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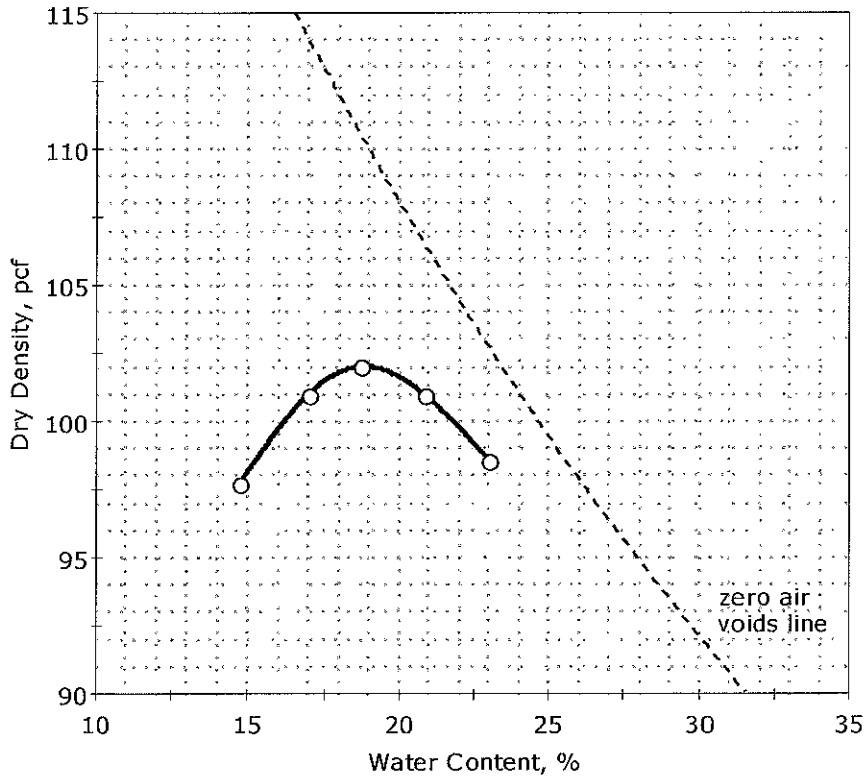
Client:	Parsons Engineering Science				
Project:	Nine Mile Creek				
Location:	---			Project No:	GTX-9273
Boring ID:	NMC- TP-1	Sample Type:	bucket	Tested By:	saa
Sample ID:	Composite	Test Date:	10/27/09	Checked By:	jdt
Depth :	0-6.0 ft	Test Id:	162030		
Test Comment:	---				
Sample Description:	Wet, dark gray clay				
Sample Comment:	---				

Compaction Report - ASTM D 698



Data Points	Point 1	Point 2	Point 3	Point 4	Point 5
Dry density, pcf	97.7	101.0	102.0	101.0	98.6
Moisture Content, %	14.7	16.9	18.7	20.8	23.0

Method : A

Preparation : WET

As received Moisture :

Rammer : Manual

Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 102.0 pcf
Optimum Moisture= 19.0 %

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Client:	Parsons Engineering Science	Tested By:	md
Project:	Nine Mile Creek	Checked By:	jdt
Location:	---	Date:	10/13/09
GTX No.:	9273		
Sample ID:	NMC-TP1 (0-6 ft) - Composite		
Sample Description:	Wet, dark gray clay		

Modified Column Test

Initial Soil/Water Data:

Initial Wet Mass of Soil, g:	82,627
Intial Moisture Content of Soil, %:	57.6
Intial Dry Mass of Soil, g:	52,428
Approximate Volume of Wet Soil, gallons:	19
Volume of Site Water Added, gallons:	4.5
Initial Height of Solids/Water in Column, in:	42

Flow Data:

Date	Elapsed Time, min	Volume of Flow		Flow Rate, gal/min	Total Suspended Solids, g/L
		mL	Gallons		
10/13/09	0	---	---	---	---
10/13/09	2	2.3	0.001	0.0003	---
10/13/09	4	2.5	0.001	0.0002	---
10/13/09	8	2.7	0.001	0.0001	---
10/13/09	15	2.9	0.001	0.0001	---
10/13/09	30	3.8	0.001	0.0000	---
10/13/09	60	5.4	0.001	0.0000	13.6
10/13/09	120	9.5	0.003	0.0000	---
10/13/09	240	29.7	0.008	0.0000	---
10/13/09	480	92.8	0.025	0.0001	---
10/14/09	1440	190.5	0.050	0.0000	16.5
10/15/09	2880	353.8	0.093	0.0000	---

After Test Data:

Solids:

	Top	Top 1/3	Bottom 1/3	Bottom
Moisture Content, %:	102	68.5	51.2	44.2
Paint Filter Test:	Flow	Flow	Flow	No Flow

Water:

TSS of Outflow Collected, g/L:	18.2
Volume of Standing Water at top of Column, gallons:	1.0
Final Height of Solids/Water in Column, in:	39

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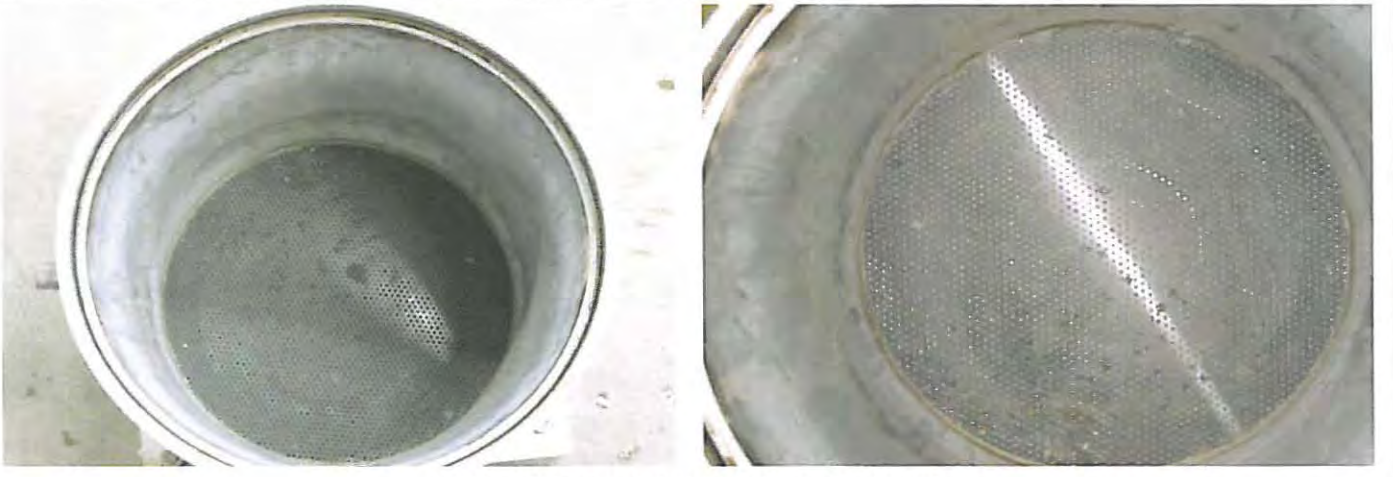
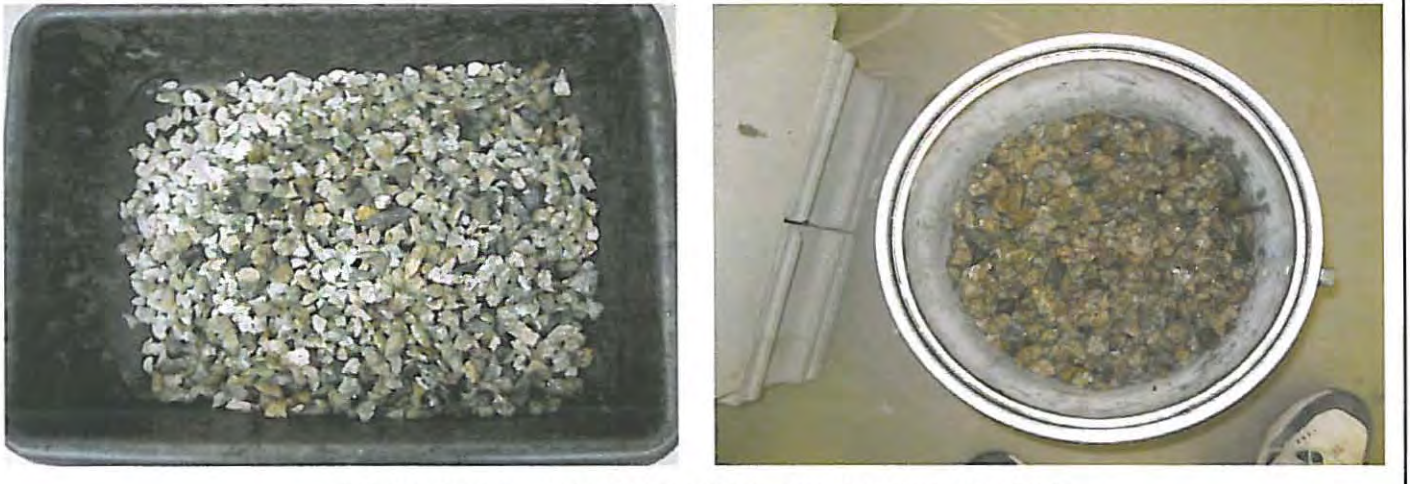
Client:	Parsons Engineering Science
Project Name:	Nine Mile Creek
Project Location:	---
GTX #:	9273
Sample ID:	NMC-TP1 (0-6 ft) - Composite
Sample Description:	Wet, dark gray clay

Modified Column Test



Perforated drainage plate at bottom of column base



1/2-inch gravel used for drainage layer. Approximate 6-inch depth.

Typical Soil after Site Water Added and Mixed with Shovel

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Client:	Parsons Engineering Science
Project Name:	Nine Mile Creek
Project Location:	---
GTX #:	9273
Sample ID:	NMC-TP1 (0-6 ft) - Composite
Sample Description:	Wet, dark gray clay

Modified Column Test

Column at Beginning of Test

Column at End of Test

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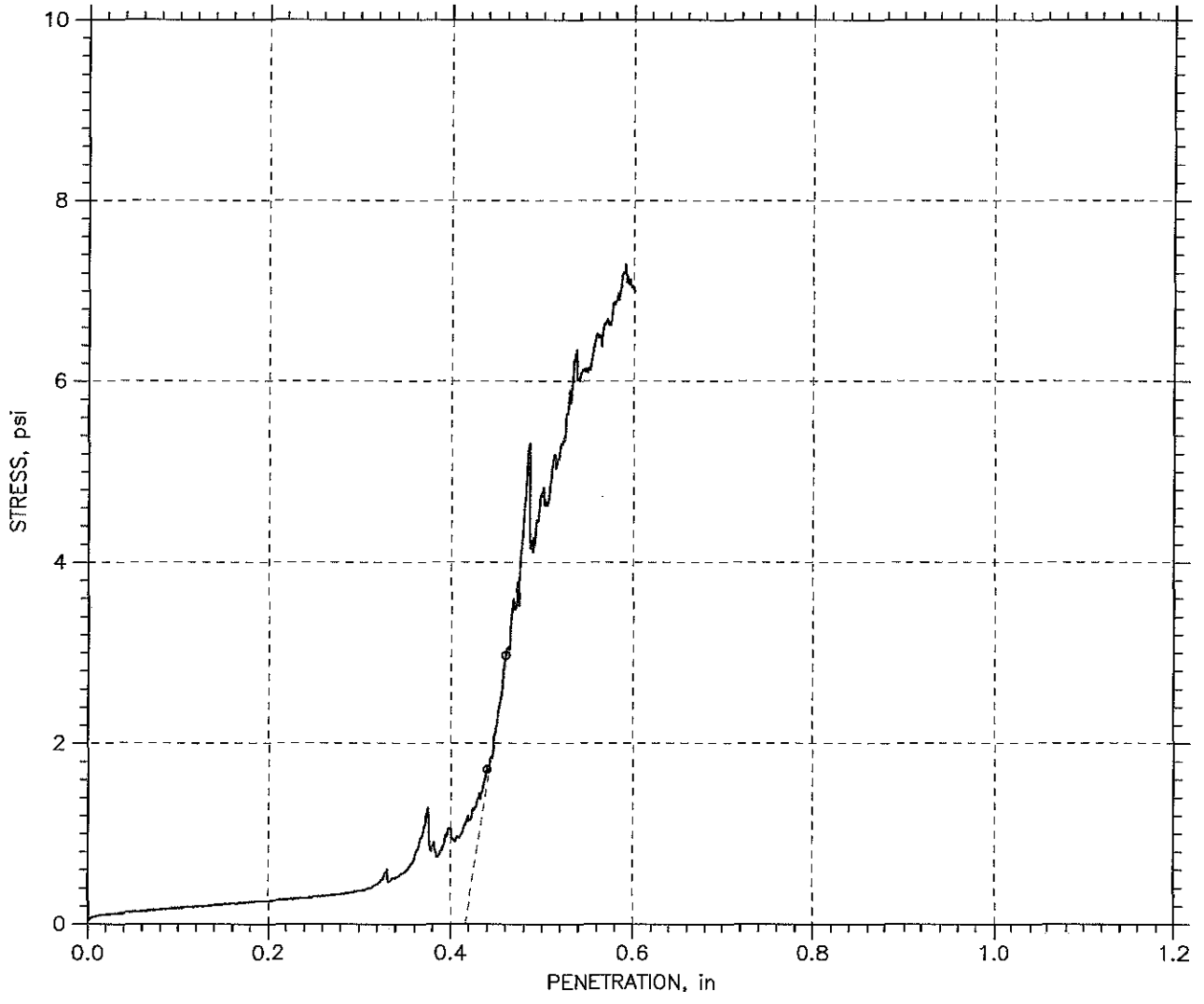
CALIFORNIA BEARING RATIO TEST REPORT - ASTM D 1883



Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 1	at 0.3 in: N/A	at 0.5 in: N/A	
Sample Volume: 0.07494 ft^3	at 0.2 in: N/A	at 0.4 in: N/A		
Sample Mass: 3539.7 gm				
Sample Condition: Unsoaked	Water Content	Before	Top	Average
Swell: 0.00 %	Tare ID	t3603	super	duper
Surcharge: 4536 gm	Tare Mass, gm	8.47	8.04	8.03
Void Ratio: 1.61	Mass Tare + Wet Soil, gm	250.13	174.5	182.48
Wet Unit Weight: 104.13 pcf	Mass Tare + Dry Soil, gm	155.56	109.6	115.01
Dry Unit Weight: 63.382 pcf	Water Content, %	64.29	63.90	63.07

Project: Nine Mile Creek	Location: ---	Project No.: GTX-9273
Boring No.: NMC-TP-1	Tested By: saa	Checked By: jdt
Sample No.: Composite	Test Date: 10/20/09	Depth: 0-6 ft.
Test No.: CBR-1	Sample Type: remolded	Elevation: ---
Description: Wet, dark gray clay		
Remarks: Test performed on post Modified Column Test material; No soaking period; 3 layers rodded 15 times per layer.		

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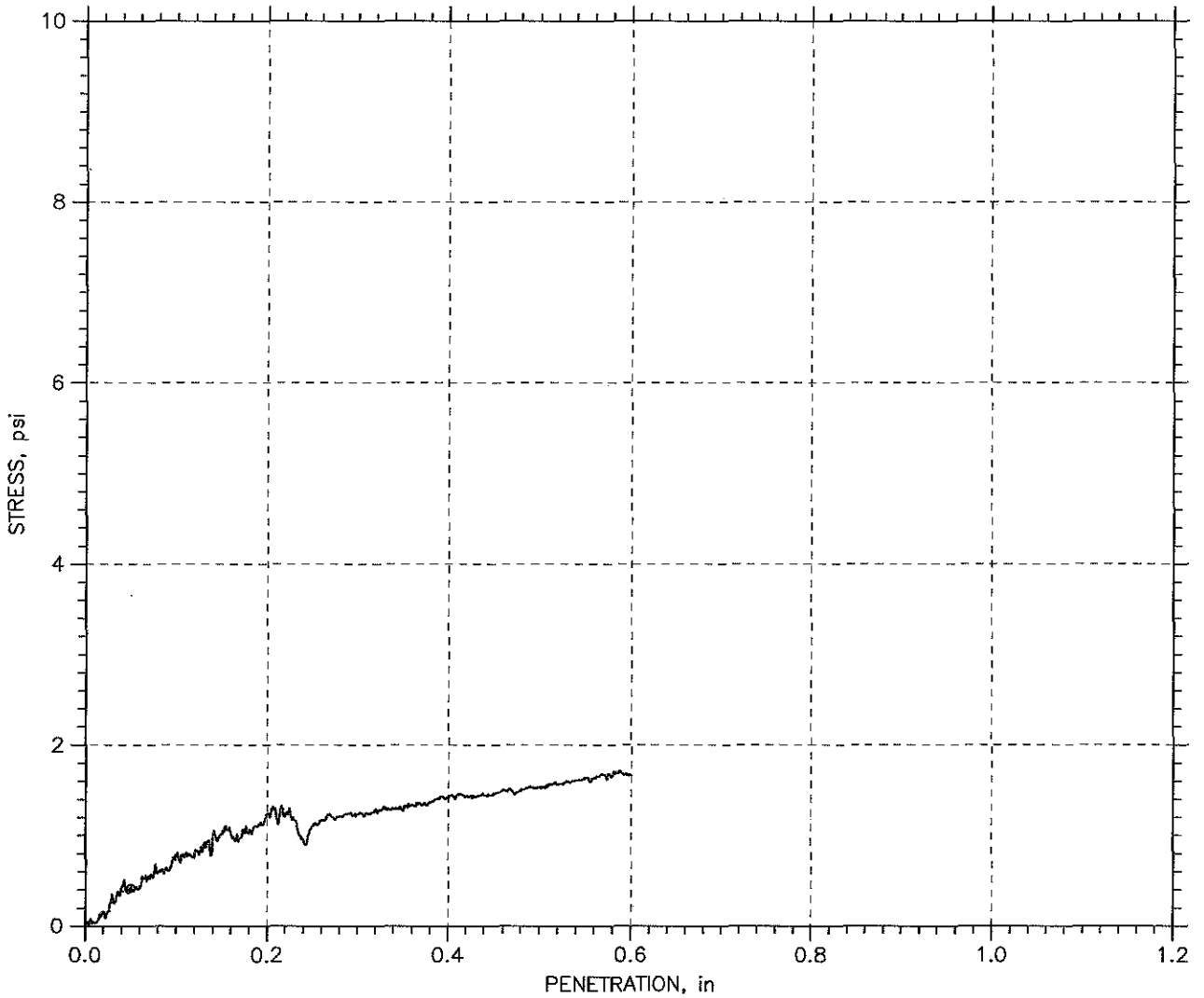
CALIFORNIA BEARING RATIO TEST REPORT - ASTM D 1883



Sample Height: 4.58 in	California Bearing Ratio		
Sample Area: 28.274 in^2	at 0.1 in: 0	at 0.3 in: 0	at 0.5 in: 0
Sample Volume: 0.07494 ft^3	at 0.2 in: 0	at 0.4 in: 0	
Sample Mass: 3539.3 gm			

Sample Condition: Soaked	Water Content	Before	Top	Average
Swell: -0.02 %	Tare ID	t3603	4228	3465
Surcharge: 4536 gm	Tare Mass, gm	8.47	8.35	8.32
Void Ratio: 1.61	Mass Tare + Wet Soil, gm	250.13	247.86	234.52
Wet Unit Weight: 104.12 pcf	Mass Tare + Dry Soil, gm	155.56	164.39	157.25
Dry Unit Weight: 63.375 pcf	Water Content, %	64.29	53.49	51.88

Project: Nine Mile Creek	Location: ---	Project No.: GTX-9273
Boring No.: NMC-TP-1	Tested By: saa	Checked By: jdt
Sample No.: Composite	Test Date: 10/22/09	Depth: 0-6 ft.
Test No.: CBR-2	Sample Type: remolded	Elevation: ---
Description: Wet, dark gray clay		
Remarks: Test performed on post Modified Column Test material; 96 hour soaking period; 3 layers rodded 15 times per layer.		

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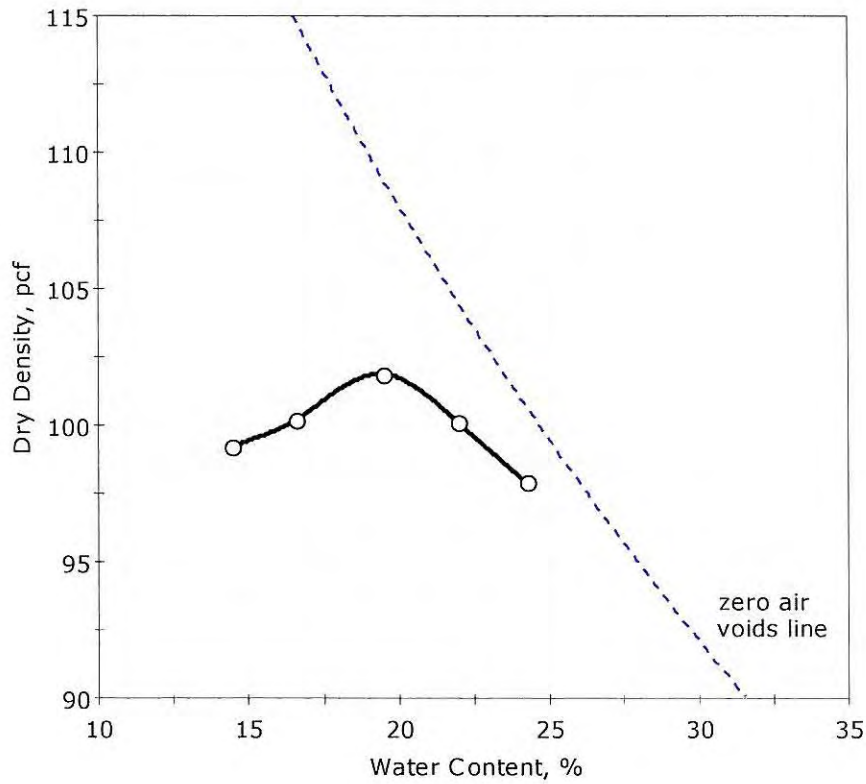
Client:	Parsons Engineering Science				
Project:	Nine Mile Creek				
Location:	---			Project No:	GTX-9273
Boring ID:	NMC- TP-2	Sample Type:	bucket	Tested By:	saa
Sample ID:	Composite	Test Date:	10/27/09	Checked By:	jdt
Depth :	0-4.0 ft	Test Id:	162031		
Test Comment:	---				
Sample Description:	Moist, dark brown clay				
Sample Comment:	---				

Compaction Report - ASTM D 698



Data Points	Point 1	Point 2	Point 3	Point 4	Point 5
Dry density, pcf	99.2	100.2	101.9	100.1	97.9
Moisture Content, %	14.4	16.6	19.4	21.9	24.2

Method : A

Preparation : WET

As received Moisture :

Rammer : Manual

Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 102.0 pcf
Optimum Moisture= 19.5 %

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Client:	Parsons Engineering Science	Tested By:	md
Project:	Nine Mile Creek	Checked By:	jdt
Location:	---	Date:	10/20/09
GTX No.:	9273		
Sample ID:	NMC-TP2 (0-4 ft) - Composite		
Sample Description:	Moist, dark brown clay		

Modified Column Test

Initial Soil/Water Data:

Initial Wet Mass of Soil, g:	70,106
Intial Moisture Content of Soil, %:	24.6
Intial Dry Mass of Soil, g:	56,265
Approximate Volume of Wet Soil, gallons:	16
Volume of Site Water Added, gallons:	4.0
Initial Height of Solids/Water in Column, in:	37

Flow Data:

Date	Elapsed Time, min	Volume of Flow		Flow Rate, gal/min	Total Suspended Solids, g/L
		mL	Gallons		
10/20/09	0	---	---	---	---
10/20/09	2	178.7	0.047	0.0236	---
10/20/09	4	191.7	0.051	0.0127	---
10/20/09	8	201.3	0.053	0.0066	---
10/20/09	15	219.5	0.058	0.0039	---
10/20/09	30	257.3	0.068	0.0023	---
10/20/09	60	300.8	0.079	0.0013	12.4
10/20/09	120	373.6	0.099	0.0008	---
10/20/09	240	477.8	0.126	0.0005	---
10/20/09	480	626.7	0.166	0.0003	---
10/21/09	1440	919.5	0.243	0.0002	6.2
10/22/09	2880	1262.4	0.333	0.0001	---

After Test Data:

Solids:

	Top	Top 1/3	Bottom 1/3	Bottom
Moisture Content, %:	46	43.8	43.1	40.9
Paint Filter Test:	No Flow	No Flow	No Flow	No Flow

Water:

TSS of Outflow Collected, g/L:	3.9
Volume of Standing Water at top of Column, gallons:	0.7
Final Height of Solids/Water in Column, in:	34.5

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Client:	Parsons Engineering Science
Project Name:	Nine Mile Creek
Project Location:	---
GTX #:	9273
Sample ID:	NMC-TP2 (0-4 ft) - Composite
Sample Description:	Moist, dark brown clay

Modified Column Test

Typical Soil before Site Water Added and Mixed with Shovel

Typical Soil after Site Water Added and Mixed with Shovel

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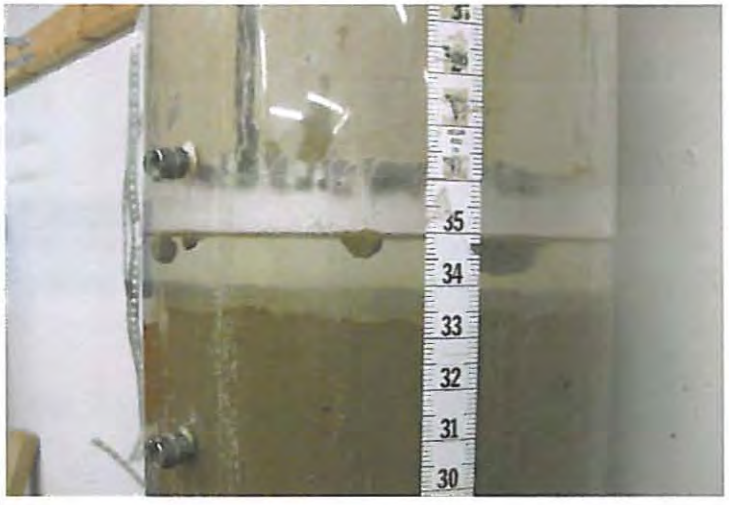
Client:	Parsons Engineering Science
Project Name:	Nine Mile Creek
Project Location:	---
GTX #:	9273
Sample ID:	NMC-TP2 (0-4 ft) - Composite
Sample Description:	Moist, dark brown clay

Modified Column Test

Column at Beginning of Test



Column at End of Test

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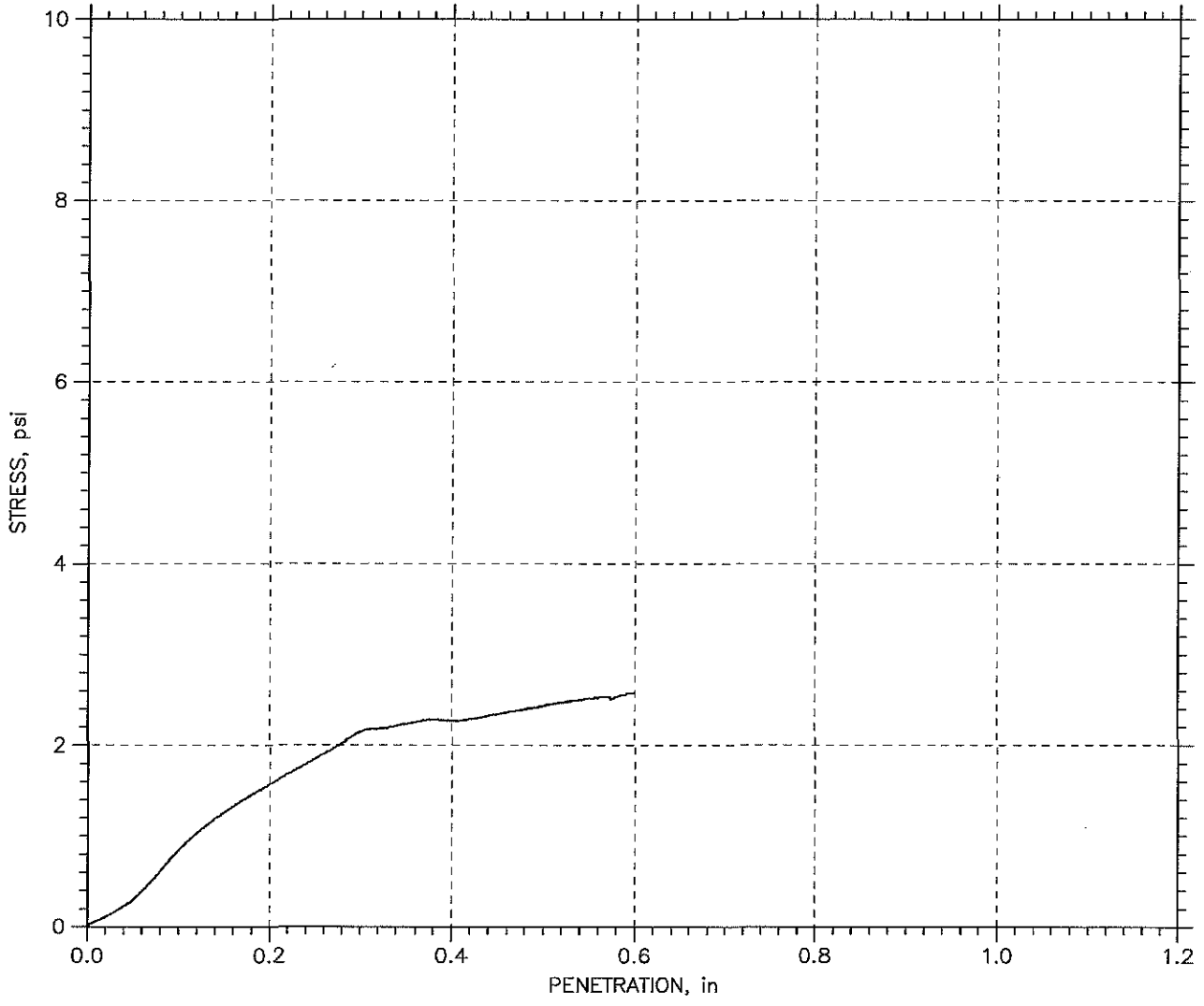
CALIFORNIA BEARING RATIO TEST REPORT - ASTM D 1883



Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 0	at 0.3 in: 0	at 0.5 in: 0	
Sample Volume: 0.07494 ft^3	at 0.2 in: 0	at 0.4 in: 0		
Sample Mass: 3686.2 gm				
Sample Condition: Unsoaked	Water Content	Before	Top	Average
Swell: 0.00 %	Tare ID	t5081	5087	5088
Surcharge: 4536 gm	Tare Mass, gm	8.27	8.41	8.44
Void Ratio: 1.17	Mass Tare + Wet Soil, gm	235.92	235.89	241.37
Wet Unit Weight: 108.44 pcf	Mass Tare + Dry Soil, gm	168.3	169.84	171.49
Dry Unit Weight: 76.231 pcf	Water Content, %	42.25	40.92	42.86

Project: Nine Mile Creek	Location: ---	Project No.: GTX-9273
Boring No.: NMC-TP-2	Tested By: saa	Checked By: jdt
Sample No.: Composite	Test Date: 10/27/09	Depth: 0-4.0 ft
Test No.: CBR-3	Sample Type: remold	Elevation: ---
Description: Moist, dark brown clay		
Remarks: Test performed on post Modified Column Test material; No soaking period; 3 layers rodded 15 times per layer.		

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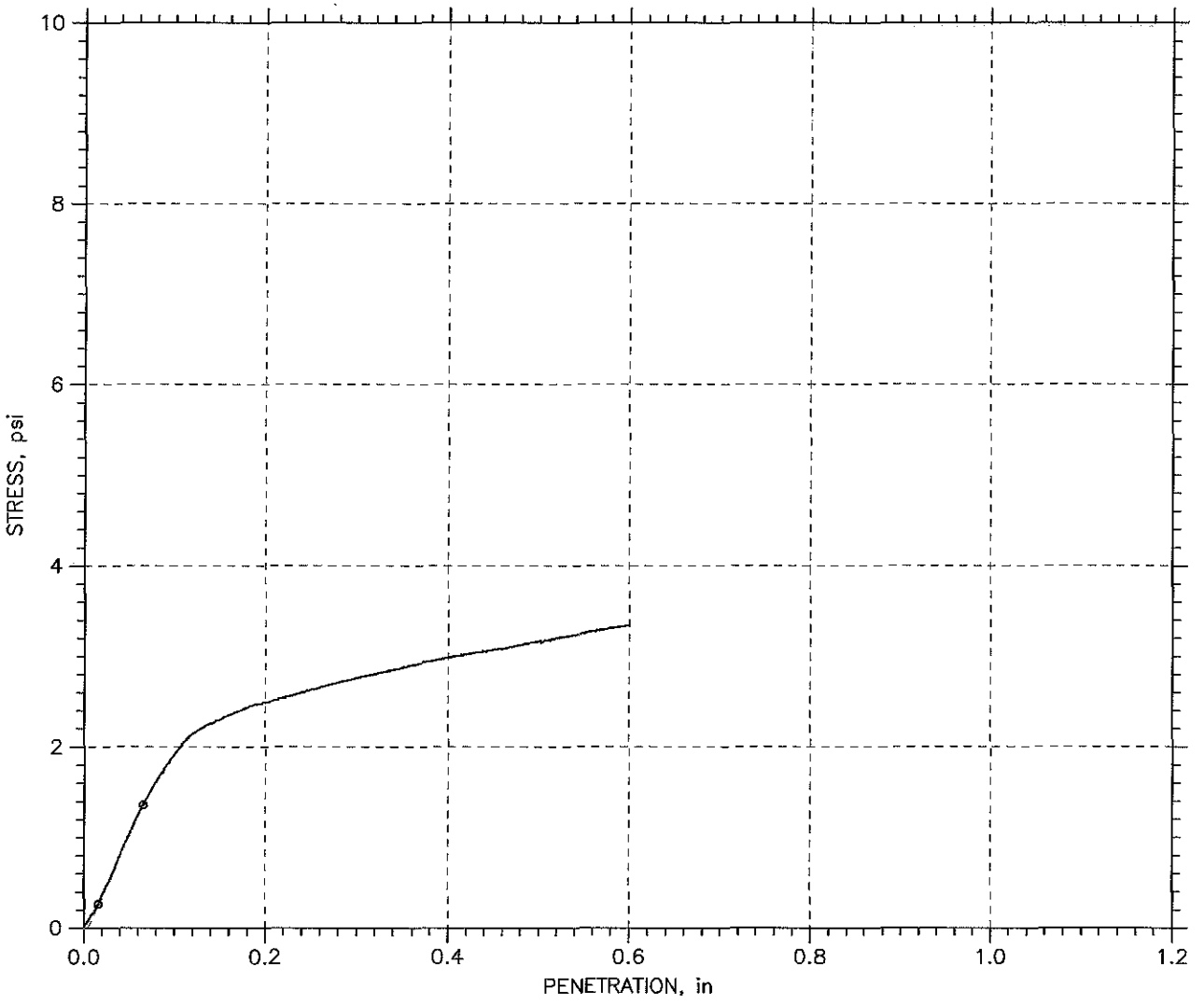
CALIFORNIA BEARING RATIO TEST REPORT - ASTM D 1883



Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 0	at 0.3 in: 0	at 0.5 in: 0	
Sample Volume: 0.07494 ft^3	at 0.2 in: 0	at 0.4 in: 0		
Sample Mass: 3675 gm				
Sample Condition: Soaked	Water Content	Before	Top	Average
Swell: -1.99 %	Tare ID	t5081	4956	4529
Surcharge: 4536 gm	Tare Mass, gm	8.27	8.51	8.46
Void Ratio: 1.18	Mass Tare + Wet Soil, gm	235.92	126.36	221.76
Wet Unit Weight: 108.11 pcf	Mass Tare + Dry Soil, gm	168.3	91.14	162.14
Dry Unit Weight: 76 pcf	Water Content, %	42.25	42.62	38.79

Project: Nine Mile Creek	Location: ---	Project No.: GTX-9273
Boring No.: NMC-TP-2	Tested By: saa	Checked By: jdt
Sample No.: NMC-TB-2	Test Date: 11/03/09	Depth: Composite
Test No.: CBR-4	Sample Type: remolded	Elevation: 0-4.0 ft.
Description: Moist, dark brown clay		
Remarks: Test performed on post Modified Column Test material; 96 hour soaking period; 3 layers rodded 15 times per layer.		

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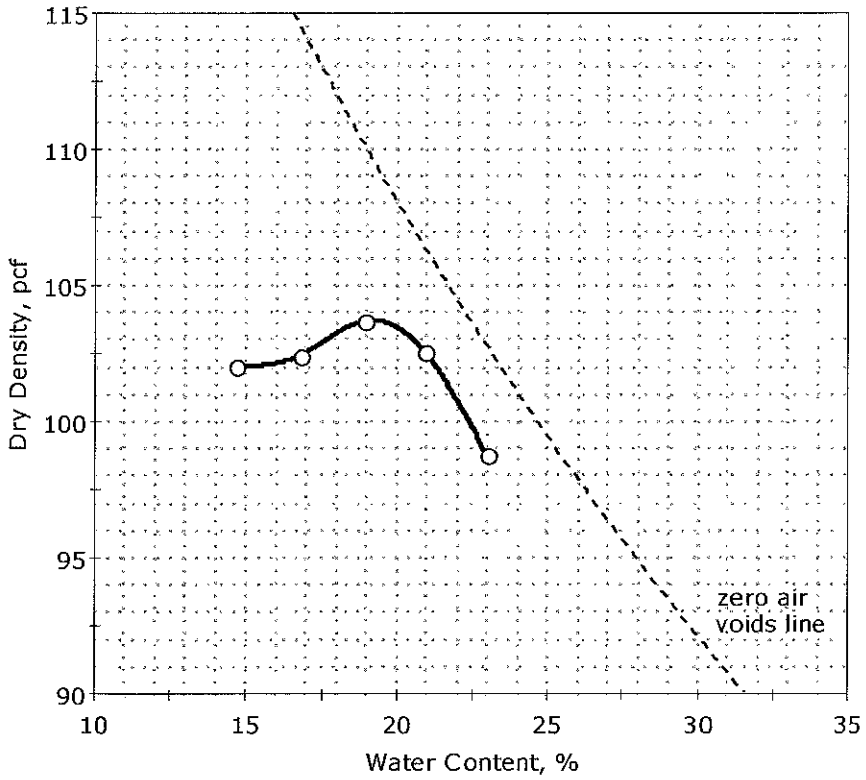
Client:	Parsons Engineering Science				
Project:	Nine Mile Creek				
Location:	---			Project No:	GTX-9273
Boring ID:	NMC- TP-3	Sample Type:	bucket	Tested By:	saa
Sample ID:	Composite	Test Date:	10/27/09	Checked By:	jdt
Depth :	0-3.0 ft	Test Id:	166063		
Test Comment:	---				
Sample Description:	Moist, brown sandy clay				
Sample Comment:	---				

Compaction Report - ASTM D 698



Data Points	Point 1	Point 2	Point 3	Point 4	Point 5
Dry density, pcf	102.0	102.5	103.7	102.6	98.8
Moisture Content, %	14.6	16.8	18.9	20.9	23.0

Method : A

Preparation : WET

As received Moisture :

Rammer : Manual

Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 103.5 pcf
Optimum Moisture= 19.0 %

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Client:	Parsons Engineering Science	Tested By:	md
Project:	Nine Mile Creek	Checked By:	jdt
Location:	---	Date:	11/04/09
GTX No.:	9273		
Sample ID:	NMC-TP3 (0-3 ft) - Composite		
Sample Description:	Moist, brown sandy clay		

Modified Column Test

Initial Soil/Water Data:

Initial Wet Mass of Soil, g:	119,400
Intial Moisture Content of Soil, %:	40.9
Intial Dry Mass of Soil, g:	84,741
Approximate Volume of Wet Soil, gallons:	17.5
Volume of Site Water Added, gallons:	4.5
Initial Height of Solids/Water in Column, in:	55

Flow Data:

Date	Elapsed Time, min	Volume of Flow		Flow Rate, gal/min	Total Suspended Solids, g/L
		mL	Gallons		
10/20/09	0	---	---	---	---
10/20/09	2	129.1	0.034	0.0171	---
10/20/09	4	210.9	0.056	0.0139	---
10/20/09	8	337.3	0.089	0.0111	---
10/20/09	15	485.3	0.128	0.0085	---
10/20/09	30	687.6	0.182	0.0061	---
10/20/09	60	980.8	0.259	0.0043	24.7
10/20/09	120	1381.1	0.365	0.0030	---
10/20/09	240	2004.0	0.529	0.0022	---
10/20/09	480	2996.6	0.792	0.0016	---
10/21/09	1440	5990.9	1.583	0.0011	25.9
10/22/09	2880	9601.5	2.536	0.0009	---

After Test Data:

Solids:

	Top	Top 1/3	Bottom 1/3	Bottom
Moisture Content, %:	123	45.5	37.6	31.3
Paint Filter Test:	Flow	No Flow	No Flow	No Flow

Water:

TSS of Outflow Collected, g/L:	24.7
Volume of Standing Water at top of Column, gallons:	1.9
Final Height of Solids/Water in Column, in:	45.5

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Client:	Parsons Engineering Science
Project Name:	Nine Mile Creek
Project Location:	---
GTX #:	9273
Sample ID:	NMC-TP3 (0-3 ft) - Composite
Sample Description:	Moist, brown sandy clay

Modified Column Test

Typical Soil after Site Water Added and Mixed with Shovel

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Client:	Parsons Engineering Science
Project Name:	Nine Mile Creek
Project Location:	---
GTX #:	9273
Sample ID:	NMC-TP3 (0-3 ft) - Composite
Sample Description:	Moist, brown sandy clay

Modified Column Test

Column at Beginning of Test

Column at End of Test

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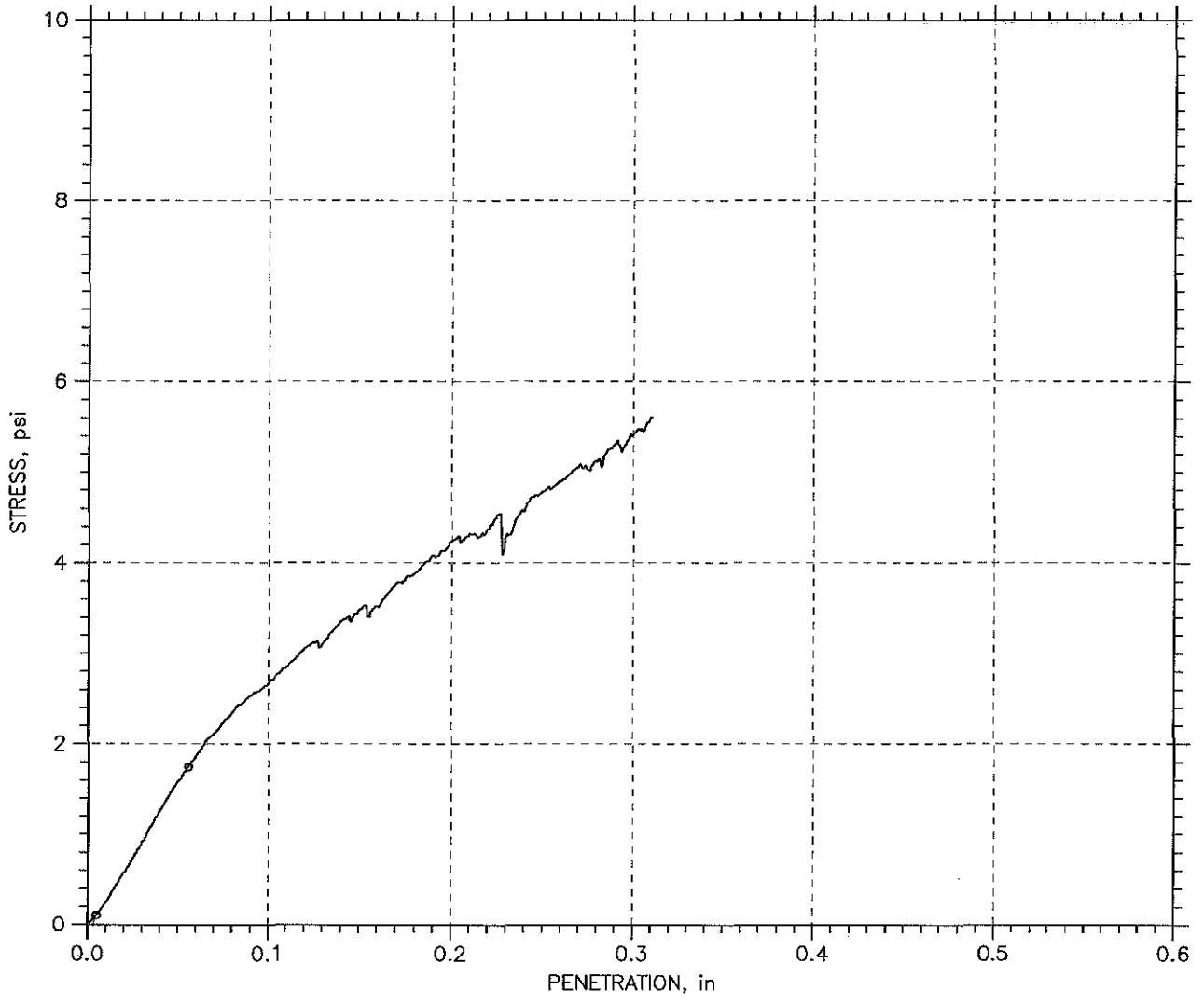

Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 0	at 0.3 in: 0	at 0.5 in: N/A	
Sample Volume: 0.07494 ft^3	at 0.2 in: 0	at 0.4 in: N/A		
Sample Mass: 3870.7 gm				
Sample Condition: Unsoaked	Water Content	Before	Top	Average
Swell: 0.00 %	Tare ID	t4353	4791	4800
Surcharge: 4536 gm	Tare Mass, gm	8.15	8.21	8.13
Void Ratio: 0.90	Mass Tare + Wet Soil, gm	378.87	228.48	403.56
Wet Unit Weight: 113.87 pcf	Mass Tare + Dry Soil, gm	290.92	172.62	306.45
Dry Unit Weight: 86.855 pcf	Water Content, %	31.10	33.98	32.55

Project: Nine Mile Creek	Location: ---	Project No.: GTX-9273
Boring No.: NMC-TP-3	Tested By: saa	Checked By: jdt
Sample No.: Composite	Test Date: 11/10/09	Depth: 0-3.0 ft
Test No.: CBR-5	Sample Type: remolded	Elevation: ---
Description: Moist, brown sandy clay		
Remarks: Test performed on post Modified Column Test material; No soaking period; 3 layers rodded 15 times per layer.		

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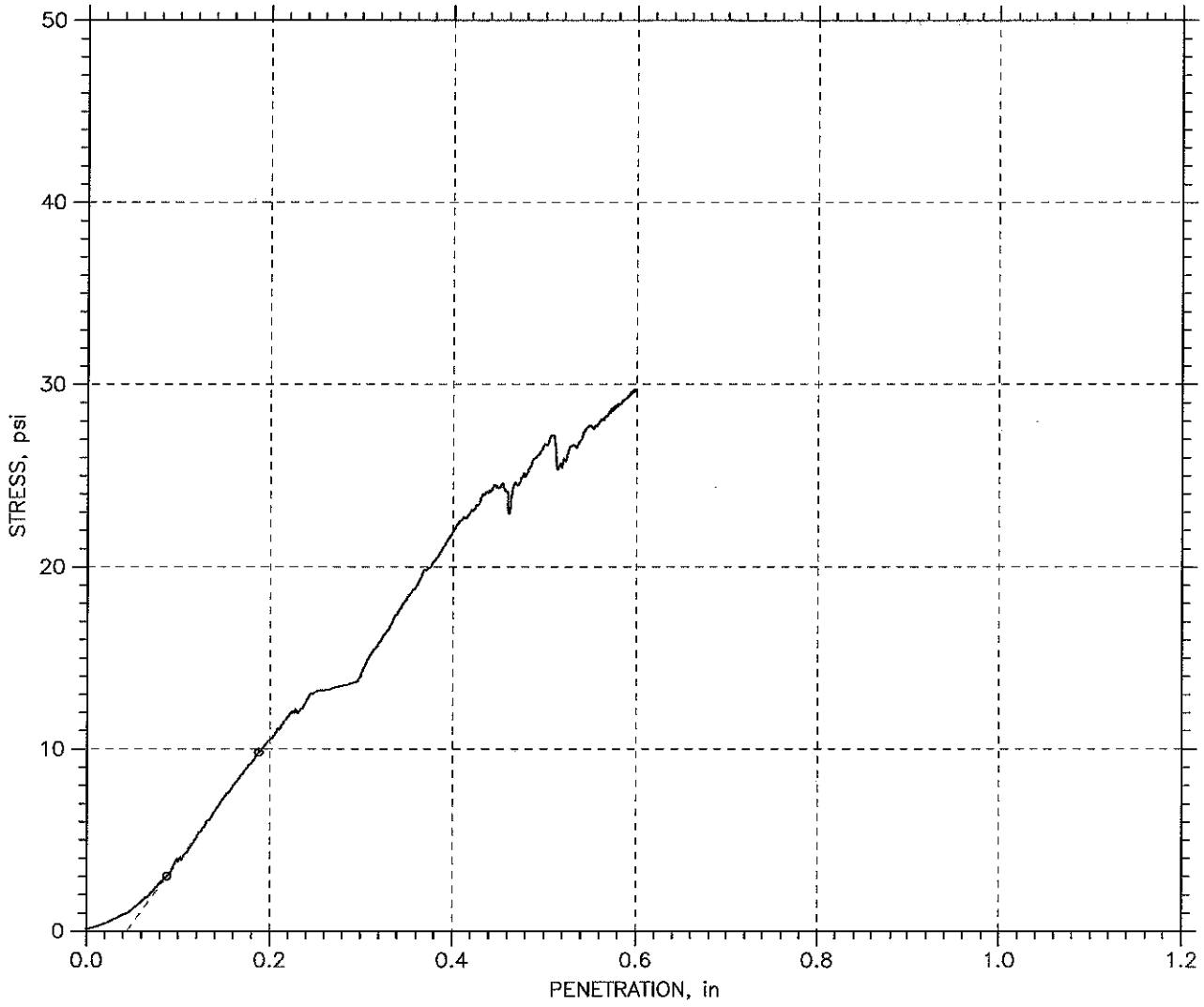

Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 1	at 0.3 in: 1	at 0.5 in: 1	
Sample Volume: 0.07494 ft^3	at 0.2 in: 1	at 0.4 in: 1		
Sample Mass: 3777.7 gm				
Sample Condition: Soaked	Water Content	Before	Top	Average
Swell: -0.76 %	Tare ID	4353	4395	3348
Surcharge: 4536 gm	Tare Mass, gm	8.15	8.44	8.45
Void Ratio: 0.95	Mass Tare + Wet Soil, gm	378.87	301.32	284.08
Wet Unit Weight: 111.13 pcf	Mass Tare + Dry Soil, gm	290.92	236.54	221.98
Dry Unit Weight: 84.769 pcf	Water Content, %	31.10	28.40	29.08

Project: Nine Mile Creek	Location: ---	Project No.: GTX-9273
Boring No.: NMC-TP-3	Tested By: md	Checked By: jdt
Sample No.: Composite	Test Date: 11/15/09	Depth: 0-3.0 ft
Test No.: CBR-6	Sample Type: remolded	Elevation: ---
Description: Moist, brown sandy clay		
Remarks: Test performed on post Modified Column Test material; 96 hour soaking period; 3 layers rodded 15 times per layer.		

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ATTACHMENT B-3

CONSTRUCTION WATER TREATMENT

(ATTACHED AS PRESENTED IN THE NINEMILE CREEK 50%, 95%, AND DRAFT 100% DESIGN REPORTS)

Attachment contains:

Table B-3-1 - Effluent Limits, Levels, and Monitoring

Table B-3-2 - Historical Geddes Brook and Ninemile Creek Sampling Results

Table B-3-3 - Summary of CWTP Influent Design Data

Figure B-3-1 - Process Flow Diagram

TABLE B-3-1
EFFLUENT LIMITS, LEVELS AND MONITORING:

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
	Construction Water	West Flume to Geddes Brook to Nine Mile Creek	Treatment System Startup Date (TSSD)	TSSD + 3 years

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Weekly	Grab	

PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	Daily Max.	TYPE I	TYPE II				
Flow	Monitor	Monitor				MGD	Continuous	Meter	
Solids, Total Suspended	Monitor	50				mg/l	Weekly	Grab	
Solids, Total Dissolved	Monitor	Monitor				mg/l	Weekly	Grab	
Ammonia (as N)	Monitor	2				mg/l	Weekly	Grab	
Aluminum, Total	Monitor	4				mg/l	Weekly	Grab	
Arsenic, Total	Monitor	0.15				mg/l	Weekly	Grab	
Beryllium, Total	Monitor	0.82				mg/l	Weekly	Grab	
Cadmium, Total	Monitor	0.056				mg/l	Weekly	Grab	
Chromium, Total	Monitor	0.5				mg/l	Weekly	Grab	
Copper, Total	Monitor	0.5				mg/l	Weekly	Grab	
Iron, Total	Monitor	3.0				mg/l	Weekly	Grab	
Lead, Total	Monitor	0.36				mg/l	Weekly	Grab	
Mercury, Total	Monitor	0.0007	0.05			µg/l	Weekly	Grab	5
Nickel, Total	Monitor	1.5				mg/l	Weekly	Grab	
Phosphorus, Total, as P	Monitor	0.5				mg/l	Weekly	Grab	
Selenium, Total	Monitor	0.046				mg/l	Weekly	Grab	
Silver, Total	Monitor	0.1				mg/l	Weekly	Grab	
Thallium, Total	Monitor	0.08				mg/l	Weekly	Grab	
Vanadium, Total	Monitor	0.1				mg/l	Weekly	Grab	
Zinc, Total	Monitor	1.0				mg/l	Weekly	Grab	
Cyanide, Total	Monitor	Monitor				mg/l	Weekly	Grab	
Cyanide, Free	Monitor	0.05				mg/l	Weekly	Grab	
PCB, Aroclor 1248	Monitor	$1x10^{-6}$	0.2			µg/l	Weekly	Grab	1
PCB, Aroclor 1254	Monitor	$1x10^{-6}$	0.2			µg/l	Weekly	Grab	1
PCB, Aroclor 1260	Monitor	$1x10^{-6}$	0.2			µg/l	Weekly	Grab	1
Hexachlorobenzene	Monitor	5				µg/l	Weekly	Grab	

PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	Daily Max.	TYPE I	TYPE II				
2-Ethylanthraquinone	Monitor	Monitor				µg/l	Weekly	Grab	
2-Octanol	Monitor	Monitor				µg/l	Weekly	Grab	
Acetophenone	Monitor	Monitor				µg/l	Weekly	Grab	
Toluene	Monitor	5				µg/l	Weekly	Grab	
Xylenes, Total	Monitor	15				µg/l	Weekly	Grab	

TABLE B-3-2
NIMEMILE CREEK 50% DESIGN
HISTORICAL GEDDES BROOK AND NINEMILE CREEK SAMPLING RESULTS

			Location	GB-TP-1A	GB-TP-1B	GB-TP-1C	GB-VC-25W	NMC-TP-1	NMC-TP-2	NMC-TP-3	NMC-TP-4A	NMC-TP-4B	NMC-TP-4C	NMC-TP-5A	NMC-TP-5B	NMC-TP-5C
			Field Sample ID	GB-1007-03	GB-1007-01	GB-1007-02	GB-1019-01	NMC-5045-01	NMC-5046-01	NMC-5080-01	NMC-5078-01	NMC-5078-02	NMC-5078-03	NMC-5078-05	NMC-5078-06	NMC-5078-04
			Sample Date	8/21/2009	8/21/2009	8/21/2009	3/3/2010	10/21/2009	10/28/2009	11/10/2009	10/15/2009	10/15/2009	10/15/2009	10/15/2009	10/15/2009	10/15/2009
			Sample Delivery Group	C9H220121	C9H220121	C9H220121	C0C040480	C9J220226	C9J290327	C9K120627	C9J160332	C9J160332	C9J160332	C9J160332	C9J160332	C9J160332
			Sample Depth	0-0 FT	0-0 FT	0-0 FT	0-0 Ft	0-6 FT	0-4 FT	0-0 FT	0-0 FT	0-0 FT	0-0 FT	0-0 FT	0-0 FT	0-0 FT
			Matrix	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Analytical Method	Parameter Name	Units	Filtered													
ALK	BICARBONATE ALKALINITY AS CACO3	mg/L	N	504	269	403	219	74.5	178	26.5	395	445	353	341	292	549
ALK	CARBONATE ALKALINITY	mg/L	N	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ALK	TOTAL ALKALINITY	mg/L	N	504	269	403	219	74.5	180	26.5	395	445	353	341	292	549
E1664A	OIL & GREASE, TOTAL REC	mg/L	N	4.6 U	4.8 U	4.6 U	5.5 U			5.2 U	4.6 U	4.8 U	4.6 U	4.6 U	4.6 U	4.6 U
E300.0	CHLORIDE	mg/L	N	864	149	5250	4090	15000	452	12100	3480	2090	2100	11000	6040	1450
E300.0	NITROGEN, NITRATE (AS N)	mg/L	N	0.05 U	0.05 U	1.2 U	1.2 U	2.5 U	2.3	2.5 U	1.2 U	0.079	0.74	2.5 U	1.2 U	0.016 J
E300.0	PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS P)	mg/L	N	0.5 U	0.5 U	12.5 U	12.5 U	25 U	0.5 U	25 U	12.5 UJ	0.5 UJ	0.5 UJ	25 UJ	12.5 UJ	0.5 UJ
E300.0	SULFATE	mg/L	N	101	12.6	181	282	356	208	762	530	335	565	74.6	261	76.1
E350.1	NITROGEN, AMMONIA (AS N)	mg/L	N	0.19	0.23	0.36			0.99	7 J						
E350.2	NITROGEN, AMMONIA (AS N)	mg/L	N	0.87 J	2	0.87 J	2 U	2.5		8.4 J	0.82 J	2 U	2 U	2 U	2 U	2 U
E351.1	TOTAL ORGANIC CARBON	mg/L	N				2.7 J	1.9 J		2.9 J	3.6	2.8 J	5	4.6	4.4	3.8
E351.1	TOTAL ORGANIC NITROGEN	mg/L	N	3.2	3.8	2 J										
E351.3	NITROGEN, KJELDAHL, TOTAL	mg/L	N	4.1	5.8	2.9 J	3.3	4.4	3.8	11.3	4.4	3.3	5.5	4.9	4.9	4.4
E365.1	PHOSPHORUS (BLACK, WHITE, RED, YELLOW, OR VIOLET)	mg/L	N	0.12	1.1	0.092 J	0.19 J	0.074 J	0.15	0.1 U	0.14	0.17	0.095 J	0.73	0.56	2.3
E410.4	CHEMICAL OXYGEN DEMAND	mg/L	N	99.5	171	201	171	945	298	815	291	179	214	785	457	120
SM2340C	HARDNESS (AS CACO3)	mg/L	N				4700	18000		13900						
SM2540B	TOTAL SOLIDS	mg/L	N	2370	1110	12100	8640	29200		27100	7650	5450	5180	26100	13800	14600
SM2540D	Total Suspended Solids	mg/L	N	142	457	524	307	651	67.5	48.8	283	294	815	856	639	4840
SM5210B	BIOCHEMICAL OXYGEN DEMAND, FIVE DAY	mg/L	N	1.6 J	9.3	2.8	1.6 J	35.2		8.9	3.6 J	2 UJ	1.8 J	2.4 J	19.2 J	15.6 J
SM5310B	TOTAL ORGANIC CARBON	mg/L	N	6.4	37.2	6.4	7.5			7.5	39.5	26.7	35.4	11	7.7	15
SW6010	ALUMINUM	mg/L	N	3.39 J	11.6 J	2.12 J	5.57 J	0.152 J	15.2	0.0919 J	4.16	2.88	4.4	4.79	9.1	22.1
SW6010	ALUMINUM	mg/L	Y					0.0245 J		0.0473 J						
SW6010	ANTIMONY	mg/L	N	0.0013 U	0.0013 U	0.0013 U	0.0024 J	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0018 J	0.0024 J	0.0027 J	0.0036 J	0.0027 J
SW6010	ANTIMONY	mg/L	Y					0.0014 J		0.0016 J						
SW6010	ARSENIC	mg/L	N	0.0027 U	0.0151	0.0027 U	0.0068 J	0.0054 J	0.0083 J	0.0068 J	0.008 J	0.0034 J	0.0066 J	0.0443	0.0445	0.0367
SW6010	ARSENIC	mg/L	Y					0.0051 J		0.0047 J						
SW6010	BARIUM	mg/L	N	0.076 J	0.114 J	0.169 J	0.247	2.2	0.193 J	1.22	0.226	0.162 J	0.169 J	1.12	0.29	0.47
SW6010	BARIUM	mg/L	Y					1.71		1.18						
SW6010	BERYLLIUM	mg/L	N	0.00023 U	0.00051 J	0.00023 U	0.0003 J	0.00055 J	0.00046 J	0.00058 J	0.00024 J	0.00023 U	0.00023 J	0.00033 J	0.00083 J	0.001 J
SW6010	BERYLLIUM	mg/L	Y					0.00033 J		0.00052 J						
SW6010	CADMIUM	mg/L	N	0.00035 J	0.00033 J	0.0011 J	0.00013 U	0.0004 J	0.00042 J	0.0009 J	0.00049 J	0.00031 J	0.0004 J	0.0011 J	0.00096 J	0.0032 J
SW6010	CADMIUM	mg/L	Y					0.00082 J		0.00072 J						
SW6010	CALCIUM	mg/L	N	365	211	1590	1160	6050	301	5520	606	431	432	2460	1950	1300
SW6010	CALCIUM	mg/L	Y					6110		5400						
SW6010	CHROMIUM	mg/L	N	0.009	0.0214	0.0024 J	0.0085	0.002 J	0.0238	0.00068 J	0.01	0.0049 J	0.009	0.0151	0.0206	0.0813
SW6010	CHROMIUM	mg/L	Y					0.0012 J		0.0016 J						
SW6010	COBALT	mg/L	N	0.0013 J	0.0076 J	0.0013 J	0.0052 J	0.0022 J	0.0055 J	0.0004 U	0.0032 J	0.0019 J	0.0026 J	0.0059 J	0.0106 J	0.0135 J
SW6010	COBALT	mg/L	Y					0.003 J		0.0004 U						
SW6010	COPPER	mg/L	N	0.0186 J	0.0223 J	0.0068 J	0.0081 J	0.0065 J	0.0305	0.0298	0.0202 J	0.0092 J	0.014 J	0.0357	0.0327	0.101
SW6010	COPPER	mg/L	Y					0.0068 J		0.0277						
SW6010	IRON	mg/L	N	2.89	15.9	1.42	9.92	0.0221 J	14.7	0.0119 U	4.51	2.85	4.15	19.1	11.6	25.8
SW6010	IRON	mg/L	Y					0.0119 U		0.0119 U						
SW6010	LEAD	mg/L	N	0.0063	0.0303	0.0013 U	0.0154	0.0025 U	0.02	0.0013 U	0.0176	0.0074	0.0111	0.0976	0.031	0.119
SW6010	LEAD	mg/L	Y					0.0025 U		0.0063 U						
SW6010	MAGNESIUM	mg/L	N	32.5	37.2	115	318	115	64.5	53.9	62	42.7	53.7	358	216	102
SW6010	MAGNESIUM	mg/L	Y					119		53.5						
SW6010	MANGANESE	mg/L	N	0.0703	0.944	0.151	2.05	6.71	0.191	0.0928	0.363	0.217	0.287	1.83	1.32	1.18
SW6010	MANGANESE	mg/L	Y					6.81		0.0901						
SW6010	NICKEL	mg/L	N	0.0072 J	0.0222 J	0.0041 J	0.0104 J	0.0077 J	0.0199 J	0.0067 J	0.0131 J	0.0076 J	0.011 J	0.031 J	0.0383 J	0.081
SW6010	NICKEL	mg/L	Y					0.0085 J		0.0074 J						
SW6010	POTASSIUM	mg/L	N	1.81 J	12.7 J	5.65 J	24.5 J	65.9 J	5.61	140 J	4.67 J	4.53 J	3.88 J	32.1	15.3	7.16
SW6010	POTASSIUM	mg/L	Y					66.2 J		138 J						
SW6010	SELENIUM	mg/L	N	0.003 U	0.0034 J	0.003 U	0.003 U	0.003 U	0.0033 J	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0033 J	0.0033 J
SW6010	SELENIUM	mg/L	Y					0.0031 J		0.003 U						
SW6010	SILVER	mg/L	N	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.0019 J	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U	0.00068 U
SW6010	SILVER	mg/L	Y					0.00088 J		0.00068 U						
SW6010	SODIUM	mg/L	N	394	50.7	1570	1010	3700	138	3270	1760	1090	1110	3500	1630	537
SW6010	SODIUM	mg/L	Y					3600		3110						
SW6010	THALLIUM	mg/L	N	0.0075 J	0.0055 J	0.0024 U	0.0024 U	0.0024 U	0.0036 J	0.0024 U	0.0024 U	0.0024 U	0.0024 U	0.0065 J	0.0024 U	0.0024 U
SW6010	THALLIUM	mg/L	Y					0.0024 U		0.0024 U						
SW6010	VANADIUM	mg/L	N	0.0093 J	0.022 J	0.0072 J	0.013 J	0.0042 J	0.023 J	0.0044 J	0.01 J	0.0068 J	0.01 J	0.0124 J	0.022 J	0.0349 J
SW6010	VANADIUM	mg/L	Y					0.0035 J		0.0035 J						
SW6010	ZINC	mg/L	N	0.0337	0.0879	0.0099 J	0.0298	0.0706	0.0744	0.217	0.0376	0.0234	0.0509	0.076	0.098	0.419
SW6010	ZINC	mg/L	Y					0.0719		0.242						
SW7470	MERCURY	mg/L	N	0.0026	0.0045	0.000038 U	0.00053	0.000038 U	0.00048	0.000038 U	0.00079	0.00035	0.00037	0.0277	0.003	0.114
SW7470	MERCURY	mg/L	Y					0.000048 J		0.000038 U						

TABLE B-3-2
NIMEMILE CREEK 50% DESIGN
HISTORICAL GEDDES BROOK AND NINEMILE CREEK SAMPLING RESULTS

			Location	GB-TP-1A		GB-TP-1B		GB-TP-1C		GB-VC-25W		NMC-TP-1		NMC-TP-2		NMC-TP-3		NMC-TP-4A		NMC-TP-4B		NMC-TP-4C		NMC-TP-5A		NMC-TP-5B		NMC-TP-5C	
			Field Sample ID	GB-1007-03		GB-1007-01		GB-1007-02		GB-1019-01		NMC-5045-01		NMC-5046-01		NMC-5080-01		NMC-5078-01		NMC-5078-02		NMC-5078-03		NMC-5078-05		NMC-5078-06		NMC-5078-04	
			Sample Date	8/21/2009		8/21/2009		8/21/2009		3/3/2010		10/21/2009		10/28/2009		11/10/2009		10/15/2009		10/15/2009		10/15/2009		10/15/2009		10/15/2009		10/15/2009	
			Sample Delivery Group	C9H220121		C9H220121		C9H220121		C0C040480		C9J220226		C9J290327		C9K120627		C9J160332		C9J160332		C9J160332		C9J160332		C9J160332		C9J160332	
			Sample Depth	0-0 FT		0-0 FT		0-0 FT		0-0 Ft		0-6 FT		0-4 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT	
			Matrix	WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER	
Analytical Method	Parameter Name	Units	Filtered																										
SW8081	4,4'-DDD	ug/L	N													0.05	U												
SW8081	4,4'-DDE	ug/L	N													0.05	U												
SW8081	4,4'-DDT	ug/L	N													0.05	U												
SW8081	ALDRIN	ug/L	N													0.05	U												
SW8081	ALPHA-BHC	ug/L	N													0.05	U												
SW8081	ALPHA-CHLORDANE	ug/L	N													0.05	U												
SW8081	BETA-BHC	ug/L	N													0.05	U												
SW8081	BETA-CHLORDANE	ug/L	N													0.05	U												
SW8081	DELTA-BHC	ug/L	N													0.05	U												
SW8081	DIELDRIN	ug/L	N													0.05	U												
SW8081	ENDOSULFAN I	ug/L	N													0.05	U												
SW8081	ENDOSULFAN II	ug/L	N													0.065	J												
SW8081	ENDOSULFAN SULFATE	ug/L	N													0.05	U												
SW8081	ENDRIN	ug/L	N													0.05	UJ												
SW8081	ENDRIN ALDEHYDE	ug/L	N													0.05	U												
SW8081	ENDRIN KETONE	ug/L	N													0.05	U												
SW8081	GAMMA-BHC (LINDANE)	ug/L	N													0.05	U												
SW8081	HEPTACHLOR	ug/L	N													0.05	U												
SW8081	HEPTACHLOR EPOXIDE	ug/L	N													0.05	U												
SW8081	METHOXYCHLOR	ug/L	N													0.1	U												
SW8081	TOXAPHENE	ug/L	N													2	U												
SW8082	AROCLOR-1016	ug/L	N	0.38	U	0.38	U	0.38	U	0.38	U					0.4	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U
SW8082	AROCLOR-1221	ug/L	N	0.38	U	0.38	U	0.38	U	0.38	U					0.4	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U
SW8082	AROCLOR-1232	ug/L	N	0.38	U	0.38	U	0.38	U	0.38	U					0.4	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U
SW8082	AROCLOR-1242	ug/L	N	0.38	U	0.38	U	0.38	U	0.38	U					0.4	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U
SW8082	AROCLOR-1248	ug/L	N	0.38	U	0.38	U	0.38	U	0.38	U					0.4	U	0.38	U	0.38	U	0.38	U	0.11	J	0.38	U	0.38	U
SW8082	AROCLOR-1254	ug/L	N	0.38	U	0.38	U	0.38	U	0.38	U					0.4	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.28	J
SW8082	AROCLOR-1260	ug/L	N	0.38	U	0.38	U	0.38	U	0.38	U					0.4	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U
SW8260	1,1,1-TRICHLOROETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,1,2,2-TETRACHLOROETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,1,2-TRICHLOROETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,1,2-TRICHLOROTRIFLUOROETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,1-DICHLOROETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,1-DICHLOROETHENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,2,3-TRICHLOROBENZENE	ug/L	N	5	U	5	U	5	UJ	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,2,4-TRICHLOROBENZENE	ug/L	N	5	UJ	5	UJ	5	UJ	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,2-DIBROMO-3-CHLOROPROPANE	ug/L	N	5	U	5	U	5	UJ	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,2-DIBROMOETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,2-DICHLOROBENZENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,2-DICHLOROETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,2-DICHLOROPROPANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,3,5-TRICHLOROBENZENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	1,3-DICHLOROBENZENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	3.6	J	5	U	5	U
SW8260	1,4-DICHLOROBENZENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	1.3	J	5	U	5	U
SW8260	2-BUTANONE	ug/L	N	5	U	5	U	5	UJ	5	U	5	U	50	U	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ
SW8260	2-HEXANONE	ug/L	N	5	UJ	5	UJ	5	U	5	U	5	UJ	50	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ
SW8260	4-METHYL-2-PENTANONE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	ACETONE	ug/L	N	20	UJ	8.2	J	20	UJ	20	UJ	340		1700	J	56	J	20	UJ	20	UJ	20	UJ	20	UJ	20	UJ	20	UJ
SW8260	BENZENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	BROMODICHLOROMETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	BROMOFORM	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ
SW8260	BROMOMETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	CARBON DISULFIDE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	CARBON TETRACHLORIDE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	UJ	5	UJ	5	U	5	U	5	UJ	5	U
SW8260	CHLOROBENZENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	CHLORODIBROMOMETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	CHLOROETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U			5	UJ	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ
SW8260	CHLOROFORM	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	CHLOROMETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	UJ	5	UJ	5	U	5	U	5	UJ	5	U
SW8260	CIS-1,2-DICHLOROETHENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	CIS-1,3-DICHLOROPROPENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	UJ	5	UJ	5	U	5	UJ
SW8260	CYCLOHEXANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	DICHLORODIFLUOROMETHANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	UJ	5	UJ	5	UJ	5	U	5	U	5	UJ	5	U
SW8260	ETHYLBENZENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	ISOPROPYLBENZENE	ug/L	N	5	U	5	U	5	UJ	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	METHYL ACETATE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	UJ	5	UJ	5	U	5	U	5	UJ	5	U

TABLE B-3-2
NIMEMILE CREEK 50% DESIGN
HISTORICAL GEDDES BROOK AND NINEMILE CREEK SAMPLING RESULTS

		Location		GB-TP-1A		GB-TP-1B		GB-TP-1C		GB-VC-25W		NMC-TP-1		NMC-TP-2		NMC-TP-3		NMC-TP-4A		NMC-TP-4B		NMC-TP-4C		NMC-TP-5A		NMC-TP-5B		NMC-TP-5C	
		Field Sample ID		GB-1007-03		GB-1007-01		GB-1007-02		GB-1019-01		NMC-5045-01		NMC-5046-01		NMC-5080-01		NMC-5078-01		NMC-5078-02		NMC-5078-03		NMC-5078-05		NMC-5078-06		NMC-5078-04	
		Sample Date		8/21/2009		8/21/2009		8/21/2009		3/3/2010		10/21/2009		10/28/2009		11/10/2009		10/15/2009		10/15/2009		10/15/2009		10/15/2009		10/15/2009		10/15/2009	
		Sample Delivery Group		C9H220121		C9H220121		C9H220121		C0C040480		C9J220226		C9J290327		C9K120627		C9J160332		C9J160332		C9J160332		C9J160332		C9J160332		C9J160332	
		Sample Depth		0-0 FT		0-0 FT		0-0 FT		0-0 Ft		0-6 FT		0-4 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT	
		Matrix		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER	
Analytical Method	Parameter Name	Units	Filtered																										
SW8260	METHYL TERT-BUTYL ETHER	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	METHYLCYCLOHEXANE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	METHYLENE CHLORIDE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	NAPHTHALENE	ug/L	N	5	U	5	U	5	UJ	5	U	5	U	5.7	J	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	STYRENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	TETRACHLOROETHENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	TOLUENE	ug/L	N	5	U	3.6	J	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	TRANS-1,2-DICHLOROETHENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	TRANS-1,3-DICHLOROPROPENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	TRICHLOROETHENE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	TRICHLOROFLUOROMETHANE	ug/L	N	5	UJ	5	UJ	5	U	5	U	5	U	50	U	5	U	5	UJ	5	UJ	5	U	5	U	5	UJ	5	U
SW8260	VINYL CHLORIDE	ug/L	N	5	U	5	U	5	U	5	U	5	U	50	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
SW8260	XYLENES, TOTAL	ug/L	N	15	U	15	U	15	U	15	U	15	U	150	U	15	U	15	U	15	U	15	U	15	U	15	U	15	U
SW8270	1,1'-BIPHENYL	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	2,2'-OXYBIS(1-CHLOROPROPANE)	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
SW8270	2,4,5-TRICHLOROPHENOL	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	2,4,6-TRICHLOROPHENOL	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	2,4-DICHLOROPHENOL	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
SW8270	2,4-DIMETHYLPHENOL	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	2.7	J
SW8270	2,4-DINITROPHENOL	ug/L	N	47	U	48	U	47	U	48	U	48	U			55	U	47	UJ	48	UJ	47	UJ	48	UJ	47	UJ	47	UJ
SW8270	2,4-DINITROTOLUENE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	2,6-DINITROTOLUENE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	2-CHLORONAPHTHALENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	0.2	J			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
SW8270	2-CHLOROPHENOL	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	2-METHYLNAPHTHALENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	0.35	J
SW8270	2-METHYLPHENOL	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	1.7	J	9.4	U
SW8270	2-NITROANILINE	ug/L	N	47	U	48	U	47	U	48	U	48	U			55	U	47	U	48	U	47	U	48	U	47	U	47	U
SW8270	2-NITROPHENOL	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	3,3'-DICHLOROBENZIDINE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	3-NITROANILINE	ug/L	N	47	U	48	U	47	U	48	U	48	U			55	U	47	U	48	U	47	U	48	U	47	U	47	U
SW8270	4,6-DINITRO-2-METHYLPHENOL	ug/L	N	47	U	48	U	47	U	48	U	48	U			55	U	47	U	48	U	47	U	48	U	47	U	47	U
SW8270	4-BROMOPHENYL PHENYL ETHER	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	4-CHLORO-3-METHYLPHENOL	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	4-CHLOROANILINE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	4-CHLOROPHENYL PHENYL ETHER	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	4-METHYLPHENOL	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	0.95	J	0.98	J
SW8270	4-NITROANILINE	ug/L	N	47	U	48	U	47	U	48	U	48	U			55	U	47	U	48	U	47	U	48	U	47	U	47	U
SW8270	4-NITROPHENOL	ug/L	N	47	U	48	U	47	U	48	U	48	U			55	U	47	U	48	U	47	U	48	U	47	U	47	U
SW8270	ACENAPHTHENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	0.31	J
SW8270	ACENAPHTHYLENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	0.65	J
SW8270	ACETOPHENONE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	0.87	J
SW8270	ANTHRACENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1	J
SW8270	ATRAZINE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	UJ	9.4	UJ	9.6	UJ	9.4	UJ	9.5	UJ	9.4	UJ	9.4	UJ
SW8270	BENZALDEHYDE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	UJ	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	7.7	J
SW8270	BENZO(A)ANTHRACENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	3.1	
SW8270	BENZO(A)PYRENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	3.6	
SW8270	BENZO(B)FLUORANTHENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	5.1	
SW8270	BENZO(G,H,I)PERYLENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	2.1	
SW8270	BENZO(K)FLUORANTHENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
SW8270	BIS(2-CHLOROETHOXY)METHANE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	BIS(2-CHLOROETHYL)ETHER	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
SW8270	BIS(2-ETHYLHEXYL)PHTHALATE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	BUTYLBENZYL PHTHALATE	ug/L	N	9.4	U	9.5	U	4.6	J	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	CAPROLACTAM	ug/L	N	47	U	48	U	47	U	48	U	48	U			55	U	47	U	48	U	47	U	48	U	47	U	47	U
SW8270	CARBAZOLE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	0.61	J
SW8270	CHRYSENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	3.8	
SW8270	DI-N-BUTYL PHTHALATE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	0.6	J			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	DI-N-OCTYL PHTHALATE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	DIBENZO(A,H)ANTHRACENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
SW8270	DIBENZOFURAN	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	0.31	J
SW8270	DIETHYL PHTHALATE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	3	J			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	DIMETHYL PHTHALATE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	FLUORANTHENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	6.1	
SW8270	FLUORENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	0.38	J
SW8270	HEXACHLOROBENZENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.6	J
SW8270	HEXACHLOROBUTADIENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U

TABLE B-3-2
NIMEMILE CREEK 50% DESIGN
HISTORICAL GEDDES BROOK AND NINEMILE CREEK SAMPLING RESULTS

			Location	GB-TP-1A		GB-TP-1B		GB-TP-1C		GB-VC-25W		NMC-TP-1		NMC-TP-2		NMC-TP-3		NMC-TP-4A		NMC-TP-4B		NMC-TP-4C		NMC-TP-5A		NMC-TP-5B		NMC-TP-5C	
			Field Sample ID	GB-1007-03		GB-1007-01		GB-1007-02		GB-1019-01		NMC-5045-01		NMC-5046-01		NMC-5080-01		NMC-5078-01		NMC-5078-02		NMC-5078-03		NMC-5078-05		NMC-5078-06		NMC-5078-04	
			Sample Date	8/21/2009		8/21/2009		8/21/2009		3/3/2010		10/21/2009		10/28/2009		11/10/2009		10/15/2009		10/15/2009		10/15/2009		10/15/2009		10/15/2009		10/15/2009	
			Sample Delivery Group	C9H220121		C9H220121		C9H220121		C0C040480		C9J220226		C9J290327		C9K120627		C9J160332		C9J160332		C9J160332		C9J160332		C9J160332		C9J160332	
			Sample Depth	0-0 FT		0-0 FT		0-0 FT		0-0 Ft		0-6 FT		0-4 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT		0-0 FT	
			Matrix	WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER		WATER	
Analytical Method	Parameter Name	Units	Filtered																										
SW8270	HEXACHLOROCYCLOPENTADIENE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	UJ			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	HEXACHLOROETHANE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	0.78	J
SW8270	INDENO(1,2,3-CD)PYRENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	
SW8270	ISOPHORONE	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	N-NITROSO-DI-N-PROPYLAMINE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
SW8270	N-NITROSODIPHENYLAMINE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
SW8270	NAPHTHALENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	0.63	J
SW8270	NITROBENZENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
SW8270	PENTACHLOROPHENOL	ug/L	N	9.4	U	9.5	U	9.4	U	9.7	U	9.6	U			11	U	9.4	U	9.6	U	9.4	U	9.5	U	9.4	U	9.4	U
SW8270	PHENANTHRENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	3.5	
SW8270	PHENOL	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
SW8270	PYRENE	ug/L	N	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U			2.2	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	6.3	
SW9012	CYANIDE	mg/L	N	0.0025	J	0.0039	J	0.0045	J	0.0366						0.012		0.0026	J	0.01	U	0.01	U	0.0709		0.0455		0.0022	J
SW9030	SULFIDE	mg/L	N	3	U	3	U	3	U	3	U	3	U			3	U	3	U	3	U	3	U	3	U	6.4		3	U
SW9040	pH	s.u.	N	7.2		7.2		7.1		7.1		7		7.8		6.9		7.2		7		7.1		6.8		7		7	
TDS	TOTAL DISSOLVED SOLIDS	mg/L	N	2310		512		13900		8780		33600		1880		32400		7650		4430		4900		15700		9180		4540	

Notes: J = Data Qualified as Estimated
U = Data Qualified as Not Detected
Shaded Cells Represent Data Within 80% of Anticipated Discharge Limit

TABLE B-3-3
NINEMILE CREEL 50% DESIGN
SUMMARY OF HISTORICAL DATA

					Geddes and NMC Samples Pooled				Geddes Samples (Only) Pooled				NMC Samples (Only) Pooled			
Analytical Method	Parameter Name	Units	Filtered		Count	Min	Max	Ave	Count	Min	Max	Ave	Count	Min	Max	Ave
ALK	BICARBONATE ALKALINITY AS CACO3	mg/L	N		13	26.5	549	311	4	219	504	349	9	26.5	549	295
ALK	CARBONATE ALKALINITY	mg/L	N		13	< 5	< 5	5	4	< 5	< 5	5	9	< 5	< 5	5
ALK	TOTAL ALKALINITY	mg/L	N		13	26.5	549	312	4	219	504	349	9	26.5	549	295
E1664A	OIL & GREASE, TOTAL REC	mg/L	N		11	< 4.6	< 5.5	4.8	4	< 4.6	< 5.5	4.9	7	<4.6	<5.2	4.7
E300.0	CHLORIDE	mg/L	N		13	149	15000	4928	4	149	5250	2588	9	452	15000	5968
E300.0	NITROGEN, NITRATE (AS N)	mg/L	N		13	0.016	< 2.5	1.2	4	< 0.05	< 1.2	0.6	9	0.016	< 2.5	1.4
E300.0	PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS P)	mg/L	N		13	< 0.5	< 25	9.8	4	< 0.5	< 12.5	6.5	9	< 0.5	< 25	11.3
E300.0	SULFATE	mg/L	N		13	12.6	762	288	4	12.6	282	144	9	74.6	762	352
E350.1	NITROGEN, AMMONIA (AS N)	mg/L	N		5	0.2	7.0	1.8	3	0.19	0.36	0.26	2	0.99	7	4.00
E350.2	NITROGEN, AMMONIA (AS N)	mg/L	N		12	0.8	8.4	2.3	4	0.87	2	1.4	8	0.82	8.4	2.7
E351.1	TOTAL ORGANIC CARBON	mg/L	N		9	1.9	5.0	3.5	1	2.7	2.7	2.7	8	1.9	5	3.6
E351.1	TOTAL ORGANIC NITROGEN	mg/L	N		3	2.0	3.8	3.0	3	2	3.8	3	0	--	--	--
E351.3	NITROGEN, KJELDAHL, TOTAL	mg/L	N		13	2.9	11.3	4.8	4	2.9	5.8	4.0	9	3.3	11.3	5.2
E365.1	PHOSPHORUS (BLACK, WHITE, RED, YELLOW, OR VIOLET)	mg/L	N		13	< 0.074	2.3	0.4	4	0.092	1.1	0.4	9	< 0.074	2.3	0.5
E410.4	CHEMICAL OXYGEN DEMAND	mg/L	N		13	99.5	945	365	4	99.5	201	161	9	120	945	456
SM2340C	HARDNESS (AS CACO3)	mg/L	N		3	4700	18000	12200	1	4700	4700	4700	2	13900	18000	15950
SM2540B	TOTAL SOLIDS	mg/L	N		12	1110	29200	12775	4	1110	12100	6055	8	5180	29200	16135
SM2540D	Total Suspended Solids	mg/L	N		13	48.8	4840	763	4	142	524	358	9	48.8	4840	944
SM5210B	BIOCHEMICAL OXYGEN DEMAND, FIVE DAY	mg/L	N		12	1.6	35.2	8.7	4	1.6	9.3	3.8	8	1.8	35.2	11.1
SM5310B	TOTAL ORGANIC CARBON	mg/L	N		11	6.4	39.5	18.2	4	6.4	37.2	14.4	7	7.5	39.5	20.4
SW6010	ALUMINUM	mg/L	N		13	0.1	22.1	6.6	4	2.12	11.6	5.7	9	0.0919	22.1	7.0
SW6010	ALUMINUM	mg/L	Y		2	0.0	0.0	0.0	0	--	--	--	2	0.0245	0.0473	0.0359
SW6010	IRON	mg/L	N		13	< 0.0119	25.8	8.7	4	1.42	15.9	7.5	9	< 0.0119	25.8	9.2
SW6010	IRON	mg/L	Y		2	< 0.0119	0.0	0.0	0	--	--	--	2	< 0.0119	0.0119	0.0119
SW7470	MERCURY	mg/L	N		13	< 0.000038	0.114000	0.011880	4	< 0.000038	0.0045	0.0019	9	< 0.000038	0.114	0.016
SW7470	MERCURY	mg/L	Y		2	< 0.000038	0.000048	0.000043	0	--	--	--	2	< 0.000038	0.000048	0.000043
SW8082	AROCLOR-1248	ug/L	N		11	0.11	< 0.4	0.36	4	< 0.38	< 0.38	0.38	7	0.11	< 0.4	0.34
SW8082	AROCLOR-1254	ug/L	N		11	0.28	< 0.4	0.37	4	< 0.38	< 0.38	0.38	7	0.28	< 0.4	0.37
SW8082	AROCLOR-1260	ug/L	N		11	< 0.38	< 0.4	0.38	4	< 0.38	< 0.38	0.38	7	< 0.38	< 0.4	0.38
SW8260	TOLUENE	ug/L	N		13	3.6	< 50	8.4	4	3.6	< 5	4.7	9	< 5	< 50	10
SW9012	CYANIDE	mg/L	N		11	0.0022	0.0709	0.0182	4	0.0025	0.0366	0.0119	7	0.0022	0.0709	0.0219
SW9030	SULFIDE	mg/L	N		12	< 3	6.4	3.3	4	< 3	< 3	< 3	8	< 3	6.4	3.4
SW9040	pH	s.u.	N		13	6.8	7.8	7.1	4	7.1	7.2	7.2	9	6.8	7.8	7.1
TDS	TOTAL DISSOLVED SOLIDS	mg/L	N		13	512	33600	10752	4	512	13900	6376	9	1880	33600	12698

Notes :
1 - All "< " values indicate values below detection limits.

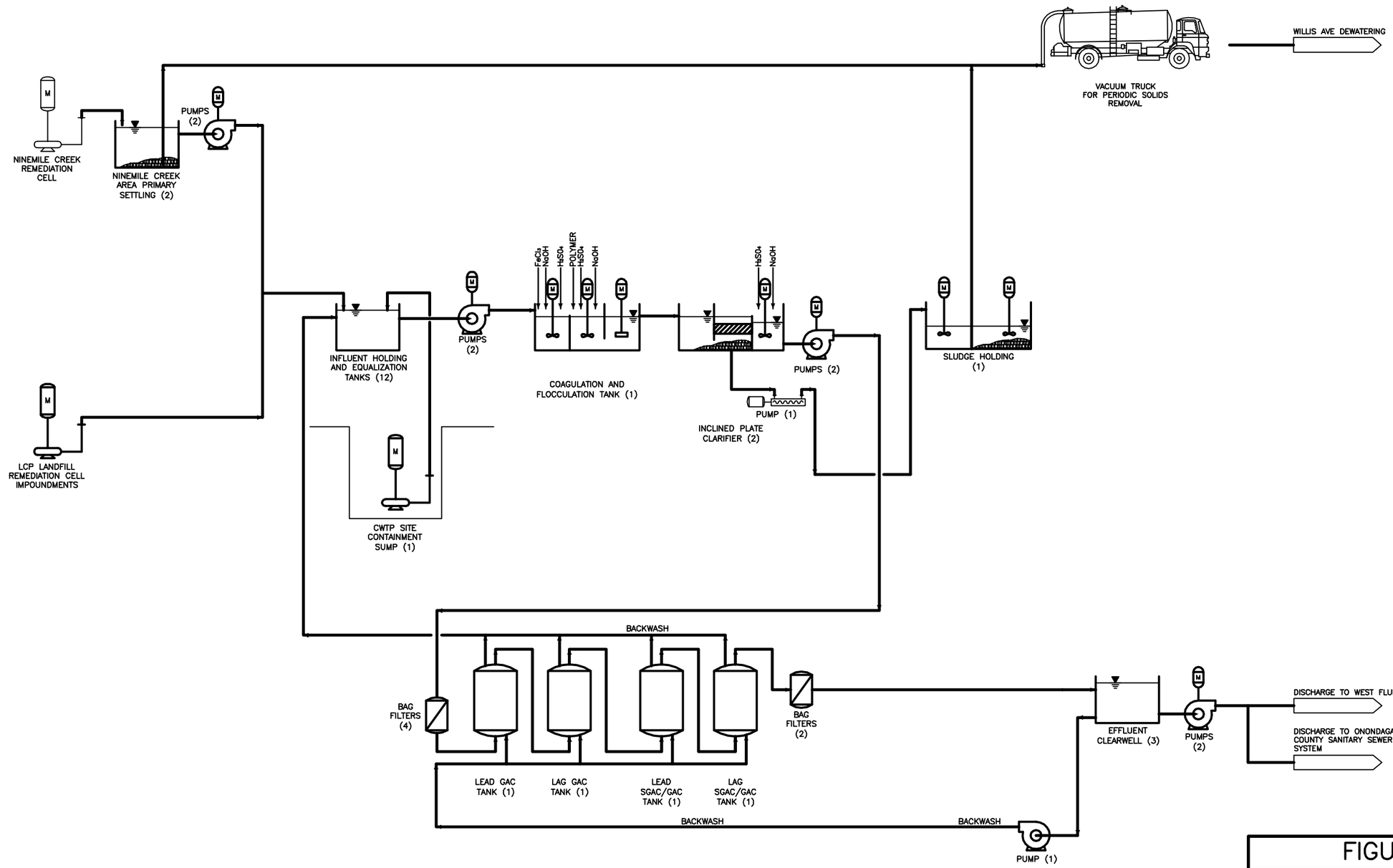

FIGURE B-3-1

Honeywell

GEDDES BROOK/NINEMILE CREEK
SOLVAY, NEW YORK

PROCESS FLOW DIAGRAM

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: T:\HONEYWELL -SYR\445844-NMC 50% DESIGN\10 TECHNICAL CATEGORIES\10.1 CAD\FIGURES\50% DESIGN REPORT\445844_SK_004.DWG
PLOT DATE: 6/18/2012 3:21 PM PLOTTED BY: RABUFFETTI, RICHARD

ATTACHMENT B-4

STABILITY ANALYSIS

(ATTACHED AS PRESENTED IN THE NINEMILE CREEK 95% AND DRAFT 100% DESIGN REPORTS)

ATTACHMENT B-4

STABILITY ANALYSES

1.0 INTRODUCTION

Excavations and reconstruction of the Ninemile Creek channel in Reach CD are planned as part of the Ninemile Creek remediation process. Geotechnical analyses of slope stability of critical and typical sections were performed to assess technical feasibility and potential protective measures related to the proposed work. The area that had slope stability analyses performed was the channel south of the Large Island, where the removals are deepest with the highest adjacent ground to demonstrate that the proposed excavations are feasible.

Slope Stability analyses were conducted using GeoStudio 2007 (Version 7.15) – SlopeW by Geoslope International, Ltd. The Morgenstern-Price method was used for the final results displayed in the attached examples and summary table.

The geotechnical information for existing conditions is generally derived from available test pits, borings, and geotechnical testing as described in the *Ninemile Creek Pre-Design Investigation Report* (Parsons, 2010). Piezometric interpretations are also based on Parsons (2010).

2.0 PARAMETER SELECTION

2.1 Reach CD Large Island Area

The analyses in the Reach CD Large Island area considered the presence of fill, recent deposits, creek deposits, glacio-lacustrine clay, and glacio-lacustrine silt types of materials. The properties for each of these are described below and tabulated in Table 2.1.

Granular/Channel Habitat Backfill

The restoration will include coarse granular imported soils as channel habitat, common backfill, and habitat subgrade materials for the banks. Terzaghi et al. (1996) and Crum et al. (1997) provide background for evaluating the strength of granular soils at relatively low effective stresses. These fills are not expected to be compacted when placed and were assigned bulk unit 125 pounds per cubic foot (pcf) and a friction angle of 35 degrees as they are generally expected to be coarse and near the ground surface with effective stresses generally less than 500 psf.

Existing Fill: South Bank of Large Island

The upper materials in the south bank of the Large Island area are miscellaneous fills related to the State Fair landfill. These materials appear to be various types of soil and debris. For the purposes of these analyses, the fills have been modeled as loose, granular materials with a bulk unit weight of 120 pcf and

a friction angle of 28 degrees. No allowances were made for matric suction or vegetation in the soils, since the proposed removals are expected to remove or disturb the near-surface soils substantially. This will include removal of much of the root mass present in the materials.

Recent Deposits

There are relatively thin layers of naturally-occurring Holocene-aged deposits, including silt, clay, and organic soil layers, present below the south bank surficial fill, and on the surface of the Large Island, north channel, and adjoining banks. For the purposes of these analyses, these deposits were modeled as soft, cohesive soils with bulk unit weight of 115 pcf and an undrained shear strength of 250 psf. Since the remediation and restoration is unlikely to significantly change the soil and stability conditions during periods of fluctuating water levels, such as in the spring, the undrained parameters were maintained through the finished grade analyses.

Creek Deposits

Loose silts and sands are present in the Ninemile Creek channel between the Large Island and the south bank. These have been modeled as loose, granular materials with a bulk unit weight of 130 pcf and a friction angle of 28 degrees.

Glacio-Lacustrine Clay

The Pleistocene - aged glacio-lacustrine clays in Reach CD are high in the soil profile, often above the adjacent surface water levels, and are over-consolidated. They are modeled as stiff clays with a bulk unit weight of 135 pcf and an undrained shear strength of 1,000 psf for the temporary excavation conditions. Since the remediation and restoration is unlikely to significantly change these soils and critical stability conditions are in periods of transient water levels, such as in the spring, the undrained parameters were maintained through the finished grade analyses.

The long-term analyses for the finished condition also assessed the stability when the soils are at pore pressure equilibrium in a drained condition. A drained strength of 32 degrees with a cohesion intercept of 20 psf was used for long-term drained conditions. These shear strength values are consistent with geotechnical analyses performed for other Onondaga Lake project stability analyses.

Glacio Lacustrine Silt

The Pleistocene - aged glacio-lacustrine silts in Reach CD underlie the glacio-lacustrine clays. They are interbedded with fine sand seams. The piezometric monitoring indicates there is a upward gradient in the vicinity of the channel which could lead to disturbance and loosening of the soils when the overlying materials are excavated. The silts are modeled as loose granular materials with a bulk unit weight of 120

pcf and a friction angle of 28 degrees as they are generally the deepest soils in the profile with the highest overburden pressures and the potential for loosening upon excavation.

Table 2.1
Reach CD Material Properties

Material	Unit Weight (pcf)	Friction Angle (degrees)	Cohesion/Undrained Shear Strength (psf)
Existing Fill	120	28	
GL Silts and Silty Sands	120	28	-
Recent Deposit	115	-	250
Creek Deposit	130	28	-
Glacio-Lacustrine Silt	120	28	-
Granular/Channel Habitat Backfill	125	35	
Undrained (Short Term) Conditions			
Glacio-Lacustrine Clay (undrained)	135	-	1000
Drained (Long Term) Conditions			
Glacio-Lacustrine Clay (drained)	135	32	20

3.0 STABILITY ANALYSES

The cross-sections, geometries and results of the stability analyses are summarized in Table 3.1 and are shown in Figures 3.2 to 3.10. The locations of the cross-sections are shown on the Cross-Section Location Plan in Figure 3.1.

3.1 Appropriate Factors of Safety

These analyses evaluate both interim conditions during excavation of sediments and long-term stability of finished and restored surfaces.

A minimum target factor of safety of 1.3 is generally considered appropriate for interim conditions (USACE, 2003).

A minimum target factor of safety of 1.5 is generally considered appropriate for long-term conditions (USACE, 2003 and Duncan et al., 1987).

3.1.1 Reach CD

Slope stability analyses were performed on three cross-sections of the proposed excavation surface in the Large Island area of Reach CD. These cross-sections were Stations 62+50, 64+50, and 65+50 with excavations at elevations 354 feet, 355 feet, and 352 feet respectively as per the 95% design drawings. The analyses were conducted with excavation slopes at 3:1 (H:V). In each analysis, a construction surcharge load of 240 psf was applied approximately 10 feet from the top of slope for a width of width of approximately 25 feet to conservatively model equipment and material stockpile loads.

Final condition analyses were performed at Stations 62+50, 64+50 and 65+50 with geometries as per the 95% design drawings.

The average creek level used in the analyses was at elevation 363 feet. An elevated piezometric pressure of 369 feet was applied to the glacio-lacustrine silt. This was applied following observations of piezometric monitoring indicating an upward gradient in the vicinity of the channel. The elevated pore pressures cause a reduction in the effective stress which reduces the shear strength of the frictional soils. The horizontally bedded glacio-lacustrine soils are expected to restrict upward flow so this upward gradient will likely persist unless the layering is disturbed when the overlying materials are excavated.

The presence of the elevated pore pressures at depth and upward hydraulic gradients in the underlying glacio-lacustrine silts and sands at the Large Island area causes some of the critical stability surfaces to be deep-seated circular slip surfaces that extend about 10 feet below the lowest point of the proposed excavation during excavation. Some of the potential slip surfaces with the lowest factors of safety extend back from the top of the creek bank to the proposed location for excavation and trucking equipment. This pattern is more analogous to soft clays than granular, non-plastic soils. As a result, the potential surface of sliding would encompass a large mass of soil which could move suddenly without warning. While the currently proposed excavations are considered stable with a factor of safety of at least 1.3 as described below, deeper or wider excavations than those currently proposed would require additional evaluations to assess whether the banks would remain stable.

The factors of safety obtained from the final condition analyses were 1.6 to 2.4, respectively, which are considered satisfactory for long term conditions. In these cases the critical slip surface has moved from the underlying pre-existing materials to slip circles within the granular channel habitat subgrade material, as the backfill pressure counteracts the upward hydraulic gradients at depth.

Table 3.1
Summary of Factors of Safety for Reach CD Stability Analyses

Location	Excavation Condition	Final Condition (Undrained)	Final condition (Drained)
62+50 (CD)	1.3 (3H:1V)	2.4	2.4
64+50 (CD)	1.8 (3H:1V)	1.9	1.9
65+50 (CD)	1.5 (3H:1V)	1.6	1.7

4.0 SUMMARY

The slope stability analyses indicate that the proposed excavation surfaces should have factors of safety of 1.3 or greater. This is generally considered acceptable for interim construction purposes. The steepness of the slopes and the magnitude of the upward hydraulic gradients in the underlying glacio-lacustrine soils are the two most significant factors in determining the factor of safety at a given location.

The factors of safety for the final backfilled conditions are typically 1.6 to 2.4. This is generally considered acceptable for long-term conditions. The critical slip surface for this condition is generally a shallow slip circle within the channel habitat fill material. This is typical of granular soils where the shear strength is a function of overburden pressure and critical slip circles are generally shallow with much higher factors of safety deeper in the profile.

5.0 REFERENCES

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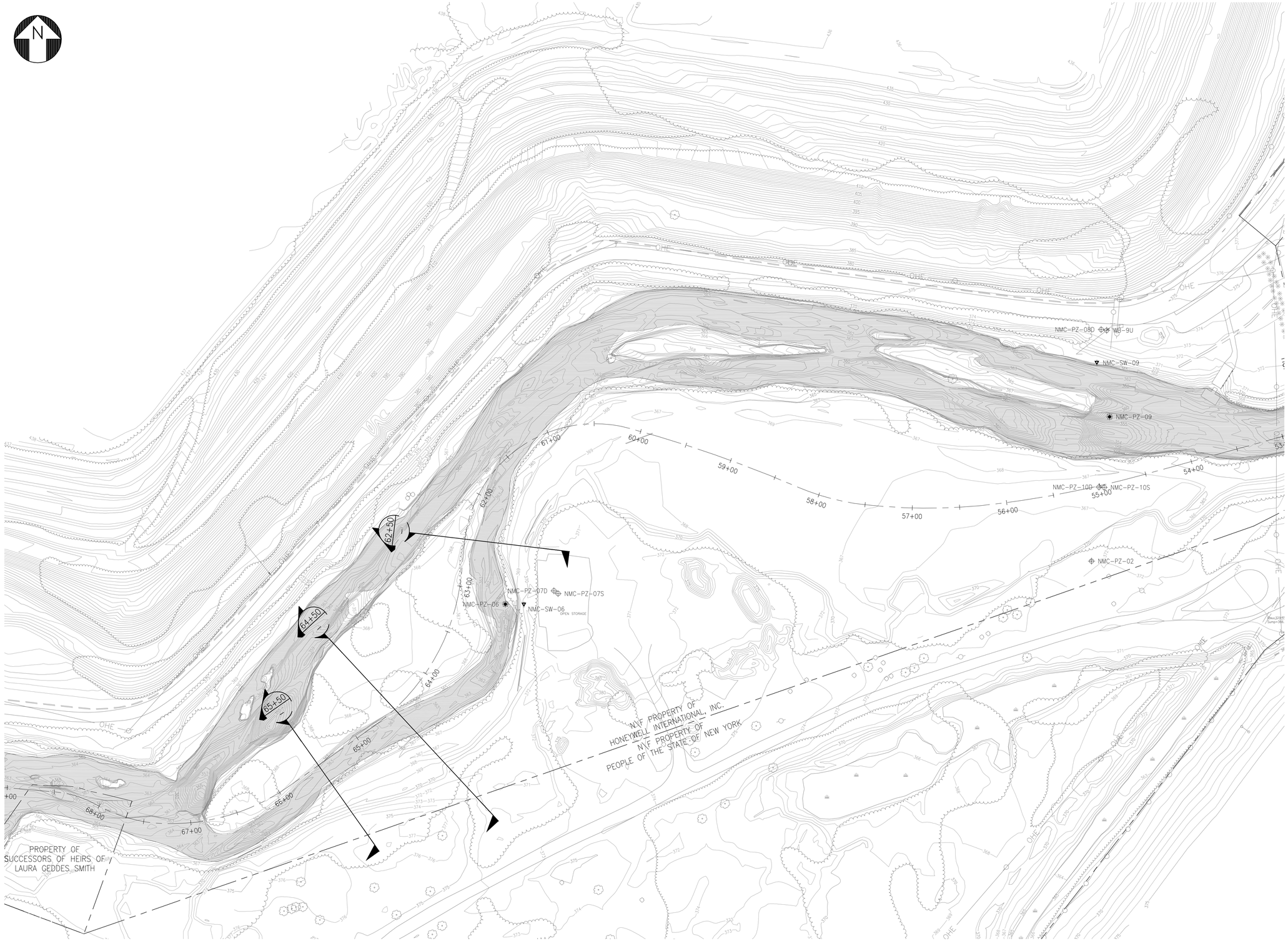
Terzaghi, K., R.B. Peck and G. Mesri (1996). *Soil Mechanics in Engineering Practice, 3rd ed.*, John Wiley & Sons, Inc.

USACE (2003). *Slope Stability, EM-1110-2-1902*, United States Army Corps of Engineers Engineer Manual.

NOTES:



50 25 0 50 100

SCALE: 1" = 50'

FIGURE 3-1

Honeywell

NINEMILE CREEK
SOLVAY, NEW YORK

SLOPE STABILITY ANALYSIS
CROSS-SECTION LOCATION PLAN
NINEMILE CREEK
REACH CD

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\PIT\PROJECTS\HONEYWELL\NINE MILE CREEK\CAD\CAD\FIGURE 3-1.DWG
PLOT DATE: 1/31/2012 11:30 AM PLOTTED BY: RABLITETTL, RICHARD