



LOG OF WELL BORING MW-1S/1D

(Page 1 of 6)

Project Description
GTAC Hoff VC
Site Investigation

Project Number
2603100116.3030.303

Driller : Duane Moyer
 Logged By : Dimitri Quafisi
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/28/12
 Drilling Completed : 03/29/12
 Well Construction : 09/11/12
 Static Water Level : MW-1S = 3.49 btoc
 : MW-1D = 7.10 btoc

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-1S	Well: MW-1D	Well Construction Information
					Elev.:	Elev.:	
0	CRUSHED STONE/ BALLAST				Driveover 2" Well Plug Concrete Bentonite	Driveover 6" Well Plug Concrete	MW-1S WELL RISER : PVC Material : PVC Diameter : 2" From : 0'-5' WELL SCREEN : PVC Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-1D OUTER CASING : Steel Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : PVC Material : PVC Diameter : 2" From : 44'-174' Opening : 0.040" slot LOWER SCREEN : PVC Material : PVC Diameter : 2" From : 240'-300' Opening : 0.040" slot
5	Clayey SILT with some gravel, moist, low-medium plasticity, dark brown (7.5 YR 3/3). Weathered SILTSTONE, some mica, gray (10 YR 6/2).	ML			Sand Screen	Grout Steel Casing Grout Filled	
15	15': Bedrock becomes competent.						
23-24	23'-24': Soft zone.	SL					
25	25': Color change to dark gray (5 YR 4/1).						
40	HORNFELS, black (5 YR 2.5/1).	HF			Bentonite Upper Sand		
50							

NOTES:

PID Readings = 0.0 ppm

Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.

Shallow well developed via pumping and surging with a submersible pump.

Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones.

Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.

bgs = below ground surface
 btoc = below top of casing
 gpm = gallons per minute
 ppm = parts per million

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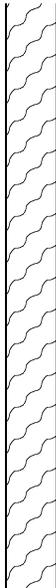
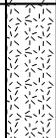
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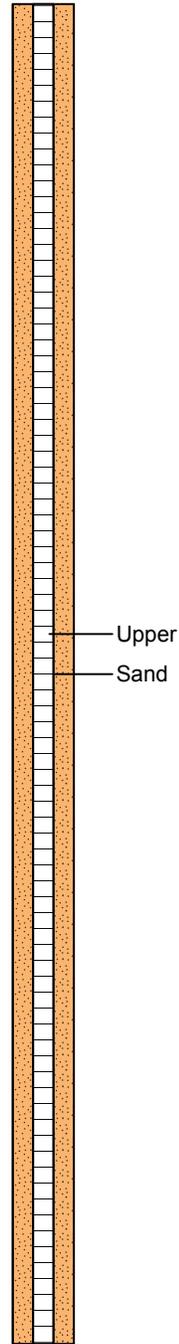
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Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-1S Elev.:	Well: MW-1D Elev.:	Well Construction Information
50	Hornfels (continued)						MW-1S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-1D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : Material : PVC Diameter : 2" From : 44'-174' Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 240'-300' Opening : 0.040" slot
55	55': Some white banding is present.						
60							
65	65': Dark brown (7.5 YR 3/2) bands are visible in cuttings.						
70							
75		HF					
80							
85							
90	90': Color change to dark grey (7.5 YR 4/1).						
95	DIABASE, fine to medium grained, some quartz.	DI					
100				0			



NOTES:

PID Readings = 0.0 ppm

Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.

Shallow well developed via pumping and surging with a submersible pump.

Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones.

Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.

bgs = below ground surface
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					Elev.:	Elev.:	
100	Diabase (continued)			0			<p>MW-1S</p> <p>WELL RISER : Material : PVC Diameter : 2" From : 0'-5'</p> <p>WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4'</p> <p>MW-1D</p> <p>OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 44'-174' Opening : 0.040" slot</p> <p>LOWER SCREEN Material : PVC Diameter : 2" From : 240'-300' Opening : 0.040" slot</p> <p>NOTES:</p> <p>PID Readings = 0.0 ppm</p> <p>Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yeild: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.</p> <p>Shallow well developed via pumping and surging with a submersible pump.</p> <p>Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones.</p> <p>Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.</p> <p>bgs = below ground surface btoc = below top of casing gpm = gallons per minute ppm = parts per million</p>
105	105': Large pieces of quartz present.						
110	110': Bedrock becomes very hard.						
115	115': Becomes very fine grained, predominantly albite, quartz, and augite, black (5 YR 2.5/1).						
120							
125		DI				Upper Sand	
130							
135	135': Rock becomes softer.						
140				0			
145	143': Fracture present ~6". 145'-153': Some hornfels present in cuttings.						
150							



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: 6" air hammer for wells	: MW-1D = 7.10 btoc

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-1S	Well: MW-1D	Well Construction Information
					Elev.:	Elev.:	
150	Diabase (continued)						MW-1S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-1D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : Material : PVC Diameter : 2" From : 44'-174' Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 240'-300' Opening : 0.040" slot
154	154': Bedrock becomes hard again.						
160						Upper Sand	NOTES: PID Readings = 0.0 ppm Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yeild: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Shallow well developed via pumping and surging with a submersible pump. Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand. bgs = below ground surface btoc = below top of casing gpm = gallons per minute ppm = parts per million
165							
170							
175		DI				Bentonite Slurry	
180							
185							
190							
195							
200							



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					Elev.:	Elev.:	
200	Diabase (continued)						<p>MW-1S</p> <p>WELL RISER : Material : PVC Diameter : 2" From : 0'-5'</p> <p>WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4'</p> <p>MW-1D</p> <p>OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 44'-174' Opening : 0.040" slot</p> <p>LOWER SCREEN Material : PVC Diameter : 2" From : 240'-300' Opening : 0.040" slot</p> <p>NOTES:</p> <p>PID Readings = 0.0 ppm</p> <p>Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yeild: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.</p> <p>Shallow well developed via pumping and surging with a submersible pump.</p> <p>Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones.</p> <p>Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.</p> <p>bgs = below ground surface btoc = below top of casing gpm = gallons per minute ppm = parts per million</p>
205							
210							
215							
220							
225		DI					
230							
235							
240							
245							
250				0			



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					Elev.:	Elev.:	
250	Diabase (continued)			0			MW-1S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30" Opening : 0.010 slot Sandpack : 4'-30" Seal : 1'-4'
255	257'-260': Soft zone encountered.						MW-1D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40" Grout : 0'-40" UPPER SCREEN : Material : PVC Diameter : 2" From : 44'-174" Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 240'-300" Opening : 0.040" slot
260							NOTES: PID Readings = 0.0 ppm Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yeild: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Shallow well developed via pumping and surging with a submersible pump. Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand. bgs = below ground surface btoc = below top of casing gpm = gallons per minute ppm = parts per million
265							
270							
275		DI					
279	279'-280': Soft zone encountered.						
280							
285							
290							
295							
300	Well Completed at 300' bgs.			<0.5			

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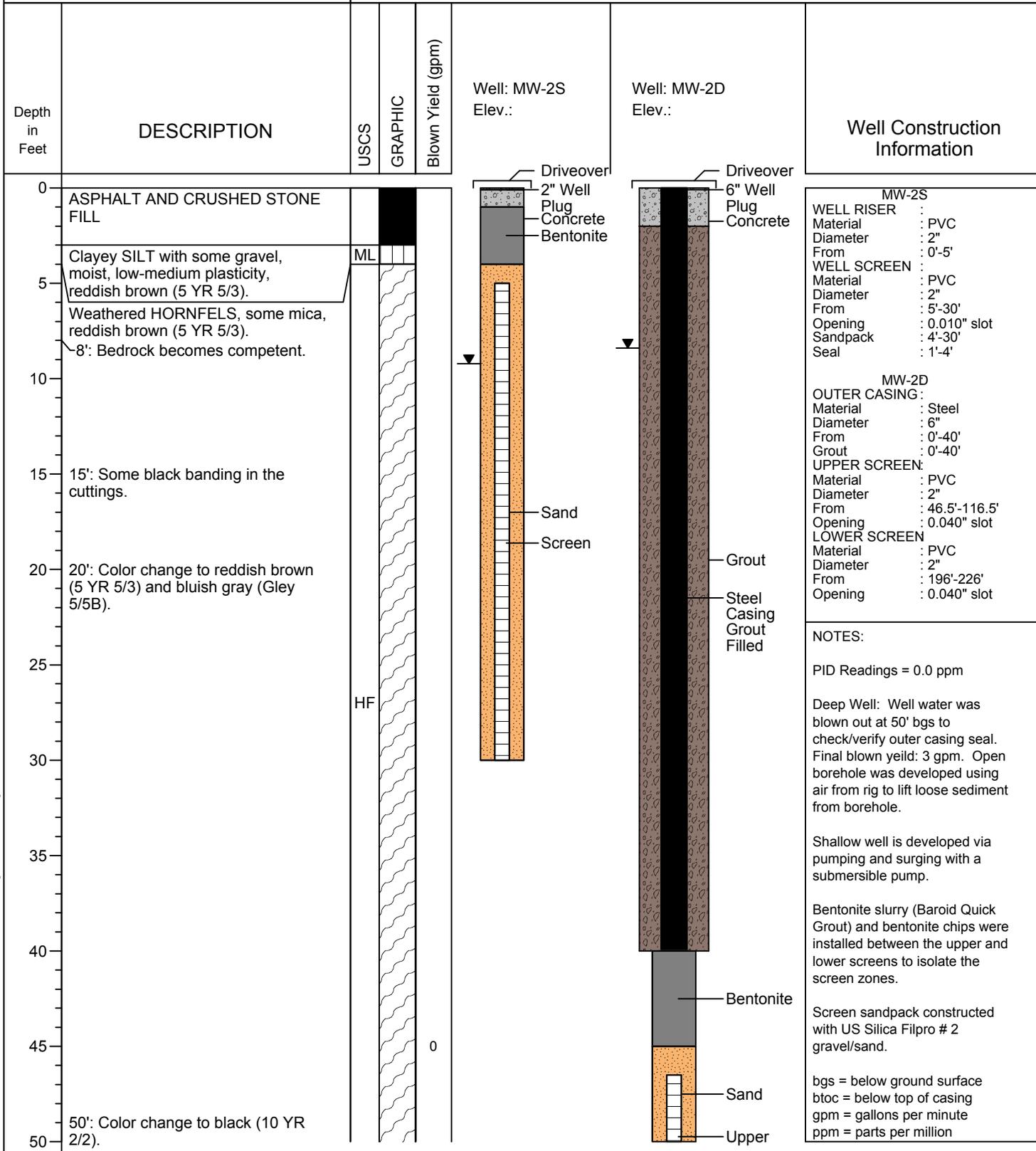
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 Static Water Level : MW-2S = 9.22' btoc
 : MW-2D = 8.40' btoc



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					Elev.:	Elev.:	
50	Hornfels (continued)						MW-2S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010" slot Sandpack : 4'-30' Seal : 1'-4' MW-2D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : Material : PVC Diameter : 2" From : 46.5'-116.5' Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 196'-226' Opening : 0.040" slot NOTES: PID Readings = 0.0 ppm Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yeild: 3 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Shallow well is developed via pumping and surging with a submersible pump. Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand. bgs = below ground surface btoc = below top of casing gpm = gallons per minute ppm = parts per million
53'	Small fracture.			<1/2			
55							
60							
65							
70							
75		HF					
80							
85							
90							
95							
100							

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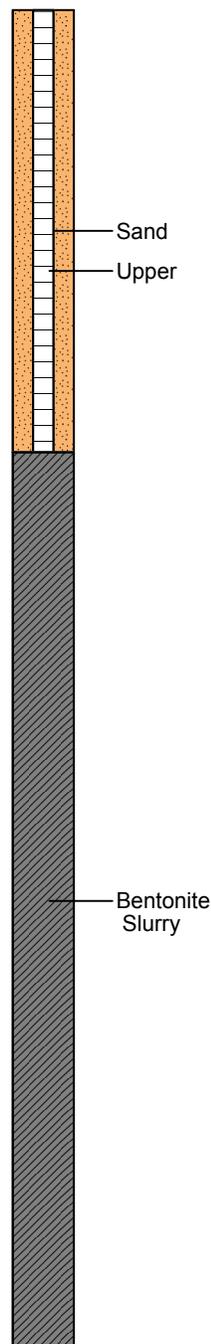
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100	Hornfels (continued)						<p>MW-2S</p> <p>WELL RISER : Material : PVC Diameter : 2" From : 0'-5'</p> <p>WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010" slot Sandpack : 4'-30' Seal : 1'-4'</p> <p>MW-2D</p> <p>OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 46.5'-116.5'</p> <p>LOWER SCREEN : Material : PVC Diameter : 2" From : 196'-226' Opening : 0.040" slot</p> <p>NOTES:</p> <p>PID Readings = 0.0 ppm</p> <p>Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 3 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.</p> <p>Shallow well is developed via pumping and surging with a submersible pump.</p> <p>Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones.</p> <p>Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.</p> <p>bgs = below ground surface btoc = below top of casing gpm = gallons per minute ppm = parts per million</p>
105							
110	110'-115': Soft zone with the softest spot at 112'.						
115		HF					
120							
125							
130							
135	135': Some white banding present.						
140	DIABASE, fine grained, feldspar and quartz rich, dark gray (10 YR 4/1).	DI					
145	HORNFELS, black (10 YR 2/2).	HF					
150							





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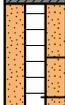
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160							
165							
170							
175		HF					
180							
185	185': Some calcite visible.						
190							
195							
200	200': Color change to very dark gray (5YR 3/1).					 Sand Lower	



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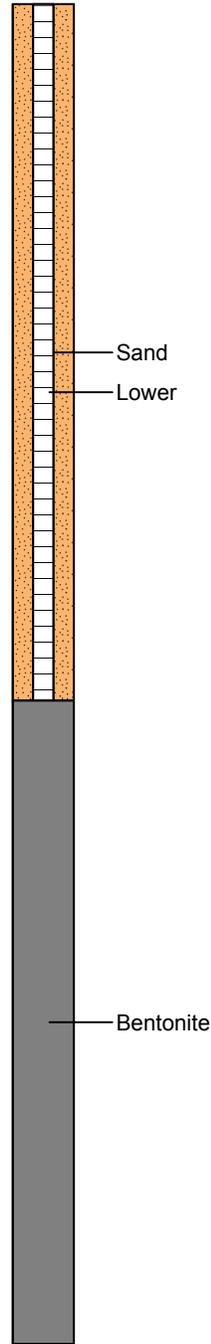
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205							
210							
215							
220							
225		HF					
230							
235							
240							
245							
250							

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255	DIABASE, fine grained, feldspar and quartz rich, dark gray (10 YR 4/1).						
260							NOTES: PID Readings = 0.0 ppm Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yeild: 3 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Shallow well is developed via pumping and surging with a submersible pump. Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand. bgs = below ground surface btoc = below top of casing gpm = gallons per minute ppm = parts per million
265							
270							
275							
280	279': Fracture present.	DI		3			
285							
290							
295							
300	Well Completed at 300' bgs.			3			

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LOG OF WELL BORING MW-3S/3D

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Project Description
GTAC Hoff VC
Site Investigation

Project Number
2603100116.3030.303

Driller : Duane Moyer
 Logged By : Dimitri Quafisi
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/26/12
 Drilling Completed : 03/27/12
 Well Construction : 06/26/13
 Static Water Level : MW-3S = 5.21' btoc
 : MW-3D = 6.61' btoc

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-3S Elev.:		Well: MW-3D Elev.:		Well Construction Information
0	CRUSHED STONE/ BALLAST				Driveover 2" Well Plug Concrete Bentonite	Driveover 6" Well Plug Concrete			MW-3S WELL RISER : PVC Material : PVC Diameter : 2" From : 0'-5' Joints : WELL SCREEN : PVC Material : PVC Diameter : 2" From : 5'-30' Joints : 5', 15', 25' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-3D OUTER CASING : Steel Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN: PVC Material : PVC Diameter : 2" From : 46.5'-106.5' Opening : 0.020" slot LOWER SCREEN Material : PVC Diameter : 2" From : 150.5'-210.5' Opening : 0.020" slot
5	Clayey SILT with some gravel, moist, low-medium plasticity, brown (7.5 YR 4/4).	ML			Sand Screen	Grout			
10	Weathered SILTSTONE, some mica, gray (7.5 YR 4/4). 11': Bedrock becomes competent.								
15	15'-16': Fracture present.								
20	20': Bedrock becomes very hard.								
25	25': Color change to black (7.5 YR 2.5/1).	SL							
30				1					
35	35': Color change to gray (7.5 YR 6/1).								
40									
45									
50	50': Color change to black (7.5 YR 2.5/1).								

NOTES:

PID Readings = 0.0 ppm

Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.

Bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack was constructed with US Silica Filpro #2 gravel/sand.

Shallow well and deep well screens were developed via pumping and surging with a submersible pump.

bgs = below ground surface
 btoc = below top of casing
 ppm = parts per million
 gpm = gallons per minute

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LOG OF WELL BORING MW-3S/3D

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Project Description
 GTAC Hoff VC
 Site Investigation

Project Number
 2603100116.3030.303

Driller : Duane Moyer
 Logged By : Dimitri Quafisi
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/26/12
 Drilling Completed : 03/27/12
 Well Construction : 06/26/13
 Static Water Level : MW-3S = 5.21' btoc
 : MW-3D = 6.61' btoc

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-3S	Well: MW-3D	Well Construction Information
					Elev.:	Elev.:	
50	Siltstone (continued)						MW-3S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' Joints : WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Joints : 5', 15', 25' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-3D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN: Material : PVC Diameter : 2" From : 46.5'-106.5' Opening : 0.020" slot LOWER SCREEN Material : PVC Diameter : 2" From : 150.5'-210.5' Opening : 0.020" slot
55		SL					
60							
65	HORNFELS, black (7.5 YR 2.5/1).						
70							
75	75': Color change to very dark brown (7.5 YR 2.5/2).						
80	80': Color change to black (5 YR 2.5/1).						
85		HF					
90							
95	93'-94': Soft zone. 95': Color change to gray (7.5 YR 6/1).						
100	100': Color change to black (5 YR 2.5/1).			<1/2			

Sand
 Upper

NOTES:

PID Readings = 0.0 ppm

Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.

Bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack was constructed with US Silica Filpro #2 gravel/sand.

Shallow well and deep well screens were developed via pumping and surging with a submersible pump.

bgs = below ground surface
 btoc = below top of casing
 ppm = parts per million
 gpm = gallons per minute

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LOG OF WELL BORING MW-3S/3D

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Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Dimitri Quafisi
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/26/12
 Drilling Completed : 03/27/12
 Well Construction : 06/26/13
 Static Water Level : MW-3S = 5.21' btoc
 : MW-3D = 6.61' btoc

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-3S	Well: MW-3D	Well Construction Information
					Elev.:	Elev.:	
100	Hornfels (continued)			<1/2			MW-3S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' Joints : WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Joints : 5', 15', 25' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-3D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN: Material : PVC Diameter : 2" From : 46.5'-106.5' Opening : 0.020" slot LOWER SCREEN Material : PVC Diameter : 2" From : 150.5'-210.5' Opening : 0.020" slot
105							
110	110': Color change to gray (7.5 YR 6/1) and pink (2.5 YR 8/4).						NOTES: PID Readings = 0.0 ppm Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack was constructed with US Silica Filpro #2 gravel/sand. Shallow well and deep well screens were developed via pumping and surging with a submersible pump. bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute
115							
120	120': Color change to black (5 YR 2.5/1).						
125		HF					
130							
135							
140							
145							
150	150'-155': Slightly softer zone.						

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LOG OF WELL BORING MW-3S/3D

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Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Dimitri Quafisi
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/26/12
 Drilling Completed : 03/27/12
 Well Construction : 06/26/13
 Static Water Level : MW-3S = 5.21' btoc
 : MW-3D = 6.61' btoc

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-3S	Well: MW-3D	Well Construction Information
					Elev.:	Elev.:	
150	Hornfels (continued)						MW-3S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' Joints : WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Joints : 5', 15', 25' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-3D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN: Material : PVC Diameter : 2" From : 46.5'-106.5' Opening : 0.020" slot LOWER SCREEN Material : PVC Diameter : 2" From : 150.5'-210.5' Opening : 0.020" slot
155	155': Color change to gray (7.5 YR 6/1) and pink (2.5 YR 8/4).						
160							Sand Lower
165							
170	170': Color change to black (5 YR 2.5/1).						NOTES: PID Readings = 0.0 ppm Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack was constructed with US Silica Filpro #2 gravel/sand. Shallow well and deep well screens were developed via pumping and surging with a submersible pump. bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute
175		HF					
180							
185							
190	190': Rock becomes slightly harder.						
195							
200							



LOG OF WELL BORING MW-3S/3D

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Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Dimitri Quafisi
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/26/12
 Drilling Completed : 03/27/12
 Well Construction : 06/26/13
 Static Water Level : MW-3S = 5.21' btoc
 : MW-3D = 6.61' btoc

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-3S	Well: MW-3D	Well Construction Information
					Elev.:	Elev.:	
200	Hornfels (continued)						MW-3S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' Joints : WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Joints : 5', 15', 25' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-3D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN: Material : PVC Diameter : 2" From : 46.5'-106.5' Opening : 0.020" slot LOWER SCREEN Material : PVC Diameter : 2" From : 150.5'-210.5' Opening : 0.020" slot
205							
210							NOTES: PID Readings = 0.0 ppm Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: <0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack was constructed with US Silica Filpro #2 gravel/sand. Shallow well and deep well screens were developed via pumping and surging with a submersible pump. bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute
215							
220							
225		HF					
230							
235							
240							
245							
250	Well Completed at 250' bgs.			<1/2			



LOG OF WELL BORING MW-4D

(Page 1 of 5)

Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Zack Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/30/12
 Drilling Completed : 04/02/12
 Well Construction : 09/18/12
 Static Water Level : 13.90' btoc

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-4D Elev.:	Well Construction Information
0	CRUSHED STONE/BALLAST			0.5			OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : Material : PVC Diameter : 2" From : 88'-118' Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 215'-245' Opening : 0.040" slot
5	SILTY CLAY, moist, dense, tight, very dark gray (7.5YR 3/1).	CL		1.5 2.5 3.0 345			
10	SILTSTONE, weathered, dark brown (7.5YR 3/3). 11': Bedrock becomes competent.						
15	15': Bedrock becomes very hard. Color change to dark gray (7.5YR 4/1).						
20		SL					
25	25': Color changes to black (7.5YR 2.5/1).						
30							
35							
40	Cuttings are spheroidal. HORNFELS, black (Gley 1 3/N).						
45		HF					
50	Hornfels (continued)						

NOTES:

Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 4 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.

Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones.

Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.

bgs = below ground surface
 btoc = below top of casing
 ppm = parts per million
 gpm = gallons per minute



LOG OF WELL BORING MW-4D

(Page 2 of 5)

Project Description
 GTAC Hoff VC
 Site Investigation

Driller : Duane Moyer
 Logged By : Zack Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/30/12
 Drilling Completed : 04/02/12
 Well Construction : 09/18/12
 Static Water Level : 13.90' btoc

Project Number
 2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-4D Elev.:	Well Construction Information
50							OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : Material : PVC Diameter : 2" From : 88'-118' Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 215'-245' Opening : 0.040" slot
55	55': Calcite filled fractures.						NOTES: Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 4 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand. bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute
60	60': Color change to dark gray (Gley 1 5/N).						
65							
70							
75	75'-80': Soft zone encountered.	HF					
80							
85							
90							
95							
100							

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LOG OF WELL BORING MW-4D

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Project Description
 GTAC Hoff VC
 Site Investigation

Driller : Duane Moyer
 Logged By : Zack Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/30/12
 Drilling Completed : 04/02/12
 Well Construction : 09/18/12
 Static Water Level : 13.90' btoc

Project Number
 2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-4D Elev.:	Well Construction Information
100 105 110 115 120 125 130 135 140 145 150	Hornfels (continued) 109': Fracture encountered. 113': Fracture encountered.				4	 Upper Sand Bentonite Slurry	<p>OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 88'-118' Opening : 0.040" slot</p> <p>LOWER SCREEN : Material : PVC Diameter : 2" From : 215'-245' Opening : 0.040" slot</p> <p>NOTES:</p> <p>Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 4 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.</p> <p>Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones.</p> <p>Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.</p> <p>bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute</p>



LOG OF WELL BORING MW-4D

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Project Description
 GTAC Hoff VC
 Site Investigation

Driller : Duane Moyer
 Logged By : Zack Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/30/12
 Drilling Completed : 04/02/12
 Well Construction : 09/18/12
 Static Water Level : 13.90' btoc

Project Number
 2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-4D Elev.:	Well Construction Information
150	DIABASE, fine grained, feldspar and quartz rich.						OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : Material : PVC Diameter : 2" From : 88'-118' Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 215'-245' Opening : 0.040" slot NOTES: Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 4 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand. bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute
155							
160							
165							
170	170': Chlorite filled fractures.						
175		DI				Bentonite Slurry	
180							
185							
190							
195							
200							



LOG OF WELL BORING MW-4D

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Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Zack Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 03/30/12
 Drilling Completed : 04/02/12
 Well Construction : 09/18/12
 Static Water Level : 13.90' btoc

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-4D Elev.:	Well Construction Information
200	Diabase (continued)						OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : Material : PVC Diameter : 2" From : 88'-118' Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 215'-245' Opening : 0.040" slot
205							
210							NOTES: Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 4 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand. bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute
215	215': Becomes very fine grained, predominantly augite, black (5 YR 2.5/1).						
220							
225		DI					
230							
235							
240	240': Becomes fine grained, feldspar and quartz rich.						
245							
250	250': Well completed at 250' bgs.				4		



LOG OF WELL BORING MW-5S/5D

(Page 1 of 5)

Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Zachary Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 04/05/12
 Drilling Completed : 04/06/12
 Well Construction : 09/14/12
 Static Water Level : MW-5S = 13.71' btoc
 : MW-5D = 15.53' btoc

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-5S	Well: MW-5D	Well Construction Information
					Elev.:	Elev.:	
0	Clayey SILT with some gravel, moist, low-medium plasticity, dark red (10 YR 3/1).	ML					<p>MW-5S</p> <p>WELL RISER : PVC Material : PVC Diameter : 2" From : 0'-5'</p> <p>WELL SCREEN : PVC Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4'</p> <p>MW-5D</p> <p>OUTER CASING : Steel Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : PVC Material : PVC Diameter : 2" From : 53'-93' Opening : 0.040" slot</p> <p>LOWER SCREEN : PVC Material : PVC Diameter : 2" From : 137.5'-187.5' Opening : 0.040" slot</p>
5	Weathered HORNFELS, some mica, very dark gray (5 YR 3/1).	HF					<p>NOTES:</p> <p>PID Readings = 0.0 ppm</p> <p>Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 8 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.</p> <p>Shallow well is developed via pumping and surging with a submersible pump.</p> <p>Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones.</p> <p>Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.</p> <p>bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute</p>
10							
15							
20							
25							
30	30': Some red color alterations can be seen in cuttings.						
35							
40							
45							
50							



LOG OF WELL BORING MW-5S/5D

Project Description
 GTAC Hoff VC
 Site Investigation

Project Number
 2603100116.3030.303

Driller	: Duane Moyer	Drilling Started	: 04/05/12
Logged By	: Zachary Bentley	Drilling Completed	: 04/06/12
Drilling Method	: Air Rotary	Well Construction	: 09/14/12
Drilling Diameter	: 10" air hammer for casing	Static Water Level	: MW-5S = 13.71' btoc
	: 6" air hammer for wells		: MW-5D = 15.53' btoc

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-5S	Well: MW-5D	Well Construction Information
					Elev.:	Elev.:	
100							MW-5S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-5D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : Material : PVC Diameter : 2" From : 53'-93' Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 137.5'-187.5' Opening : 0.040" slot
105							NOTES: PID Readings = 0.0 ppm Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 8 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Shallow well is developed via pumping and surging with a submersible pump. Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand. bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute
110							
115							
120							
125		HF					
130							
135							
140							
145	144'-146': Soft zone encountered.			5			
150							

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LOG OF WELL BORING MW-5S/5D

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Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Zachary Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 04/05/12
 Drilling Completed : 04/06/12
 Well Construction : 09/14/12
 Static Water Level : MW-5S = 13.71' btoc
 : MW-5D = 15.53' btoc

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-5S	Well: MW-5D	Well Construction Information
					Elev.:	Elev.:	
150							<p>MW-5S</p> <p>WELL RISER : Material : PVC Diameter : 2" From : 0'-5'</p> <p>WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4'</p> <p>MW-5D</p> <p>OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 53'-93' Opening : 0.040" slot</p> <p>LOWER SCREEN Material : PVC Diameter : 2" From : 137.5'-187.5' Opening : 0.040" slot</p> <p>NOTES:</p> <p>PID Readings = 0.0 ppm</p> <p>Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 8 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.</p> <p>Shallow well is developed via pumping and surging with a submersible pump.</p> <p>Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones.</p> <p>Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.</p> <p>bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute</p>
154'-156'	Soft zone encountered.			8			
160							
169'-172'	Soft zone encountered.						
170							
175		HF					
177'-178'	Small fracture.						
180	Color change to black (7.5 Yr 2.5/1).						
185							
190							
195							
200							



LOG OF WELL BORING MW-5S/5D

(Page 5 of 5)

Project Description
 GTAC Hoff VC
 Site Investigation

Driller : Duane Moyer
 Logged By : Zachary Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 04/05/12
 Drilling Completed : 04/06/12
 Well Construction : 09/14/12
 Static Water Level : MW-5S = 13.71' btoc
 : MW-5D = 15.53' btoc

Project Number
 2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-5S	Well: MW-5D	Well Construction Information
					Elev.:	Elev.:	
200							MW-5S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-5D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : Material : PVC Diameter : 2" From : 53'-93' Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 137.5'-187.5' Opening : 0.040" slot
205							
210							
215							
220							
225		HF				Bentonite	NOTES: PID Readings = 0.0 ppm Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yeild: 8 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Shallow well is developed via pumping and surging with a submersible pump. Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand. bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute
230							
235							
240	239'-241': Soft zone encountered.						
245							
250	Well Completed at 250 bgs.			8			



LOG OF WELL BORING MW-6S

(Page 1 of 1)

Project Description
 GTAC Hoff VC
 Site Investigation

Project Number
 2603100116.3030.303

Driller : Duane Moyer
 Logged By : Zachary Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 6" air hammer for well

Drilling Started : 04/09/12
 Drilling Completed : 04/09/12
 Well Construction : 09/09/12
 Static Water Level : MW-6S = 22.56' btoc

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-4S Elev.:	Well Construction Information	
							WELL RISER	WELL SCREEN
0	Weathered HORNFELS, dark reddish grey (2.5 YR 3/1).			0.0		Driveover 2" Compression Plug Concrete Bentonite	: PVC Material : PVC Diameter : 2" From : 0'-5'	NOTES: Shallow well is developed via pumping and surging with a submersible pump. bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute
5	6.5': bedrock becomes competent.			0.0		Sand Screen	: PVC Material : PVC Diameter : 2" From : 5'-30' Joints : 5', 15', 25' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4'	
15		HF		0.0				
30	Well Completed at 30' bgs.							



LOG OF WELL BORING MW-7S/7D

(Page 1 of 5)

Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Zachary Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 04/09/12
 Drilling Completed : 04/10/12
 Well Construction : 09/17/12
 Static Water Level : MW-7S = 3.39' btoc
 : MW-7D = 0.65' btoc

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-7S	Well: MW-7D	Well Construction Information
					Elev.:	Elev.:	
0	Weathered SILTSTONE, mica rich, dark reddish brown (10 YR 2.5/2).						<p>MW-7S</p> <p>WELL RISER : Material : PVC Diameter : 2" From : 0'-5'</p> <p>WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4'</p> <p>MW-7D</p> <p>OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 85'-155' Opening : 0.040" slot</p> <p>LOWER SCREEN : Material : PVC Diameter : 2" From : 180'-210' Opening : 0.040" slot</p>
5	5': Bedrock becomes competent.	SL					
10	HORNFELS, some interfingred siltstone, black (7.5 YR 2.5/1).						
20	20': Color changes to black (7.5 YR 2.5/1) and gray (10 Yr 6/1).						
28	28': Rock becomes very hard.	HF					
50							<p>NOTES:</p> <p>Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 4 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.</p> <p>Shallow well is developed via pumping and surging with a submersible pump.</p> <p>Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.</p> <p>bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute</p>



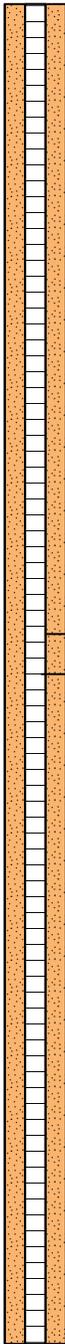
LOG OF WELL BORING MW-7S/7D

(Page 3 of 5)

Project Description
 GTAC Hoff VC
 Site Investigation

Project Number
 2603100116.3030.303

Driller	: Duane Moyer	Drilling Started	: 04/09/12
Logged By	: Zachary Bentley	Drilling Completed	: 04/10/12
Drilling Method	: Air Rotary	Well Construction	: 09/17/12
Drilling Diameter	: 10" air hammer for casing	Static Water Level	: MW-7S = 3.39' btoc
	: 6" air hammer for wells		: MW-7D = 0.65' btoc

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-7S	Well: MW-7D	Well Construction Information
					Elev.:	Elev.:	
100	Hornfels (continued)						<p>MW-7S</p> <p>WELL RISER : Material : PVC Diameter : 2" From : 0'-5'</p> <p>WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4'</p> <p>MW-7D</p> <p>OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 85'-155' Opening : 0.040" slot</p> <p>LOWER SCREEN Material : PVC Diameter : 2" From : 180'-210' Opening : 0.040" slot</p> <p>NOTES:</p> <p>Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 4 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.</p> <p>Shallow well is developed via pumping and surging with a submersible pump.</p> <p>Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.</p> <p>bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute</p>
108'	Soft zone encountered.						
110							
115							
120							
125		HF					
130							
135							
140							
142'-145'	Fracture present.						
145				1			
150							



LOG OF WELL BORING MW-7S/7D

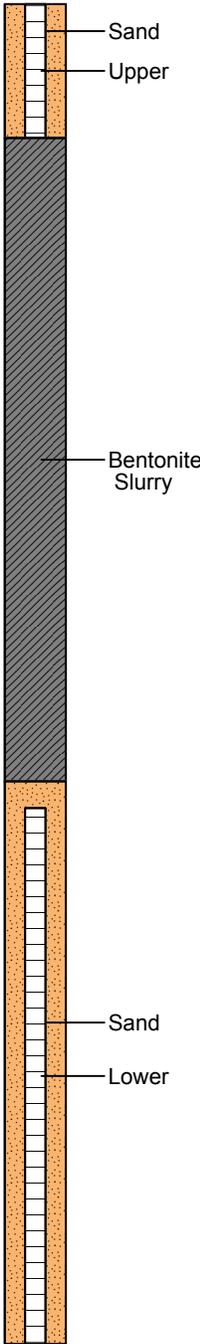
(Page 4 of 5)

Project Description
 GTAC Hoff VC
 Site Investigation

Driller : Duane Moyer
 Logged By : Zachary Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 04/09/12
 Drilling Completed : 04/10/12
 Well Construction : 09/17/12
 Static Water Level : MW-7S = 3.39' btoc
 : MW-7D = 0.65' btoc

Project Number
 2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-7S	Well: MW-7D	Well Construction Information
					Elev.:	Elev.:	
150	Hornfels (continued)					 <p>Sand Upper Bentonite Slurry Lower</p>	<p>MW-7S</p> <p>WELL RISER : Material : PVC Diameter : 2" From : 0'-5'</p> <p>WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4'</p> <p>MW-7D</p> <p>OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 85'-155' Opening : 0.040" slot</p> <p>LOWER SCREEN : Material : PVC Diameter : 2" From : 180'-210' Opening : 0.040" slot</p>
155							
160							
165							
170	170': Color change to black (5 YR 2.5/1).						
175		HF					
180							
185							
190	192'-193': Soft zone encountered.			2			
195							
200							

MW-7S

WELL RISER :
 Material : PVC
 Diameter : 2"
 From : 0'-5'

WELL SCREEN :
 Material : PVC
 Diameter : 2"
 From : 5'-30'
 Opening : 0.010 slot
 Sandpack : 4'-30'
 Seal : 1'-4'

MW-7D

OUTER CASING :
 Material : Steel
 Diameter : 6"
 From : 0'-40'
 Grout : 0'-40'

UPPER SCREEN :
 Material : PVC
 Diameter : 2"
 From : 85'-155'
 Opening : 0.040" slot

LOWER SCREEN :
 Material : PVC
 Diameter : 2"
 From : 180'-210'
 Opening : 0.040" slot

NOTES:

Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 4 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.

Shallow well is developed via pumping and surging with a submersible pump.

Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand.

bgs = below ground surface
 btoc = below top of casing
 ppm = parts per million
 gpm = gallons per minute



LOG OF WELL BORING MW-7S/7D

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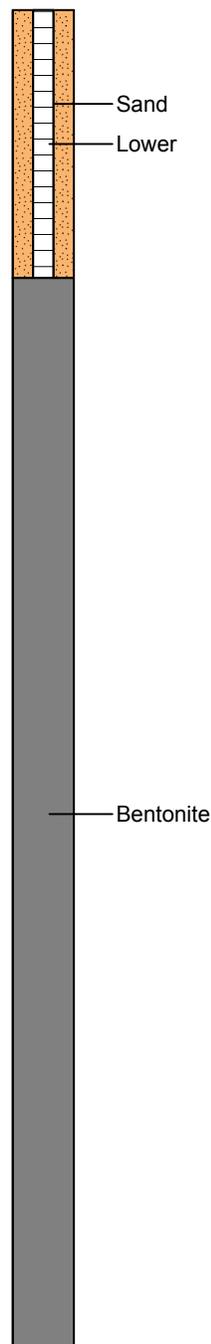
Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Zachary Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 04/09/12
 Drilling Completed : 04/10/12
 Well Construction : 09/17/12
 Static Water Level : MW-7S = 3.39' btoc
 : MW-7D = 0.65' btoc

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	Blown Yield (gpm)	Well: MW-7S	Well: MW-7D	Well Construction Information
					Elev.:	Elev.:	
200	Hornfels (continued)						MW-7S WELL RISER : Material : PVC Diameter : 2" From : 0'-5' WELL SCREEN : Material : PVC Diameter : 2" From : 5'-30' Opening : 0.010 slot Sandpack : 4'-30' Seal : 1'-4' MW-7D OUTER CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40' UPPER SCREEN : Material : PVC Diameter : 2" From : 85'-155' Opening : 0.040" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 180'-210' Opening : 0.040" slot
205	206'-207': Soft zone encountered.			3			
210							NOTES: Deep Well: Well water was blown out at 50' bgs to check/verify outer casing seal. Final blown yield: 4 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Shallow well is developed via pumping and surging with a submersible pump. Bentonite slurry (Baroid Quick Grout) and bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack constructed with US Silica Filpro # 2 gravel/sand. bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute
215	215': Dark gray banding visible in cuttings (7.5 YR 4/1).			4			
220							
225		HF					
230							
235							
240							
245							
250	Well Completed at 250' bgs.			4			





LOG OF WELL BORING MW-8D

(Page 1 of 5)

Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Dimitri Quafisi
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 04/08/13
 Drilling Completed : 04/10/13
 Well Construction : 06/25/13
 Static Water Level : MW-8D = 14' bgs

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yelid (gpm)	Well: MW-8D Elev.:	Well Construction Information
0	CRUSHED STONE\BALLAST			0.0			<p>WELL CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 44.1'-119.1' Opening : 0.020" slot</p> <p>LOWER SCREEN : Material : PVC Diameter : 2" From : 176.5'-246.5' Opening : 0.020" slot</p> <p>NOTES:</p> <p>Deep Well: Well water was blown out at 45' bgs to check/verify outer casing seal. Final blown yeild: 0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.</p> <p>Bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack was constructed with US Silica Filpro #2 gravel/sand.</p> <p>Shallow well and deep well screens were developed via pumping and surging with a submersible pump.</p> <p>bgs = below ground surface btoc = below top of casingy ppm = parts per million gpm = gallons per minute</p>
3.0				3.0			
4.0				4.0			
5.0				3.0			
10.0	Weathered HORNFELS, some with mica, moist, dark gray (7.5 YR 4/1). 10': Slight odor, no elevated PID readings. 10': Bedrock becomes competent.			2.0			
15.0	15.5': Fracture.			0.0			
20.0	19': Calcite filled fracture.			0.0			
22.0	22': Color change to black (7.5 YR 2.5/1).			0.0			
23.0	23': Intermixed black and gray (7.5 YR 6/1) hornfels zone.			0.0			
24.0	24'-26': Fracture zone.			0.0			
30.0	29'-30': Water yeilding aproximately 1 gpm.	HF			1		
45.0	45': Color change to black (7.5 YR 2.5/1).				0		
50.0							

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LOG OF WELL BORING MW-8D

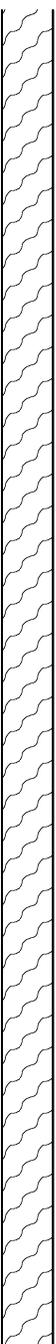
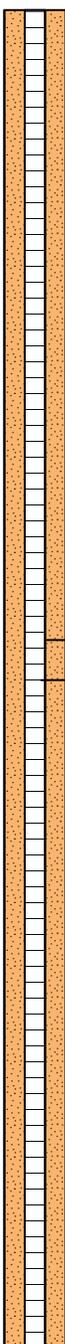
(Page 2 of 5)

Project Description
GTAC Hoff VC
Site Investigation

Driller : Duane Moyer
 Logged By : Dimitri Quafisi
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 04/08/13
 Drilling Completed : 04/10/13
 Well Construction : 06/25/13
 Static Water Level : MW-8D = 14' bgs

Project Number
2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-8D Elev.:	Well Construction Information
50 55 60 65 70 75 80 85 90 95 100	Hornfels (continued) 65': Varying color gray (7.5 YR 6/1), light brown (7.5 YR 6/3) and black (7.5YR 2.5/1). 83'-83.5': Mineral filled fracture. 85': Blown yield 0 gpm.	HF				 <p>Sand Upper</p>	<p>WELL CASING : Material : Steel Diameter : 6" From : 0'-40' Grout : 0'-40'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 44.1'-119.1' Opening : 0.020" slot</p> <p>LOWER SCREEN : Material : PVC Diameter : 2" From : 176.5'-246.5' Opening : 0.020" slot</p> <p>NOTES:</p> <p>Deep Well: Well water was blown out at 45' bgs to check/verify outer casing seal. Final blown yield: 0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.</p> <p>Bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack was constructed with US Silica Filpro #2 gravel/sand.</p> <p>Shallow well and deep well screens were developed via pumping and surging with a submersible pump.</p> <p>bgs = below ground surface btoc = below top of casing ppm = parts per million gpm = gallons per minute</p>



LOG OF WELL BORING MW-8D

(Page 3 of 5)

Project Description
 GTAC Hoff VC
 Site Investigation

Driller : Duane Moyer
 Logged By : Dimitri Quafisi
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 04/08/13
 Drilling Completed : 04/10/13
 Well Construction : 06/25/13
 Static Water Level : MW-8D = 14' bgs

Project Number
 2603100116.3030.303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yelid (gpm)	Well: MW-8D Elev.:	Well Construction Information
100	Hornfels (continued)						
101.75'	Mineral-filled fracture.						
105	106'-108.5: Mineral-filled fracture zone.						
110		HF				Upper	
114.5'	Mineral-filled fracture						
115						Sand	
120	DIABASE, very fine grained, predominantly labordorite and augite, black (5 YR 2.5/1).						
125	125': Bedrock becomes very hard.						
130	130': Interfingering hornfels.						
135		DI					
140							
145	145': Blown yield is approximatley 0.5 gpm.				0.5		
148'-153'	Fracture zone.						
150						Bentonite	

WELL CASING :
 Material : Steel
 Diameter : 6"
 From : 0'-40'
 Grout : 0'-40'
UPPER SCREEN :
 Material : PVC
 Diameter : 2"
 From : 44.1'-119.1'
 Opening : 0.020" slot
LOWER SCREEN :
 Material : PVC
 Diameter : 2"
 From : 176.5'-246.5'
 Opening : 0.020" slot

NOTES:

Deep Well: Well water was blown out at 45' bgs to check/verify outer casing seal. Final blown yield: 0.5 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole.

Bentonite chips were installed between the upper and lower screens to isolate the screen zones. Screen sandpack was constructed with US Silica Filpro #2 gravel/sand.

Shallow well and deep well screens were developed via pumping and surging with a submersible pump.

bgs = below ground surface
 btoc = below top of casing
 ppm = parts per million
 gpm = gallons per minute



LOG OF WELL BORING MW-9D

(Page 1 of 5)

GTAC Hoff VC
New Hanover Township
Montgomery County, Pennsylvania

Driller : Duane Moyer
Logged By : Zachary Bentley
Drilling Method : Air Rotary
Drilling Diameter : 10" air hammer for casing
: 6" air hammer for wells

Drilling Started : 5/12/14
Drilling Completed : 5/13/14
Well Construction : 6/16/14
Static Water Level : 16' bgs on 5/14/14

Project Number
301604.TM.100116.3030.0303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yelid (gpm)	Well: MW-9D Elev.:	Well Construction Information
0	CLAY, organic rich soil, very high plasticity, moist.	CL		0.0			<p>WELL CASING : Material : Steel Diameter : 6" From : 0'-38'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 43.5'-103.5' Opening : 0.020" slot</p> <p>LOWER SCREEN : Material : PVC Diameter : 2" From : 139.5'-189.5' Opening : 0.020" slot</p>
5	Weathered SILTSTONE, dark reddish brown (2.5 YR 3/3). 7': Bedrock becomes competent.	SL		0.0			
20	HORNFELS, some interfingering siltstone, dark reddish brown (2.5YR 3/3). 20': Hard zone.	HF		0.0			
36	36': Calcite chips in cuttings.				1		<p>NOTES:</p> <p>Well water was blown out at 43' bgs to check/verify outer casing seal. Final blown yeild: 50 gpm.</p> <p>Open borehole was developed using air from rig to lift loose sediment from borehole. Individual wells screens developed via pumping and surging on 7/01/14 with submersible pump.</p> <p>Bentonite pellets (3/8") were used to construct bentonite seals. Sandpacks constructed using US Silica Filpro #2 gravel/sand.</p> <p>bgs = below ground surface ppm = parts per million gpm = gallons per minute</p>



LOG OF WELL BORING MW-9D

(Page 2 of 5)

GTAC Hoff VC
New Hanover Township
Montgomery County, Pennsylvania

Driller : Duane Moyer
Logged By : Zachary Bentley
Drilling Method : Air Rotary
Drilling Diameter : 10" air hammer for casing
: 6" air hammer for wells

Drilling Started : 5/12/14
Drilling Completed : 5/13/14
Well Construction : 6/16/14
Static Water Level : 16' bgs on 5/14/14

Project Number
301604.TM.100116.3030.0303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-9D Elev.:	Well Construction Information
50 55 60 65 70 75 80 85 90 95 100	<p>HORNFELS (continued)</p> <p>65': Color change to very dusky red (10R 2.5/2). Pyrite in cuttings.</p> <p>80': Color change to black (10R 2.5/1), some calcite in cuttings. Pyrite in cuttings.</p> <p>90'-100': Soft zone. No water.</p>	HF			2	<p>Sand</p> <p>Upper Screen</p>	<p>WELL CASING : Material : Steel Diameter : 6" From : 0'-38'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 43.5'-103.5' Opening : 0.020" slot</p> <p>LOWER SCREEN : Material : PVC Diameter : 2" From : 139.5'-189.5' Opening : 0.020" slot</p> <p>NOTES:</p> <p>Well water was blown out at 43' bgs to check/verify outer casing seal. Final blown yield: 50 gpm.</p> <p>Open borehole was developed using air from rig to lift loose sediment from borehole. Individual wells screens developed via pumping and surging on 7/01/14 with submersible pump.</p> <p>Bentonite pellets (3/8") were used to construct bentonite seals. Sandpacks constructed using US Silica Filpro #2 gravel/sand.</p> <p>bgs = below ground surface ppm = parts per million gpm = gallons per minute</p>



LOG OF WELL BORING MW-9D

(Page 3 of 5)

GTAC Hoff VC
New Hanover Township
Montgomery County, Pennsylvania

Driller : Duane Moyer
Logged By : Zachary Bentley
Drilling Method : Air Rotary
Drilling Diameter : 10" air hammer for casing
: 6" air hammer for wells

Drilling Started : 5/12/14
Drilling Completed : 5/13/14
Well Construction : 6/16/14
Static Water Level : 16' bgs on 5/14/14

Project Number
301604.TM.100116.3030.0303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-9D Elev.:	Well Construction Information
100	HORNFELS (continued)						<p>WELL CASING : Material : Steel Diameter : 6" From : 0'-38'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 43.5'-103.5' Opening : 0.020" slot</p> <p>LOWER SCREEN : Material : PVC Diameter : 2" From : 139.5'-189.5' Opening : 0.020" slot</p> <p>NOTES:</p> <p>Well water was blown out at 43' bgs to check/verify outer casing seal. Final blown yield: 50 gpm.</p> <p>Open borehole was developed using air from rig to lift loose sediment from borehole. Individual wells screens developed via pumping and surging on 7/01/14 with submersible pump.</p> <p>Bentonite pellets (3/8") were used to construct bentonite seals. Sandpacks constructed using US Silica Filpro #2 gravel/sand.</p> <p>bgs = below ground surface ppm = parts per million gpm = gallons per minute</p>
105						<p>Upper Screen</p> <p>Sand</p> <p>Bentonite</p> <p>Lower Screen</p>	
110							
115							
120	120': Color change to very dusky red (2.5YR 2.5/2). Pyrite in cuttings.						
125		HF					
130							
135	136'-140': Soft zone.						
140							
143	143': Fracture				12		
145							
150							



LOG OF WELL BORING MW-9D

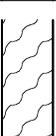
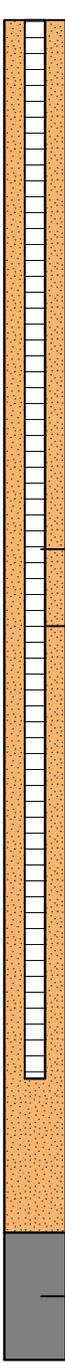
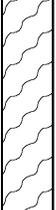
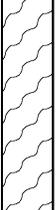
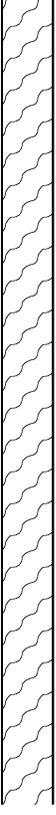
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GTAC Hoff VC
New Hanover Township
Montgomery County, Pennsylvania

Driller : Duane Moyer
Logged By : Zachary Bentley
Drilling Method : Air Rotary
Drilling Diameter : 10" air hammer for casing
: 6" air hammer for wells

Drilling Started : 5/12/14
Drilling Completed : 5/13/14
Well Construction : 6/16/14
Static Water Level : 16' bgs on 5/14/14

Project Number
301604.TM.100116.3030.0303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-9D Elev.:	Well Construction Information
150	HORNFELS (continued)						<p>WELL CASING : Material : Steel Diameter : 6" From : 0'-38'</p> <p>UPPER SCREEN : Material : PVC Diameter : 2" From : 43.5'-103.5' Opening : 0.020" slot</p> <p>LOWER SCREEN : Material : PVC Diameter : 2" From : 139.5'-189.5' Opening : 0.020" slot</p> <p>NOTES:</p> <p>Well water was blown out at 43' bgs to check/verify outer casing seal. Final blown yield: 50 gpm.</p> <p>Open borehole was developed using air from rig to lift loose sediment from borehole. Individual wells screens developed via pumping and surging on 7/01/14 with submersible pump.</p> <p>Bentonite pellets (3/8") were used to construct bentonite seals. Sandpacks constructed using US Silica Filpro #2 gravel/sand.</p> <p>bgs = below ground surface ppm = parts per million gpm = gallons per minute</p>
155	155': Fracture.				42		
160	163': Fracture.				44	<p>Lower Screen</p> <p>Sand</p>	
180	182'-185': Soft zone.	HF			45	<p>Bentonite</p>	



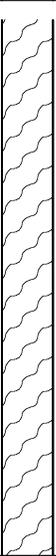
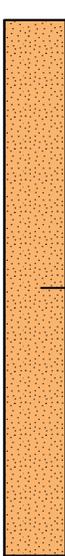
LOG OF WELL BORING MW-9D

GTAC Hoff VC
New Hanover Township
Montgomery County, Pennsylvania

Driller : Duane Moyer
 Logged By : Zachary Bentley
 Drilling Method : Air Rotary
 Drilling Diameter : 10" air hammer for casing
 : 6" air hammer for wells

Drilling Started : 5/12/14
 Drilling Completed : 5/13/14
 Well Construction : 6/16/14
 Static Water Level : 16' bgs on 5/14/14

Project Number
301604.TM.100116.3030.0303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-9D Elev.:	Well Construction Information
200 205 210 215 220	HORNFELS (continued) 208': Fracture. Well Completed to 220' bgs.	HF			50 50	 Sand	<p>WELL CASING : Material : Steel Diameter : 6" From : 0'-38' UPPER SCREEN : Material : PVC Diameter : 2" From : 43.5'-103.5' Opening : 0.020" slot LOWER SCREEN : Material : PVC Diameter : 2" From : 139.5'-189.5' Opening : 0.020" slot</p> <p>NOTES: Well water was blown out at 43' bgs to check/verify outer casing seal. Final blown yield: 50 gpm. Open borehole was developed using air from rig to lift loose sediment from borehole. Individual wells screens developed via pumping and surging on 7/01/14 with submersible pump. Bentonite pellets (3/8") were used to construct bentonite seals. Sandpacks constructed using US Silica Filpro #2 gravel/sand.</p> <p>bgs = below ground surface ppm = parts per million gpm = gallons per minute</p>
220 225 230 235 240 245 250							



LOG OF WELL BORING MW-10D

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GTAC Hoff VC
New Hanover Township
Montgomery County, Pennsylvania

Driller : Duane Moyer
Logged By : Zachary Bentley
Drilling Method : Air Rotary
Drilling Diameter : 10" air hammer for casing
: 6" air hammer for wells

Drilling Started : 5/12/14
Drilling Completed : 5/13/14
Well Construction : 6/17/14
Static Water Level : 29.25' bgs on 5/14/14

Project Number
301604.TM.100116.3030.0303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yield (gpm)	Well: MW-10D Elev.:	Well Construction Information
0	CLAY, organic rich soil, high plasticity, moist.	CL		0.0			<p>WELL CASING : Material : Steel Diameter : 6" From : 0'-38'</p> <p>UPPER SCREEN: Material : PVC Diameter : 2" From : 40.5'-110.5' Opening : 0.020" slot</p> <p>LOWER SCREEN Material : PVC Diameter : 2" From : 170.5'-200.5' Opening : 0.020" slot</p>
5	SILTSTONE, weathered, very brittle, small cuttings, very dusky red (10R 3/2). HORNFELS, dusky red (10R 3/2).	SL		0.0	0.0		
10		HF					<p>NOTES:</p> <p>Well water was blown out at 43' bgs to check/verify outer casing seal. Final blown yield: 60 gpm.</p> <p>Open borehole was developed using air from rig to lift loose sediment from borehole. Individual well screens developed via pumping and surging on 6/30/14 with submersible pump.</p> <p>Bentonite pellets (3/8") were used to construct bentonite seals. Sandpacks constructed using US Silica Filpro #2 gravel/sand.</p> <p>Bridging of bentonite at 35'-40' bgs during well screen installation resulted in complications during completion of the upper screen sandpack to 40' bgs.</p> <p>bgs = below ground surface ppm = parts per million gpm = gallons per million</p>
33'	Some calcite in cuttings						
40							
45							



LOG OF WELL BORING MW-10D

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Project Number
301604.TM.100116.3030.0303

Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yelid (gpm)	Well: MW-10D Elev.:	Well Construction Information
50 55 60 65 70 75 80 85 90 95 100	<p>HORNFELS (continued)</p> <p>55': Color change to reddish black (10R 2.5/1)</p> <p>69': Color change to very dark gray (GLEY1 N 3/)</p> <p>90': Color change to dark greenish gray (GLEY1 10Y 4/1), pyrite in cuttings.</p> <p>96': Color change to bluish black (GLEY2 3/5 B), soft zone, some calcite in cuttings, moist.</p>	HF					<p>WELL CASING : Material : Steel Diameter : 6" From : 0'-38'</p> <p>UPPER SCREEN: Material : PVC Diameter : 2" From : 40.5'-110.5' Opening : 0.020" slot</p> <p>LOWER SCREEN Material : PVC Diameter : 2" From : 170.5'-200.5' Opening : 0.020" slot</p> <p>NOTES:</p> <p>Well water was blown out at 43' bgs to check/verify outer casing seal. Final blown yeild: 60 gpm.</p> <p>Open borehole was developed using air from rig to lift loose sediment from borehole. Individual well screens developed via pumping and surging on 6/30/14 with submersible pump.</p> <p>Bentonite pellets (3/8") were used to construct betonite seals. Sandpacks constructed using US Silica Filpro #2 gravel/sand.</p> <p>Bridging of bentonite at 35'-40' bgs during well screen installation resulted in complications during completion of the upper screen sandpack to 40' bgs.</p> <p>bgs = below ground surface ppm = parts per million gpm = gallons per million</p>



LOG OF WELL BORING MW-10D

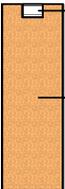
(Page 5 of 5)

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Project Number
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Depth in Feet	DESCRIPTION	USCS	GRAPHIC	PID Reading (ppm)	Blown Yeild (gpm)	Well: MW-10D Elev.:	Well Construction Information
200	HORNFELS (continued)	HF				 Lower Sand	<p>WELL CASING : Material : Steel Diameter : 6" From : 0'-38'</p> <p>UPPER SCREEN: Material : PVC Diameter : 2" From : 40.5'-110.5' Opening : 0.020" slot</p> <p>LOWER SCREEN Material : PVC Diameter : 2" From : 170.5'-200.5' Opening : 0.020" slot</p> <p>NOTES:</p> <p>Well water was blown out at 43' bgs to check/verify outer casing seal. Final blown yeild: 60 gpm.</p> <p>Open borehole was developed using air from rig to lift loose sediment from borehole. Individual well screens developed via pumping and surging on 6/30/14 with submersible pump.</p> <p>Bentonite pellets (3/8") were used to construct betonite seals. Sandpacks constructed using US Silica Filpro #2 gravel/sand.</p> <p>Bridging of bentonite at 35'-40' bgs during well screen installation resulted in complications during completion of the upper screen sandpack to 40' bgs.</p> <p>bgs = below ground surface ppm = parts per million gpm = gallons per million</p>
205	Well Completed to 207' bgs.				60		
210							
215							
220							
225							
230							
235							
240							
245							
250							