



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

BORING NO. **DP-1** SHEET **1 OF 1**
 PROJECT **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Bernie Harvey**

COORDINATES **N 226,954.5 E 19,440,113.5**

SURFACE ELEVATION **1085.21** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
 DRILLING STARTED **11/16/00** ENDED **11/16/00**

LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

- SAND SILT
- CLAY CLAYEY SAND
- GRAVEL SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec-covery %					
5		GRAB			PEAT. Organic Muck.	PT			1085.21
					Coarse SAND, some fine gravel.	SP		End of boring - 5.25' bgl	1080.96

MALCOLM PIRNIE

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

BORING NO. **DP-2** SHEET **1 OF 1**
 PROJECT **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Bernie Harvey**

COORDINATES **N 226,996.9 E 19,439,990.1**







SURFACE ELEVATION **1085.02** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD EQUIPMENT
Hand Auger Hand Auger
 DRILLING STARTED ENDED
11/16/00 11/16/00


LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

-  SAND  SILT
-  CLAY  CLAYEY SAND
-  GRAVEL  SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Recovery %					
5		GRAB			PEAT. Organic Muck.	PT		End of boring - 5.25' bgl	1085.02

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East Lansing, MI 48823
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Fax: (517) 337-0417

BORING NO. **DP-3** SHEET **1 OF 1**
PROJECT **GSWA: Spring Hill Camp Phase III**
LOCATION **Osceola Township, MI**
PROJECT NO. **4065-005**
LOGGED BY **Bernie Harvey**

COORDINATES **N 226,966.7 E 19,439,878.0**







SURFACE ELEVATION **1085.14** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **11/16/00** ENDED **11/16/00**


LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

-  SAND
-  SILT
-  CLAY
-  CLAYEY SAND
-  GRAVEL
-  SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
5		GRAB			PEAT. Organic Muck.	PT		End of boring - 5.4' bgl	1085.14

MALCOLM PIRNIE

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East Lansing, MI 48823
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BORING NO. **DP-5** SHEET **1** OF **1**
PROJECT **GSWA: Spring Hill Camp Phase III**
LOCATION **Osceola Township, MI**
PROJECT NO. **4065-005**
LOGGED BY **Bernie Harvey**

COORDINATES **N 227,162.0 E 19,439,369.4**







SURFACE ELEVATION **1081.99** DATUM **USGS**


DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **11/17/00** ENDED **11/17/00**

LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

-  SAND  SILT
-  CLAY  CLAYEY SAND
-  GRAVEL  SILTY SAND

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
-		GRAB			PEAT. Organic Muck.	PT		End of boring - 4.6' bgl	1081.99

MALCOLM PIRNIE

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

BORING NO. **DP-6** SHEET **1 OF 1**
PROJECT **GSWA: Spring Hill Camp Phase III**
LOCATION **Osceola Township, MI**
PROJECT NO. **4065-005**
LOGGED BY **Phil Odenkirk**

COORDINATES **N 226,593.7 E 19,438,102.4**







SURFACE ELEVATION **1081.30** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **11/21/00** ENDED **11/21/00**


LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

-  SAND  SILT
-  CLAY  CLAYEY SAND
-  GRAVEL  SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
		GRAB			PEAT. Organic Muck.	PT		End of boring - 4' bgl	1081.30



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BORING NO. **DP-7** SHEET **1 OF 1**
 PROJECT **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Phil Odenkirk**

COORDINATES **N 226,659.9 E 19,438,111.4**

SURFACE ELEVATION **1080.94** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
 DRILLING STARTED **11/21/00** ENDED **11/21/00**

LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

- SAND SILT
- CLAY CLAYEY SAND
- GRAVEL SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
					PEAT. Organic Muck.	PT			1080.94
		GRAB			SAND.	SP		End of boring - 4' bgl	1079.94

MALCOLM PIRNIE

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

BORING NO. **DP-8** SHEET **1 OF 1**
PROJECT **GSWA: Spring Hill Camp Phase III**
LOCATION **Osceola Township, MI**
PROJECT NO. **4065-005**
LOGGED BY **Phil Odenkirk**

COORDINATES **N 226,730.9 E 19,438,235.8**


SURFACE ELEVATION **1079.65** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **11/21/00** ENDED **11/21/00**



LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

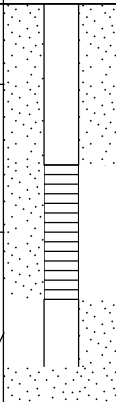
 SAND  SILT
 CLAY  CLAYEY SAND
 GRAVEL  SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
					PEAT. Organic Muck.	PT			1079.65
		GRAB			SAND.	SP		End of boring - 4' bgl	1078.65

Soil Boring Log

Project Name: White Pine Springs Date Started: 07/06/2017 Logger: K. Voet
 Project Number: 04065113.0000 Date Completed: 07/06/2017 Editor: K. Voet
 Project Location: Osceola Township, MI Weather Conditions: Sunny, 89F

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36				(0.0-0.5') 6" of water above surface.	(-3.9-1.2') 2" PVC Schedule 40 Well Casing (1.2-2.2') 2" PVC 10 Slot Well Screen (2.2-2.7') 2" PVC Schedule 40 Well Casing with plug.	
						(0.5-1.0') CLAY, some silt, low plasticity, slow dilatancy; wet; soft; dark gray (10YR 4/1).			
2						(1.0-1.75') SILT, some clay, low plasticity, rapid dilatancy; little fine sand; wet; very soft; dark brown (10YR 3/3). Note: And Organic material.			
						(1.75-2.5') CLAY, some silt, low to medium plasticity, no dilatancy; moist; stiff; dark gray (10YR 4/1).			
3						(2.5-3.0') SAND, very fine to fine, round; well sorted; wet; gray (10YR 5/1).			
4						End of boring at 3.0' below water surface.			
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: M. Pozniak Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Note: Backfill around the well was natural collapse. Converted to Well: Yes No
 Surface Elev.: 1088.5
 North Coord.: 227104.3
 East Coord.: 19440385.4

Soil Boring Log

Project Name: White Pine Springs Date Started: 07/07/2017 Logger: K. Voet
 Project Number: 04065113.0000 Date Completed: 07/07/2017 Editor: K. Voet
 Project Location: Osceola Township, MI Weather Conditions: Sunny, 79F

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			39			(0.0-1.75') SILT, non-plastic, rapid dilatancy; moist to wet; very soft; black (10YR 2/1). Note: And Organics, muck.		(-4.25-1.0') 2" PVC Schedule 40 Well Casing (1.0-2.0') 2" PVC 10 Slot Well Screen (2.0-3.0') 2" PVC Schedule 40 Well Casing with plug.	
2					(1.75-2.5') SILT, trace clay, low plasticity, slow dilatancy; moist; medium stiff; black (10YR 2/1).				
3					(2.5-3.25') SAND, very fine to medium, round to subround; well sorted; wet; gray (10YR 5/1).				
4						End of boring at 3.25' bgs.			
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: M. Pozniak Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): At surface
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Note: Backfill around the well was natural collapse. Converted to Well: Yes No
bgs = below ground surface Surface Elev.: 1084.5
 North Coord.: 226963.7
 East Coord.: 19439958.3

Soil Boring Log

Project Name: White Pine Springs Date Started: 07/06/2017 Logger: K. Voet
 Project Number: 04065113.0000 Date Completed: 07/06/2017 Editor: K. Voet
 Project Location: Osceola Township, MI Weather Conditions: Sunny, 89F

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1							(0.0-4.0') SILT, low plasticity, rapid dilatancy; moist; very soft; black (10YR 2/1). Note: Some organics, muck.	(-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.	
2		48				Note: Moist to wet from 1.75-2.5' bgs.			
3						Note: Change in color to very dark brown (10YR 2/2) at 2.5' bgs; wet. Note: Wood from 2.75-3.25' bgs.			
4						Note: Auger refusal at 4.0' bgs due to wood.			
5						End of boring at 4.0' bgs.			
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: M. Pozniak Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): 2.5' bgs
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Note: Backfill around the well was natural collapse. Converted to Well: Yes No
bgs = below ground surface Surface Elev.: 1085.0
 North Coord.: 226357.4
 East Coord.: 19442009.4

Soil Boring Log

Project Name: White Pine Springs Date Started: 07/06/2017 Logger: K. Voet
 Project Number: 04065113.0000 Date Completed: 07/06/2017 Editor: K. Voet
 Project Location: Osceola Township, MI Weather Conditions: Sunny, 89F

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1							(0.0-1.5') SILT, trace clay, low plasticity, rapid dilatancy; wet; very soft; black (10YR 2/1). Note: Muck, organics.	(-1.38-2.0') 2" PVC Schedule 40 Well Casing	
2						(1.5-3.0') SILT, non-plastic to low plasticity, rapid dilatancy; trace fine sand; moist; very soft; very dark brown (10YR 2/2). Note: Trace wood.			
3			60			(3.0-5.0') SILT, non-plastic, rapid dilatancy; moist; very soft; very dark brown (10YR 2/2).	(2.0-4.0') 2" PVC 10 Slot Well Screen		
4						Note: Large wood pieces at ~4.5' bgs.	(4.0-5.0') 2" PVC Schedule 40 Well Casing with plug.		
5						Note: At 5.0' bgs, Sand, very fine to medium, trace granules, round to subround; poorly sorted; wet; grayish brown (10YR 5/2). End of boring at 5.0' bgs.			
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: M. Poznaniak Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): At surface
 Drilling Fluid: None Water Level Finish (ft. bgs.): NA
 Remarks: Note: Backfill around the well was natural collapse. Converted to Well: Yes No
bgs = below ground surface Surface Elev.: 1093.1
 North Coord.: 226784.6
 East Coord.: 19442911.0

Soil Boring Log

Project Name: White Pine Springs Date Started: 07/06/2017 Logger: K. Voet
 Project Number: 04065113.0000 Date Completed: 07/06/2017 Editor: K. Voet
 Project Location: Osceola Township, MI Weather Conditions: Sunny, 89F

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36			(0.0-0.25') SILT, low plasticity, rapid dilatancy; little fine sand, well sorted; wet; very soft; black (10YR 2/1). Note: Muck.		(-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 Well Casing with plug.	
2					(0.25-0.5') SAND, fine to medium, round to subround; well sorted; wet; very dark gray (10YR 3/1). Note: Large cobble at 2.0' bgs.				
3					(0.5-2.0') SAND and SILT, very fine to fine, round to subround; well sorted; wet; very dark gray (10YR 3/1). Note: Large cobble at 2.0' bgs.				
					(2.0-2.5') SILT, non-plastic, rapid dilatancy; some sand, very fine to fine; wet; very soft; dark gray (10YR 4/1).				
4						(2.5-3.0') PEBBLES, very large, subround to subangular.			
5						End of boring at 3.0' bgs.			
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: M. Pozniak Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): At surface
 Drilling Fluid: None Water Level Finish (ft. bgs.): NA
 Remarks: Note: Backfill around the well was natural collapse. Converted to Well: Yes No
bgs = below ground surface Surface Elev.: 1100.9
 North Coord.: 227177.2
 East Coord.: 19443086.8

Soil Boring Log

Project Name: White Pine Springs Date Started: 07/07/2017 Logger: K. Voet
 Project Number: 04065113.0000 Date Completed: 07/07/2017 Editor: K. Voet
 Project Location: Osceola Township, MI Weather Conditions: Sunny, 79F

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1	[Spiral Drill Bit]		38.4			[Silt Pattern]	(0.0-2.25') SILT, low plasticity, rapid dilatancy; wet; very 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')	[Well Diagram]
2							[Sand Pattern]		
3						End of boring at 3.2' bgs.			
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: M. Pozniak Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): At surface
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Note: Backfill around the well was natural collapse. Converted to Well: Yes No
bgs = below ground surface Surface Elev.: 1076.8
 North Coord.: 226690.9
 East Coord.: 19439658.2

Soil Boring Log

Project Name: White Pine Springs Date Started: 07/06/2017 Logger: K. Voet
 Project Number: 04065113.0000 Date Completed: 07/06/2017 Editor: K. Voet
 Project Location: Osceola Township, MI Weather Conditions: Sunny, 89F

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1						(0.0-0.5') SILT, non-plastic, rapid dilatancy; moist; soft; black (10YR 2/1). Note: Trace organics, muck.	(-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.		
2		48			(0.5-2.5') SAND, very fine to fine, round to subround; little silt; well sorted; wet; dark grayish brown (10YR 4/2). Note: Trace organics. Note: Trace granules, subround to subangular from 1.5 to 2.0' bgs.				
3					(2.5-4.0') SILT, non-plastic, rapid dilatancy; trace very fine sand, round; moist to wet; soft; black (10YR 2/1). Note: Some organics.				
4					Note: At 4.0' bgs, Silt, trace clay, low to medium plasticity, slow dilatancy; moist; very soft to soft; grayish brown (10YR 5/2). End of boring at 4.0' below ground surface.				
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: M. Pozniak Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): 0.5' bgs
 Drilling Fluid: None Water Level Finish (ft. bgs.): NA
 Remarks: Note: Backfill around the well was natural collapse. Converted to Well: Yes No
bgs = below ground surface Surface Elev.: 1075.5
 North Coord.: 226768.1
 East Coord.: 19440696.5

Soil Boring Log

Project Name: White Pine Springs Date Started: 07/07/2017 Logger: K. Voet
 Project Number: 04065113.0000 Date Completed: 07/07/2017 Editor: K. Voet
 Project Location: Osceola Township, MI Weather Conditions: Sunny, 79F

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			38.4			(0.0-2.5') SILT, non-plastic, rapid dilatancy; wet; very soft; black (10YR 2/1). Note: Little organics, wood pieces, and roots.		(-3.79-1.5') 2" PVC Schedule 40 Well Casing	
2							(1.5-2.5') 2" PVC 10 Slot Well Screen		
3						(2.5-2.8') SILT, low plasticity, slow dilatancy; moist; soft; black (10YR 2/1). (2.8-3.2') SAND, very fine to medium, round to subround; trace coarse sand, subround; well sorted; wet; dark gray (10YR 4/1).	2" PVC Schedule 40 Well Casing with plug.		
4						End of boring at 3.2' bgs.			
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: M. Pozniak Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): At surface
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Note: Backfill around the well was natural collapse. Converted to Well: Yes No
bgs = below ground surface Surface Elev.: 1085.0
 North Coord.: 227847.5
 East Coord.: 19439209.5

Soil Boring Log

Project Name: White Pine Springs Date Started: 07/07/2017 Logger: K. Voet
 Project Number: 04065113.0000 Date Completed: 07/07/2017 Editor: K. Voet
 Project Location: Osceola Township, MI Weather Conditions: Sunny, 79F

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36			(0.0-1.33') SILT, non-plastic, rapid dilatancy; little fine sand, subround; wet; soft; black (10YR 2/1). Note: Muck. Root at 2.0' bgs.		(-3.75-1.5') 2" PVC Schedule 40 Well Casing	
2					(1.33-3.0') SAND, very fine to medium, round to subround; trace to little coarse sand, subround; well sorted; wet; light yellowish brown (10YR 6/4). Note: Some coarse sand from 2.5-3.0' bgs.		(1.5-2.5') 2" PVC Slot Well Screen (2.5-3.0') 2" PVC Schedule 40 Well Casing with plug.		
3						End of boring at 3.0' bgs.			
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: M. Pozniak Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): At surface
 Drilling Fluid: None Water Level Finish (ft. bgs.): NA
 Remarks: Note: Backfill around the well was natural collapse. Converted to Well: Yes No
bgs = below ground surface Surface Elev.: 1089.9
 North Coord.: 228767.1
 East Coord.: 19438986.2

MALCOLM PIRNIE

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**
PROJECT NO. **4065-005**
LOGGED BY **Jeff Groncki**

COORDINATES **N 226,960.6 E 19,440,873.6**







SURFACE ELEVATION **1088.04** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **6/27/00** ENDED **6/27/00**



LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

-  SAND  SILT
-  CLAY  CLAYEY SAND
-  GRAVEL  SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
					PEAT	PT			1088.04
		GRAB			Medium to fine SAND, with some coarse Sand and fine Gravel, trace medium to coarse Gravel.	SP			1087.04
5								End of boring - 5' bgl	1083.04

MALCOLM PIRNIE

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

BORING NO. **Seep 2** SHEET **1 OF 1**
PROJECT **GSWA: Spring Hill Camp Phase III**
LOCATION **Osceola Township, MI**
PROJECT NO. **4065-005**
LOGGED BY **Jeff Groncki**

COORDINATES **N 226,953.5 E 19,440,521.3**







SURFACE ELEVATION **1083.04** DATUM **USGS**




DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **6/27/00** ENDED **6/27/00**

LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

-  SAND
-  SILT
-  CLAY
-  CLAYEY SAND
-  GRAVEL
-  SILTY SAND

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Recovery %					
					PEAT	PT			1083.04
		GRAVEL			Medium to fine SAND, with some coarse Sand and fine to coarse Gravel.	SP			1082.04
					Light brown, CLAY, stiff.	CL		Sand layer continued to collapse in well. Could only get well ~3.3' bgl. End of boring - 4' bgl	1080.04 1079.04



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 **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Jeff Groncki**

COORDINATES **N 226,882.5 E 19,440,425.1**

SURFACE ELEVATION **1083.73** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
 DRILLING STARTED **6/27/00** ENDED **6/27/00**

LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

- SAND SILT
- CLAY CLAYEY SAND
- GRAVEL SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
					Black, PEAT.	PT			1083.73
		GRAB			Medium SAND, with coarse Gravel, trace fine Gravel, coarsens to coarse Sand toward 4'.	SP		Sediment continued to collapse.	1082.73
								End of boring - 4' bgl	1079.73

MALCOLM PIRNIE

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

BORING NO. **Seep 4** SHEET **1 OF 1**
 PROJECT **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Joel Henry**

COORDINATES **N 226,957.5 E 19,440,722.3**







SURFACE ELEVATION **1085.18** DATUM **USGS**



DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD EQUIPMENT
Hand Auger Hand Auger
 DRILLING STARTED ENDED
6/27/00 6/27/00

LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

-  SAND
-  SILT
-  CLAY
-  CLAYEY SAND
-  GRAVEL
-  SILTY SAND

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec-covery %					
					PEAT.	PT			1085.18
		GRAB			Medium SAND.	SP			1084.18
								End of boring - 4' bgl	1081.18



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

BORING NO. **Seep 5** SHEET **1 OF 1**
 PROJECT **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Mike Brennan**

COORDINATES **N 226,640.0 E 19,441,943.2**
 SURFACE ELEVATION **1092.25** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
 DRILLING STARTED **7/21/00** ENDED **7/21/00**

LOCATION DESCRIPTION:
 See attached Site Diagram for location.

STRATA KEY

- SAND SILT
- CLAY CLAYEY SAND
- GRAVEL SILTY SAND

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
5		GRAB			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.	ML SP SP SP SP		End of boring - 6' bgl	1092.25 1091.75 1091.15 1090.95 1089.45 1086.25



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

BORING NO. **Seep 6** SHEET **1 OF 1**
 PROJECT **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Mike Brennan**

COORDINATES **N 229,199.4 E 19,439,146.3**
 SURFACE ELEVATION **1106.62** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
 DRILLING STARTED **7/21/00** ENDED **7/21/00**

LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

SAND	SILT
CLAY	CLAYEY SAND
GRAVEL	SILTY SAND

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Recovery %					
5		GRAB			Black, PEAT, WET. Brown to black, fine to medium, SAND, and Silt, some root debris, trace Clay, MOIST. Black, fine to very fine, SAND, and Silt, some Clay and root debris. Dark black, SILT, trace Clay, root debris, and decomposed wood, MOIST. Light brown to tan, fine to very fine, SAND, trace Silt and coarse Sand. Light brown, SAND, some Gravel/cobbles (1/8 to 1/4" diameter). SAND, and Gravel, with Cobbles (1/8 to 1/4" diameter). Dark brown, medium SAND, some coarse Sand, cobbles.	PT SM SM ML 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 1102.62 1101.62

MALCOLM PIRNIE

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

BORING NO. **SW1-DP** SHEET **1** OF **1**
 PROJECT **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Larry Jordan**

COORDINATES **N 228,873.2 E 19,438,976.9**







SURFACE ELEVATION **1090.01** DATUM **USGS**


DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
 DRILLING STARTED **10/30/00** ENDED **10/30/00**

LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

- | | |
|--|---|
|  SAND |  SILT |
|  CLAY |  CLAYEY SAND |
|  GRAVEL |  SILTY SAND |

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
		GRAB			Light brown, fine to coarse SAND, some gravel, trace silt, well graded.	SW		End of boring - 3.5' bgl	1090.01

MALCOLM PIRNIE

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 **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Bernie Harvey**

COORDINATES **N 227,883.0 E 19,439,154.7**







SURFACE ELEVATION **1083.73** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
 DRILLING STARTED **12/7/00** ENDED **12/7/00**


LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

-  SAND
-  SILT
-  CLAY
-  CLAYEY SAND
-  GRAVEL
-  SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
		GRAV			Peat.	PT			1083.73

MALCOLM PIRNIE

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

BORING NO. **SW3-DP** SHEET **1** OF **1**
PROJECT **GSWA: Spring Hill Camp Phase III**
LOCATION **Osceola Township, MI**
PROJECT NO. **4065-005**
LOGGED BY **Bobbi McClead**

COORDINATES **N 226,473.4 E 19,439,149.6**







SURFACE ELEVATION **1076.51** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **11/2/00** ENDED **11/2/00**


LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

 SAND	 SILT
 CLAY	 CLAYEY SAND
 GRAVEL	 SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
		GRAB			Dark brown to black, fine to medium SAND, with some organic matter.	SP		End of boring - 4.5'	1076.51

MALCOLM PIRNIE

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

BORING NO. **SW5-DP** SHEET **1 OF 1**
PROJECT **GSWA: Spring Hill Camp Phase III**
LOCATION **Osceola Township, MI**
PROJECT NO. **4065-005**
LOGGED BY **Larry Jordan**

COORDINATES **N 226,600.3 E 19,440,402.4**







SURFACE ELEVATION **1074.81** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **10/30/00** ENDED **10/30/00**


LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

 SAND	 SILT
 CLAY	 CLAYEY SAND
 GRAVEL	 SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
		GRAB			PEAT	PT		End of boring - 4.85' bgl	1074.81

MALCOLM PIRNIE

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

BORING NO. **SW6-DP** SHEET **1** OF **1**
PROJECT **GSWA: Spring Hill Camp Phase III**
LOCATION **Osceola Township, MI**
PROJECT NO. **4065-005**
LOGGED BY **Larry Jordan**

COORDINATES **N 226,584.8 E 19,439,926.8**







SURFACE ELEVATION **1074.19** DATUM **USGS**



DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **10/30/00** ENDED **10/30/00**

LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

 SAND  SILT
 CLAY  CLAYEY SAND
 GRAVEL  SILTY SAND

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
		GRAB			PEAT, with wood and roots.	PT			1074.19
					Light brown, SAND, trace fine gravel. Occasional silty Clay lenses.	SP		End of boring - 3.5' bgl	1072.19

MALCOLM PIRNIE

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

BORING NO. **SW7-DP** SHEET **1** OF **1**
 PROJECT **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Mike Brennan**

COORDINATES **N 226,219.0 E 19,439,778.9**







SURFACE ELEVATION **1073.18** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
 DRILLING STARTED **1/15/01** ENDED **1/15/01**





LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

- | | |
|--|---|
|  SAND |  SILT |
|  CLAY |  CLAYEY SAND |
|  GRAVEL |  SILTY SAND |

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
		GRAB			Black, Wood Debris and organic rich Silty SAND.	SM			1073.18
		GRAB			Black, fine to medium SAND and SILT, little to some	SM			1072.98
		GRAB			Organic Matter (roots and wood), trace to little fine to	SM			1072.18
		GRAB			medium Gravel.	SM			1071.68
					Black, medium to coarse SAND and SILT, some fine Sand.				
					Black, fine to medium SAND, little to some Silt, little coarse				
					Sand, trace fine Gravel.				

MALCOLM PIRNIE

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

BORING NO. **SW8-DP** SHEET **1** OF **1**
 PROJECT **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Phil Odenkirk**

COORDINATES **N 226,523.5 E 19,442,326.0**







SURFACE ELEVATION **1081.09** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD EQUIPMENT
Hand Auger Hand Auger
 DRILLING STARTED ENDED
11/21/00 11/21/00


LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

-  SAND
-  SILT
-  CLAY
-  CLAYEY SAND
-  GRAVEL
-  SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
		GRAB			PEAT. Organic Muck.	PT		End of boring - 4' bgl	1081.09

MALCOLM PIRNIE

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

BORING NO. **SW11-DP** SHEET **1** OF **1**
PROJECT **GSWA: Spring Hill Camp Phase III**
LOCATION **Osceola Township, MI**
PROJECT NO. **4065-005**
LOGGED BY **Bernie Harvey**

COORDINATES **N 228,756.2 E 19,437,419.5**







SURFACE ELEVATION **1101.86** DATUM **USGS**


DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **2/7/01** ENDED **2/7/01**

LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

-  SAND  SILT
-  CLAY  CLAYEY SAND
-  GRAVEL  SILTY SAND

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
		GRAB			PEAT	PT			1101.86

MALCOLM PIRNIE

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**

COORDINATES **N 226,877.4 E 19,440,716.4**







SURFACE ELEVATION **1076.97** DATUM **USGS**





DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **5/31/01** ENDED **5/31/01**

LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

 SAND	 SILT
 CLAY	 CLAYEY SAND
 GRAVEL	 SILTY SAND

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
					Black, silty sand and PEAT, wet.	OL			1076.97
					Light brown, fine to medium SAND, trace root debris.	SP			1076.22
					Brown to gray, silt, few clay and fine to medium SAND, soft, occasional lenses to beds of woody peat material.	SM			1074.97
5					Brown, fine to mdium SAND, some peat, few fine gravel, lenses of silt and clay.	SM			1071.97

MALCOLM PIRNIE

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

BORING NO. **SW15-DP** SHEET **1** OF **1**
 PROJECT **GSWA: Spring Hill Camp Phase III**
 LOCATION **Osceola Township, MI**
 PROJECT NO. **4065-005**
 LOGGED BY **Mike Brennan**

COORDINATES **N 226,746.6 E 19,440,753.5**






SURFACE ELEVATION **1075.66** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
 DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
 DRILLING STARTED **5/31/01** ENDED **5/31/01**




LOCATION DESCRIPTION:

 See attached Site Diagram for location.

STRATA KEY

-  SAND
-  SILT
-  CLAY
-  CLAYEY SAND
-  GRAVEL
-  SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
5					Black, PEAT to silty sand, root debris, wet.	OL			1075.66
					Light brown, fine to medium SAND, wet.	SP			1074.91
						SM		Void, no sample.	1073.66
								End of boring - 8 ft	1072.66

MALCOLM PIRNIE

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

BORING NO. **Vent 1** SHEET **1 OF 1**
PROJECT **GSWA: Spring Hill Camp Phase III**
LOCATION **Osceola Township, MI**
PROJECT NO. **4065-005**
LOGGED BY **Jeff Groncki**

COORDINATES **N 226,920.3 E 19,441,122.1**







SURFACE ELEVATION **1090.40** DATUM **USGS**

DRILLING CONTRACTOR
Malcolm Pirnie
DRILLING METHOD **Hand Auger** EQUIPMENT **Hand Auger**
DRILLING STARTED **6/27/00** ENDED **6/27/00**

LOCATION DESCRIPTION:

See attached Site Diagram for location.

STRATA KEY

 SAND	 SILT
 CLAY	 CLAYEY SAND
 GRAVEL	 SILTY SAND

SAMPLE INFORMATION

SAMPLE INFORMATION					DESCRIPTION	USCS	Strata	REMARKS	Elevation Feet
Depth feet	Lab Sample	Sample Type	Blow Counts	Rec- overy %					
								End of boring - 4.07' bgl	1090.40