

## **SOIL INVESTIGATION REPORT**

EMERALD SKY DAIRY, LLC
TOWN OF EMERALD
ST. CROIX COUNTY, WISCONSIN

# **Prepared by:**

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August of 2017

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### INTRODUCTION

This report details the subsurface investigation for the proposed expansion to Emerald Sky Dairy, LLC site located south of County Highway G and bordered by 250<sup>th</sup> to the east in the Town of Emerald, St. Croix County, Wisconsin. The dairy is more specifically located in NE ¼ of NE ¼ of T30N, R16W of Section 22. The sites physical address is 2487 County Road G Emerald, WI 54013.

Currently, the dairy consists of three freestall barns, a parlor, feed pad, one covered HDPE lined waste storage facility, calf shed and drainage pond. Generally, the site naturally grades to the south. The current dairy facility drains to an existing drainage pond via swales and constructed embankments. The agricultural fields west of the facility drain into a wooded wetland. Currently, the surrounding area is comprised of agricultural fields and residential homes.

Ronnie Williams, P.E. of Williams Engineering Services, LLC (WES) has designed the expansion to Emerald Sky Dairy, LLC. The dairy expansion will consist of the following structures: two waste storage facilities (WSF), a stacking pad, concrete feed pad and runoff collection, calf hutch lot area and runoff collection, runoff collection at existing feed pad, and runoff collection at existing heifer lot area.

This report provides a summary of subsurface soil and groundwater conditions at the site and discusses how the conditions observed affect the design of the Emerald Sky Dairy waste, feed, and solids storage facilities. The information in this report was concluded by observing excavated test pits. The locations of excavations were predetermined and staked in the field. The testing of collected soil samples according to ASTM Standards was performed by WES personnel. The information assembled in this report is representative of the subsoil conditions across the site.

Attachment 1 contains the site layout drawing, a drawing depicting the location of the test pits and the subsoil cross section drawings.

Attachment 2 contains Table 1-*Test Pit Summary*, a summary of all the test pit findings which are grouped by the various components of the designed dairy, Table 2-*Summary of Soil Testing Results*, a summary of the results of the laboratory testing conducted by WES.

Attachment 3 contains Soil Investigation Test Pit Log Summary detailing all the delineated layers with corresponding depths.

Attachment 4 contains soil maps and a wetland delineation map.

## SOIL INVESTIGATION

A soil investigation was conducted to determine the subsurface soil and groundwater conditions at the site. A total of 69 test pit excavations were dug throughout the site using a track mounted hoe excavator within the footprint of the proposed dairy facility components. The soil investigation work was completed based on the design requirements of each component. Excavation of test pits for the proposed dairy facility components was carried out in January, February and June of 2016, and July 2017 by Ronnie Williams, PE, and staff of Williams Engineering Services, LLC. All soil samples were collected during the test pit excavations. The samples were sent to the WES Office and were evaluated for moisture content, grain size and Atterberg limits. All the samples were transported, stored and tested according to ASTM Standards.

### SOIL CONDITIONS

According to the United States Department of Agriculture Natural Resource Conservation Service (USDA-NRCS) web soil survey website, the main soil series at the proposed location is Santiago silt loam (SaB 2-6 percent slopes) comprising approximately 85 percent of the approximately 22 acre site. The site also consists of approximately 10 percent of Magnor silt loam (MaB, 0-4 percent slopes), approximately 5 percent of Freeon silt loam (FnB, 2-6 percent slopes).

The subsurface soil was regularly sandy clay material containing stones with an exception of a few sand pockets. This material was collected and tested according to ASTM Standards to determine the suitability of the earthen materials that will be later used for construction of various structures. After oven drying and separating the material finer than the #40 sieve, the test results concluded that the borrow material was acceptable for WSF sub liner material. Bedrock was not observed in any of the test pits, with the deepest test pit being 24.5 feet below existing ground surface. After 24 hours, groundwater was observed in 1 of the 69 test pits at a depth of 7.5 feet below existing ground surface. There were no karst or sinkhole features located during field observation, or upon review of available geological maps and GIS maps produced by WES utilizing current Wisconsin Department of Natural Resources (WDNR) and St. Croix County ArcGIS layers. The subsurface soil material properties, volumes, and moisture content were considered while designing the proposed additions layout.

## **TEST PIT & SOIL TESTING COVERAGE**

WI NRCS-313 (Waste Storage Facility) requires compliance with the following:

• One test pit or boring per 15,000 square feet of waste storage facility footprint. The standard also requires all test pits or boring must be within 100 feet of the footprint.

WI NRCS-300 (Clay Liner) requires compliance with the following:

- One Percent Fines (ASTM D1140) and One Atterberg Limits (ASTM 4318) Test per 5,000 cubic yards of estimated sub liner borrow material.
- One Percent Fines (ASTM D1140) and One Atterberg Limits (ASTM 4318) Test per 2,000 cubic yards of in-place clay sub liner.

The table below details each WSF with the needed requirements and how the standards were met.

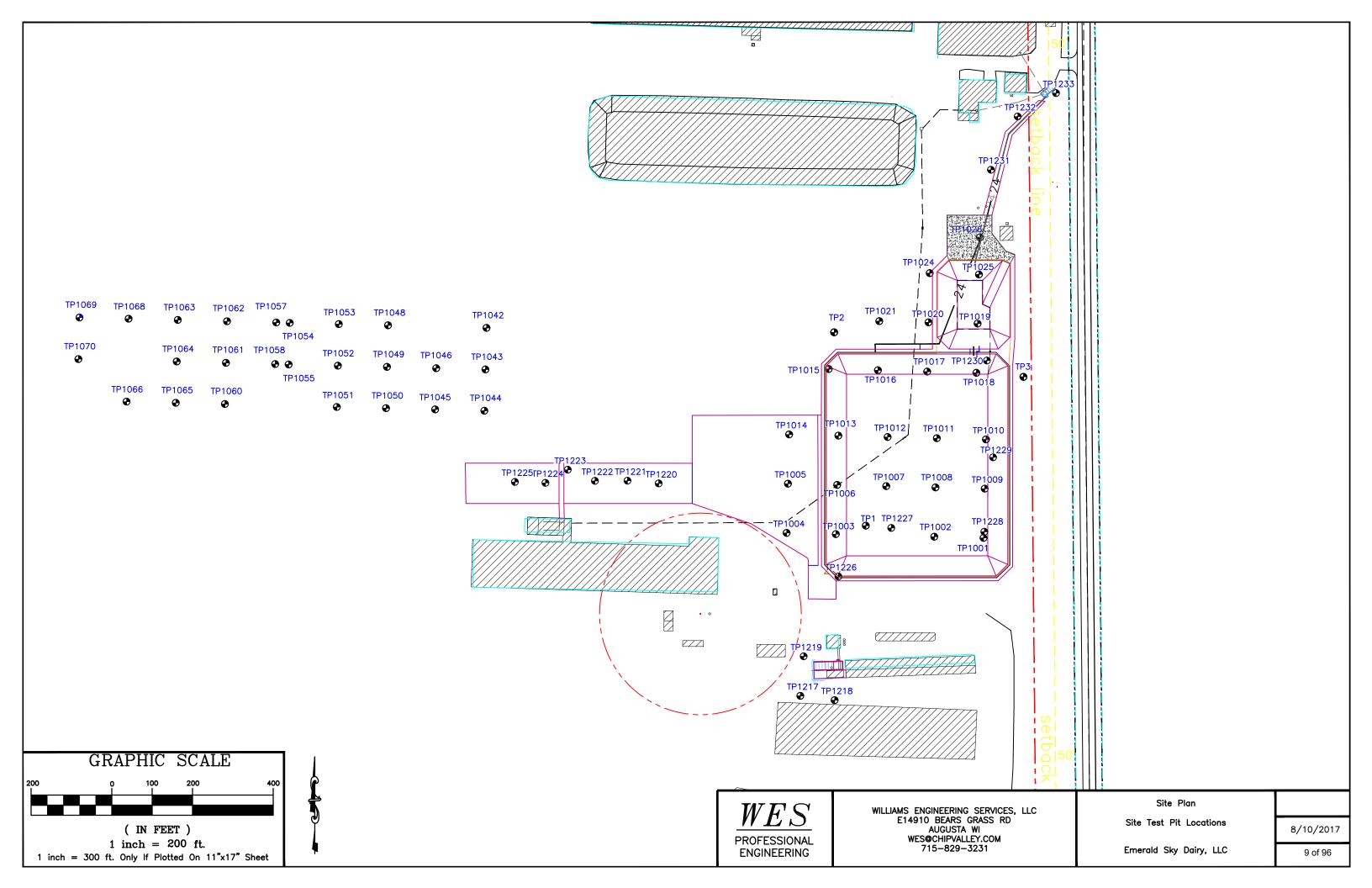
Eme	Emerald Sky Dairy WSF Footprint										
	Existing WSF	WSF #1	WSF #2								
Liner Type	60 Mil HDPE	Concrete w/Waterstop	60 Mil HDPE								
Top Area of WSF (ft <sup>2</sup> )	167,289	.67,289 39,297 245,778									
Required Test Pits Per WI NRCS-313	N/A	3	17								
Test Pits Conducted	N/A	4 24									
3ft Cohesive Subliner (yd³) + 30% Extra Fill for Compaction	N/A	1,841*	35,501								
Required Soil Tests Per WI NRCS-300 Borrow Material	N/A	1	8								
Soil Test Conducted	N/A	13	13								

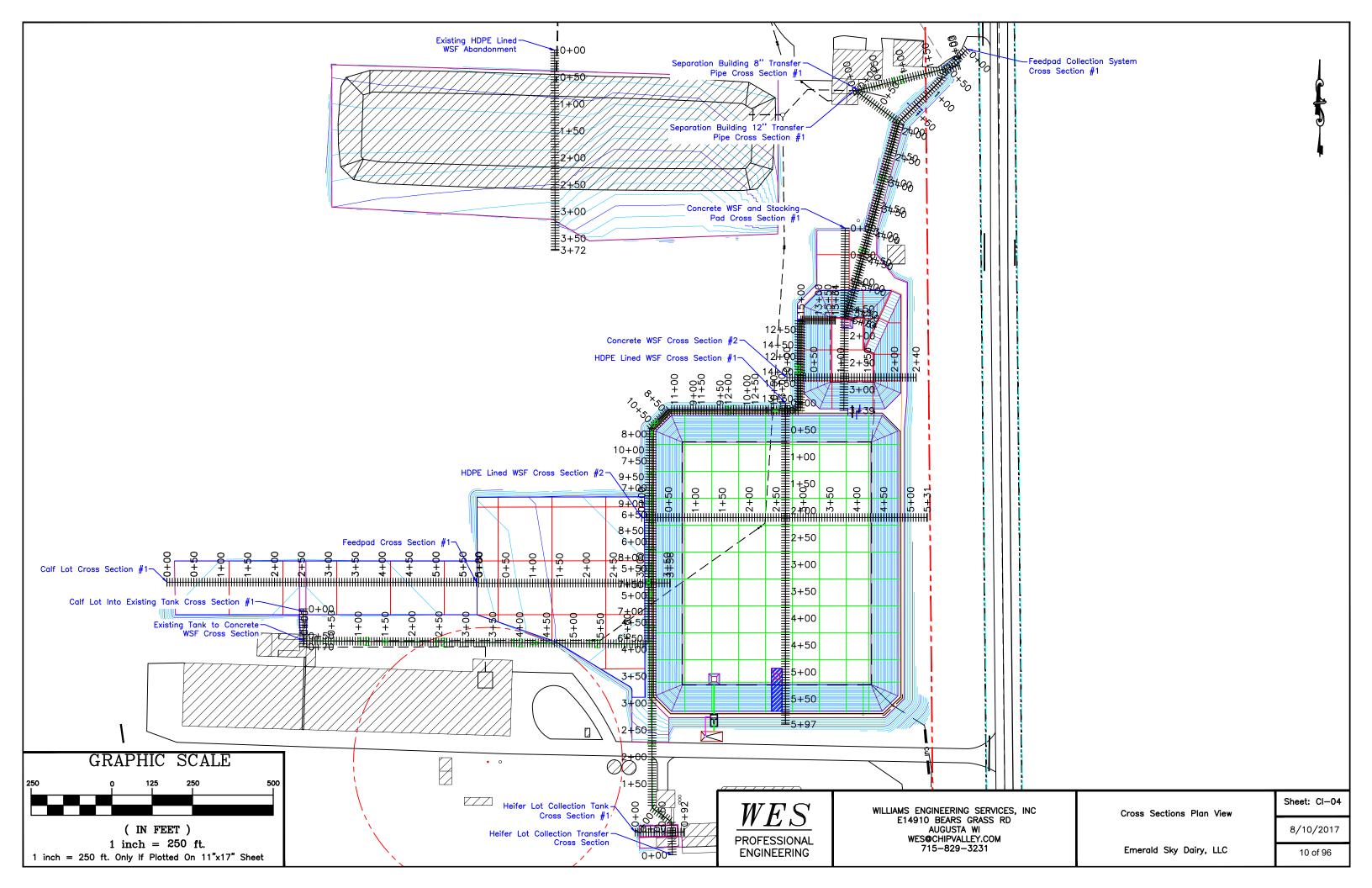
<sup>\*</sup>Concrete WSF will only have 1 foot soil subliner

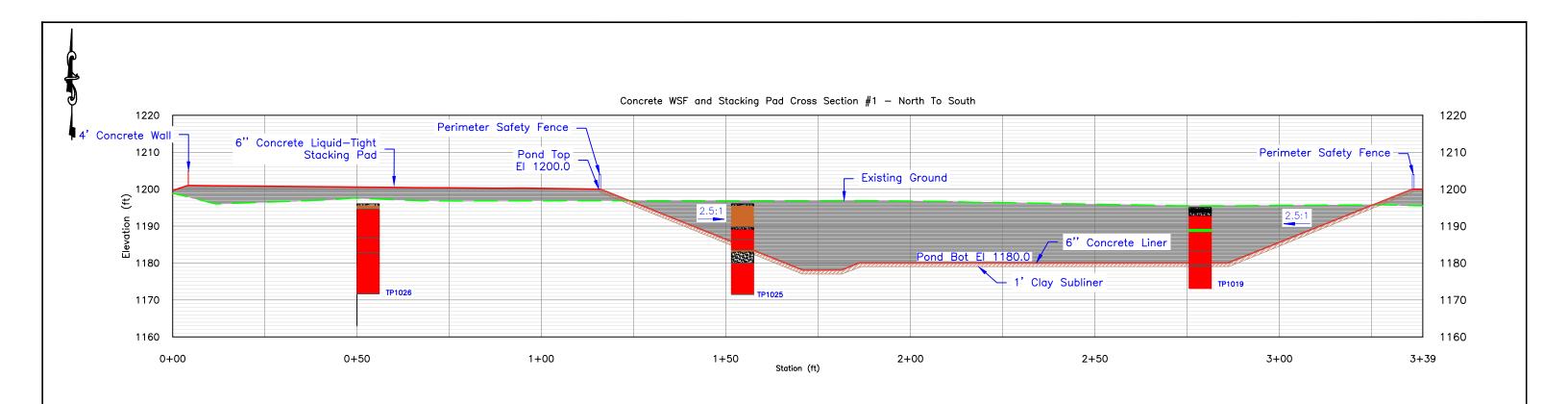
Emerald Sky Dai	ry Feedpad	, Stack Are	a & Calf Hut	tch Area
	Feedpad	Stacking Area	Calf Hutch Area	
Liner Type	Concrete w/ Waterstop	Concrete w/ Waterstop	Concrete w/ Waterstop	
Top Area of Structure	88,993	14,382	56,149	
Required Test Pits Per WI NRCS-313	6	1	4	
Test Pits Conducted Within 100 Feet of Structure	7	3	6	
2ft Cohesive Subliner (yd³) + 30% Extra Fill for Compaction	N/A	N/A	N/A	
Required Soil Tests Per WI NRCS-300 Borrow Material	N/A	N/A	N/A	
Soil Test Conducted	N/A	N/A	N/A	

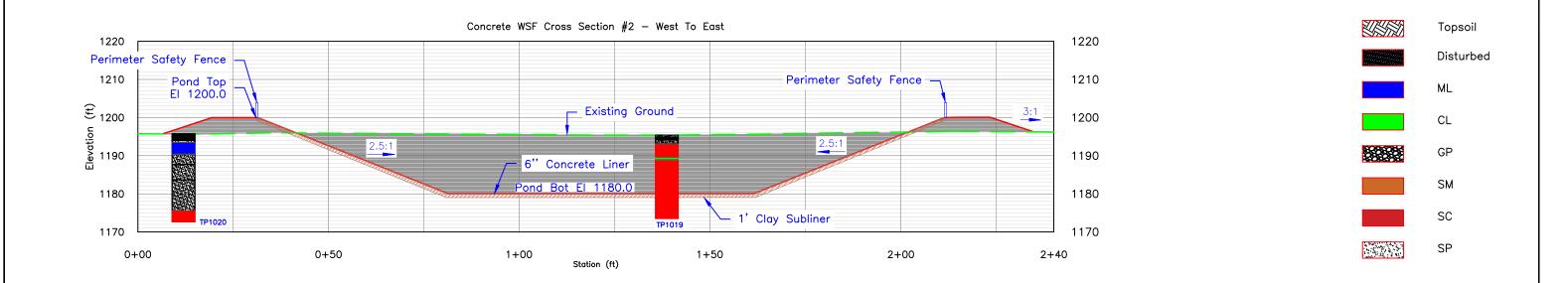
Emerald Sky I	Dairy Runot	f Collection	& Transfe	r Pipe
	Feedpad Collection Tank	Heifer Lot Collection Tank	Transfer Pipes (5 Total)	
Liner Type	Concrete	Concrete	N/A	
Top Area of Structure	529	3158	N/A	
Required Test Pits	2	2	N/A	
Test Pits Conducted Within 100 Feet of Structure	2	3	12	
2ft Cohesive Subliner (yd³) + 30% Extra Fill for Compaction	N/A	N/A	N/A	
Required Soil Tests Per WI NRCS-300 Borrow Material	N/A	N/A	N/A	
Soil Test Conducted	N/A	N/A	N/A	



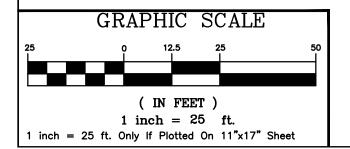








1 inch = 25 ft Only if Plotted on 11"x17" Sheet

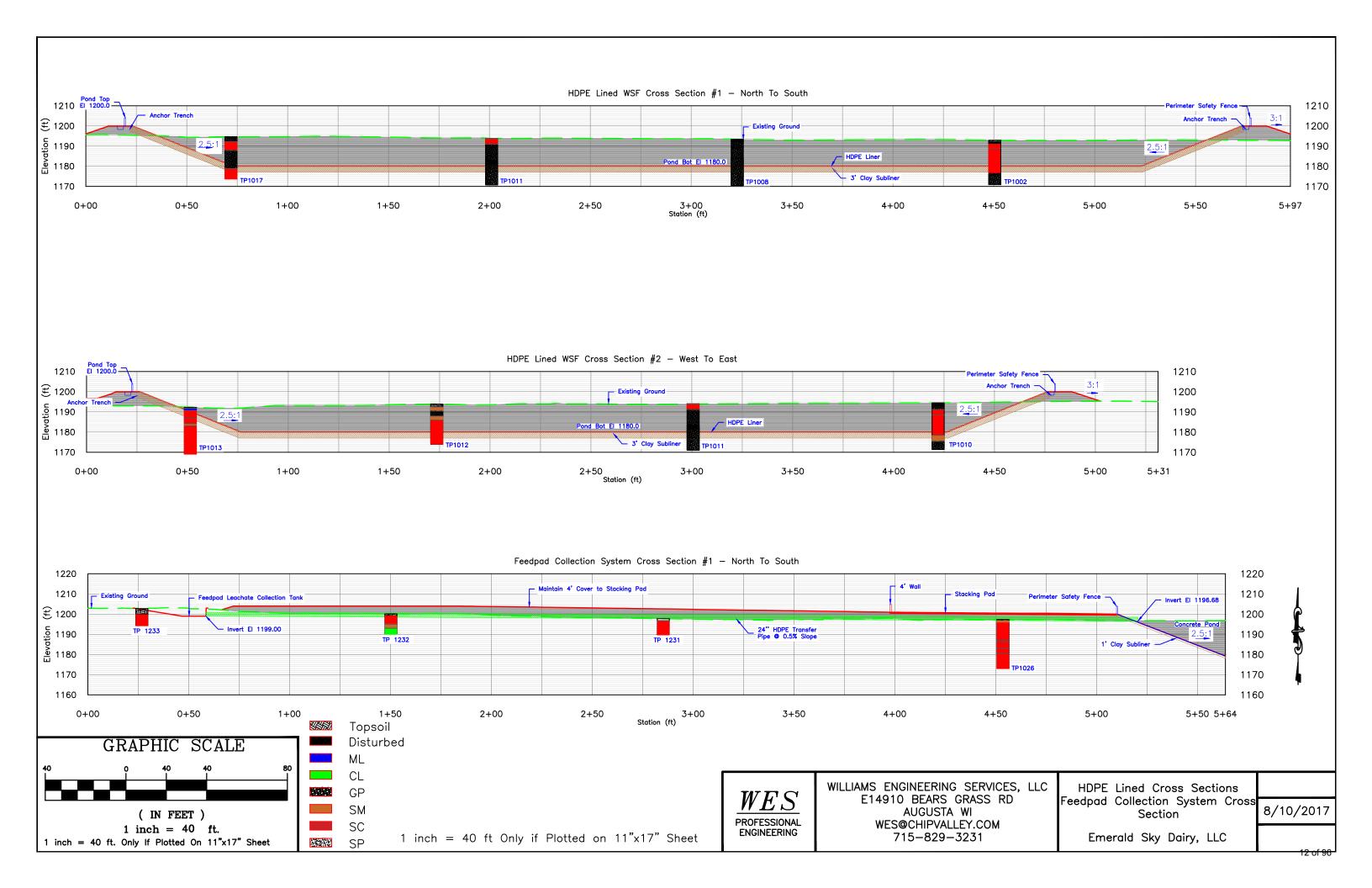


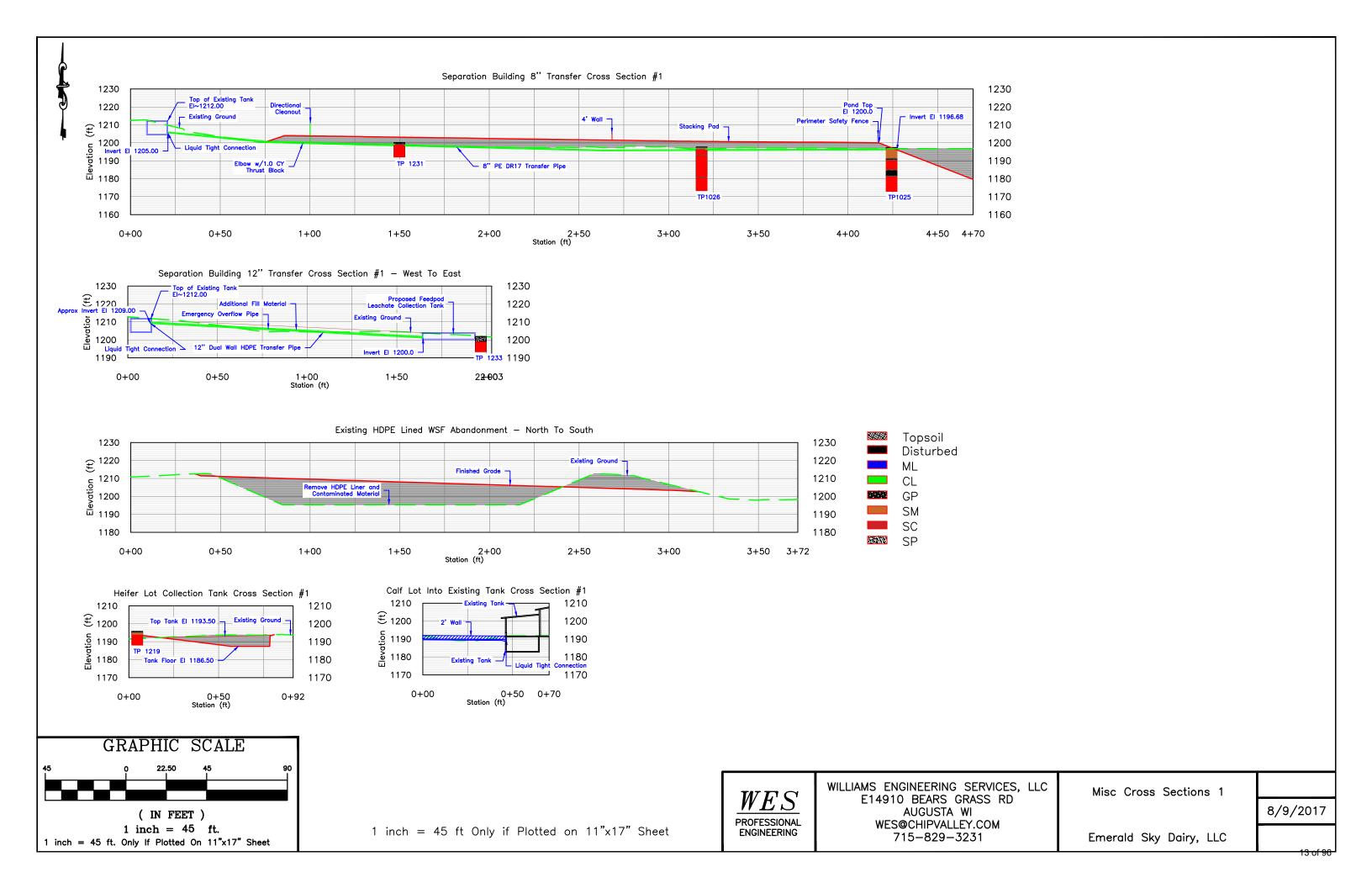
WES PROFESSIONAL ENGINEERING WILLIAMS ENGINEERING SERVICES, LLC E14910 BEARS GRASS RD AUGUSTA WI WES@CHIPVALLEY.COM 715-829-3231

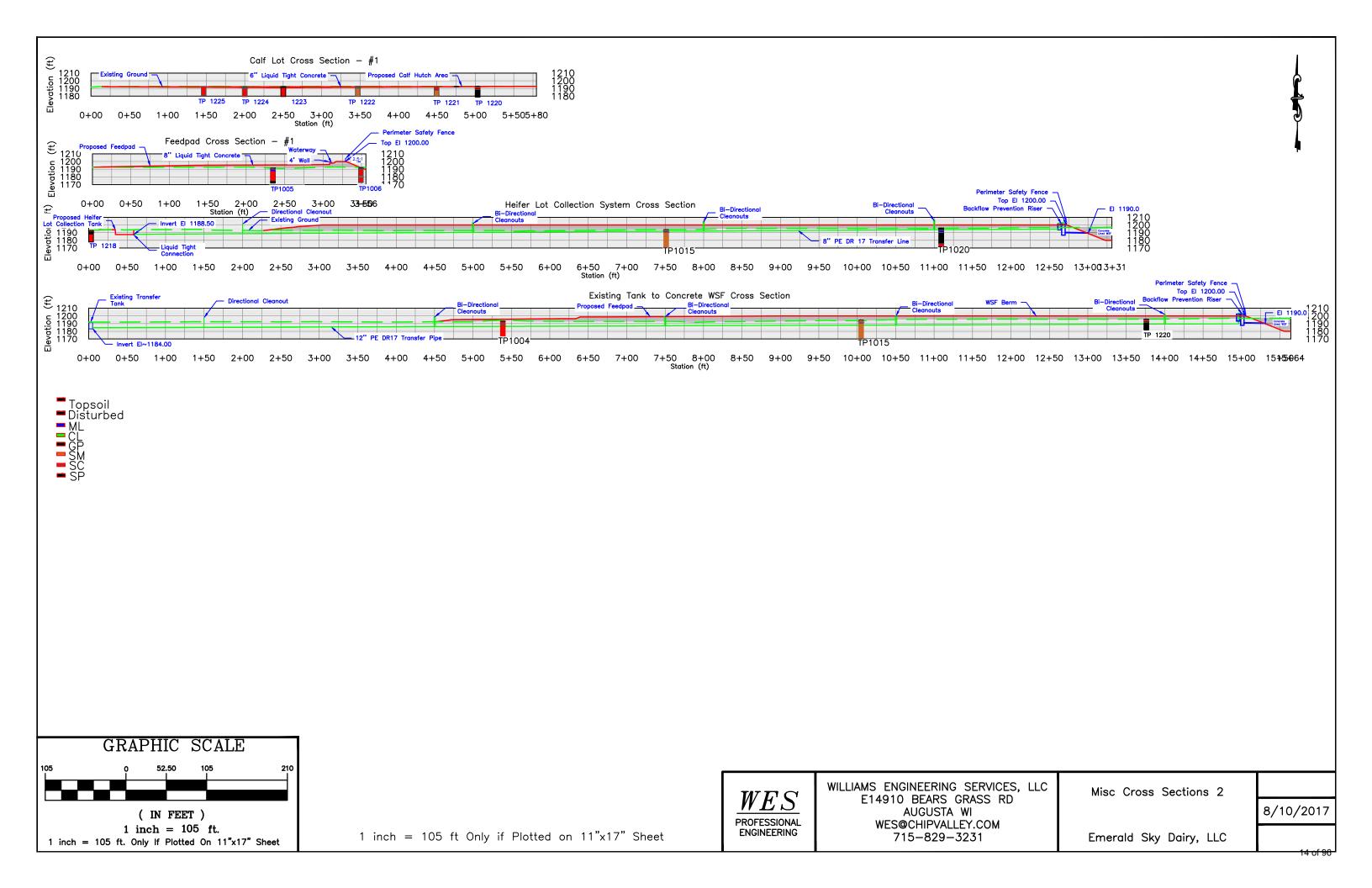
Concrete Lined WSF Cross Sections

Emerald Sky Dairy, LLC

8/10/2017







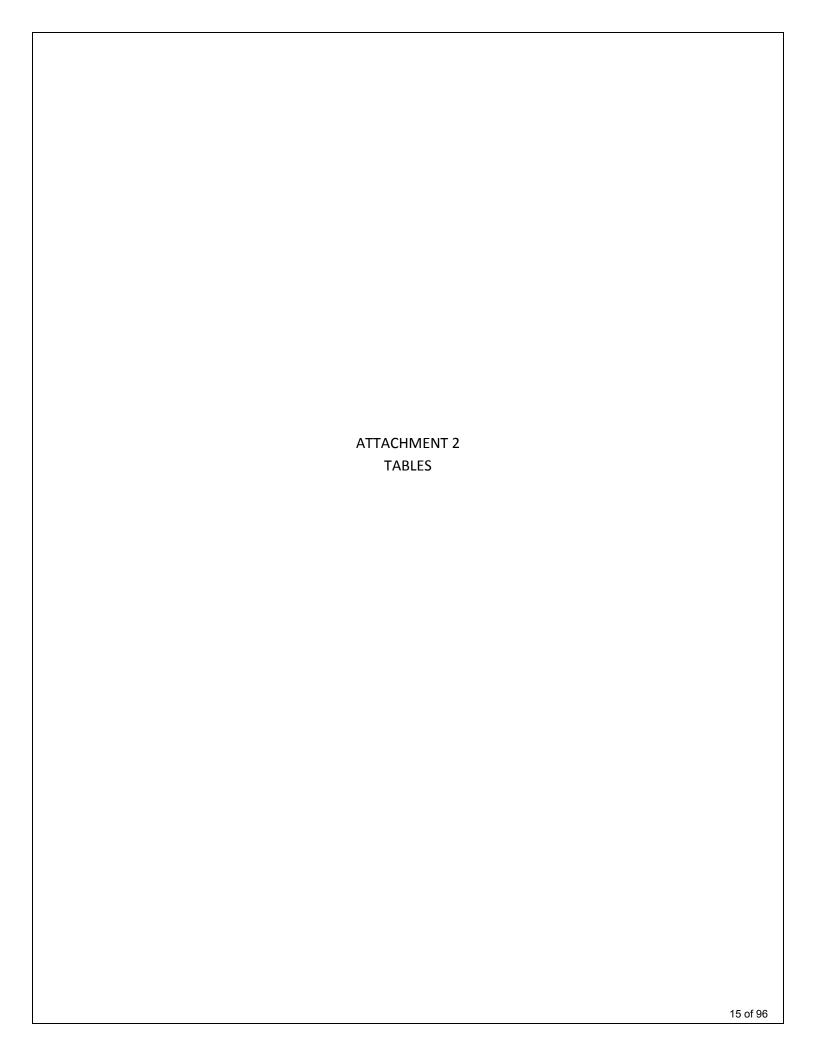


		Table	1 - Tes	st Pit Su	mmar	y:		
ID:	Nearest Structure:	Existing Ground Elevation:	Structure Bottom Elevation:	Required Hole Depth Below Structure:	Minimum Hole Depth:	Excavated Depth:	Extra Depth:	Elevation of Standing Water (After 24 hrs):
*TP 1	WSF #2	1192.9	1180.0	4 Ft	16.9 Ft	23.0 Ft	6.1 Ft	N/A
*TP 2	WSF #2	1196.1	1180.0	4 Ft	20.1 Ft	21.5 Ft	1.4 Ft	N/A
*TP 3	WSF #2	1195.8	1180.0	4 Ft	19.8 Ft	22.0 Ft	2.2 Ft	N/A
TP 1001	WSF #2	1192.8	1180.0	4 Ft	16.8 Ft	22.0 Ft	5.2 Ft	N/A
TP 1002	WSF #2	1192.7	1180.0	4 Ft	16.7 Ft	22.0 Ft	5.3 Ft	N/A
TP 1003	WSF #2	1192.4	1180.0	4 Ft	16.4 Ft	22.0 Ft	5.6 Ft	N/A
TP 1004	Feedpad	1193.4	1196.1	2 Ft	0.7 Ft	19.5 Ft	21.2 Ft	N/A
TP 1005	Feedpad	1190.9	1195.5	2 Ft	2.7 Ft	19.5 Ft	22.2 Ft	N/A
TP 1006	WSF #2	1192.5	1180.0	4 Ft	16.5 Ft	18.5 Ft	2.0 Ft	N/A
TP 1007	WSF #2	1192.8	1180.0	4 Ft	16.8 Ft	23.0 Ft	6.2 Ft	N/A
TP 1008	WSF #2	1193.1	1180.0	4 Ft	17.1 Ft	23.0 Ft	5.9 Ft	N/A
TP 1009	WSF #2	1193.6	1180.0	4 Ft	17.6 Ft	23.0 Ft	5.4 Ft	N/A
TP 1010	WSF #2	1194.2	1180.0	4 Ft	18.2 Ft	23.0 Ft	4.8 Ft	N/A
TP 1011	WSF #2	1193.9	1180.0	4 Ft	17.9 Ft	23.0 Ft	5.1 Ft	N/A
TP 1012	WSF #2	1193.6	1180.0	4 Ft	17.6 Ft	20.0 Ft	2.4 Ft	N/A
TP 1013	WSF #2	1191.3	1180.0	4 Ft	15.3 Ft	23.0 Ft	7.7 Ft	N/A
TP 1014	Feedpad	1190.2	1196.0	2 Ft	-3.78 Ft	19.5 Ft	23.3 Ft	N/A
TP 1015	WSF #2	1194.7	1180.0	4 Ft	18.7 Ft	22.5 Ft	3.8 Ft	1186.9 Ft
TP 1016	WSF #2	1194.8	1180.0	4 Ft	18.8 Ft	23.0 Ft	4.2 Ft	N/A
TP 1017	WSF #2	1194.2	1180.0	4 Ft	18.2 Ft	21.0 Ft	2.8 Ft	N/A
TP 1018	WSF #2	1194.3	1180.0	4 Ft	18.3 Ft	24.5 Ft	6.2 Ft	N/A
TP 1019	WSF #1	1195.3	1180.0	2 Ft	17.3 Ft	22.0 Ft	4.7 Ft	N/A
TP 1020	WSF #1	1195.8	1180.0	2 Ft	17.8 Ft	23.0 Ft	5.2 Ft	N/A
TP 1021	WSF #2	1196.2	1180.0	4 Ft	20.2 Ft	23.0 Ft	2.8 Ft	N/A
TP 1024	WSF #1	1196.8	1180.0	2 Ft	18.8 Ft	23.0 Ft	4.2 Ft	N/A
TP 1025	WSF #1	1196.6	1180.0	2 Ft	18.6 Ft	24.5 Ft	5.9 Ft	N/A
TP 1026	Stacking Pad	1196.8	1200.5	2 Ft	-1.68 Ft	24.5 Ft	26.2 Ft	N/A
TP 1042	Borrow Area	1187.3	N/A	N/A	N/A	23.5 Ft	N/A	N/A
TP 1043	Borrow Area	1184.9	N/A	N/A	N/A	14.5 Ft	N/A	N/A
TP 1044	Borrow Area	1186.7	N/A	N/A	N/A	17.0 Ft	N/A	N/A
TP 1045	Borrow Area	1185.4	N/A	N/A	N/A	17.0 Ft	N/A	N/A
TP 1046	Borrow Area	1184.9	N/A	N/A	N/A	18.0 Ft	N/A	N/A
TP 1048	Borrow Area	1179.9	N/A	N/A	N/A	18.5 Ft	N/A	N/A
TP 1049	Borrow Area	1180.3	N/A	N/A	N/A	13.0 Ft	N/A	N/A
TP 1050	Borrow Area	1181.4	N/A	N/A	N/A	13.5 Ft	N/A	N/A
TP 1051	Borrow Area	1178.5	N/A	N/A	N/A	14.5 Ft	N/A	N/A
TP 1052	Borrow Area	1178.4	N/A	N/A	N/A	14.0 Ft	N/A	N/A
TP 1053	Borrow Area	1179.9	N/A	N/A	N/A	18.0 Ft	N/A	N/A
TP 1054	Borrow Area	1177.0	N/A	N/A	N/A	24.0 Ft	N/A	N/A
TP 1055	Borrow Area	1174.4	N/A	N/A	N/A	14.0 Ft	N/A	N/A
TP 1057	Borrow Area	1179.4	N/A	N/A	N/A	25.0 Ft	N/A	N/A
TP 1058	Borrow Area	1175.5	N/A	N/A	N/A	14.0 Ft	N/A	N/A
TP 1060	Borrow Area	1174.3	N/A	N/A	N/A	7.0 Ft	N/A	N/A
TP 1061	Borrow Area	1175.1	N/A	N/A	N/A	9.5 Ft	N/A	N/A6 of 96

		Table	1 - Tes	st Pit Su	mmary	y:		
ID:	Nearest Structure:	Existing Ground Elevation:	Structure Bottom Elevation:	Required Hole Depth Below Structure:	Minimum Hole Depth:	Excavated Depth:	Extra Depth:	Elevation of Standing Water (After 24 hrs):
TP 1062	Borrow Area	1177.5	N/A	N/A	N/A	16.0 Ft	N/A	N/A
TP 1063	Borrow Area	1175.7	N/A	N/A	N/A	14.5 Ft	N/A	N/A
TP 1064	Borrow Area	1175.2	N/A	N/A	N/A	8.5 Ft	N/A	N/A
TP 1065	Borrow Area	1174.6	N/A	N/A	N/A	6.0 Ft	N/A	N/A
TP 1066	Borrow Area	1171.8	N/A	N/A	N/A	4.0 Ft	N/A	N/A
TP 1068	Borrow Area	1176.8	N/A	N/A	N/A	13.0 Ft	N/A	N/A
TP 1069	Borrow Area	1175.7	N/A	N/A	N/A	13.0 Ft	N/A	N/A
TP 1070	Borrow Area	1174.7	N/A	N/A	N/A	4.0 Ft	N/A	N/A
TP 1217	Heifer Collection Tank	1188.8	1187.5	2 Ft	3.3	15.0 Ft	11.7 Ft	N/A
TP 1218	Heifer Collection Tank	1190.4	1187.5	2 Ft	4.9	15.0 Ft	10.1 Ft	N/A
TP 1219	Heifer Collection Tank	1190.6	1187.5	2 Ft	5.1	8.0 Ft	2.9 Ft	N/A
TP 1220	Calf Hutch Lot Area	1193.3	1192.2	2 Ft	3.11	14.0 Ft	10.9 Ft	N/A
TP 1221	Calf Hutch Lot Area	1192.7	1191.8	2 Ft	2.87	13.0 Ft	10.1 Ft	N/A
TP 1222	Calf Hutch Lot Area	1192.2	1191.4	2 Ft	2.79	13.0 Ft	10.2 Ft	N/A
TP 1223	Calf Hutch Lot Area	1192.7	1191.2	2 Ft	3.49	13.0 Ft	9.5 Ft	N/A
TP 1224	Calf Hutch Lot Area	1192.5	1191.2	2 Ft	3.33	13.0 Ft	9.7 Ft	N/A
TP 1225	Calf Hutch Lot Area	1192.8	1191.6	2 Ft	3.23	11.5 Ft	8.3 Ft	N/A
TP 1226	WSF #2	1193.2	1180.0	4 Ft	17.2	23.0 Ft	5.8 Ft	N/A
TP 1227	WSF #2	1192.8	1180.0	4 Ft	16.8	22.0 Ft	5.2 Ft	N/A
TP 1228	WSF #2	1193	1180.0	4 Ft	17	24.0 Ft	7.0 Ft	N/A
TP 1229	WSF #2	1194	1180.0	4 Ft	18	24.0 Ft	6.0 Ft	N/A
TP 1230	WSF #2	1195.3	1180.0	4 Ft	19.3	24.0 Ft	4.7 Ft	N/A
TP 1231	24" Gravity Transfer	1199.7	1198.0	0.5	2.2	8.0 Ft	5.8 Ft	N/A
TP 1232	24" Gravity Transfer	1200.9	1198.6	0.5	2.8	10.0 Ft	7.2 Ft	N/A
TP 1233	Feedpad Collection Tank	1201.6	1199.0	2 Ft	4.6	8.5 Ft	3.9 Ft	N/A

<sup>\*</sup> Initial Exploratory Holes Dug on 1/8/16

						Laboratory T	esting		
	Sample				Atterberg Lin		Sieve <sup>(2)</sup>	3.5.1.	
Test Pit	Depth (ft)	Nearest Structure	Soil Series		Plastic Limit (PL)		% Passing No. 200 Sieve (P200)	Moisture Content <sup>(3)</sup>	
2	8.0	HDPE Lined Pond	Magnor	44.0	16.5	27.5	95.6%	28.5%	
1001	17.0	HDPE Lined Pond	Santiago	18.1	12.9	5.2	33.0%	11.4%	
1002	13.0	HDPE Lined Pond	Santiago	20.3	12.9	7.4	27.2%	9.2%	
1003	2.5	HDPE Lined Pond	Santiago	22.1	13.2	8.9	31.0%	8.0%	
1004	9.5	HDPE Lined Pond	Santiago	22.7	15.0	7.7	25.0%	10.0%	
1007	3.5	HDPE Lined Pond	Santiago	19.6	12.3	7.3	25.5%	11.2%	
1009	18.0	HDPE Lined Pond	Santiago	19.4	12.4	7.0	33.0%	11.1%	
1010	5.0	HDPE Lined Pond	Santiago	19.8	12.0	7.8	24.0%	7.2%	
1012	9.0	HDPE Lined Pond	Santiago	19.5	12.6	6.9	30.3%	9.3%	
1014	8.0	HDPE Lined Pond	Santiago	20.2	12.5	7.7	21.1%	11.2%	
1015	3.0	HDPE Lined Pond	Magnor	24.9	13.9	11.0	82.1%	20.8%	
1017	4.0	HDPE Lined Pond	Santiago	24.1	14.0	10.1	29.2%	8.7%	
1018	4.0	HDPE Lined Pond	Santiago	19.1	9.9	9.2	17.5%	8.4%	
1021	2.0	HDPE Lined Pond	Magnor	19.8	11.2	8.6	25.5%	11.5%	
1021	4.0	HDPE Lined Pond	Magnor	33.6	16.9	16.7	42.8%	14.7%	
1025	3.0	Concrete Lined Pond	Santiago	17.2	10.9	6.3	36.8%	8.3%	
1026	2.5	Concrete Lined Pond	Santiago	17.9	11.5	6.4	28.9%	8.9%	
1042	2.5	Borrow Area	Santiago	44.6	15.9	28.7	85.6%	18.6%	
1048	3.5	Borrow Area	Santiago	29.8	18.2	11.6	86.9%	16.4%	
1051	5.0	Borrow Area	Santiago	26.3	15.4	10.9	56.3%	7.9%	
1052	2.0	Borrow Area	Santiago	23.1	15.6	7.5	32.6%	10.7%	
1053	2.5	Borrow Area	Santiago	25.9	14.8	11.1	45.2%	12.0%	
1054	2.0	Borrow Area	Santiago	27.3	14.8	12.5	47.1%	18.5%	
1055	2.0	Borrow Area	Santiago	27.9	14.1	13.8	66.1%	15.7%	
1058	1.3	Borrow Area	Santiago	28.9	15.8	13.1	69.9%	14.9%	
1060	1.5	Borrow Area	Santiago	28.4	17.9	10.5	86.9%	20.0%	
1062	1.5	Borrow Area	Magnor	24.1	12.9	11.2	56.4%	15.3%	
1063	5.0	Borrow Area	Magnor	49.4	25.7	23.7	66.6%	46.0%	
1068	4.5	Borrow Area	Magnor	33.5	15.0	18.5	82.0%	24.0%	
1069	8.0	Borrow Area	Magnor	21.4	11.4	10.0	36.4%	12.7%	
			Average	25.8	14.3	11.5	47.5%	14.7%	
	Total 30 Tests								

#### Notes:

All soil samples were preserved and transported according to ASTM D4220

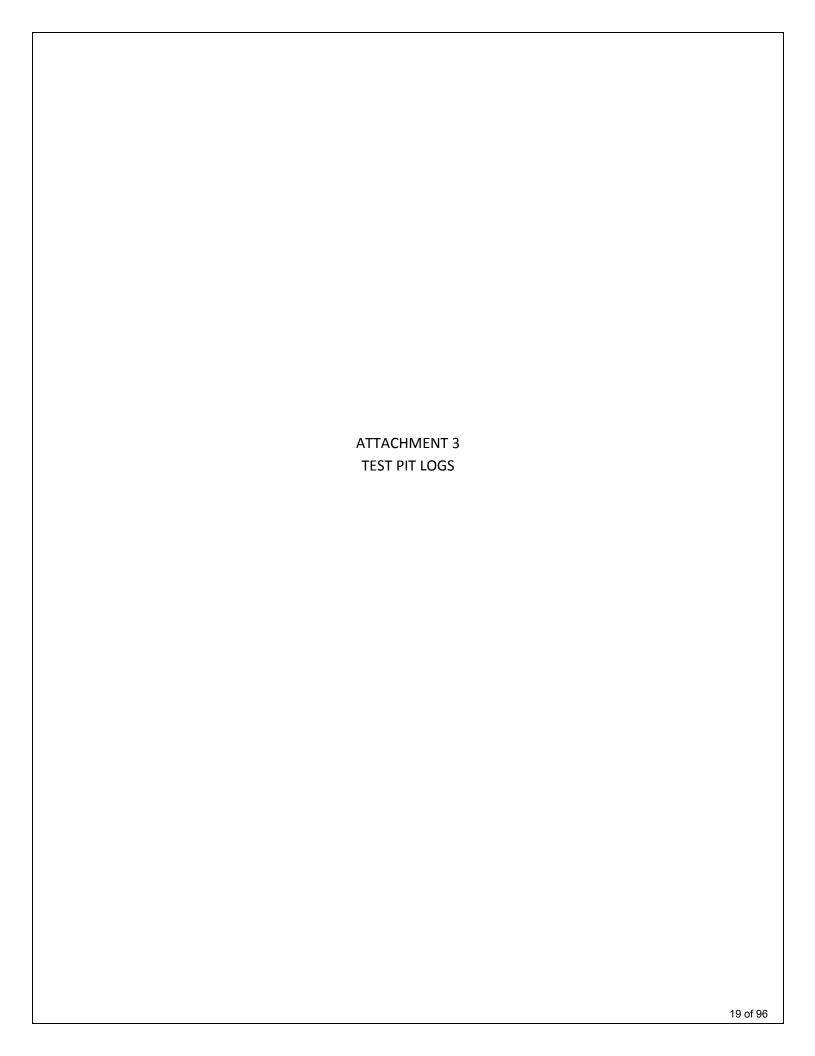
All soil samples were oven dried.

Material that was greater than #40 Sieve was removed prior to Atterberg Limit Testing.

<sup>(1)</sup> ASTM D4318 Liquid Limit, Plastic Limit and Plasticity Index of Soil

<sup>(2)</sup> ASTM D1140 Amount of Material in Soils Finer than No. 200 Sieve

<sup>(3)</sup> ASTM D2216 Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass



(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/8/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1192.9	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	N/A	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 3.0	Topsoil	dry	10YR 3/2	few, fine (< 5 mm), faint	moderate, granular, medium (2-5	Soft	clear	smooth	-	Sand & Stones, Mottles
1192.9 - 1189.9	ТОРЗОП	ury		rew, fine ( v 5 finit), faint	mm)	3011	cicui	311100011		Sana & Stories, Mottles
3.0 - 5.5	CL	dry	7.5YR 3/3	(none)	weak, angular, fine (5-10 mm)	Soft	gradual	smooth	_	
1189.9 - 1187.4	CL	ury		(none)	weak, angular, fine (5 10 film)	3011	Bradadi	311100011		
5.5 - 11.5	SM	dry	5YR 4/4	(none)	moderate, angular, fine (5-10 mm)	Soft	abrupt	smooth	_	Red
1187.4 - 1181.4	5	ω.,		(none)	moderate, angular, mic (5 15 mm)	30.1	abrapt	511100111		
11.5 - 15.0	Sand	dry	10YR 5/3	(none)	structureless	Loose	clear	smooth	_	Greyish
1181.4 - 1177.9	54.14	۵.,		(none)			cicu.	511100111		Grey.s
15.0 - 23.0	Sand	dry	7.5YR 4/4	(none)	structureless	Loose	gradual	wavy	_	
1177.9 - 1169.9		. ,		(/			0	- ,		
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General Comments: No Signs of Moisture







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/8/2016	Soil Name:	Magnor Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	2	Position in Landscape:	Excavated Field	<del></del>	
County:	St Croix	Elevation:	1196.1	Observed Water Depth:	N/A	<del></del>	
Logged by:	Ronnie Williams, PE	Total Depth:	21.5	Est. HGW Depth:	N/A	Туре:	
Practice:	NRCS 313	Sample Depths:	~8'	Depth to Bedrock:	N/A	Туре:	N/A

USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments				
	dry	Matrix	abundance	grade		distinc-	topo-						
	wet	Mottle	contrast	size		tiveness	graphy						
Tonsoil	dry	10YR 2/2	(none)	moderate, subangular, medium (10-	Soft	abrupt	smooth	_					
. 0 0 5 0	۵.,		()	20 mm)									
Fill	dry	10YR 4/3	(none)	weak, granular, v. fine (< 1 mm)	Soft	abrupt	smooth	-					
CI	dry	7.5YR 3/3	fow fine (< E mm) faint	moderate, subangular, medium (10-	Coft	abrupt	smooth	01	Mottles				
CL	ury		iew, iiiie (< 5 mm), faint	iew, iiie (< 3 iiiii), iaiii	iew, inic (< 3 illiii), iailit	iew, inic (< 3 min), idilit	iew, iiile (< 3 iiiiii), iaiiit	20 mm)	3011	abrupt	SITIOOLIT	٥	Wottles
Sand	moist	5YR 4/6	(none)	structureless	Loose	clear	wavv	_	Red, Small Stones				
			,										
	=												
	Topsoil	dry moist wet  Topsoil dry  Fill dry  CL dry	dry   Matrix     moist   wet   Mottle     Topsoil   dry   10YR 2/2     Fill   dry   7.5YR 3/3     CL   dry   5YR 4/6	dry   Matrix   abundance   size   contrast	Topsoil dry 10YR 4/3 (none) weak, granular, v. fine (< 1 mm)  CL dry 7.5YR 3/3 few, fine (< 5 mm), faint 5YR 4/6	dry   Matrix   abundance   grade   type   size   Size	Matrix   Abundance   Size   Size	Matrix   Abundance   Size   Size	Moisture   Munseil Color   Mottle   Structure   Consistency   Boundary   Number				

General Comments: No Non-Red Sand







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/8/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	3	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1195.8	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	22.0	Est. HGW Depth:	N/A	Type:	N/A
Practice:	NRCS 313	Sample Depths:	N/A	Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/2	(none)	moderate, granular, medium (2-5	soft	abrupt	smooth	_	
1195.8 - 1195.3	торзоп	ury		(none)	mm)	3010	ивгирс	311100111		
0.5 - 3.5	SM	dry	7.5YR 4/3	few, fine (< 5 mm), faint	weak, subangular, medium (10-20	soft	clear	smooth	_	Mottles
1195.3 - 1192.3	5141	ury		rew, fine ( v 5 finit), faint	mm)	3010	cicui	311100111		Mottes
3.5 - 13.5	SM	dry	2.5YR 4/6	(none)	weak, subangular, medium (10-20	sli. hard	clear	smooth	_	Red
1192.3 - 1182.3	5	۵.,		(none)	mm)	Sin nara	cicai	511100111		eu
13.5 - 22.0	SM	dry	5YR 4/4	(none)	weak, subangular, medium (10-20	sli. hard	clear	smooth	_	Less Red
1182.3 - 1173.8		,		()	mm)					
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1001	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1192.8	Observed Water Depth:	N/A	_	
Logged by:	Ronnie Williams, PE	Total Depth:	22.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	5', 14', 17', 19'	Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 1.4	Fill	dry	10YR 3/4	(none)	structureless	soft	clear	smooth	_	
1192.8 - 1191.4	1111	ury		(none)	structureiess	3011	cicai	311100011		
1.4 - 3.2	SM	dry	10YR 4/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	_	Stones & Sand Bands
1191.4 - 1189.6	SIVI	ury		(none)	weak, subangular, fille (5-10 filliff)	SII. Haru	cicai	311100011		Stones & Sand Bands
3.2 - 15.5	SC	dry	7.5YR 4/4	(none)	moderate, subangular, medium (10-	sli. hard	clear	smooth	5', 14'	Stones
1189.6 - 1177.3	30	ury		(none)	20 mm)	Sii. Hara	cicui	311100111	3,14	Stones
15.5 - 18.2	SM	dry	7.5YR 4/6	(none)	moderate, subangular, medium (10-	sli. hard	clear	smooth	17'	Cobbles
1177.3 - 1174.6	5141	ury		(none)	20 mm)	Sii. Hara	cicui	311100011	17	Cobbies
18.2 - 22.0	Fine Sand	dry	7.5YR 4/6	(none)	structureless	loose	clear	smooth	19'	
1174.6 - 1170.8		,		(110110)						
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General Comments: Disturbed Area







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1002	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1192.7	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	22.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	2.5', 5', 13', 17'	Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 2/2	(none)	moderate, granular, fine (1-2 mm)	Soft	clear	smooth	-	
1192.7 - 1191.7	ТОРЗОП	ury		(none)	moderate, grandal, fine (1 2 mm)	3010	cicui	311100011		
1.0 - 1.4	Fill	dry	10YR 3/4	(none)	structureless	Soft	clear	smooth	_	
1191.7 - 1191.3		ury		(none)	Structure iess	3010	cicui	311100011		
1.4 - 4.0	SC	dry	7.5YR 3/3	(none)	weak, subangular, fine (5-10 mm)	Sli. Hard	clear	smooth	2.5'	Stones
1191.3 - 1188.7	50	۵.,		(none)		Siii Tiara	cicai	511100111	2.0	Stones
4.0 - 16.5	SC	dry	7.5YR 4/3	(none)	moderate, subangular, medium (10-	Hard	clear	smooth	5', 13'	Stones
1188.7 - 1176.2		,		(none)	20 mm)				-,	-11
16.5 - 17.0	Sand	dry	7.5YR 5/4	(none)	structureless	Loose	clear	smooth	17'	Stones
1176.2 - 1175.7		. ,		(/						
17.0 - 22.0	Fine Sand	dry	7.5YR 5/4	(none)	structureless	Loose	clear	smooth	-	
1175.7 - 1170.7		. ,		` '						
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General Comments: Disturbed Area







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1003	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1192.4	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	22.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	2.5', 16'	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.8	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	Soft	clear	smooth	-	
1192.4 - 1191.6	торзоп	ury		(Horie)	weak, grandiar, fille (1-2 fillif)	3011	cieai	SITIOUTI	-	
0.8 - 2.0	Disturbed	dry	10YR 3/3	(none)	structureless	Soft	clear	smooth	_	
1191.6 - 1190.4	Disturbed	ury		(none)	structureiess	3011	cieai	311100011		
2.0 - 3.5	SC	dry	10YR 5/3	(none)	weak, subangular, fine (5-10 mm)	Sli. Hard	gradual	smooth	2.5'	Stones
1190.4 - 1188.9	30	ury		(none)	· · · · · · · · · · · · · · · · · · ·	Sii. Hara	Bradadi	311100111	2.5	Stolles
3.5 - 8.0	SC	dry	10YR 5/4	(none)	moderate, subangular, medium (10-	Hard	gradual	smooth	_	Stones
1188.9 - 1184.4	30	ury		(none)	20 mm)	Hara	gradau	311100111		Stolles
8.0 - 18.0	SC	dry	10YR 5/4	(none)	moderate, subangular, medium (10-	Loose	gradual	smooth	16'	Stones
1184.4 - 1174.4	50	ω.,		(none)	20 mm)	20050	Braaa.	511100111	10	Stories
18.0 - 22.0	Fine Sand	dry	7.5YR 5/6	(none)	structureless	Loose	clear	smooth	_	Stones
1174.4 - 1170.4	· me sana	۵.,		()						
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/16/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1004	Position in Landscape:	Excavated Field	_	
County:	St Croix	Elevation:	1193.4	Observed Water Depth:	N/A	<del>_</del>	
Logged by:	Ronnie Williams, PE	Total Depth:	19.5	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	9.5'	Depth to Bedrock:	N/A	Туре:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 0.9	Topsoil	dry	10YR 3/3	(none)	weak, subangular, fine (5-10 mm)	soft	clear	smooth	_	
1193.4 - 1192.5	Τυμσυπ	ury		(none)	- ' '	3011	cieai	311100111		
0.9 - 4.0	SC	dry	7.5YR 4/3	(none)	moderate, subangular, medium (10-	v. hard	clear	smooth	-	
1192.5 - 1189.4		,		()	20 mm)					
4.0 - 6.0	sc	wet	5YR 4/4	(none)	moderate, subangular, medium (10-	v. sticky	clear	smooth	-	
1189.4 - 1187.4			EVD 4/4		20 mm)					
6.0 - 19.5 1187.4 - 1173.9	SC	dry	5YR 4/4	(none)	moderate, subangular, medium (10- 20 mm)	sli. hard	gradual	smooth	9.5'	
1107.4 - 1173.3					20 11111)					
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1005	Position in Landscape:	Excavated Field	_	
County:	St Croix	Elevation:	1190.9	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	19.5	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/3	(none)	moderate, granular, fine (1-2 mm)	Soft	clear	smooth	_	
1190.9 - 1189.9	ТОРЗОП	ury		(none)	moderate, grandiar, mic (1 2 mm)	3011	cicui	311100011		
1.0 - 2.0	SM	dry	5YR 4/6	(none)	moderate, subangular, medium (2-5	Soft	clear	smooth	_	Red, Stones
1189.9 - 1188.9	5141	ury		(none)	mm)	3011	cicui	311100011		nea, stones
2.0 - 3.5	ML	dry	10YR 4/4	(none)	moderate, subangular, medium (2-5	Sli. Hard	clear	smooth	_	Sand, Stones
1188.9 - 1187.4		۵.,		(none)	mm)	Siii Tiara	cicai	511100111		Sund, Stories
3.5 - 11.0	SC	dry	5YR 4/4	(none)	moderate, subangular, medium (2-5	Sli. Hard	gradual	smooth	_	Red
1187.4 - 1179.9	50	۵.,			mm)	5 11010	8	511100111		
11.0 - 17.5	SC	dry	5YR 4/4	(none)	moderate, subangular, medium (2-5	Sli. Hard	gradual	smooth	_	Stones
1179.9 - 1173.4		,		()	mm)		8			
17.5 - 19.5	Sand	dry	10YR 6/8	(none)	structureless	Loose	gradual	smooth	_	Yellow
1173.4 - 1171.4	54.14	۵.,		()			8			
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/16/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1006	Position in Landscape:	Excavated Field	_	
County:	St Croix	Elevation:	1192.5	Observed Water Depth:	N/A	_	
Logged by:	Ronnie Williams, PE	Total Depth:	18.5	Est. HGW Depth:	N/A	Туре:	
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Туре:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 0.9	Topsoil	dry	10YR 3/3	(none)	weak, angular, fine (5-10 mm)	soft	abrupt	smooth	_	
1192.5 - 1191.6	Τομεσιί	ury		(none)	weak, angular, fille (3-10 fillif)	SOIL	abrupt	SIIIOOUI	-	
0.9 - 1.8	Fill	dry	10YR 4/4	(none)	structureless	loose	abrupt	smooth	_	
1191.6 - 1190.7		ury		(none)	Structure iess	10030	иыгирс	311100111		
1.8 - 2.5	SC	dry	7.5YR 3/4	(none)	moderate, subangular, medium (10-	sli. hard	gradual	smooth	_	Some Stones
1190.7 - 1190.0	50	,		()	20 mm)		8			
2.5 - 11.0	SC	dry	7.5YR 4/6	(none)	moderate, subangular, medium (10-	sli. hard	gradual	smooth	-	
1190.0 - 1181.5				, ,	20 mm)					
11.0 - 13.0 1181.5 - 1179.5	SM	dry	7.5YR 4/6	(none)	moderate, subangular, medium (10- 20 mm)	sli. hard	gradual	smooth	-	
13.0 - 18.5			5YR 4/4		moderate, subangular, medium (10-					
1179.5 - 1174.0	SC	dry	•	(none)	20 mm)	sli. hard	gradual	smooth	-	

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam			
Legal Description:	Sec 22 T30N R16W	Hole Number:	1007	Position in Landscape:	Excavated Field	_		
County:	St Croix	Elevation:	1192.8	Observed Water Depth:	N/A	_		
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Type:	N/A	
Practice:	NRCS 313	Sample Depths:	3.5', 14.5', 17'	Depth to Bedrock:	N/A	Type:	N/A	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/2	(none)	weak, angular, medium (10-20 mm)	Soft	abrupt	smooth	_	
1192.8 - 1192.3	Торѕоп	ury		(none)	weak, angular, medidiri (10-20 mm)	3011	аышрі	SHIOOTH	-	
0.5 - 1.2	Fill	dry	10YR 3/3	(none)	structureless	Soft	abrupt	smooth	_	
1192.3 - 1191.6		ury		(none)	3ti uctui eless	3010	аышрс	311100111		
1.2 - 2.7	SC	dry	5YR 4/3	(none)	weak, angular, fine (5-10 mm)	Sli. Hard	gradual	smooth	_	
1191.6 - 1190.1	30	۵.,		(none)	wear, angular, mie (5 16 mm)	5 110.0	g. aaaa.	511100111		
2.7 - 5.1	SC	dry	5YR 4/3	(none)	weak, angular, fine (5-10 mm)	Sli. Hard	clear	smooth	3.5'	
1190.1 - 1187.7		,		()	, engaler, (c. 20)					
5.1 - 6.0	Sand	dry	10YR 6/6	(none)	structureless	Loose	clear	smooth	-	Yellow
1187.7 - 1186.8		. ,		( /						
6.0 - 15.0	SC	dry	5YR 4/4	(none)	moderate, subangular, medium (10-	Hard	clear	smooth	14.5'	Red
1186.8 - 1177.8		. ,		` ,	20 mm)					
15.0 - 23.0	Sand	dry	10YR 6/8	(none)	structureless	Loose	clear	smooth	17'	Yellow, Some Stones
1177.8 - 1169.8		. ,		( /						, , , , , , , , , , , , , , , , , , , ,
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1008	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1193.1	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	2', 4', 8', 12'	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/2	(none)	weak, granular, fine (1-2 mm)	Soft	abrupt	smooth	_	
1193.1 - 1192.6	ТОРЗОП	ury		(Horie)	weak, grandiar, fille (1-2 fillif)	3011	авгирс	311100111	_	
0.5 - 1.2	Fill	dry	10YR 3/4	(none)	weak, granular, v. fine (< 1 mm)	Soft	abrupt	smooth	_	Some Clay
1192.6 - 1191.9		۵.,		(none)	really grandian, trime (+1 mm)	50.1	шогирс	511100111		Some old,
1.2 - 4.0	Sand	dry	10YR 5/6	(none)	structureless	Sli. Hard	clear	smooth	2', 4'	
1191.9 - 1189.1		. ,							,	
4.0 - 9.5	Sand	dry	5YR 4/6	(none)	structureless	Sli. Hard	clear	smooth	8'	Red
1189.1 - 1183.6			1010 010	, ,						
9.5 - 23.0	Fine Sand	dry	10YR 6/8	(none)	structureless	Loose	clear	smooth	12'	Yellow
1183.6 - 1170.1										
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1009	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1193.6	Observed Water Depth:	N/A	=" _	
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	2', 3', 18'	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 0.6	Topsoil	dry	10YR 3/2	(none)	weak, angular, fine (1-2 mm)	Soft	abrupt	smooth	_	
1193.6 - 1193.0	. opso	۵.,		(1.0.1.0)	,					
0.6 - 1.5	Disturbed	dry	10YR 3/4	(none)	weak, granular, v. fine (< 1 mm)	Soft	abrupt	wavy	-	
1193.0 - 1192.1			= = 1/2							
1.5 - 3.5	SC	dry	7.5YR 4/3	(none)	moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	2', 3'	2.3-2.8 Sand Band
1192.1 - 1190.1			7.51/0.4/4		20 mm)					
3.5 - 7.5	SC	dry	7.5YR 4/4	(none)	moderate, subangular, medium (10- 20 mm)	Sli. Hard	gradual	smooth	-	Stones & Cobbles
1190.1 - 1186.1 7.5 - 17.0			7.5YR 4/4		,					
1186.1 - 1176.6	SC	dry	7.51K 4/4	(none)	moderate, subangular, medium (10- 20 mm)	Sli. Hard	gradual	smooth	-	More Sand
17.0 - 18.5		. 1	5YR 4/4	, ,	moderate, subangular, medium (10-				4.01	
1176.6 - 1175.1	SC	dry	•	(none)	20 mm)	Sli. Hard	clear	smooth	18'	More Clay
18.5 - 23.0	Fine Cond	des	7.5YR 5/4	()		1	-1			
1175.1 - 1170.6	Fine Sand	dry		(none)	structureless	Loose	clear	smooth	-	
			·							

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1010	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1194.2	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	3', 5', 17'	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	Soft	abrupt	smooth	-	
1194.2 - 1193.7	ТОРЗОП	ury		(Holle)	weak, grandiar, fille (1-2 fillif)	3010	аышрс	311100111		
0.5 - 1.2	Fill	dry	10YR 3/3	(none)	structureless	Soft	abrupt	smooth	_	
1193.7 - 1193.0		ury		(none)	Structureless	3011	авгарс	311100111		
1.2 - 3.2	Sandy Bands	dry	10YR 3/4	(none)	weak, subangular, fine (5-10 mm)	Firm & Loose	gradual	smooth	3'	
1193.0 - 1191.0	Sanay Sanas	ω.,		(none)	· · · · · · · · · · · · · · · · · · ·	1 IIII G 2005C	Braaa.	511100111	J	
3.2 - 6.0	SC	dry	5YR 3/3	(none)	moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	5'	Some Stones
1191.0 - 1188.2	30	۵.,		(none)	20 mm)		Braaa.	5.11001.1	J	Some Stones
6.0 - 16.0	sc	dry	5YR 4/4	(none)	moderate, subangular, medium (10-	Very Hard	gradual	smooth	_	Some Stones
1188.2 - 1178.2		- /		,	20 mm)	,	0			
16.0 - 19.0	SM	moist	5YR 4/6	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	17'	
1178.2 - 1175.2				. ,	20 mm)					
19.0 - 23.0	Sand	moist	10YR 4/4	(none)	structureless	Loose	clear	smooth	-	
1175.2 - 1171.2				. ,						
	4									
	1									
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	1									
	4									

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1011	Position in Landscape:	Excavated Field	_	
County:	St Croix	Elevation:	1193.9	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	7'	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.1	Topsoil	dry	10YR 3/1	(none)	weak, subangular, fine (1-2 mm)	Soft	abrupt	smooth	-	
1193.9 - 1193.8 0.1 - 3.0			10YR 4/4	, ,						
1193.8 - 1190.9	SC	dry		(none)	weak, subangular, fine (1-2 mm)	Soft	clear	smooth	-	Some Small Stones
3.0 - 11.0 1190.9 - 1182.9	Sand	dry	10YR 6/8	(none)	structureless	Loose	abrupt	wavy	7'	Yellow
11.0 - 12.5	Stones	dry		(none)	structureless	Loose	abrupt	wavy	-	Sand Bands
1182.9 - 1181.4 12.5 - 23.0		. ,	10YR 6/8	,				,		
1181.4 - 1170.9	Sand	dry	101K 6/8	(none)	structureless	Loose	abrupt	smooth	-	Yellow

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/16/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1012	Position in Landscape:	Excavated Field	_	
County:	St Croix	Elevation:	1193.6	Observed Water Depth:	N/A	_	
Logged by:	Ronnie Williams, PE	Total Depth:	20.0	Est. HGW Depth:	N/A	Туре:	
Practice:	NRCS 313	Sample Depths:	3', 9'	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Boundary		Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 1.5	Topsoil	dry	10YR 3/3	(none)	weak, angular, fine (5-10 mm)	soft	clear	smooth	_	
1193.6 - 1192.1	Торзоп	ury		(Horie)	weak, angular, fine (3-10 film)	3010	cieai	311100111	_	
1.5 - 3.5	SM	dry	10YR 3/4	(none)	weak, subangular, fine (5-10 mm)	soft	clear	smooth	3'	Stones
1192.1 - 1190.1	3141	ury		(Holle)	weak, subdingular, line (5 10 mm)	3011				
3.5 - 4.0	Sand	dry 10YR 4/4 (none	(none)	structureless	sli. hard	clear	smooth	_	Stones/Gravel	
1190.1 - 1189.6	54.14	,		(none)						
4.0 - 6.0	Sand	dry	7.5YR 4/6	(none)	structureless	sli. hard clea	clear	clear smooth	-	Red, Stones
1189.6 - 1187.6		,								
6.0 - 8.0	SM	dry	7.5YR 4/4	(none)	weak, subangular, medium (10-20 mm)	sli. hard	gradual	smooth	-	Sandy
1187.6 - 1185.6		,	7.570.4/4							·
8.0 - 20.0	SC	dry	dry 7.5YR 4/4 (none) moderate, subangular, medium (10-	sli. hard	gradual	smooth	9'			
1185.6 - 1173.6		20 mm)	20 mm)	1	<u> </u>	<del></del>				

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1013	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1191.3	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Boundary		Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/2	(none)	weak, subangular, fine (5-10 mm)	Soft	abrupt	smooth	-	
1191.3 - 1190.8	Торзоп	ury		(none)	weak, subangular, fille (3-10 fillif)	3010				
0.5 - 1.5	ML	dry	10YR 3/4	(none)	weak, subangular, fine (5-10 mm)	Soft	gradual	smooth	-	Sandy
1190.8 - 1189.8	1412	ury		(none)	weak, sabangalar, line (5-10 min)	3011				Sandy
1.5 - 5.5	SC	dry	5YR 4/4	(none)	moderate, subangular, medium (10-	Soft	gradual	smooth	-	Red, Sand Vains
1189.8 - 1185.8	50	۵.,			20 mm)					,
5.5 - 8.0	SC	moist		moderate, subangular, medium (10-	Firm	gradual	smooth	_	More Sand, Stones, Mottles	
1185.8 - 1183.3				distinct	20 mm)		8			, , ,
8.0 - 9.0	SM	dry	dry 5YR 3/3 moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	-	Stones		
1183.3 - 1182.3		. ,		(/	20 mm)	Sii. Haru	graduar	311100111		5.6565
9.0 - 23.0	SC	moist	2.5YR 4/6	(none)	moderate, subangular, medium (10-	Firm	gradual	smooth	-	Red, Little Moist
1182.3 - 1168.3				` ,	20 mm)		Bradaai	33001	<u> </u>	
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General Comments:







(For Waste Storage Facilities)

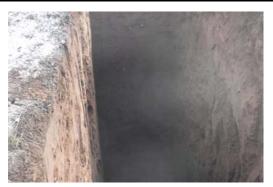
Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1014	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1190.8	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	19.5	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	8'	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Boundary		Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	Soft	abrupt	smooth	-	
1190.8 - 1189.8	Торзоп	ury		(none)	mean, grandiar, mie (1 2 mm)	30.1				
1.0 - 5.0	SM	dry	10YR 3/3	(none)	weak, subangular, fine (5-10 mm)	Very Hard	gradual	smooth	-	Red, Stones
1189.8 - 1185.8		,	1015 0 10	` ,						,
5.0 - 8.0	SM	dry	10YR 3/3	(none)	moderate, subangular, medium (10-20	Very Hard	gradual	smooth	-	Red, Larger Stones
1185.8 - 1182.8			10/0.2/1		mm)	•				
8.0 - 10.0	SC	dry	10YR 3/4	(none)	moderate, subangular, medium (10-20 mm)	Sli. Hard	gradual	smooth	8'	Stones
1182.8 - 1180.8 10.0 - 15.0	-		5YR 4/4		· '					
1180.8 - 1175.8	SM	dry	31N 4/4	(none)	moderate, subangular, medium (10-20 mm)	Sli. Hard	gradual	smooth	-	Red, Stones
15.0 - 19.5			5YR 4/4		moderate, subangular, medium (10-20			+		
1175.8 - 1171.3	SC	moist	J, .	(none)	mm)	Firm	gradual	smooth	-	Red, Stones

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/29/2016	Soil Name:	Magnor Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1015	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1194.7	Observed Water Depth:	22'		
Logged by:	Ronnie Williams, PE	Total Depth:	22.5	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	3'	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	Soft	clear	smooth	_	
1194.7 - 1194.2	Торзоп	ury		(none)	weak, grandar, fine (1-2 film)	3010	cieai	311100011	_	
0.5 - 2.0	SM	dry	10YR 4/4	(none)	moderate, subangular, medium (10-	Soft	clear	smooth	_	
1194.2 - 1192.7	5141	ury		(Holie)	20 mm)	3010	cicui	311100011		
2.0 - 3.5	ML/CL	dry	10YR 5/4	common, medium (5-15 mm),	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	3'	Small Stones, Mottles
1192.7 - 1191.2	2, 02	۵.,		distinct	20 mm)	Siii Tiara	cicai	511100111	J	Small Stories, Motices
3.5 - 10.0	SM	dry	10YR 4/4	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	_	Stones
1191.2 - 1184.7	5.11	۵.,		(none)	20 mm)	5 1.0.0	cicu.	511100111		Stories
10.0 - 22.5	SM/Sand	dry	7.5YR 5/6	(none)	weak, subangular, v. fine (< 5 mm)	Soft/Loose	clear	smooth	_	Larger Stones
1184.7 - 1172.2	,	/		(,	,					8

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/29/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1016	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1194.8	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	Soft	clear	smooth	_	
1194.8 - 1194.3	. орзо	۵.,		()	, 8, (2 2,					
0.5 - 1.5	Sand	dry	10YR 5/4	(none)	structureless	Loose	clear	smooth	-	ML Bands
1194.3 - 1193.3 1.5 - 3.5			5YR 4/3							
1193.3 - 1191.3	SC	dry	31K 4/3	(none)	weak, subangular, fine (5-10 mm)	Hard	clear	smooth	-	Stones
3.5 - 6.0	Sand	dry	10YR 4/6	(none)	structureless	Sli. Hard	clear	14/21/04		Larger Stones
1191.3 - 1188.8	Saliu	ury		(none)	structureless	SII. Haru	clear	wavy	-	Larger Stories
6.0 - 23.0	Sand	dry	5YR 4/4	(none)	structureless	Sli. Hard	clear	smooth	-	Red, Few Stones
1188.8 - 1171.8		,		()						
	1									
	1									

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/29/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1017	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1194.2	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	21.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	4'	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/3	(none)	weak, granular, fine (1-2 mm)	Soft	clear	smooth	_	
1194.2 - 1193.7		,	10/0.4/6	,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
0.5 - 2.5 1193.7 - 1191.7	Sand	dry	10YR 4/6	(none)	structureless	Loose	clear	smooth	-	Stones
2.5 - 6.0			7.5YR 4/3	()		F1			41	5 6
1191.7 - 1188.2	- SC	moist -		(none)	weak, angular, fine (5-10 mm)	Firm	abrupt	wavy	4'	Few Stones
6.0 - 15.0	Sand	dry	5YR 4/4	(none)	structureless	Loose	abrupt	smooth		Red
1188.2 - 1179.2	Jana	ury		(Hone)	structureiess	Loose	аышрс	311100111		neu
15.0 - 21.0	SC	dry	7.5YR 4/6	(none)	moderate, subangular, medium (10-	Soft	clear	smooth	_	
1179.2 - 1173.2		,		,	20 mm)					
	1									

General Comments: Seep @ 14' After 24hrs, Collapse @ 12' (One Side)







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1018	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1194.3	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	24.5	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	1', 4', 10'	Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.2	Topsoil	dry	10YR 2/2	(none)	weak, granular, fine (1-2 mm)	Soft	clear	smooth	_	
1194.3 - 1194.1	торзоп	ury		(none)	weak, grandiar, fine (1 2 mm)	3011	cicui	311100011		
0.2 - 1.4	SC	moist	10YR 4/3	(none)	weak, subangular, fine (5-10 mm)	Soft	gradual	smooth	1'	
1194.1 - 1192.9	30	moist		(none)	weak, subangular, fille (5-10 filliff)	3010	graduar	311100111	1	
1.4 - 3.6	sc	dry	10YR 4/6	(none)	moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	_	
1192.9 - 1190.7	50	ury		(none)	20 mm)	Sii. Hara	Bradadi	311100011		
3.6 - 15.0	SC	dry	10YR 3/3	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	wavy	4', 10'	Darker
1190.7 - 1179.3	50	۵.,		(none)	20 mm)	5	cicu.	,	.,10	Surve.
15.0 - 24.5	Sand	dry	5YR 3/4	(none)	structureless	Loose	clear	smooth	_	Red, Some Stones
1179.3 - 1169.8	Sana	۵.,		(none)	Structure.ess	20050	cicai	511100111		nea, some stones
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1019	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1195.3	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	22.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	Soft	clear	smooth	_	
1195.3 - 1194.8	ТОРЗОП	ury		(none)	weak, grandiar, fine (1 2 mm)	3011	cicui	311100011		
0.5 - 1.3	Fill	dry	10YR 3/4	(none)	structureless	Soft	clear	wavy	_	
1194.8 - 1194.0		ury		(none)	Structure less	3011	cicui	wavy		
1.3 - 2.4	Sand	dry	7.5YR 4/6	(none)	structureless	Loose	abrupt	smooth	_	
1194.0 - 1192.9	Sana	۵.,		(none)		20030	авгарс	511100111		
2.4 - 6.0	SC	dry	7.5YR 4/3	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	_	Sandy
1192.9 - 1189.3		,		()	20 mm)					
6.0 - 6.5	CL	dry	5YR 3/4	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	-	Bands
1189.3 - 1188.8		. ,		, , ,	20 mm)					
6.5 - 22.0	SC	dry	5YR 4/6	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	-	Red, Band of Yellow Sand @ 13'-19'
1188.8 - 1173.3		,		( /	20 mm)					.,,

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1020	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1195.8	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 1.8	Fill	dny	10YR 3/4	(none)	weak, granular, fine (1-2 mm)	Soft	clear	smooth	-	
1195.8 - 1194.0	FIII	dry		(Holle)	weak, grandiar, fille (1-2 filliff)	3011	cieai	SIIIOULII	-	
1.8 - 2.2	Buried	dry	10YR 3/1	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth		
1194.0 - 1193.6	Topsoil	ury		(Holle)	20 mm)	Sii. Haiu	cieai	SHIOULH	-	
2.2 - 3.3	ML	dry	10YR 3/3	(none)	weak, subangular, fine (5-10 mm)	Sli. Hard	gradual	smooth	-	
1193.6 - 1192.5	IVIE	ury		(none)	weak, subangular, fille (3-10 fillif)	Sii. Haru	graduai	311100111		
3.3 - 5.2	ML	dry	7.5YR 3/3	common, fine (< 5 mm), faint	weak, subangular, fine (5-10 mm)	Sli. Hard	abrupt	smooth	_	Mottles, Coarse Sand
1192.5 - 1190.6	IVIL	ury		common, fine (< 5 mm), fame	weak, subangular, fille (3-10 fillif)	Sii. Hai u	abrupt	311100111		Wiotties, Coarse Sand
5.2 - 8.0	Sand	dry	7.5YR 4/3	(none)	structureless	Loose	gradual	smooth		Coarse Sand, Seep
1190.6 - 1187.8	Suria	al y		(none)	Structureless	20030	gradau	Jillootii		course suna, seep
8.0 - 12.0	Sand	dry	5YR 4/3	(none)	structureless	Loose	gradual	smooth	_	
1187.8 - 1183.8	Jana	ury		(none)	Structureless	20030	gradau	311100011		
12.0 - 20.0	Sand	dry	5YR 4/4	(none)	structureless	Loose	abrupt	smooth	_	Stones & Cobbles
1183.8 - 1175.8	Jana	ury		(none)	structureless	LOOSE	abrupt	311100011		Stories & Cobbles
20.0 - 23.0	SC	dry	5YR 4/6	(none)	moderate, subangular, medium (10-	Very Hard	abrupt	smooth	_	Stones
1175.8 - 1172.8	30	∴i y		(one)	20 mm)	· c. , riuru	u.c. upt	330(11		Stories

General Comments: Still Seeping @ 48hrs







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/29/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1021	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1196.2	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	2', 4'	Depth to Bedrock:	N/A	Туре:	N/A

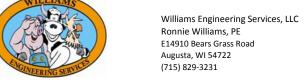
Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/2	(none)	weak, angular, fine (1-2 mm)	Soft	clear	smooth	-	
1196.2 - 1195.7		,	10/10 2 /2	,	, , , , , , , ,					
0.5 - 1.5 1195.7 - 1194.7	Fill	dry	10YR 3/3	(none)	weak, granular, v. fine (< 1 mm)	Soft	clear	smooth	-	
1.5 - 3.0	SC	moist	7.5YR 3/4	(none)	moderate, subangular, medium (10-	Firm	gradual	smooth	2'	Stones
1194.7 - 1193.2	30	moise		(none)	20 mm)		gradadi	311100111	-	Stories
3.0 - 6.0	SC	moist	7.5YR 4/4	(none)	moderate, subangular, medium (10- 20 mm)	Firm	abrupt	smooth	4'	More Clay, Larger Stones, Dark Bands of ML/CL
1193.2 - 1190.2 6.0 - 7.0			7.5YR 5/6	many, coarse (> 15 mm),	20 mm)					
1190.2 - 1189.2	Sand	dry	7.511( 5/0	prominent	structureless	Loose	gradual	smooth	-	Mottles
7.0 - 23.0	Sand	dry	5YR 4/6	(none)	structureless	Loose	gradual	smooth	_	Red
1189.2 - 1173.2	Janu	ury		(none)	3ti uctui eiess	Loose	graduar	311100111		neu
	1									
4										

General Comments: Small Seep @ 6', Seep @ 7' @ 24hrs









(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Magnor Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1024	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1196.8	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.4	Topsoil	dry	10YR 2/2	(none)	weak, granular, fine (1-2 mm)	Soft	clear	smooth	_	
1196.8 - 1196.4	торзоп	ury		(none)	weak, grandiar, fille (1-2 fillif)	3011	cieai	SITIOUTI	-	
0.4 - 4.9	Fill	dry	10YR 3/3	(none)	weak, angular, v. fine (< 5 mm)	Soft	clear	wavy	_	
1196.4 - 1191.9		ury		(none)	weak, aligular, v. lille (< 5 lilli)	3010	cicai	wavy		
4.9 - 5.8	SM	dry	7.5YR 5/4	(none)	weak, subangular, medium (10-20	Sli. Hard	gradual	smooth	_	Grey (1/2 of Hole)
1191.9 - 1191.0	5141	ui y		(none)	mm)	Sii. Hara	Bradadi	311100111		diey (1/2 of fiole)
5.8 - 19.0	SC	dry	5YR 4/4	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	_	
1191.0 - 1177.8		۵.,		(none)	20 mm)	5 11010	cicai	5		
19.0 - 23.0	Sand	dry	7.5YR 6/8	(none)	structureless	Loose	clear	smooth	_	Orange
1177.8 - 1173.8	-	,		()						
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General Comments: Sloughed @ 8'







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1025	Position in Landscape:	Excavated Field		
County:	St Croix	Elevation:	1196.6	Observed Water Depth:	N/A	_	
Logged by:	Ronnie Williams, PE	Total Depth:	24.5	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	3', 6', 12.5'-13'	Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/2	(none)	weak, granular, fine (1-2 mm)	Soft	abrupt	smooth		
1196.6 - 1196.1	Торзоп	ury		(none)	weak, grandiar, fine (1-2 fillif)	3011	abrupt	311100111		
0.5 - 1.8	SM	dry	10YR 3/4	(none)	weak, angular, medium (10-20 mm)	Sli. Hard	clear	smooth	_	Grey
1196.1 - 1194.8	SIVI	ury		(none)	weak, angular, medium (10-20 mm)	Sii. Haru	cicai	311100011		diey
1.8 - 3.3	SM	dry	5YR 4/6	(none)	weak, subangular, medium (10-20	Sli. Hard	clear	smooth	3'	Red
1194.8 - 1193.3	5141	ury		(none)	mm)	Sii. Hara	cicui	311100011	J	ned
3.3 - 6.2	SM	dry	5YR 4/3	(none)	moderate, subangular, medium (10-	Sli. Hard	abrupt	smooth	6'	Red/Brown
1193.3 - 1190.4	5141	ury		(none)	20 mm)	Sii. Hara	ивгирс	311100011	Ů	ited/ brown
6.2 - 7.0	Sand	dry	7.5YR 6/6	(none)	structureless	Loose	abrupt	smooth		Orange, Some Stones
1190.4 - 1189.6	Suria	ury		(none)	Structure less	20030	ивгирс	311100011		ordinge, some stones
7.0 - 12.5	SC	dry	5YR 3/3	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	_	
1189.6 - 1184.1	30	ury		(none)	20 mm)	Sii. Hara	cicui	311100011		
12.5 - 13.0	SM	moist	5YR 3/4	(none)	moderate, subangular, medium (10-	Firm	abrupt	smooth	12.5'-13'	
1184.1 - 1183.6	5141	moist		(none)	20 mm)		ивгирс	311100111	12.5 15	
13.0 - 16.0	Sand	dry	5YR 4/6	(none)	structureless	Loose	abrupt	smooth	_	
1183.6 - 1180.6	Suria	ury		(none)	Structure less	20030	ubrupt	311100011		
16.0 - 24.5	SC	dry	5YR 4/3	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	_	
1180.6 - 1172.1	30	ury		(none)	20 mm)	5 Idi d	c.cui	550111		
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	1/28/2016	Soil Name:	Magnor Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1026	Position in Landscape:	Excavated Field	<u> </u>	
County:	St Croix	Elevation:	1196.8	Observed Water Depth:	N/A	<u></u>	
Logged by:	Ronnie Williams, PE	Total Depth:	24.5	Est. HGW Depth:	N/A	Type:	N/A
Practice:	NRCS 313	Sample Depths:	2.5', 5'	Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 0.7	Topsoil	dry	10YR 3/2	(none)	weak, granular, fine (1-2 mm)	Soft	abrupt	smooth	-	
1196.8 - 1196.1		,		( /						
0.7 - 1.6 1196.1 - 1195.2	SM	dry	10YR 3/3	(none)	moderate, subangular, medium (10- 20 mm)	Soft	clear	smooth	-	Stones
1.6 - 4.6	-		7.5YR 4/3		moderate, subangular, medium (10-					
1195.2 - 1192.2	SC	dry	7.511 4/5	(none)	20 mm)	Soft	gradual	smooth	2.5'	Stones
4.6 - 17.0		al as a	7.5YR 4/4	()	moderate, subangular, medium (10-	c 6			5'	
1192.2 - 1179.8	SC	dry		(none)	20 mm)	Soft	gradual	smooth	5	
17.0 - 24.5	SC	dry	5YR 5/4	(none)	moderate, subangular, medium (10-	Soft	gradual	smooth	_	Yellowish
1179.8 - 1172.3		۵.,		(none)	20 mm)	30.1	g. aaaa.	511100111		· c.iowisii
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		-								
		-								

General Comments:



(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1042	Position in Landscape:	Field		
County:	St Croix	Elevation:	1187.3	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	23.5	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	2.5'	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	Soft	gradual	smooth	_	
1187.3 - 1186.3	Торзоп	ury		(none)	weak, grandiar, fille (1-2 fillif)	3010	graduar	311100111	_	
1.0 - 2.5	ML/CL	dry	10YR 3/2	(none)	moderate, subangular, fine (5-10 mm)	Sli. Hard	abrupt	smooth	2.5'	
1186.3 - 1184.8	IVIL/CL	ury		(none)	moderate, subangular, line (5-10 lillil)	Sii. Haru	abrupt	311100111	2.5	
2.5 - 7.0	Sand	dry	5YR 4/4	(none)	structureless	Sli. Hard	abrupt	smooth	_	Red, Lots of Stones/Gravel
1184.8 - 1180.3	Suria	ury		(none)	Structure less	Sii. Hara	иыгирс	311100011		nea, Eots of Stones, draver
7.0 - 9.0	SM	dry	5YR 4/6	(none)	moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	_	Red, Stones
1180.3 - 1178.3	5141	ui y		(none)	20 mm)	Sii. Hara	gradau	311100011		nea, stones
9.0 - 11.5	SC	dry	2.5YR 4/6	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	_	Red, Stones
1178.3 - 1175.8	50	۵.,		(none)	20 mm)	5	cicui	511100111		neu, stones
11.5 - 17.0	SM	dry	2.5YR 4/6	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	_	Red
1175.8 - 1170.3	5141	ui y		(none)	20 mm)	5	cicui	511100111		
17.0 - 23.5	SM	dry	2.5YR 4/6	(none)	moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	_	Red, Stones
1170.3 - 1163.8	5	۵.,		(none)	20 mm)	5	g. aaaa.	5001.1		neu, stones
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General Comments: Seep @ 10'







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1043	Position in Landscape:	Disturbed Area		
County:	St Croix	Elevation:	1184.9	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	14.5	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 4.0	Fill/	dry	10YR 3/3	(none)	weak, subangular, v. fine (< 5 mm)	Soft	abrupt	smooth	-	Lots of Stones
1184.9 - 1180.9	Disturbed	,		( /	, , , , , , , , , , , , , , , , , , , ,					
4.0 - 6.0	SM	dry	5Y 3/1	(none)	moderate, subangular, medium (10-	Soft	abrupt	smooth	-	Dark Brown/Black, Several Seeps @ 6.5'
1180.9 - 1178.9					20 mm)					
6.0 - 14.5	Sand	moist	5YR 4/4	(none)	structureless	Loose	gradual	smooth	_	Red, Stones/Gravel
1178.9 - 1170.4				(110110)			0			,,
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General Comments: Seep @ 5' & 7'







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1044	Position in Landscape:	Disturbed Area		
County:	St Croix	Elevation:	1186.7	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	17.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 3.5	Fill	dry	10YR 3/3	(none)	weak, subangular, v. fine (< 5 mm)	Soft	abrupt	smooth	-	
1186.7 - 1183.2		,		. ,						
3.5 - 5.0 1183.2 - 1181.7	SC	moist	5Y 3/2	(none)	moderate, subangular, medium (10- 20 mm)	Soft	abrupt	smooth	-	Dark Black/Grey, Stones/Sandy
5.0 - 17.0 1181.7 - 1169.7	Sand	dry	5YR 4/4	(none)	structureless	Loose	gradual	smooth	-	Red, Lots of Stones/Gravel
1101.7 - 1109.7										
		-								
		-								

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1045	Position in Landscape:	Disturbed Area		
County:	St Croix	Elevation:	1185.4	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	17.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 5.5	Fill	dry	10YR 3/3	(none)	weak, subangular, v. fine (< 5 mm)	Soft	gradual	smooth	_	
1185.4 - 1179.9		al y		(none)	wear, subangular, vi inie ( +5 inin)	30.1	Bradan	511100111		
5.5 - 7.0	CL	dry	10YR 3/4	(none)	moderate, subangular, medium (10-	Soft	abrupt	smooth	_	Some Stones
1179.9 - 1178.4	CL	ury		(Holle)	20 mm)	3010	abrupt	311100111		Some Stones
7.0 - 8.0	CL/SC	moist	5Y 4/1	(none)	moderate, subangular, medium (10-	Firm	abrupt	smooth	_	Dark Grey, Large Stones
1178.4 - 1177.4	CL/3C	moist		(Holle)	20 mm)	1 11111	abrupt	311100111		Dark Grey, Large Stories
8.0 - 17.0	Sand	moist	5YR 3/4	(none)	structureless	Loose	clear	smooth		Red, Stones/Gravel
1177.4 - 1168.4	Sanu	moist		(Holle)	structureless	Loose	cieai	SITIOULIT	-	Red, Stolles, Glavel

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1046	Position in Landscape:	Distrubed Area		
County:	St Croix	Elevation:	1184.9	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	18.0	Est. HGW Depth:	N/A	Type:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 3.0	Fill/	dry	10YR 3/3	(none)	weak, subangular, v. fine (< 5 mm)	Soft	abrupt	smooth	_	
1184.9 - 1181.9	Disturbed	ury		(none)	weak, subungular, v. mie ( 5 mm)	3010	ubrupt	311100111		
3.0 - 5.0	CL	dry	10YR 3/4	(none)	moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	_	
1181.9 - 1179.9	CL	ury		(Holle)	20 mm)	Sii. Haru	grauuar	SHIOOTH	-	
5.0 - 6.0	CL	dry	7.5YR 3/4	many, medium (5-15 mm),	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	-	Stones, Mottles
1179.9 - 1178.9	CL	ury		distinct	20 mm)	Sii. Haru	cieai	SHIOOTH	-	Stories, Mottles
6.0 - 11.0	Sand	moist	5YR 3/2	(none)	structureless	Loose	gradual	smooth	-	Coarse, Small Rocks
1178.9 - 1173.9	Saliu	HIOIST		(none)	structureless	Loose	graduai	SIIIOOUII	-	Coarse, Siriali Rocks
11.0 - 18.0	Sand	moist	5YR 3/2	(none)	structureless	Loose	gradual	smooth	_	
1173.9 - 1166.9	Saliu	1110131		(Holle)	structureless	Loose	grauuar	SHIOOTH	-	
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			<u> </u>							

General Comments: Seeps @ 6' & 8' & 12', Cave in Both Sides







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1048	Position in Landscape:	Field		
County:	St Croix	Elevation:	1179.9	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	18.5	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	2.5'	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance	grade		distinc-	topo-		
(elevation)		wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 1.5	Topsoil	dry	10YR 3/2	(none)	weak, granular, fine (1-2 mm)	Soft	abrupt	smooth	_	
1179.9 - 1178.4	Торзоп	ury		(none)		55.1	авгарс	511100111		
1.5 - 3.0	ML/CL	dry	10YR 4/1	many, medium (5-15 mm),	moderate, angular, medium (10-20	Sli. Hard	gradual	smooth	2.5	Grey, Mottles
1178.4 - 1176.9	IVIL/ CL	ury		distinct	mm)	Sii. Hara	gradau	311100111	2.3	Grey, Mottles
3.0 - 5.0	SC	dry	5YR 4/3	(none)	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	_	Red, Stones
1176.9 - 1174.9		۵.,		(none)	20 mm)	5	cicu.	511100111		nea, stones
5.0 - 18.5	Sand	dry	5YR 3/2	(none)	structureless	Loose	clear	smooth	_	Red/Brown, Stones
1174.9 - 1161.4	Sund	ury		(Holie)	Structure less	LOUSE	cicui	311100111		ica/ Brown, Stories

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1049	Position in Landscape:	Field		
County:	St Croix	Elevation:	1180.3	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	13.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 1.5	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	Soft	abrupt	smooth	_	
1180.3 - 1178.8	ТОРЗОП	ury		(none)	weak, granular, fille (1-2 fillif)	3010	авгирс	311100111		
1.5 - 3.0	SM	dry	7.5YR 3/4	(none)	moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	_	Red, Gravel
1178.8 - 1177.3	5141	ury		(none)	20 mm)	Sii. Hara	Біааааі	311100111		ned, draver
3.0 - 4.5	SM	dry	7.5YR 4/4	(none)	moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	_	Red, Gravel, Large Stones
1177.3 - 1175.8	5.11.	۵.,			20 mm)	5	B. aaaa.	511100111		nea, Graver, Earge Stories
4.5 - 5.0	SC	dry	7.5YR 4/4	common, medium (5-15 mm),	moderate, subangular, medium (10-	Sli. Hard	clear	smooth	_	Mottles
1175.8 - 1175.3		,		distinct	20 mm)			*********		
5.0 - 13.0	Sand	dry	7.5YR 6/6	(none)	structureless	Loose	clear	smooth	_	Red/Orange, Gravel
1175.3 - 1167.3		. ,		, , ,						11,11 (1,11)
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General Comments: Seep @ 8.5'







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/1/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1050	Position in Landscape:	Field		
County:	St Croix	Elevation:	1181.4	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	13.5	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, fine (1-2 mm)	Soft	abrupt	smooth	_	
1181.4 - 1180.4	торзоп	ury		(none)	weak, grandar, fine (1 2 mm)	3011	ивгирс	311100111		
1.0 - 4.0	SM	dry	5YR 4/4	(none)	moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	_	Red/Brown
1180.4 - 1177.4	5141	ury		(none)	20 mm)	Sii. Hara	Біааааі	311100011		Nea, Brown
4.0 - 13.5	SC	dry	7.5YR 3/3	(none)	moderate, subangular, medium (10-	Sli. Hard	gradual	smooth	_	Brown, Stones
1177.4 - 1167.9		,		()	20 mm)		8			
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1051	Position in Landscape:	Field	<del></del> "	
County:	St Croix	Elevation:	1178.5	Observed Water Depth:	14.0	<u> </u>	
Logged by:	Ronnie Williams, PE	Total Depth:	14.5	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	5', 10'	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 0.7	Topsoil	dry	10YR 3/2	(none)	weak, angular, fine (5-10 mm)	soft	clear	smooth	-	
1178.5 - 1177.8 0.7 - 9.0		,	10YR 4/4	, ,	, , , , ,					
1177.8 - 1169.5	SM	dry	101K 4/4	(none)	moderate, subangular, fine (5-10 mm)	sli. hard	gradual	smooth	5'	Some Stones
9.0 - 14.5	SM	dry	7.5YR 3/4	(none)	moderate, subangular, fine (5-10 mm)	sli. hard	gradual	smooth	10'	More Clay
1169.5 - 1164.0	Sivi	ury		(none)	moderate, subungular, mie (5 10 mm)	Sii. Hara	Біладан	311100111	10	Wiore etdy
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General Comments: Water @ 14' after 24hrs







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1052	Position in Landscape:	Field		
County:	St Croix	Elevation:	1178.4	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	14.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	2', 12'	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 0.7	Topsoil	dry	10YR 3/1	(none)	weak, subangular, fine (5-10 mm)	soft	clear	smooth	-	
1178.4 - 1177.7 0.7 - 5.0	,	· '	7.5YR 4/3		weak, subangular, medium (10-20					
1177.7 - 1173.4	SM	dry	7.5111.475	(none)	mm)	soft	gradual	smooth	2'	
5.0 - 8.0	SM	dry	5YR 4/4	(none)	moderate, subangular, medium (10-	soft	gradual	smooth	_	More Sand
1173.4 - 1170.4		/	= = va + /a	()	20 mm)		8	••		
8.0 - 14.0 1170.4 - 1164.4	SM	moist	7.5YR 4/3	(none)	weak, subangular, medium (10-20 mm)	v. firm	gradual	smooth	12'	Some Stones
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1053	Position in Landscape:	Field		
County:	St Croix	Elevation:	1179.9	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	18.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	1.8', 30"	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.8	Topsoil	dry	10YR 3/2	(none)	weak, angular, fine (5-10 mm)	soft	gradual	smooth	_	
1179.9 - 1179.1	торзоп	ury		(none)	weak, angular, mic (5 10 mm)	3010	Біааааі	311100111		
0.8 - 1.8	SM	dry	10YR 3/3	(none)	moderate, angular, fine (5-10 mm)	soft	gradual	smooth	1.8'	Little Sand
1179.1 - 1178.1	5141	ury		(none)	moderate, angular, mic (5 10 mm)	3010	Біааааі	311100111	1.0	Little Sund
1.8 - 4.0	SM	dry	7.5YR 3/4	(none)	moderate, angular, fine (5-10 mm)	sli. hard	gradual	smooth	30"	
1178.1 - 1175.9	5	۵.,		(none)	moderate, angular, mic (5 15 mm)	Sin nara	B. aaaa.	511100111	50	
4.0 - 8.0	SM	dry	5YR 4/4	(none)	moderate, subangular, fine (5-10 mm)	sli. hard	gradual	smooth	_	More Sand
1175.9 - 1171.9	5	۵.,		(none)	moderate, subungalar, mic (5 15 mm)	5 110.0	g. aaaa.	511100111		more sand
8.0 - 18.0	SM	moist	5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	v. firm	gradual	smooth	_	Few Cobbles
1171.9 - 1161.9				()	,		8			
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	4									

General Comments: Few Large Boulders







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1054	Position in Landscape:	Field		
County:	St Croix	Elevation:	1177.0	Observed Water Depth:	N/A	<u> </u>	
Logged by:	Ronnie Williams, PE	Total Depth:	24.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	2', 4', 22'	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/3	(none)	weak, granular, medium (2-5 mm)	sli. hard	clear	smooth	_	
1177.0 - 1176.0	ТОРЗОП	u.y		(none)		31111010	c.cu.	511100111		
1.0 - 3.0	CL	dry	7.5YR 4/4	few, fine (< 5 mm), distinct	moderate, subangular, medium (2-5	sli. hard	gradual	smooth	2'	Mottles
1176.0 - 1174.0		,	1010 110		mm)		0			
3.0 - 4.6	CL	dry	10YR 4/6	common, medium (5-15 mm),	moderate, subangular, medium (2-5	hard	clear	smooth	4'	Bands of Mottles
1174.0 - 1172.4 4.6 - 20.0		-	7.5YR 4/4	prominent	mm)					
1172.4 - 1157.0	SM	dry	7.511 4/4	(none)	moderate, subangular, medium (2-5 mm)	sli. hard	gradual	smooth	-	Some Stones, Nearly Dry
20.0 - 24.0			7.5YR 4/4		moderate, subangular, medium (2-5					
1157.0 - 1153.0	SC	moist		(none)	mm)	firm	gradual	smooth	22'	More Stones & Cobbles, Almost CH
		<del>                                     </del>								

General Comments: Located in Waterway







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1055	Position in Landscape:	Field	_	
County:	St Croix	Elevation:	1174.4	Observed Water Depth:	N/A	<u></u>	
Logged by:	Ronnie Williams, PE	Total Depth:	14.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	2', 3', 4'	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.9	Topsoil	dry	10YR 3/3	(none)	weak, subangular, fine (5-10 mm)	soft	abrupt	smooth	-	
1174.4 - 1173.5	торзоп	۵.,		()						
0.9 - 2.0	ML	dry	10YR 4/2	(none)	moderate, subangular, medium (10-	sli. hard	gradual	smooth	2'	
1173.5 - 1172.4		,		` '	20 mm)					
2.0 - 3.0 1172.4 - 1171.4	ML	dry	10YR 4/3	(none)	moderate, subangular, medium (10- 20 mm)	sli. hard	gradual	smooth	3'	More Sand
3.0 - 4.4			7.5YR 4/4		moderate, subangular, medium (10-					
1171.4 - 1170.0	ML	dry	7.511(4)4	common, fine (< 5 mm), faint	20 mm)	sli. hard	abrupt	smooth	4'	Mottles
4.4 - 14.0	Sand	dry	5YR 4/3	(none)	structureless	loose	gradual	smooth	_	
1170.0 - 1160.4	Saliu	ury		(none)	structureless	loose	graduai	SIIIOOUII	-	

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1057	Position in Landscape:	Field		
County:	St Croix	Elevation:	1179.4	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	25.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 0.7	Topsoil	dry	10YR 4/4	(none)	weak, granular, fine (1-2 mm)	soft	abrupt	smooth	-	
1179.4 - 1178.7	торос	۵.,	= = = = = = = = = = = = = = = = = = = =	()	, 8					
0.7 - 2.5 1178.7 - 1176.9	ML	dry	7.5YR 4/4	(none)	weak, subangular, fine (5-10 mm)	hard	abrupt	smooth	-	
2.5 - 4.0			5YR 4/4		weak, subangular, medium (10-20					
1176.9 - 1175.4	SM	dry	3y.	(none)	mm)	sli. hard	gradual	smooth	-	
4.0 - 21.0	SM	dry	5YR 4/6	(none)	weak, subangular, medium (10-20	sli. hard	gradual	smooth	-	
1175.4 - 1158.4	3101	ury		(Horie)	mm)	Sii. Haru	grauuar	311100111	_	
21.0 - 25.0	SM	dry	5YR 5/6	(none)	weak, subangular, medium (10-20	v. firm	gradual	smooth	-	Some Stones & Cobbles & Large Rocks
1158.4 - 1154.4					mm)					-
		1								
	-									

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1058	Position in Landscape:	Field	<del>_</del>	
County:	St Croix	Elevation:	1175.5	Observed Water Depth:	N/A	<u> </u>	
Logged by:	Ronnie Williams, PE	Total Depth:	14.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	1.3'	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.7	Topsoil	dry	10YR 3/2	(none)	weak, granular, fine (1-2 mm)	soft	abrupt	smooth	-	
1175.5 - 1174.8	торзоп	ury		(none)	weak, grandiar, fine (1-2 fillif)	3010	abrupt	311100111		
0.7 - 1.4	ML	dry	7.5YR 4/4	(none)	moderate, subangular, medium (10-	sli. hard	clear	smooth	1.3'	
1174.8 - 1174.1	1412	ury		(none)	20 mm)	Sii. Hara	cicui	311100111	1.5	
1.4 - 4.0	SM	dry	7.5YR 4/4	(none)	moderate, subangular, medium (10-	soft	clear	smooth	_	Some Stones
1174.1 - 1171.5	5.11.	۵.,		(none)	20 mm)	30.1	cicai	511100111		Some Stones
4.0 - 4.2	ML	dry	7.5YR 4/6	(none)	moderate, subangular, medium (10-	sli. hard	abrupt	smooth	_	Small Band
1171.5 - 1171.3		,		()	20 mm)					
4.2 - 14.0	Sand	dry	5YR 4/4	(none)	structureless	loose	gradual	smooth	-	Stones
1171.3 - 1161.5		. ,		( /			0			
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General Comments: Near Waterway







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1060	Position in Landscape:	Field		
County:	St Croix	Elevation:	1174.3	Observed Water Depth:	N/A	<u></u>	
Logged by:	Ronnie Williams, PE	Total Depth:	7.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	1.5'	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.9	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	soft	clear	smooth	_	
1174.3 - 1173.4	ТОРЗОП	ury		(none)	-	3010	cicui	311100111		
0.9 - 2.9	CL	dry	5YR 4/3	(none)	weak, subangular, medium (10-20	sli. hard	abrupt	smooth	1.5'	
1173.4 - 1171.4		,		(1.0.1.0)	mm)					
2.9 - 7.0	Sand	dry	5YR 4/6	(none)	structureless	loose	gradual	smooth	-	
1171.4 - 1167.3		,		` ,						
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1061	Position in Landscape:	Field		
County:	St Croix	Elevation:	1175.1	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	9.5	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 1.1	Topsoil	dry	10YR 2/2	(none)	weak, granular, fine (1-2 mm)	soft	clear	smooth	-	
1175.1 - 1174.0 1.1 - 2.0	.,	,	10YR 3/3	, ,						
1174.0 - 1173.1	ML	dry	101K 3/3	(none)	moderate, subangular, medium (10- 20 mm)	sli. hard	clear	smooth	-	Very Sandy
2.0 - 3.5	SM	dry	7.5YR 4/3	(none)	moderate, subangular, medium (10-	soft	gradual	smooth	_	Sandy
1173.1 - 1171.6		,		()	20 mm)		8			
3.5 - 4.0 1171.6 - 1171.1	SM	dry	5YR 4/6	(none)	moderate, subangular, medium (10- 20 mm)	soft	abrupt	smooth	-	Bands of ML
4.0 - 9.5	Sand	des	5YR 4/6	()		lanan				Laura Channa
1171.1 - 1165.6	Saliu	dry		(none)	structureless	loose	gradual	smooth	-	Large Stones

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1062	Position in Landscape:	Field		
County:	St Croix	Elevation:	1177.5	Observed Water Depth:	11.0		
Logged by:	Ronnie Williams, PE	Total Depth:	16.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	18"	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.7	Topsoil	dry	10YR 3/3	(none)	weak, granular, fine (1-2 mm)	soft	gradual	smooth	_	
1177.5 - 1176.8	торзоп	ury		(Horie)	weak, granular, fille (1-2 fillif)	3010	graduar	311100111	_	
0.7 - 2.0	ML	dry	10YR 3/6	(none)	moderate, subangular, fine (5-10 mm)	sli. hard	abrupt	smooth	18"	Sandy
1176.8 - 1175.5	1412	ury		(Holic)	moderate, sabangalar, line (5-10 lillin)	Sii. Hara	ивгирс	311100111	10	Sundy
2.0 - 4.5	Sand	dry	7.5YR 4/3	common, medium (5-15 mm),	structureless	loose	clear	smooth	_	Band of Mottles
1175.5 - 1173.0		/		prominent						
4.5 - 6.0	Wet Sand	wet	5YR 4/4	(none)	structureless	nonsticky	clear	smooth	_	Coarse Sand
1173.0 - 1171.5				(,		,				
6.0 - 16.0	SC	moist	7.5YR 4/3	(none)	moderate, subangular, medium (10-	firm	gradual	smooth	-	
1171.5 - 1161.5				, ,	20 mm)					

General Comments: Water @ 11' after 24hrs







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1063	Position in Landscape:	Field		
County:	St Croix	Elevation:	1175.7	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	14.5	Est. HGW Depth:	N/A	Туре:	
Practice:	NRCS 313	Sample Depths:	5'	Depth to Bedrock:	N/A	Туре:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, fine (1-2 mm)	soft	clear	smooth	_	
1175.7 - 1174.7	. орзо	ω.,		()	, g (2 2,					
1.0 - 2.5 1174.7 - 1173.2	ML	dry	7.5YR 4/6	few, fine (< 5 mm), distinct	weak, angular, fine (1-2 mm)	soft	gradual	smooth	-	Red, Sandy, Mottles
2.5 - 3.0	SM	dry	5YR 4/4	common, medium (5-15 mm),	weak, angular, fine (1-2 mm)	loose	abrupt	smooth	-	Red, Stones, Mottles
1173.2 - 1172.7		. ,		distinct						·
3.0 - 14.5 1172.7 - 1161.2	CL	dry	Gley2 2.5/10G	common, medium (5-15 mm), prominent	moderate, subangular, medium (10- 20 mm)	sli. hard	gradual	smooth	5'	Organic Material, Mottles, Dark Color, Gley, Possible Buried Wetland
									-	
									-	
	1									
	-									

General Comments: Fill/Disturbed Area







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1064	Position in Landscape:	Field		
County:	St Croix	Elevation:	1175.2	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	8.5	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 0.7	Topsoil	dry	10YR 3/3	(none)	weak, granular, fine (1-2 mm)	soft	abrupt	smooth	_	
1175.2 - 1174.5	ТОРЗОП	ury		(Holie)	weak, grandar, fine (1 2 mm)	3010	иогирс	311100111		
0.7 - 3.0	SM	dry	7.5YR 4/4	(none)	moderate, subangular, medium (10-	sli. hard	clear	smooth	_	Red, Stones
1174.5 - 1172.2	SIVI	ury		(Horie)	20 mm)	SII. Halu	cieai	SHIOOUI	-	neu, Stories
3.0 - 8.5	ML	dry	7.5YR 4/6	common, medium (5-15 mm),	moderate, subangular, medium (10-	sli. hard	clear	smooth	_	Red, Stones, Sandy, Mottles
1172.2 - 1166.7	IVIL	ury		distinct	20 mm)	SII. Halu	cieai	SHIOOUI	-	heu, Stories, Saridy, Mottles
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1065	Position in Landscape:	Field		
County:	St Croix	Elevation:	1174.6	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	6.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.7	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	soft	clear	smooth	_	
1174.6 - 1173.9	ТОРЗОП	ury		(none)	weak, grandar, fine (1 2 mm)	3010	cicui	311100111		
0.7 - 1.5	ML	dry	10YR 3/3	(none)	moderate, subangular, fine (5-10 mm)	soft	gradual	smooth	_	Sandy
1173.9 - 1173.1		ω.,		(none)		5010	B. aaaa.	511100111		Sanay
1.5 - 3.5	SM	dry	7.5YR 3/4	(none)	moderate, subangular, medium (10-	soft	gradual	smooth	_	Small Stones
1173.1 - 1171.1		,		(1.0.1.0)	20 mm)		8			
3.5 - 6.0	ML	dry	7.5YR 4/4	few, fine (< 5 mm), faint	moderate, subangular, medium (10-	sli. hard	gradual	smooth	-	Small Stones, Mottles
1171.1 - 1168.6				, , , ,,	20 mm)					,
-										
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Magnor Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1066	Position in Landscape:	Field		
County:	St Croix	Elevation:	1171.8	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	4.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 0.7	Topsoil	dry	10YR 3/1	(none)	weak, subangular, fine (1-2 mm)	soft	clear	smooth	_	
1171.8 - 1171.1	торзоп	ury		(none)	weak, subungular, mile (1 2 mm)	3010	cicui	311100111		
0.7 - 2.0	ML	dry	7.5YR 3/3	(none)	moderate, subangular, fine (1-2 mm)	sli. hard	clear	smooth	_	Stones
1171.1 - 1169.8	1412	ury		(none)	moderate, sabangalar, mic (1 2 mm)	Sii. Hara	cicui	311100111		Stories
2.0 - 4.0	SM	dry	7.5YR 4/4	(none)	moderate, subangular, fine (1-2 mm)	soft	gradual	smooth	_	Redish, Stones
1169.8 - 1167.8		,		()			8			,
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	-									

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Magnor Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1068	Position in Landscape:	Field		
County:	St Croix	Elevation:	1176.8	Observed Water Depth:	N/A		
Logged by:	Ronnie Williams, PE	Total Depth:	13.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	4.5'	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/1	(none)	weak, granular, fine (1-2 mm)	soft	clear	smooth	_	
1176.8 - 1175.8	торзоп	ury		(none)	weak, grandiar, fine (1-2 min)	3010	cicai	311100011	_	
1.0 - 2.0	ML	dry	10YR 3/3	(none)	weak, subangular, medium (10-20	sli. hard	gradual	smooth	_	
1175.8 - 1174.8	IVIL	ury		(none)	mm)	SII. Haru	graduar	311100111	_	
2.0 - 3.0	CL	dry	10YR 3/4	few, fine (< 5 mm), faint	moderate, subangular, medium (10-	sli. hard	gradual	smooth	_	Some Stones, Mottles
1174.8 - 1173.8	CL	ury		rew, fille (< 5 fillif), failt	20 mm)	SII. Haru	graduar	311100011	_	Joine Stories, Mottles
3.0 - 4.5	CL	dry	7.5YR 5/2	many, medium (5-15 mm),	moderate, subangular, medium (10-	sli. hard	gradual	smooth	4.5'	Grey, Large Stones, Mottles
1173.8 - 1172.3	CL	ary	,	prominent	20 mm)	Sii. Halu	Bradadi	311100011	4.5	Grey, Edige Stories, Wottles
4.5 - 7.0	SM	dry	7.5YR 3/3	(none)	moderate, subangular, medium (10-	soft	gradual	smooth	_	Lots of Stones
1172.3 - 1169.8	5141	ury		(none)	20 mm)	3010	Біааааі	311100011		Lots of Stories
7.0 - 13.0	CL	dry	7.5YR 4/3	(none)	moderate, subangular, medium (10-	sli. hard	gradual	smooth	_	Grey/Brown Mix, Bands of Yellow Sand
1169.8 - 1163.8	CL	ury		(none)	20 mm)	Sii. Hara	Біааааі	311100011		drey/ brown with, builds of Tellow Sund

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1069	Position in Landscape:	Field	<del>_</del>	
County:	St Croix	Elevation:	1175.7	Observed Water Depth:	N/A	<u> </u>	
Logged by:	Ronnie Williams, PE	Total Depth:	13.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:	8'	Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, fine (1-2 mm)	soft	clear	smooth	_	
1175.7 - 1174.7	ТОРЗОП	ury		(none)	weak, grandar, fine (1 2 mm)	3010	cicui	311100011		
1.0 - 2.5	SM	dry	10YR 3/3	(none)	weak, subangular, fine (1-2 mm)	sli. hard	clear	smooth	_	Stones
1174.7 - 1173.2	5141	ury		(none)	weak, subangular, mic (1 2 mm)	Sii. Hara	cicui	311100011		Stones
2.5 - 6.0	ML	dry	10YR 3/3	many, medium (5-15 mm),	moderate, subangular, fine (1-2 mm)	sli. hard	clear	smooth	_	Brown, Stones, Mottles
1173.2 - 1169.7	2	ω.,		prominent		5 110.10	cicai	511100111		Stown, Stones, Motales
6.0 - 8.0	SM	dry	7.5YR 3/4	(none)	moderate, subangular, medium (10-	soft	clear	smooth	_	Brown, Stones
1169.7 - 1167.7		,		(,	20 mm)			***********		,
8.0 - 9.0	CL	dry	5YR 4/3	(none)	moderate, subangular, medium (10-	sli. hard	gradual	smooth	8'	Sandy
1167.7 - 1166.7		. ,		,,	20 mm)		0			,
9.0 - 13.0	ML	dry	10YR 6/3	(none)	moderate, subangular, medium (10-	sli. hard	gradual	smooth	-	Light Grey, Very Dry
1166.7 - 1162.7		,		,,	20 mm)		0			5 · · · · / · /
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General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	2/15/2016	Soil Name:	Magnor Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1070	Position in Landscape:	Field	<u>-</u>	
County:	St Croix	Elevation:	1174.7	Observed Water Depth:	N/A	<u>-</u>	
Logged by:	Ronnie Williams, PE	Total Depth:	4.0	Est. HGW Depth:	N/A	Type:	
Practice:	NRCS 313	Sample Depths:		Depth to Bedrock:	N/A	Type:	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/3	(none)	weak, granular, fine (1-2 mm)	soft	abrupt	smooth	_	
1174.7 - 1173.7	торзоп	ary		(none)	weak, granalar, inte (1 2 mm)	30.1	авгарс	511100111		
1.0 - 2.0	ML	dry	10YR 4/4	few, fine (< 5 mm), faint	weak, subangular, fine (1-2 mm)	sli. hard	clear	smooth	_	Stones, Mottles
1173.7 - 1172.7	1412	ury		iew, inie (< 5 inii), iunie	weak, subungular, mic (1 2 mm)	Sii. Hara	cicui	311100011		Stories, Mottles
2.0 - 4.0	SM	dry	5YR 4/4	(none)	weak, subangular, fine (1-2 mm)	sli. hard	gradual	smooth	_	Red, Stones
1172.7 - 1170.7	5.11.	۵.,		(none)	really subungular, mile (1 2 mm)	Siii ridi d	B. aaaa.	511100111		neu, stones
	4									
	4									

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1217	Position in Landscape:	Side Slope	<del>_</del>	
County:	St Croix	Elevation:	1188.8	Observed Water Depth:	N/A	<del>_</del>	
Logged by:	Cody Overgard	Total Depth:	15.0	Est. HGW Depth:	N/A	Type:	N/A
Practice:	NRCS 313	Sample Depths:	2.0	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	_	
1188.8 - 1187.8	Торзоп	ury		(Horie)	weak, granular, medium (2-3 mm)	mable	авгирс	311100111	_	
1.0 - 3.0	SC	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	1217@2'	Cobbles
1187.8 - 1185.8	50	u.,		(Horie)	wear, subungular, mile (5 16 mm)	5111 1141 4	crear	511100111	121,62	6655765
3.0 - 15.0	SC	dry	7.5YR 4/3	(none)	structureless	soft	clear	smooth	-	Cobbles/Mostly Sand
1185.8 - 1173.8				. ,						· ·
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General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam			
Legal Description:	Sec 22 T30N R16W	Hole Number:	1218	Position in Landscape:	Toe Slope	_		
County:	St Croix	Elevation:	1190.4	Observed Water Depth:	N/A	<del>_</del>		
Logged by:	Cody Overgard	Total Depth:	15.0	Est. HGW Depth:	N/A	Type:	N/A	
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Type:	N/A	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	-	
1190.4 - 1189.4	торзоп	۵.,		(none)	wear, grandar, mearam (2 5 mm)	madic	ubrupt	311100111		
1.0 - 2.5	SC	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	-	Topsoil Mixture
1189.4 - 1187.9 2.5 - 6.0			7.5YR 4/3							
1187.9 - 1184.4	SP	dry	7.511(4/5	(none)	structureless	sli. hard	clear	smooth	-	SM Banded Layers
6.0 - 15.0	sc	dry	2.5YR 4/4	(none)	structureless	sli. hard	clear	smooth	-	Red/Mostly Sand with Few Fines
1184.4 - 1175.4	30	ury		(Horie)	structureless	Sii. Haru	Clear	SHOOTH	-	neu/Mostly Salid With Few Filles
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General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1219	Position in Landscape:	Side Slope	_	
County:	St Croix	Elevation:	1190.6	Observed Water Depth:	N/A	<u>-</u>	
Logged by:	Cody Overgard	Total Depth:	8.0	Est. HGW Depth:	N/A	Type:	N/A
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 0.5	Disturbed	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	-	
1190.6 - 1190.1			7 FVD 2/4	. ,	, , , , ,		'			
0.5 - 2.0 1190.1 - 1188.6	SM	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	-	SC Mixed /Cobbles
2.0 - 8.0		dnı	7.5YR 4/3	(nana)	structureless	sli. hard	clear	smooth		Some Gravel/Cobbles/Few Fines
1188.6 - 1182.6	SC	dry		(none)	structureless	sii. nard	clear	smooth	-	Some Gravei/Cobbles/Few Fines
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General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1220	Position in Landscape:	Shoulder	_	
County:	St Croix	Elevation:	1193.3	Observed Water Depth:	N/A	_	
Logged by:	Ronnie Williams, PE	Total Depth:	14.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	_	
1193.3 - 1192.3	ТОРЗОП	ury		(none)	weak, grandar, mediam (2 5 mm)	mubic	иыгирс	311100111		
1.0 - 4.0	SC	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	_	Cobbles/GP mix
1192.3 - 1189.3	30	u, y		(none)	weak, subungular, mile (5 10 mm)	Sii. Hara	cicui	311100111		cossics/ of Tillx
4.0 - 10.0	SP	dry	7.5YR 4/3	(none)	structureless	sli. hard	clear	smooth	_	SM Mixture
1189.3 - 1183.3	J.	,		()						
10.0 - 14.0	SP	dry	2.5YR 4/4	(none)	structureless	soft	clear	smooth	-	Few SM Pockets
1183.3 - 1179.3		<i>'</i>		, ,						
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General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1221	Position in Landscape:	Shoulder	=	
County:	St Croix	Elevation:	1192.7	Observed Water Depth:	N/A	_	
Logged by:	Ronnie Williams, PE	Total Depth:	13.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	4.5'	Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 0.5	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	_	
1192.7 - 1192.2	Торѕоп	ury		(none)	weak, granular, medidiri (2-3 mm)	ITIAble	автирс	SHOOTH	-	
0.5 - 5.0	SC	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	_	Cobbles/GP Mix
1192.2 - 1187.7	36	ui y		(Holle)	weak, subungular, mile (5 10 mm)	Sii. Hara	cicui	311100111		cobbles/ GI WIIX
5.0 - 13.0	SM	dry	7.5YR 4/3	(none)	structureless	sli. hard	clear	smooth	-	SC Mix/Few Fines
1187.7 - 1179.7		,		. ,						·

General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1222	Position in Landscape:	Shoulder	_	
County:	St Croix	Elevation:	1192.2	Observed Water Depth:	N/A	_	
Logged by:	Cody Overgard	Total Depth:	13.0	Est. HGW Depth:	N/A	Type:	N/A
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 0.7	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	-	
1192.2 - 1191.5	. орзо	,		()	, g, (= 0)					
0.7 - 2.0 1191.5 - 1190.2	SC	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	-	Cobbles
2.0 - 13.0	SM	dry	7.5YR 4/3	(none)	structureless	hard	clear	smooth	-	SC Pockets/Few Fines/Cobbles
1190.2 - 1179.2	SIVI	ury		(Horie)	Structureless	Haru	clear	SITIOUTI	-	3c Fockets/Few Filles/Cobbles
	_									

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1223	Position in Landscape:	Shoulder	_	
County:	St Croix	Elevation:	1192.7	Observed Water Depth:	N/A	<b>-</b>	
Logged by:	Cody Overgard	Total Depth:	13.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 2.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	_	
1192.7 - 1190.7	Торзоп	ury		(Horie)	weak, granular, medium (2-3 mm)	mable	авгирс	311100111	_	
2.0 - 4.0	SC	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	_	Cobbles
1190.7 - 1188.7	55	۵.,		(Holle)	wear, subungular, mile (5 16 mm)	5111 Har a	cicui	311100111		2000/100
4.0 - 13.0	SC	dry	7.5YR 4/3	(none)	structureless	sli. hard	clear	smooth	-	Boulders/Few Fines
1188.7 - 1179.7		,		. ,						·
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General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam			
Legal Description:	Sec 22 T30N R16W	Hole Number:	1224	Position in Landscape:	Shoulder	_		
County:	St Croix	Elevation:	1192.5	Observed Water Depth:	N/A			
Logged by:	Cody Overgard	Total Depth:	13.0	Est. HGW Depth:	N/A	Type:	N/A	
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Type:	N/A	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 1.5	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	-	
1192.5 - 1191.0 1.5 - 3.0		,	7.5YR 3/4	. ,	, , , , ,					
1191.0 - 1189.5	SC	dry	7.51K 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	-	Boulders
3.0 - 13.0	SC	dry	7.5YR 4/3	(none)	structureless	sli. hard	clear	smooth	_	Few Fines/Coarse Sand Inclusions
1189.5 - 1179.5	3C	ury		(none)	Structureless	Sii. Ilai u	Clear	SITIOUTI	-	rew rines/ coarse sand inclusions
	4									
	1									
	-									
	1									

General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Magnor Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1225	Position in Landscape:	Shoulder	_	
County:	St Croix	Elevation:	1192.8	Observed Water Depth:	N/A	_	
Logged by:	Cody Overgard	Total Depth:	11.5	Est. HGW Depth:	N/A	Type:	N/A
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 11.5	SC	dry	7.5YR 3/4	(none)	weak, subangular, medium (2-5 mm)	friable	abrupt	smooth	-	Cobbles/Few Fines
1192.8 - 1181.3	30	ury		(none)	weak, subangular, medidiri (2-5 min)	mable	abrupt	311100111		CODDIES/TEW TITLES
-										
	-									

General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Magnor Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1226	Position in Landscape:	Shoulder	_	
County:	St Croix	Elevation:	1193.2	Observed Water Depth:	N/A	<u>-</u>	
Logged by:	Cody Overgard	Total Depth:	23.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	-	
1193.2 - 1192.2					.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
1.0 - 14.0	SM	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	_	Cobbles/Few Fines
1192.2 - 1179.2		. ,			, , , , , , , , , , , , , , , , , , , ,					
14.0 - 23.0	SP	dry	7.5YR 7/3	(none)	structureless	soft	clear	smooth	_	Hole Caving at 14'/Tan Sand
1179.2 - 1170.2	J.	,		(	33.3333.3333					

General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam			
Legal Description:	Sec 22 T30N R16W	Hole Number:	1227	Position in Landscape:	Shoulder	_		
County:	St Croix	Elevation:	1192.8	Observed Water Depth:	N/A	_		
Logged by:	Cody Overgard	Total Depth:	22.0	Est. HGW Depth:	N/A	Type:	N/A	
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Type:	N/A	

USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
	dry	Matrix	abundance	grade		distinc-	topo-		
	wet	Mottle	contrast	size		tiveness	graphy		
ГорѕоіІ	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	-	
- 1	,		, ,	, , , ,					
SM	dry	7.5YR 4/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	-	Boulders
60	der .	7.5YR 7/3	( )		6				11.1.0 : 1401/7 0 1
SP	ary		(none)	structureless	SOTT	ciear	smootn	-	Hole Caving at 10'/Tan Sand
	_								
Ş		moist wet  psoil dry  SM dry	moist wet Mottle  10YR 3/2  SM dry 7.5YR 4/4  7.5YR 7/3	moist   wet	moist   wet   Mottle   size   type   size	moist wet Mottle size type size  psoil dry 10YR 3/2 (none) weak, granular, medium (2-5 mm) friable  7.5YR 4/4 (none) weak, subangular, fine (5-10 mm) sli. hard	moist wet Mottle size type tiveness  Mottle contrast size type tiveness  psoil dry 10YR 3/2 (none) weak, granular, medium (2-5 mm) friable abrupt  Mottle contrast size type tiveness  Mottle contrast size type t	moist wet Mottle size type size type graphy  psoil dry 10YR 3/2 (none) weak, granular, medium (2-5 mm) friable abrupt smooth  Mottle contrast size type size type size type size tiveness graphy  weak, granular, medium (2-5 mm) friable abrupt smooth  Mottle contrast type size type size type size type size tiveness graphy  weak, granular, fine (5-10 mm) sli. hard clear smooth	dry Matrix abundance size type tiveness graphy  Mottle contrast size contrast  Mottle dry 10YR 3/2 (none) weak, granular, medium (2-5 mm) friable abrupt smooth -  T.5YR 4/4 (none) weak, subangular, fine (5-10 mm) sli. hard clear smooth -

General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam			
Legal Description:	Sec 22 T30N R16W	Hole Number:	1228	Position in Landscape:	Shoulder			
County:	St Croix	Elevation:	1193.0	Observed Water Depth:	N/A	_		
Logged by:	Cody Overgard	Total Depth:	24.0	Est. HGW Depth:	N/A	Туре:	N/A	
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Туре:	N/A	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 2.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	-	
1193.0 - 1191.0	торзоп	ury		(none)	weak, granular, medidiri (2-5 mm)	mable	авгирс	311100111		
2.0 - 3.0	SC	dry	10YR 4/3	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	_	Yellow Sand Bands
1191.0 - 1190.0		ω.,		(none)	mean, sasangarar, mie (s. 10 mm)	5111 Har a	cicui	511100111		Tellow Sund Sunds
3.0 - 8.0	SM	dry	7.5YR 4/3	(none)	structureless	sli. hard	clear	smooth	-	Cobbles
1190.0 - 1185.0		· '		` ′						
8.0 - 9.0	SP	dry	7.5YR 7/3	(none)	structureless	sli. hard	clear	smooth	-	Tan Sand
1185.0 - 1184.0 9.0 - 21.0			7.5YR 4/4							
9.0 - 21.0 1184.0 - 1172.0	SC	dry	7.51K 4/4	(none)	structureless	soft	clear	smooth	-	Boulders
21.0 - 24.0			7.5YR 7/3							
1172.0 - 1169.0	SP	dry	, ,	(none)	structureless	sli. hard	clear	smooth	-	Tan Sand

General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1229	Position in Landscape:	Shoulder	_	
County:	St Croix	Elevation:	1194.0	Observed Water Depth:	N/A	_	
Logged by:	Cody Overgard	Total Depth:	24.0	Est. HGW Depth:	N/A	Type:	N/A
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Type:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry moist	Matrix	abundance size	grade type		distinc-	topo-		
(elevation)		wet	Mottle	contrast	size		tiveness	graphy		
0.0 - 1.5	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	_	
1194.0 - 1192.5	ТОРЗОП	۵.,		(none)	really grandiary mediam (2 5 mm)	1110010	шогирс	511100111		
1.5 - 10.0	SC	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	_	cobbles/GP Mix
1192.5 - 1184.0		,		()	,					
10.0 - 12.0	SP	dry	7.5YR 7/3	(none)	structureless	soft	clear	smooth	-	Tan Sand
1184.0 - 1182.0	-	. ,		( /						
12.0 - 22.0	sc	dry	2.5YR 4/4	(none)	structureless	sli. hard	clear	smooth	-	cobbles/Few Fines
1182.0 - 1172.0		,		` '						,
22.0 - 24.0	SP	dry	7.5YR 7/3	(none)	structureless	soft	clear	smooth	-	Tan Sand
1172.0 - 1170.0		. ,		( /						
	4									
	1									

General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1230	Position in Landscape:	Shoulder	_	
County:	St Croix	Elevation:	1195.3	Observed Water Depth:	N/A	_	
Logged by:	Cody Overgard	Total Depth:	24.0	Est. HGW Depth:	N/A	Type:	N/A
Practice:	NRCS 313	Sample Depths:	2.0	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 1.5	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	_	
1195.3 - 1193.8	Торзоп	ury		(Holle)	weak, granular, medium (2-3 mm)	mable	авгирс	311100111	_	
1.5 - 2.0	SC	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	1230@2'	Cobbles
1193.8 - 1193.3	50	۵.,		(none)	wear, subungular, mile (5 16 mm)	5111 1141 4	crear	511100111	123062	Costiles
2.0 - 14.0	SM	dry	7.5YR 4/3	(none)	structureless	sli. hard	clear	smooth	-	Cobbles/Few Fines
1193.3 - 1181.3		,		,						
14.0 - 24.0	SM	dry	7.5YR 4/4	(none)	structureless	soft	clear	smooth	-	SC Pockets/Few Fines
1181.3 - 1171.3										
	-									
	-									
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General Comments:





(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1231	Position in Landscape:	Sideslope	_	
County:	St Croix	Elevation:	1199.7	Observed Water Depth:	N/A	_	
Logged by:	Cody Overgard	Total Depth:	8.0	Est. HGW Depth:	N/A	Туре:	N/A
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance size	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	-	
1199.7 - 1198.7 1.0 - 8.0			7.5YR 3/4		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
1198.7 - 1191.7	SC	dry	7.51K 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	-	Cobbles/Some Fines/GP Pockets
	1									

General Comments:







(For Waste Storage Facilities)

Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Santiago Silt Loam			
Legal Description:	Sec 22 T30N R16W	Hole Number:	1232	Position in Landscape:	Side Slope			
County:	St Croix	Elevation:	1200.9	Observed Water Depth:	N/A	_		
Logged by:	Cody Overgard	Total Depth:	10.0	Est. HGW Depth:	N/A	Type:	N/A	
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Type:	N/A	

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 1.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	_	
1200.9 - 1199.9	Topson	۵.,		(none)	ready grandiary mediam (2 3 mm)	abic	abrapt	511100111		
1.0 - 5.0	SC	dry	7.5YR 3/4	(none)	weak, subangular, fine (5-10 mm)	sli. hard	clear	smooth	_	Cobbles
1199.9 - 1195.9	55	۵.,			wear, sabangarar, me (5 15 mm)	3111 1101 0	c.cu.	311100111		2000/120
5.0 - 7.0	ML	dry	7.5YR 4/3	common, medium (5-15 mm),	structureless	sli. hard	clear	smooth	-	Mostly Silt/Few Clay Bands
1195.9 - 1193.9		. ,	10YR 6/2	distinct						,,
7.0 - 10.0	CL	moist	2.5YR 4/4	many, medium (5-15 mm),	structureless	friable	clear	smooth	-	Multicolored Clay
1193.9 - 1190.9			10YR 6/2	distinct						,
	ļ									
	4									
	-									
	1									

General Comments:





(For Waste Storage Facilities)

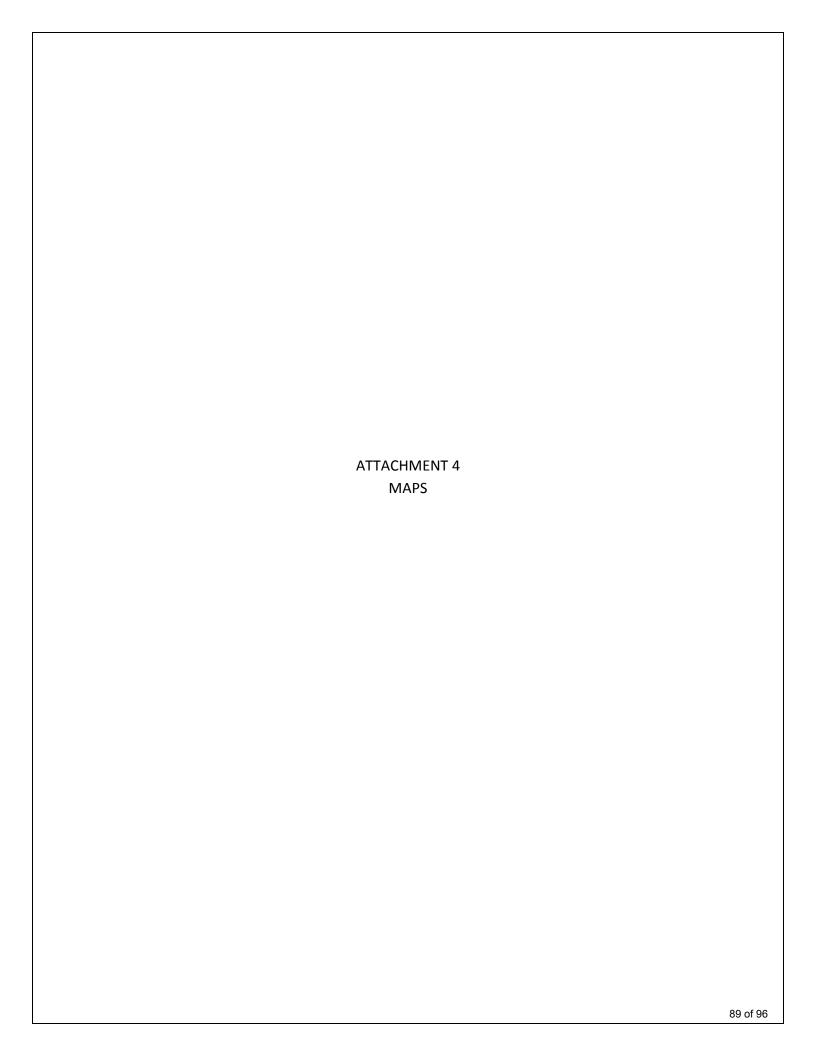
Landowner:	Todd Tuls	Date:	7/19/2017	Soil Name:	Freeon Silt Loam		
Legal Description:	Sec 22 T30N R16W	Hole Number:	1233	Position in Landscape:	Side Slope	_	
County:	St Croix	Elevation:	1201.6	Observed Water Depth:	N/A	_	
Logged by:	Cody Overgard	Total Depth:	8.5	Est. HGW Depth:	N/A	Type:	N/A
Practice:	NRCS 313	Sample Depths:	-	Depth to Bedrock:	N/A	Туре:	N/A

Depth	USCS	Moisture	Munsell Color	Mottle	Structure	Consistency	Bour	ndary	Sample Number	Comments
(feet)		dry	Matrix	abundance	grade		distinc-	topo-		
(elevation)		moist wet	Mottle	size contrast	type size		tiveness	graphy		
0.0 - 3.0	Topsoil	dry	10YR 3/2	(none)	weak, granular, medium (2-5 mm)	friable	abrupt	smooth	_	
1201.6 - 1198.6	Торзоп	ury		(Horie)	weak, granular, medium (2-3 mm)	mable	аышрс	311100111	_	
3.0 - 8.5	SC	moist	7.5YR 3/4	(none)	structureless	sli. hard	clear	smooth	_	Boulders/Few Fines
1198.6 - 1193.1	50	5150		(one)	St. detailetess	S ridi d	c.cui	330111		Source syrew rines
	_									
	-									
	-									

General Comments:









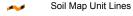
### MAP LEGEND

## Area of Interest (AOI)

Area of Interest (AOI)

### Soils

Soil Map Unit Polygons



Soil Map Unit Points

### **Special Point Features**

Blowout

Borrow Pit 

36 Clay Spot

Closed Depression

Gravel Pit

**Gravelly Spot** 

Landfill ۵

Lava Flow Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot Sandy Spot

Severely Eroded Spot 0

Sinkhole

Slide or Slip

Sodic Spot

â Stony Spot

0 Very Stony Spot

Spoil Area

Wet Spot

Other Special Line Features

### **Water Features**

Δ

Streams and Canals

### Transportation

Rails ---

Interstate Highways

**US Routes** 

Major Roads

Local Roads

### Background

Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15.800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: St. Croix County, Wisconsin Survey Area Data: Version 12, Sep 27, 2016

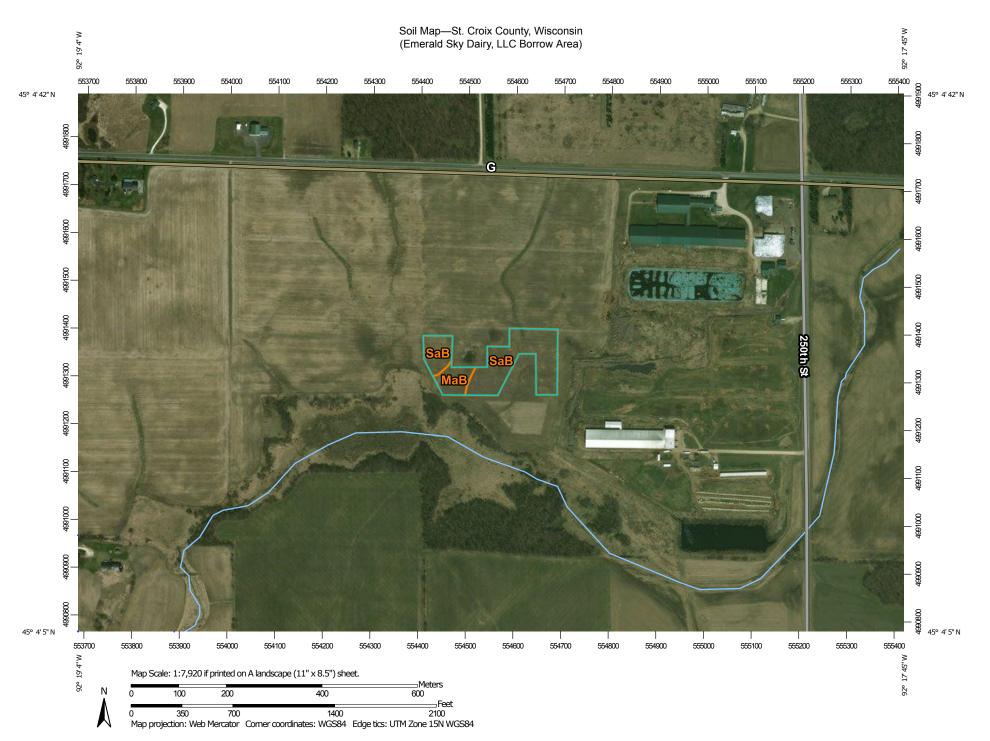
Soil map units are labeled (as space allows) for map scales 1:50.000 or larger.

Date(s) aerial images were photographed: Oct 4, 2010—Jun 6. 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## **Map Unit Legend**

St. Croix County, Wisconsin (WI109)										
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI							
FnB	Freeon silt loam, 2 to 6 percent slopes	1.0	6.4%							
МаВ	Magnor silt loam, 0 to 4 percent slopes	1.2	7.7%							
SaB	Santiago silt loam, 2 to 6 percent slopes	13.6	85.8%							
Totals for Area of Interest		15.9	100.0%							



### MAP LEGEND

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**Water Features** 

Transportation

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Background

Spoil Area

Stony Spot

Wet Spot

Other

Rails

**US Routes** 

Major Roads

Local Roads

Very Stony Spot

Special Line Features

Streams and Canals

Interstate Highways

Aerial Photography

### Area of Interest (AOI)

Area of Interest (AOI)

### Soils

Soil Map Unit Polygons



Soil Map Unit Points

### Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

... Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15.800.

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This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: St. Croix County, Wisconsin Survey Area Data: Version 12, Sep 27, 2016

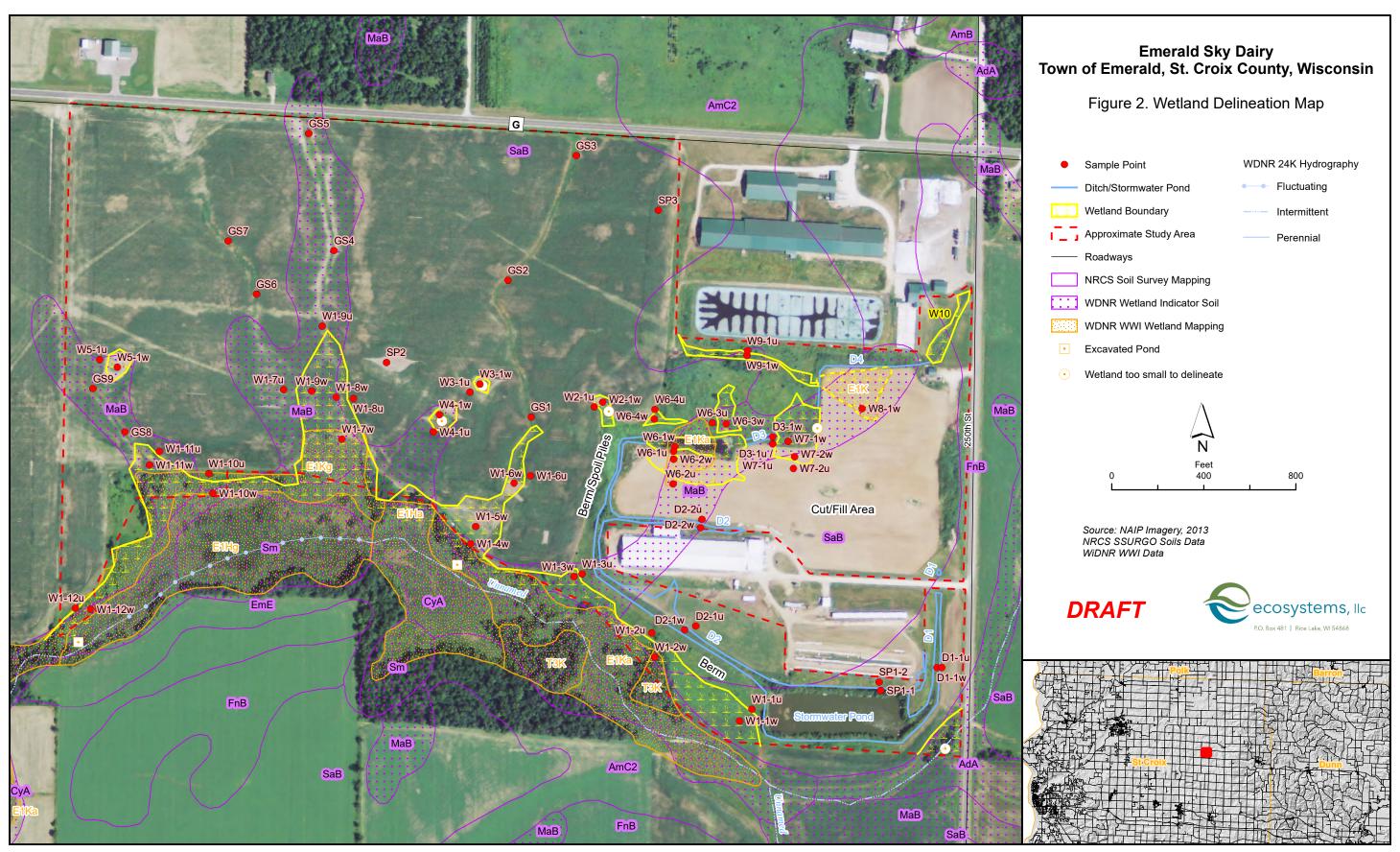
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 4, 2010—Jun 6, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# **Map Unit Legend**

St. Croix County, Wisconsin (WI109)										
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI							
МаВ	Magnor silt loam, 0 to 4 percent slopes	0.9	15.8%							
SaB	Santiago silt loam, 2 to 6 percent slopes	5.0	84.2%							
Totals for Area of Interest		5.9	100.0%							



 $6/2/2016 \quad C: \\ \label{lem:condition} C: \\ \la$