

DP-1 BORING NO.

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

COORDINATES N 226,954.5 E 19,440,113.5

4065-005 PROJECT NO.

SURFACE ELEVATION	N 1085.21	DATU	M USGS	LOGGED BY	Bernie	Harve	y.	
DRILLING CONTRAC Malcolm Pirnie DRILLING METHOD Hand Auger DRILLING STARTED 11/16/00	TOR EQUIPMENT Hand Aug		LOCATION DESCRIPTION: See attached Site Diagr					
STR SAND CLAY GRAVEL	ATA KEY SILT CLAYE SILTY S							
SAMPLE INFO Depth Lab Sampl feet Sample Type	e Blow Rec-		DESCRIPTION		USCS	Strata	REMARKS	Elevation
	B		Organic Muck.		PT	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		<u>¥</u> 1085.21
5-			SAND, some fine gravel.		SP		End of boring - 5.25' bgl	1080.96



BORING NO. DP-2 SHEET 1 OF 1

PROJECT LOCATION GSWA: Spring Hill Camp Phase III

Osceola Township, MI

COORDINATES N 226	5,996.9 E 1	PROJECT NO.	4065-005		
SURFACE ELEVATION	1085.02	DATUM	USGS	LOGGED BY	Bernie Harve

SUR	FACE EL	EVATIO	V 108	35.02	DATU	M USGS	LOGGED BY	Serine	Haive	У	
Ma DRIL Hai	LING CO Icolm P LING ME nd Aug	Pirnie THOD er	EQUIP Han e	d Auge	er	LOCATION DESCRIPTION: See attached Site Dia	gram for location.				
	LING ST/ 16/00	ARTED	11/1								
	SAND CLAY	STRA		(SILT CLAYEY	' SAND						
	GRAVEL			SILTY S							
S	AMPLE	INFO	RMATI	ON		1					Lo Lo
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %		DESCRIPTION	N	USCS	Š	REMARKS	Elevation Feet
-		 GRAE			PEAT.	Organic Muck.		PT			1085.02
5-									77 77 7 77 7		
										ä	



BORING NO.

DP-3

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III Osceola Township, MI

LOCATION PROJECT NO.

4065-005

COORDINATES N 226,966.7 E 19,439,878.0 LOGGED BY Bernie Harvey SURFACE ELEVATION 1085.14 DATUM USGS

Hand Auger DRILLING STARTED ENDE 11/16/00 11/1 STRATA KE SAND CLAY	6/00	LOCATION DESCRIPTION: See attached Site Diagram for location.				
SAMPLE INFORMAT	Poc	DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Feet Sample Type Counts GRAB 5-	PEAT.	Organic Muck.	PT	70 70 70 70 70 70 70 70 70 70 70 70 70 7		



BORING NO. DP-5 SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

PROJECT NO. 4065-005

COORDINATES N 227,162.0 E 19,439,369.4 **Bernie Harvey** LOGGED BY SURFACE ELEVATION 1081.99 DATUM USGS LOCATION DESCRIPTION:

Malcolm Pirnie DRILLING METHOD EQUIPMENT Hand Auger DRILLING STARTED 11/17/00 STRATA KEY SAND CLAY GRAVEL SILTY S	SAND			
SAMPLE INFORMATION Depth Lab Sample Blow overy Counts %	DESCRIPTION USCS	Š	REMARKS	Elevation Feet
GRAE	PEAT. Organic Muck. PT	7 77 7 7 77 7 7 77 7 7 77 7		<u>7</u> 081.99



DP-6 BORING NO.

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION PROJECT NO. Osceola Township, MI 4065-005

COORDINATES N 226,593.7 E 19,438,102.4

SURFACE FLEVATION 1021 30 DATUM LISCS

Phil Odenkirk LOGGED BY

SURFACI	E ELEV	AHON	1 100	31.30	DATU	IM USGS	LOGOLD DI	1111 00	CHRIT	X	
Malcol DRILLING Hand A DRILLING 11/21/0	Im Pirr G METH Auger G STAR	nie OD TED	EQUIP Hand ENDED 11/21	d Auge 1/00	er	LOCATION DESCRIPTION: See attached Site Diagr	am for location.				
SAN				SILT CLAYEY	' SAND						
GRA				SILTY S							
SAM	PLE IN	NFOF	MATI				i i		ta		tion
			Blow Counts	Rec- overy %		DESCRIPTION		USCS	Strata	REMARKS	Elevation Feet
-	m,	GRAB			PEAT.	Organic Muck.		PT	77 77 7 77 7 7 77 7		<u>≢</u> 081.30
									2 717 71		
										ı.	
1 I	1.1	· I	/ /	1	ı					ı	1



BORING NO.

DP-7

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

1			4 10 1100		(,					
	COORDINAT	ES N	226,659	9.9 E			PROJECT NO.				
5	SURFACE EL	EVATIO	N 108	30.94	DATU	M USGS	LOGGED BY	Phil O	denkir	k	
	MAICOIM FORILLING CO MAICOIM FORILLING ME HAND AUG DRILLING STA 11/21/00 SAND	Pirnie THOD er ARTED	EQUIP Han e	d Auge ⊃ 1/00 ′	er	LOCATION DESCRIPTI See attached Sit	te Diagram for location.				
1					/ OAND						
1.	CLAY GRAVEL			SILTY S	SAND SAND						
Γ	SAMPLE	INFO	RMATI	ON							
	epth Lab eet Sample	Sample Type	Blow Counts	Rec- overy %		DESCRIP	TION	uscs	Strata	REMARKS	Elevation
r	1			70		Organic Muck.		PT	11/11/		1080.94
		 GRAI			SAND.			SP		End of boring - 4' bgl	1079.94



BORING NO.

DP-8

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

ORDINATES	N 226,730.9	E 19,438,235.8	
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4065-005 PROJECT NO.

SURFACE ELE	EVATION	107	79.65	DATU	M USGS	LOGGED BY	Phil O	denkir	k	
DRILLING COM Malcolm P DRILLING MET Hand Auge DRILLING STA 11/21/00	irnie THOD er	EQUIP Han o	d Auge	er	LOCATION DESCR	PTION: d Site Diagram for location.				
SAND CLAY GRAVEL			SILT	' SAND AND						
SAMPLE Depth Lab feet Sample	Sample Type	Blow	Rec-		DESCF	RIPTION	USCS	Strata	REMARKS	Elevation Feet
	\vdash		70	PEAT.	Organic Muck.		PT	11, 11,		1079.65
	♥GRAB			PEAT. SAND.	Organic Muck.		SP		End of boring - 4' bgl	對 079.68
	44									

ARCADI	S Design & Consultancy for natural and bull tassets bull tassets				Borin	g No.: <u>DP-11</u>	
Soil Borin						Sheet: 1 of	1
Project Name:	White Pine Springs		_	Date Started: <u>07/06/2017</u>	_Logger: <u>K. Vo</u>		I
	04065113.0000		_ Date	e Completed: <u>07/06/2017</u>	_ Editor: K. Vo		
Project Location	: Osceola Township, MI			Weather C	onditions: <u>Sunn</u>	ı <u>y, 89</u> F	
Depth Sample (feet) Interva		PID (ppm)	USCS Class	Description		Construction Details	Well
			() S	0.0-0.5') 6" of water above surface. 0.5-1.0') CLAY, some silt, low plasticity, soft; dark gray (10YR 4/1). 1.0-1.75') SILT, some clay, low plasticity,		(-3.9-1.2') 2" PVC Schedule — 40 Well Casing	
	36			ittle fine sand; wet; very soft; dark brow Note: And Organic material. 1.75-2.5') CLAY, some silt, low to mediul lilatancy; moist; stiff; dark gray (10YR 4/	n (10YR 3/3).	(1.2-2.2') 2" PVC 10 — Slot Well	
				2.5-3.0') SAND, very fine to fine, round; rray (10YR 5/1).	well sorted; wet;	Screen (2.2-2.7') 2" PVC Schedule 40	
			E	and of boring at 3.0' below water surface	ı.	Well Casing with plug.	
4							
5							
6							
7							
TIERRARYISHL, DEL							
9							
10							
Drilling Co.:	Arcadis	1 1		Sampling Method: <u>Hand A</u>	uger	1 (
Driller:	M. Pozniak			Sampling Interval:Continu			
Drilling Method: Drilling Fluid:	Hand Auger None			Water Level Start (ft. bgs.Water Level Finish (ft. btc	•		
Remarks:	Note: Backfill around the well w	vas natura	al collaps	· —	Yes [No	
901 		<u></u>		Surface Elev.:1088.5			
				North Coor: 227104.3			
8				East Coor: 19440385.4	ļ		

ARCADIS	Design 8 Consultancy for natural and built assets					Boring	No.: <u>DP-12</u>	
Soil Boring I							haati 1 of	4
Project Name: W	hite Pine Springs		Date	Started: <u>07/07/2017</u>	_Logger:			1
Project Number: 04			Date Con	npleted: <u>07/07/2017</u>	_ Editor:			
Project Location: Os	sceola Township, MI			Weather Co	onditions:	Sunny	, 79F	
Deptil Sample	Recovery (in.) Sample ID		ISCS Class	Description			Construction Details	Well
1 - 1	39		very so Note: A	'5') SILT, non-plastic, rapid dilatan ft; black (10YR 2/1). .nd Organics, muck.			(-4.25-1.0') 2" PVC Schedule — 40 Well Casing (1.0-2.0') 2" PVC 10 Slot	
2 }			moist; (2.5-3.2	.5') SILT, trace clay, low plasticity, medium stiff; black (10YR 2/1). 25') SAND, very fine to medium, rotted; wet; gray (10YR 5/1).			Well Screen (2.0-3.0') 2" PVC Schedule 40 Well Casing with	
4			End of	boring at 3.25' bgs.			plug.	
Drilling Co.: Ar	rcadis			Sampling Method:Hand A	<u>uge</u> r			
Driller: <u>M</u> .	. Pozniak			Sampling Interval: Continu	ous			
0	and Auger			Water Level Start (ft. bgs.		ace		
,	one	o notural -	collance	Water Level Finish (ft. bto Converted to Well:	c. <u>):NA</u> Yes	Г	No No	
5)	ote: Backfill around the well wa gs = below ground surface	is Hatural C	collapse.	Surface Elev.: 1084.5	103] 140	
	,			North Coor: 226963.7				
900				East Coor: 19439958.3				

ARCADI	S Design & Consultancy for natural and built assets					Boring	J No.: <u>DP-14</u>		
Soil Borin	g Log						Sheet: 1 of	1	
Project Name:	White Pine Sp				Date Started: 07/06/2017	_Logger: <u>K. Vo</u>	et		
Project Number: Project Location				_ Da _	te Completed: <u>07/06/2017</u> Weather Co	_ Editor: <u>K. Vo</u> onditions: <u>Sunn</u>			
Depth Sample (feet) Interva		Sample ID	PID (ppm)	USCS Class	Description		Construction Details	Well	
1	48				(0.0-4.0') SILT, low plasticity, rapid dilatar soft; black (10YR 2/1). Note: Some organics, muck. Note: Moist to wet from 1.75-2.5' bgs. Note: Change in color to very dark brown bgs; wet. Note: Wood from 2.75-3.25' bgs. Note: Auger refusal at 4.0' bgs due to wo End of boring at 4.0' bgs.	(10YR 2/2) at 2.5'	(-3.7-1.4') 2" PVC Schedule — 40 Well Casing (1.4-3.4') 2" PVC 10 — Slot Well Screen (3.4-3.8') 2" PVC Schedule 40 Well Casing with plug.		
Drilling Co.:	Arcadis				Sampling Method <u>:Hand A</u>	uner			
Driller:	M. Pozniak				Sampling Interval <u>:Continu</u>	-			
Drilling Method:	Hand Auger				Water Level Start (ft. bgs.): 2.5' bgs			
Drilling Fluid:	None				` —	Water Level Finish (ft. btoc.):NA			
Remarks:		around the well wa	s natur	al collar		Yes	No		
	pgs = below g	round surface			Surface Elev. <u>:1085.0</u> North Coor: 226357.4				
					East Coor: 19442009.4				
					<u> </u>				

ARCADI	S Design & Consultancy for natural and built assets			Boring N	No.: <u>DP-15</u>	
Soil Boring				CI	heet: 1 of	1
Project Name:	White Pine Springs		Date Started: <u>07/06/2017</u>	Logger: <u>K. Voet</u>	t i or	I
1 '	04065113.0000		e Completed: <u>07/06/2017</u>	_ Editor: <u>K. Voet</u>		
Project Location	: Osceola Township, MI		Weather Co	onditions: <u>Sunny,</u>	89F	
Depth Sample (feet) Interval		PID USCS (ppm) Class	Description		Construction Details	Well
2	60		(0.0-1.5') SILT, trace clay, low plasticity, ravery soft; black (10YR 2/1). Note: Muck, organics. (1.5-3.0') SILT, non-plastic to low plasticity trace fine sand; moist; very soft; very dark 2/2). Note: Trace wood. (3.0-5.0') SILT, non-plastic, rapid dilatancy very dark brown (10YR 2/2). Note: Large wood pieces at ~4.5' bgs. Note: At 5.0' bgs, Sand, very fine to mediuround to subround; poorly sorted; wet; gr (10YR 5/2). End of boring at 5.0' bgs.	y, rapid dilatancy; k brown (10YR ;; moist; very soft;	(-1.38-2.0') 2" PVC Schedule — 40 Well Casing (2.0-4.0') 2" PVC 10 Slot Well Screen (4.0-5.0') 2" PVC Schedule 40 Well Casing with plug.	
Drilling Co.:	Arcadis		Sampling Method <u>:Hand Au</u>	 uger		
Driller:	M. Pozniak		Sampling Interval: Continue	-		
Drilling Method:	Hand Auger		Water Level Start (ft. bgs.)	: At surface		
Drilling Fluid:	None		Water Level Finish (ft. btoo		NI-	
Remarks:	Note: Backfill around the well wa	as natural collap		Yes	No	
	bgs = below ground surface		Surface Elev.:1093.1			
			North Coor: 226784.6			
б <u></u>			East Coor: 19442911.0			

ARCADIS Design & Consistancy for ristural and trases				Borinç	g No.:_DP-16	
Soil Boring Log					Sheet: 1 of	4
Project Name: White Pine Springs		Date	Started: <u>07/06/2017</u>	_Logger: <u>K. Vo</u>		1
Project Number: <u>04065113.0000</u>		Date Co	mpleted: <u>07/06/2017</u>	_ Editor: K. Vo		
Project Location: Osceola Township,	MI	_	Weather Co	onditions: <u>Sunn</u>	ıy, 89F	
Depth Sample (feet) Interval Counts Recovery (in.)	Sample ID PID (ppm)	USCS Class	Description		Construction Details	Well
1 1 2 3		sand, Note: (0.25-(sorted Note: (0.5-2. subrou Note: (2.0-2. fine to	25') SILT, low plasticity, rapid dilata well sorted; wet; very soft; black (1 Muck. 0.5') SAND, fine to medium, round to the common of the co	over 2/1). o subround; well round to y (10YR 3/1). r; some sand, very R 4/1).	(-2.8-1.3') 2" PVC Schedule — 40 Well Casing (1.3-2.3') 2" PVC 10 Slot Well Screen (2.3-2.8') 2" PVC Schedule 40	
4		End of	boring at 3.0' bgs.		Well Casing with plug.	
Drilling Co.: Arcadis	11		Sampling Method: <u>Hand A</u>	uger		
Driller: <u>M. Pozniak</u>			Sampling Interval: Continu	ous		
Drilling Method: Hand Auger			Water Level Start (ft. bgs.			
Drilling Fluid: <u>None</u> Remarks: <u>Note: Backfill aroun</u>	d the well was natur	al collance	Water Level Finish (ft. bto Converted to Well:	c. <u>):NA </u>	No	
bgs = below ground		<u>ai collapse.</u>	Surface Elev.:1100.9			
			North Coor: 227177.2			
			East Coor: 19443086.8			

ARCADI	S Consistancy for natural and lobit tassets			Boring	No.: <u>DP-17</u>	
Soil Boring					Sheet: 1 of	1
Project Name:	White Pine Springs		Date Started: <u>07/07/2017</u>	Logger: K. Vo		
	04065113.0000	Dat	e Completed: <u>07/07/2017</u>	Editor: <u>K. Vo</u>		
Project Location	: Osceola Township, MI		Weather C	onditions: <u>Sunn</u> y	y, 79F	
Depth Sample (feet) Interval		PID USCS (ppm) Class	Description		Construction Details	Well
	38.4		(0.0-2.25') SILT, low plasticity, rapid dilat soft; black (10YR 2/1). Note: Muck. Medium stiff from 2.0-2.25'	bgs.	(-3.5-0.92') 2" PVC Schedule 40 Well Casing (0.92-1.92') 2" PVC 10 Slot Well Screen (1.92-2.92')	
3			(2.25-3.2') SAND, very fine to medium, ro trace granules, subround to subangular; brown (10YR 5/3).	und to subround; well sorted; wet;	2" PVC Schedule 40 Well Casing with	
4 5 6 7 6 7 8 9 10			End of boring at 3.2' bgs.		plug.	
Drilling Co.:	Arcadis M. Dozniek		Sampling Method: Hand A	-		
Driller: Drilling Method:	M. Pozniak Hand Auger		Sampling Interval <u>:Continu</u> Water Level Start (ft. bgs.			
Drilling Fluid:	None		Water Level Finish (ft. btd.			
Remarks:	Note: Backfill around the well wa	as natural collap	se. Converted to Well: 🗵	Yes	No	
	bgs = below ground surface		Surface Elev.:1076.8			
			North Coor: 226690.9	<u> </u>		
б <u>Г</u>			East Coor: 19439658.2	<u>·</u>		

ARCADI	S Design & Connuttancy to restural and built assets					Boring	No.: <u>DP-18</u>	
Soil Boring						C	·	4
Project Name:	White Pine Springs		Date	Started: <u>07/06/2017</u>	_Logger:			1
	04065113.0000		Date Con	npleted: <u>07/06/2017</u>	_ Editor:			
Project Location:	: Osceola Township, MI			Weather Co	onditions:	Sunny	, 89F	
Depth Sample (feet) Interval	Blow Recovery Counts Sample ID		JSCS Class	Description			Construction Details	Well
1	48		(10YR 2 Note: T	race organics, muck. 5') SAND, very fine to fine, round to li sorted; wet; dark grayish brown race organics. Trace granules, subround to suban	o subround; (10YR 4/2). gular from 1 y; trace very YR 2/1).	little .5 to fine	(-3.3-1.75') 2" PVC Schedule 40 Well Casing (1.75-3.75') 2" PVC 10 Slot Well Screen (3.75-3.9') 2" PVC Schedule 40 Well Casing with plug.	
Drilling Co.:	Arcadis			Sampling Method:Hand A	uger	l .	•	
Driller:	M. Pozniak			Sampling Interval: Continu	ous			
Drilling Method:	Hand Auger			Water Level Start (ft. bgs.	_	S		
Drilling Fluid:	Note: Backfill around the well wo	se natural a	collance	Water Level Finish (ft. bto Converted to Well:	c. <u>):NA </u>		No	
Remarks:	Note: Backfill around the well wabgs = below ground surface	is natural (collapse.	Surface Elev.:1075.5	169		INU	
NAME OF THE PROPERTY OF THE PR	Days - Delow Glound Sullace			North Coor: 226768.1				
<u> </u>				East Coor: 19440696.5				

ARCADIS	Design & Consultancy to returned and built sockets			Boring	No.: <u>DP-19</u>	
Soil Boring					2h4. 4 -£	4
Project Name: <u>V</u>	White Pine Springs		Date Started: 07/07/2017	Logger: K. Voe		1
Project Number: 0		Dat	te Completed: <u>07/07/2017</u>	Editor: <u>K. Voe</u>		
Project Location: <u>C</u>	Osceola Township, MI		Weather Co	onditions: <u>Sunn</u> y	/, 79F	
Deptii Sample	Blow ounts Recovery (in.) Sample ID	PID USCS (ppm) Class	Description		Construction Details	Well
1 1 2 3 3 4 5 6 7 6 9	38.4		(2.5-2.8') SILT, non-plastic, rapid dilatance black (10YR 2/1). Note: Little organics, wood pieces, and round in the content of the content	cy; moist; soft;	(-3.79-1.5') 2" PVC Schedule — 40 Well Casing (1.5-2.5') 2" PVC 10 Slot Well Screen (2.5-3.04') 2" PVC Schedule 40 Well Casing with plug.	
10						
<u> </u>	Arcadis		Sampling Method: Hand A	-		
∢	M. Pozniak Hand Auger		Sampling Interval <u>:Continu</u> Water Level Start (ft. bgs.			
20	nand Auger None		Water Level Start (it. bgs Water Level Finish (ft. bto			
2	Note: Backfill around the well wa	s natural collap	` —	Yes	No	
9	ogs = below ground surface		Surface Elev. <u>:1085.0</u>			
			North Coor: 227847.5			
			East Coor: 19439209.5	<u>;</u>		

ARCADIS	Design & Consultancy for natural and built assets					Boring	No.: <u>DP-20</u>	
Soil Boring						,	Sheet: 1 of	1
Project Name: W	hite Pine Spi	-		_	Date Started: <u>07/07/2017</u>	_Logger: <u>K. Vo</u>		'
Project Number: 04				_ Dat	e Completed: <u>07/07/2017</u>	_ Editor: <u>K. Vo</u>		
Project Location: Os		ship, MI		_	Weather Co	onditions: <u>Sunn</u>	y, 79F	
Depth Sample (feet) Interval	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description		Construction Details	Well
- - - - - - - - -					(0.0-1.33') SILT, non-plastic, rapid dilatan subround; wet; soft; black (10YR 2/1). Note: Muck. Root at 2.0' bgs.	cy; little fine sand,	(-3.75-1.5') 2" PVC Schedule — 40 Well Casing	
	36				(1.33-3.0') SAND, very fine to medium, ro trace to little coarse sand, subround; wel yellowish brown (10YR 6/4). Note: Some coarse sand from 2.5-3.0' bg	l sorted; wet; light	(1.5-2.5') 2" PVC 10 Slot Well Screen (2.5-3.0')	
, [2" PVC	
4					End of boring at 3.0' bgs.		Schedule / 40 Well Casing with plug.	1 1
5								
ь								
7								
8								
10 Drilling Co.: Ar	cadis				Sampling Method <u>:Hand A</u>	uger		
o I	Pozniak				Sampling Interval <u>:Continu</u>	-		
Drilling Method: <u>Ha</u>	and Auger				Water Level Start (ft. bgs.): At surface		
,	one			,	Water Level Finish (ft. bto		□ No	
5		around the well wa ound surface	s natur	ai collap	se. Converted to Well: ⊠ Surface Elev.:1089.9	Yes	No	
DC	<u>- neiow âi</u>				North Coor: 228767.1			
					East Coor: 19438986.2			



DRILLING CONTRACTOR

1500 Abbott Road, Suite 210 East Lansing, MI 48823

Telephone: (517) 337-0111 Fax: (517) 337-0417 BORING NO. Seep 1

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

COORDINATES **N 226,960.6 E 19,440,873.6**SURFACE ELEVATION **1088.04**DATUM **USGS**PROJECT NO. **4065-005**LOGGED BY **Jeff Groncki**

LOCATION DESCRIPTION:

DRIL Hai DRIL	LING ME nd Augo LING STA 7/00	THO er	DC	EQUIP Hand ENDED 6/27/	d Auge	er			Se	e attach	ed Site	Diagrai	n for lo	eation.								
	SAND	5	STRA	TA KEY	SILT																	
_	CLAY				CLAYEY	SAND																
77	GRAVEL			_	SILTY S																	
S	AMPLE	IN	IFOF	RMATI	ON		_															c
Depth feet	Lab Sample			Blow Counts	Rec- overy %				C	ESC	RIPT	ION				uscs	Strata		REM	ARK	S	Elevation Feet
		П				PEAT										PT	71 71					1088.04
-		3	GRAB			Medium Gravel,	m to , tra	o fine i	SAND	o, with some	some o irse Gr	coarse avel.	Sand	and fir	ne	SP						1087.04
5-		H																End	of bori	ng - 5'	bgl	1083.04
					1																	
	t.																					
																			2		•	



BORING NO. Seep 2

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

COORDINATES N 226,953.5 E 19,440,521.3

PROJECT NO.

4065-005

001	31(1)11(1)			,		, , .	21.0	AND THE RESIDENCE OF THE PARTY				
SUR	FACE ELE	ΞV	OITA	108	33.04	DATU	M USGS	LOGGED BY	Jeff Gr	oncki		
Ma DRIL Ha DRIL	LING COI Icolm P LING ME nd Augo LING STA	ir ⊺⊢ er	nie HOD	EQUIP Hand ENDEI	d Auge	er	LOCATION DESCRIPTION: See attached Site Diagram	m for location.				
6/2	7/00			6/27/								
	SAND		STRA	TA KEY	r SILT							
	CLAY			- (CLAYEY	SAND						
	GRAVEL				SILTY S	AND						
S	AMPLE	11	NFOF	RMATI	ON					_		5
Depth feet	Lab Sample		ample Type	Blow Counts	Rec- overy %		DESCRIPTION		USCS	Strata	REMARKS	Elevation Feet
_		Γ				PEAT			PT	11/11/		1083.04
-		m	GRAE			Medium	n to fine SAND, with some coarse Gravel.	Sand and fine to	SP			1082.04
_		L				Light br	own, CLAY, stiff.		CL		Sand layer continued to collapse in well.	1080.04
											Could only get well ~3.3' bgl. End of boring - 4' bgl	1079.04



DRILLING CONTRACTOR

1500 Abbott Road, Suite 210 East Lansing, MI 48823 Telephone: (517) 337-0111 Fax: (517) 337-0417

BORING NO. Seep 3 SHEET 1 OF 1

PROJECT LOCATION GSWA: Spring Hill Camp Phase III

Osceola Township, MI

4065-005 PROJECT NO. COORDINATES N 226,882.5 E 19,440,425.1 Jeff Groncki LOGGED BY SURFACE ELEVATION 1083.73 DATUM USGS

LOCATION DESCRIPTION:

DRIL Har DRIL	Icolm P LING MET Ind Auge LING STA 7/00	HOD er		d Auge	er	See attached Site Diagram for location.				
[27]		STR	ATA KEY							
	SAND			SILT						
_	CLAY			CLAYEY						
27	GRAVEL			SILTY S	AND					
S	AMPLE	INFO	RMATI	ON						uo .
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %		DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
			1		Black, F		PT	41 41		1083.73
-		 GRA			Medium coarsen	SAND, with coarse Gravel, trace fine Gravel, is to coarse Sand toward 4'.	SP		Sediment continued to collapse.	1082.73
								3/2/2/2	End of boring - 4' bgl	1079.73



BORING NO. Seep 4

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

COORDINATE	ES N 2	26,957	7.5 E '	19,440,7	22.3	PROJECT NO.	4065-0			
SURFACE ELE			35.18		M USGS	LOGGED BY	Joel He	enry		
DRILLING CON Malcolm Pi DRILLING MET Hand Auge DRILLING STA 6/27/00	irnie THOD er	EQUIP Han d	d Auge	er	LOCATION DESCRIPTION: See attached Site Diagran	n for location.				
SAND CLAY GRAVEL	LAY CLAYEY SAND RAVEL SILTY SAND									
SAMPLE	INFOF	RMATI	ON			SP SSECTION				- E
Depth Lab feet Sample	Sample Type	Blow Counts	Rec- overy %		DESCRIPTION		USCS	Strata	REMARKS	Elevation Feet
				PEAT. Medium	CAND	T. Munic	PT	<u> </u>		1085.18
	®GRAB						SP		End of boring - 4' bgl	1084.18



COORDINATES N 226,640.0 E 19,441,943.2

1500 Abbott Road, Suite 210 East Lansing, MI 48823 Telephone: (517) 337-0111 Fax: (517) 337-0417

Seep 5 BORING NO.

PROJECT

GSWA: Spring Hill Camp Phase III

SHEET 1 OF 1

Osceola Township, MI LOCATION

PROJECT NO. 4065-005

Mike Brennan LOGGED BY SURFACE ELEVATION 1092.25 DATUM USGS

DRILLING CONTRACTOR Malcolm Pirnie DRILLING METHOD EQUIPMENT Hand Auger Hand Aug DRILLING STARTED ENDED 7/21/00 STRATA KEY SAND SILT CLAY GRAVEL SILTY S	SAND				
SAMPLE INFORMATION Depth Lab Sample Blow overy Counts %	DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
5- 	Dark black, SILT, trace Clay, trace very fine Sand, root debris. Light brown to tan, medium to coarse SAND, some very coarse Sand, some fine Gravel, MOIST. Light brown to tan, medium to very coarse SAND, some fine to coarse Gravel, trace Silt, MOIST. Light brown to tan, medium to coarse SAND, trace very coarse Sand to fine Gravel, trace Silt, MOIST. Light brown to tan, fine to medium SAND, with trace Silt and coarse Sand, SATURATED.	SP SP SP SP		End of boring - 6' bgl	1092.25 1091.75 1091.15 1090.95 1089.45 1086.25



Seep 6 BORING NO. PROJECT

GSWA: Spring Hill Camp Phase III

SHEET 1 OF 1

Osceola Township, MI LOCATION

COORDINATES N 229,199.4 E 19,439,146.3

PROJECT NO. 4065-005

SURFACE ELEVATION	1106.62	DATU	м USGS		Mike Brenn	an	
Hand Auger	OR EQUIPMENT Hand Auge ENDED 7/21/00	ər	See attached S	TION: Site Diagram for location.			
STRATE SAND CLAY GRAVEL	TA KEY SILT CLAYEY SILTY S					,	
SAMPLE INFOR Depth Lab Sample feet Sample Type	Pac-		DESCRI	PTION	Strata	REMARKS	Elevation Feet
5		Brown to debris, the Black, findebris. Dark blate wood, Mark blate woods but the blate	trace Clay, MOIST. ine to very fine, SAND, a ack, SILT, trace Clay, ro MOIST. own to tan, fine to very f Sand. own, SAND, some Graver). and Gravel, with Cobble	s SAND, and Silt, some root and Silt, some Clay and root of debris, and decomposed fine, SAND, trace Silt and rel/cobbles (1/8 to 1/4" es (1/8 to 1/4" diameter). The coarse Sand, cobbles.	SM SM ML SP SP SP SP SP	Dave Amish took over logging boring at 2'bgl. End of boring - 5' bgl	1106.62 1106.37 1105.87 1105.42 1104.92 1104.62 1103.62 1101.62



BORING NO. SW1-DP SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

PROJECT NO.

4065-005

CO	JRUINAT	ES N 2	20,87	3.2 E	19,438,9	910.9	. 1100201 110.				
SUR	FACE ELE	EVATIO	N 109	90.01	DATU	M USGS	LOGGED BY	Larry .	lordan		
Ma DRIL Ha	LING COI Icolm P LING ME	irnie THOD er	EQUIP Han e	d Auge	er	LOCATION DESCR	PTION: ed Site Diagram for location.				
	LING STA 30/00	ARTED	10/3								
	SAND	STRA	TA KEY	SILT							
-	CLAY			CLAYEY	VI. VI. 1. VI. 1. VI. VI. VI. VI. VI. VI. VI. VI. VI. VI						
2	GRAVEL			SILTY S	AND			_			
S	AMPLE	INFO	RMATI	ON					o l		t ion
Depth feet		Sample Type	Blow Counts	Rec- overy %			RIPTION	USCS	Strata	REMARKS	Elevation Feet
-		® GRAE			Light browell gra		AND, some gravel, trace silt,	sw		End of boring - 3.5' bgl	1090.01
									A		
								12			
	1										



COORDINATES N 227,883.0 E 19,439,154.7

1500 Abbott Road, Suite 210 East Lansing, MI 48823 Telephone: (517) 337-0111 Fax: (517) 337-0417

BORING NO. SW2-DP SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

PROJECT NO.

Osceola Township, MI

4065-005

SURFACE ELEVATION 1083.73	DATUN	n USGS	LOGGED BY	Bernie	Harve	ey	
DRILLING CONTRACTOR Malcolm Pirnie DRILLING METHOD EQUIPMENT Hand Auger DRILLING STARTED ENDED 12/7/00 12/7/00		LOCATION DESCRIPT See attached S	ION: ite Diagram for location.				
STRATA KEY SAND SILT CLAY CLAYEYS GRAVEL SILTY SA							
SAMPLE INFORMATION Depth Lab Sample Blow overy feet Sample Type Counts %		DESCRIP	TION	USCS	Strata	REMARKS	Elevation

S	AMPLE	INFO	RMATI	ON		I								Ē
epth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %			DESC	RIPTION		uscs	Strata	REMA	ARKS	Elevation
		 GRAE			Peat.					PT	<u>v vv v</u>			1083.



SW3-DP BORING NO.

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

	COORDINATES	N	226	473.4	4 E	19	,439	,149.	6
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SURFACE ELEVATION 1076.51 DATUM USGS

4065-005 PROJECT NO. **Bobbi McClead** LOGGED BY

		_						-			
Ma DRIL Hai DRIL	LING COI Icolm P LING ME nd Augo LING STA 2/00	irr TH er	nie OD TED	EQUIF Hand ENDEI	d Auge D /00	er	LOCATION DESCRIPTION: See attached Site Diagram for location.				
	SAND	;	STRA	TA KEY							
	CLAY				CLAYEY	SAND					
	GRAVEL				SILTY S						
S	AMPLE	IN	IFOF	RMATI	ON						<u></u>
Depth feet	Lab Sample		0.20	Blow Counts	Rec- overy %		DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
-		3	GRAB			Dark bro organic	own to black, fine to medium SAND, with some matter.	SP		End of boring - 4.5'	1076.51
									Marine de Marine		
						ī.					
I	i .				1	ı		1		I	ı



COORDINATES N 226,600.3 E 19,440,402.4

1500 Abbott Road, Suite 210 East Lansing, MI 48823 Telephone: (517) 337-0111 Fax: (517) 337-0417

SW5-DP BORING NO.

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

4065-005 PROJECT NO.

SURFACE EL	EVATIO	N 10	74.81	DATUN	M USGS	LOGGED BY	Larry J	lordan		
DRILLING CO Malcolm F DRILLING ME Hand Aug DRILLING ST 10/30/00	Pirnie ETHOD Jer	EQUIP Han e		er	LOCATION DESCRIPTION: See attached Site Diagra	m for location.				
EN CAND	STRA	TA KEY								
SAND CLAY			SILT CLAYEY	(SAND						
GRAVEL			SILTY S							
SAMPLE		RMATI	ON							
Depth Lab feet Sample	Sample Type	Blow Counts	Rec- overy %		DESCRIPTION		uscs	Strata	REMARKS	Elevation Feet
-	% GRAE			PEAT			PT	7 77 77 77 77 7 77 7 77 77	bgl	1074.81
									4	
		70								



BORING NO. SW6-DP SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

COORDINATES N 226,584.8 E 19,439,926.8

4065-005 PROJECT NO. LOGGED BY Larry Jordan

SUR	FACE ELE	V	MOITA	v 107	4.19	DATU	M USGS	LOGGED BY	Larry C	ordan		
Ma	LING COI	irı	nie				LOCATION DESCRIPTION	N:				
Ha DRIL	LING MET nd Auge LING STA 30/00	er			d Auge	er	See attached Site I	Diagram for location.				
	SAND CLAY GRAVEL		STRA									
S	AMPLE	۱N	NFOF	RMATI	ON							LC.
Depth feet				Blow Counts	Rec- overy %		DESCRIPTI	ON	USCS	Strata	REMARKS	Elevation Feet
-		un.	GRAB			PEAT, v	with wood and roots.		PT	7 77 7		1074.19
-			SIVAL			Light bro	rown, SAND, trace fine grave	el. Occasional silty Clay	SP		End of boring - 3.5' bgl	1072.19
					n.							
			8									



DRILLING CONTRACTOR

1500 Abbott Road, Suite 210 East Lansing, MI 48823

Telephone: (517) 337-0111 Fax: (517) 337-0417

SW7-DP BORING NO.

1 OF 1 SHEET

PROJECT LOCATION

Osceola Township, MI

GSWA: Spring Hill Camp Phase III

PROJECT NO.

4065-005

COORDINATES N 226,219.0 E 19,439,778.9 Mike Brennan LOGGED BY SURFACE ELEVATION 1073.18 DATUM USGS

LOCATION DESCRIPTION:

Malcolm Pirnie DRILLING METHOD EQUIPMENT Hand Auger Hand Auger DRILLING STARTED ENDED 1/15/01 1/15/01	See attached Site Diagram for location.				
STRATA KEY					
SAND SILT CLAYEY SAND					
CLAYEY SAND GRAVEL SILTY SAND					
SAMPLE INFORMATION					Т
Depth Lab Sample Blow Rec- feet Sample Type Counts	DESCRIPTION	uscs	Strata	REMARKS	Elevation Feet
GRAB Black, 1 GRAB Organic GRAB medium Black, 1 Black, 1 Black, 1 Black, 1 Black, 1	Mood Debris and organic rich Silty SAND. ine to medium SAND and SILT, little to some c Matter (roots and wood), trace to little fine to n Gravel. medium to coarse SAND and SILT, some fine Sand. ine to medium SAND, little to some Silt, little coarse race fine Gravel.	SM SM SM SM			1073.18 1072.98 1072.18 1071.68



BORING NO.

SW8-DP

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

COORDINATES N 226,523.5 E 19,442,326.0

PROJECT NO. 4065-005

SURFACE ELEVATION	1081.09	DATU	M USGS	LOGGED BY	Phil O	denkir	k	
Hand Auger DRILLING STARTED 11/21/00	EQUIPMENT Hand Auge		LOCATION DESCRIPTION: See attached Site Diagram	m for location.				
GRAVEL	SILTY S	AND				2		
SAMPLE INFORD Depth Lab Sample Type	Rec-		DESCRIPTION		USCS	Strata	REMARKS	Elevation Feet
- ®GRAE			Organic Muck.		PT	70 77 77 77 77 77 77 77 77 77 77 77 77 7	Ü	1081.09



SW11-DP BORING NO.

SHEET 1 OF 1 GSWA: Spring Hill Camp Phase III

PROJECT LOCATION

LOGGED BY

Osceola Township, MI

Bernie Harvey

COORDINATES	N 228,756.2	2 E 19,437,419.5
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SURFACE ELEVATION 1101.86 DATUM USGS

4065-005 PROJECT NO.

DRILLING CONTRAC Malcolm Pirne	TOR	LOCATION DESCRIPTION:
DRILLING METHOD Hand Auger	EQUIPMENT Hand Auguer	See attached Site Diagram for location.
DRILLING STARTED 2/7/01	2/7/01	
STR	ATA KEY	
SAND	SILT	
CLAY	CLAYEY SAND	
GRAVEL	SILTY SAND	

67	GRAVEL			SILTY S	AND					
S	AMPLE	Γ	Т	ON Rec-		DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet		Sampl Type	e Blow Counts	avan.		DESCRIPTION			REWARKS	
75 75		 GRA	В		PEAT			7 77 7 77 77		1101.8
-								<u> </u>		
					i					
		£								
	525									
		П	1							



DRILLING CONTRACTOR Malcolm Pirnie

COORDINATES N 226,877.4 E 19,440,716.4

1500 Abbott Road, Suite 210 East Lansing, MI 48823 Telephone: (517) 337-0111 Fax: (517) 337-0417

BORING NO. SW-14-DP SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

PROJECT NO.

4065-005

LOGGED BY Mike Brennan SURFACE ELEVATION 1076.97 DATUM USGS LOCATION DESCRIPTION:

DRILLING METHOD Hand Auger DRILLING STARTED 5/31/01 EQUIPMENT Hand Auger ENDED 5/31/01			d Auge	er	See attached Site Diagram for location.						
STRATA KEY SAND SILT CLAY CLAYEY SAND GRAVEL SILTY SAND											
S	AMPLE	INFO	RMATI	ON							
Depth feet	1200	Sample Type	Blow Counts	Rec- overy %		DESCRIPTION	US	scs	Strata	REMARKS	Elevation Feet
_		П			Black, s	y sand and PEAT, wet.		OL	11, 11,		1076.97
-					Brown t	vn, fine to medium SAND, trace root debris. gray, silt, few clay and fine to medium SAND, al lenses to beds of woody peat material.	soft,	SP SM			1076.22 1074.97
5-		Н_			Brown, lenses	ne to mdium SAND, some peat, few fine grave silt and clay.	el, S	SM			1071.97



COORDINATES N 226,746.6 E 19,440,753.5

1500 Abbott Road, Suite 210 East Lansing, MI 48823 Telephone: (517) 337-0111 Fax: (517) 337-0417

SW15-DP BORING NO.

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

4065-005 NO.

SURFACE ELEVATION	1075.66	DATUM	USGS	LOGGED BY	Mike Brenna

DRILLING CONTRACTOR Malcolm Pirnie DRILLING METHOD EQUIPMENT Hand Auger Hand Auger DRILLING STARTED ENDED 5/31/01 5/31/01 STRATA KEY SAND SILT CLAY CLAYEY SAND GRAVEL SILTY SAND					Y SAND	LOCATION DESCRIPTION: See attached Site Diagram for location	п.				T
SAMPLE INFORMATION Depth Lab Sample Blow covery Counts %		DESCRIPTION		USCS	Strata	REMARKS	Elevation				
	5-				Light br	PEAT to silty sand, root debris, wetown, fine to medium SAND, wet.		OL SP SP SM		Void, no sample. End of boring - 8 ft	1075 <u>.66</u> 1074.91 1073.66 1072.66



DRILLING CONTRACTOR

1500 Abbott Road, Suite 210 East Lansing, MI 48823

Telephone: (517) 337-0111 Fax: (517) 337-0417

Vent 1 BORING NO.

SHEET 1 OF 1

PROJECT

GSWA: Spring Hill Camp Phase III

LOCATION

Osceola Township, MI

COORDINATES N 226,920.3 E 19,441,122.1

PROJECT NO.

4065-005

Jeff Groncki LOGGED BY SURFACE ELEVATION 1090.40 DATUM USGS LOCATION DESCRIPTION:

Malcolm Pirnie DRILLING METHOD EQUIPMEN Hand Auger Hand Au DRILLING STARTED ENDED 6/27/00 6/27/00		See attached Site Diagram for location.				
STRATA KEY						
SAND SILT	Y SAND					
2000	SAND					
SAMPLE INFORMATION	T					
Depth Lab Sample Blow ove feet Sample Type Counts %	1	DESCRIPTION	uscs	Strata	REMARKS	Elevation Feet
					End of boring - 4.07' bgl	1090.40