

## **Appendix I**

### **Monitoring Well Construction Logs**

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW001	<b>Northing:</b> 335505.8 <b>Easting:</b> 1569044.6	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 38.9	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-06-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 5-20
<b>Finish Date:</b> 12-06-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 25.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0							Stickup
2	2.1/5.0	1.7, 0.7	43%	OH	0.5	ORGANICS, moist, dark brown, decaying roots and leaves, trace gravel	Annular Backfill
4				SM		SILTY SAND, moist, slightly compacted, yellowish brown with minor orange oxidation, medium to fine sand with silt, well sorted, cohesive, not plastic, some small gravel (pea size) at 5.5' bgs	
6	1.6/5.0	0.5, 1.2	30%		7.0		Seal
8				SM		SILTY SAND, wet, loose, dark brown, medium sand, coarser than above, trace gravel (0.5-1"), subangular, poorly sorted	
10	4.0/5.0	1.1, 0.7	81%		11.0		Riser
12				CL		LEAN CLAY, moist, dense, dark brown/ gray, fine sand, silt, some organics, cohesive and plastic	
14	1.8/5.0	2.1, 1.8	36%		18.0		Filter Pack
16				CH		FAT CLAY, moist to dry, dense and pliable, light gray, clay with trace silt, cohesive and highly plastic, TD = 20'. Borehole backfilled to have screen in waterbearing zone	
18	5.0/5.0	1.1, 3.4	98%		25.0		Screen
20				CH			
22							End Cap/Base Backfill
24							

**Remarks:**

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW002	<b>Northing:</b> 335054.1 <b>Easting:</b> 1569043.9	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 38.7	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-05-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 15-30
<b>Finish Date:</b> 12-06-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 30.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information		
							Stickup	Well Construction	
0									
2	2.4/5.0	1.0, 1.7	50%	OH	1.0	ORGANIC MATERIAL, dry, soft, dark brown, leaves, roots, and decaying organic material			
4				SM	2.0	SILTY SAND, dry, compacted, yellowish brown, fine to medium sand with some silt, poorly sorted			
6				ML	4.5	SANDY SILT, dry, compacted, grayish brown, fine sand with silt and trace clay, poorly sorted, cohesive and slightly plastic	Annular Backfill		
8	2.5/5.0	0.8, 0.4	50%	SW		SAND, moist, loose, yellowish brown with orange oxidation staining, medium sand with trace gravel (pea sized), poorly sorted, color change to gray brown, sand becomes medium to coarse, return to fine to medium sand at 15' bgs	Riser		
10									
12									
14	2.5/5.0	0.8, 0.4	50%	SW			Seal		
16									
18									
20	2.5/5.0	1.0, 1.1	50%	ML	15.5	SANDY SILT, dry, compacted, brownish gray, medium sand with silt and gravel (till material), material cemented	Filter Pack		
22				SW	18.0	SANDY GRAVEL, dry, loose, medium sand with cobbles (0.5-1"), highly heterogenous			
24									
26	2.0/5.0	1.2, 0.7	3%	SM		SILTY SAND, moist to wet, compacted, medium sand and silt, trace clay, trace fine gravel (pea size), poorly sorted, heterogeneous, large cobbles, poorly sorted, TD = 30' bgs, reach desired aquifer material	Screen		
28									
30									

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW003	<b>Northing:</b> 334839.0 <b>Easting:</b> 1569050.0	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 34.4	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-05-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 15-20
<b>Finish Date:</b> 12-05-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 30.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information	
							Stickup	Diagram
0								
2	1.2/5.0	1.8, 0.9	25%	OH	1.0	Organics, dark brown/black, roots and root structures		
4				SM		SILTY SAND, dry, loose, yellowish brown with orange oxidation staining along roots and other pathways, medium sand with some silt, gravel (0.5-2"), very heterogeneous, poorly sorted. Same as above, color change to light gray, very heterogeneous, very poorly sorted		
6	3.8/5.0	1.1, 0.5	76%		7.5			
8				ML	8.5	SANDY SILT, moist, dark brown, fine to medium sand with some silt, less gravel, slightly cohesive, not plastic		
10	1.4/5.0	1.7, 0.8	28%			SILTY SAND, moist to slightly wet, yellowish brown, medium sand with silt, trace gravel (0.5-2 inches), poorly sorted		
12				SM				
14	2.0/5.0	0.8	42%					
16				SM				
18	3.9/5.0	1.1, 2.6	78%		20.0	SILTY SAND, wet/very moist, light gray, medium to fine sand with silt, trace gravel, poorly sorted		
20				SM				
22	3.3/5.0	1.0, 0.4	67%		24.5	CLAYEY SAND, moist to wet, light gray, medium to fine sand with clay, trace gravel, poorly sorted sand, cohesive and slightly plastic. TD = 30' bgs, reached desired aquifer material		
24				SC				
26								
28								
30								

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW004	<b>Northing:</b> 334385.3 <b>Easting:</b> 1569185.1	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 54.4	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-06-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 17-32
<b>Finish Date:</b> 12-06-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 35.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information	
							Stickup	Diagram
0								
2	1.4/5.0	1.1, 14.7	28%	OH	1.0	ORGANICS, wet, cohesive, dark brown to black, grass, roots and decaying material		
4				SM		SILTY SAND, dry to slightly moist, loose, yellowish brown, fine to medium sand with some silt, trace gravel (0.5"-1"), heterogeneous, poorly sorted		
6	1.6/5.0	0.7, 1.1	33%	SC	4.5	CLAYEY SAND, moist, yellowish brown, fine sand with clay, cohesive and slightly plastic, very heterogeneous		
8				SM		SILTY SAND WITH GRAVEL, moist to dry, cemented, yellow brown, medium sand with silt and clay, gravel, subangular to rounded, poorly sorted		
10	1.6/5.0	13.6, 14.7	33%	SC	6.5	CLAYEY SAND, lens, same as above		
12				SM		SILTY SAND WITH GRAVEL, same as above, hit boulder during run, limited recovery		
14	1.5/5.0	2.1, 1.7	30%	SP	11.0	SAND, dry, loose, yellow brown, medium to coarse sand, trace silt, well sorted and rounded, wet at 20' bgs, becoming more silty		
16								
18	4.0/5.0	14.7, 7.8	80%	SM	24.0	SILTY SAND, wet, compacted, yellowish brown, sand with some silt, trace clay, rounded to subangular, well sorted		
20								
22	4.2/5.0	8.8, 5.7	85%	SM	29.5	CLAYEY SAND WITH GRAVEL, dry to moist, cemented, yellow brown, medium sand with some silt and clay, cemented gravel (0.5-2" diameter), poorly sorted and sub angular, TD = 32' bgs: Well screen moved up to put within waterbearing material		
24								
26	5.0/5.0	1.8, 1.7	100%	SC	35.0			
28								
30								
32								
34								

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW007	<b>Northing:</b> 335781.7 <b>Easting:</b> 1573852.4	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 60.8	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-06-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 20-35
<b>Finish Date:</b> 12-06-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 40.0

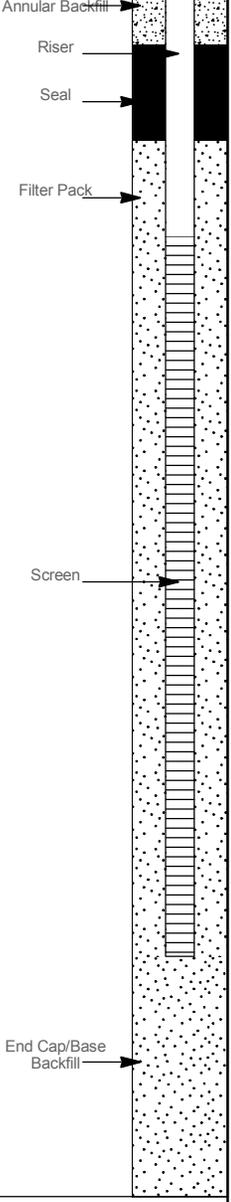
Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
							Diagram
0							
2	3.0/5.0	24.1, 11.7	60%	SWSC	1.0	Fill material, sand, silt, clay, and gravel, heterogenous	Stickup Annular Backfill
4				SP		SAND, dry, loose, yellow brown, medium sand with small gravel (pea size), gravel at 2' bgs, well sorted, slightly cohesive  boulder, no recovery	
6	3.6/5.0	25.3, 15.7	71%	SM	6.0	SILTY SAND, dry, compacted, yellowish brown, sand with silt, trace amounts of clay, trace gravel, very heterogenous, poorly sorted, grains rounded to subrounded, highly cemented at 8' bgs	Riser
8							
10	3.8/5.0	1.6, 3.2	75%	SM	13.0	SILTY SAND, dry to moist, loose, yellowish brown, sand with silt, poorly sorted, rounded to subrounded, trace small gravel	Seal
12							
14	4.2/5.0	3.4, 5.7, 3.0	85%	SM	17.0	SILTY SAND WITH GRAVEL, dry to moist, dense and compact, sand with silt, trace clay, some small gravel in cemented matrix, poorly sorted, subangular, oxidation staining throughout 25-30' bgs, moist	Filter Pack
16							
18	5.0/5.0	1.3, 2.1, 1.7	100%	SM	32.0	SILTY CLAY, moist, loose, medium sand with some silt, poorly sorted, cohesive, not plastic	Screen
20							
22	4.3/5.0	0.7, 0.3, 0.4	86%	SM	35.0	SILTY SAND WITH GRAVEL, same as above, dry, highly compacted, TD = 35' bgs: moved screen to target waterbearing units	End Cap/Base Backfill
24							
26	5.0/5.0	0.4, 0.2	100%	CLML	35.0		
28							
30	3.9/5.0	0.3, 0.4	78%	SM	40.0		
32							
34							
36							
38							
40							

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW009	<b>Northing:</b> 335088.5 <b>Easting:</b> 1572872.1	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 55.4	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-07-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 5-20
<b>Finish Date:</b> 12-07-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 25.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0							
2	2.5/5.0	2.3, 1.7	51%	OH		Organics, moist, loose and soft, dark brown, grass, roots	
4				SP		SAND, dry, loose yellowish brown, medium sand with trace silt, well sorted, subrounded to rounded, slightly cohesive	
6				SM		SILTY SAND, dry, loose/brittle, dark brown with orange staining, medium sand with some silt, roots in sleeve, cohesive, not plastic	
8	3.2/5.0	3.2, 1.4	66%	SW		SAND, dry to moist, loose, dark brown, fine sand with trace silt, poorly sorted, compacted	
10				SM		SILTY SAND, dry, loose/brittle, dark brown with orange staining, medium sand with some silt, roots, cohesive, not plastic	
12	3.5/5.0	3.3, 1.7	71%	SW		GRAVELLY SAND, moist, loose, yellowish brown/tan, coarse to medium sand, gravel (0.5-1"), very poorly sorted, heterogeneous, wet at 11' bgs	
14				ML		SANDY SILT WITH GRAVEL, dry, compacted and dense, brownish yellow, silt and trace clay with some fine sand, very poorly sorted, color change: gray at 15' bgs, wet, very heterogeneous, poorly sorted	
16				CLML		SILTY CLAY WITH SAND, dry, compacted/cemented, light gray, silt and clay with fine sand, trace small gravel, cohesive, low plasticity, subangular	
22	4.3/5.0	1.7, 1.6, 4.2	86%	ML		SANDY SILT, dry to moist, compacted/slightly loose, fine sand with silt and clay, trace gravel, poorly sorted, cohesive and slightly plastic. END OF BORING- reached target depth and water bearing zone	
24							

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW010	<b>Northing:</b> 335687.7 <b>Easting:</b> 1571269.8	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 64.8	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-07-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 10-25
<b>Finish Date:</b> 12-07-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 25.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
							Stickup
0							
2	3.3/5.0	4.3, 1.7, 40.7	66%	MLCL	3.5	CLAYEY SILT, soft, moist, yellowish brown/tan, silt with clay, cohesive and low plasticity, low fine sand percentage	Stickup
4						CLAYEY SILT WITH SAND, dry, soft/loose, light brownish yellow, silt with trace clay, some fine sand and gravel (0.5-1"), poorly sorted	
6	3.1/5.0	3.4, 2.3, 1.3	61%	SP	6.5	SAND, soft, moist, brownish yellow, medium sand, rounded, well sorted, small gravel (0.5"), rounded	Riser
8						wet at 10' bgs	
10						silty seam at 12' bgs	
12	3.6/5.0	0.7, 2.2, 1.4	71%	SP		coarse to medium sand at 14' bgs, gravel is 0.5-1", rounded, not spherical	Annular Backfill
14						sand becomes coarser at 16', well sorted, rounded, angular	
16						finer sand at 20' bgs, some trace gravel	
18							
20	2.0/5.0	1.5, 1.0	40%	SM	23.5	SILTY SAND, soft, moist, fine sand with silt	Seal
22							
24	3.7/5.0	1.7, 2.5, 3.1	75%		25.0		Filter Pack
							Screen

**Remarks:**

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# Boring and Well Construction Log

Client: Camp Hero	Area: Background	Logged By: M Glinski
Location ID: CH-MW011	Northing: 333753.9    Easting: 1570930.0	Drilling Company: Cascade
Project #: 60443903	Ground & TOC Elevations (FT NAVD88): 82.4	Depth to Bedrock (ft bgs): NA
Start Date: 12-06-16	Drilling Method: Sonic	Well Screen Interval (ft bgs): 10-25
Finish Date: 12-06-16	Borehole Diameter (in): 7	Total Depth (ft): 27.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0							
2	3.3/5.0	0.6, 0.0, 0.9, 0.8	66%	SM	●●●●●●	5Y 2.5/1 black, angular, roots, organics from 0-2 inches bgs	Riser →
				ML	XXXXXX	25% fine sand, 10YR 4/6 dark yellowish brown, soft, dry	
				ML	XXXXXX	5% fine sand, 5Y 2.5/1 black, soft, dry	
4						Annular Backfill →	
6							
8	3.5/5.0	1.1, 0.4, 1.0, 0.9	70%	SM	●●●●●●	20% SILT, 5% gravel, 5Y 2.5/1 dark gray, loose, moist, cohesive, gravel is subrounded and 20mm in size	Seal →
10							
12	3.4/5.0	0.1, 0.8, 0.4, 1.1	68%	SM	●●●●●●		
14				SC	▨▨▨▨	2.5Y 3/2 very dark grayish brown, non plastic, increasingly cohesive	
16							
18	4/5.0	1.1, 0.8, 2.0, 3.4	80%	ML	XXXXXX	25% fine sand, 7.5YR 4/6 strong brown, medium stiff, dry, trace gravel (up to 60 mm in size) at 20 ft bgs	Filter Pack Screen →
20							
22	4.5/5.0	0.8, 0.7, 0.2, 0.0	90%	SM	●●●●●●	20% SILT, 10YR 5/6 yellowish brown, loose, moist	
24							
26	NA	0.0, 0.1		CL	▨▨▨▨	5Y 5/1 gray, low plasticity stiff, dry, grading to olive grey (5Y 4/2) with brown (7.5YR 4/4) laminations (5mm in width) at 25 ft bgs	End Cap/Base Backfill →
27							

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW012	<b>Northing:</b> 335301.1 <b>Easting:</b> 1571415.8	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 70.2	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-07-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 15-30
<b>Finish Date:</b> 12-07-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 30.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information							
							Stickup							
0														
2	2.1/5.0	8.2, 2.6	43%	SP	[Dotted Pattern]	SAND, dry, loose, yellowish brown, medium sand, trace silt, well sorted, rounded, not cohesive, increasing gravel size (0.5")  large piece of rock at 5' bgs, slight color change, more yellowish/tan  moist at 9' bgs	Riser							
4														
6														
8	2.3/5.0	1.6, 2	46%						Annular Backfill					
10														
12	No recovery		0%											
14														
16	3.5/5.0	3.8, 2.2, 2.3	70%				SM	[Dotted Pattern]	SILTY SAND, wet, loose/compact, light brown, medium to coarse sand, some silt with trace amounts of clay, poorly sorted, heterogenous, rounded to subrounded, subangular, TD = 30' bgs, reached water bearing unit	Seal				
18														
20														
22	No recovery		0%											
24														
26	No recovery		0%											
28														
30											Filter Pack Screen			

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# Boring and Well Construction Log

Client: Camp Hero	Area: Background	Logged By: M Glinski
Location ID: CH-MW013	Northing: 334759.0    Easting: 1569949.4	Drilling Company: Cascade
Project #: 60443903	Ground & TOC Elevations (FT NAVD88): 58.0	Depth to Bedrock (ft bgs): NA
Start Date: 12-05-16	Drilling Method: Sonic	Well Screen Interval (ft bgs): 18-33
Finish Date: 12-05-16	Borehole Diameter (in): 7	Total Depth (ft): 33.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information			
0							Stickup →			
2	5.0/5.0	0.0, 0.0, 0.0, 0.1	100%	SM	3.0	poorly graded, 20% fine sand, 10YR 4/4 dark yellowish brown, loose, dry	Riser →			
4								15% fine sand, 10YR 5/4 yellowish brown, medium stiff, dry, cohesive, pulverized concrete at 8-8.5 ft bgs, rare subrounded gravel at 12-13 ft bgs, grading to brown (7.5YR 4/4)	Annular Backfill →	
6	5.0/5.0	0.0, 0.0, 0.0, 0.0	100%	ML			Seal →			
8										
10										
12	5.0/5.0	0.2, 0.0, 0.2, 0.0	100%	ML						
14										
16	5.0/5.0	0.0, 0.0, 0.0, 0.0	100%	SM						
18										
20										
22	5.0/5.0	0.2, 0.4, 0.0, 0.0	100%	SM	23.0	20% SILT, 7.5YR 4/6 strong brown, loose, dry, yellowish red (5YR 4/6) from 17-18 ft bgs	Filter Pack →			
24				ML		7.5YR 4/2 brown, loose, dry, slightly cohesive				
26	5.0/5.0	0.0, 0.0, 0.0, 0.0	100%	SM	25.0	20% SILT, 7.5YR 4/6 strong brown, loose, dry, slightly cohesive	Screen →			
28				SWSM		10YR 4/6 dark yellowish brown, loose, moist, slightly cohesive, very fine to coarse grain sand, subangular sand, less than 5% gravel (40 mm)				
30				SM		20% silt, 7.5YR 4/6 strong brown, loose, dry, slightly cohesive				
32				SM						
33.0										

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW016	<b>Northing:</b> 333368.4 <b>Easting:</b> 1570265.0	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 80.7	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-08-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 15-30
<b>Finish Date:</b> 12-08-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 30.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
							Stickup
0							
2	3.0/5.0	4.1, 9.2, 5.5, 3.7	60%	OH	0.5	ORGANIC MATERIAL, dry, soft, dark brown, leaves, roots, and decaying organic material	Stickup
4						CLAYEY SAND, dense, dry, brownish yellow, fine to medium sand with clay, trace silt, cohesive and low plasticity, poorly sorted, subrounded, not spherical (till), becoming more medium sand, trace fine to medium gravel, less cohesive, very dense, lots of staining, becoming moderately dense at 14' bgs	
6	3.6/5.0	173, 325, 321, 1447, 737	73%	SC			Riser
8							
10	3.6/5.0	255, 195, 160, 117, 8.9	73%	SC			Annular Backfill Filter Pack
12							
14	3.0/5.0	365, 440, 168, 72.1, 27.1	61%	SW	17.5	SAND, loose, moist, light gray, medium sand, trace silt, poorly sorted, sub rounded	Seal
16							
18	3.3/5.0	3.1, 2.7, 3.4, 3.1, 1.1	66%	CH	20.0	FAT CLAY, soft, light brown to gray, clay and silt, trace fine sand, plastic and cohesive	Screen
20							
22	3.4/5.0		68%	SP	26.5	SAND, loose, moist, light yellowish brown, medium to fine sand, trace silt, well sorted, sub rounded	
24							
26					30.0		

**Remarks:**

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW017	<b>Northing:</b> 333325.0 <b>Easting:</b> 1570231.4	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 81.4	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-08-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 15-30
<b>Finish Date:</b> 12-08-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 30.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
							Stickup
0							
2	3.5/5.0	2.2, 2	71%	SM	[Dotted Pattern]	SILTY SAND, moist, moderate stiff, yellowish orange, fine sand with silt, cohesive, not plastic, well rounded, poorly sorted, rock in shoe, no recovery 5-10' bgs	Riser
4							
6	No recovery		0%	SM	[Dotted Pattern]		Annular Backfill Filter Pack
8							
10	2.6/5.0	20.4, 21.6, 18.4, 24.5, 16.7	53%	SC	[Diagonal Lines]	CLAYEY SAND, dry, stiff, yellowish orange to light gray, fine sand with clay, trace silt, cohesive, low plasticity, poorly sorted, sub rounded	Seal
12							
14	3.6/5.0	240, 210, 186, 88.4, 255	73%	SWSC	[Diagonal Lines]	CLAYEY SAND to SAND, stiff, moist, light gray, fine to medium sand with trace silt and clay, poorly sorted, rounded, slightly cohesive, not plastic	Screen
16							
18	3.8/5.0	24.8, 110, 226, 194	76%	SM	[Dotted Pattern]	SILTY SAND, stiff, moist, light gray, medium sand with silt, trace clay and gravel, poorly sorted, rounded, slightly cohesive, not plastic	
20							
22	2.0/5.0	370, 410, 360, 440, 382	40%	SM	[Dotted Pattern]		
24							
26	[Diagonal Lines]			CH	[Diagonal Lines]	FAT CLAY, soft, moist, brownish yellow, silt and clay, cohesive and plastic	
28							
30							

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW020	<b>Northing:</b> 333303.1 <b>Easting:</b> 1570356.8	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 93.7	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-08-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 10-25
<b>Finish Date:</b> 12-08-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 25.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0							Stickup
2	1.9/5.0	3.4, 1.5	38%	SP		SAND, dry, loose, light yellowish brown, medium sand, trace silt, trace small gravel, well sorted, slightly cohesive, rounded, sub-spherical, gravel is rounded, trace organics and roots, moist at 4' bgs, large gravel piece	Riser
4							Annular Backfill
6	2.7/5.0	5.5, 37.2, 1330	55%	SC		6.0 Rock in shoe, no recovery	Seal
8						7.0 CLAYEY SAND, dense, dry to moist, grayish brown with minor staining (oxidation), fine sand with clay, trace silt, poorly sorted, sub rounded, cohesive and low plasticity, trace fine gravel	Filter Pack
10							
12	3.7/5.0	78.1, 53.2, 72.3	75%	SW		11.0 SAND, wet, loose, grayish brown, fine to medium sand (coarse to medium), trace clay and silt, slightly cohesive, poorly sorted, angular, not spherical	Screen
14						13.5 CLAYEY SAND, dense, dry, grayish orange, fine to medium sand with clay and trace silt, poorly sorted, rounded, not spherical, cohesive and slightly plastic	
16	3.0/5.0	16.2, 5.5	60%	SC			
18							
20							
22	2.8/5.0	1.5, 7.2	57%	CLML		23.0 SILTY CLAY, dense, dry to moist, brownish gray, fine to medium sand, poorly sorted, some silt, trace gravel	
24						25.0	

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<b>Client:</b> Camp Hero	<b>Area:</b> Background	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW021	<b>Northing:</b> 333245.8 <b>Easting:</b> 1570329.5	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 92.2	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 12-07-16	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 5-15
<b>Finish Date:</b> 12-07-16	<b>Borehole Diameter (in):</b> 7	<b>Total Depth (ft):</b> 25.0

Depth (ft bgs)	Recovery Length	PID (ppm)	Percent Recovery	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0							
2	2.9/5.0	1.0, 1.8	58%	OH	0.5	ORGANICS, silty clay, grass, roots	Annular Backfill
4				CLML	3.3	SILTY CLAY, moist, dense, brown with orange staining, clay with fine sand, poorly sorted, cohesive and plastic, some trace gravel, subrounded	
6	3.4/5.0	4.8, 3.2, 2.2	68%	SW	4.0	SAND lens, dry	Seal
8				SC	4.0	CLAYEY SAND, dry, soft, grayish brown, clay with fine sand, poorly sorted, cohesive and plastic, some trace gravel, impacted soil at 10' bgs to 12.5' bgs; high PID hits and staining	
12	4.3/5.0	336, 453, 382	86%		12.0	FAT CLAY, soft and dense, grayish brown, dry to moist in places, clay with silt, trace fine sand, cohesive and highly plastic, no staining or odor	Riser
14					15.0		
16	4.6/5.0	28.6, 19.2, 15.1	91%	CH			Filter Pack Screen
18				CL			
22	5.0/5.0	48.2, 16.1	100%	CL	21.0	LEAN CLAY, soft and dense, dry, grayish brown, fine sand, poorly sorted, slight odor, no staining	End Cap/Base Backfill
24				SC	22.5	CLAYEY SAND, slight odor, no staining	
					24.0	LEAN CLAY, TD = 25' bgs, set well from 5-15' bgs to monitor impacted zone	

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<b>Client:</b> Camp Hero	<b>Area:</b> DU01	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW025	<b>Northing:</b> 333494.4 <b>Easting:</b> 1570092.4	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 71.6	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-07-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 10-20
<b>Finish Date:</b> 06-07-17	<b>Borehole Diameter (in):</b> 6 in	<b>Total Depth (ft):</b> 22.5

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
						Stickup
0						
2	2	0.9, 1.3, 2.7, 3.2	OH		Organic soil, loamy, roots, grass	Stickup
4			SM		SILTY SAND, firm, dry, light reddish brown, fine to medium sand, poorly sorted, subrounded, silt, cohesive, trace gravel	
6	3	0.7, 0.4, 0.2, 0.1	MLCL		SILTY SAND WITH CLAY, soft, dry, light gray, fine to medium sand, poorly sorted, subrounded, silt and clay, cohesive and slightly plastic becoming very soft with higher percentage of clay, less silt, moderate plasticity	Bentonite chips
8						
10	3	0.2, 0.3, 0.4, 0.1	SM		SILTY SAND, firm, dry, dark grayish brown, medium sand, poorly sorted, silt, cohesive, becoming light reddish brown, fine to medium sand with silt, moist	Annular Backfill Filter Pack
12						
16	3.5	0.4, 0.4, 0.6, 0.2	SP		SAND, loose, wet, reddish brown, medium sand, very poorly sorted, subrounded, trace amount of silt and clay, not cohesive	End Cap/Base Backfill
18			CL		CLAYEY SILT, dense to very dense, dry, light reddish brown to gray, silt and clay, massive, cohesive, non plastic, fine sand and trace small gravel	
22						

**Remarks:**

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<b>Client:</b> Camp Hero	<b>Area:</b> DU17	<b>Logged By:</b> M Glinski
<b>Location ID:</b> CH-MW029	<b>Northing:</b> 335299.4 <b>Easting:</b> 1571864.5	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 50.0	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-06-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 10-19.5
<b>Finish Date:</b> 06-06-17	<b>Borehole Diameter (in):</b> 6.0 in	<b>Total Depth (ft):</b> 20.0

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information	
						Stickup	Diagram
0							
2	2.7	0.1, 0.1, 0.1	SPSM	20	POORLY GRADED SAND WITH SILT, loose (n=5-10), moist, (7.5YR 3/2) dark brown, 5% gravel		Bentonite chips
4					SILTY SAND, non-plastic loose (n=5-10), moist, (7.5YR 5/3) brown, 20% fines	Riser	
6	3.4	0.0, 0.0, 0.0	SM	11.0			Seal
8						Annular Backfill Filter Pack	
10							Screen
12	3	0.1, 0.0, 0.1	SPSM	20.0	POORLY GRADED SAND WITH SILT, cohesive loose (n=5-10), moist, (2.5Y 5/2) grayish brown, fine SAND		End Cap/Base Backfill
14							
16							
18							
20							

**Remarks:**

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<b>Client:</b> Camp Hero	<b>Area:</b> DU12	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW030	<b>Northing:</b> 335186.5 <b>Easting:</b> 1572152.3	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 49.2	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-06-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 10-20
<b>Finish Date:</b> 06-06-17	<b>Borehole Diameter (in):</b> 6 in	<b>Total Depth (ft):</b> 22.5

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0						
0 - 2	2.5	0.4, 1.7, 2.3, 4.3, 2.1	OH		Organic soil, grass, roots	
2 - 6			SM		SILTY SAND, loose, moist, brown, medium sand, poorly sorted, subrounded, some silt, slightly cohesive, trace gravel, non spherical, medium to fine sand, moist to wet	Bentonite chips
6 - 8	0	NA				SM
8 - 10			3	0.3, 0.7, 0.2, 2.4	SC	
10 - 12	4.2	0.4, 0.5, 0.9, 1.3, 0.2				MLCL
12 - 14			SC	CLAYEY SAND, soft, moist to wet, light grayish brown, medium to coarse sand, rounded to subrounded, poorly sorted, clay, cohesive and low to moderate plasticity	SC	
14 - 16	MLCL	SILTY SAND WITH CLAY AND GRAVEL, dense, moist, light reddish brown, medium sand, poorly sorted, subrounded, silt and clay matrix, cohesive, slightly plastic, some gravel, sub rounded, very heterogeneous				MLCL
16 - 18			22.5	MLCL	MLCL	
18 - 20	22.5	MLCL				MLCL
20 - 22			22.5	MLCL	MLCL	
22 - 22.5	22.5	MLCL				MLCL

**Remarks:** No Stickup

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<b>Client:</b> Camp Hero	<b>Area:</b> DU14	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW031	<b>Northing:</b> 335162.2 <b>Easting:</b> 1572582.1	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 44.1	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-07-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 8-18
<b>Finish Date:</b> 06-07-17	<b>Borehole Diameter (in):</b> 6 in	<b>Total Depth (ft):</b> 20.0

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information		
						Stickup	Diagram	
0								
2	3.4	0.4, 0.7, 1.4, 2.3	OH	1.5	Organic soil, loamy, roots, fine sand		Bentonite chips	
4			SP	4.5	SAND, soft, moist, light grayish brown, fine sand, well sorted, rounded, trace silt, slightly cohesive		Riser	
6			MLCL	5.5	CLAYEY SILT, lens, organics, root structures		Seal	
8	3.1	1.1, 2.4, 3.3, 0.7	SP	15.0	SAND, soft, moist to wet, fine sand, well sorted, rounded, coarse sand seam, very poorly sorted, wet to saturated, subrounded		Annular Backfill Filter Pack	
10					SAND, SAA, trace gravel, becoming moist to wet, higher silt content			
12	3.3	0.3, 0.5, 0.1, 0.7	SP	15.0	SILTY SAND, loose, moist to wet, light grayish brown, fine sand, poorly sorted, subrounded, trace amount of fine gravel		Screen	
14								
16								
18	4	0.1, 0.5, 0.6, 0.3	SM	20.0			End Cap/Base Backfill	

**Remarks:**

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<b>Client:</b> Camp Hero	<b>Area:</b> DU11	<b>Logged By:</b> M Glinski
<b>Location ID:</b> CH-MW032	<b>Northing:</b> 334983.3 <b>Easting:</b> 1571877.5	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 57.2	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-08-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 10-24.5
<b>Finish Date:</b> 06-08-17	<b>Borehole Diameter (in):</b> 6 in	<b>Total Depth (ft):</b> 25.0

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0						Stickup →
2	3.5	0.0, 0.1, 0.1, 0.1	ML	XXXXXX	SANDY SILT, medium stiff (n=5-8), moist, (7.5YR 5/4) brown, 30% fine sand	Bentonite chips →
4			ML	XXXXXX	SILT WITH SAND, non-plastic, 20% fine sand	
6	3.6	0.0, 0.0, 0.0, 0.0	ML	XXXXXX		Seal →
8			ML	XXXXXX		
10	4.1	0.2, 0.1, 0.0, 0.0	SC	XXXXXX	CLAYEY SAND, non-plastic loose (n=5-10), moist, (7.5YR 5/4) brown, fine SAND, 25% fines 10% medium sand	Annular Backfill Filter Pack →
12			SC	XXXXXX		Screen →
14	4	0.0, 0.0, 0.0, 0.0	SP	XXXXXX	POORLY GRADED SAND, loose (n=5-10), moist, (10YR 5/6) yellowish brown, fine to medium SAND	End Cap/Base Backfill →
16			SP	XXXXXX		
18	3.7	0.0, 0.0, 0.0, 0.0	SM	XXXXXX	SILTY SAND, cohesive medium dense (n=11-30), moist, (10YR 5/3) brown, 20% fines, trace very dark gray (5Y 3/1)	
20			SM	XXXXXX		
22						
24						
25.0						

**Remarks:**

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<b>Client:</b> Camp Hero	<b>Area:</b> DU11	<b>Logged By:</b> M Glinski
<b>Location ID:</b> CH-MW033	<b>Northing:</b> 335094.6 <b>Easting:</b> 1572040.4	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 48.1	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-06-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 15-29.9
<b>Finish Date:</b> 06-06-17	<b>Borehole Diameter (in):</b> 6.0 in	<b>Total Depth (ft):</b> 30.0

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information	
						Stickup	Diagram
0							
0.5			ML	XXXXXX	SILT, soft {n=2-4}, moist, (10YR 2/1) black, with roots		
2	3	0.0, 0.0, 0.0	ML	XXXXXX	SILT WITH SAND, soft {n=2-4}, moist, (10YR 4/4) dark yellowish brown, 20% fine sand 5% gravel		Bentonite chips
4							
6	3	0.0, 0.0, 0.0	SW	XXXXXX	WELL GRADED SAND, loose {n=5-10}, moist, (7.5YR 4/4) brown, fine to coarse SAND		Riser
8							
10	4	0.0, 0.0, 0.0, 0.0	ML	XXXXXX	SILT WITH SAND, soft {n=2-4}, moist, (10YR 4/3) brown, 15% fine sand		Seal
12							
14	3	0.0, 0.5, 0.3	SPSM	XXXXXX	POORLY GRADED SAND WITH SILT		Annular Backfill Filter Pack
16							
18	2.6	0.1, 0.3, 0.4	SP	XXXXXX	POORLY GRADED SAND, loose {n=5-10}, dry, (10YR 5/4) yellowish brown, 5% gravel		Screen
20							
22	1.6	0.0, 0.0, 0.0	SW	XXXXXX	WELL GRADED SAND, loose {n=5-10}, wet		End Cap/Base Backfill
24							
26							
28							
30							

**Remarks:**

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<b>Client:</b> Camp Hero	<b>Area:</b> DU13	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW034	<b>Northing:</b> 334975.9 <b>Easting:</b> 1572442.8	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 48.9	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-06-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 20-35
<b>Finish Date:</b> 06-06-17	<b>Borehole Diameter (in):</b> 6 in	<b>Total Depth (ft):</b> 37.5

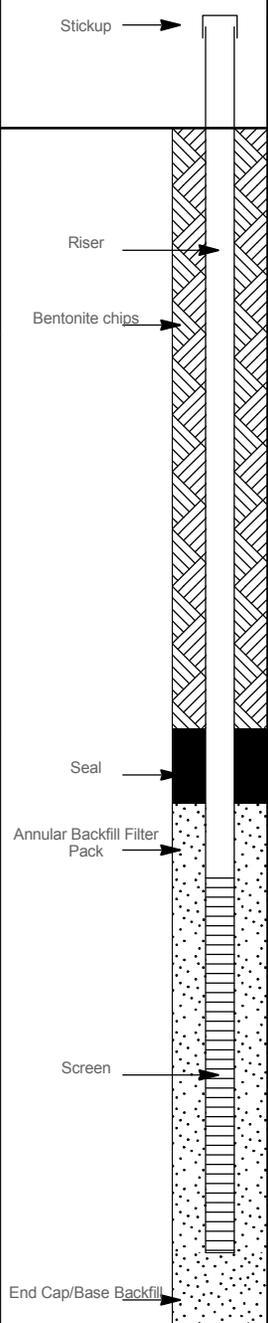
Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0						Stickup
2	3.8	0.0, 0.0, 0.0, 0.0	OH	0.5	Organic soil, roots, grass	Riser
4			SM	2.5	SANDY SILT, loose, dry to moist, light reddish brown, silt, cohesive, slightly plastic, fine sand, well sorted	
6	5	0.0, 0.0, 0.0, 0.0, 0.0, 0.0	SM	5.5	SILTY SAND, loose, dry, light grayish brown, medium sand, poorly sorted, subrounded, trace to some silt, trace gravel	Bentonite chips
8			MLCL	5.5	SILTY SAND WITH CLAY, dense and firm, light reddish brown, medium to fine sand, poorly sorted, silt and clay, cohesive, slightly plastic, trace amount of gravel,	
10						
12	5	0.0, 0.0, 0.0, 0.0, 0.0, 0.0	MLCL	5.5	SILTY SAND WITH CLAY, dense and firm, light reddish brown, medium to fine sand, poorly sorted, silt and clay, cohesive, slightly plastic, trace amount of gravel,	Seal
14						
16	3.1	0.0, 0.0, 0.0, 0.0, 0.0, 0.0	MLCL	5.5	SILTY SAND WITH CLAY, dense and firm, light reddish brown, medium to fine sand, poorly sorted, silt and clay, cohesive, slightly plastic, trace amount of gravel,	Annular Backfill Filter Pack
18						
20	5	0.0, 0.0, 0.0, 0.0, 0.0, 0.0	CL	21.0	LEAN CLAY, lens, cohesive, plastic, very dense	Screen
22						
24	5	0.0, 0.0, 0.0, 0.0, 0.0, 0.0	SM	21.5	SILTY SAND, firm to moist, light grayish brown, fine to medium sand, poorly sorted, sub rounded, silt, slightly cohesive, trace gravel at 24' bgs, more moist than above	End Cap/Base Backfill
26						
28	5	0.0, 0.0, 0.0, 0.0, 0.0, 0.0	CL	27.0	SILTY SAND WITH CLAY, firm to dense, light grayish brown, dry to moist, fine to medium sand, poorly sorted, sub rounded, silt and clay, cohesive, not plastic	
30						
32	5	0.0, 0.0, 0.0, 0.0, 0.0, 0.0	SM	29.5	SILTY SAND, dense, moist to wet, light reddish gray, fine to medium sand, poorly sorted, sub rounded, silt, cohesive, trace gravel, sub rounded	
34						
36						
37.5						

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<b>Client:</b> Camp Hero	<b>Area:</b> DU13	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW035	<b>Northing:</b> 335018.2 <b>Easting:</b> 1572552.8	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 42.0	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-06-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 20-30
<b>Finish Date:</b> 06-06-17	<b>Borehole Diameter (in):</b> 6 in	<b>Total Depth (ft):</b> 32.5

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information			
						Stickup	Well Diagram		
0									
2	3.5	0.4, 0.6, 1.3, 0.5	OH		1.0 Organic soil, roots, loamy soil				
4			SM		SILTY SAND, loose to dense, dry, light reddish brown, fine to medium sand, poorly sorted, subrounded, silt, cohesive, non plastic fine sand at 4 feet bgs, trace gravel, broken rock fragment				
6	3.8	0.1, 0.4, 0.1, 0.8	MLCL		5.5 SILTY SAND WITH CLAY, dense, moist to dry, reddish brown, fine to medium sand, poorly sorted, sub rounded to rounded, silt and clay, cohesive, low plasticity, sticky, orange oxidation staining, bright orange to red, trace gravel and fragmented rock, becoming moist to dry, higher sand content at 14 feet bgs, moist, rock fragment				
8									
10									
12	4.1	0.1, 1.7, 2.3, 3.3, 2.4			16.0 SILTY SAND, firm/slightly dense, moist, light reddish brown, fine to medium sand, poorly sorted, rounded to subrounded, silt, slightly cohesive, trace to some gravel, rounded, non spherical, moisture limited to pore spaces				
14									
16	4.5	0.3, 0.2, 1.3, 2.0, 0.7			trace large diameter gravel ~1-2"				
18									
20	4.1	0.1, 0.2, 0.7, 1.1, 1.0,	SM		till material, heterogenous sand, silt, and gravel				
22									
24									
26	4.3	0.4, 0.6, 0.2, 1.0, 1.5			SAA, tight to firm, less moisture in core material				
28									
30									
32									
					32.5				



**Remarks:**

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# Boring and Well Construction Log

<b>Client:</b> Camp Hero	<b>Area:</b> DU08	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW037	<b>Northing:</b> 333765.9 <b>Easting:</b> 1572787.9	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 18.8	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-09-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 5-15
<b>Finish Date:</b> 06-09-17	<b>Borehole Diameter (in):</b> 6 in	<b>Total Depth (ft):</b> 17.5

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0						
0.5			OH		Organic soil, tight, wet, roots, grass	
2	2	0.0, 0.1, 0.0	SP		SAND, lose, moist, grayish brown, medium sand, some coarse sand, subrounded, poorly sorted, rootsrock in shoe, crushed increasing silt contents and becomes coarse	Bentonite chips
4						Annular Backfill Filter Pack
6						Riser
8	3	0.2, 0.3, 0.2	SWGP		GRAVELLY SAND, very loose, wet, dark brownish gray, coarse sand, poorly sorted, subrounded, gravel, slightly spherical, rounded, 1" diameter	
10			SM		SILTY SAND lens, firm, moist, dark brown, fine to medium sand, silt	Screen
12			SW		SAND, lose, wet, light brown, medium to coarse sand, well sorted, rounded, trace silt	
14	3.1	0.1, 0.1, 0.1	SPGP		GRAVELLY SAND, loose, wet, dark brown, poorly sorted, rounded gravel, sub spherical, 1" diameter	
16						End Cap/Base Backfill
17.5						

**Remarks:** No Stickup

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<b>Client:</b> Camp Hero	<b>Area:</b> DU07	<b>Logged By:</b> M Glinski
<b>Location ID:</b> CH-MW038	<b>Northing:</b> 335849.6 <b>Easting:</b> 1571322.0	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 63.7	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-07-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 10-19.5
<b>Finish Date:</b> 06-07-17	<b>Borehole Diameter (in):</b> 6 in	<b>Total Depth (ft):</b> 20.0

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information			
						Stickup			
0									
2	2.5	0.0, 0.0	SM	[Dotted Pattern]	SILTY SAND, soft (n=2-4), wet, (7.5YR 4/6) strong brown, fine SAND, 20% fines trace gravel	Stickup			
4						Bentonite chips			
6	Riser								
8	Seal								
10	Annular Backfill Filter Pack								
12	Screen								
14									
16									
18	3.6	0.0, 0.0, 0.0				SPSM	[Dotted Pattern]	18.0	
20								20.0	POORLY GRADED SAND WITH SILT, loose (n=5-10), moist, (10YR 4/4) dark yellowish brown, fine to medium SAND

**Remarks:**

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# Boring and Well Construction Log

<b>Client:</b> Camp Hero	<b>Area:</b> DU15	<b>Logged By:</b> M Glinski
<b>Location ID:</b> CH-MW039	<b>Northing:</b> 335245.2 <b>Easting:</b> 1571285.3	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 66.2	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-07-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 5-14.5
<b>Finish Date:</b> 06-07-17	<b>Borehole Diameter (in):</b> 6 in	<b>Total Depth (ft):</b> 15.0

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0						Stickup →
2	2.9	0.0, 0.0, 0.0	SM	[Pattern]	SILTY SAND, non-plastic medium dense (n=11-30), dry, (2.5Y 4/3) olive brown, fine to medium SAND, 20% fines	Cement →
4						Seal →
6	2.5	0.0, 0.0	SPSM	[Pattern]	POORLY GRADED SAND WITH SILT, non-plastic loose (n=5-10), wet, (2.5Y 5/3) light olive brown, fine to medium SAND	Riser →
8						Annular Backfill Filter Pack →
10	3		SPSM	[Pattern]	POORLY GRADED SAND w SILT + GRAVEL, 15% gravel	Screen →
12						End Cap/Base Backfill →
14						
15.0						

**Remarks:**

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<b>Client:</b> Camp Hero	<b>Area:</b> DU06	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW041	<b>Northing:</b> 334117.5 <b>Easting:</b> 1570083.1	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 59.6	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-05-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 15-25
<b>Finish Date:</b> 06-05-17	<b>Borehole Diameter (in):</b> 6 in	<b>Total Depth (ft):</b> 30.0

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0						Stickup →
2	4.1	0.0, 0.0, 0.0, 0.0, 0.0	OH		Organic soil, grass, roots, coal fragments	
3.5			SM		SILTY SAND, loose, moist, light brown with orange staining, fine to medium sand, rounded, poorly sorted, trace silt, cohesive, gray at 3 feet bgs	
4.3			OH		Peat/organic layer, leaves, roots, woody fragments	
6	4	0.0, 0.0, 0.0, 0.0, 0.0	SM		SILTY SAND, loose to firm, moist, light brown, fine sand, poorly sorted, rounded, silt, cohesive	
7.5			SP		SAND, loose, wet, medium sand, well sorted	
10.0			SM		SILTY SAND, firm, dry, gray with orange staining, fine sand with silt, trace clay, cohesive, non plastic	
12	2.8	0.0, 0.0, 0.0, 0.0, 0.0	SW		SAND, loose, dry to moist, light brown, medium sand, trace silt, grading to coarse sand, wet, poorly sorted	
13.5						
16	3.8	0.0, 0.0, 0.0, 0.0, 0.0			SILTY SAND, loose to firm, light gray, moist, fine to medium sand, poorly sorted, sub rounded, silt, cohesive, non plastic, trace gravel, rounded, non spherical  denser at 18 feet bgs, higher percentage of clay	
18						
20						
22	0	NA	SM			
24						
26	3	0.0, 0.0, 0.0, 0.0, 0.0				
28						
30						End Cap/Base Backfill →

**Remarks:**

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<b>Client:</b> Camp Hero	<b>Area:</b> DU06	<b>Logged By:</b> A Borden
<b>Location ID:</b> CH-MW042	<b>Northing:</b> 334148.3 <b>Easting:</b> 1570132.9	<b>Drilling Company:</b> Cascade
<b>Project #:</b> 60443903	<b>Ground &amp; TOC Elevations (FT NAVD88):</b> 61.1	<b>Depth to Bedrock (ft bgs):</b> NA
<b>Start Date:</b> 06-05-17	<b>Drilling Method:</b> Sonic	<b>Well Screen Interval (ft bgs):</b> 22-32
<b>Finish Date:</b> 06-05-17	<b>Borehole Diameter (in):</b> 5.5 in	<b>Total Depth (ft):</b> 35.0

Depth (ft bgs)	Recovery Length	PID (ppm)	USCS Code	Geo Unit Code	Soil and Rock Description Classification Scheme: USCS	Well Information
0						
0.5			OH		Organic soil (loam), grass, roots	
2	2	0.0, 0.0, 0.7	SM		SILTY SAND, moist, loose, black to dark brown, fine to medium sand with some silt, poorly sorted	Bentonite chips
4			SM		SILTY SAND WITH GRAVEL, loose, moist, light reddish brown, fine to medium sand with trace gravel, poorly sorted, gravel is rounded and non-spherical, moist to wet at 5-6 feet bgs	
6			SM			
8	4.5	0.0, 0.0, 0.4, 0.0, 0.0	MLCL		SILTY CLAY, soft, moist to wet, light brown, fine sand with trace medium sand, cohesive, slightly plastic	
10			SM		SILTY SAND, soft, dry to moist, light brown with orange staining, fine sand with silt, trace clay, poorly sorted, cohesive becoming moist at 11 feet bgs, coarse sand at 12 feet bgs, trace gravel, orange staining, medium to coarse sand at 14 feet bgs, poorly sorted	Riser
12	4	0.0, 0.0, 0.0, 0.0	SM			
14			SM			
16			SM			
18	4.5	0.0, 0.0, 0.0	MLCL		SILTY SAND WITH CLAY, dense, dry to moist, medium brown with orange staining, medium sand, trace gravel, poorly sorted, sand is rounded, non-spherical becoming stiff and dense, difficult to break open core	Seal
20			MLCL			
22	2.5	0.0, 0.0, 0.0	SW		SAND, loose, moist to wet, light gray, medium sand, poorly sorted, rounded, trace silt, slightly cohesive, trace amount of gravel	Annular Backfill Filter Pack
24			SW			
26			SW			
28	0	NA	SW			Screen
30			SW			
32	4.2	0.0, 0.0, 0.0, 0.0	SM		SILTY SAND, stiff, moist to dry, light gray, medium to coarse sand, angular to sub rounded, poorly sorted, silt, stiff, cohesive, not plastic	
34			SM		very coarse, wet, loose, poorly sorted at 35 feet bgs	End Cap/Base Backfill
35.0						

**Remarks:** No Stickup

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