Potential Brown County Borrow Source List						
Location	**Type of Material**	**Contact Name**	**Contact Number**	**Representing**	**Estimated Quantity (CY)**	**Soil Borings Available****
3 Miles SE of Wrightstown on CTH IL	Red Clay	Chad Doverspike	920-621-4393 920-492-4955	Brown County Solid Waste Dept.	500,000 - 600,000	No
City of Green Bay	Reprocessed block and brick	Quasan Shaw	920-448-3396	GB Economic Development	Unknown	No
Fox River on Hurlbut Street	Waste Lime	Steve Moss	920-965-4218	Great Lakes Calcium	15,000	No
Hurlbut Street	Dredged material	Dean Haen	920- 492-4953	Brown County Port	800,000 +	Yes
State Street	Sand from PCB dredging	Richard Feeney	920-445-0732	Tetra Tech	25,000 - 100,000	No
W2354 CTH G	N/A	Tom Ostrowski	920-595-0101	Private	1.5-2.0 Million	No
Village Green Golf Course - Stockpile	Silt	Geoff Farr	920-434-4060	Village of Howard	20,000	No
Woodman's - Excavate Pond	Silt	Geoff Farr	920-434-4060	Village of Howard	30,000	No
Village Center - Excavate Pond	Silt	Geoff Farr	920-434-4060	Village of Howard	25,000	No
Community Church - Excavate Storm Ponds	Silt	Geoff Farr	920-434-4060	Village of Howard	15,000	No
Duck Creek Golf Center	Waste from Utility Relocations	Dan Thorpe	920-498-2797	Private	50,000	No

** See documentation below

CORRESPONDENCE/MEMORANDUM _____State of Wisconsin

DATE: June 16, 2010

TO: Ken Hanzel, P.E.
Northeast Region Soils and Materials Engineer

FROM: Jeffrey D Horsfall, P.E.
Geotechnical Engineer

SUBJECT: **Site Investigation Memorandum**
Project I.D. 1133-03-03
Bayport Dredge Pile
USH 41
Brown County

General

The Northeast Region requested that the Foundation and Pavement Unit evaluate the Bayport dredge pile for use as a borrow source for the USH 41 project. The dredge pile was generated by first dredging material from the Fox River and placing the material into holding ponds, next the material was excavated from the holding ponds and placed on the dredge pile with dump trucks and spread around the pile with the dozer.

The approximate size of the dredge pile is 900 feet long by 700 feet wide by 55 feet high and has side slopes of approximately 6H:1V (9.5 degrees).

Subsurface Investigation

The Foundation and Pavement Unit performed 12 boring on the dredge pile in May 2010. Samples were collected every five feet with a method conforming to AASHTO T-206, Standard Penetration Test. The purpose of the boring was to define subsurface soil conditions at this site and collect samples. Three auger borings were performed to gather samples for standard Proctor tests and remolded unconfined compression tests. In addition, the Region Soils Engineer had collected samples for standard Proctor tests. Soil textures in the boring logs were field identified by the drillers. Attachment 1 presents the driller's boring logs at this site. Attachment 2 presents the results of the laboratory tests.

Typically, the following describes the subsurface conditions in the borings:

> 15.0 feet to 50.0 feet black loose to firm silt, trace clay, some organics, overlying Brown, hard, clay, some silt

Soils Laboratory Results

The soils laboratory test results were separated into index testing (moisture content, loss of ignition, Atterberg Limits and grain size distribution) and physical property testing (standard Proctor test and remolded unconfined compression test). The purpose of the index testing was to determine the uniformity and organic nature of the dredge pile, while

the purpose of the physical property testing was to determine the ability of the material to be incorporated into the roadway.

The SPT samples were combined into larger samples for the index testing. Three auger borings were performed to collect sufficient sample to perform standard Proctor tests and remolded unconfined compression tests. Three additional standard Proctor tests were performed in the Region from surface bag samples. Table 1 presents the results of the laboratory tests.

Generally, the results of the index tests indicated that the dredge pile material was mostly silt and clay particles with high moisture contents and relatively high organic contents. The material had a Unified Soil Classification of OL and OH. One sample (B-3, S5 and S6) had unique tests results with a Unified Soil Classification of 'ML' and was not used in the development of the ranges and averages presented below.

The dredge material was relatively consistent both laterally and with depth. The following describes some of the index properties:

- The moisture content ranged from 50.6% to 81.5% with an average of 69.2 %.

- The percent silt size particles ranged from 56.0% to 77.0% with an average of 69.0%. Figure 1 presents the percent silt versus the sample elevation. The figure indicates a slight trend for higher percent silt with the lower sample elevation.

- The loss of ignition test provide an indication of the organic content of the material with values greater than 5% could be considered to be perishable. The loss of ignition ranged from 7.1% to 11.7% with an average of 9.8%. Figure 2 presents the loss of ignition versus the sample elevation. The figure shows no indication of loss of ignition with sample elevation.

The results of the standard Proctor test indicated a range of maximum dry density of 77.7 pcf to 106.0 pcf and a range of optimum moisture content of 17.6% to 34.2%. Samples were remolded for the unconfined compression tests at a dry density of approximately 95% of the maximum dry density and at the optimum moisture content. The results of the unconfined compression tests ranged from 1,480 psf to 2,272 psf. This indicates a medium to stiff material. The moisture content of a soil has a great influence on the compressive strength. Generally, the higher the moisture contents the lower compressive strengths.

Recommendation

The following presents the recommendation for use of the Bayport dredge pile.

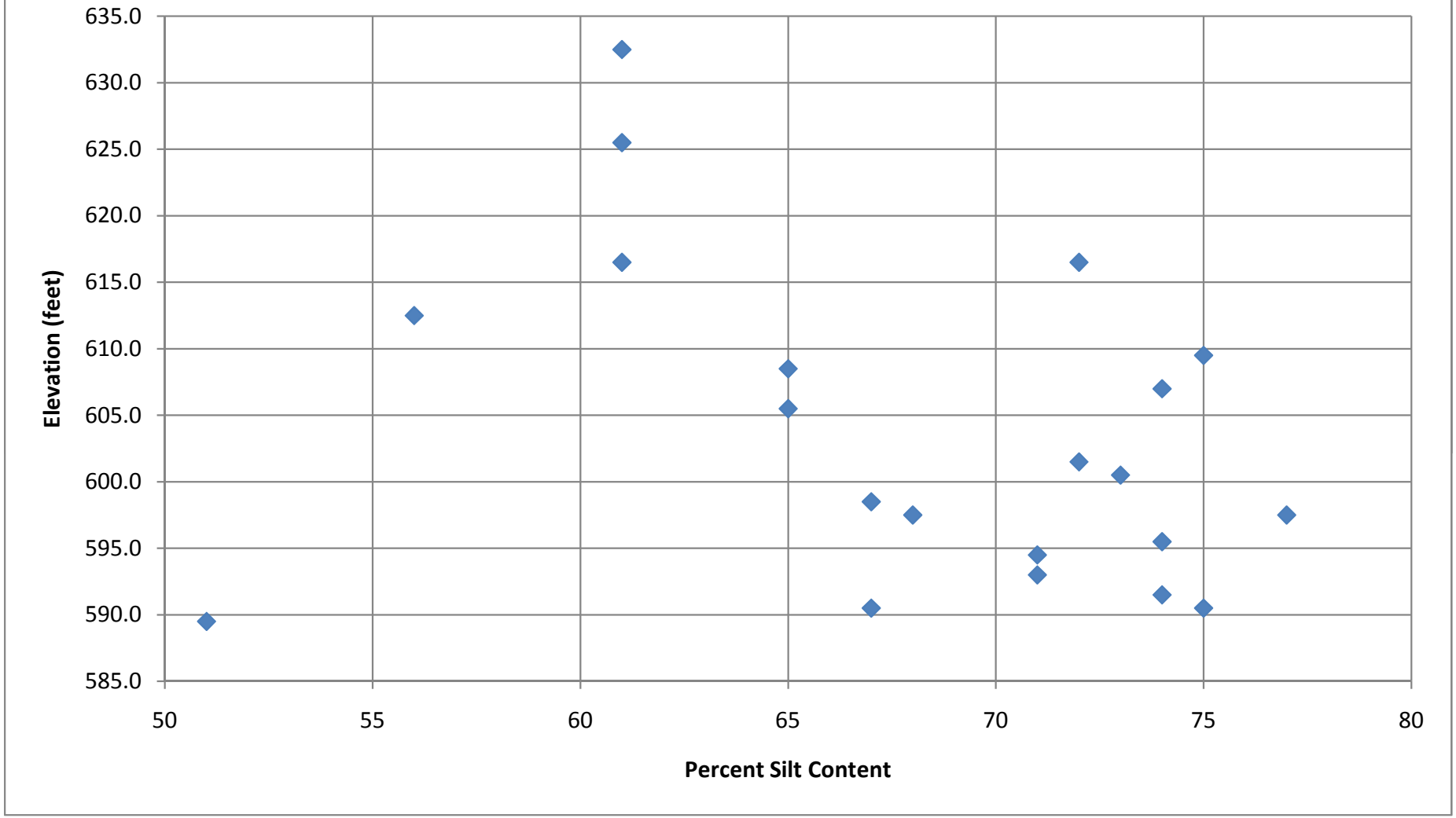
1. The dredge pile material should not be used within the core of the embankment because of the high loss of ignition of the material and the high moisture content. The standard specifications Section 207 Embankment prohibit the use of 'perishable material' within the core of the embankment. Material with an average loss of ignition of 9.8% would be considered organic and perishable. In

Table 1: Results of Soils Laboratry Testing

Sample	Descrip	Elevation	Class	LL	PL	PI	%M	%loss	Sand/Gra	Silt	Clay	DDmax	%Mopt	Qu	DD	%M
1	B-1, S1,S2	600.5	OL	NA	NP	NA	66.4	10.4	10	73	17	NA	NA	NA	NA	NA
2	B-2, S2,S3,S4	593.0	OL	NA	NP	NA	79.2	10.4	18	71	11	NA	NA	NA	NA	NA
3	B-3, S1,S2,S3	607.0	OL	NA	NP	NA	69.9	10.3	16	74	10	NA	NA	NA	NA	NA
4	B-3, S5,S6	589.5	ML	NA	NP	NA	26.0	4.2	38	51	11	NA	NA	NA	NA	NA
5	B-4, S3,S4	609.5	OL	NA	NP	NA	75.7	11.3	17	75	8	NA	NA	NA	NA	NA
6	B-4, S6,S7	594.5	OL	NA	NP	NA	71.7	11.4	21	71	8	NA	NA	NA	NA	NA
7	B-5, S3,S4	616.5	OL	NA	NP	NA	75.5	9.5	20	72	8	NA	NA	NA	NA	NA
8	B-5, S8,S9	591.5	OL	NA	NP	NA	50.6	7.4	18	74	8	NA	NA	NA	NA	NA
9	B-6 S1,S2	616.5	OL	NA	NP	NA	63.6	7.1	30	61	9	NA	NA	NA	NA	NA
10	B-6, S4,S5	601.5	OL	NA	NP	NA	65.6	9.0	17	72	11	NA	NA	NA	NA	NA
11	B-7, S4,S5	597.5	OL	NA	NP	NA	70.2	11.0	14	77	9	NA	NA	NA	NA	NA
12	B-8, S1,S2	625.5	OL	NA	NP	NA	72.2	10.2	32	61	7	NA	NA	NA	NA	NA
13	B-8, S8,S9	590.5	OL	NA	NP	NA	69.0	9.9	13	75	12	NA	NA	NA	NA	NA
14	B-9, S2,S3	598.5	OL	NA	NP	NA	64.1	9.8	15	67	18	NA	NA	NA	NA	NA
15	B-10, S1,S2,S3,S4	597.5	OL	NA	NP	NA	70.4	9.4	16	68	16	NA	NA	NA	NA	NA
16	B-11, S2,S3	605.5	OL	NA	NP	NA	70.9	9.0	25	65	10	NA	NA	NA	NA	NA
17	B-11, S5,S6	590.5	OL	NA	NP	NA	59.2	9.9	22	67	11	NA	NA	NA	NA	NA
18	B-12, S1,S2	595.5	OL	NA	NP	NA	81.5	11.7	14	74	12	NA	NA	NA	NA	NA
19	B-5, Bag 5	632.5	OH	65	36	29	NA	8.5	19	61	20	81.6	31.8	1480	73.4	31.8
20	B-7, Bag7	612.5	OH	55	33	22	NA	9.2	28	56	16	81.3	26.5	2272	73.2	26.5
21	B-9, Bag 9	608.5	OH	70	38	32	NA	11.1	16	65	19	77.7	34.2	2110	69.9	34.2
22	Black Soil	NA	NA	NA	NA	NA	35.1	NA	NA	NA	NA	82.4	31.0	NA	NA	NA
23	Brown Soil	NA	NA	NA	NA	NA	23.8	NA	NA	NA	NA	106	17.6	NA	NA	NA
24	Brown/Black Dredge	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	96.8	20.0	NA	NA	NA

Note:
Class: Unified Soil Classification
LL,PL,PI: Liquid Limit, Plastic Limit, Plasticity Index (%)
%M: moisture content (%)
%loss: Loss of ignition (%)
Sand/Gra: percent sand and gravel (%)
Silt: percent silt (%)
Clay: percent clay (%)
DDmax: Standard Proctor maximum dry density (pcf)
%Mopt: Standard Proctor optimum moisture content (%)
Qu: Unconfined compression strength (psf)
DD: Qu dry density (pcf)
%M: Qu moisture content (%)
NP: non plastic
NA: Not Applicable

Figure 1: Dredge Pile - Percent Silt



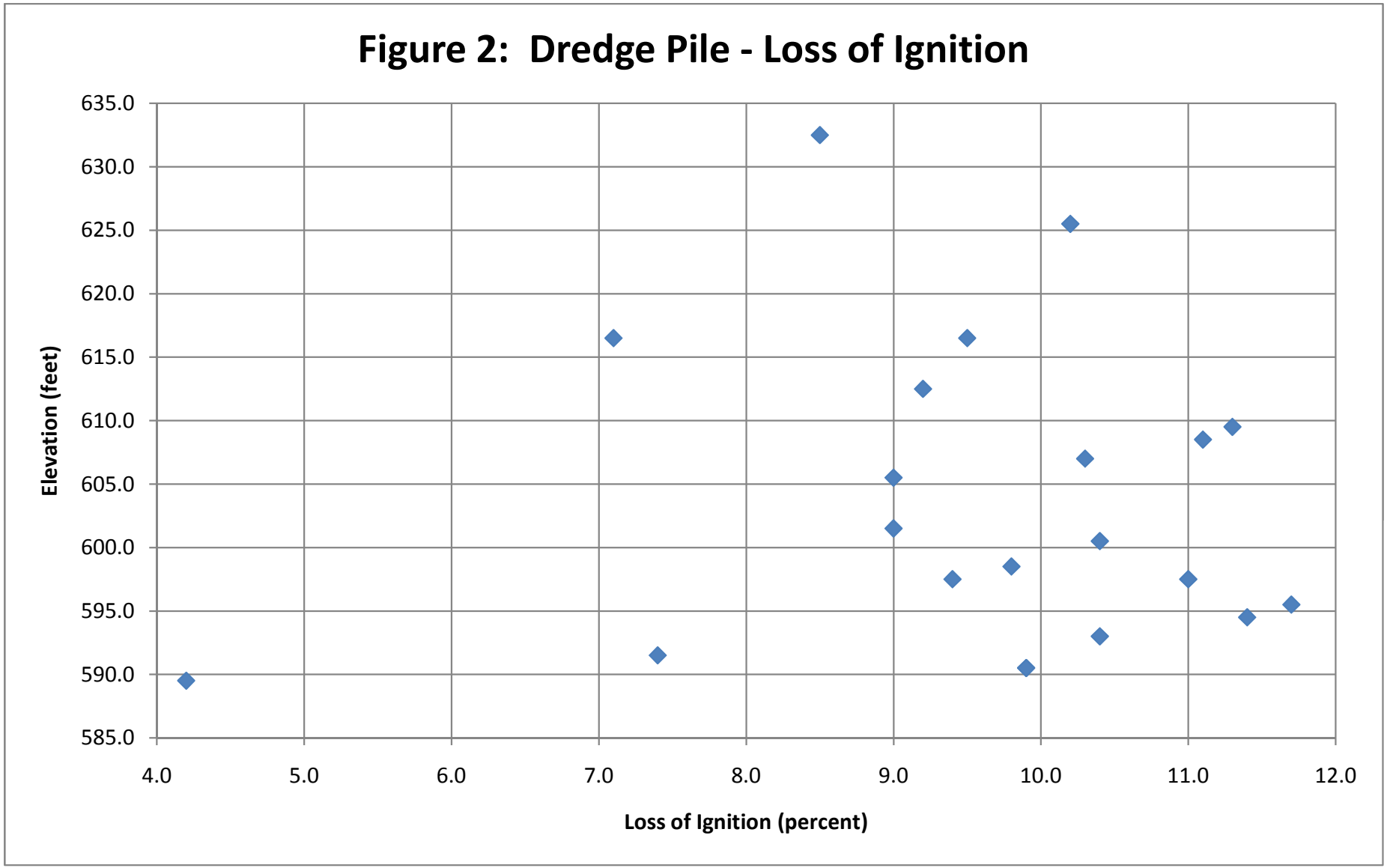


Figure 2: Dredge Pile - Loss of Ignition
635.0
630.0
625.0
620.0
615.0
610.0
605.0
600.0
595.0
590.0
585.0
Elevation (feet)
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
Loss of Ignition (percent)

addition, the range from the existing moisture content to the standard Proctor optimum moisture content is nearly 40 percent, which indicates the contractor would require a significant effort to dry the material.

2. The dredge pile material could be used outside of the 1H:1V up to a height of 10 feet, however, the cost to the contractor to adequately dry the dredge material may preclude its economical benefit.

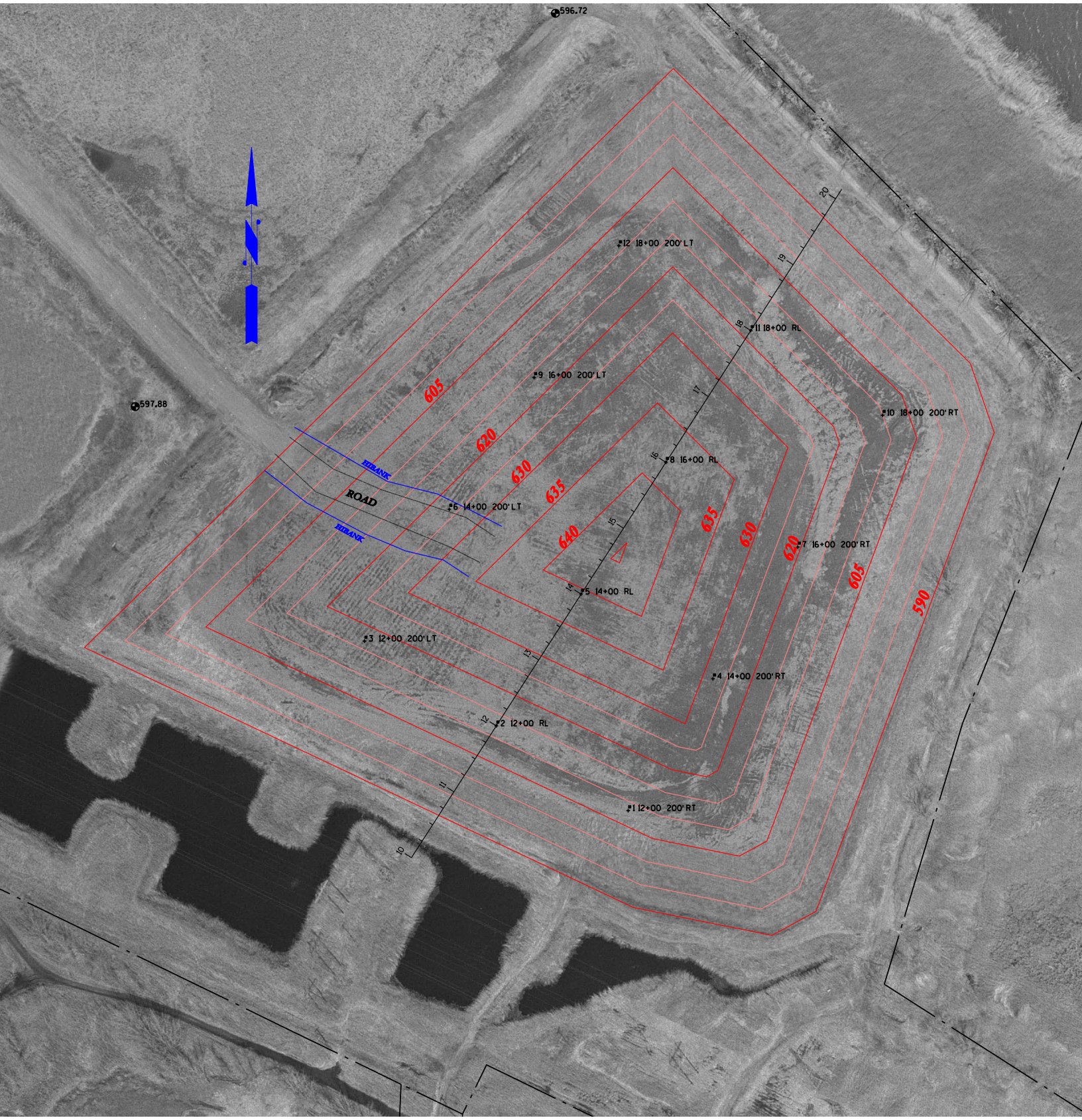
3. A bulking additive could be used to reduce the moisture content and allow for the use of the mixture within the core of the embankment, however, this would require an increase in construction observation to insure the proper mixture of the material.

Please call if you have any questions.

Attachments

cc: Northeast Region (via e-mail)
Central Office Files
Geotechnical File (original)

Attachment 1
Boring Location Figure and
Driller's Soil Boring Logs


596.72
597.88
#12 18+00 200' LT
#11 18+00 RL
#9 16+00 200' LT
#10 18+00 200' RT
#8 16+00 RL
#7 16+00 200' RT
#6 14+00 200' LT
#5 14+00 RL
#3 12+00 200' LT
#4 14+00 200' RT
#2 12+00 RL
#1 12+00 200' RT
ROAD
RIBANK
RIBANK
605
620
630
635
640
635
630
620
605
590
20
19
18
17
16
15
14
13
12
11
10

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 1 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 12+00 Offset 200' Rt RL Surface Elevation 608

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE
D = Damp
M = Moist
W = Wet

DRILLING METHOD
HS = Hollowstem
WA = Wash Ahead
RB = Rockbit
ST = Shelby Tube
SS = Splitspoon
DM = Drilling Mud
A = Auger
C = Coring
W = Wash
E = Easy
M = Medium
H = Hard

Start 5-6 Unit 3

Finish 5-6-10 Chief MM

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	DM								HS	
						Silt Br				
		1	2			5				
		2	2		4	Vloose No Recov			SS	
1a	M	1	2			10 Silt Br tr Clay				
		2	3		4	Vloose	2.5		SS	
2a		1	2			15				
2b		3	3		5	V loose	NS		SS	
						17' EOB #1				
						20				
						25				
						30				
						35				
						40				

Checked by

Final 17'

Boring No. 1

DT1434 96, (Replaces EL3A(S)) **FIELD BORING LOG** Wisconsin Department of Transportation

Boring No. 2 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 12+00 Offset RL Surface Elevation 608

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____ _____ _____ _____ _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____ _____ _____ _____ _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD

HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-6 Unit 3

Finish 5-6-10 Chief TH

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M								HS	
						5	5			
1a		1	2			Loose Silt Br Tr Clay	1.0		SS	
		2	3		4	little Wood				
						10	10			
2a	MW	0	0				.5		SS	
		2	2		2	V loose				
						15	15			
3a		0	0				5		SS	
		2	2		2	V loose				
						20	20			
4a	M	0	0				.5		SS	
4b		2	2		2	V loose				
						25	25			
5a		9	9			Firm Silt Gravel small layer Bit	4.5		SS	
5b		10	17		19	27' EOB #2				
						30	30			
						35	35			
						40	40			

Checked by _____ Final 27' Boring No. 2

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 3 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 12+00 Offset 200' Lt RL Surface Elevation 617

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-6 Unit 3

Finish 5-6-10 Chief TH

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M					Silt Br tr Clay			HS	
1a		0	0							
		1	2			5 V loose	.5		SS	
2a										
2b	d	0	2							
		2	3		4	10 V loose Tr Wood	1.0		SS	
3a		0	0			15				
		2	2		2		.7		SS	
4a	P	0	1			20				
4b		2	3				.7		SS	
5a		3	4			25				
5b		5	3		9	loose Silt br tr Clay Tr Gravel Small Clay Layer	2.5		SS	
	MW									
6a	M	4	5			30				
6b		7	5		12	(Small sand and gravel layer) 32' EOB #3	2.0		SS	
						35				
						40				

Checked by

Final 32'

Boring No. 3

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 4 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 14+00 Offset 200' Rt RL Surface Elevation 627

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W. = Wash, E = Easy, M = Medium, H = Hard

Start 5-5 Unit 3

Finish 5-5-10 Chief [illegible]

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	DM								HS	
1a		2	3			5 Silt tr Clay Br Tr Organic tr Wood				
		4	4		7	loose	.5		SS	
2a	MW	0	0			10				
		2	2		2	Very loose Silt tr Clay	.7		SS	
3a	M	2	2			15				
3b		3	3		5	Very loose	1.5		SS	
4a	MW	0	0			20				
		2	3		2	Very loose	1.0		SS	
5a	W	0	1			25 Layer Wet Wood				
5b	M	3	2		4	V loose Silt tr Clay Br (Water Filling in hole)	1.0		SS	
6a	M	1	2			30				
6b		2	2		4	very loose	.5		SS	
7a	MW	1	2			35 Silt tr Clay Little Wood				
7b		3	3		5	V loose	.7		SS	
8a	MW	2	3			40				
		4	4		7	loose (small clay layer 25)	1.5		SS	

Checked by

Final 42'

Boring No. 4

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 5 Structure Dredge Pile County Brown Sheet 1 of 2

Project 1133-03-03 Road Dredge Pile

Station 14+00 Offset RL Surface Elevation 639

GROUND WATER OBSERVATIONS

Streambed Elev. ____ Time After Drilling ____

Water Elev. ____

Top of Well Elev. ____ Depth to Water ____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-4 Unit 3

Finish 5-4-10 Chief [illegible]

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	D/M					Silt Br				
		0	0			5 V loose No Recov			SS	
		0	0							
1A	M	0	0			10 Silt Br				
		1	2			V loose	.2		SS	
A		0	0			15 Trace of Wood				
B		0	0		0	V loose Trace of Ice	.3		SS	
A		0	0			20				
B		2	2		2	V loose Silt little Organics Tr Ice	.5		SS	
1	W	0	0			25				
3		2	3		2	V loose Silt little Clay	1.0		SS	
1	M	1	3			30				
3		4	3		7	loose (Small Red Clay layer) 4"	1.0 2.0		SS	
1		0	1			35				
2		2	3		5	V loose Silt Br Tr Clay Tr Organic	1.5		SS	
		1	2			40 loose				
		4	4		6		1.7		SS	

Checked by

Final 52'

Boring No. 5

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 5 Structure Dredge Pike County Brown Sheet 2 of 2

Project 1133-03-03 Road Dredge Pike

Station 14+00 Offset RL Surface Elevation 639

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE
D = Damp
M = Moist
W = Wet

DRILLING METHOD

HS = Hollowstem
WA = Wash Ahead
RB = Rockbit
ST = Shelby Tube
SS = Splitspoon
DM = Drilling Mud
A = Auger
C = Coring
W = Wash
E = Easy
M = Medium
H = Hard

Start 5-4 Unit 3

Finish 5-4-10 Chief MZ

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M								HS	
2A		1	3			Silt Some Clay				
2B		4	5		7	Little Wood	2.0		SS	
						5 45 Loose		5		
4A		3	4				2.0			
4B	W	4	6		10	10 50 Loose Silt ttl Sand to Gravel	1.0		SS	
						52' EOB #5				
						15 55		15		
						20 60		20		
						25 65		25		
						30 70		30		
						35 75		35		
						40 80		40		

Checked by

Final 52'

Boring No. 5

DT1434 96, (Replaces EL3A(S)) **FIELD BORING LOG** Wisconsin Department of Transportation

Boring No. #6 Structure Dredge Pike County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pike

Station 14+00 Offset 200' LT RL Surface Elevation 624.

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD

HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-3 Unit 3

Finish 5-4-10 Chief TL

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	D								HS	
	W									
S1A		0	0			5				
		0			0	V loose Silt little Clay Br Tr Gravel	.5		SS	
						10				
S2A	M	8	0			Silt tr Clay Br				
		8				V loose	.7		SS	
						15				
S3A	M	4	5				3.0		SS	
S3B	M	6	5		11	Firm				
						20				
S4A	M	2	2				1.5		SS	
S4B		3	9		5	V loose Silt tr Sand Clay Gravel Br	2.0			
						25				
S5A		2	2		5		2.5		SS	
S5B		3	4		5	V loose Silt Br				
						30				
S6A	M	1	6			Silt tr Sand & Grad	.20		SS	
S6B	D	9	60/.5		14	Silt Tr Organic Firm	.40			
						35				
S7A	M	2	2			Silt little Clay tr Organic	1.0		SS	
S7B		3	6		5	V loose Silt tr Organic tr Clay	.25			
						40				
						37' EOB #6				

Checked by _____ Final 37' Boring No. B-6

DT1434 96, (Replaces EL3A(S)) **FIELD BORING LOG** Wisconsin Department of Transportation

Boring No. 7 Structure Dredge Pile County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pile

Station 16+00 Offset ~~RT~~ 200' RT R Surface Elevation 620

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD

HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-5 Unit 3

Finish 5-5-10 Chief MZ

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M					Silt Or Tr Clay Tr Organics			HS	
1a		0	0			5				
1b		1	3		1	V loose	.5		SS	
2a		0	0			10				
2b		0	2		0	V loose	.3		SS	
3a	MW	0	0			15				
3b		2	3		2	V loose	.3		SS	
4a	MW	2	2			20				
4b		3	4		5	V loose	.3		SS	
5a	MW	2	4			25				
5b		3	4		7	loose	1.0		SS	
6a	M	2	3			30				
6b		4	5		7	loose	.5		SS	
						32' EOB #7				
						35				
						40				

Checked by _____ Final 32' Boring No 7

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. B-B Structure Dredge Pile County Brown Sheet 1 of 2

Project 1133-03-03 Road Dredge Pile

Station 16+00 Offset RL Surface Elevation 638

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-4 Unit 3

Finish Chief

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M								HS	
						5		5		
		0	0						SS	
		0	0		0	V loose				
1A		0	0			10		10		
		0	3		0	V loose Silt Br Seashell	.2		SS	
2A	M+	0	0			15		15		
2B		0	2		0	V loose Silt Br tr clay Tr Gravel	.5		SS	
3A		5	3			20		20		
3B		1	1		4	V loose tr Ile	4.5 / 1.0		SS	
4A		1	1			25 Silt Br		25		
4B		1	1		2	V loose Some Ice Little wood	.6		SS	
5A		0	0			30 ~~Silt Br~~	1.0	30		
5B		0	2		6	V loose Silt Dark Br Some Organic	.2		SS	
6A		0	0			35 ~~Silt Br~~		35		
6B		1	2		1	V loose	1.2		SS	
7A	M	1	2			40 loose Silt Br		40		
7B		3	4		5	~~Silt Br~~ tr wood	3.0		SS	

Checked by

Final 52

Boring No. B-B

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. B-8 Structure Dredge Pile County Brown Sheet 2 of 2

Project 1133-03-03 Road Dredge Pile

Station 16+00 Offset RL Surface Elevation

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE
D = Damp
M = Moist
W = Wet

DRILLING METHOD

HS = Hollowstem
WA = Wash Ahead
RB = Rockbit
ST = Shelby Tube
SS = Splitspoon
DM = Drilling Mud
A = Auger
C = Coring
W = Wash
E = Easy
M = Medium
H = Hard

Start 5-4 Unit 3

Finish 5-5-10 Chief TM

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
						5 45 Silt Br	5			
8A	M	0	3				30		SS	
8B		3	5		6	Loose				
						10 50	10			
8A		0	2				18		SS	
8B		3	3		5	V Loose				
						52 EOB				
						15 55	15			
						20 60	20			
						25 65	25			
						30 70	30			
						35 75	35			
						40 80	40			

Checked by

Final 52

Boring No. 8

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 9 Structure Dredge Pile County Brown Sheet 1 of

Project 1133-03-03 Road Dredge Pile

Station 16+00 Offset 200' Lt Rt Surface Elevation 616.

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE
D = Damp
M = Moist
W = Wet

DRILLING METHOD
HS = Hollowstem
WA = Wash Ahead
RB = Rockbit
ST = Shelby Tube
SS = Splitspoon
DM = Drilling Mud
A = Auger
C = Coring
W = Wash
E = Easy
M = Medium
H = Hard

Start 5-4 Unit 3

Finish 5-4-10 Chief JJ

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M					Silt Br ~~Fill~~ Tr Gravel			HS	
		0	0			5		5		
		3	3		3	V loose No Recov			SS	
A		1	2			10		10		
B		2	3		4	V loose Silt Br some Wood	1.2		SS	
A	MW	0	0			15 Silt Br Tr Clay	.2	15		
B		0	0		0	V loose Tr Organics small layer Br clay in tip	.5		SS	
A	M	5	4			20		20		
B		6	6		10	loose Silt Tr Clay	2.8		SS	
A		4	2			25 Silt Tr Clay		25		
B		4	3		6	loose Tr Gravel	2.8		SS	
						27' EOB # 9				
						30		30		
						35		35		
						40		40		

Logged by

Final 27'

Boring No. 9

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 10 Structure Dredge Pike County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pike

Station 18+00 Offset 200' Rt-RL Surface Elevation 610.±

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____ Depth to Water _____

Top of Well Elev. _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD

HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-5 Unit 3

Finish 5-5-10 Chief TZ

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M								HS	
1A		1	2			5 Silt Br Tr Clay			1	
		2	3		4	Very loose	1.5		SS	
2A		1	2			10 small cby layer Red				
		2	3		4	Very loose	12		SS	
3A		0	1			15				
		2	2		2	Vloose Tr Organic	.7		SS	
		1	3			20				
4A		3	3		6	Loose	1.5			
						22' EOB #10				
						25				
						30				
						35				
						40				

Checked by _____ Final 22' Boring No. 10

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 11 Structure Dredge Pike County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pike

Station 18+00 Offset RL Surface Elevation 618

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____

Top of Well Elev. _____ Depth to Water _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit, ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud, A = Auger, C = Coring, W = Wash, E = Easy, M = Medium, H = Hard

Start 5-5 Unit 3

Finish 5-5-10 Chief DZ

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	M								HS	
						Silt Br				
		0	0							
1A		0	2		0	5 Vloose Tr Wood				
B							10		SS	
						10				
2A		0	0							
B		0	2		0	Vloose Silt Br to Clay	.7		SS	
						15				
A		0	1							
B		3	3		4	Vloose Tr Organic	1.0		SS	
						20				
4A		1	2							
B		3	3		5	loose	2.5		SS	
						25				
A		3	3							
		3	5		6	loose	2.5		SS	
						30				
		1	3				1			
3		4	5		7	loose	1.0		SS	
							1.5			
						32' EOB # 11				
						35				
						40				

Checked by

Final 32'

Boring No. 11

DT1434 96, (Replaces EL3A(S))

FIELD BORING LOG

Wisconsin Department of Transportation

Boring No. 12 Structure Dredge Pike County Brown Sheet 1 of 1

Project 1133-03-03 Road Dredge Pike

Station 18+00 Offset 200' LT RL Surface Elevation 608.

GROUND WATER OBSERVATIONS

Streambed Elev. _____ Time After Drilling _____

Water Elev. _____ Depth to Water _____

Top of Well Elev. _____

MOISTURE: D = Damp, M = Moist, W = Wet

DRILLING METHOD: HS = Hollowstem, WA = Wash Ahead, RB = Rockbit; ST = Shelby Tube, SS = Splitspoon, DM = Drilling Mud; A = Auger, C = Coring, W = Wash; E = Easy, M = Medium, H = Hard

Start 5-4 Unit 3

Finish 5-4-10 Chief TM

Sample No.	Moisture	Blows on Sampler 0/6	Blows on Sampler 6/12	Sample and Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Unconfined Strength	Boulders	Drilling Method	Probe Blows
	D M					SM Br			HS	
		0	0			5 V loose No Recov			SS	
		2	2		2					
A	M	0	0			10 SM Tr Clay				
B		1	2		1	V loose	.6		SS	
A	D M	3	4			15				
B		5	5		9	Loose	2.2		SS	
						17' EOB #12				
A	M	3	4			20 SM Some Clay				
B		4	4		8	Loose little Wood	2.5		SS	
						22' EOB #12	1.5			
						25				
						30				
						35				
						40				

Checked by _____ Final 22' Boring No 12

Attachment 2
Results of Laboratory Testing

REPORT ON TESTS ON SOILS
EL140(L) 1-78

Wisconsin Department of Transportation
Div. of Transportation Systems Development
Bureau of Technical Services
3502 Kinsman Blvd., Madison, Wi 53704 - 2507

TEST NUMBER
230-8-10

	MO.-DAY-YR.			PROJECT ID	TEST CODE		QUANTITY
	5	10	10	1133-03-03	**190**	**2**	66 jars / 3 bags

County: Brown	Project Name:
Contractor:	
Material: Soil	
Source: Dredge pile USH 41	
Tests Requested By: Geotechnical	
Submitted by: Jeff Horsfall	Date: 6/2/10

BORING NUMBER	1	2	3	3	4	4
SAMPLE NUMBER	1a2a2b	2a3a4a4b	1a2a2b3a	5a5b6a6b	3a3b4a	6a6b7a7b
DEPTH, FT.						
MECHANICAL ANALYSIS (AASHTO T-88)						
Boulders (Ret. 3")						
Gravel (Pass 3" - Ret. #10)	1	2	2	5	1	1
Coarse Sand (Pass #10 - Ret. #40)	1	1	1	10	3	2
Fine Sand (Pass #40 - Ret. #200)	8	15	13	23	13	18
Silt (Pass #200 - Ret. 0.002mm)	73	71	74	51	75	71
Clay (Pass 0.002mm)	17	11	10	11	8	8
LIQUID LIMIT (AASHTO T-89)						
PLASTICITY INDEX (AASHTO T-90)						
UNIFIED CLASSIFICATION (ASTM D 2487)	OL	OL	OL	ML	OL	OL
AASHTO CLASSIFICATION (AASHTO M-145)	A-8 (0)	A-8 (0)	A-8 (0)	A-4 (0)	A-8 (0)	A-8 (0)
LOSS ON IGNITION, % (AASHTO T-267)	10.4	10.4	10.3	4.22	11.3	11.4
MOISTURE, % (AASHTO T-265)	66.4	79.2	69.9	26.0	75.7	71.7
COMPACTION TEST						
AASHTO T-99, METHOD						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
CORRECTION FOR COARSE PARTICLES IN THE SOIL COMPACTION TEST (AASHTO T-224)						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
UNCONFINED COMPRESSION TEST (AASHTO T-208)						
MOISTURE CONTENT, %						
UNIT WEIGHT, PCF						
PENETRATION RESISTANCE, TSF						
UNCONFINED COMPRESSION, TSF						
CONSOLIDATION TEST (AASHTO T-216)						
MOISTURE BEFORE, %						
MOISTURE AFTER, %						
COMPRESSION INDEX						
DIRECT SHEAR TEST (AASHTO T-236)						
MOISTURE CONTENT, %						
ANGLE OF INTERNAL FRICTION, DEGREES						
COHESION, PSF						

Remarks

DISTRIBUTION: Geotechnical Unit
District

By RSD

REPORT ON TESTS ON SOILS
EL140(L) 1-78

Wisconsin Department of Transportation
Div. of Transportation Systems Development
Bureau of Technical Services
3502 Kinsman Blvd., Madison, Wi 53704 - 2507

TEST NUMBER
230-8-10

	MO.-DAY-YR.			PROJECT ID	TEST CODE		QUANTITY
	5	10	10	1133-03-03	**190**	**2**	66 jars / 3 bags

County: Brown	Project Name:
Contractor:	
Material: Soil	
Source: Dredge pile USH 41	
Tests Requested By: Geotechnical	
Submitted by: Jeff Horsfall	Date: 6/2/10

BORING NUMBER	5	5	6	6	7	8
SAMPLE NUMBER	3a3b4a4b	8a8b9a9b	1a2a	4a4b5a5b	4a4b5a5b	1a2a2b
DEPTH, FT.						
MECHANICAL ANALYSIS (AASHTO T-88)						
Boulders (Ret. 3")						
Gravel (Pass 3" - Ret. #10)	3		5	1	1	2
Coarse Sand (Pass #10 - Ret. #40)	2	3	2	2	1	1
Fine Sand (Pass #40 - Ret. #200)	15	15	23	14	12	29
Silt (Pass #200 - Ret. 0.002mm)	72	74	61	72	77	61
Clay (Pass 0.002mm)	8	8	9	11	9	7
LIQUID LIMIT (AASHTO T-89)						
PLASTICITY INDEX (AASHTO T-90)						
UNIFIED CLASSIFICATION (ASTM D 2487)	OL	OL	OL	OL	OL	OL
AASHTO CLASSIFICATION (AASHTO M-145)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)
LOSS ON IGNITION, % (AASHTO T-267)	9.5	7.4	7.1	9.0	11.1	10.2
MOISTURE, % (AASHTO T-265)	75.5	50.6	63.6	65.6	70.2	72.2
COMPACTION TEST						
AASHTO T-99, METHOD						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
CORRECTION FOR COARSE PARTICLES IN THE SOIL COMPACTION TEST (AASHTO T-224)						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
UNCONFINED COMPRESSION TEST (AASHTO T-208)						
MOISTURE CONTENT, %						
UNIT WEIGHT, PCF						
PENETRATION RESISTANCE, TSF						
UNCONFINED COMPRESSION, TSF						
CONSOLIDATION TEST (AASHTO T-216)						
MOISTURE BEFORE, %						
MOISTURE AFTER, %						
COMPRESSION INDEX						
DIRECT SHEAR TEST (AASHTO T-236)						
MOISTURE CONTENT, %						
ANGLE OF INTERNAL FRICTION, DEGREES						
COHESION, PSF						

Remarks

DISTRIBUTION: Geotechnical Unit
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REPORT ON TESTS ON SOILS
EL140(L) 1-78

Wisconsin Department of Transportation
Div. of Transportation Systems Development
Bureau of Technical Services
3502 Kinsman Blvd., Madison, Wi 53704 - 2507

TEST NUMBER
230-8-10

	MO.-DAY-YR.			PROJECT ID	TEST CODE		QUANTITY
	5	10	10	1133-03-03	**190**	**2**	66 jars / 3 bags

County: Brown	Project Name:
Contractor:	
Material: Soil	
Source: Dredge pile USH 41	
Tests Requested By: Geotechnical	
Submitted by: Jeff Horsfall	Date: 6/2/10

BORING NUMBER	8	9	10	11	11	12
SAMPLE NUMBER	8a8b9a9b	2a2b3a3b	1a2a3a4a	2a2b3a3b	5a6a6b	1a1b2a2b
DEPTH, FT.						
MECHANICAL ANALYSIS (AASHTO T-88)						
Boulders (Ret. 3")						
Gravel (Pass 3" - Ret. #10)	2	1	1	2	2	1
Coarse Sand (Pass #10 - Ret. #40)	1	1	1	1	2	1
Fine Sand (Pass #40 - Ret. #200)	10	13	14	22	18	12
Silt (Pass #200 - Ret. 0.002mm)	75	67	68	65	67	74
Clay (Pass 0.002mm)	12	18	16	10	11	12
LIQUID LIMIT (AASHTO T-89)						
PLASTICITY INDEX (AASHTO T-90)						
UNIFIED CLASSIFICATION (ASTM D 2487)	OL	OL	OL	OL	OL	OL
AASHTO CLASSIFICATION (AASHTO M-145)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)	A-8 (0)
LOSS ON IGNITION, % (AASHTO T-267)	9.9	9.8	9.4	9.0	9.9	11.7
MOISTURE, % (AASHTO T-265)	69.0	64.1	70.4	70.9	59.2	81.5
COMPACTION TEST						
AASHTO T-99, METHOD						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
CORRECTION FOR COARSE PARTICLES IN THE SOIL COMPACTION TEST (AASHTO T-224)						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
UNCONFINED COMPRESSION TEST (AASHTO T-208)						
MOISTURE CONTENT, %						
UNIT WEIGHT, PCF						
PENETRATION RESISTANCE, TSF						
UNCONFINED COMPRESSION, TSF						
CONSOLIDATION TEST (AASHTO T-216)						
MOISTURE BEFORE, %						
MOISTURE AFTER, %						
COMPRESSION INDEX						
DIRECT SHEAR TEST (AASHTO T-236)						
MOISTURE CONTENT, %						
ANGLE OF INTERNAL FRICTION, DEGREES						
COHESION, PSF						

Remarks

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REPORT ON TESTS ON SOILS
EL140(L) 1-78

Wisconsin Department of Transportation
Div. of Transportation Systems Development
Bureau of Technical Services
3502 Kinsman Blvd., Madison, Wi 53704 - 2507

TEST NUMBER
230-8-10

	MO.-DAY-YR.			PROJECT ID	TEST CODE		QUANTITY
	5	10	10	1133-03-03	**190**	**2**	66 jars / 3 bags

County	Project Name
Brown	
Contractor	
Material: Soil	
Source: Dredge pile USH 41	
Tests Requested By: Geotechnical	
Submitted by: Jeff Horsfall	Date: 6/2/10

BORING NUMBER	Bag 5		Bag 7		Bag 9	
SAMPLE NUMBER						
DEPTH, FT.						
MECHANICAL ANALYSIS (AASHTO T-88)						
Boulders (Ret. 3")						
Gravel (Pass 3" - Ret. #10)						
Coarse Sand (Pass #10 - Ret. #40)	2		2		1	
Fine Sand (Pass #40 - Ret. #200)	17		26		15	
Silt (Pass #200 - Ret. 0.002mm)	61		56		65	
Clay (Pass 0.002mm)	20		16		19	
LIQUID LIMIT (AASHTO T-89)	65		55		70	
PLASTICITY INDEX (AASHTO T-90)	29		22		32	
UNIFIED CLASSIFICATION (ASTM D 2487)	OH		OH		OH	
AASHTO CLASSIFICATION (AASHTO M-145)	A-7-5 (27)		A-7-5 (17)		A-7-5 (32)	
LOSS ON IGNITION, % (AASHTO T-267)	8.5		9.2		11.1	
MOISTURE, % (AASHTO T-265)						
COMPACTION TEST						
AASHTO T-99, METHOD	A		A		A	
OPTIMUM MOISTURE, %	31.8		26.5		34.2	
MAXIMUM DENSITY, PCF	81.6		81.3		77.7	
CORRECTION FOR COARSE PARTICLES IN THE SOIL COMPACTION TEST (AASHTO T-224)						
OPTIMUM MOISTURE, %						
MAXIMUM DENSITY, PCF						
UNCONFINED COMPRESSION TEST (AASHTO T-208)						
MOISTURE CONTENT, %	31.8		26.5		34.2	
UNIT WEIGHT, PCF	96.8		92.6		93.8	
PENETRATION RESISTANCE, TSF						
UNCONFINED COMPRESSION, PSF	1480		2272		2110	
CONSOLIDATION TEST (AASHTO T-216)						
MOISTURE BEFORE, %						
MOISTURE AFTER, %						
COMPRESSION INDEX						
DIRECT SHEAR TEST (AASHTO T-236)						
MOISTURE CONTENT, %						
ANGLE OF INTERNAL FRICTION, DEGREES						
COHESION, PSF						

Remarks

Unconfined Compression samples were re-molded at 90% density of T-99.

DISTRIBUTION: Geotechnical Unit
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