravel.	
25	11		2 3 4 4	0.0	Slight septic like odor. No staining or sheens.	
26						
27	12		4 3 2 6	0.0	Loose fine angular gravel with trace masonry and refractory brick. No staining for odors.	
28						
29	13		1 1 4	0.2	Fine sand with silt, trace coarse angular gravel, silt. Firm. No staining or odor.	
30						

SB-53(16-18') * collected 16-18' for lab analysis

BORING BORING LOGS.GPJ (3/10)

PROJECT: Former West Station Plant Area MGP Site

Log of Boring No. SB-53 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
31	14		5 3 31 11 25	0.0	Coarse, loose limestone gravel, some weathered shale near bottom of sample.	
32					Gray fine sand with silt, trace medium sand and fine rounded gravel. Firm. SB-43(32-34')	* collected 32-34' for lab analysis
33	15		8 15 15 17	0.0		
34	16		50/0.5	0.0		
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PROJECT: Former West Station Plant Area MGP Site		**Log of Boring No. SB-55**	
BORING LOCATION: See Site Map		ELEVATION: 413.82 fmsl	DATUM: barge canal
DRILLING CONTRACTOR: Nothnagle Drilling		DATE STARTED: 11/6/09	DATE FINISHED: 11/6/09
DRILLING METHOD: 4 1/4" diameter Hollow Stem Augers		TOTAL DEPTH: 12.6 fbgs	MEASURING POINT: ground surface
DRILLING EQUIPMENT: CME 75		DEPTH TO WATER: FIRST	COMPL.
SAMPLING METHOD: 2" dia. Split Spoons		LOGGED BY: MAC	
HAMMER WEIGHT: 140	DROP: Autohammer	RESPONSIBLE PROFESSIONAL: Richard Frappa	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/foot	OVM (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., structure, cementation, react. w/HCl, geo. inter.	DRILLING REMARKS
					Surface Elevation: 413.82 fmsl	
1–7					* Clear with backhoe to 8.0' bgs. No staining or odors. Test pit consists of FILL material composed of brown fine sand with silt, refractory brick, coal fragments and concrete pieces. No staining or odors encountered.	
8–10	1		6 27 11 6	0.0	**FILL** Shale bedrock cobble, overlying brown fine sand and silt. No staining or odors.	
10–11	2		5 7 20 17	0.5	SB-55(10-11')	* collected 10-11' for lab analysis
11–12	3		23 50/0.1	3.5	**Weathered Shale Bedrock** Slight diesel-like odor in top of bedrock sample between 11 and 12.6' bgs.	
13–30						